

# FLORA OF KAILASH SACRED LANDSCAPE NEPAL

## AN ANNOTATED CHECKLIST – VOLUME 1

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AN ANNOTATED CHECKLIST - VOLUME 1  
(Gymnosperms and Angiosperms: Ephedraceae – Buxaceae)



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(GYMNOSPERMS AND ANGIOSPERMS: EPHEDRACEAE – BUXACEAE)

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Front cover: *Cypripedium himalaicum*, Mt. Api (7132 m) in the background; back cover: *Cypripedium elegans*.

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# Contents

|  |             |
|--|-------------|
| <i>Foreword</i>  | <i>vii</i>  |
| <i>Preface</i>   | <i>ix</i>   |
| <i>Abbreviations and Acronyms</i>                                      | <i>xi</i>   |
| <b>Introduction</b>  | <b>xiii</b> |
| Kailash Sacred Landscape (KSL) Nepal                                   | xiii        |
| Biodiversity   | xv          |
| Vegetation Pattern   | xvi         |
| Trade and Conservation Status of Plant Biodiversity                    | xxiii       |
| Botanical Exploration  | xxiii       |
| Published Accounts on Flora of Nepal and Rationale of the Present Work | xxxiii      |
| Scope, Format and Sources of Information                               | xxxv        |
| Floristic Synopsis   | xxxvii      |
| <b>Checklist</b>   |             |
| <b>Gymnosperms</b>   | <b>1</b>    |
| Ephedraceae  | 1           |
| Pinaceae   | 2           |
| Cupressaceae   | 7           |
| Taxaceae   | 10          |
| <b>Angiosperms</b>   | <b>11</b>   |
| Schisandraceae   | 11          |
| Saururaceae  | 12          |
| Piperaceae   | 12          |
| Aristolochiaceae   | 13          |
| Magnoliaceae   | 14          |
| Annonaceae   | 14          |
| Lauraceae  | 15          |
| Acoraceae  | 20          |
| Araceae  | 20          |
| Alismataceae   | 27          |
| Juncaginaceae  | 28          |

|   |     |
|---|-----|
| Potamogetonaceae  | 29  |
| Nartheciaceae   | 30  |
| Dioscoreaceae   | 31  |
| Melanthiaceae   | 35  |
| Colchicaceae  | 36  |
| Smilacaceae   | 38  |
| Liliaceae   | 40  |
| Orchidaceae   | 46  |
| Hypoxidaceae  | 81  |
| Iridaceae   | 82  |
| Amaryllidaceae  | 83  |
| Asparagaceae  | 87  |
| Arecaceae   | 95  |
| Commelinaceae   | 96  |
| Pontederiaceae  | 100 |
| Zingiberaceae   | 100 |
| Eriocaulaceae   | 104 |
| Juncaceae   | 105 |
| Cyperaceae  | 111 |
| Poaceae   | 142 |
| Papaveraceae  | 212 |
| Lardizabalaceae   | 224 |
| Menispermaceae  | 225 |
| Berberidaceae   | 228 |
| Ranunculaceae   | 234 |
| Sabiaceae   | 269 |
| Buxaceae  | 270 |
| <b>References</b>   | 272 |
| <b>Appendix 1: Online Catalogues, Herbarium Datasets and Plant Databases Consulted (Accessed from 2019 to 2021)</b> | 284 |
| <b>Colour Plates</b>  | 287 |
| <b>Index</b>  |     |
| Index to Scientific Names   | 319 |
| Index to Vernacular Names   | 338 |
| <b>About the Authors and Editor</b>   | 349 |



# Foreword

Floral diversity, the number of plant species including endemic, rare, and threatened species of a region, will enable conservation efforts to be more effectively targeted. To promote the biodiversity conservation and ecosystem management in the Himalayas, six transboundary landscapes in the Himalayan range have been designated, among which Kailash Sacred Landscape (KSL), located across the borders of NE Uttarakhand region of India, Far-west Nepal, and Tibetan Autonomous Region of China, is one of the largest landscapes. In terms of cultural, ecological and biological diversity, KSL Nepal is home to numerous cultural heritage sites, protected areas/wildlife sanctuaries, watersheds and diverse ecological landscapes, as well as rich flora and fauna. Since the late 19<sup>th</sup> century, botanical explorations in this region have been carried out, but further explorations and compilation of baseline floristic data of gymnosperms and angiosperms have been extended during the last couple of decades.

The present book 'Flora of Kailash Sacred Landscape Nepal' is obviously an exemplary outcome of the series of explorations by the foreign and Nepalese botanists, including the authors and editor of this book. In fact, the responsibility of plant collection and compiling plant resource information, from one of the remotest areas of Nepal, is a difficult and challenging task. In this context, publication of this book is one of the remarkable steps in plant biodiversity documentation of Far-West Nepal. The Flora of Kailash Sacred Landscape Nepal: An Annotated Checklist – Vol. 1 comprises 642 species belonging to 231 genera and 42 families of gymnosperms and angiosperms (Ephedraceae – Buxaceae), contributed by the lead authors, contributing authors and Editor; and published by the Research Centre for Applied Science and Technology (RECAST), Tribhuvan University.

This book provides a wide variety of comprehensive information on the introduction of Kailash Sacred Landscape (KSL) Nepal, with synopsis of biodiversity, vegetation pattern, and itineraries of botanical explorations in KSL Nepal (1876-2019) by foreign and Nepali explorers. Furthermore, the checklist format and floristic synopsis, including status of endemic species and threatened species in KSL Nepal are also comprehensively presented. The arrangement of families in gymnosperms and angiosperms follow Christenhusz *et al.* (2011) and APG IV (2016) respectively; and accepted Latin names and synonyms based on online global databases (Catalogue of Life, Plants of the World and TROPICOS) are commendable, providing latest nomenclatural status of each species.

The annotated checklist of species encompasses accepted names with author and protologue citations, including major reference citations related to Flora of Nepal; common synonyms, vernacular names in Nepali and local names (with Devanagari script), as well as English and Tibetan names; brief characteristic features with habitat, distribution in KSL Nepal and Nepal (with elevation ranges) and general distribution highlight user-friendly information of each species. Furthermore, information on representative herbarium specimens reported from KSL Nepal (arranged district-

wise), deposited in national and foreign herbaria (with Herbarium Code); conservation status (IUCN Red List Categories, and local assessment) of the selective taxa occur in KSL Nepal provides additional valuable information for the researchers and policy makers.

In addition, the book comprises necessary components of the local ethnobotanical uses of plant species, especially the ethnomedicinal value, based on the field works carried out by the researchers; which may contribute to the management and entrepreneurship development of medicinal and aromatic plants in KSL Nepal. The authors also justified their contribution by providing up-to-date references, appendices (online catalogues, herbarium datasets, online plant databases), and user-friendly index to the scientific names and vernacular names. Based on this baseline information, this book may be considered as an esteemed reference book on flora of Nepal, especially the flora of Far-west Nepal. Obviously, this book provides a valuable window for further explorations and compilation of biodiversity data (flora and fauna) ranging from non-flowering plants to flowering plants, and invertebrate to vertebrate animals; including ethnobiological information, and their conservation status.

The authors have tried their best to compile useful information on the local plant resources of KSL Nepal for the use of local communities, students, researchers, botanical professionals, conservationists and planners working in field of biodiversity management. It gives me an immense pleasure to extend my appreciation to the local people for their cooperation in sharing the local information; the authors and editor for their significant efforts in preparing this valuable resource book, and the publishers for bringing out this important publication 'Flora of KSL Nepal' Volume 1. I am optimistic that the remaining volumes of the book, encompassing remaining species of flowering plants, will be compiled and published soon. Finally, I hope the book will be useful and relevant in future biodiversity research, planning process, resource management and biodiversity conservation in KSL Nepal, as well as other landscapes of the Himalayas. I fully believe that publication of the book would enhance transboundary collaboration in sustainable use of biodiversity among the peoples of China, India and Nepal in the days to come.

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March 31, 2021

# Preface

Floristic works provide information about the diversity of a given group of plants growing in specific geographic areas. Plant nomenclature, taxonomic description, distribution and other details including local or vernacular name, utility of species and threat status covered in such works are useful not only for species identification but also in biodiversity assessment and management. The present work is an attempt to provide a consolidated account of gymnosperm and angiosperm flora of Kailash Sacred Landscape (KSL) in north-west Nepal.

The Kailash Sacred Landscape (KSL) is a transboundary landscape which spreads across an area of over 31,000 km<sup>2</sup> and includes southwestern part of Tibet Autonomous Region (TAR) of China, northwestern part of Nepal, and northeastern part of Uttarakhand State in India. The KSL part in Nepal (known as KSL Nepal) includes three districts (Baitadi, Bajhang and Darchula) of Sudurpashchim Province and Humla District of Karnali Province. The landscape is rich in biological diversity and encompasses areas with diverse cultures and ethnicities. The diverse habitat types in the landscape extending from tropical forests to alpine pastures in the monsoon-dominated areas and dry alpine meadows and scrubs in the trans-Himalayan valleys support high plant diversity.

The earliest plant explorations in the landscape were made independently by two British scholars, namely John Scully and John Firminger Duthie in 1870s and 1880s, respectively. However, extensive explorations for scientific plant collections started in the landscape only after 1952 when Oleg Vladimir Polunin and his team first visited Humla-Jumla area. Between 1952 and 2019, at least 53 botanical expeditions for collecting plant specimens and documenting vegetation and flora of the landscape were made mainly by British, French, Japanese and Nepali botanists and naturalists. Botanical explorations and survey of vegetation in KSL Nepal intensified after the implementation in 2011 of Kailash Sacred Landscape Conservation and Development Initiative (KSLCDI), a collaborative effort of ICIMOD and governments of China, India and Nepal. The plant specimens collected from the landscape are in various herbaria distributed globally, but majority of which are found in BM, DD, E, G, K, KATH, P, PE, TI, TUCH, and ZT.

This is the first volume of the three-volume book, documenting the gymnosperm and angiosperm flora of KSL Nepal. It is primarily based on the study of herbarium specimens from the landscape, investigation of the relevant floristic literature, online catalogue and databases, and direct field surveys. The first part of the present volume introduces KSL Nepal, its biodiversity and vegetation pattern, trade and conservation status of plant biodiversity, and provides a brief account of the botanical explorations carried out by different explorers in the landscape. The second part provides a comprehensive checklist of the gymnosperm and angiosperm flora with information about nomenclature, vernacular name(s), growth characteristics, habitat, global distribution, distribution within the landscape and neighbouring districts in Nepal and KSL India and China of the transboundary landscape, ethnobotanical uses and threat status. It covers 642 species and 19 subordinate taxa belonging to 231 genera in 42 families. Gymnosperms comprise 15 species

belonging 9 genera in 4 families. Angiosperms covered in this volume represent 627 species, 8 subspecies and 11 varieties under 222 genera in 38 families (only families Schisandraceae – Buxaceae are included). The remaining species of angiosperms (family Dilleniaceae – Apiaceae) will be covered in the subsequent volumes.

Various organizations and individuals helped us to bring out this publication in the present form. The authors would like to express their sincere thanks to the International Centre for Integrated Mountain Development (ICIMOD) for providing financial support for its publication. We also thank the Research Centre for Applied Science and Technology (RECAST), Tribhuvan University for publishing the volume. We are thankful to the Department of Forests and Soil Conservation and the Department of National Parks and Wildlife Conservation (DNPWC) of the Ministry of Forests and Environment (MoFE), Government of Nepal for granting us permission to carry out research and collect herbarium specimens from the landscape. Thanks are also due to the officials of District Forest Office (now Division Forest Office) at Baitadi, Bajhang, Darchula and Humla, and Api Nampa Conservation Area (ANCA), Darchula for permission and kind help to document plant species in the respective district and within the conservation area. We would like to thank the authorities of KATH and TUCH for their kind help to study the herbarium specimens collected from KSL Nepal.

Our special thanks goes to Prof. Dr. Ram Prasad Chaudhary, Professor Emeritus, Tribhuvan University for kindly editing the volume; and to Prof. Dr. Krishna Kumar Shrestha for writing the foreword. We thank Prof. Dr. Ram Kailash P. Yadav, Dr. Keshab Rajbhandari and Prof. Dr. Sangeeta Rajbhandari for their suggestions and encouragement. We also thank Mr. Ashok Ram, Mr. Shankar Badal, Dr. Yadav Uprety and Mr. Bijaya Subedi for their support. We thank Salikram Sigdel for preparing climatic graphs of different districts of KSL Nepal, and Sunil Thapa for preparing map of the study area.

We are grateful to the local people living in Bajhang, Baitadi, Darchula and Humla for sharing their invaluable knowledge about plants with us. We are profoundly indebted to Mr. Amar Shing Bista, Mr. Ramesh Bista, Mr. Rabi Rokaya, Mr. Raghubir Shing Dhami and Mr. Shyamjor Lama for their generous help during our field works. Thanks are also due to forest users and committee members of Paripatal Women's Community Forest and Kirmade Sinnedi Community Forest, Darchula District, and Kailash Kachaharikot Women's Community Forest, Bajhang District for providing information on forest/vegetation types and management of community forests. Finally, we are grateful to various individuals and researchers, including Anil Koirala, Bikram Jnawali, Chhabi Thapa, Khadak Rokaya, Kuber Bhatta, Mahesh Limbu, Mandhata Acharya, Mohan Pandey, Nabin Bhattarai, Neha Bist, Prabin Bhandari, Prakash Bhattarai, Prem Subedi, Prerana Misra, Raj Kumar Gautam, Rajesh Sharma, Shristhi Nepal and Smriti Lo, who supported us during our field work and helped us in collecting and drying of plant specimens.

**The Authors**

# Abbreviations and Acronyms

## General

|        |  |
|--------|--|
| APG    | Angiosperm Phylogeny Group   |
| CAMP   | Conservation Assessment Management Plan  |
| CDB    | Central Department of Botany   |
| CITES  | Convention on International Trade in Endangered Species and Wild Fauna and Flora |
| DPR    | Department of Plant Resources  |
| GoN    | Government of Nepal  |
| ICIMOD | International Centre for Integrated Mountain Development                         |
| IUCN   | International Union for Conservation of Nature                                   |
| KSL    | Kailash Sacred Landscape   |
| KSLCDI | Kailash Sacred Landscape Conservation and Development Initiative                 |
| MAP    | Medicinal and aromatic plant   |
| MoFE   | Ministry of Forests and Environment  |
| NTFP   | Non-timber forest product  |
| RECAST | Research Centre for Applied Science and Technology                               |

## Plant distribution

|    |                          |     |            |
|----|--------------------------|-----|------------|
| C  | central                  | SAN | Sanskrit   |
| E  | east, eastern            | TIB | Tibetan    |
| N  | north, northern          | TRD | Trade name |
| NE | northeast, north-eastern |     |            |
| NW | northwest, north-western |     |            |
| S  | south, southern          |     |            |
| SC | south-central            |     |            |
| SE | southeast, south-eastern |     |            |
| SW | southwest, south-western |     |            |
| W  | west, western            |     |            |

## Other

|                |  |
|----------------|--|
| <i>c., ca.</i> | <i>circa</i> – approximately                 |
| cm             | centimetre                                   |
| Consv. status  | conservation status                          |
| Ethnobot. use  | ethnobotanical use                           |
| GLB.           | global status                                |
| LOC.           | local status                                 |
| Local abund.   | local abundance                              |
| m              | metre  |
| mm             | millimetre                                   |
| NAT.           | national status                              |
| nom. illeg.    | <i>nomen illegitimum</i> (illegitimate name) |
| nom. inval.    | <i>nomen invalidum</i> (invalid name)        |
| nom. nud.      | <i>nomen nudum</i> (“naked name”)            |
| nom. superfl.  | <i>nomen superfluum</i> (superfluous name)   |

## Vernacular names

|       |                       |
|-------|-----------------------|
| DOZ   | Dozam, Humla          |
| ENG   | English               |
| HIN   | Hindi                 |
| HIN-L | Local Indian dialects |
| KER   | Kermi, Humla          |
| LIM   | Limi, Humla           |
| NEP   | Nepali                |
| NEP-L | Local Nepali dialects |

|        |                                      |      |                               |
|--------|--------------------------------------|------|-------------------------------|
| Pl.    | plate (referring to the photo plate) | syn. | synonym                       |
|        |                                      | var. | variety (infraspecific taxon) |
| subsp. | subspecies (infraspecific taxon)     | >    | greater than                  |
|        |                                      | <    | less than                     |

# Herbaria (Thiers 2018)

|      |   |
|------|---|
| A    | Arnold Arboretum, Harvard University, Cambridge, USA  |
| AMES | Oakes Ames Orchid Herbarium, Harvard University, Cambridge, USA   |
| B    | Botanischer Garten und Botanisches Museum Berlin-Dahlem, Berlin, Germany  |
| BM   | Natural History Museum, London, UK  |
| BR   | Meise Botanic Garden, Meise, Belgium  |
| BSD  | Botanical Survey of India, Northern Regional Centre, Dehra Dun, India   |
| CAL  | Central National Herbarium, Botanical Survey of India, West Bengal, India                                       |
| DD   | Forest Research Institute, Dehra Dun, India   |
| E    | Royal Botanic Garden Edinburgh, Edinburgh, UK   |
| FR   | Senckenberg Gesellschaft für Naturforschung: Senckenberg Forschungsinstitut und Naturmuseum, Frankfurt, Germany |
| G    | Conservatoire et Jardin botaniques de la Ville de Genève, Genève, Switzerland                                   |
| GH   | Gray Herbarium, Harvard University, Cambridge, USA  |
| GOET | Universität Göttingen, Göttingen, Germany   |
| GR   | University Grenoble Alpes, Grenoble, France   |
| GUH  | HNB Garhwal University, Srinagar, Uttaranchal, India  |
| K    | Royal Botanic Gardens, Kew, England, UK   |
| KATH | National Herbarium and Plant Laboratories, Lalitpur, Nepal  |
| KYO  | Kyoto University, Kyoto, Japan  |
| L    | Naturalis, Leiden, Netherlands  |
| LE   | Komarov Botanical Institute of RAS, Saint Petersburg, Russia  |
| MICH | University of Michigan, Ann Arbor, Michigan, USA  |
| MSB  | Ludwig-Maximilians-Universität, München, Germany  |
| NCSC | North Carolina State University, Raleigh, North Carolina, USA   |
| NY   | The New York Botanical Garden, New York, USA  |
| P    | Muséum National d'Histoire Naturelle, Paris, France   |
| PE   | Institute of Botany, Chinese Academy of Sciences, Beijing, China  |
| TUCH | Tribhuvan University Central Herbarium, Kathmandu, Nepal  |
| TI   | University of Tokyo, Tokyo, Japan   |
| U    | Naturalis, Leiden, Netherlands  |
| US   | Smithsonian Institution, Washington DC, USA   |
| W    | Naturhistorisches Museum Wien, Austria  |
| WU   | Universität Wien, Wien, Austria   |
| Z    | Universität Zürich, Zürich, Switzerland   |

# Introduction

## Kailash Sacred Landscape (KSL) Nepal

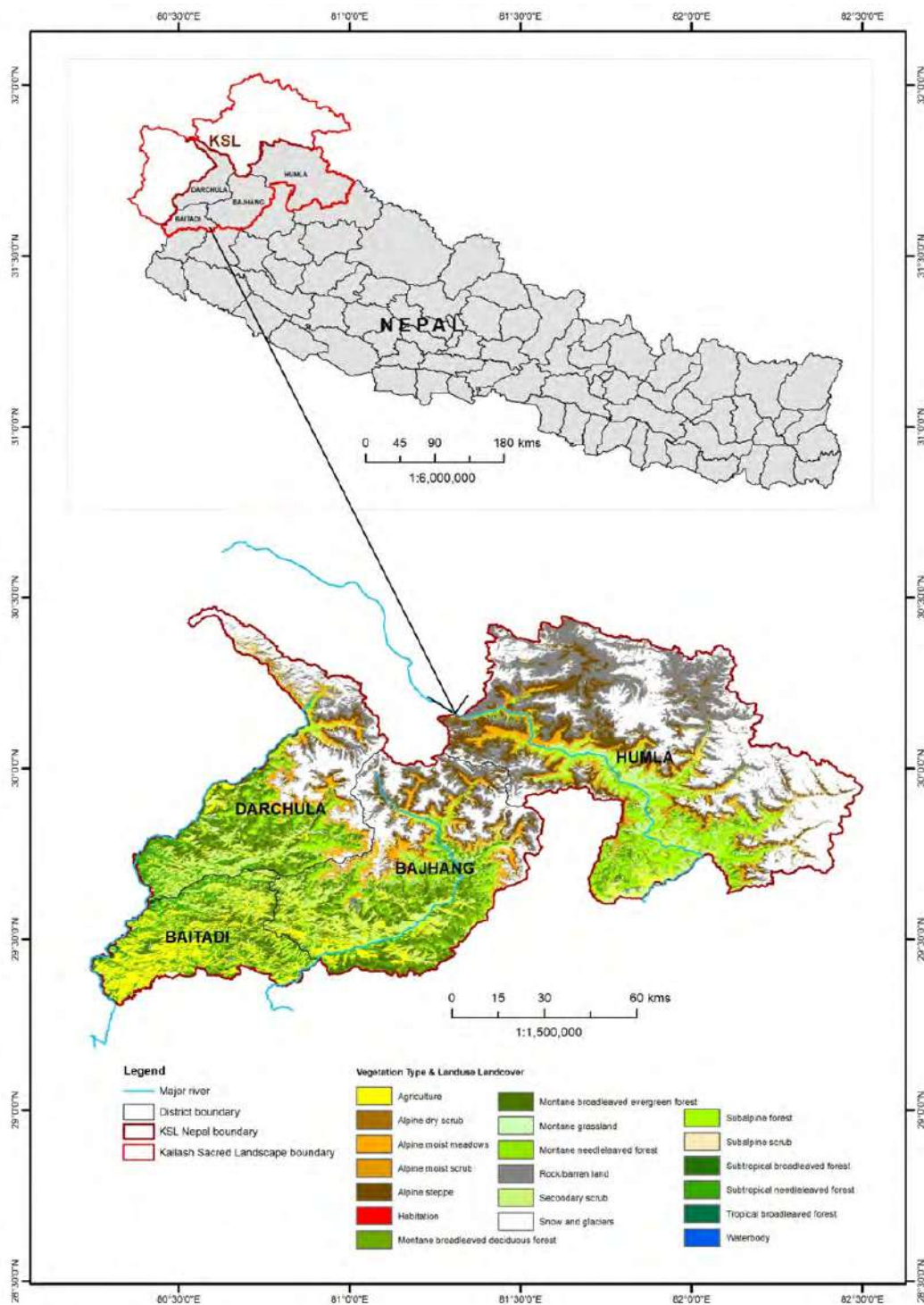
The Kailash Sacred Landscape (KSL) is a transboundary landscape extending across an area of over 31,000 km<sup>2</sup> and encompassing the southwestern part of Tibet Autonomous Region of China, four northwestern districts of Nepal, and the northeastern part of Uttarakhand State in India (Figure 1). The landscape is named after Mount Kailash, one of the most sacred mountains of Asia and an important pilgrimage site. Mt Kailash is also a source of Asia's important rivers: Indus, Sutlej, Brahmaputra and Karnali. The Landscape is characterized by rich culture and tradition, diverse ecology and fragile geology (CDB 2010; Zomer & Oli 2011).

The Nepalese part of the KSL, known as KSL Nepal, comprises three districts (Baitadi, Bajhang and Darchula) of Sudurpashchim Province (hereinafter 'Far West') and Humla District of Karnali Province (Figure 1). The altitude within KSL Nepal ranges from 390 m asl (meters above sea level) in Baitadi to 7336 m of Mt. Nalakankad in Humla District. Humla Karnali, Mahakali, Chameliya (Chaulani) and Seti are the major river systems of the landscape. There are altogether 426 wetlands (MFSC 2016). Chhubhu Tal and Surma Tal in Bajhang District and Kalidhunga Tal in Darchula District are the major lakes in the landscape. Mt. Nalakankad (7336 m) is the highest mountain, followed by Api (7132 m), Saipal (7031 m), and Nampa (6757 m).

Altitudinal and topographical variations in the landscape bring variation in climate from subtropical to alpine type. The climate is subtropical in the southern monsoon-dominated part of the landscape. The hills are characterized by temperate climate, and the northern belt which is mostly covered with snow represents alpine climate. The northernmost trans-Himalayan part is relatively dry. The average annual maximum and minimum temperatures recorded in the landscape between 1978 and 2014 were 17.25°C and 6.15°C, respectively, and the average annual precipitation was 1214 mm (DHM 2017). Baitadi, Darchula and Bajhang are characterized by relatively high annual precipitation, the average value of which has been reported to be 1472, 1403 and 1324 mm in the three districts, respectively (DHM 2017). The average annual precipitation recorded in Humla was quite low (656 mm; DHM 2017). The climatic (precipitation and temperature) data of the last ten years (2010–2019) measured at the headquarters of KSL districts in Nepal are presented in Figure 2.

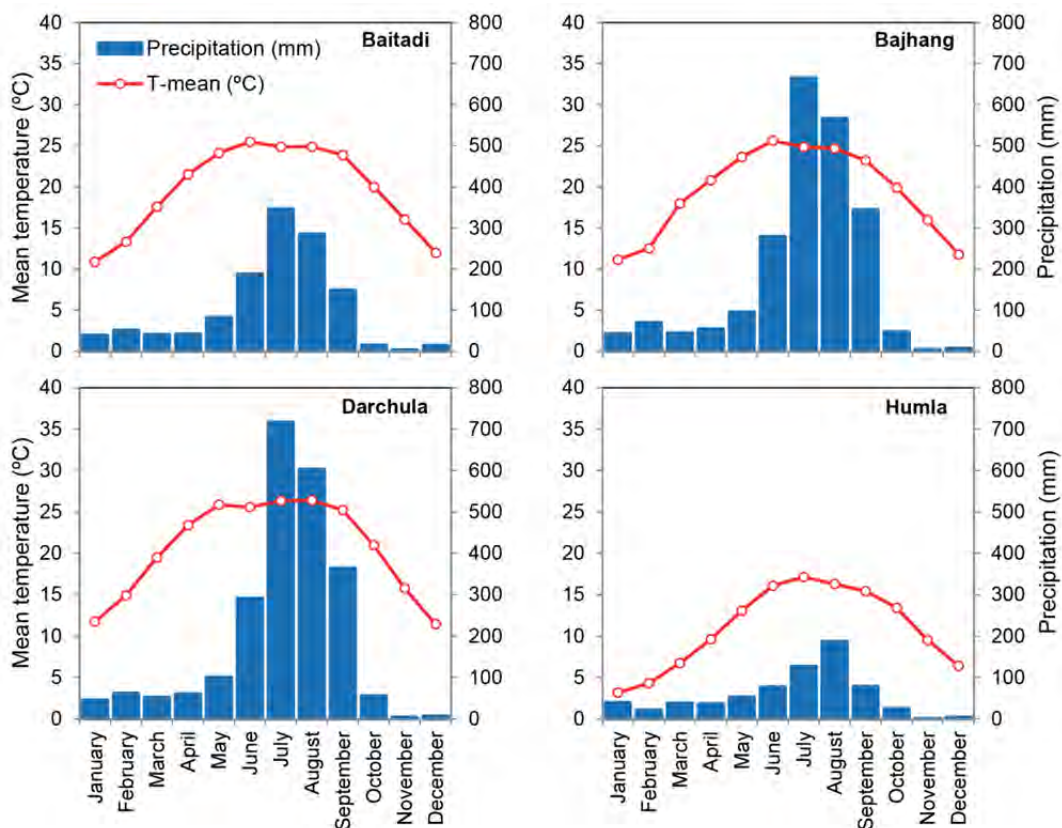
Geologically, the northernmost part of KSL Nepal is dominated by Tibetan sediments; high Himalayan zone consists of gneiss, schist, limestone, sediments, granite and pegmatite; middle mountain zone consists of phyllite, quartzite, gneiss, granite and schist (CDB 2010).

Total human population of the KSL area in Nepal is 630,189, of which 47.5% are male and 52.5% are female, comprising a total of 113,074 households (CBS 2017). KSL Nepal is inhabited by such major ethnic/caste groups as Chhetri, Brahman, Thakuri, Dalit (Kami, Damai and Sarki), Byasi/Sauka, Sanyasi/Dashnami, Tamang, and Magar (CBS 2011).



**Figure 1:** Map of Kailash Sacred Landscape Nepal (source: ICIMOD 2020).





**Figure 2:** Precipitation and mean temperature (T-mean) recorded at district headquarters of KSL Nepal (based on last ten years' climatic data: 2010–2019; source: DHM 2020).

## Biodiversity

KSL Nepal is characterized by different bioclimatic zones and ecosystems that harbor rich biodiversity (Zomer & Oli 2011). The landscape lies at the interjunction of three major floristic regions: western Himalayan, eastern Himalayan and central Asiatic. It is a part of the Himalaya Biodiversity Hotspot (Mittermeier *et al.* 2004) and comprises of five major ecoregions, namely Himalayan subtropical broadleaf forest, Himalayan subtropical pine forest, western Himalayan broadleaf forest, western Himalayan subalpine conifer forest and western Himalaya alpine shrub and meadows (Olson *et al.* 2001). Out of 35 forest types of Nepal (Stainton 1972), at least 20 forest types, including sal forest of lowland to upper alpine vegetation, occur in the landscape. KSL Nepal also provides habitat for 83 species of mammals, 455 birds, 38 amphibians and reptiles, and 119 fish species, out of which 22 mammal, 12 bird and 1 reptile species are listed under the IUCN Red List. Forty-two endemic plant taxa (including 40 species, 1 subspecies and 1 variety) have been documented from the landscape and its immediate vicinity in Nepal (CDB 2010; Rana *et al.* 2018, 2021; Ghimire *et al.* in prep.), while eight mammal, seven bird, 22 reptile and eight fish species are endemic or with restricted range distribution (Zomer & Oli 2011). Fourteen species of plants found

in KSL Nepal are listed in IUCN Red List as critically endangered (1 species), endangered (4), vulnerable (7) and near threatened (2) (Ghimire *et al.* in prep.). Thirty-five species of mammals and 73 bird species are listed in Convention on International Trade in Endangered Species of Fauna and Flora (CITES) list, and 10 mammals, 4 birds and 1 reptile species are listed as legally protected by the Government of Nepal (MFSC 2016).

About 8.6% of total land of the area is available for cultivation (CDB 2010), and people of KSL Nepal are highly dependent on the natural resources for their livelihoods. The forest cover of KSL Nepal decreased by 9% and cropland expanded by 12% in between 1990 and 2009 mainly due to forest dependency (Uddin *et al.* 2015). The indigenous peoples of this region have been interacting with the biological resources to meet their basic needs and other purposes. Traditional knowledge on the use of plants and animals for various purposes is rich, and non-timber forest products (NTFPs), including medicinal and aromatic plants (MAPs) are the major economic products of this region (Ghimire 2010; Chaudhary *et al.* 2017; Pyakurel *et al.* 2017, 2018; Poudeyal *et al.* 2019). Local knowledge on plant resources and the uses have been partially documented (Kunwar *et al.* 2008, 2009, 2015, 2018; Rokaya *et al.* 2010; Thapa *et al.* 2020). Kunwar *et al.* (2015) reported a total of 258 species of medicinal plants in Bajhang, Baitadi, Dadeldhura and Darchula for the indigenous treatment of 66 human diseases, predominantly for dysentery, diarrhea, and skin problems. Recently, Kunwar *et al.* (2018) listed 1434 use reports from 122 plant species from KSL Nepal, and Thapa *et al.* (2020) reported the use of 33 species of medicinal plants to treat 40 ailments in Dilasaini Gaunpalika of Baitadi District. Our ongoing primary research indicated the presence of over 450 ethnobotanically important plant species in KSL Nepal (Ghimire *et al.* in prep.), of which use reports of 133 species are documented in this volume.

## **Vegetation Pattern**

Vegetation of NW Nepal including Karnali region has been partly described by Stainton (1972), Dobremez and Shrestha (1978), Shrestha (1982), and Miehe *et al.* (2015). Like other parts of the Himalayas, distribution of vegetation in this area is determined primarily by variation in altitude and monsoonal precipitation, though geology, soil and other biotic factors exert a considerable influence (Stainton 1972; Dobremez 1976). The northern trans-Himalayan regions, such as upper Mahakali (Byas and Tinkar area) and upper Humla-Karnali (Limi and Talung Valley), characterized by dry steppe vegetation, have drier climate than the southern monsoon-affected slopes. Vegetations in the southern slopes are diverse representing temperate, sub-alpine and alpine formations and comprised of many north temperate and western Himalayan elements. The southern slopes are chiefly characterized by distinct forest stands representing coniferous and broad-leaved taxa in various proportions.

NW Nepal has been regarded as an eastern extension of the western Himalayan vegetation (Mani 1978; Shrestha 1982). The western Himalayan vegetation, in general, differs from the east in the greater representation of conifers (Kaul 1976; Mani 1978; Miehe *et al.* 2015). *Abies pindrow*, *Cedrus deodara*, *Cupressus torulosa* and *Picea smithiana* are the typical western Himalayan conifers found in KSL area. The succession from the southern parts closely follows with the principal difference in the presence of *Pinus wallichiana*, *Picea smithiana*, *Tsuga dumosa* and *Cupressus torulosa*

at elevations of about 2500–2800 m (Mani 1978). A number of western Himalayan species are known to stop their range of distribution in west Nepal (e.g., *Abies pindrow* and *Cedrus deodara*) or some reach to Kali-Gandaki (e.g., *Cupressus torulosa*) and Trishuli (*Picea smithiana*) in central Nepal (Miehe *et al.* 2015).

The western Himalayas are also characterized by lower tree line, lower snow line, higher winter snowfall, and difference in length of daylight between summer and winter (Mani 1978). However, for NW Nepal the tree line has been reported to be at 3700–3900 m and the snow line at 4800–5000 m (Shrestha 1982). In upper Humla and other drier valleys of NW Nepal (e.g., Dolpo), where signs of reduced rainfall occur at much lower elevation, the tree line is much higher than the southern side of the main ranges and at some places forest can be found at 4350 m (Stainton 1972).

An outline vegetation classification of KSL has been developed through a consensus among different stakeholders during a regional meeting on “Vegetation type harmonization and validation for Kailash Sacred Landscape” held on 9–10 December 2015 in Dehradun, India. Approximately 48% of the total area of the landscape is covered by 14 different types of vegetation (ICIMOD 2020). The 14 broad vegetation types, their subcategories, dominant species and altitudinal ranges are presented below (revised after ICIMOD 2020; and elaborated for KSL Nepal based on primary field observation; and literature, mainly Stainton 1972, and Miehe *et al.* 2015):

## 1. Tropical broad-leaved forests

It is distributed below 1000 m asl and represented by Sal forest and Khair-Sissoo riverine forest.

- a. Sal forest: It is dominated by *Shorea robusta*. The major associated species are *Terminalia anogeissiana* (= *Anogeissus latifolia*), *Adina cordifolia*, *Dillenia pentagyna*, *Lagerstroemia parviflora*, *Mallotus philippensis* and *Semecarpus anacardium*.
- b. Khair-Sissoo riverine forest: It is dominated by *Acacia catechu* and *Dalbergia sissoo*. The major associated species are *Tamarix dioica*, *Murraya koenigii* and *Callicarpa macrophylla*.

*Note:* In KSL Nepal, these forests are less common and found in small area.

## 2. Subtropical broad-leaved forests

The major subtypes in this category are:

- a. Hill Sal (*Shorea robusta*) forest: It is distributed from 600 to 1200 m asl and reaches up to 1500 m asl along river valleys. The major tree species in this forest are *S. robusta*, *Terminalia anogeissiana* and *T. elliptica* (= *T. alata*). The other associated species, particularly in dry slopes, are *Adina cordifolia*, *Lagerstroemia parviflora*, *Mallotus philippensis* and *Semecarpus anacardium*.
- b. *Toona* - *Engelhardia* riverine forest: It is distributed at 900–1700 m asl, and is characterized by the presence of *Toona ciliata*, *Engelhardia spicata* and *Albizia julibrissin*. The other associated species are *Albizia chinensis*, *Dalbergia sericea*, *Lyonia ovalifolia* and *Stranvaesia nussia*.

- c. *Macaranga denticulata* riverine forest: *Macaranga denticulata* forms scattered stands with *Debregeasia* spp. (*D. longifolia*, *D. saeneb*), *Pouzolzia rugulosa*, *Sapium insigne*, *Callicarpa macrophylla*, *Mallotus philippensis*, *Terminalia elliptica* and occasional *Bombax ceiba* on open hillsides and riversides between 800 and 1800 m.

### 3. Subtropical needle-leaved forest

This forest is characterized mostly by even-aged and single-storeyed Chir pine (*Pinus roxburghii*). It usually occurs on steep south-facing slopes between 900 and 1900 m asl. In Chir pine forest, despite good light condition, understorey vegetation rarely develops. However, some shrubs (e.g., *Boehmeria* spp., *Duhaldea cappa*, *Pseudocaryopteris foetida*, *Spermadictyon suaveolens* and *Woodfordia fruticosa*) and small trees (e.g., *Lyonia ovalifolia*) which are fire tolerant and adapted to grazing are found in areas with sufficiently open canopy or along forest margins on dry and rocky slopes.

### 4. Montane broad-leaved evergreen forests

This category is found between 1400 and 3000 m asl and is characterized by multi-storeyed forests dominated by different species of oak (*Quercus* spp.) in different altitudinal ranges. The dominant species include:

- a. *Quercus oblongata* (= *Q. incana* Roxb. = *Q. leucotrichophora*), in association with *Neolitsea pallens*, *Machilus* spp. and *Myrica esculenta* (1200–2500 m).
- b. *Quercus lanata* (= *Q. lanuginosa* D. Don), in association with *Rhododendron arboreum*, *Ilex dipyrena*, *Symplocos paniculata*, *Lindera pulcherrima*, *Lyonia ovalifolia* (1300–2600 m).
- c. *Quercus floribunda* (= *Q. dilatata* Lindl. ex A. DC.), in association with *Acer* spp., *Aesculus indica*, *Dodecadenia grandiflora*, *Ilex dipyrena*, *Juglans regia*, *Lindera pulcherrima*, *Machilus duthiei*, *Neolitsea pallens*, *Rhododendron arboreum* and *Symplocos paniculata* (mainly on north-facing slopes between 2000 and 2800 m asl).
- d. *Quercus semecarpifolia*, between 2400 and 3500 m asl. *Q. semecarpifolia* often forms mixed stands with *Abies spectabilis* and *Tsuga dumosa* on wetter slopes, but on dry southern slopes it forms pure forest at elevation up to 3500 m asl. Along riverside and deeply shaded habitats, it is mixed with broadleaved species, like *Prunus cornuta*, *Acer* spp., *Ilex dipyrena*, *Neolitsea pallens*, *Corylus jacquemontii*, *Rhododendron arboreum* and *Sorbus cuspidata*. In Chameliya Valley of Darchula, *Quercus semecarpifolia* reaches the highest altitude of 3900 m asl (up to the treeline) on southern aspect.

### 5. Montane broad-leaved deciduous forests

The different floristic units of this vegetation are:

- a. *Alnus nepalensis* forest: It is mostly monospecific and occurs along streams, landslide area and unstable ground from 1500 to 2500 m asl.

- b. *Aesculus* – *Acer* forest: It is multi-storeyed forest occurring on shady slopes and along streams from 1700 to 2900 m. It is characterized by the dominance of *Aesculus indica* along with species of Himalayan maple, chiefly *Acer caesium*, *A. cappadocicum* and *A. sterculiaceum*. The other associated tree species are *Alnus nepalensis*, *Betula alnoides*, *Carpinus faginea*, *C. viminea*, *Juglans regia*, *Prunus cornuta*, *Morus serrata*, *Toona sinensis* and *Ulmus wallichiana*. The understorey is well developed and consists of small trees and taller shrubs (such as *Corylus jacquemontii*, *Cornus macrophylla*, *Deutzia compacta*, *Hydrangea* spp., *Leycesteria formosa*, *Philadelphus tomentosus*, *Rhus* spp., *Staphylea emodi*, *Syringa emodi*, *Picrasma quassioides* and *Viburnum mullaha*).
- c. *Populus ciliata* forest: It occurs along streams between 2200–3600 m. It is chiefly associated with *Acer* spp.

## 6. Montane needle-leaved forests

The different floristic units of this vegetation are:

- a. *Cedrus deodara* forest (1600–2200 m).
- b. *Cupressus torulosa* forest (1800–2400 m).
- c. *Tsuga dumosa* forest (2600–3200 m). It forms pure as well as mixed stands with *Abies spectabilis* and *Quercus semecarpifolia*. The other associated tree species are *Acer* spp., *Rhododendron arboreum* and *Betula utilis*.
- d. *Abies pindrow* forest (2100–3000 m). It occurs in association with *Picea smithiana*, *Acer* spp., *Quercus semecarpifolia* and *Aesculus indica*.
- e. *Pinus wallichiana* forest (1800–3300 m). It occurs in association with *Picea smithiana*, *Abies spectabilis*.
- f. *Picea smithiana* forest (2400–3500 m). It is mostly associated with *Pinus wallichiana* and *Abies spectabilis*. The other associated tree species are *Acer* spp., *Quercus semecarpifolia*, *Betula utilis* and *Abies pindrow*.

*Note:* In KSL Nepal, natural forests of *Cedrus deodara* and *Cupressus torulosa* are fragmented and very rare. In some places, these have been planted for timber, and some trees are found at the sites of shrines or sacred/religious forests.

## 7. Montane scrub

The different units of this vegetation are:

- a. *Euphorbia royleana* scrub: It occurs on steep, south-facing rocky slopes and rock walls from 1000 to 1600 m.
- b. *Olea* scrub: It occurs on dry valley bottoms and lower slopes from 1000 to 2000 m. The major composition includes *Olea europaea* subsp. *cuspidata*, associated with *Celtis australis*, *Cotinus coggygria*, *Ficus palmata* and *Pistacia chinensis* subsp. *integerrima*.

- c. Shrub community forming mixed or monospecific stands: This type of community occurs on exposed dry slopes and along streams/rivers between 800–3200 m. The major components are: *Searsia parviflora* (800–1600 m), *Woodfordia fruticosa* (800–1600 m), *Cocculus laurifolius* (800–1900 m), *Leptodermis lanceolata* (1300–2500 m), *Buxus wallichiana* (2000–2700 m), *Pyracantha crenulata* (800–3000 m), and *Prinsepia utilis* (1700–3000 m). The barren rocky cliffs on southern aspect harbor scattered shrubs like *Colquhounia coccinea* (1300–2500 m), *Buddleja crispa* (2100–2500 m) and *Isodon rugosus* (1700–3200 m); and the major herbs in such habitats are *Coleus barbatus*, *Incarvillea diffusa* and *Origanum vulgare*.

## 8. Montane grasslands

The grasslands on steeper slopes and hay meadows (managed pastures) distributed up to 3300 m represent this type of vegetation. The major species of the grasslands include *Agrostis pilosula*, *Andropogon munroi*, *Apluda mutica*, *Arundinella setosa*, *Cenchrus flaccidus*, *Chrysopogon gryllus*, *Cymbopogon distans*, *Eulalia mollis*, *Erioscirpus comosus*, *Setaria* spp. and *Themeda anathera*. The other associated herbs comprise the species of *Crotalaria*, *Gynura*, *Lilium*, *Rumex*, *Senecio* and *Swertia*.

## 9. Subalpine forests

The major subtypes in this category are:

- a. Oak-fir mixed forest (*Quercus semecarpifolia* – *Abies spectabilis*) distributed from 3000 to 3500 m asl. It is characterized by the dominance of *Quercus semecarpifolia* and *Abies spectabilis*. On north-facing slopes, *Abies spectabilis* (or *Tsuga dumosa* below 3200 m asl) being in the top canopy and *Q. semecarpifolia* mostly dominate the second layer. But on southern slopes, *Q. semecarpifolia* forms pure forests at elevation up to 3500 m asl. In Chameliya Valley of Darchula, *Q. semecarpifolia* reaches the highest altitude of 3900 m asl with *Betula utilis*, and with few scattered trees of *Abies spectabilis*.
- b. Fir- (*Abies spectabilis*-) dominated forest, distributed from 3300 to 3700 m asl. Pure forest of *Abies spectabilis* is less frequent in KSL Nepal. It is often mixed with *Quercus semecarpifolia* and *Betula utilis* forming distinct mixed forest types. The other associated species are *Acer acuminatum*, *A. caesium*, *A. pectinatum*, *Rhododendron arboreum*, *R. barbatum*, *Sorbus foliolosa*, *S. cuspidata* and *Taxus contorta*.
- c. Birch- (*Betula utilis*-) dominated forest. The birch is found from 2700 m asl up to the treeline. At elevation below 3200 m asl, it occurs as an associated component of montane needle-leaved forests (chiefly *Abies pindrow*, *Pinus wallichiana* and *Picea smithiana*) along with other broad-leaved species, such as *Acer caesium*, *Acer pectinatum* and *Prunus cornuta*. At elevation between 3300 and 3700 m asl, birch forms dominant stand mostly with *Rhododendron campanulatum*, *Abies spectabilis* and *Quercus semecarpifolia*. The other associated species of birch forests are *Euonymus frigidus*, *Prunus rufa*, *Sorbus foliolosa* and *S. microphylla*.

## 10. Subalpine scrub

This is mainly represented by krummholz vegetation formed by *Rhododendron campanulatum* at an altitude of 3100 to 4000 m asl. In addition, *R. anthopogon* and *R. lepidotum* together with *Cotoneaster microphyllus* and occasional *Juniperus indica* form scattered patches at 3300–4000 m.

## 11. Alpine moist scrub

The major plant communities under this category are:

- a. *Salix* – *Myricaria* community (*Salix denticulata*, *Myricaria* spp.) between 3200 and 4200 m.
- b. *Rhododendron* scrub distributed from 3800 to 4500 m, mostly on northern aspect. *R. anthopogon* forms extensive stand of closed vegetation along with few woody perennials, like *Cassiope fastigiata* and *Salix sclerophylla*. However, in disturbed sites, it is also associated with *Lonicera obovata*, *L. hispida*, *Rhododendron lepidotum*, *Cotoneaster microphyllus*, *Salix serpyllum*, *S. lindleyana*, and many species of sedges and forbs.
- c. *Salix* – *Lonicera* community (*Astragalus rhizanthus*, *Lonicera hispida*, *L. obovata*, *L. myrtillus*, *Salix lindleyana*, *S. sclerophylla*) distributed from 3500 to 4700 m.
- d. *Juniperus* scrub (*Juniperus indica*, *J. squamata* and *Berberis kumaonensis*) on southern aspect.

## 12. Alpine dry scrub

The major plant communities (distributed from 3500 to 5500 m asl) under this category are:

- a. *Caragana* – *Lonicera* scrub (*Astragalus* spp., *Artemisia* spp., *Caragana versicolor*, *Dasiphora arbuscula*, *Lonicera spinosa*, *Myricaria wardii*, *Rubus* sp., *Rosa sericea*)
- b. *Ephedra* scrub (*Ephedra gerardiana*)
- c. Juniper scrub (*Juniperus squamata*)
- d. *Rhododendron* scrub (*R. nivale*)
- e. *Krascheninnikovia* scrub (*Krascheninnikovia ceratoides*)
- f. *Koenigia* scrub (*K. tortuosa*)
- g. *Berberis* scrub (*Berberis jaeschkeana*, *B. mucrifolia*, *B. thomsoniana*)
- h. *Hippophae tibetana* riverine dwarf thicket.

## 13. Alpine moist meadows

The major plant communities (distributed from 3500 to 5000 m) under this category are:

- a. Mixed formations of forbs, grasses, rushes and sedges (*Aletris pauciflora*, *Allium prattii*, *Anaphalis* spp., *Anemonastrum polyanthes*, *Anthoxanthum laxum*, *Aster diplostephioides*, *Bistorta affinis*, *B. macrophylla*, *B. vivipara*, *Bromus porphyranthos*, *Bupleurum* spp., *Carex gracilentia*, *C. haematostoma*, *Erigeron multiradiatus*, *Euphorbia stracheyi*, *Geum elatum*, *Juncus*

*allioides*, *J. benghalensis*, *Koenigia rumicifolia*, *Pedicularis* spp., *Phleum alpinum*, *Poa* spp., *Potentilla argyrophylla* var. *atrosanguinea*, *Geranium pratense*, *G. wallichianum*).

- b. *Tenaxia* meadows (*Tenaxia cachemyriana*, *T. cumminsii*).
- c. *Carex* (= *Kobresia*) meadows (mainly *Carex unciniiformis*).
- d. Marsh meadows (*Blasmus compressus*, *Caltha palustris*, *Carex microglochin*, *Dactylorhiza hatagirea*, *Eleocharis uniglumis*, *Eriocapitella rivularis*, *Isolepis setacea*, *Juncus concinnus*, *J. himalensis*, *J. membranaceus*, *J. sphacelatus*, *Ranunculus* spp., *Trollius pumilus*).
- e. Rocky/scree meadows (*Bistorta vacciniifolia*, *Carex atrata*, *Carex gracilentia*, *Cremanthodium nepalense*, *C. oblongatum*, *Juncus benghalensis*, *J. membranaceus*, *Pedicularis odontoloma*, *Rhodiola* spp., *Rosularia alpestris* subsp. *marnieri*, *Saxifraga alpigena*, *S. hypostoma*, *Silene* spp.).

#### 14. Alpine steppe

It is found between 3600 and 5000 m asl in the arid Talung and Limi Valley of Humla; Saipal, and Surmasarovar area of Bajhang; and upper Mahakali in Darchula. The major communities in this category are:

- a. *Stipa* – *Carex* community (*Stipa capillacea*, *S. krylovii*, *Carex* spp., *Ptilagrostis concinna*).
- b. Dry alpine mixed formations (*Artemisia* spp., *Bistorta perpusilla*, *Dracocephalum heterophyllum*, *Festuca* spp., *Lancea tibetica*, *Lepidium capitatum*, *Potentilla argyrophylla*, *P. multifida*, *Youngia gracilipes*).
- c. Desert steppe (*Artemisia hedinii*, *A. rutifolia*, *A. vestita*, *Orinus thoroldii*, *Sibbaldianthe bifurca*, *Stipa* spp.).
- d. Alpine cushionoid community (*Arenaria* spp., *Thylacospermum caespitosum*).
- e. Alpine salt meadows (dominated by *Blasmus compressus*, *Carex* spp., *Deschampsia caespitosa*, *Eleocharis quinqueflora*, *Juncus thomsonii*, *Pedicularis longiflora* var. *tubiformis*, *Primula tibetica* and *Triglochin* spp.; the salty and drier margins are sparsely colonized by *Argentina anserina*, *Blasmus compressus*, *Lancea tibetica* and *Sibbaldianthe bifurca*).
- f. Shallow peaty lakes (dominated by *Equisetum debile*, *Hippuris vulgaris* and *Ranunculus himalaicus*).

### Trade and Conservation Status of Plant Biodiversity

Collection and trade of NTFPs, including MAPs, provide regular cash income to the people in KSL Nepal and support their livelihood. According to a recent study (Pyakurel *et al.* 2018), about 56% households in Darchula District are engaged in MAP harvest with a total quantity traded from the district in the fiscal year 2014/015 being 400 tons (involving 23 species). The collection and trade of MAPs in Darchula have nearly tripled in volume, and the value has increased 17 times (Pyakurel *et*



*al.* 2018) when compared with the similar study that took place around two decades ago (Olsen 2005; Olsen and Helles 2009). In Baitadi District, about 15% of the total households are engaged in MAP harvest for trade (Pyakurel *et al.* 2017). A total of 17 species of MAPs and their products amounting to 732 tons (with a price value of USD 316,175) were traded from Baitadi in the fiscal year 2014/15. The major traded species with significant contribution to both volume and value in Darchula are *Bergenia* sp. (pākhanved), *Cinnamomum tamala* (tejpāt), *Machilus odoratissima* (kāulo), *Ophiocordyceps sinensis* (yārtsā gūmbu), *Neopicrorhiza scrophulariiflora* (kutkī) and *Sapindus mukorossi* (rithā) (Pyakurel *et al.* 2018). Similarly, the major traded species from Baitadi included *Bergenia* sp., *Cinnamomum tamala* and *Sapindus mukorossi* (Pyakurel *et al.* 2017). Scientific documentation of harvest and trade of MAPs is not available for other districts. However, based on our field works, we have identified the illegal trade of such MAPs as *Rheum australe* (padamchāl), *Swertia* spp. (chirāito), *Nardostachys jatamansi* (jatāmasī), *Daphne* spp. (loktā), *Aconitum* spp. (nirmasī), *Paris polyphylla* (satuwā) and *Trillium govanianum* (lek satuwā) across the Nepal - China (Tibet) border.

In Nepal, over 350 species of MAPs are identified as commercially important (Ghimire *et al.* 2015). The average annual amount of MAPs exported from Nepal is estimated to be 13.23 thousand tons for 2005–2014 (Ghimire *et al.* 2015, 2016). It has been estimated that two times greater number of species entered in trade network within a decade between 2006 and 2018 (Pyakurel *et al.* 2019). Among the species traded from Nepal, the majority are from northwestern region, including KSL area. Constrained by climatic unsuitability, species distribution and habitats of MAPs are limited towards the western as compared to eastern Nepal (Poudeyal *et al.* 2021). About 40–50% of total traded MAPs (and 80% of those from the alpine region) of Nepal, including KSL, are threatened with overexploitation and land use changes. Among the high-altitude MAPs, *Dactylorhiza hatagirea*, *Fritillaria cirrhosa*, *Nardostachys jatamansi*, *Neopicrorhiza scrophulariiflora*, *Rheum australe* and *Trillium govanianum* are highly threatened with vulnerable to endangered status in KSL Nepal. Similarly, *Brachycorythis obcordata*, *Machilus odoratissima*, *Paris polyphylla* and *Taxus contorta* are the highly threatened species from low to mid altitude. These species are most warranted for developing sustainable harvest strategies and should be given priority for conservation.

## Botanical Exploration

Botanical exploration in Nepal began in the early 19<sup>th</sup> century when the East India Company sent Francis Buchanan (later Hamilton), a Scottish medical man to work in Nepal as a member of a political mission (from March 1802 to March 1803). He collected plant specimens from Kathmandu Valley and surrounding area. The second and third major explorations in the early 19<sup>th</sup> century were those of Edward Gardner (from 1817 to 1820) and Nathaniel Wallich (from 1820 to 1821). Gardner, the first permanent British Resident in Kathmandu, collected plants from Kathmandu Valley and later sent collectors to Gosainkunda for Wallich (Sutton 1978; Fraser-Jenkins 2006). Wallich, a medical doctor and botanist from Denmark, collected plants mainly from Kathmandu Valley and surrounding area, and he sent collectors in other places, such as Gosainkunda. Nepal remained a relatively closed country to the foreign plant collectors until 1949; however, at least 15 different explorers visited Nepal until that period for botanical collections after Hamilton, Gardner and Wallich visited the country (detailed account of the history of botanical exploration in Nepal has

been presented by Rajbhandari 1976, 2016; Stearn 1978; Fraser-Jenkins 2006; plant collectors are also listed in Sutton 1978, and Shrestha *et al.* 2018). The early expeditions were mostly on the individual basis, but when Nepal was formally open to foreign explorers, several institutionally organized botanical expeditions took place (reviewed in Rajbhandari 1976, 2016). However, the majority of these expeditions were mainly focused in central and eastern part of Nepal.

Plant exploration in NW Nepal, and particularly in the present day KSL region, started at the end of the 19<sup>th</sup> century with short excursions across the Nepal-India border by British botanists and naturalists, who were temporarily based in India on mission to the East India Company. The early explorations in the landscape were made independently by John Scully and John Firminger Duthie.

John Scully, a resident surgeon in Kathmandu (between 1876 and 1877) collected plant specimens in 1876 from west Nepal in the Mahakali Valley. Scully collected plants for Sir George King (a British surgeon and botanist who worked as superintendent of the Royal Botanic Garden, Calcutta from 1871). Scully's collections are mainly found in E and K.

John Firminger Duthie, a British botanist and Superintendent of Saharanpur Botanical Garden (now in Uttar Pradesh, India), visited upper Mahakali Valley through north Kumaon between 1883 and 1886 and collected plant specimens from northern region of the present day Pithoragarh District, India, and upper Darchula and Khaptad area in Nepal. In some of his expeditions, Duthie was accompanied by J.R. Reid, who was at that time the Chief Secretary of the Government of northwest Provinces and Oudh (Duthie 1886, 1906). Duthie's collections from Nepalese side are housed at BM, E, CAL and K.

Among Nepalese collectors, Lall Dhwoj was the first naturalist to collect plant specimens from NW Nepal (mainly Khaptad area in Doti District). In 1929, Indian botanist and plant collector, namely Basant Lall Gupta and Bis Ram visited NW Nepal. Lall Dhwoj, as a representative of the Nepalese authority, joined the short expedition led by Mr. Gupta. The latter had to return soon with his Indian team after serious illness, but Lall Dhwoj remained in the field and made some independent collections (Rajbhandari 2016).

After Lall Dhwoj and Indian botanist visited the area in 1929, there were two groups of people who made independent plant collections from the landscape in 1936. The first set of collection was from Humla and Doti by anonymous collectors sent by Frederick M. Bailey of UK and the second was from Tinkar Valley of Darchula collected by Arnold Heim and Augusto Gansser of Switzerland. Both of these collections, however, gathered limited number of specimens (Rajbhandari 2016). More extensive botanical explorations for scientific plant collections were made in the landscape only after 1950. Oleg Vladimir Polunin and his team visited Humla-Jumla area in 1952 and gathered huge number of specimens, 17000 of which are estimated to be in BM (Shrestha *et al.* 2018). The other important collections from the landscape between 1950s–1990s were made by British, Japanese and French botanists and naturalists, including J.B. Tyson (UK, in 1953), J.E.M. Arnold (UK, 1954), K. Itoh (Japan, 1963), J.D.A. Stainton (UK, 1965–1969), J.F. Dobremez (France, 1973), A. Maire (France, 1973), H. Tabata (Japan, 1976 & 1983), R. Bailey (UK, 1979), M.A. Farille (France, 1884) and M. Suzuki (Japan, 1991). These collections are housed at herbaria mainly located in Europe and Japan. Among the Nepalese collectors, T.B. Shrestha (in 1965 & 1973), P.R. Shakya and his team (1971–1985), M.S. Bista and D.P. Joshi (1972), K.R. Rajbhandari and his team (1979 & 1980),

L.P. Kattel (1980–1982), I. Sharma and her team (1981), M.M. Amatya and P.M. Regmi (1982), N.K. Bhattarai (1983–1991), P. Pradhan and her team (1984), and M.N. Subedi (1985) made important contributions in botanical explorations of the landscape gathering thousands of important specimens mainly for the Nepalese national herbarium (KATH).

A brief account of the important botanical explorations in KSL Nepal and neighboring districts in west Nepal are given in Table 1.

**Table 1.** Plant explorations in KSL Nepal and neighboring districts.

| <b>Collection Year (month)</b>   | <b>Explorer (country), areas/places visited in KSL Nepal and neighboring districts, major herbaria (where the specimens are housed) and remarks</b>   |
|--|---|
| <b>1876</b>  | <p><b>J. Scully</b> (UK).</p> <p>Mahakali Valley and also in the other parts of W &amp; C Nepal.</p> <p><i>Herbaria</i>: <b>BM, CAL</b>, E, K.</p> <p>Total number of specimens of this collection is not known. Information of only 17 specimens has been given in the ‘Flora of Nepal’ website (<a href="http://www.floraofnepal.org/data/specimens">http://www.floraofnepal.org/data/specimens</a>), six of which have been found in the online catalogue of BM and K. Most of the specimens lack locality information and associated label data. J.D. Hooker in 1905 described a new species of <i>Impatiens</i> (<i>I. scullyi</i> Hook. f.) based on one of the Scully’s collections from W Nepal (probably Mahakali Valley).</p>   |
| <b>1883</b> (June), <b>1884</b> (Aug. & Sept.), <b>1885</b> (Sept. & Oct.), <b>1886</b> (July–Sept.) | <p><b>J.F. Duthie</b> (UK).</p> <p><i>N Kumaon, India</i> (Darma, Dhauli Valley, Kali Valley, Lebung Pass, Nipchang Valley, Palang Garh in Byans, and Ralam Valley all in PITHORAGARH District); and <i>Far West Nepal</i> (Nampa Gadh, Mahakali Valley in DARCHULA; and Khaptad in DOTI District).</p> <p><i>Herbaria</i>: <b>BM, CAL</b>, DD, E, G, <b>K</b>, US, W, WU.</p> <p>Duthie’s collection from Nepalese side encompasses several specimens of rare high altitude plants. However, only 15 and 16 specimens are available online in herbarium catalogue of K and BM, respectively; and the information of about 24 specimens are available online in the ‘Flora of Nepal’ website (<a href="http://www.floraofnepal.org/data/specimens">http://www.floraofnepal.org/data/specimens</a>). Many new species were described based on his collection of specimens from Mahakali Valley (in India and Nepal), the most notable ones include <i>Berberis koehneana</i> C.K. Schneid., 1905; <i>Berberis kumaonensis</i> C.K. Schneid., 1905; <i>Cotoneaster ignotus</i> G. Klotz, 1970; <i>Delphinium densiflorum</i> Duthie ex Huth, 1895; <i>Delphinium kamaonense</i> Huth, 1893; <i>Draba amoena</i> O.E. Schulz, 1927; <i>Poa jaunsarensis</i> Bor, 1948 [now <i>Poa lhasaensis</i> Bor, 1965]; <i>Sedum bouvieri</i> Raym.-Hamet, 1916 [now <i>Rhodiola himalensis</i> subsp. <i>bouvieri</i> (R.-Hamet) H. Ohba, 1982].</p> |
| <b>1929</b> (May & June)   | <p><b>B.L. Gupta</b> and <b>Bis Ram</b> (India); and <b>Lall Dhwoj Sunwar</b> (Nepal).</p> <p>PITHORAGARH (Kumaon) in India; and DOTI (Khaptad, Silgarhi) in W Nepal.</p> <p><i>Herbaria</i>: <b>BM, CAL, DD</b>, E, KATH.</p> <p>The total collection has been estimated to be about 500 specimens (Shrestha <i>et al.</i> 2018). According to Rajbhandari (2016), this expedition, mainly in Khaptad area, in total, gathered 406 species of plants belonging to 334 genera and 101 families, which included three species new to science, viz. <i>Cotoneaster bisramianus</i> G. Klotz, 1972; <i>Milletia nepalensis</i> R. Parker, 1931; and <i>Taraxacum nepalense</i> van Soest, 1961. The latter two species are endemic to Nepal. <i>Cotoneaster bisramianus</i> has been treated by Brach (2011) as synonymous with <i>C. acuminatus</i> Lindl.</p>  |
| <b>1936</b> (May – Aug.)   | <p><b>F.M. Bailey</b> (UK).</p> <p>HUMLA (Simikot), DOTI (Silgarhi) and JUMLA area.</p>   |

| Collection Year (month) | Explorer (country), areas/places visited in KSL Nepal and neighboring districts, major herbaria (where the specimens are housed) and remarks  |
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|                         | <p><i>Herbaria:</i> BM, E.</p> <p>Bailey, in 1935, also collected plant specimens from C Nepal (Rasuwa District), and from Nepal – China (Tibet) border. ‘Flora of Nepal’ website (<a href="http://www.floraofnepal.org/data/specimens">http://www.floraofnepal.org/data/specimens</a>) provides detail information of about 279 specimens collected by Bailey from these expeditions.</p>  |
| 1936                    | <p><b>A. Heim</b> and <b>A. Gansser</b> (Switzerland).</p> <p>PITHORAGARH (NE Kumaon), India to DARCHULA (Tinkar Khola Valley), Nepal.</p> <p><i>Herbarium:</i> Z.</p> <p>The total collection has been estimated to be about 200 species (Rajbhandari 2016). However, no specimen could be traced for the present work.</p>  |
| 1952 (April–Aug.)       | <p><b>O.V. Polunin</b>, <b>W.R. Sykes</b> and <b>L.H.J. Williams</b> (UK).</p> <p>Area between Karnali in the west and Kali Gandaki in the central region of Nepal (Rajbhandari 2016). In W Nepal, they explored HUMLA (locality includes Changkheli, Darma, Daura, Dozam, Durpa, Humla Karnali, Khangalgaon, Margor, Melchham, Pahung, Phucha/Pucha, Puma, Ruga, Simikot, Sisne Himal); MUGU (Daura, Ghurchi, Kawa, Khaptang, Luma, Mangri, Mugu Karnali, Namja La, Rara); as well as JUMLA, DOLPA, JAJARKOT and SALYAN districts.</p> <p><i>Herbaria:</i> A, BM, E, GH, K, L, P, KATH, TI, US.</p> <p>The expedition was jointly organized by the British Museum (Natural History) and the Royal Horticultural Society, UK. The expedition of Polunin, Sykes and Williams (popularly acronymed as PSW) in 1952 gathered huge number of specimens, 17000 of which are estimated to be in BM (Shrestha <i>et al.</i> 2018). Our search revealed 840, 427 and 21 distinct entries available online in herbarium catalogue of BM, E and K, respectively. However, we were able to trace only 170 species collected by PSW from KSL Nepal and neighboring districts. Several of their specimens were later described as new species. In this regard, the following taxa collected from NW Nepal are most noteworthy, all endemic to Nepal: <i>Aconitum poluninii</i> Lauener, 1964; <i>Draba poluniniana</i> Al-Shehbaz, 2004; <i>Meconopsis grandis</i> Prain subsp. <i>jumlaensis</i> C. Grey-Wilson, 2011; <i>Meconopsis simikotensis</i> Grey-Wilson, 2006; <i>Nocca nepalensis</i> Al-Shehbaz, 2002; and <i>Ranunculus himalaicus</i> Tamura, 1978.</p> |
| 1953 (June & July)      | <p><b>J.B. Tyson</b>, B. Beetham and W.H. Murray (UK).</p> <p>DARCHULA (Api, Nampa, Tinkar and Lipu Pass area); BAJHANG (Dhuli, Saipal and Urai Lagna); as well as outlying parts of BAITADI and DOTI.</p> <p><i>Herbaria:</i> BM, E, L, KATH</p> <p>In 1953, J.B. Tyson, along with B. Beetham and W.H. Murray, visited Darchula, Bajhang and outlying parts of Baitadi and Doti and made botanical and entomological collections for the British Museum (Tyson 1954). A total of 154 plant specimens of this collection are in BM (Sutton 1978). However, we have traced only about 50 specimens. Among the specimens of this collection, one from Bajhang (Urai Lagna, below Saipal at c. 5800 m) was later discovered as a new species (<i>Lagotis nepalensis</i> Yamazaki, 1971), which is still endemic to the type locality. Later, in 1963 (April–October), Tyson, along with J.J. Burnet and J. Earle, visited Jagdulla Valley in Dolpa District (Tyson 1962). Burnet’s collections of 34 specimens from Jagdulla expedition are in BM (Sutton 1978).</p>  |
| 1954 (Jul–Sept.)        | <p><b>J.E.M. Arnold</b> with H.J. Harrington, J.J. Murray, I.F. Davidson and C.M. Todd (UK).</p> <p>BAJHANG (Saipal).</p> <p><i>Herbarium:</i> BM.</p> <p>The expedition was organized by Oxford University, UK. A total of 169 plant specimens of this collection are in BM (Sutton 1978). We were able to trace only 33 specimens collected by Arnold from Bajhang (nine of which are presented in the present volume). Some of his specimens were later described as new species, e.g., <i>Galium saipalense</i> Ehrend. &amp; Schönb.-Tem., 1987 (still endemic</p>   |

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|  | to Saipal area); <i>Poa arnoldii</i> Melderis, 1978; and <i>Pedicularis saipalensis</i> T. Yamaz., 1970 (now <i>P. roylei</i> Maxim. var. <i>speciosa</i> (Prain) T. Yamaz., 1988).   |
| 1963 (July - Oct.)   | <p><b>K. Itoh</b> (Japan) and <b>S.B. Rajbhandari</b> (Nepal).<br/>           DOTI (Khaptad) and JUMLA.<br/> <i>Herbaria: KATH, KYO.</i></p> <p>The major focus of this expedition was to collect specimens of medicinal plants. According to Rajbhandari (2016), ca. 1000 specimens were collected by this expedition and one of the specimens collected from Jumla was later described under a new genus <i>Eskemukerjea</i> Malick &amp; Sengupta, 1969 pub. 1972, and the species was <i>Eskemukerjea nepalensis</i> Malick &amp; Sengupta, 1969 pub. 1972 (later <i>Eskemukerjea megacarpum</i> (H. Hara) H. Hara, 1982). The genus <i>Eskemukerjea</i> was later merged with <i>Fagopyrum</i>.</p>  |
| 1965 (April–June),<br>1968 (June)<br>1969 (June)                         | <p><b>J.D.A. Stainton</b> (UK).<br/>           DOTI (Khaptad, Silgarhi) in April/May 1965; BAJURA (Dugun, Manakot, Porakya) in May 1965; BAJHANG (Chainpur, Kali Gad) in April–June 1965; DARCHULA (Chheti, Marma) in June 1965; HUMLA (Changkhele, Munya Lagna, Simikot, Sisne Himal) in June 1968; and MUGU in June 1969.<br/> <i>Herbaria: BM, E, KATH, TI.</i></p> <p>J.D.A. Stainton independently collected plant specimens from Nepal in different periods between 1956 and 1975 (of these, collection made in 1965 was from Far West Nepal and those between 1968 and 1969 were from Karnali region). Previously, in 1954 (April–November), Stainton was involved in a scientific expedition organized by British Museum to explore Dhaulagiri and Annapurna mountain regions, where he collected plant specimens together with W.R. Sykes, and L.H.J. Williams (the three names popularly acronymed as SSW). Stainton's individual and group collections added about 15,000 specimens to the British Museum and provided materials to describe more than 100 species new to science (Rajbhandari 2016; Shrestha <i>et al.</i> 2018). However, the total collection made from Far West Nepal (ca. 90 specimens traced during this study) was much lower compared to other regions (Sutton 1978; Rajbhandari 2016). Among his collections from Far West Nepal, <i>Scrophularia laportifolia</i> T. Yamaz. and <i>Vicatia nepalensis</i> Kljuykov (both endemic to the type locality in Darchula) were described as new to science by Yamazaki and Kljuykov in 1971 and 1991, respectively. Stainton also described forests of Nepal (Stainton 1972).</p> |
| 1965 (April–June),<br>1973 (April & May)                                 | <p><b>T.B. Shrestha</b> (Nepal).<br/>           BAITADI (Ganger); BAJHANG (Budkhori Lek, Chainpur, Dhuli, Kalauni, Kali Gad Valley, Kaudo, Launi, Laingon, Saipal, Thongnada/Thogundanda); DARCHULA (Chheti, Chirkiti Lekh, Marma); Doti (Jurael); and Khaptad area.<br/> <i>Herbaria: BM, KATH, US.</i></p> <p>T.B. Shrestha visited Nepal extensively accumulating over 4000 plant specimens mainly for KATH. In his Far West expedition, T.B. Shrestha was associated with JDA Stainton (in 1965), and with JF Dobremez (in 1973), but almost all of their specimens carry individual collector name. There is no information about the total number of specimens collected by T.B. Shrestha from Far West Nepal (for our study, we have traced only 80 specimens collected by him).</p>   |
| 1971 (May),<br>1981 (June & July),<br>1984 (July & Aug.),<br>1985 (Aug.) | <p><b>P.R. Shakya</b> and <b>D.P. Joshi</b> in 1971; <b>P.R. Shakya</b>, <b>L.R. Sharma</b> and <b>K.R. Amatya</b> in 1981; <b>P.R. Shakya</b>, <b>M.K. Adhikari</b> and <b>M.N. Subedi</b> in 1984; <b>P.R. Shakya</b>, <b>M.N. Subedi</b> and <b>R.K. Uprety</b> in 1985 (all from Nepal).</p> <p>BAITADI (Bagadi, Dhik Gad, Ganna, Nalabagar, Pangsera, Shimar, Sribhabar) in 1984; BAJHANG (Dhansera, Dubai Pass, Kalagad, Mahadeosera, Naya Odar, Nilkatti, Sundi Khola, Sunigad, Surma-sarovar, Thongnada, Tapaun) in 1981 and 1984; DARCHULA (Bramha Lek, Chheti, Gokule, Kasoti, Kawa, Khandeswari, Makarigad, Mechhra, Paribagar) in 1971 and 1984; DOTI (Baga Lekh, Gadsera,</p>  |

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|                         | <p>Khaptad, Telia Lekh) in 1981; HUMLA and MUGU (Chankheli, Ghurchi, Juma Kharka, Pina, Rimi, Suma Kharka) in 1985.</p> <p><i>Herbarium</i>: KATH.</p> <p>P.R. Shakya visited Nepal extensively with different botanists accumulating about 17000 plant specimens for KATH (Shrestha <i>et al.</i> 2018). However, no information is available regarding the number of specimens collected by P.R. Shakya and his team from Far West Nepal (for this study we have traced in KATH over 250 specimens collected by P.R. Shakya and his team from Baitadi, Bajhang, and Darchula). Lidén in 1989 described a new species of <i>Corydalis</i>, <i>C. shakya</i> among the collections of P.R. Shakya and his team from Darchula.</p>  |
| 1972 (July & Aug.)      | <p><b>M.S. Bista and D.P. Joshi</b> (Nepal).</p> <p>BAJHANG (Agar, Chainpur, Badigaon, Ghodi Lek, Surmasarovar, Talkot, Thogun Danda); BAJURA (Dargali, Jilli, Rigla); and DOTI (Gadsera, Khaptad, Kola, Salimgado/Solimgada, Tele Lek).</p> <p><i>Herbarium</i>: KATH.</p> <p>They collected about 3000 specimens from Bajhang, Bajura and Doti, of which we have traced only about 100 specimens.</p>  |
| 1973 (April & May)      | <p><b>J.F. Dobremez</b> with A. Maire and P. Ozenda (France).</p> <p>BAJHANG (Bauli Gad, Chainpur, Chaurapani, Dalaun, Dhuli, Jiauli Gad, Kaudo, Lachhi Gad, Launi, Raisalli, Ramkot, Saipal Himal, Suni Gad, Surmasarovar, Talkot, Thar, Thakundanda); BAJURA (Basala); and DOTI (Khaer Khola, Khaptad, Nahapani, Phaltunde).</p> <p><i>Herbaria</i>: BM, E, GR, <b>KATH</b>.</p> <p>Dobremez explored different parts of west, central and east Nepal from 1968 to 1984 (collection from Bajhang, Bajura and Doti was made in 1973). There is no information available regarding the total number of specimens he had collected. About 437 specimens of his 1973 collection are reported to be in GR and BM (Sutton 1978). Most of the personal (?and those in GR) collection of specimens of Dobremez were later presented to the herbarium of Royal Botanic Garden Edinburgh (E). Online search of Dobremez's collection of specimens revealed 3272, 447 and 180 distinct entries in the herbarium catalogue of E, BM and KATH, respectively, including c. 90 specimens with confirmed collection locality in Bajhang and Doti. Great majority of specimens listed in online herbarium catalogues of BM and E lack collection date and locality details.</p> <p>Dobremez also described vegetation of Nepal (Dobremez 1972, 1976), and with the help of different scientists (including Nepali botanists D.P. Joshi, P.R. Shakya and T.B. Shrestha) he prepared vegetation maps of different regions, including Dhangadhi-Api (Dobremez 1984) and Jumla-Saipal (Dobremez and Shrestha 1978).</p> |
| 1973 (April – June)     | <p><b>A. Maire</b> (France).</p> <p>BAJHANG (Agar, Bauli Gad, Chainpur, Dhuli, Lachhi Gad, Launi, upper valleys of Seti River, Suni Gad, Surmasarovar, Thar, Thakundanda); DOTI (Khaer Khola, Khaptad, Nahapani).</p> <p><i>Herbaria</i>: E, GR.</p> <p>Maire visited Bajhang and Doti with J.F. Dobremez and P. Ozenda (the latter collected lichens) in 1973 (Sutton 1978). Maire had also independently collected plant specimens from central Nepal in 1971 and 1972. More than 700 plant specimens collected by Marie are reported to be in GR (Sutton 1978). Our online search revealed that 939 specimens collected by Maire from Nepal are housed at E, including about 50 specimens with images confirming collection locality in Bajhang and Doti. Great majority of specimens are listed in online herbarium catalogue of E without image, and even the collection date and locality details have not been given.</p>   |
| 1976 (June–Oct.)        | <p><b>H. Tabata, K.R. Rajbhandari and K. Tsuchiya</b> (Japan and Nepal).</p> <p>BAJHANG (Agara, Aletsoura, Chainpur, Chaurapani, Dahachaur, Dhalaun, Dhuli, Dilbagar, Gangadi,</p>   |

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|  | <p>Ghat Khola, Godilekh, Inuldar, Jimkot, Kanda, Kariganga, Nayaodar, Rishinri, Rosia Pass, Saipal, Talkot); BAJURA (Godilekh, Kolti, Porakya Pass); DOTI (Barigad, Bhasu, Chuyadhara, Gadshera, Khaptad, Napani, Rauttukatte, Rhikula, Ritha, Sahejpur); MUGU (Rara); as well as JUMLA, DOLPA, BAGLUNG, and MUSTANG.</p> <p><i>Herbaria:</i> KATH, KYO, TI.</p> <p>H. Tabata and his botanical team also collected specimens from central and east Nepal in 1978. The total collection from these expeditions has been estimated to be about 25000 specimens (ca. 12000 specimens were from 1976 expedition) mostly housed at KYO with some duplicates at KATH (Rajbhandari 2015, 2016). No specimen images could be assessed at KYO. We have traced about 300 specimens collected by Tabata <i>et al.</i> from KSL and adjoining districts in Nepal, of which 60 specimens at KYO were based on secondary sources (mainly Tamura 1986; Rajbhandari and Rai 2017; and 'Flora of Nepal' website: <a href="http://www.floraofnepal.org/data/specimens">http://www.floraofnepal.org/data/specimens</a>).</p> |
| 1979   | <p><b>R. Bailey</b> (UK).</p> <p>BAJHANG (Saipal); MUGU (Changkheli, Rara).</p> <p><i>Herbarium:</i> Not known.</p> <p>Bailey and his team from Durham University collected specimens of the families – Leguminosae, Cruciferae, and Araceae (Rajbhandari 2016), no further details of this collection are known.</p>  |
| 1979 (July, Aug.), 1980 (July–Sept.)               | <p><b>K.R. Rajbhandari</b> and <b>B. Roy</b> in 1979; <b>K.R. Rajbhandari, P.M. Regmi</b> and <b>K.J. Malla</b> in 1980 (all from Nepal).</p> <p>HUMLA (Changkheli Lagna, Dharma Gaon, Durpa, Kallas, Kuligad, Lothi Khola, Luma Gaon, Marghor Lagna, Melchham, Phucha, Poom Gaon, Rimi Gaon, Ruga, Simikot), and MUGU (Banwa Gaon, Chuchamara Danda, Gumgadi, Ghurchi Lagna, Jhyari Gaon, Khatyar Khola, Rara, Ruga) in 1979; and DADELHURA (Ruwakhola), DARCHULA (Api Khola, Chhangru, Dandap, Dopakhe, Dumli, Huti, Kuntisau, Nampha Valley, Palaa, Rapla, Sunchera, Tangbang, Thin, Tinkar, Tipulchyakti) and BAITADI in 1980.</p> <p><i>Herbaria:</i> KATH, TI.</p> <p>K.R. Rajbhandari visited Nepal extensively between 1975 and 2014 with different botanists from Department of Plant Resources, Kathmandu. In their W Nepal expeditions, they collected a total of 6100 specimens (2500 in 1979 and 3600 in 1980; Rajbhandari 2015).</p>   |
| 1980 (Dec.), 1981 (Jan., April), 1982 (June–Sept.) | <p><b>L.P. Kattel</b> (Nepal).</p> <p>BAJHANG (Bangh, Bithad, Simad Bagar); BAITADI (Gothalapani, Jhurjhure, Katmada, Khateda, Sailek, Sankarpur, Satbanjh, Shribhawar, Tadi Gaon); DADELHURA (Gairadoti, Ganesh ko dhuro, Gogan, Jogbuda, Lipha, Pokhara, Sahashra Lingi); DARCHULA (Khalanga); DOTI (Jhingdara, Khaptad, Patan, Rautegaun, Sirkhauli).</p> <p><i>Herbarium:</i> KATH.</p> <p>We have found at KATH about 60 species collected by L.P. Kattel from Bajhang, Dadeldhura and Darchula. No further details of this collection are known.</p>   |
| 1981 (Sept. & Oct.)                                | <p><b>I. Sharma, R. Joshi, R.K. Uprety</b> and <b>I. Pandey</b> (Nepal).</p> <p>BAITADI (Khated, Niglad, Patan, Satbanj); DADELHURA (Lipha, Jogbuda); DOTI (Gayer, Khated, Silinge).</p> <p><i>Herbarium:</i> KATH.</p> <p>I. Sharma and her team collected a total of 1600 specimens during this expedition (Rajbhandari 2015).</p>   |
| 1982 (Sept.)                                       | <p><b>M.M. Amatya</b> and <b>P.M. Regmi</b> (Nepal).</p> <p>BAJHANG (Kaphalseri, Gareko Lek); DARCHULA (Chheti, Chiltha, Dethami Lek, Lukhani, Makarigad, Oathi, Thumti).</p>  |

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|  | <p><i>Herbarium:</i> KATH.</p> <p>We have found at KATH about 100 specimens of this collection from Bajhang and Darchula. No further details are known.</p>  |
| <p><b>1983</b> (June),<br/><b>1990</b> (Aug., Sept.),<br/><b>1991</b> (June)</p> | <p><b>N.K. Bhattarai</b> (Nepal).<br/>Khaptad area and other places in BAJHANG (Chhanna, Gorkhali Village, Gorkhali Lek, Gurel Lek, Malumela, Majhigaon, Pujarigaon, Sailinga) and MUGU (Rara).<br/><i>Herbarium:</i> KATH.<br/>N.K. Bhattarai has extensively visited Nepal accumulating more than 6500 specimens from all over the country (Shrestha <i>et al.</i> 2018). However, total specimens he had collected from KSL area are not known.</p>   |
| <p><b>1983</b> (Aug. &amp; Sept)</p>   | <p><b>H. Tabata, D.P. Joshi, K. Tsuchiya, N. Fujita, E. Suzuki, Y. Shimizu, F. Koike, M. Matusui and T. Yumoto</b> (Japan and Nepal).<br/>HUMLA (Chankheli Lagna, Humla-Karnali between Kalphe and Surkegad, Launthi, Munya Lagna, Ripa, Rimi, Sat Thaple, between Simikot and Yangchu Gaon); MUGU (Bakhaura, Rara).<br/><i>Herbaria:</i> KATH, <b>KYO</b>, TI.<br/>Further details of this collection are not known.</p>  |
| <p><b>1984</b> (March &amp; April)</p>   | <p><b>P. Pradhan, R.K. Uprety, N. Pradhan and N. Dabadi</b> (Nepal).<br/>BAITADI (Barail, Dyola); BAJHANG (Chir, Dilbagar, Dyolekh, Jebli, Jhota, Rupal); DADEL DHURA (Bhumtare, Dotikhola, Litregaon, Pipalkhet); DOTI (Baglekh, Khaptad).<br/><i>Herbarium:</i> KATH.<br/>Pradhan and her team collected a total of 2600 specimens during this expedition (Rajbhandari 2016).</p>  |
| <p><b>1984</b> (Sept.)</p>   | <p><b>M.A. Farille</b> (France).<br/>DARCHULA – BAITADI (Kawa Lekh area).<br/><i>Herbaria:</i> BM, G, <b>P</b>.<br/>Farille visited Nepal with G. Lachard of Switzerland to collect specimens of Himalayan plants. They visited northern part of W, C and E Nepal and gathered a total of 616 individual specimens and 149 number of seeds, including 14 specimens from Kawa Lekh area (Rajbhandari 2016). Farille and Lachard in 2002 described a new species (<i>Pimpinella kawalekhensis</i> Farille &amp; Lachard) based on Farille's collection from the area. The species is endemic to Kawa Lekh at 2950 m. In addition, <i>Acronema tenerum</i> (DC.) Edgew., and <i>Indoschulzia garhwalica</i> (H. Wolff) Pimenov &amp; Kljuykov, collected from the same area, were identified as new records for Nepal (Farille and Lachard 2002).</p> |
| <p><b>1985</b> (May, Oct. &amp; Nov.)</p>  | <p><b>M.N. Subedi</b> (Nepal).<br/>HUMLA (Chaumidi-Simikot, Piplang, Sarkegad, Syamme Khola, Yangche).<br/><i>Herbarium:</i> KATH.<br/>Further details of this collection are not known.</p>   |
| <p><b>1991</b> (Aug.)</p>  | <p><b>M. Suzuki, H. Hatta, N. Kurosaki, M. Mikage, F. Miyamoto, KR Rajbhandari, H. Takayama and K. Terada</b> (Japan and Nepal).<br/>BAJHANG (Agar, Chainpur, Badigaon, Dantola, Jimkot, Ghodi Lekh, Khaptad, Rasa, Roshidanda, Serigaon, Talkot); BAJURA (Bashala, Berma, Birseni, Kaudegaon, Khaptad, Kolti, Pategaon, Porakya).<br/><i>Herbaria:</i> BM, E, <b>TI</b>, KATH.<br/>Suzuki and his team conducted extensive botanical explorations from 1988 to 1996 covering W, C and E Nepal. In 1991 (July–Aug.), they visited W Nepal, including parts of Seti, Bheri and Karnali</p>  |



| Collection Year (month) | Explorer (country), areas/places visited in KSL Nepal and neighboring districts, major herbaria (where the specimens are housed) and remarks  |
|-------------------------|---|
|                         | region. According to Rajbhandari (2016), Suzuki <i>et al.</i> collected more than 20000 herbarium specimens during this expedition for the University of Tokyo, Japan. We have traced 936 specimens collected from Bajhang and Bajura by Suzuki <i>et al.</i> for this report. The expeditions of Suzuki <i>et al.</i> in Nepal have contributed to the discovery of many new species, including <i>Impatiens bajurensis</i> Shinobu Akiyama & H. Ohba, 1993 collected from Bajura in 1991.   |
| 2008 (June)             | <p><b>C.A. Pendry, S. Baral, S. Noshiro, S. Rajbhandary, P.P. Kurmi, B.I. Dell and B. Adhikari</b> (Japan, Nepal and UK).</p> <p>JUMLA – MUGU (Ghurchi Lagna, Rara, south of Chankheli) – HUMLA (Chankheli, Darma, Humla-Karnali, Sathapla, Simikot) in 2008.</p> <p><i>Herbaria</i>: <b>E, KATH.</b></p> <p>C.A. Pendry and his team collected 409 specimens and reported seven new records for Nepal (Rajbhandari 2016).</p>  |
| 2009 (June & July)      | <p><b>H. Ikeda, S. Noshiro, M. Amano, T. Tanaka, N. Yamamoto, C.A. Pendry, B. Dell, Y. Wang, G.D. Bhatta and A.P. Bhattarai</b> (China, Japan, Nepal and UK).</p> <p>BAJHANG (Bhanj, Budkhori, Deuli Gad, Dhuli, Ghoda daune, Khalanga Nadi, Khaptad National Park, Lokhada, Manane Lek, Patiudi, Surma Village, Surmasarovar Lek, Thalara), and DOTI (Silgadi, Khaptad National Park).</p> <p><i>Herbaria</i>: <b>E, KATH, TI.</b></p> <p>Ikeda and his team collected a total of 2500 specimens during this expedition (Rajbhandari 2015).</p>  |
| 2010 (May & June)       | <p><b>R.P. Chaudhary, K.K. Shrestha, S.K. Ghimire, K. Bhatta, R.K. Gautam, P. Bhattarai, M. Acharya and M. Limbu</b> (Nepal).</p> <p>DARCHULA (Byans) and HUMLA (Simikot – Dozam – upper Changla Khola Valley).</p> <p><i>Herbarium</i>: <b>TUCH.</b></p> <p>The expedition in Humla generated over 300 specimens.</p>  |
| 2012 (Jul)              | <p><b>H. Ikeda, S. Noshiro, K. Yonekura, K. Akai, O. Yano, N. Yamamoto, C.A. Pendry, A. Elliott, M Pathak and GD Bhatt</b> (Japan, Nepal and UK).</p> <p>DARCHULA (along Chameliya River, from Dethala up to the southern slope of Api).</p> <p><i>Herbaria</i>: <b>E, KATH, TI.</b></p> <p>Ikeda and his team collected <i>ca.</i> 8400 specimens during this expedition (Elliot 2019).</p>  |
| 2012 (Sept)             | <p><b>S.K. Ghimire, A. Paudel, L.R. Joshi, S. Lo, P. Subedi, C. Thapa and S. Lama</b> (Nepal).</p> <p>HUMLA (Humla Karnali from Simikot to Kyermi, Salli-Chungsa, Seliman – Nyalu La, Singjungma Tsho area, Nyalu La – Talung).</p> <p><i>Herbarium</i>: <b>TUCH.</b></p> <p>This expedition primarily aimed at establishing permanent plots for long-term monitoring of climate change impacts on alpine vegetation; and providing field-ecological and taxonomical trainings to graduate students. About 1200 herbarium specimens were collected (300 species delimited so far), including many rare high-altitude plants. The field work was supported by ICIMOD and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).</p> <p>Based on the collection made during this expedition, Rana <i>et al.</i> (2018, 2021) discovered two new species of <i>Saussurea</i>, namely <i>S. ramchaudharyi</i> S.K. Ghimire &amp; H.K. Rana, 2018, and <i>S. talungensis</i> S.K. Ghimire &amp; H.K. Rana, 2021; both endemic to the type locality in Humla. They named the former species in honor of Dr. Ram Prasad Chaudhary, a Nepali plant taxonomist and professor of botany. The specific epithet of the latter species was derived with reference to the type locality (Talung Valley, Humla).</p> |

| Collection Year (month)  | Explorer (country), areas/places visited in KSL Nepal and neighboring districts, major herbaria (where the specimens are housed) and remarks   |
|--|--|
| <b>2013</b> (Oct.),<br><b>2014</b> (Oct.),<br><b>2015</b> (July),<br><b>2016</b> (Aug.),<br><b>2017</b> (Aug.–Sept.) | <p><b>S.K. Ghimire, L.R. Joshi, B. Awasthi, N.K. Bhattarai and C.K. Subedi</b> in 2013; <b>S.K. Ghimire, B. Awasthi, S. Thapa, S. Lo, C. Thapa and M.R. Paudeyal</b> in 2014; <b>S.K. Ghimire, B. Awasthi, S. Thapa, S. Budha Magar, M.R. Paudeyal and D.J. Chapagain</b> in 2015; <b>S.K. Ghimire, B. Awasthi, A. Paudel, S. Thapa, S. Budha Magar, M.R. Paudeyal and D.J. Chapagain</b> in 2016; <b>S.K. Ghimire, B. Awasthi, S. Budha Magar, B. Gyawali, S. Nepal, M.R. Paudeyal and D.J. Chapagain</b> in 2017 (Nepal).</p> <p>DARCHULA (Chameliya Valley from Gokule up to southern slopes of Api and Bhabeiye Himal; Khandeshwari area).</p> <p><i>Herbarium:</i> TUCH.</p> <p>These expeditions aimed at establishing permanent plots for long-term monitoring of climate change impacts on alpine vegetation; monitoring population dynamics and harvesting sustainability of high-altitude medicinal plants; documenting vascular plant diversity and collecting voucher specimens; collecting associated ethnobotanical and socio-cultural information; and providing trainings to graduate students about field ecology and taxonomy. Over 4000 herbarium specimens of vascular plants were collected covering different seasons between 2013 and 2017. Three of the students completed their M.Sc. theses and two have almost finalized their PhD research based on these field works. These works were supported by ICIMOD, RECAST and Research Committee for Development Research of the Danish Ministry of Foreign Affairs.</p> |
| <b>2014</b> (June & Aug.),<br><b>2015</b>  | <p><b>C.K. Subedi, J. Gurung, S. Thapa and K.M. Ghimire</b> in 2014; <b>CK. Subedi, J. Gurung, S. Thapa, P. Bhandari, M. Pandey, P. Mishra, A. Koirala and R. Sharma</b> in 2015 (Nepal).</p> <p>BAJHANG (Kailash); DARCHULA (Chameliya Valley up to southern slopes of Api Himal; Khar and Pasti area).</p> <p><i>Herbarium:</i> TUCH.</p> <p>They have collected about 200 species.</p>  |
| <b>2014</b> (Sept.),<br><b>2016</b> (June, Sept.)  | <p><b>T.R. Pandey and S. Panthi</b> in Sept 2014; <b>T.R. Pandey and G.D. Bhatt</b> in June 2016; <b>T.R. Pandey and D.R. Kandel</b> in Sept 2016 (Nepal).</p> <p>BAITADI (Shribhawar) in June 2016; DARCHULA (Chheti, Khandeshwari) in Sept 2014; HUMLA (Bargaun, Dozam, Simikot, Thehe) in Sept. 2016.</p> <p><i>Herbarium:</i> KATH.</p> <p>Pandey and his team collected over 100 species.</p>   |
| <b>2015</b> (Sept.),<br><b>2016</b> (July)   | <p><b>K.M. Ghimire and M. Adhikari</b> (Nepal).</p> <p>DARCHULA (Ghusa, Khandeshwari).</p> <p><i>Herbarium:</i> TUCH.</p> <p>They have collected about 150 species.</p>  |
| <b>2015</b> (Sept. & Oct.)   | <p><b>B.B. Shrestha, M. Pandey and R. Chhetri</b> (Nepal).</p> <p>DARCHULA (Khalanga and Khar).</p> <p><i>Herbarium:</i> TUCH.</p> <p>Shrestha and his team aimed at exploring diversity and ecology of invasive species in Darchula District. They collected about 400 specimens (including angiosperms, gymnosperms and ferns), of which about 280 species of Angiosperms were identified.</p>   |
| <b>2017</b> (Aug)  | <p><b>C.A. Pendry, H. Ikeda, P. Gudkova, W. Hinchliff, M. Jackson and J. Pandey</b> (Japan, Nepal, Russia and UK).</p> <p>BAJURA (Martadi to the east of Saipal Himal).</p>  |

| Collection Year (month) | Explorer (country), areas/places visited in KSL Nepal and neighboring districts, major herbaria (where the specimens are housed) and remarks  |
|-------------------------|---|
|                         | <p><i>Herbaria</i>: E, KATH, TI.</p> <p>Pendry and his team collected seeds (62 collections), herbarium specimens (571 collections), and DNA samples from the Saipal Himal region of Bajura District, and discovered one new species of <i>Potentilla</i> and two new records for Nepal, <i>Stipa roborowskyi</i> Roshev and <i>Sehima notata</i> (Hack.) A. Camus (Hinchliffe <i>et al.</i> undated).</p>  |
| 2017 (Sept.)            | <p><b>H.N. Qin, P. Bhandari, T.R. Pandey, B.R. Subedee, Y.C. Yang and S.R. Zhang</b> (China and Nepal).</p> <p>BAJHANG (Agara, near Chainpur, Chimnya, above Deuthala, Dhalaun, Kada, Kakarkot, Khalanga river, Kuwa, Panalta, Panselegi, Rupatola, Talkot, Sunkuda); BAITADI (Shrivabhar).</p> <p><i>Herbaria</i>: KATH, PE, TUCH.</p> <p>Over 2,000 specimens were collected, c. 400 species identified so far (about 90 species cited in this volume).</p> |
| 2019                    | <p><b>S.R. Zhang, Y. Chen, P. Bhandari, T.R. Pandey and G.D. Bhatt</b> (China and Nepal).</p> <p>HUMLA (Simikot – Hilsa – Limi – Simikot).</p> <p><i>Herbaria</i>: KATH, PE.</p> <p>1040 samples collected. Identification undergoing.</p>  |

## Published Accounts on Flora of Nepal and Rationale of the Present Work

Plant exploration has remained a fascinating field of study in Nepal that has attracted both professional and amateur plant explorers for the last 200 years accumulating huge number specimens now in herbaria distributed across the globe, and generating information about the species, their ecology, distribution, and uses. A number of efforts have been made in the past to compile such information in the form of catalogues, checklists and Floras. *An enumeration of the flowering plants of Nepal* published in three volumes between 1978 and 1982 (Hara *et al.* 1978, 1982; Hara & Williams 1979) by the British Museum (Natural History) in collaboration with the University of Tokyo was the first of its kind having country-level focus with most updated nomenclature and distribution data. In 2000, the British Museum (Natural History) in collaboration with the Central Department of Botany, Tribhuvan University produced a revised checklist entitled *Annotated checklist of the flowering plants of Nepal* (Press *et al.* 2000; also available electronically at [www.eflora.org](http://www.eflora.org)), which included all of the information originally published in *An enumeration of the flowering plants of Nepal* and also incorporated the changes and additions to the flora since 1982.

Although earlier attempts at publishing the accounts of ‘flora of Nepal’ were made in the first half of the 19<sup>th</sup> century by Wallich (who published *Tentamen florae Nepalensis illustratae* in two parts in 1824 and 1826), and David Don (who published *Prodromus florae Nepalensis* in 1825), these were limited by geographical area covered. Wallich’s *Tentamen* was based on plant specimens collected by him from central Nepal and Don’s account was mainly based on collections of Buchanan Hamilton (made in 1802–1803) and Edward Gardner (in 1817–1820) from central Nepal and on some of Wallich’s collections. Plant specimens collected by Wallich from Nepal were also listed in his illustrated book on east Indian plants, entitled *Plantae Asiaticae rariores*, published in three volumes

(1829–1832). In addition, plant specimens collected from Nepal by Hamilton and Wallich were also extensively mentioned in books related to the Flora of India published in the 19<sup>th</sup> century (e.g., Roxburgh 1820–1824, reprinted in 1832; Royle 1833–1840; Hooker 1872–1897). In addition, a number of other publications, in the form of checklists or Floras, mostly covering parts of central and east Nepal (a list of 31 such publications given in Shrestha *et al.* 2018), came out after the accounts of Wallich and Don and before the publication of ‘*Enumeration*’.

The Department of Plant Resources (DPR, formerly Department of Medicinal Plants) of the Government of Nepal, since its establishment in 1960, has been playing a leading role in the exploration and documentation of plant biodiversity, and publication of floral accounts covering different parts of the country. DPR has produced local and regional Floras, catalogues, and series of fascicles on Flora of Nepal. The local or regional Floras produced by DPR included ‘*Flora of Rajanikunj/Gokarna*’ (1967), ‘*Flora of Phulchoki and Godavari*’ (1969), ‘*Flora of Nagarjun*’ (1973), ‘*Flora of Langtang*’ (1976), and ‘*Flora of Kathmandu Valley*’ (1986). DPR published ‘*Catalogue of Nepalese flowering plants*’ (parts 1–3 and supplement 1) in the years between 2010 and 2015 accounting 4443 species under 1403 genera and 203 families (Rajbhandari & Baral 2010; Rajbhandari *et al.* 2011, 2012, 2015). These publications were based on herbarium specimens housed at KATH. Recently, DPR published most updated checklists of the flowering plants (in two volumes; Rajbhandari & Rai 2017, 2019) and gymnosperms (Rajbhandari *et al.* 2020) of Nepal in the form of handbooks, which also listed specimens deposited at different herbaria of the world in addition to those housed at KATH. However, a comprehensive flora of Nepal incorporating all the known plant species has not yet been completed (except Volume 3, which was published in 2011). ‘*Flora of Nepal*’ has been planned to be published in ten volumes through a collaboration between two international (Royal Botanic Garden Edinburgh UK; and University of Tokyo, Japan) and three national organizations (Department of Plant Resources, Nepal Academy of Science and Technology and Tribhuvan University).

More than 55 botanical expeditions were made from 1876 to 2019, for collecting plant specimens and documenting vegetation and flora, in the present day KSL region and neighboring districts in Nepal. The plant specimens collected from the landscape are in various herbaria distributed globally, but the majority of which are found in BM, DD, E, G, K, KATH, P, PE, TI, TUCH, and ZT. To date, no attempt has been made to consolidate the floristic information into a complete flora of the landscape. One of the earliest published accounts of plants of this region was that of J.F. Duthie, who visited north of Kumaon, India and upper Mahakali, Nepal during 1883–1886. In his travel diary published as an article entitled ‘*Kumaon*’, Duthie describe the vegetation and flora of the northern region of Kumaon and the upper Mahakali Valley (Duthie 1886). “*Catalogue of the plants of Kumaon and of the adjacent portions of Garhwal and Tibet*” (first prepared by Sir Richard Strachey and published in 1882, and later revised and supplemented by Duthie in 1906) is one of the earliest floristic works of this region, which incorporates some the plant specimens collected by Duthie from Far West Nepal. Similarly, Parker (1931) produced a list of plants collected by B.L. Gupta and his team from Khaptad area.

The country-level checklists mentioned above have presented plant taxa with an approach to provide a broad geographical distribution, following the horizontal classification scheme of Stern (1960), dividing Nepal into three major regions, west, central and east. Some of these checklists, to

some extent, also provide indication of taxa found in KSL Nepal, but in majority of the cases, it is impossible to generalize whether the taxa mentioned as ‘found in west Nepal’ are actually occurring in the landscape. Only few earlier catalogues or checklists cited limited number of specimens collected from this area (e.g., Duthie 1906; Rajbhandari & Baral 2010; Rajbhandari *et al.* 2011, 2012, 2015; Pandey *et al.* 2017; Rajbhandari & Rai 2017).

KSL Nepal comprises rich natural resources, including fresh water, forests, grasslands, wetlands, and cultural heritage, including ethnic diversity and religious heritage sites. The diverse habitat types in the landscape extending from tropical forests to alpine pastures in the monsoon-dominated areas and dry alpine meadows and scrubs in the trans-Himalayan region support high plant diversity, the majority of which having socio-cultural, economic and conservation significance. The present work is an attempt to document all the known gymnosperm and angiosperm flora of KSL Nepal in the form of a comprehensive checklist. The entire checklist will form three volumes, of which the present book represents the first. It is primarily based on herbarium specimens collected from the landscape and review of the relevant floristic literature, including protologues, and online catalogues and databases. It is also based on authors’ extensive field work in the landscape. The publication, to some extent, will fill the basic information gap about plant biodiversity of the landscape.

## Scope, Format and Sources of Information

Families of gymnosperms and angiosperms are arranged following the linear classification scheme of Christenhusz *et al.* (2011) and APG IV (2016), respectively. The present volume covers all gymnosperms recorded from KSL Nepal; and regarding angiosperms, taxa belonging to 38 families (Schisandraceae – Buxaceae) are included. Rest of the families of angiosperms will be published in subsequent volumes. An attempt has been made to incorporate only those species or subordinate taxa having at least a reference herbarium voucher from the landscape. We personally examined physical specimens stored in the two national herbaria (KATH and TUCH), but for specimens stored in the international herbaria we consulted online catalogues and databases, and published literature. We directly searched for specimen records in the online catalogue of seven international herbaria: A, BM, E, K, GH, P and TI (credit to each such catalogue is provided in Appendix 1). We used Global Biodiversity Information Facility (GBIF) portal (<https://www.gbif.org/>; Appendix 1) for consulting the specimens housed at other herbaria (e.g., B, BR, FR, GOET, GUH, L, LE, MICH, NCSC, PE, U, US, W and WU). For each collection, we examined physical herbarium specimen or high resolution photograph of the specimen, and thoroughly checked for the locality information and associated label data (voucher number, date of collection, elevation, habitat characteristics, and name of collectors). Unconfirmed specimen records, mostly taken from the literature or databases, are indicated by the term ‘fide’ followed by the name of author(s) who published the record or name of the database where the specimen record was cited. Full list of online databases that we consulted are given in Appendix 1.

Regarding the geographical area covered, we focused primary on taxa occurring within the four districts of KSL Nepal (Baitadi, Bajhang, Darchula and Humla). However, we have also incorporated the distribution range in the five neighboring districts bordering KSL Nepal (Achham, Bajura,

Dadeldhura, Doti and Mugu), and the range within KSL India (Bageshwar and Pithoragarh Districts including Almora, Uttarakhand) and China (Pulan County, Xizang). In some cases, where we did not find direct herbarium evidence to support for the occurrence of a species within the boundary of KSL Nepal (the four districts mentioned above), but the available data suggest its occurrence in any of the five neighboring districts within Nepal, or in KSL India or China, we use the latter evidence(s) to refer that the taxon might also occur in KSL Nepal.

Gymnosperms are treated first, followed by angiosperms. Genera within each family and species within each genus are arranged in alphabetical order. Description of each species begins with its accepted scientific name (in bold letters) followed by author(s) of the name with full bibliographic reference to the protologue (i.e., original publication); some important taxonomic publications, particularly with reference to Nepal or the region, are also provided. Database maintained online at International Plant Names Index (<https://www.ipni.org/>) was followed for standardized abbreviations of author's name. Basionym, whenever available, is given first with full citation, followed by alphabetical listing of other synonyms. In the case of multiple synonyms, we have listed only those most relevant from geographical perspective. These are then followed by vernacular names (including, in the order of, names used locally in the area; names given in Nepali, English, Hindi, Sanskrit and Tibetan languages; and trade name, where known), growth characters (habit, growth pattern and other key characters), habitat, geographical distribution (including global distribution, and distribution within Nepal and KSL with elevation range), and detail listing of specimen(s) recorded from the KSL area and neighboring districts. Finally, we have also provided, for many species that we collected, primary information about ethnobotanical use(s); and their conservation status according to the IUCN Red List system (<https://www.iucnredlist.org/>).

Accepted botanical names and global distribution are primarily based on three online global databases, the 'Catalogue of Life' ([catalogueoflife.org/](http://catalogueoflife.org/)), the 'Plants of the World Online' ([plantsoftheworldonline.org/](http://plantsoftheworldonline.org/)), and 'Tropicos' (<https://www.tropicos.org/>). Specifically, following references are also consulted for the nomenclature and global distribution of gymnosperms: Adams (2014), Govaerts (2020), Farjon (2017), Farjon *et al.* (2020) and Rajbhandari *et al.* (2020); and angiosperms: Press *et al.* (2000), Watson *et al.* (2011), Global Carex Group (2015), Rajbhandari and Rai (2017), Shrestha *et al.* (2018) and Hassler (2020). In addition, Flora of China (Wu *et al.* 1994–2013) and Flora of Bhutan (Grierson *et al.* 1983–2002; Pearce & Cribb 2002) were also consulted for nomenclature and species distribution. We followed Press *et al.* (2000), Watson *et al.* (2011), Rajbhandari and Rai (2017), Shrestha *et al.* (2018) and Rajbhandari *et al.* (2020) for distribution and elevation range within Nepal. In addition, 'Flora of Nepal database for seed plants' maintained by the University of Tokyo ([http://umdb.um.u-tokyo.ac.jp/DShokubu/nepal/Seedplants/specimen\\_dic/findrecords.php?langTop=jp](http://umdb.um.u-tokyo.ac.jp/DShokubu/nepal/Seedplants/specimen_dic/findrecords.php?langTop=jp)), and the specimen database of Royle Botanic Garden, Edinburgh ([floraofnepal.org/data/specimens](http://floraofnepal.org/data/specimens)) were also consulted to define the distribution limit of plant species within Nepal and KSL area. Presentation of geographical distribution follows the approach of Hata *et al.* (1978). Distribution within Nepal are indicated following the horizontal classification of Stern (1960), who divided Nepal into the three major regions, west (Kumaun frontier to 83° E), central (83° E to 86° 30' E) and east (86° 30' E to Sikkim frontier), the same scheme was used in several publications in Nepal (Hara *et al.* 1978, 1982; Hara & Williams 1979; Rajbhandari & Rai 2017).

Ethnobotanical information (local vernacular names of plants, and uses) were based on our own primary research, in which we interviewed local people, herders, plant collectors and traders from 2010 to 2017. Nepali names are based on Shrestha (1998), Ghimire *et al.* (2001, 2008), Manandhar (2002), GoN (2012–2016) and Shrestha *et al.* (2018). Sanskrit and Hindi names of plants are based on Devkota (1968), Sharma *et al.* (1993), Sivarajan and Balachandran (1994), Warriar *et al.* (1994–1996), GoN (2012–2016), and Flowers of India database (<http://www.flowersofindia.net>); and for English names, we followed the same references cited above, particularly two online global databases mentioned above (Catalogue of Life and Plants of the World Online), and Mabberley (2008). Tibetan (mainly Sowa Rigpa) plant names are based on Lama *et al.* (2001) and Ghimire *et al.* (in press). Nepali, Sanskrit and other local vernacular names are given in transliterated (phonetic translation) terms, followed by Devanagari script, while Tibetan (mostly Sowa Rigpa) names are given in the form of simplified Tibetan transcription as well as written in Tibetan script (Wylie transliteration of all Tibetan terms are given at the end of ‘index to vernacular names’).

Global threat status is based on IUCN Red List of Threatened Species (accessed online at [iucnredlist.org/](http://iucnredlist.org/)). Reference pertaining to Red List category of each species is also provided. National status is based on Conservation Assessment and Management Plan (CAMP, Tandon *et al.* 2001). Local status given for some of the species is based on our long-term ecological research in the area.

## Floristic Synopsis

The present volume covers 661 taxa (642 species, 8 subspecies and 11 varieties) of seed plants (gymnosperms and angiosperms) belonging to 231 genera in 42 families. Of the total seed plants, 15 species (belonging to 9 genera in 4 families) are gymnosperms, and 646 taxa including 627 species, 8 subspecies and 11 varieties (belonging to 222 genera and 38 families) are angiosperms (Table 2 and 3). Pinaceae is the largest family of gymnosperms with 5 genera and 7 species, followed by Cupressaceae (2 genera and 4 species), Ephedraceae (1, 3) and Taxaceae (1, 1). The largest families of angiosperms included in this volume are Poaceae (with 78 genera and 189 specific and infraspecific taxa), Orchidaceae (40, 89), Cyperaceae (9, 89) and Ranunculaceae (16, 80). The other angiosperm families included in this volume with 10 or more species and subordinate taxa are Papaveraceae (31), Asparagaceae (18), Juncaceae (18), Araceae (16), Berberidaceae (14), Lauraceae (11), Liliaceae (11), and Commelinaceae (10).

The largest genus covered in this book is *Carex* (50 taxa of specific and infraspecific categories). The other angiosperm genera consisting of 10 or more species and subordinate taxa are *Corydalis* (20), *Cyperus* (19), *Poa* (18), *Juncus* (16), *Ranunculus* (16), *Thalictrum* (14), *Berberis* (12), *Delphinium* (11), *Setaria* (11), *Arisaema* (10), *Clematis* (10) and *Herminium* (10).

The 646 specific and infraspecific taxa under 38 angiosperm families, in average, represent 11–100% (mean 42%) of the total taxa recorded within the same families from Nepal. The highly represented families covering 60–100% of the Nepalese species are Acoraceae, Amaryllidaceae, Colchicaceae, Dioscoreaceae, Juncaginaceae, Lardizabalaceae, and Saururaceae; and the families with 40–60% representation of the Nepalese species are Asparagaceae, Berberidaceae, Commelinaceae, Cyperaceae, Liliaceae, Poaceae, Ranunculaceae and Schisandraceae (Table 3).

**Table 2.** Families of gymnosperms with number of genera and species in the KSL Flora, which are presented in this volume. Families are arranged according to Christenhusz *et al.* (2011).

| Subclasses | Order      | Family       | Number of |           | % <sup>‡</sup> |
|------------|------------|--------------|-----------|-----------|----------------|
|            |            |              | Genera    | Species   |                |
| Gnetidae   | Ephedrales | Ephedraceae  | 1         | 3         | 75             |
| Pinidae    | Pinales    | Pinaceae     | 5         | 7         | 70             |
|            |            | Cupressaceae | 2         | 4         | 57             |
|            |            | Taxaceae     | 1         | 1         | 33             |
|            |            | <b>Total</b> | <b>9</b>  | <b>15</b> |                |

<sup>‡</sup>% of total species reported from Nepal (calculated based on the number of taxa in each family as per Rajbhandari *et al.* 2020).

**Table 3.** Families of angiosperms with number of genera, species, and infraspecific taxa in the KSL Flora, which are presented in this volume. Families are arranged according to APG IV (2016).

| Clade             | Order            | Family           | Number of |         |                            | % <sup>‡</sup> |
|-------------------|------------------|------------------|-----------|---------|----------------------------|----------------|
|                   |                  |                  | Genera    | Species | Subsp. & var. <sup>†</sup> |                |
| Basal Angiosperms | Austrobaileyales | Schisandraceae   | 1         | 2       | -                          | 50             |
| Magnoliids        | Piperales        | Saururaceae      | 1         | 1       | -                          | 100            |
|                   |                  | Piperaceae       | 1         | 3       | -                          | 33             |
|                   |                  | Aristolochiaceae | 1         | 1       | -                          | 20             |
|                   |                  | Magnoliales      | 1         | 1       | -                          | 13             |
|                   | Laurales         | Annonaceae       | 1         | 1       | -                          | 11             |
|                   |                  | Lauraceae        | 6         | 11      | -                          | 23             |
| Monocots          | Acorales         | Acoraceae        | 1         | 1       | -                          | 100            |
|                   | Alismatales      | Araceae          | 5         | 16      | -                          | 38             |
|                   |                  | Alismataceae     | 1         | 1       | -                          | 25             |
|                   |                  | Juncaginaceae    | 1         | 2       | -                          | 100            |
|                   |                  | Potamogetonaceae | 1         | 4       | -                          | 36             |
|                   | Dioscoreales     | Nartheciaceae    | 1         | 1       | -                          | 25             |
|                   |                  | Dioscoreaceae    | 1         | 9       | -                          | 82             |
|                   | Liliales         | Melanthiaceae    | 2         | 2       | -                          | 33             |
|                   |                  | Colchicaceae     | 3         | 3       | -                          | 75             |
|                   |                  | Smilacaceae      | 1         | 4       | -                          | 24             |
|                   |                  | Liliaceae        | 8         | 10      | 1                          | 50             |
|                   | Asparagales      | Orchidaceae      | 40        | 86      | 3                          | 23             |
|                   |                  | Hypoxidaceae     | 1         | 1       | -                          | 20             |
|                   |                  | Iridaceae        | 1         | 2       | -                          | 33             |
|                   |                  | Amaryllidaceae   | 3         | 9       | -                          | 69             |



| Clade        | Order        | Family          | Number of  |            |                            | % <sup>‡</sup> |
|--------------|--------------|-----------------|------------|------------|----------------------------|----------------|
|              |              |                 | Genera     | Species    | Subsp. & var. <sup>†</sup> |                |
|              | Arecales     | Asparagaceae    | 8          | 18         | -                          | 56             |
|              |              | Arecaceae       | 1          |            | 1                          | 11             |
|              | Commelinales | Commelinaceae   | 4          | 10         | -                          | 43             |
|              |              | Pontederiaceae  | 1          | 1          | -                          | 33             |
|              | Zingiberales | Zingiberaceae   | 4          | 7          | -                          | 19             |
|              | Poales       | Eriocaulaceae   | 1          | 2          | -                          | 15             |
|              |              | Juncaceae       | 2          | 17         | 1                          | 37             |
|              |              | Cyperaceae      | 9          | 84         | 5                          | 40             |
|              |              | Poaceae         | 78         | 187        | 2                          | 45             |
|              | Eudicots     | Papaveraceae    | 6          | 29         | 2                          | 35             |
|              |              | Lardizabalaceae | 1          | 2          | -                          | 67             |
|              |              | Menispermaceae  | 3          | 5          | -                          | 36             |
|              |              | Berberidaceae   | 3          | 12         | 2                          | 56             |
|              |              | Ranunculaceae   | 16         | 78         | 2                          | 47             |
|              | Proteales    | Sabiaceae       | 1          | 1          | -                          | 11             |
|              | Buxales      | Buxaceae        | 2          | 3          | -                          | 50             |
| <b>Total</b> |              |                 | <b>222</b> | <b>627</b> | <b>19</b>                  |                |

<sup>†</sup>subsp. = subspecies; var.= variety. <sup>‡</sup>representation (%) of the total taxa (specific and infraspecific) recorded from Nepal [calculated based on the number of specific and infraspecific taxa in each family as per Rajbhandari and Rai (2017), except for Buxaceae which follows Shrestha *et al.* (2018)].

**Table 4.** Largest genera of angiosperms included in this volume.

| Genera     | Family        | Number of |                            |
|------------|---------------|-----------|----------------------------|
|            |               | Species   | Subsp. & var. <sup>†</sup> |
| Carex      | Cyperaceae    | 45        | 5                          |
| Corydalis  | Papaveraceae  | 20        | -                          |
| Cyperus    | Cyperaceae    | 19        | -                          |
| Poa        | Poaceae       | 17        | 1                          |
| Juncus     | Juncaceae     | 15        | 1                          |
| Ranunculus | Ranunculaceae | 14        | 2                          |
| Thalictrum | Ranunculaceae | 14        | -                          |
| Delphinium | Ranunculaceae | 11        | -                          |
| Setaria    | Poaceae       | 11        | -                          |
| Berberis   | Berberidaceae | 10        | 2                          |
| Arisaema   | Araceae       | 10        | -                          |
| Clematis   | Ranunculaceae | 10        | -                          |
| Herminium  | Orchidaceae   | 10        | -                          |

| Genera        | Family         | Number of |                            |
|---------------|----------------|-----------|----------------------------|
|               |                | Species   | Subsp. & var. <sup>†</sup> |
| Dioscorea     | Dioscoreaceae  | 9         | -                          |
| Elymus        | Poaceae        | 9         | -                          |
| Habenaria     | Orchidaceae    | 8         | 1                          |
| Aconitum      | Ranunculaceae  | 7         | -                          |
| Allium        | Amaryllidaceae | 7         | -                          |
| Anemonastrum  | Ranunculaceae  | 7         | -                          |
| Calamagrostis | Poaceae        | 7         | -                          |
| Festuca       | Poaceae        | 7         | -                          |
| Calanthe      | Orchidaceae    | 6         | -                          |
| Digitaria     | Poaceae        | 6         | -                          |
| Fimbristylis  | Cyperaceae     | 6         | -                          |
| Meconopsis    | Papaveraceae   | 5         | 1                          |
| Agrostis      | Poaceae        | 5         | -                          |
| Bromus        | Poaceae        | 5         | -                          |
| Cymbopogon    | Poaceae        | 5         | -                          |
| Dendrobium    | Orchidaceae    | 5         | -                          |
| Eleocharis    | Cyperaceae     | 5         | -                          |
| Eragrostis    | Poaceae        | 5         | -                          |
| Polygonatum   | Asparagaceae   | 5         | -                          |

<sup>†</sup>subsp. = subspecies; var.= variety.

Endemics covered in this volume are defined as taxa whose distribution is restricted within the political boundary of Nepal. Out of 42 such taxa (including 40 species and 2 infraspecific endemics) recorded from the area within KSL and its immediate vicinity in Nepal, 19 are included in the present volume (Table 5). Three endemics included in this volume have wide distribution range covering west, central and east Nepal (further one species has been recorded from west and east but not from central Nepal); seven have distribution range within west and central Nepal; and eight are restricted to west Nepal, of which, *Calanthe himalaicum*, *Delphinium williamsii*, *Meconopsis simikotensis* and *Ranunculus himalaicus* are found only in KSL area or its immediate vicinity in Nepal. In addition, *Draba poluniniana*, *Galium saipalense*, *Lagotis nepalensis*, *Millettia nepalensis*, *Pimpinella kawalekhensis*, *Saussurea ramchaudharyi*, *S. talungensis*, *Scrophularia laportifolia* and *Vicatia nepalensis* are other endemics restricted to KSL area (these will be covered in the next volume).

A total of 113 species included in this volume have already been assessed for the global IUCN Red List; of which 9 species are listed as threatened (4 as endangered, and 5 as vulnerable), 2 as near threatened (Table 6), 3 as data deficient, and the remaining 99 species are included in least concern category. In addition, 7 species included in this book are in the national CAMP report and 7 species are evaluated as locally threatened (Table 6).

**Table 5.** Endemic species and infraspecific taxa in KSL Nepal included in this volume.

| Species   | Family        | Distribution in Nepal | Distribution in KSL and surrounding area in Nepal      | Elevation range in Nepal |
|---|---------------|-----------------------|--|--------------------------|
| <i>Achnatherum staintonii</i>                       | Poaceae       | W & C                 | Humla, 3500 m  | 2600–4200 m              |
| <i>Aconitum poluninii</i>                           | Ranunculaceae | W & E                 | Darchula and Mugu, 3800–3900 m                         | 2600–3900 m              |
| <i>Berberis karnaliensis</i>                        | Berberidaceae | W                     | Darchula, Humla and Mugu, 1800–3600 m                  | 1800–3600 m              |
| <i>Berberis mucrifolia</i>                          | Berberidaceae | W & C                 | Bajhang and Humla, 2300–3000 m                         | 2000–4500 m              |
| <i>Calanthe himalaicum</i>                          | Orchidaceae   | W                     | Doti, 2200 m   | 2200 m                   |
| <i>Carex esbirajbhandarii</i>                       | Cyperaceae    | W, C & E              | Darchula, 4100 m                                       | 3900–4700 m              |
| <i>Corydalis calycina</i>                           | Papaveraceae  | W & C                 | Bajhang and Humla, 2800–3950 m                         | 2800–5500 m              |
| <i>Corydalis stipulata</i>                          | Papaveraceae  | W & C                 | Bajhang, 2500–3200 m                                   | 2500–4000 m              |
| <i>Corydalis terracina</i>                          | Papaveraceae  | W & C                 | Bajhang, ca. 2380 m                                    | 1300–2700 m              |
| <i>Corydalis uncinata</i>                           | Papaveraceae  | W                     | Humla, 4300–4500 m                                     | 3500–5500 m              |
| <i>Delphinium himalayae</i>                         | Ranunculaceae | W, C & E              | Bajhang, Bajura, Darchula, Humla and Mugu; 2100–4600 m | 2000–4600 m              |
| <i>Delphinium williamsii</i>                        | Ranunculaceae | W                     | Bajhang, 1500–2000 m                                   | 1500–2600 m              |
| <i>Elymus nepalensis</i>                            | Poaceae       | W, C & E              | Bajhang and Darchula, 2000–3350 m                      | 1500–4000 m              |
| <i>Habenaria plantaginea</i> var. <i>nepalensis</i> | Orchidaceae   | W & C                 | Doti, 1000 m   | 300–1000 m               |
| <i>Meconopsis chankheliensis</i>                    | Papaveraceae  | W                     | Bajhang, Humla and Mugu, 3100–3700 m                   | 3100–4600 m              |
| <i>Meconopsis grandis</i> subsp. <i>jumlaensis</i>  | Papaveraceae  | W                     | Mugu, 3500–3600 m                                      | 3300–4400 m              |
| <i>Meconopsis simikotensis</i>                      | Papaveraceae  | W                     | Humla, 3300–4000 m                                     | 3300–4000 m              |
| <i>Meconopsis staintonii</i>                        | Papaveraceae  | W & C                 | Bajhang, 4100 m  | 2500–4300 m              |
| <i>Ranunculus himalaicus</i>                        | Ranunculaceae | W                     | Bajhang and Humla, 4300–5650 m                         | 4300–5650 m              |

**Table 6.** Threatened species in KSL Nepal included in this volume.

| Species                          | Family         | Conservation status* |           |           | Elevation range (m) in |           |
|----------------------------------|----------------|----------------------|-----------|-----------|------------------------|-----------|
|                                  |                | IUCN                 | CAMP      | Local     | Nepal                  | KSL Nepal |
| <i>Abies pindrow</i>             | Pinaceae       | LC                   | -         | NT        | 2100–3700              | 2300–3500 |
| <i>Abies spectabilis</i>         | Pinaceae       | NT                   | -         | NT        | 2100–4400              | 2500–4100 |
| <i>Aconitum spicatum</i>         | Ranunculaceae  | -                    | <b>VU</b> | NT        | 1800–4400              | 2600–4100 |
| <i>Aconitum violaceum</i>        | Ranunculaceae  | <b>VU</b>            | -         | DD        | 3900–4500              | 3900–4400 |
| <i>Allium prattii</i>            | Amaryllidaceae | -                    | -         | NT        | 2400–4600              | 2900–4600 |
| <i>Allium stracheyi</i>          | Amaryllidaceae | -                    | -         | NT        | 2300–4000              | 2300–3700 |
| <i>Allium wallichii</i>          | Amaryllidaceae | -                    | -         | NT        | 2100–4800              | 3000–4300 |
| <i>Brachycorythis obcordata</i>  | Orchidaceae    | -                    | -         | <b>VU</b> | 600–2600               | 900–2200  |
| <i>Corydalis cashmeriana</i>     | Papaveraceae   | -                    | -         | NT        | 2400–5500              | 2950–4200 |
| <i>Cinnamomum tamala</i>         | Lauraceae      | LC                   | -         | NT        | 400–2550               | 700–1600  |
| <i>Cypripedium cordigerum</i>    | Orchidaceae    | <b>VU</b>            | -         | DD        | 2100–4000              | 2900–3800 |
| <i>Cypripedium elegans</i>       | Orchidaceae    | <b>EN</b>            | -         | DD        | 3200–4200              | 3500–3600 |
| <i>Cypripedium himalaicum</i>    | Orchidaceae    | <b>EN</b>            | -         | DD        | 2800–4900              | 3300–4100 |
| <i>Dactylorhiza hatagirea</i>    | Orchidaceae    | -                    | <b>EN</b> | <b>EN</b> | 2800–4600              | 2900–4100 |
| <i>Delphinium brunonianum</i>    | Ranunculaceae  | -                    | -         | NT        | 3500–6000              | 3800–5300 |
| <i>Delphinium himalayae</i>      | Ranunculaceae  | -                    | <b>VU</b> | NT        | 2000–4600              | 2100–4600 |
| <i>Dioscorea deltoidea</i>       | Dioscoreaceae  | -                    | <b>EN</b> | NT        | 200–3900               | 1800–2900 |
| <i>Dioscorea hamiltonii</i>      | Dioscoreaceae  | NT                   | -         | DD        | 200–2400               | 1100–1300 |
| <i>Ephedra gerardiana</i>        | Ephedraceae    | <b>VU</b>            | -         | NT        | 1060–5400              | 1060–4800 |
| <i>Fritillaria cirrhosa</i>      | Liliaceae      | -                    | <b>VU</b> | <b>VU</b> | 3000–4800              | 3000–4500 |
| <i>Goodyera biflora</i>          | Orchidaceae    | -                    | -         | NT        | 1900–2200              | 2150–2200 |
| <i>Habenaria intermedia</i>      | Orchidaceae    | -                    | -         | NT        | 900–3300               | 2000–2900 |
| <i>Habenaria pectinata</i>       | Orchidaceae    | -                    | -         | NT        | 500–3500               | 1400–2500 |
| <i>Juniperus indica</i>          | Cupressaceae   | LC                   | -         | NT        | 2600–5100              | 2600–4900 |
| <i>Lilium nanum</i>              | Liliaceae      | -                    | -         | NT        | 3400–4800              | 3400–4500 |
| <i>Machilus odoratissima</i>     | Lauraceae      | -                    | -         | <b>VU</b> | 300–2400               | 500–2400  |
| <i>Malaxis muscifera</i>         | Orchidaceae    | <b>VU</b>            | -         | DD        | 2000–4300              | 2800–3900 |
| <i>Paris polyphylla</i>          | Melanthiaceae  | <b>VU</b>            | <b>VU</b> | <b>EN</b> | 1300–3600              | 1700–3300 |
| <i>Picea smithiana</i>           | Pinaceae       | -                    | -         | NT        | 2000–3600              | 2000–3500 |
| <i>Pinus roxburghii</i>          | Pinaceae       | -                    | -         | NT        | 500–2700               | 900–2100  |
| <i>Pinus wallichiana</i>         | Pinaceae       | -                    | -         | NT        | 1500–4300              | 1700–4000 |
| <i>Podophyllum hexandrum</i>     | Berberidaceae  | -                    | <b>VU</b> | DD        | 2300–4600              | 2800–4000 |
| <i>Polygonatum cirrhifolium</i>  | Asparagaceae   | -                    | -         | NT        | 1200–4600              | 1200–3200 |
| <i>Polygonatum verticillatum</i> | Asparagaceae   | -                    | -         | NT        | 2100–4800              | 2400–3500 |
| <i>Taxus contorta</i>            | Taxaceae       | <b>EN</b>            | -         | <b>EN</b> | 1700–3700              | 2000–3700 |
| <i>Trillium govanianum</i>       | Melanthiaceae  | <b>EN</b>            | -         | <b>CR</b> | 2700–4300              | 3100–3500 |
| <i>Tsuga dumosa</i>              | Pinaceae       | LC                   | -         | NT        | 1800–3600              | 2100–3200 |

\*CR – Critically Endangered; DD – Data Deficient; EN – Endangered; LC – Least Concern; NT – Near Threatened; VU – Vulnerable

# Checklist



# GYMNOSPERMS

## EPHEDRACEAE

**Ephedra** L., Sp. Pl. 2: 1040 (1753).

**Ephedra gerardiana** Wall. ex Klotzsch & Garcke, Bot. Ergebn. Reise Waldemar: 32 (1862). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 24 (1978). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 36 (2018). **Pl. 1.**

NEP-L: Lek-ānkhle, Kāgchāro (लेक-आँखले, कागचारो). NEP: Somlatā (सोमलता).

ENG: Gerard jointfir. HIN/SAN: Somlatā (सोमलता). TIB: tsedum (ཅེདུམ་).

Dwarf tufted shrublets, 10–40 cm; branchlets rigid, directed upward; mycophylar tube straight.

*Habitat*: Stony slopes, open stony places, rock outcrops, moraine ridges, among scrub.

*Distribution*: N Asia (SW Siberia), Afghanistan to E Himalaya, Tibetan Plateau, N China.

NEPAL: W, C & E; (1060–)2400–5400 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal; 1060–4800 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Saipal, 1060 m (JF Dobremez 2283, 16 May 1973; KATH<sup>1</sup>); Naya Odar, 3220 m (PR Shakya, MK Adhikari & MN Subedi 8373, 28 Jul 1984; KATH<sup>1</sup>). **DARCHULA**: Nampha Valley, 3800 m (KR Rajbhandari & KJ Malla 5848, 9 Sep 1980; KATH<sup>1</sup>); upper Chameliya, Thadyul, 4100 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-755, 22 Oct 2014; TUCH<sup>1</sup>). **HUMLA**: Talung, 4300–4800 m (SK Ghimire, A Paudel, L Joshi, S Lama, P Subedi & C Thapa CHH-1589, 12 Sept 2012; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Western Himalaya, Province Kumaon, Environs of Milum, chief place of the district Johár, 3414–3688 m (Schlagintweit s.n., 6–25 Jun 1855; US 02060739<sup>1</sup> image).

*Local abund.*: Occasional to frequent at higher elevations, rare at lower elevations.

*Ethnobot. use*: Rootstocks are used to treat fever and headache. Plant is toxic, needs detoxification before human use. The plant also serves as forage for goats and sheep.

*Conserv. status*: GLB., Vulnerable A2d (Roland 2020). LOC., Near Threatened. Threat is due to over-harvesting, overgrazing, and habitat degradation and loss. Roland (2020) estimates a population decline of 30–50% over three generations (15 years) across its whole distribution range, but an average decline of *c.* 61% has been estimated over three generations for the NW Himalaya, including Hindu Kush Range.

**Ephedra pachyclada** Boiss., Fl. Orient. 5: 713 (1884). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 24 (1978). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 37 (2018).

Tufted undershrubs or shrubs, 10–60 cm, with rigid branchlets; mycophylar tube twisted.

*Habitat*: Dry slopes, stony areas, cliffs, sandy places, gravelly ridges, woodlands.

*Distribution*: Arabian Peninsula to Afghanistan, W Pakistan, W & C Himalaya.

NEPAL: W & C; (1100–)2000–4100(–5000) m.

KSL: Known from neighboring Bajura; 1120 m. Likely also to be present in Bajhang in KSL Nepal.

*Representative specimen*. **BAJURA**: Berma-Kolti, 1120 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9192269, 10 Aug 1991; TI) fide SHB 2013–2020.

*Conserv. status*: GLB., Least Concern (Bell & Bachman 2011). LOC., Data Deficient.

**Ephedra saxatilis** (Stapf) Royle ex Florin, Kongl. Svenska Vetensk. Acad. Handl., ser. 3, 12(1): 25 (1933). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 37 (2018).

*Ephedra gerardiana* var. *saxatilis* Stapf, Denkschr. Kaiserl. Akad. Wiss., Wien. Math.-Naturwiss. Kl. 56(2): 76 (1889).

Tufted shrubs to 60 cm or more; branchlets clustered, radially arranged; mycophylar tube straight.

*Habitat*: Open slopes, dry stony slopes.

*Distribution*: W & C Himalaya (NW India, Nepal), Tibetan Plateau, SC China.

NEPAL: W, C & E; 2300–5200 m.

KSL: Known from KSL India (Pithoragarh and neighboring Almora District, Uttarakhand); and KSL China (Pulan Xian, SW Xizang). It is likely also to be present in upper Mahakali in Darchula and Limi Valley in Humla, Nepal.

*Representative specimens*. **UTTARAKHAND (INDIA)**: Palang Garh, Byans, 3048–3353m (JF Duthie 5980, 19 Jul 1886; K000459414); Almora, Dhauliganga Valley, 3210 m (RN Parker 2100, 19 Jul 1923; K000459416).

**XIZANG (CHINA)**: Pulan Xian (Qinghai-Tibet team vegetation group 6657563; PE) fide Kong & Yang (2019).

## PINACEAE

**Abies** Mill., Gard. Dict. Abr. (ed. 4) vol. 1 (1754).

**Abies pindrow** (Royle ex D. Don) Royle, Ill. Bot. Himal. Mts.: 350, t. 86 (1836). Franco in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 25 (1978). Farjon, Handbk. World Conifers 1: 113, 114 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 37 (2018). **PL. 1.**

*Pinus pindrow* Royle ex D. Don, London Edinburgh Philos. Mag. & J. Sci. 8: 255 (1836); *Abies webbiana* (Wall. ex D. Don) Lindl. var. *pindrow* (Royle ex D. Don) Brandis; *Picea pindrow* (Royle ex D. Don) Loudon

NEP-L: Gobre, Kānpar (गोब्रे, काँपर). NEP: Gobre sallā, Gobre sallo (गोब्रे सल्ला, गोब्रे सल्लो).

ENG: Pindrow fir, West Himalayan fir. HIN-L: Morindā, Pindrau, Rāghā, Raisallā, Tosh (मोरिण्डा, पिन्ड्रौ, राघा, रैसल्ला, तोश).

Evergreen trees up to 50 m tall, with narrow conical crown and spreading branches; branchlets stout, light brown to grey, slightly ridged and grooved, glabrous; leaves linear, 2.5–10 cm long, flattened, notched at apex; pollen cones lateral, crowded, pendulous; seed cones lateral, erect, cylindrical.

*Habitat*: Mixed broad-leaved and coniferous forests on steep shady slopes and on ridges.

*Distribution*: NE Afghanistan, Karakoram (Pakistan), W & C Himalaya (Kashmir to Nepal).

NEPAL: W; 2100–3700 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura, Doti and Mugu; 2300–3500 m.

*Representative specimens*. **BAJHANG**: Dhuli, 2500 m (JF Dobremez 2206, 14 May 1973; E00952383<sup>1</sup> image); Ghoda daune–Lokhada, 2866 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20912028, 3 Jul 2009; E00509729<sup>1</sup> image); between Dhalun & Kakarkot, below Deurali, 2900–2200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0578, 16 Sept 2017; KATH<sup>1</sup>, PE). **BAJURA**: Porakya, 2600 m (KR Rajbhandari 14802, 12 Aug 1991; KATH<sup>1</sup>). **DOTI**: Khaptad National Park, on trail from Bichpani to Ghoda daune, 3075 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915030, 2 Jul 2009; E00623926<sup>1</sup> image). **HUMLA**: Changkheli – Rimi, 2500 m (KR Rajbhandari & B Roy 3972, 26 Jul 1979; KATH); below Saathapla, 2900 m (CA Pendry, S Baral, S Noshiro, PP Kurmi, B Dell & B Adhikari B120, 13 Jun 2008; E00397301<sup>1</sup> image); Salli-Chungsa, 3000 m (SK Ghimire, A Paudel, L Joshi, S Lama, P Subedi & C



Thapa CHH-1786, 14 Sept 2012; TUCH<sup>1</sup>). **MUGU**: Khatyar Khola, 2650 m (KR Rajbhandari & B Roy 3763, 22 Jul 1979; KATH<sup>1</sup>).

*Local abund.*: Occasional to frequent.

*Ethnobot. use*: Plant provides fuel and timber. Trunk is used as a prayer-flag pole.

*Conserv. status*: GLB., Least Concern (Xiang *et al.* 2013). *LOC.*, Near Threatened. Threat is due to habitat degradation and loss, and illegal logging for local use as fuel and timber, as well as for sale across the northern border.

**Abies spectabilis** (D. Don) Mirb., Mém. Mus. Hist. Nat. 13: 70 (1825). Franco in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 25 (1978). Farjon, Handbk. World Conifers 1: 124 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 37 (2018). **Pl. 1.**

*Pinus spectabilis* D. Don, Prodr. Fl. Nepal. 2: 55 (1825); *Abies spectabilis* var. *langtangensis* Silba; *Abies webbiana* (Wall. ex D. Don) Lindl.; *Pinus webbiana* Wall. ex D. Don

NEP-L: Gobre, Human (गोब्रे, हुमन). NEP: Tālīshpatra, Gobre sallā/sallo (तालीसपत्र, गोब्रे सल्ला/सल्लो).

ENG: Himalayan silver fir, East Himalayan fir, Webb fir. HIN-L/HIN: Morindā, Rāghā, Raisallā, Tālīspatra, Tālīspatrī (मोरिण्डा, राघा, रैसल्ला, तालीसपत्र, तालीसपत्री). SAN: Tālīsam, Tālīsapatram (तालीसं, तालिसपत्रं). TIB: thangnak, thangshing (ཐང་ནག་, ཐང་ཤིང་).

Evergreen trees, up to 50 m tall, with broadly conical crown and horizontally spreading branches; branchlets slender, brown, prominently ridged and grooved, pubescent in the grooves with brown hairs; leaves linear, 2–6 cm long, flattened, margins slightly recurved, apex emarginate or bifid; pollen cones lateral, crowded, pendulous; seed cones lateral, erect, broad cylindrical.

*Habitat*: Occurs forming pure or mixed stands on cool moist river valleys, mostly on shady slopes, riversides, well-drained ridges and in treeline.

*Distribution*: N Afghanistan, Karakoram, Himalaya (N India, Nepal), Tibetan Plateau.

NEPAL: W, C & E; (1520–)2100–4400 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Achham, Bajura, Doti and Mugu; 2500–4100 m.

*Representative specimens*. **BAJHANG**: Khaptad, 2730 m (TB Shrestha 4064, 2 May 1965; KATH<sup>1</sup>); Ghodadaune – Lokhada, 2949 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20912027, 3 Jul 2009; E00509728<sup>1</sup> image, KATH<sup>1</sup>); east peak from Deurali, near Dhalun, 2500–3200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0482, 15 Sept 2017; KATH<sup>1</sup>, PE); Naya Odar, 3240 m (PR Shaky, MK Adhikari & MN Subedi 8262; KATH<sup>1</sup>). **BAJURA & BAJHANG**: Pategaon – Ghodi Lekh Deurali – Badigaon, 3110 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9194201, 16 Aug 1991; KATH<sup>1</sup>). **DARCHULA**: Upper Chameliya, above Domul, 2850 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-686, 18 Oct 2014; TUCH<sup>1</sup>). **DOTI**: Khaptad National Park, trail from Jhingrana to Bichpani, 3121 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20917013, 1 Jul 2009; E00623927<sup>1</sup> image, KATH<sup>1</sup>). **HUMLA**: Salli-Chungsa, 3000 m, 14 Sept 2012 (SK Ghimire, A Paudel, L Joshi, S Lama, P Subedi & C Thapa CHH-1787; TUCH<sup>1</sup>); Marghor – Durpa, 3100 m (KR Rajbhandari & B Roy 4130, 29 Jul 1979; KATH<sup>1</sup>); above Phwaso, Changla Khola, Dozam, 3700–4100 m (SK Ghimire, RP Chaudhary & team P10908, 22 May 2010; TUCH<sup>1</sup>). **MUGU**: Chhiti – Baylung, 3700 m (PR Shaky & B Roy 5594, 10 Jun 1980; KATH<sup>1</sup>).

*Local abund.*: Frequent to common.

*Ethnobot. use*: Plant provides fuel for cooking and timber for construction and furniture. Trunk is also used as a prayer-flag pole.

*Conserv. status*: GLB., Near Threatened (Zhang *et al.* 2011). *LOC.*, Near Threatened. Major threat is illegal logging for local use as fuel and timber, as well as for sale across the northern border. *Abies* forests are particularly depleted in upper Humla Karnali.

**Cedrus** Trew, *Traité Arbr.* Arbust. 1: 139 (1755).

**Cedrus deodara** (Roxb. ex D. Don) G. Don in Loudon, *Hort. Brit.*: 388 (1830). Franco in Hara *et al.*, *Enum. Fl. Pl. Nepal* 1: 25 (1978). Farjon, *Handbk. World Conifers* 1: 263 (2017). Shrestha *et al.*, *Handbk. Fl. Pl. Nepal* 1: 38 (2018). **PI. 1.**

*Pinus deodara* Roxb. ex D. Don in Lambert, *Descr. Pinus* 2: 8 (1824); *Abies deodara* (Roxb. ex D. Don) Lindl.; *Cedrus indica* Chambray; *Cedrus libani* A. Rich. var. *deodara* (Lamb.) Hook. f.; *Cedrus libani* A. Rich. subsp. *deodara* (Lamb.) P. D. Sell; *Larix deodara* (Roxb. ex D. Don) K. Koch

NEP-L: Devdār, Diyār (देवदार, दियार). NEP: Devār, Devadār (देवार, देवदार).

ENG: Himalayan cedar. HIN: Devadār, Devadāru (देवदार, देवदारु). SAN: Devadāru, Kasthadāru, Kastha devadāru, Snigdhadāru (देवदारु, काष्ठदारु, काष्ठ देवदारु, स्निग्धदारु).

Large evergreen trees, 25–50 m, with pyramidal crown; branches spreading, drooping at ends; barks grayish, smooth, with vertical grooves; leaves linear, solitary or arranged in dense whorls.

*Habitat*: Occurs in temperate zone under semi-humid to semi-arid conditions.

*Distribution*: NE Afghanistan, NW Pakistan, W & C Himalaya (Kashmir to Nepal).

NEPAL: W; 1800–3000 m.

KSL: Baitadi and Humla in KSL Nepal, and neighboring Mugu; 2200–2650 m [Kumaon, Uttarakhand in KSL India].

*Representative specimens*. **HUMLA**: Dharma Gaon, 2200 m (KR Rajbhandari & B Roy 4034, 27 Jul 1979; KATH<sup>1</sup>). **MUGU**: Jhyari, 2650 m (CA Pendry, S Baral, S Noshiro, S Rajbhandary, PP Kurmi, B Dell & B Adhikari JRS B76, 8 Jun 2008; E00397368<sup>1</sup> image). **UTTARAKHAND (INDIA)**: Kumaon (R Blinkworth 6060; K001122920<sup>1</sup> image).

*Local abund.*: Very rare.

*Ethnobot. use*: Plant provides timber for construction. Cedar wood oil is used as an external application to treat skin diseases, and as an insecticide to treat lice and ticks of both humans and animals.

*Conserv. status*: GLB., Least Concern (Farjon A. 2013a). *LOC.*, Data Deficient. Natural forests of *Cedrus deodara* are fragmented and very rare in Nepal; now mostly confined to southwest and northwest of Jumla and in the Bheri Valley between Tibrikot and Tarakot and north of Gurta (Miehe *et al.* 2015). It has suffered from logging since the 19th century. Commercial logging has resulted in the extinction of natural stands over large areas (Miehe *et al.* 2015). In many places of NW Nepal, it has been planted for timber, and some trees are still found at the sites of shrines or sacred/religious forests (Bishop 1978; Ghimire *et al.* 2008; Miehe *et al.* 2015).

**Picea** A. Dietr., *Fl. Berlin*. 1(2): 794 (1824).

**Picea smithiana** (Wall.) Boiss., *Fl. Orient.* 5: 700 (1884). Franco in Hara *et al.*, *Enum. Fl. Pl. Nepal* 1: 26 (1978). Farjon, *Handbk. World Conifers* 2: 618 (2017). Shrestha *et al.*, *Handbk. Fl. Pl. Nepal* 1: 39 (2018). **PI. 1.**

*Pinus smithiana* Wall., *Pl. Asiat. Rar.* 3: 24 (1832); *Abies smithiana* (Wall.) Lindl.; *Picea khutrow* (Royle ex Turra) Carrière; *Picea morinda* Link; *Picea smithiana* var. *nepalensis* Franco; *Pinus khutrow* Royle ex Turra; *Pinus pendula* Griff.

DOZ: Jām (जाम). NEP-L: Jhule sallā, Jhulo, Thingo (झुले सल्ला, झुलो, ठिङ्गो). NEP: Jhule sallā (झुले सल्ला).

ENG: West Himalayan spruce. HIN-L: Kachal, Kathelā, Morindā, Rāghā, Rai, Riār, Sallā, Tosh (कछल, कथेला, मोरिण्डा, राघा, रै, रियार, सल्ला, तोश). TIB: drönshing (ལྷོ་ཤིང་).

Tall trees, 15–30 m tall, with greyish-brown bark and drooping branchlets.

*Habitat*: Occurs forming mixed forests with fir, blue pine and cedar on shady slopes and riversides in humid and semi-arid valleys.

*Distribution*: N Afghanistan, Himalaya (Pakistan to Nepal), Tibetan Plateau.

NEPAL: W & C; 2000–3600 m.

KSL: Bajhang and Humla in KSL Nepal, and neighboring Bajura and Mugu; 2000–3500 m.

*Representative specimens*. **BAJHANG**: Lokhada, 2289 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20917038, 4 Jul 2009; E00623924<sup>1</sup> image, KATH<sup>1</sup>). **BAJURA**: Birseni – Porakya, 2000 m (KR Rajbhandari 14874, 12 Aug 1991; KATH<sup>1</sup>). **HUMLA**: Manal, above Dozam 2600–2700 m (SK Ghimire, RP Chaudhary & team P10501, 20 May 2010; TUCH<sup>1</sup>); Salli-Chungsa, 3000 m (SK Ghimire, A Paudel, L Joshi, S Lama, P Subedi & C Thapa CHH-1790, 14 Sept 2012; TUCH<sup>1</sup>). **MUGU**: Pina–Ghurchi, 2400 m (PR Shakya, MN Subedi & R Uprety 8791, 22 Aug 1985; KATH<sup>1</sup>).

*Local abund.*: Rare to frequent.

*Ethnobot. use*: Plant provides fuel and timber. Trunk is used as a prayer-flag pole.

*Conserv. status*: GLB., Least Concern (Farjon & Rushforth 2013). LOC., Near Threatened. It is threatened mainly due to habitat destruction, and direct felling of trees for timber, fuel, and prayer-flag pole, leading to a population size reduction suspected to be about 20% over the last 10 years.

## **Pinus** L., Sp. Pl. 2: 1000 (1753).

**Pinus roxburghii** Sarg., Silva N. Amer. 11: 9 (1897). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 26 (1978). Farjon, Handbk. World Conifers 2: 777 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 39 (2018). **Pl. 1**.

*Pinus longifolia* Roxb. ex Lamb.

NEP-L/NEP: Aule sallā, Khote sallā (औले सल्ला, खोटे सल्ला).

ENG: Chir pine. HIN: Chid, Chir (चीड, चीर). SAN: Sarala (सरल). TIB: drönshing (ལྷོ་ཤིང་).

Tall trees up to 40 m tall, with soft flaky bark; leaves acicular, in clusters of 3.

*Habitat*: Usually occurs forming pure stands on dry slopes in outer valleys and foothills.

*Distribution*: Himalaya (Pakistan to Bhutan), India, Bangladesh, Tibetan Plateau.

NEPAL: W, C & E; 500–2700 m.

KSL: Baitadi, Bajhang and Darchula in KSL Nepal, and neighboring Dadeldhura and Doti; 900–2100 m.

*Representative specimens*. **BAJHANG**: Trail from Bhanj to Khalanga Nadi, 1582 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20917080, 17 Jul 2009; KATH<sup>1</sup>). **DADEL DHURA**: Dadeldhura, 1730 m (I Sharma, R Joshi, R Uprety & I Pandey 532, 15 Sept 1981; KATH<sup>1</sup>). **DARCHULA**: Between Makarigad & Thala, 1500 m (SK Ghimire, LR Joshi & B Awasthi P-13016, 22 Oct 2013; TUCH<sup>1</sup>).

*Local abund.*: Occasional to frequent.

*Ethnobot. use*: Timber is used for construction and furniture. Plant resin is used to treat skin affections.

*Conserv. status*: GLB., Least Concern (Farjon 2013b). LOC., Near Threatened. Threat is due to habitat degradation, felling of trees for timber, and unsustainable resin extraction.

**Pinus wallichiana** A.B. Jacks., Bull. Misc. Inform. Kew. 1938: 85 (1938). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 26 (1978). Farjon, Handbk. World Conifers 2: 804 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 39 (2018). **PI. 1.**

*Pinus excelsa* Wall. ex D. Don; *Pinus griffithii* M'Clelland; *Pinus nepalensis* Chambray

DOZ: Thesing. NEP-L: Gobre sallā, Pāphe sallo (गोब्रे सल्ला, पाफे सल्लो). NEP: Ranī sallā (रानी सल्ला).

ENG: Blue pine, Himalayan blue pine, Himalayan white pine. HIN: Biār, Chilla, Dhurāsālā, Kail, (बियार, चिल्ला, दुरासला, कैल). TIB: drönshing (ལྷོང་ཤིང་).

Pyramidal trees, up to 50 m tall, with grey, scaly bark; leaves acicular, in clusters of 5.

*Habitat*: Forests, usually forming pure or mixed stands with *Quercus*, *Rhododendron*, *Picea*, *Abies* and *Betula* under subhumid to semi-arid conditions.

*Distribution*: E Afghanistan, Himalaya (Pakistan to NE India), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 1500–4300 m.

KSL: Baitadi, Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura, Doti and Mugu; 1700–4000 m.

*Representative specimens*. **BAJHANG**: Badigaon – Talkot, 2200–1600 m (MS Bista & DP Joshi 573, 18 Aug 1972; KATH<sup>1</sup>); east peak from Deurali, near Dhalun, 2500–3200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0473, 15 Sept 2017; KATH<sup>1</sup>, PE). **BAJURA**: Birseni – Porakya, 2000 m (KR Rajbhandari 14875, 12 Aug 1991; KATH<sup>1</sup>). **DARCHULA**: Thin, 2300 m (KR Rajbhandari & KJ Malla 5644, 27 Aug 1980; KATH<sup>1</sup>). **HUMLA**: Salli-Chungsa, 3000 m (SK Ghimire, A Paudel, L Joshi, S Lama, P Subedi & C Thapa 1791, 14 Sept 2012; TUCH<sup>1</sup>); Phwaso, Dozam, 3500 m (SK Ghimire, RP Chaudhary & team P10826, 21 May 2010; TUCH<sup>1</sup>). **MUGU**: Rara, 2900 m (NP Manandhar & DP Joshi 8061, 10 Aug 1981; KATH<sup>1</sup>).

*Local abund.*: Frequent to common.

*Ethnobot. use*: Plant provides timber for construction and furniture. Resin is used to treat skin affections and stomach disorders. Trunk is used as a prayer-flag pole.

*Conserv. status*: GLB., Least Concern (Farjon 2013c). LOC., Near Threatened. Major threat is illegal felling of trees as timber for local construction and fuel, and sale across the borders.

## **Tsuga** (Endl.) Carrière, Traité Gén. Conif. 185 (1855).

**Tsuga dumosa** (D. Don) Eichler in Engler & Prantl, Nat. Pflanzenfam. 2(1): 80 (1887). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 26 (1978). Farjon, Handbk. World Conifers 2: 1048 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 40 (2018). **PI. 2.**

*Pinus dumosa* D. Don in Lamb., Descr. Pinus 2: 55 (1824); *Abies brunoniana* (Wall.) Lindl.; *Abies dumosa* (D. Don) Mirb.; *Pinus brunoniana* Wall.; *Tsuga brunoniana* (Wall.) Carrière; *Tsuga dura* Downie; *Tsuga wardii* Downie

NEP-L: Thinge (ठिङ्गे). NEP: Thinge sallā, Thingre sallā (ठिङ्गे सल्ला, ठिङ्ग्रे सल्ला).

ENG: Himalayan hemlock.

Tall pyramidal trees, 8–40 m high, with longitudinally fissured bark and linear leaves.

*Habitat*: In forests often with *Quercus*, *Rhododendron* and *Abies* on semi-humid and humid shady slopes.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, Myanmar, SC China, N Vietnam.

NEPAL: W, C & E; 1800–3600 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura and Doti; 2100–3200 m.

*Representative specimens*. **BAJHANG**: Khaptad National Park, 2924 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattacharai 20917026, 3 Jul 2009; E00395766' image, KATH<sup>1</sup>); Surma Sarovar Lekh, north of Chainpur, 3185 m (H Ikeda, S Noshiro, M Amano,

T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20917052, 8 Jul 2009; E00509809<sup>1</sup> image, KATH<sup>1</sup>); Deurali, way to Kada from Dhalun, 2500–3200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0392, 15 Sept 2017; KATH<sup>1</sup>, PE). **BAJURA**: Pategaon – Ghodi Lehk Deorali – Badigaon, 2900 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170651, 16 Aug 1991; TI) fide SHB 2013–2020. **DARCHULA**: Palaa, 2250 m (KR Rajbhandari & KJ Malla 5692, 29 Aug 1980; KATH<sup>1</sup>). **DOTI**: On the trail between Ghoda daune and Lokhada, 3060 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20918017, 3 Jul 2009; E00625016<sup>1</sup> image, KATH<sup>1</sup>); Khaptad National Park, trail from Jhingrana to Bichpani, 3088 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20917014, 1 Jul 2009; E00395765<sup>1</sup> image). **HUMLA**: Changkheli – Rimi, 3000 m (KR Rajbhandari & B Roy 3983, 26 Jul 1979; KATH<sup>1</sup>).

*Local abund.*: Occasional to frequent in Bajhang, rare to occasional in Darchula and Humla.

*Ethnobot. use*: Timber is used for construction purposes, and in making household implements.

*Conserv. status*: GLB., Least Concern (Yang *et al.* 2013). LOC., Near Threatened. Threat is mainly due to small population size, habitat destruction, and direct felling of trees for timber. About 20% decline of population size has been suspected over the last 10 years.

## CUPRESSACEAE

### **Cupressus** L., Sp. Pl. 2: 1002 (1753).

**Cupressus torulosa** D. Don in Lambert, Descr. *Pinus*. 2: 18 (1824). Franco in Enum. Fl. Pl. Nepal 1: 27 (1978). Farjon, Handbk. World Conifers 1: 324 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 41 (2018).

*Cupressus doniana* Hook. f.; *Cupressus karnaliensis* Silba; *Cupressus karnaliensis* var. *mustangensis* Silba; *Cupressus karnaliensis* subsp. *mustangensis* (Silba) Silba; *Cupressus lusitanica* Mill. subsp. *torulosa* (D. Don) Silba; *Cupressus nepalensis* Loudon; *Cupressus pakistanensis* Silba; *Cupressus torulosa* subsp. *karnaliensis* (Silba) Silba

NEP-L: Āggar, Dhūpī, Raisallā (आगगर, धूपी, रैसल्ला). NEP: Dhūpī, Rājsallo (धूपी, राजसल्लो).

ENG: Himalayan cypress. TIB: gyashuk (ཐུ་ཤུག་).

Evergreen trees, to 40 m tall; branches spreading, branchlets pendulous; leaves scale-like, appressed.

*Habitat*: Forests under semi-arid to subarid conditions, mostly on S-facing slopes in dry valleys.

*Distribution*: Himalaya (Pakistan to Nepal), Tibetan Plateau.

NEPAL: W & C; 1800–3300 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Mugu; 1400–2700 m.

*Representative specimens*. **BAJHANG**: Launi, 2450 m (JF Dobremez DBR NEP 2090, 6 May 1973; E00792293<sup>1</sup> image); Kalaune – Laune, 2621 m (TB Shrestha 4097, 10 May 1965; *Cupressus karnaliensis* US 01310423<sup>1</sup> image). **DARCHULA**: Sunchera, 1800 m (KR Rajbhandari & KJ Malla 5575, 25 Aug 1980; KATH<sup>1</sup>); near Sithi, 2300 m (SK Ghimire, LR Joshi & B Awasthi P13085, 23 Oct 2013; TUCH<sup>1</sup>). **HUMLA**: Kharpu – Dozam, 2550 m (O Polunin, WR Sykes & LHJ Williams 4184; BM) fide Rajbhandari *et al.* (2020). **MUGU**: W of Mangri, 2300 m (S Miehe 99-02201; K000075098) fide RBGK (2020-21).

*Local abund.*: Rare.

*Ethnobot. use*: Leaves are used in folk medicine to treat swellings and skin warts. Timber is used for building and construction. Leaves and twigs are occasionally burned as incense. The whole plant is considered as sacred and planted around temples. In Humla (Thehe and Chhipra), wood is valued during marriage and funeral rites, and fire offerings.

*Consrv. status*: GLB., Least Concern (Qin *et al.* 2013). LOC., Data Deficient. In KSL area of Nepal, natural stands of *Cupressus torulosa* seldom occur. Sporadic trees are found only in the sacred areas or at the sites of shrines. In Nepal, cypress forests have suffered from extensive logging and burning in the past (Stainton 1970). It has been regarded as vulnerable by Miehe *et al.* (2015).

**Juniperus** L., Sp. Pl. 2: 1038 (1753).

**Juniperus indica** Bertol., Misc. Bot. 23: 16, t. 1 (1862). Lewis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 27 (1978). Farjon, Handbk. World Conifers 1: 436 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 42 (2018). **PI. 2.**

*Juniperus wallichiana* Hook. f. & Thomson ex Brandis; *Sabina indica* (Bertol.) L.K. Fu & Y.F. Yu; *Sabina wallichiana* (Hook. f. & Thomson ex Brandis) W.C. Cheng & L.K. Fu

DOZ/LIM: Pāmā, Shyukpā (पामा, स्युक्पा). NEP-L: Pāmā-dhūp, Pāmo (पामा-धूप, पामो). NEP: Dhūpī (धूपी). ENG: Black juniper, Wallich's juniper. TIB: lhashuk (ལྷ་སུག).

Shrubs or small trees, dioecious; ultimate branchlets dense, spreading or erect; leaves on lower branches (or on young plants) needle-like, spreading; those on mature plants or on upper branches scale-like, adpressed, decussate, sometimes 3-whorled, imbricate, decurrent; pollen and seed cones terminal on short branchlets; seed cones blue-black or brownish black when ripe, subglobose or ovoid, 1-seeded.

*Habitat*: Temperate coniferous forests, woodlands of treeline, scattered vegetation on steep dry slopes in alpine belt, meadows, bare moraines and scree slopes.

*Distribution*: Himalaya (Kashmir to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 2600–5100 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Mugu; 2600–4900 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: North of Dhuli, 3962 m (TB Shrestha 4154, Jun 1965; US02072828<sup>1</sup> image); **DARCHULA**: Upper Chameliya, Dhauleodar, 3400 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal 688, 18 Oct 2014; TUCH<sup>1</sup>); upper Chameliya, Thadeyul, 4100 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal 757, 22 Oct 2014; TUCH<sup>1</sup>). **HUMLA**: Above Phwaso, Changla Khola 3650 m (SK Ghimire, RP Chaudhary & team P10900, 22 May 2010; TUCH<sup>1</sup>); Dozam Khola, near Simikot, 3658 m (O Polunin, WR Sykes & LHJ Williams 4242, 31 May 1952; L.1185961<sup>1</sup> image); Chungsa, Dharmasala, 4300 m (SK Ghimire, A Paudel, L Joshi, S Lama, P Subedi & C Thapa CHH-1048, 1 Sept 2012; TUCH<sup>1</sup>); Chungsa, Khyunkar La, 4540 m (SK Ghimire, A Paudel, L Joshi, S Lama, P Subedi & C Thapa CHH-1273, 9 Sept 2012; TUCH<sup>1</sup>). **MUGU**: Darke Gad, 2600 m (PR Shakya, MN Subedi & R Uprety 8965, 12 Aug 1989; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Chahlek, Byans, 3505 m (JF Duthie [interpreted] s.n., 23 Jul 1886; E00234825<sup>1</sup> image).

*Local abund.*: Frequent in Humla, rare to frequent in Bajhang and Darchula.

*Ethnobot. use*: Stems and branches are used as fuel. Leaves and leafy twigs are burned as incense, and also used as an offering to the local dieties. Leaves, young twigs and fruits are used to treat fever, headache, swellings, allergies, and other skin affections, such as warts. In Dozam area of Humla, wood is valued for carving a big churn (locally 'twadam') for keeping curd, in which curd is stirred vigorously to produce butter; and a small vessel locally known as 'pari' used for milking.

*Consrv. status*: GLB., Least Concern (Farjon 2013d). LOC., Near Threatened. It is locally threatened mainly due to habitat destruction, and overharvesting for local use as fuel and incense.

**Juniperus semiglobosa** Regel, Trudy Imp. S.-Peterburgsk. Bot. Sada 6(2): 487 (1879). Farjon, Handbk. World Conifers 1: 477 (2017).

*Juniperus excelsa* Wall. (1832), nom. nud., non M.-Bieb (1800); *Juniperus jarkendensis* Kom.; *Juniperus tianschanica* Sumnev.; *Sabina semiglobosa* (Regel) L.K. Fu & Y.F. Yu

NEP: Dhūpī (धूपी).

ENG: Pencil cedar, Himalayan pencil cedar, Himalayan pencil juniper.

Shrubs or trees, dioecious or rarely monoecious; branches long, spreading and ascending; juvenile leaves needle-like, adult leaves scale-like, decussate on ultimate branchlets, closely appressed; seed cones sub-globose to triangular, 2–3-seeded.

*Habitat*: Open slopes.

*Distribution*: C Asia, Afghanistan, W & C Himalaya (Pakistan to Nepal), Tibetan Plateau, N China.

NEPAL: W & C; 3600–4000 m.

KSL: Humla in KSL Nepal; 2900 m.

*Representative specimen*. HUMLA: Simikot, 2900 m (SB Malla 14254, 17 Jul 1968; KATH) fide Rajbhandari *et al.* (2020).

*Conserv. status*: GLB., Least Concern (Farjon 2013e). LOC., Data Deficient.

**Juniperus squamata** Buch.-Ham. ex D. Don in Lamb., Descr. Gen. *Pinus* 2: 17 (1824). Lewis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 28 (1978). Farjon, Handbk. World Conifers 1: 478 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 42 (2018). **PI. 2.**

*Juniperus recurva* var. *squamata* (Buch.-Ham. ex D. Don) Parl.; *Sabina squamata* (Buch.-Ham. ex D. Don) Antoine

NEP: Dhūpī, Bhuin dhūpī (धूपी, भुईं धूपी).

ENG: Flaky juniper, Scaly-leaved Nepal juniper, Nepalese juniper. TIB: shuktser (ལུག་ཅེར་).

Semiprostrate or spreading bushy shrubs, monoecious; leaves needle-like, in whorls of 3, decurrent, free part spreading or ascending; pollen and seed cones terminal on axillary dwarfed shoots; seed cones subglobose to ovoid, brown to purple-black when ripe, glabrous, 1-seeded.

*Habitat*: Coniferous forests, mixed woodland, exposed slopes with dwarf shrubs or grasses and forbs.

*Distribution*: N Afghanistan to E Himalaya, Tibetan Plateau, Myanmar, C & SE China.

NEPAL: W, C & E; (2440–)2800–4500 m.

KSL: Bajhang, Darchula, and Humla in KSL Nepal; (2440–)3300–4500 m.

*Representative specimens*. BAJHANG: Kalagad Valley, 2440 m (TB Shrestha 4103, Jun 1965; US 02072941<sup>1</sup> image); Surmasarovar, 3300 m (JF Dobremez 2079, 5 May 1973; E00726863<sup>1</sup> image); Ramkot, 3500 m (JF Dobremez 2196, 13 May 1973; E00726859<sup>1</sup> image); Surmasarovar, north of Chainpur, 3530 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20917057, 8 Jul 2009; E00623925<sup>1</sup> image, KATH<sup>1</sup>). DARCHULA: Upper Chameliya, between Lolu & Thadapani, 3700 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal 743, 20 Oct 2014; TUCH<sup>1</sup>). HUMLA: Salli-Chungsa, near Dharmashala 4300 (SK Ghimire, A Paudel, L Joshi, S Lama, P Subedi & C Thapa 1058, 2 Sept 2012; TUCH<sup>1</sup>); Salli-Chungsa, above Dharmashala, 4350 m (SK Ghimire, A Paudel, L Joshi, S Lama, P Subedi & C Thapa 1085, 3 Sept 2012; TUCH<sup>1</sup>).

*Local abund.*: Rare to occasional.

*Ethnobot. use*: Plant provides fuel at high altitudes; leaves and twigs are burned as incense. Leaves and twigs are also used as medicine to treat swellings, and skin affections.

*Conserv. status*: GLB., Least Concern (Farjon 2013f). LOC., Data Deficient.

## TAXACEAE

**Taxus** L., Sp. Pl. 2: 1040 (1753).

**Taxus contorta** Griff., Itin. Pl. Khasyah Mts. 351, no. 116 (1848); Icon. Pl. Asiat.: t. 376. (1854). Farjon, Handbk. World Conifers 2: 1008 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 42 (2018). **Pl. 2.**

*Taxus fuana* Nan Li & R.R. Mill; *Taxus wallichiana* Zucc. subsp. *contorta* (Griff.) Silba

DOZ: Sāngāshing (साङ्गासिङ्ग). NEP-L: Launtho, Luinth (लौंठो, लुईंठ). NEP: Lauth sallā (लौठ सल्ला).

ENG: West Himalayan yew. HIN-L/HIN: Thuner, Thuno (थुनेर, थुनो). TIB: sangshing (སང་ཤིང་).

Evergreen shrubs or trees, to 20 m tall, dioecious; branches forming a rounded or pyramidal crown; leaves linear, straight, arranged in a V-formation.

*Habitat*: Mixed broadleaved and coniferous forests along streams, secondary vegetation.

*Distribution*: N Afghanistan, W & C Himalaya (Pakistan to Nepal), Tibetan Plateau.

NEPAL: W & C; 1700–3700 m.

KSL: Baitadi, Bajhang, Darchula and Humla in KSL Nepal, and neighboring Achham, Bajura, Doti and Mugu; 2000–3700 m.

*Representative specimens*. **ACHHAM**: Ramaroshan, 2300 m (TR Pandey & ML Pathak 201506019, 8 Jun 2015; KATH<sup>1</sup>). **BAITADI**: Shrivabhar, 2200–2300 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0060, 10 Sept 2017; KATH<sup>1</sup>); Shribhawar, 2480 m (TR Pandey & GD Bhatt 20166036, 6 Jun 2016, KATH<sup>1</sup>). **BAJHANG**: Trail from Surma to Thalara 2333 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915072, 10 Jul 2009; KATH<sup>1</sup>); Launi, 2450 m (JF Dobremez DBR NEP 2106, 7 May 1973; BM000900597<sup>1</sup> image, E00737118<sup>1</sup> image); near Dhalun, 2500–3200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0480, 15 Sept 2017; KATH<sup>1</sup>); Khaptad, 3730 m (K Itoh & SB Rajbhandari 1278, 9 Sept 1963; KATH<sup>1</sup>). **BAJURA**: Khaptad – Kande, 2600 m (KR Rajbhandari 15665, 28 Aug 1991; KATH<sup>1</sup>). **DARCHULA**: Near Sithi Village, way to Api Base Camp, 2200 m (SK Ghimire, LR Joshi & B Awasthi P13087A, 23 Oct 2013; TUCH<sup>1</sup>); Chheti, 2780 m (PR Shakya, MK Adhikari & MN Subedi 7979, 20 Jul 1984; KATH<sup>1</sup>); Domul, between Khayakot & Dhauliodar, 2970 m (SK Ghimire, LR Joshi & B Awasthi P13087B, 25 Oct 2013; TUCH<sup>1</sup>). **DOTI**: Khaptad National Park, 2600 m (KR Rajbhandari 15665, 28 Aug 1991; KATH<sup>1</sup>); Khaptad Daha, 3059 m (TR Pandey, GD Bhatt & MB Rokaya 177056, 9 Jul 2017; KATH<sup>1</sup>). **HUMLA**: Kallas, 2700 m (KR Rajbhandari & B Roy 4247, 1 Aug 1979; KATH<sup>1</sup>); Raniban, Simikot, 2990 m (TR Pandey & DR Kandel 2016902, 9 Sep 2016; KATH<sup>1</sup>); below Chankheli Lagna, 3150 m (CA Pendry, S Baral, S Noshiro, PP Kurmi, B Dell & B Adhikari JRS B111, 12 Jun 2008; E00397273<sup>1</sup> image); above Jabkung, Changla Khola, Dozam, 3200 m (SK Ghimire, RP Chaudhary & team P10661, 21 May 2010; TUCH<sup>1</sup>).

*Local abund.*: Rare to occasional.

*Ethnobot. use*: Plant provides timber for construction and furniture. In Dozam, Humla, wood is carved to prepare vessel for churning butter tea. Wood is also used to prepare wooden pestle known as 'mujul'. Bark is used as a substitute for tea. Bark extrat is used in dyeing wool.

*Conserv. status*: GLB., Endangered A2acd (Thomas 2011). LOC., Endangered A2acd. Global assessment by Thomas (2011) revealed decreasing population trend with a recent rangewide population decline of at least 50–80% due to overcollection for timber and fuelwood, and harvesting of plant for medicinal use and taxol production. In the Himalaya (NW India and Nepal), the population is estimated to have declined by 90% (Thomas 2011). KSL Nepal has important share of total global population of *T. contorta*. In KSL Nepal, the major threat is excessive felling of trees for timber.



# ANGIOSPERMS

## SCHISANDRACEAE

**Schisandra** Michx., Fl. Bor.-Amer. 2: 218 (1803).

**Schisandra grandiflora** (Wall.) Hook. f. & Thomson in Hook. f., Fl. Brit. India 1(1): 44 (1872). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 26 (1979). Pendry in Watson *et al.*, Fl. Nepal 3: 7 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 6 (2017). **PL. 2.**

*Kadsura grandiflora* Wall., Tent. Fl. Nepal. 10: t. 14 (1824); *Sphaerostema grandiflorum* (Wall.) Blume

NEP: Singate, Singate-laharā (सिंगटे, सिंगटे-लहरा).

Woody, deciduous climbers; male flowers with loosely arranged free stamens.

*Habitat*: Forests, forest margins, thickets, landslide areas, riversides.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, SC China, mainland SE Asia.

NEPAL: W, C & E; 1800–3400 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Doti and Mugu; 2100–3200 m [also in Almora, Uttarakhand, India].

*Representative specimens*. **BAJHANG**: Talkot–Agara, 2180 m (H Tabata, KR Rajbhandari & K Tsuchiya 1453, 22 Jul 1976; KATH<sup>1</sup>); Dhuli to Inuldar, 2575 m (H Tabata, KR Rajbhandari & K Tsuchiya 1682, 26 Jul 1976, KATH<sup>1</sup>); Chimnya, way to Kalapani, NE of Dhalun, 2900–3200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0502, 16 Sept 2017; KATH<sup>1</sup>, PE). **DARCHULA**: Khar, Paripatal Community Forest, 2245 m (CK Subedi, J Gurung & M Pandey 50, 7 Jun 2015; TUCH<sup>1</sup>); Simar, way to Pilkanda, 2780 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA 1059, 19 Jul 2015; TUCH<sup>1</sup>). **HUMLA**: Gyaldorje, above Dozam, 2700 m (SK Ghimire, RP Chaudhary & team P10453, 20 May 2010; TUCH<sup>1</sup>); Melcham, 2730 m (PR Shakya, MN Subedi & R Uprety 8756, 20 Aug 1985; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Madhari Pass, Kumaon, 2438 m (R Strachey & JE Winterbottom s.n., 1843; P00206985<sup>1</sup> image).

*Local abund.*: Occasional to frequent.

*Ethnobot. use*: Fruits are edible.

**Schisandra propinqua** (Wall.) Baill., Hist. Pl. 1: 148 (1868). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 26 (1979). Pendry in Watson *et al.*, Fl. Nepal 3: 8 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 6 (2017).

*Kadsura propinqua* Wall., Tent. Fl. Nepal.: 11, t. 15 (1824); *Sphaerostema propinquum* (Wall.) Blume

NEP: Pahlenlo singate, Singate-laharā (पहेंलो सिंगटे, सिंगटे-लहरा).

Woody, deciduous climbers; male flowers with fused stamens.

*Habitat*: Forests, streamsides, degraded land around cultivated area.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, C & SE China, mainland SE Asia to Indonesia.

NEPAL: W, C & E; 1200–2400 m.

KSL: Bajhang in KSL Nepal [Bageshwar and neighboring Almora, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Trail from Lokhada to Tameil, 2151 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911063, 4 Jul 2009; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Shai Devi, Kumaon, 1219 m (R Strachey & JE Winterbottom 2, Wallich Cat. 4986; isoelectotype of *Kadsura propinqua* BM000548355<sup>1</sup> image).

## SAURURACEAE

**Houttuynia** Thunb., Kongl. Vetensk. Acad. Nya Handl. 4: 149 (1783).

**Houttuynia cordata** Thunb., Kongl. Vetensk. Acad. Nya Handl. 4: 149 (1783). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 3: 182 (1982). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 7 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 47 (2018).

NEP: Gane (गने).

ENG: Chameleon, Fish mint.

Perennial aromatic herbs; rhizomes creeping; stems 20–30 cm, fleshy, with erect apical part.

*Habitat*: Forests, wet meadows, damp grassy places, streamsides.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, S China to Japan, mainland SE Asia.

NEPAL: W, C & E; 1300–2500 m.

KSL: Known from neighboring Bajura, Nepal; and from Uttarakhand, India; 900–1900 m. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimens*. **BAJURA**: Serigaon – Bashala, 1690–1760 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160615, 14 Aug 1991; TI); Porakya – Serigaon, 1900 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193238, 13 Aug 1991; TI) fide SHB 2013–2020. **UTTARAKHAND (INDIA)**: NW Himalaya, Jaunsar, 915–1220 m (JF Duthie 19849, 30 May 1897; W 0039770<sup>0</sup> image).

## PIPERACEAE

**Peperomia** Ruiz & Pavon, Fl. Peruv. Prodr. 8: 8 (1794).

**Peperomia heyneana** Miq., Syst. Piperac.: 123 (1843). Tebbs in Hara *et al.*, Enum. Fl. Pl. Nepal 3: 181 (1982). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 7 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 47 (2018).

*Peperomia duclouxii* C. DC.

Fleshy annual herbs, stoloniferous, forming clumps.

*Habitat*: On tree trunk or on moss-covered rocks in broad-leaved forests.

*Distribution*: Tropical region in S Asia, Himalaya (Nepal to Bhutan), China, mainland SE Asia.

NEPAL: W, C & E; 850–2600 m.

KSL: Bajhang and Darchula in KSL Nepal; 1300–2100 m.

*Representative specimens*. **BAJHANG**: Near Agara, 2000–2100 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0265, 13 Sept 2017; KATH<sup>1</sup>, PE). **DARCHULA**: On the way to Makarigad, above Okhal, 1350 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudyal & DJ Chapagain ANCA-1702, 14 Jul 2016; TUCH<sup>1</sup>).

*Local abund.*: Rare to occasional.

**Peperomia pellucida** (L.) Kunth in F.W.H. von Humboldt *et al.*, Nov. Gen. Pl. 1: 64 (1816). Tebbs in Hara *et al.*, Enum. Fl. Pl. Nepal 3: 181 (1982). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 7 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 48 (2018).

*Piper pellucidum* L., Sp. Pl. 1: 30 (1753).

NEP: Latpate (लत्पते).

ENG: Shining bush, Shiny bush, Silver bush.

Fleshy annual herbs, with erect or ascending stems to 30 cm.

*Habitat*: On tree trunk or on wet places in forests, rock crevices, cliff bases, fields, walls.

*Distribution*: N & S America, Africa, SW Asia; naturalized in tropical and subtropical regions in Asia.

NEPAL: W, C & E; 60–2000 m (naturalized).

KSL: Baitadi in KSL Nepal, and neighboring Dadeldhura; 350–1500 m.

*Representative specimens*. **BAITADI**: Baitadi, 1500 m (I Sharma, R Joshi, R Uprety & I Pandey 624; KATH<sup>1</sup>).

**DADEL DHURA**: Jogbuda, 360 m (I Sharma, R Joshi, R Uprety & I Pandey 337, 14 Sept 1981; KATH<sup>1</sup>).

**Peperomia tetraphylla** (G. Forst.) Hook. & Arn., Bot. Beechey Voy.: 97 (1832). Tebbs in Hara *et al.*, Enum. Fl. Pl. Nepal 3: 181 (1982). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 8 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 48 (2018).

*Piper tetraphyllum* G. Forst., Prodr. Fl. Ins. Austr. 5: 5 (1786); *Piper reflexum* L. f.; *Piper saxatile* Wall.

ENG: Acorn peperomia, Four-leaf peperomia.

Fleshy, stoloniferous herbs, usually epiphytic; stems tufted, branched, glabrous.

*Habitat*: On wet rocks or tree trunks in forests, along streams.

*Distribution*: Tropics and subtropics.

NEPAL: W, C & E; 1000–2500 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura and Mugu; 1000–2300 m.

*Representative specimens*. **BAJHANG**: Talkot, between Seti bridge & camp site, 1500–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0128, 11 Sept 2017; KATH<sup>1</sup>, PE). **DARCHULA**: Below Simaar, 2300 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA 1052B, 19 Jul 2015; TUCH<sup>1</sup>). **HUMLA**: Humla-Karnali, between Lipne & Chhare, 1900 m (CA Pendry, S Baral, S Noshiro, S Rajbhandari, PP Kurmi, B Del & B Adhikari JRS A154, 16 Jun 2008; KATH<sup>1</sup>). **MUGU**: Mugu Karnali, between Lumra & Changri, 2134 m (O Polunin, WR Sykes & LHJ Williams 5234, 15 Aug 1952; A 01978278<sup>1</sup> image).

*Local abund.*: Occasional to frequent in Bajhang and Darchula.

## ARISTOLOCHIACEAE

**Aristolochia** L., Sp. Pl. 2: 960 (1753).

**Aristolochia punjabensis** Lace, Bull. Misc. Inform. Kew 1911: 273 (1911). **PI. 3.**

*Isotrema punjabense* (Lace) X.X.Zhu, S.Liao & J.S.Ma

NEP-L: Bhāngkhopade, Bhainsī-laharā (भाङ्खोपडे, बैँसी-लहरा).

Climbing shrubs; stem first densely retrorse-pubescent, then smooth; leaves with petioles 1–1.5 cm long, densely villous; blades ovate or broadly ovate, apex obtuse, acute or shortly acuminate, base cordate, both sides gently pubescent or upper surface densely hairy; flowers axillary, solitary; perianth tube S-shaped, villous, inflated in the lower half, the upper tube strongly constricted; limb of perianth narrow, reflexed, purple, slightly 3-lobed, lobes broadly ovate; throat yellow; fruits obovoid, 6-ribbed.

*Habitat*: Mixed forests, forest margins.

*Distribution*: Pakistan, W & C Himalaya (Kashmir to Nepal)

NEPAL: W; 1350–2500 m.

KSL: Baitadi and Darchula in KSL Nepal, and neighboring Dadeldhura; 1350–2500 m.

*Representative specimens.* **BAITADI:** Shribhawar, 2509 m (TR Pandey & GD Bhatt 2016672, 6 Jun 2016, KATH<sup>1</sup>). **DADEL DHURA:** Gaira, 1350 m (KJ Malla 1501, 24 Apr 1983; KATH<sup>1</sup>). **DARCHULA:** Khar, Paripatal CF, 2280 m (CK Subedi, J Gurung & M Pandey 14, 4 Jun 2015; TUCH<sup>1</sup>).

*Local abund.:* Rare to occasional.

*Ethnobot. use:* Plant is considered to be poisonous.

## MAGNOLIACEAE

**Magnolia** L., Sp. Pl. 1: 535 (1753).

**Magnolia kisopa** (Buch.-Ham. ex DC.) Figlar, Proc. Int. Symp. Magnoliac. 1: 22 (2000). Poudel *et al.* in Watson *et al.*, Fl. Nepal 3: 4 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 13 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 52 (2018).

*Michelia kisopa* Buch.-Ham. ex DC., Syst. Nat. 1: 448 (1817); *Sampacca kisopa* (Buch.-Ham. ex DC.) Kuntze

NEP: Van chānp (वन चाँप).

Deciduous trees, c. 10–20 m tall.

*Habitat:* Forests, woodlands near streams.

*Distribution:* Himalaya (Nepal to Bhutan & NE India), Tibetan Plateau.

NEPAL: W, C & E; 1000–3000 m.

KSL: Bajhang in KSL Nepal; 1590 m.

*Representative specimen.* **BAJHANG:** Between Rishinri & Gangadi, near Talkot, 1590 m (H Tabata, KR Rajbhandari & K Tsuchiya 1421, 21 Jul 1976; KATH<sup>1</sup>).

*Conserv. status:* GLB., Data Deficient (Khela 2014).

## ANNONACEAE

**Artabotrys** R. Br., Bot. Reg. 5: t. 423 (1820).

**Artabotrys hexapetalus** (L. f.) Bhandari, Baileya 12: 149 (1965). Kurmi in Watson *et al.*, Fl. Nepal 3: 14 (2011). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 54 (2018).

*Annona hexapetala* L. f., Suppl. Pl. 270 (1782); *Annona uncinata* Lam.; *Artabotrys uncinatus* (Lam.) Merr.; *Uvaria uncinata* Lour.

NEP: Kanakchompā, Harichompā (कनकचम्पा, हरिचम्पा).

ENG: Ylang ylang vine, Tail grape. HIN: Harichompā (हरिचम्पा).

Evergreen scandent or climbing shrubs, 2.5–10 m tall.

*Habitat:* Cultivated and naturalized in Nepal.

*Distribution:* Native to tropical region in S Asia, S China, mainland SE Asia; cultivated in Old World tropics and subtropics.

NEPAL: W & C; 100–1300 m.

KSL: Bajhang in KSL Nepal; 1300 m (probably cultivated).

*Representative specimen.* **BAJHANG:** Chainpur, 1300 m (MS Bista & DP Joshi 768, 30 Aug 1972; KATH<sup>1</sup>).

## LAURACEAE

**Cinnamomum** Schaeffer, Bot. Exped. 74 (1760).

**Cinnamomum glanduliferum** (Wall.) Meisn. in DC., Prodr. 15(1): 25 (1864). Kostermans & Chater in Hara *et al.*, Enum. Fl. Pl. Nepal 3: 183 (1982). Pendry in Watson *et al.*, Fl. Nepal 3: 25 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 17 (2017).

*Laurus glandulifera* Wall., Trans. Soc. Med. Phys. Calcutta. 1: 45, 51, t. 1 (1825); *Camphora glandulifera* (Wall.) Nees

NEP: Mālāgiri, Sinkauli (मालागिरि, सिन्कौली).

Evergreen shrubs or trees, c. 4.5–25 m, with grey-brown, longitudinally fissured bark.

*Habitat*: Moist and damp places near streams, wet gullies in evergreen forests, cultivated terraces.

*Distribution*: Himalaya (Nepal to Bhutan & NE India), Tibetan Plateau, SC China, mainland SE Asia.

NEPAL: W, C & E; (100–)700–2600 m.

KSL: Known from neighboring Doti District; 2150 m.

*Representative specimen*. **DOTI**: Above Silgadi on trail to Khaptad, 2147 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhattacha & AP Bhattacharai 20915006, 29 Jun 2009; KATH<sup>1</sup>).

*Conserv. status*: GLB., Least Concern (Liu *et al.* 2019a).

**Cinnamomum tamala** (Buch.-Ham.) T. Nees & C.H. Eberm., Handb. Med.-Pharm. Bot. 2: 426 (1831). Kostermans & Chater in Hara *et al.*, Enum. Fl. Pl. Nepal 3: 183 (1982). Pendry in Watson *et al.*, Fl. Nepal 3: 24 (2011). **Pl. 3.**

*Laurus tamala* Buch.-Ham., Trans. Linn. Soc. London 13: 555 (1822); *Cinnamomum albiflorum* Nees

NEP: Tejpat (तेजपात).

ENG: Indian bay leaf, Nepal cinnamon. HIN: Tejpatā, Tejpat (तेजपता, तेजपात). SAN: Tamālapatra (तमालपत्र). TIB: shingtsa (ཤིང་ཅ་).

Evergreen much branched trees, 7–20 m tall, with smooth, grey-brown bark.

*Habitat*: Mixed broad-leaved forests, hillside shrub forests, open hill slopes, open places, also planted.

*Distribution*: Tropical and subtropical Himalaya (Kashmir to Bhutan), SC China, mainland SE Asia.

NEPAL: W, C & E; 400–2550 m.

KSL: Baitadi, Bajhang and Darchula in KSL Nepal, and neighboring Bajura and Doti; 700–1700 m.

*Representative specimens*. **BAITADI**: Shimar, 840 m (PR Shakya, MK Adhikari & MN Subedi 7841, 14 Jul 1984; KATH<sup>1</sup>, L.1795316<sup>1</sup> image). **BAJHANG**: Chainpur, 1200 m (JF Dobremez 1985, 27 Apr 1973; BM000880636); Gorkhali–Pujarigaon, 1600 m (NK Bhattacharai 90/1243, 2 Sept 1990; KATH<sup>1</sup>). **DARCHULA**: Chameliya Valley, between Gokule & Balanch, 800 m (SK Ghimire & B Awasthi P13710, 30 Oct 2013; TUCH<sup>1</sup>). **DOTI**: Khaer Khola, 1100 m (JF Dobremez 1821, 16 Apr 1973; BM000880634); Nahapani, 1400 m (JF Dobremez 1863, 18 Apr 1973; BM000880635).

*Local abund.*: Occasional to frequent.

*Ethnobot. use*: Dried leaves and barks are used as condiment, and in medicine to treat cold, cough, and stomach disorders. Dried leaves are occasionally traded.

*Conserv. status*: GLB., Least Concern (de Kok 2020). LOC., Near Threatened. Habitat destruction, and excessive harvesting of leaves and barks are the major factors affecting wild populations. As a result of commercial harvesting pressure, wild populations have declined sharply in some areas, such as in Baitadi and Darchula, in the past few years. In the fiscal year 2014/015, 186 and 147 tons of tejpat leaves and barks were traded from Baitadi and Darchula, respectively (Pyakurel *et al.* 2017, 2018).

**Dodecadenia** Nees in Wall., Pl. Asiat. Rar. 2: 61, 63 (1831).

**Dodecadenia grandiflora** Nees in Wall., Pl. Asiat. Rar. 2: 63 (1831). Kostermans & Chater in Hara *et al.*, Enum. Fl. Pl. Nepal 3: 184 (1982). Pendry in Watson *et al.*, Fl. Nepal 3: 46 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 19 (2017).

*Dodecadenia grandiflora* var. *griffithii* (Hook. f.) D.G. Long; *Dodecadenia griffithii* Hook.f.; *Laurus macrophylla* D. Don; *Litsea grandiflora* (Nees) Kosterm.; *Tetranthera grandiflora* Wall., nom. nud.

NEP-L: Kāule (काउले). NEP: Nepālī dālchīnī (नेपाली दालचिनी).

Evergreen trees, 6–20 m tall.

*Habitat*: Oak-laurel forests, mixed forests, open hill slopes.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 600–3400 m.

KSL: Bajhang District in KSL Nepal, and neighboring Bajura, Dadeldhura and Doti; 2000–2500 m.

*Representative specimens*. **BAJHANG**: Badigaon–Talkot, 2100 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9192440, 17 Aug 1991; TI) fide SHB 2013–2020; Kanda–Dhuli, 2300 m (H Tabata, KR Rajbhandari & Y Shimizu 1592, 25 Jul 1976; KATH<sup>1</sup>). **BAJURA** & **BAJHANG**: Pategaon – Badigaon, 2480 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9192420, 16 Aug 1991; TI) fide SHB (2013–2020). **DADEL DHURA**: Telya Lekh, 2000 m (KR Rajbhandari, S Bhattacharai, I Sharma & R Joshi 7093, 20 Jan 1983; KATH<sup>1</sup>). **DOTI**: Between Rhikula & Chuyadhara 2320 m (H Tabata, KR Rajbhandari & Y Shimizu 1004, 8 Jul 1976; KYO) fide RBGE (2014).

**Lindera** Thunb., Nov. Gen. Pl. 3: 64 (1783).

**Lindera nacusua** (D. Don) Merr., Lingnan Sci. J. 15: 419 (1936). Kostermans & Chater in Hara *et al.*, Enum. Fl. Pl. Nepal 3: 184 (1982). Pendry in Watson *et al.*, Fl. Nepal 3: 36 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 20 (2017).

*Laurus nacusua* D. Don, Prodr. Fl. Nepal.: 64 (1825); *Benzoin nacusua* (D. Don) Kuntze; *Daphnidium bifarium* Nees; *Laurus umbellata* Buch.-Ham. ex D. Don (1827), nom. illeg., non Thunb (1784); *Lindera bifaria* (Nees) Hook. f.

NEP: Pahlenlo khapate, Seto khapde (पहेंलो खपटे, सेतो खप्डे).

Evergreen shrubs or small trees, 1–10 m tall.

*Habitat*: Mixed broad-leaved and coniferous forests, riverside slopes.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, S China, mainland SE Asia.

NEPAL: W, C & E; 1200–2650 m.

KSL: Bajhang District in KSL Nepal; 2650 m.

*Representative specimen*. **BAJHANG**: Trail from Surma to Thalara, 2643 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattacharai 20915080, 10 Jul 2009; KATH<sup>1</sup>).

*Conserv. status*: GLB., Least Concern (BGCI & IUCN 2019a). LOC., Data Deficient.

**Lindera pulcherrima** (Nees) Benth. ex Hook. f., Fl. Brit. India 5: 185 (1886). Kostermans & Chater in Hara *et al.*, Enum. Fl. Pl. Nepal 3: 184 (1982). Pendry in Watson *et al.*, Fl. Nepal 3: 35 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 21 (2017). **Pl. 3.**

*Daphnidium pulcherrimum* Nees in Wall., Pl. Asiat. Rar. 2: 63 (1831).

NEP-L: Dālchīnī kāulo, Van kāulo (दालचिनी काउलो, वन काउलो). NEP: Phusre, Kharāne (फुसे, खराने).

Evergreen shrubs or small trees, 1.5–12 m tall.

*Habitat*: Shady mixed broad-leaved forests, *Acer-Abies* forests.

*Distribution:* Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, Myanmar.

NEPAL: W, C & E; 700–3600 m.

KSL: Baitadi, Bajhang and Darchula in KSL Nepal, and neighboring Bajura and Doti; 1600–3000 m.

*Representative specimens.* **BAITADI:** Shribhawan, 2432 m (TR Pandey & GD Bhatt 2016608, 5 Jun 2016; KATH<sup>1</sup>). **BAJHANG:** Trail from Ghodadaune to Lokhada, 2691 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915039, 3 Jul 2009; KATH<sup>1</sup>); between Dhalun & Kakarkot, below Deurali, NW aspect, 2700–2900 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0571, 16 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJHANG & BAJURA:** Pategaon – Ghodi Lekh – Badigaon, 2190–3350 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160651, 16 Aug 1991; L3888051<sup>1</sup> image, TI). **DARCHULA:** Khar VDC-7, 1925 m (BB Shrestha, M Pandey & R Chhetri 207, 29 Sept 2015; TUCH<sup>1</sup>); Khar, Paripatal Community Forest, 2260 m (CK Subedi, J Gurung & M Pandey 8, 17 Jun 2015; TUCH<sup>1</sup>). **DOTI:** On way to Jhigrana, 2350 m (P Pradhan, RK Uprety, N Pradhan & N Dabadi 1212, 6 Apr 1984, KATH<sup>1</sup>); Khaptad, Silgarhi Doti, 2743 m (JDA Stainton 4829, 2 May 1965; KATH<sup>1</sup>).

*Local abund.:* Frequent to common.

*Ethnobot. use:* Leaves are lopped for animal bedding and for fodder.

*Conserv. status:* LOC., Least Concern. It is widespread and common in the area.

**Machilus** Nees in Wall., Pl. Asiat. Rar. 2: 70 (1831).

**Machilus duthiei** King ex Hook. f., Fl. Brit. India 5: 861 (1890). Pendry in Watson *et al.*, Fl. Nepal 3: 32 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 24 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 61 (2018).

*Persea duthiei* (King ex Hook. f.) Kosterm.

NEP-L: Kāule, Kitkāulo, Tokle kāulo (काउले, किक्काउलो, टोक्ले काउलो). NEP: Kāthe kāulo (काठे काउलो).

Evergreen trees, 10–20 m tall.

*Habitat:* Mixed forests, oak forests, ravines, stream banks.

*Distribution:* Himalaya (Pakistan to Bhutan & NE India), Tibetan Plateau, SC China.

NEPAL: W, C & E; (150–)600–3200 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Dadeldhura and Doti; 1100–2500 m [also in Kumaon, Uttarakhand, India].

*Representative specimens.* **BAJHANG:** Dilbagar, 1140 m (RK Uprety & NK Bhusal 277, 5 Sept 1985; KATH<sup>1</sup>); above Patiudi, 2197 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915057, 7 Jul 2009; E00619035, KATH<sup>1</sup>). **DADEL DHURA:** Chirkitte, 2000 m (KJ Malla 1580, 30 Apr 1983; KATH<sup>1</sup>). **DARCHULA:** Above Khayekot, 2020 m (SK Ghimire & B Awasthi P13094, 24 Oct 2013, TUCH<sup>1</sup>); Sunsera, 2286 m (AP Singh 142-84, 7 Mar 1984; KATH<sup>1</sup>). **DOTI:** Kapthad, 2424 m (H Tabata, KR Rajbhandari & K Tsuchiya 1000, 8 Jul 1976; KYO) fide Rajbhandari & Rai (2017). **HUMLA:** North of bridge over Humla Karnali at Chhare, 1900 m (CA Pendry, S Baral, S Noshiro, S Rajbhandary, PP Kurmi, B Dell & B Adhikari JRS B142, 16 Jun 2008; E00397318, KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, 1372 m (R Strachey & JE Winterbottom s.n., 1818; syntype K000228447<sup>1</sup> image).

*Local abund.:* Frequent to common.

*Ethnobot. use:* Leaves are lopped for animal bedding and fodder.

*Conserv. status:* LOC., Least Concern. It is widespread and common in the area.

**Machilus gamblei** King ex Hook. f., Fl. Brit. India 5: 138 (1886). Pendry in Watson *et al.*, Fl. Nepal 3: 33 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 25 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 61 (2018).

*Machilus bombycina* King ex Hook. f.; *Persea bombycina* (King ex Hook. f.) Kosterm.; *Persea gamblei* (King ex Hook. f.) Kosterm.

NEP-L/NEP: Kāule, Chiple kāulo (काउले, चिप्ले काउलो).

Evergreen trees, 6–23 m tall.

*Habitat*: Hill sal forests, lower-temperate mixed broad-leaved forests, riversides.

*Distribution*: Himalaya (Nepal to Bhutan & NE India), Tibetan Plateau, S China, mainland SE Asia.

NEPAL: W, C & E; (115–)600–2400 m.

KSL: Baitadi in KSL Nepal, and neighboring Doti; 2300–2400 m.

*Representative specimens*. **BAITADI**: Sribhabar–Dhole, 2330 m (PR Shakya, NK Adhikari & MN Subedi 8329, 8 Aug 1984; KATH<sup>1</sup>). **DOTI**: Napani, 2360 m (H Tabata, KR Rajbhandari & K Tsuchiya 899; KYO) fide Rajbhandari & Rai (2017).

*Consv. status*: GLB., Least Concern (BGCI & IUCN 2018a). LOC., Data Deficient.

**Machilus odoratissima** Nees in Wall., Pl. Asiat. Rar. 2: 70 (1831). Pendry in Watson *et al.*, Fl. Nepal 3: 31 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 26 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 61 (2018).

*Laurus odoratissima* Wall., nom. nud.; *Machilus indica* Kurz; *Persea odoratissima* (Nees) Kosterm.

NEP-L: Kāule (काउले). NEP: Kāulo, Seto kāulo (काउलो, सेतो काउलो).

Evergreen trees, 4–25 m tall.

*Habitat*: Evergreen mixed broad-leaved forests, moist mixed forests, along agricultural fields.

*Distribution*: Himalaya (Pakistan to Bhutan & NE India), Bangladesh, mainland SE Asia.

NEPAL: W, C & E; 300–2400 m.

KSL: Baitadi, Darchula and Bajhang Districts in KSL Nepal, and neighboring Doti; 500–2400 m [Bageshwar District, Uttarakhand in KSL India].

*Representative specimens*. **BAITADI**: Near Sribhabar, 2370 m (PR Shakya, MK Adhikari & MN Subedi 8320, 8 Aug 1984; KATH<sup>1</sup>). **BAJHANG**: Suni Gad, 1500 m (JF Dobremez 2157, 11 May 1973; BM000888192). **DOTI**: Thuli Gad, 1524 m (JDA Stainton 4813, 24 Apr 1965; BM000888190); Nahapani, 2000 m (JF Dobremez 1858, 18 Apr 1973; BM000888191). **UTTARAKHAND (INDIA)**: Jagthana, Kumaon, 1615 m (R Strachey & JE Winterbottom s.n., 1818; syntype K000228479<sup>1</sup> image).

*Local abund.*: Rare to occasional.

*Ethnobot. use*: Bark is used for making incense; leaves are cut for fodder.

*Consv. status*: LOC., Vulnerable A2acd. Major threat is overharvesting of bark for trade. Harvesting is particularly high in Baitadi and Darchula. According to Pyakurel *et al.* (2017, 2018), 39.5 and 82 tons of barks were traded in the fiscal year 2014/015 from Baitadi and Darchula, respectively.

**Machilus sericea** Blume, Mus. Bot. 1(21): 330 (1851). Pendry in Watson *et al.*, Fl. Nepal 3: 31 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 26 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 62 (2018).

*Laurus sericea* Wall. (1831), nom. nud., non Blume (1826); *Persea wallichii* D.G. Long; *Phoebe sericea* Nees, nom. illeg.

Evergreen trees, 3–15 m tall.

*Habitat*: Mixed forests, around villages.

*Distribution*: W & C Himalaya (NW India, Nepal).



NEPAL: W & C; (200–)1100–2500 m.

KSL: Known from neighboring Doti District, Nepal; 1100–1400 m.

*Representative specimens.* **DOTI:** Kaher Khola, 1100 m (JF Dobremez 1826, 16 Apr 1973; E00210238); Kaher Khola, 1350 m (JF Dobremez 1846, 16 Apr 1973; E00210239).

**Neolitsea** (Benth.) Merr., Philipp. J. Sci. (Suppl. 1): 56 (1906).

**Neolitsea pallens** (D. Don) Momiy. & H. Hara, J. Jap. Bot. 47: 269 (1972). Kostermans & Chater in Hara *et al.*, Enum. Fl. Pl. Nepal 3: 186 (1982). Pendry in Watson *et al.*, Fl. Nepal 3: 45 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 27 (2017). **Pl. 3.**

*Tetranthera pallens* D. Don, Prodr. Fl. Nepal.: 66 (1825); *Litsea consimilis* (Nees) Nees; *Neolitsea umbrosa* (Nees) Gamble; *Tetradenia consimilis* Nees; *Tetradenia umbrosa* Nees

NEP-L: Kitkita kaulo (किक्किटे काउलो). NEP: Khapate (खपटे).

Small evergreen trees, 3–15 m tall; rarely up to 25 m.

*Habitat:* Oak forests, mixed evergreen broad-leaved forests.

*Distribution:* Himalaya (Pakistan to Nepal & NE India), Tibetan Plateau.

NEPAL: W, C & E; 1370–3500 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura, Dadeldhura, Doti and Mugu; 1800–2500 m.

*Representative specimens.* **BAJHANG:** Maltadi, way to Kaptad, 2600 m (ML Pathak, DR Luitel & KR Bhattacharai 2012134, 2 Apr 2012; KATH<sup>1</sup>). **BAJURA:** Porakya – Serigaon, 1880 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama and K Terada 9194178, 13 Aug 1991; TI) fide SHB 2013–2020. **DADEL DHURA:** Ghanteshor, 2300 m (KR Rajbhandari, PM Regmi and KJ Malla 5440, 17 Aug 1980, KATH<sup>1</sup>). **DARCHULA:** Khar VDC-4, 1930 m (BB Shrestha, M Pandey & R Chhetri 25, 26 Sept 2015; TUCH<sup>1</sup>); Makarigad – Khandeswari, 2090 m (PR Shakya, MK Adhikari & MN Subedi 7903, 18 Jul 1984; KATH<sup>1</sup>); Thin, 2300 m (KR Rajbhandari & KJ Malla 5624, 27 Aug 1980; KATH<sup>1</sup>); above Bayeli, on the way to Simar, 2475 m (CK Subedi & KM Ghimire 2003, 18 Jun 2014; TUCH<sup>1</sup>). **DOTI:** Napani, 2000 m (KJ Malla 497, 31 Aug 1981; KATH<sup>1</sup>). **HUMLA:** Humla-Karnali, south of Yanchu Khola, 2020 m (CA Pendry, S Baral, S Noshiro, S Rajbhandary, PP Kurmi, B Dell & B Adhikari JRS B151, 17 Jun 2008; E00397288, KATH<sup>1</sup>). **MUGU:** Mugu Karnali Valley, between Lumsa and Mangri, 2135 m (O Polunin, WR Sykes & LHJ Williams 5244, 15 Aug 1952; KATH<sup>1</sup>).

*Local abund.:* Frequent to common.

*Ethnobot. use:* Bark and fruits are used in medicine; leaves are cut for fodder.

*Conserv. status:* LOC., Least Concern. It is widespread and common in the area.

**Phoebe** Nees, Syst. Laur.: 98 (1836).

**Phoebe lanceolata** (Nees) Nees, Syst. Laur.: 109 (1836). Kostermans & Chater in Hara *et al.*, Enum. Fl. Pl. Nepal 3: 187 (1982). Pendry in Watson *et al.*, Fl. Nepal 3: 27 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 28 (2017).

*Ocotea lanceolata* Nees in Wall., Pl. Asiat. Rar. 2: 71 (1831); *Laurus lanceolaria* Roxb.; *Laurus salicifolia* Buch.-Ham. ex Nees

NEP: Jhānkrī-kāth (झाँक्री-काठ).

Evergreen trees, to 20 m tall.

*Habitat:* Supertropical and temperate broad-leaved forests, secondary forests, religious forests.

*Distribution:* Tropical South Asia, Himalaya, SC China, mainland SE Asia to Indonesia.

NEPAL: W, C & E; 100–2900 m.

KSL: Bajhang District in KSL Nepal, and neighboring Dadeldhura and Doti; 800–1800 m.

*Representative specimens.* **BAJHANG:** Deuli Gad, north of Chainpur, 1330 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915053, 6 Jul 2009; KATH<sup>1</sup>); Agara, 1780 m (Tabata, KR Rajbhandari & Y Shimizu 1468, 23 Jul 1976; KATH<sup>1</sup>). **DADEL DHURA:** Lipna–Jogbura, 800 m (KR Rajbhandari, PM Regmi & KJ Malla 5313, 13 Aug 1980; KATH<sup>1</sup>); Umlekh, 1000 m (KJ Malla 1623, 2 May 1983; KATH<sup>1</sup>). **DOTI:** Between Barigad & Calsera, 1400 m (Tabata, KR Rajbhandari & Y Shimizu 684, 27 Jun 1976; KYO) fide RBGE (2014).

*Consu. status:* GLB., Least Concern (Liu *et al.* 2019b). *LOC.*, Data Deficient.

## ACORACEAE

**Acorus** L., Sp. Pl. 1: 324 (1753).

**Acorus calamus** L., Sp. Pl. 1: 324 (1753). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 87 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 29 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 64 (2018).

NEP: Bojho (बोज्हो).

ENG: Calamus, Sweet flag. HIN: Vach (वच). SAN: Uragandhā, Vachā (उग्रगन्धा, वचा). TIB: shudak (ཤུད་ཅུག་).

Aromatic perennial herbs; rhizomes creeping, thick.

*Habitat:* Marshy places, wet muddy places of riverside, open field, often cultivated in garden.

*Distribution:* Europe, Asia, N America.

NEPAL: W, C & E; 150–2700 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Doti; 900–2100 m.

*Representative specimens.* **BAJHANG:** Sud de Chainpur, 1150 m (JF Dobremez 1981, 25 Apr 1973; E00645392<sup>1</sup> image). **DARCHULA:** Lattenath, 1000 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-950, 14 Jul 15; TUCH<sup>1</sup>); below Nahli, Ghusa, 2100 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1028B, 17 Jul 2015; TUCH<sup>1</sup>). **DOTI:** Between Rauttukatte & Barigad, 1120 m (H Tabata, KR Rajbhandari & K Tsuchiya 660, 26 Jun 1976; KATH<sup>1</sup>).

*Local abund.:* Occasional.

*Ethnobot. use:* Rhizomes are used in folk medicine to treat cold, sore throat, and parasitic infestations.

*Consu. status:* GLB., Least Concern (Lansdown 2014a).

## ARACEAE

**Arisaema** Mart., Flora. 14: 459 (1831).

**Arisaema concinnum** Schott, Bonplandia (Hann-over) 7: 27 (1859). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 89 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 31 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 66 (2018). **PI. 3.**

*Arisaema affine* Schott; *Arisaema alienatum* Schott; *Arisaema concinnum* var. *alienatum* (Schott) Engl.

NEP: Bānko, Sarpako-makai (बाँको, सर्पाको-मकै).

Erect dioecious perennial herbs, 40–100 cm tall; leaf solitary, radiate with broad leaflets; spathe green.

*Habitat*: Moist and shady places, forests, thickets, open slopes, rocky moist places.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 700–2800 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Doti; 2200–2700 m.

*Representative specimens*. **BAJHANG**: Khaptad, 2700 m (NK Bhattarai 90/1011, 23 Aug 1990; KATH<sup>1</sup>).

**DARCHULA**: Khar, 2180 m (BB Shrestha, M Pandey & R Chhetri 52, 26 Sept 2015; TUCH<sup>1</sup>). **DOTI**: Khaptad National Park, trail from Jhigrana to Bichpani, 2605 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911023, 1 Jul 2009; E00509856<sup>1</sup> image).

*Local abund.*: Rare to occasional in Bajhang and Darchula.

**Arisaema consanguineum** Schott, Bonplandia (Hannover) 7: 27 (1859). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 89 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 31 (2017). **Pl. 4.**

*Arisaema erubescens* (Wall.) Schott var. *consanguineum* (Schott) Engl.

NEP-L: Raksyā bānko, Tinchu (रक्ष्या बाँको, तिन्चु). NEP: Vīr bānko (वीर बाँको).

Erect dioecious perennial herbs, 60–150 cm tall; leaf solitary, radiate with narrow leaflets; spathe green.

*Habitat*: Moist and shady places, forests, thickets, grassy slopes, rocky places, riverside.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, C & NE China, mainland SE Asia.

NEPAL: W, C & E; 870–3000 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura, Doti and Mugu; 1700–3000 m.

*Representative specimens*. **BAJHANG**: Aagar – Dhalaun, 1700 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160759, 19 Aug 1991; KATH<sup>1</sup>, TI<sup>1</sup> image); Kali Gad Valley, 2286 m (TB Shrestha 4190, 11 Jun 1965; KATH<sup>1</sup>). **DARCHULA**: Paripatal CF, Khar, 2230 m (CK Subedi, J Gurun & M Pandey 4014, 4 Jun 2015; TUCH<sup>1</sup>). **DOTI**: Above Silgadi on trail to Khaptad National Park (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911004, 29 Jun 2009; E00623975<sup>1</sup> image); Napani (H Tabata, KR Rajbhandari & K Tsuchiya 9083, 1 Jul 1986; KATH<sup>1</sup>); Khaptad, 3000 m (MS Bista & DP Joshi 274/74, 4 Aug 1972; KATH<sup>1</sup>). **HUMLA**: Melchham, 2500 m (KR Rajbhandari & B Roy 4043, 27 Jul 1979; KATH<sup>1</sup>). **MUGU**: Gamgarhi, 2050 m (NP Manandhar & DP Joshi 6967, 10 Aug 1981; KATH<sup>1</sup>).

*Local abund.*: Rare to occasional in Bajhang and Darchula.

**Arisaema erubescens** (Wall.) Schott in Schott & Endl., Melet. Bot.: 17 (1832). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 89 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 32 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 66 (2018).

*Arum erubescens* Wall., Pl. Asiat. Rar. 2: 30 (1831).

NEP: Bānko, Sarpa-makai (बाँको, सर्प-मकै).

Erect perennial herbs, similar to *A. consanguineum*, but with spathe reddish-brown.

*Habitat*: Moist and shady places, forests, shrubberies, grassy places, trailsides.

*Distribution*: C & E Himalaya (Nepal, NE India: Sikkim).

NEPAL: W, C & E; 1600–3300 m.

KSL: Bajhang in KSL Nepal; 2000–2500 m.

*Representative specimens*. **BAJHANG**: Aagar – Dhalaun, 2000–2100 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0369, 14 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>); Khaptad – Lokhare, 2500 m (NK Bhattarai 90/1092, 24 Aug 1990; KATH<sup>1</sup>).

**Arisaema flavum** (Forssk.) Schott, Prodr. Syst. Aroid.: 40 (1860). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 89 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 33 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 66 (2018). **Pl. 3.**

*Arum flavum* Forssk., Fl. Aegypt.-Arab.: 157 (1775); *Arisaema flavum* subsp. *abbreviatum* (Schott) J. Murata  
DOZ: Dhol. NEP-L: Bhāle bānko, Chare bānko, Kālo bānko, Tinchu (भाले बाँको, चरे बाँको, कालो बाँको, तिन्चु).  
ENG: Yellow cobra-lily. TIB: dawa (དྭ་པ་).

Erect monoecious perennial herbs, 7–30 cm tall; leaves 1 or 2, pedate; spathe yellowish-green.

*Habitat*: Open rocky slopes, dry grassy slopes, rock crevices, thickets, crop fields, trail side near river.

*Distribution*: NE Africa, Arabian Peninsula, Afghanistan to E Himalaya.

NEPAL: W, C & E; 1900–4300 m.

KSL: Darchula and Humla in KSL Nepal, and neighboring Mugu; 1900–4100 m.

*Representative specimens*. **DARCHULA**: Khar VDC-5, 1930 m (BB Shrestha, M Pandey & R Chhetri 196, 28 Sept 2015; TUCH<sup>1</sup>); Paripatal Community Forest, Khar, 2230 m (CK Subedi, J Gurung & M Pandey 13, 4 Jun 2015; TUCH<sup>1</sup>); Lolu, Pilkanda, 3850 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain 790, 24 Oct 2014; TUCH<sup>1</sup>). **HUMLA**: Humla-Karnali, between Yanchu Khola & Kharpunath, 2150 m (CA Pendry, S Baral, S Noshiro, S Rajbhandari, PP Kurmi, B Dell & B Adhikari JRS A165, 18 Jun 2008; E00392166<sup>1</sup> image, KATH<sup>1</sup>); Humla-Karnali, near Kermi, 2700 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama; CHH-1778B, Sept 2012; TUCH<sup>1</sup>); Gyaldorje, Dozam, 2800 m (SK Ghimire, RP Chaudhary & team P11903, 25 May 2010; TUCH<sup>1</sup>). **MUGU**: Above Dharkya, south of Chankheli Lagna, 2990 m (CA Pendry, S Baral, S Noshiro, S Rajbhandari, PP Kurmi, B Dell & B Adhikari JRS A115, 12 Jun 2008; E00397511<sup>1</sup> image, KATH<sup>1</sup>); Mugu, 3353 m (JDA Stainton 6336, 24 Jun 1968; KATH<sup>1</sup>).

*Local abund.*: Frequent to common.

*Ethnobot. use*: Corms and leaves are boiled and cooked as vegetable. Corms and leaves are also used as an anthelmintic medicine to treat intestinal worms and stomachache.

**Arisaema intermedium** Blume, Rumphia 1: 102 (1836). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 90 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 33 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 67 (2018).

*Arisaema biflagellatum* H. Hara; *Arisaema intermedium* f. *biflagellatum* (H. Hara) H. Hara; *Arisaema stracheyanum* Schott.

NEP: Bānko, Sarpako-makai (बाँको, सर्पाको-मकै).

Erect dioecious perennial herbs to 40 cm tall; leaves 1–2, trifoliate; spathe greenish, rarely striped.

*Habitat*: Shady places in forests, mossy rocks in forests, open slopes, grassy places, among shrubs.

*Distribution*: Himalaya (N India, Nepal), Tibetan Plateau, SC China.

NEPAL: W, C & E; 1700–3700 m.

KSL: Humla in KSL Nepal, and neighboring Doti and Mugu; 2100–3100 m [Bageshwar and neighboring Almora District, Uttarakhand in KSL India].

*Representative specimens*. **DOTI**: Baglekh–Jhigrana, 2098 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20919009B, 30 Jun 2009; KATH<sup>1</sup>). **HUMLA/MUGU**: Chankheli Lagna, 3050 m (O Polunin, WR Sykes & LHT Williams 4326, 19 Jun 1952; E00735707<sup>1</sup> image). **UTTARAKHAND (INDIA)**: Kumaon, Kathi, 2195 m (R Strachey & JE Winterbottom 5; isotype of *Arisaema stracheyanum* GH 00028679<sup>1</sup> image).

**Arisaema jacquemontii** Blume, Rumphia 1: 95 (1835). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 90 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 33 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 67 (2018). **Pl. 4.**

*Arisaema cornutum* Schott; *Arisaema exile* Schott.; *Arisaema wightii* Schott

NEP: Bānko, Charī bānko, Māle bānko (बाँको, चरी बाँको, माले बाँको).

ENG: Jacquemont's cobra-lily. TIB: dawa (དྭ་བ་).

Erect dioecious perennial herbs, 10–50(–80) cm tall; leaves 1 or 2, palmate, with 5–9 leaflets.

*Habitat*: Shady and mossy ground in temperate mixed broad-leaved and coniferous forests, forest margins, meadows, grassy slopes, thickets, rocky slopes, among rocks.

*Distribution*: Afghanistan to E Himalaya, Peninsular India, Tibetan Plateau.

NEPAL: W, C & E; 2200–4500 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Doti; 2400–4100 m.

*Representative specimens*. **BAJHANG**: Dhalaun–Rasa, 2500 m (KR Rajbhandari 15460, 20 Aug 1991; KATH<sup>1</sup>); Khaptad, 2900 m (NK Bhattarai 90/943, 21 Aug 1990; KATH<sup>1</sup>); trail from Ghodadaune to Lokhada, 3031 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915034, 3 Jul 2009; E00509936<sup>1</sup> image, KATH<sup>1</sup>). **DARCHULA**: Upper Chameliya Valley, Simar, above Khayakot, 2780 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain 1079, 18 Jul 2015; TUCH<sup>1</sup>). **DOTI**: Khaptad, 3000 m (MS Bista & DP Joshi 210, 3 Aug 1972; KATH<sup>1</sup>). **HUMLA**: Humla Karnali, Kermi, 2500 m (SK Ghimire, A Paudel, L Joshi, S Lama, P Subedi & C Thapa 1419, 15 Sept 2012; TUCH<sup>1</sup>); Phucha, 2600 m (KR Rajbhandari & B Roy 4210, 31 Jul 1979; KATH<sup>1</sup>); Kallas, 2700 m (KR Rajbhandari & B Roy 4243, 1 Aug 1979; KATH<sup>1</sup>); Dozam Khola, near Simikot, 3050 m (O Polunin, WR Sykes & LHJ Williams 4271, 4 Jun 1952; E00735715<sup>1</sup> image).

*Local abund.*: Frequent to common.

*Ethnobot. use*: Tubers and leaves are boiled and cooked as vegetable. Tubers are also used as an anthelmintic medicine to treat intestinal worms and stomachache.

*Conserv. status*: GLB., Least Concern (Crook & Bachman 2013).

**Arisaema propinquum** Schott, Oesterr. Bot. Z. 7: 333 (1857). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 90 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 34 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 67 (2018). **PI. 4.**

*Arisaema sikkimense* Stapf ex Chatterjee; *Arisaema wallichianum* Hook. f.

NEP: Bānko, Sarpako-makai (बाँको, सर्पको-मकै).

Erect dioecious perennial herbs, to 90 cm tall; leaves 1–2, trifoliate; spathe dark purple or green, with white or purple stripes, limb narrower, oblong-ovate.

*Habitat*: Mixed oak forests, hemlock forests, forest margins, open slopes, thickets, among rocks, pasture.

*Distribution*: Himalaya (Pakistan to Bhutan), Tibetan Plateau.

NEPAL: W, C & E; 2200–4000 m.

KSL: Darchula and Humla in KSL Nepal, and neighboring Mugu; 2850–3350.

*Representative specimens*. **DARCHULA**: Between Simar & Domul, Ghusa VDC, 2850 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA 1056B, 18 Jul 2015; TUCH<sup>1</sup>). **HUMLA/MUGU**: Changkheli Lagna, 3350 m (O Polunin, WR Sykes & LHJ Williams 4124, 19 May 1952; A 01655138).

*Local abund.*: Rare.

**Arisaema speciosum** (Wall.) Mart. in Schott & Endl., Melet. Bot. 17 (1832). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 90 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 34 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 68 (2018).

*Arum speciosum* Wall., Tent. Fl. Nepal.: 29 (1824).

NEP: Bānko, Sarpako-makai (बाँको, सर्पको-मकै).

ENG: Cobra lily, Grand cobra lily.

Erect dioecious perennial herbs; rhizome cylindric, elongated; leaf 1, trifoliate; spathe dark black-purple, with whitish longitudinal stripes.

*Habitat*: Dry rocky slopes, broad-leaved forests, forest margins, shrubberies.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 2100–3500 m.

KSL: Bajhang in KSL Nepal; 2670 m.

*Representative specimen*. **BAJHANG**: Above Surma Village, 2670 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911079, 8 Jul 2009; E00509732<sup>1</sup> image).

**Arisaema tortuosum** (Wall.) Schott in Schott & Endl., Melet. Bot. 17 (1832). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 90 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 35 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 68 (2018). **PI. 4.**

*Arum tortuosum* Wall., Pl. Asiat. Rar. 2: 10 (1830); *Arisaema curvatum* (Roxb.) Kunth; *Arisaema belleborifolium* Schott.

DOZ: Dhol. NEP-L: Vîr bānko, Gau bānko (वीर बाँको, गौ बाँको). NEP: Sarpako-makai (सर्पाको-मकै).

ENG: Cobra lily. HIN: Bāgh-mungrî, Sānp-kî-makkî (बाघ-मुङ्गरी, साँप-की-मक्की). TIB: dagoe (དཱ་ཁོ་ཏཱ་).

Erect monoecious perennial herbs, 0.5–1.5 m tall; leaves 2, pedate; spathe light green or dark purple.

*Habitat*: Moist and shady places in mixed forests, forest margins, degraded forests, rocky slopes, rock crevices, shrubberies, streamsides, agriculture borderlands, along trail.

*Distribution*: SW Pakistan, Himalaya (Kashmir to Bhutan & NE India), Tibetan Plateau, Peninsular India, Sri Lanka, Myanmar, SC China.

NEPAL: W, C & E; 650–3200 m.

KSL: Baitadi, Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura, Doti and Mugu; 1000–2900 m.

*Representative specimens*. **BAITADI**: Shribhawar, 2430 m (TR Pandey & GD Bhatt 2016607, 5 Jun 2016, KATH<sup>1</sup>). **BAJHANG**: Rasa – Roshadanda, 1980–2540 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160871, 21 Aug 1991; TI) fide SHB 2013–2020; Kali Gad Valley, 2285 m (TB Shrestha 4191, 11 Jun 1965; KATH<sup>1</sup>); Khaptad, 2900 m (NK Bhattarai 90/1015, 23 Aug 1990; KATH<sup>1</sup>). **DARCHULA**: Okhal, way to Makari Gad, 1230 m (SK Ghimire IM0545, 15 Jul 2015; TUCH<sup>1</sup>); Nahli, way to Sithi, Ghusa, 2400 m (SK Ghimire IM0823, 17 Jul 2015; TUCH<sup>1</sup>). **DOTI**: Trail from Silgadi to Khaptad National Park, 2095 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20919009, 30 Jun 2009; E00509993<sup>1</sup> image). **HUMLA**: Humla Karnali, between Kermi & Dharapori, 2300–2500 m (SK Ghimire, A Paudel, L Joshi, S Lama, P Subedi & C Thapa 1778, 15 Sept 2012; TUCH<sup>1</sup>); Phucha, 2895 m (O Polunin, WR Sykes & LHJ Williams 4159, 24 May 1952; E00735736<sup>1</sup> image). **MUGU**: Gamgari, 2050 m (NP Manandhar & DP Joshi 6968, 10 Aug 1981; KATH<sup>1</sup>).

*Local abund.*: Frequent to common.

*Ethnobot. use*: Corms are boiled and cooked as vegetable. Corms are also used as an anthelmintic medicine to treat intestinal worms and stomachache.

**Arisaema utile** Hook. f. ex Schott, Prodr. Syst. Aroid. 30 (1860). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 91 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 35 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 68 (2018).

*Arisaema verrucosum* Schott var. *utile* (Hook. f. ex Schott.) Pradhan.

NEP: Bānko, Tīnpāte bānko (बाँको, तीनपाते बाँको).

Like *A. propinquum*, but spathe dark purple with whitish stripes, and broadly obovate limb.

*Habitat*: Shady places in moist forests, forest margins, shady moist slopes, thickets, meadows.

*Distribution*: Himalaya (NE Pakistan to Bhutan), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 1600–4000(–4600) m.

KSL: Bajhang in KSL Nepal, and neighboring Mugu; 2400–3700 m [also in Uttarakhand, India].

*Representative specimens*. **BAJHANG**: Above Surma Village, 2670 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911078, 8 Jul 2009; E00509725<sup>1</sup> image); Kali Gad Valley, 2743 m (TB Shrestha 4195, 11 Jun 1965; KATH<sup>1</sup>); Khaptad, 2850 m (NK Bhattarai 91/949, 23 Jun 1991; KATH<sup>1</sup>). **MUGU**: Chuchamara Danda, 3700 m (KR Rajbhandari & B Roy 3604, 19 Jul 1979; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon, Madhari Pass [Almora], 2435 m (R Strachey & JE Winterbottom 4; GH 01655134).

## **Pothos** L., Sp. Pl. 2: 968 (1753).

**Pothos chinensis** (Raf.) Merr., J. Arnold Arbor. 29: 210 (1948). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 37 (2017). Shrestha et al., Handbk. Fl. Pl. Nepal 1: 70 (2018).

*Tapanava chinensis* Raf., Fl. Tellur. 4: 14 (1838); *Pothos cathcartii* Schott; *Pothos yunnanensis* Engl.

Lianas, to 10 m, climbing against trees or creeping over rocks with aid of adhesive roots; stems weakly 4-angled or terete.

*Habitat*: Shady forests, wet rocks in shady steep ravines.

*Distribution*: Tropical and subtropical regions in S Asia, Tibetan Plateau, S China, mainland SE Asia.

NEPAL: W, C & E, 200–1600 m.

KSL: Probably in Darchula District in KSL Nepal, c. 1370 m [also in Uttarakhand, India].

*Representative specimens*. **W NEPAL**: ?Mahakali, 1370 m (Shrestha 11588, 7 Sept 1969; BM000067167). **UTTARAKHAND (INDIA)**: Kumaon, Ramganga River, 610 m (R Strachey & JE Winterbottom 1; GH 01629793<sup>1</sup> image).

## **Remusatia** Schott in Schott & Endl., Melet. Bot.: 18 (1832).

**Remusatia pumila** (D. Don) H. Li & A. Hay, Acta Bot. Yunnan., Suppl. 5: 28 (1992). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 38 (2017).

*Caladium pumilum* D. Don, Prodr. Fl. Nepal.: 21 (1825); *Colocasia pumila* (D. Don) Kunth; *Gonatanthus pumilus* (D. Don) Engl. & K. Krause; *Gonatanthus sarmentosus* Klotzsch; *Remusatia garrettii* Gagnep.

NEP: Jalukā, Māne, Pyākse (जलुका, माने, प्याक्से).

ENG: Dwarf hitchhiker arum, Dwarf taro, Pygmy elephant ear.

Perennial herbs, with cormose tuber; bulbil bearing stolons spreading, creeping, slender, branched.

*Habitat*: On mossy tree trunk, mossy ground, mossy rocks, cliff ledges in forests.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, SC China, mainland SE Asia.

NEPAL: W, C & E; 500–2450 m.

KSL: Bajhang in KSL Nepal; 1600 m [also in Uttarakhand, India].

*Representative specimens*. **BAJHANG**: Dhuli, Seti River, 1600 m (A Maire AMA906, 12 May 1973; E00645395<sup>1</sup> image); Gorkhali Village, 1600 m (NK Bhattarai 90/1255, 2 Sept 1990; KATH<sup>1</sup>).

**UTTARAKHAND (INDIA):** Kumaon, Kalinath [Almora], 1890 m (R Strachey & JE Winterbottom 15; GH01630405<sup>1</sup> image).

**Remusatia vivipara** (Roxb.) Schott in Schott & Endl., Melet. Bot.: 18 (1832). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 92 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 38 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 70 (2018). **PI. 4.**

*Arum viviparum* Roxb., Hort. Bengal.: 65 (1814); *Caladium viviparum* (Roxb.) G. Lodd.

NEP-L: Van pindālu, Rukh pindālu (वन पिंडालु, रुख पिंडालु). NEP: Jalukā, Kālo pindālu (जलुका, कालो पिंडालु).

ENG: Hitchhiker elephant ear.

Perennial herbs, with cormose tuber; bulbil bearing stolons erect, simple, stout.

*Habitat:* Epiphytic or epilithic on trees, boulders and cliff ledges in forests.

*Distribution:* Africa, tropical and subtropical regions in Asia including Himalaya, Australasia.

NEPAL: W, C & E; 200–2400 m.

KSL: Darchula in KSL Nepal, and neighboring Doti; 1000–1400 m [also in Uttarakhand, India].

*Representative specimens.* **DARCHULA:** Lattenath, 1060 m (SK Ghimire, B Awasthi, S Budha Magar, B Jnawali, S Nepal, MR Paudeyal & DJ Chapagain 3017, 29 Aug 2017; TUCH<sup>1</sup>). **DOTI:** Jurael, Gaindadi, 1402 m (TB Shrestha 4005, 24 Apr 1965; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, Mohargari, 1220 m (R Strachey & JE Winterbottom 14; GH 01630420<sup>1</sup> image).

*Local abund.:* Occasional to frequent.

*Ethnobot. use:* Young leaves are boiled and cooked as vegetable. Boiled corms are used as an anthelminic medicine and to treat stomach troubles.

**Rhaphidophora** Hassk., Flora 25(2 Beibl. 1): 11 (1842).

**Rhaphidophora decursiva** (Roxb.) Schott, Bonplandia (Hannover) 5: 45 (1857). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 92 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 38 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 70 (2018).

*Pothos decursivus* Roxb., Fl. Ind. 1: 456 (1820); *Monstera decursiva* (Roxb.) Schott; *Rhaphidophora affinis* Schott; *Rhaphido-phora eximia* Schott; *Rhaphidophora grandis* Schott; *Rhaphidophora insignis* Schott; *Scindapsus decursivus* (Roxb.) Schott

Lianas, mostly epiphytic; stems robust, rooting; leaf blades more than 40 cm, pinnately divided.

*Habitat:* Subtropical and mixed broad-leaved forests.

*Distribution:* Tropical and subtropical regions in S Asia, Tibetan Plateau, S China, mainland SE Asia.

NEPAL: C & E; 1100–2000 m.

KSL: Known from Bageshwar District, Uttarakhand in KSL India.

*Representative specimen.* **UTTARAKHAND (INDIA):** Kumaon, Baisani, 1120 m (R Strachey & JE Winterbottom 2; GH 01630177<sup>1</sup> image).

**Rhaphidophora glauca** (Wall.) Schott, Bonplandia (Hannover) 5: 45 (1857). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 92 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 39 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 71 (2018).

*Pothos glaucus* Wall., Pl. Asiat. Rar. 2: 45 (1831); *Monstera glauca* K. Koch ex Ender; *Pothos wallichii* Steud., nom. illeg. superfl.; *Scindapsus glaucus* (Wall.) Schott

Differs from above in its smaller size, and smaller leaf blades, which are sometimes glaucous beneath.

*Habitat:* Subtropical and mixed broad-leaved forests.



*Distribution:* Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, Bangladesh, mainland SE Asia.

NEPAL: W, C & E; (400–)1000–2150 m.

KSL: Known from adjoining Kumaon region, Uttarakhand, India, and nearby Kailali District, Far West Nepal. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimens.* **KAILALI (NEPAL):** Sisne, 1027 m (MST Magar, C Khanal, SP Magar & BB Raji BSM15018) fide Rajbhandari & Rai (2017). **UTTARAKHAND (INDIA):** Kumaon, Turjo Valley, 915 m (R Strachey & JE Winterbottom 3; GH 01630172' image).

**Sauromatum** Schott in Schott & Endl., Melet. Bot. 17 (1832).

**Sauromatum diversifolium** (Wall. ex Schott) Cusimano & Hett., Taxon 59: 445 (2010). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 39 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 71 (2018). **Pl. 4.**

*Typhonium diversifolium* Wall. ex Schott, Aroideae 13 (1853); *Typhonium alpinum* C.Y. Wu ex H. Li, Y. Shiao & S.L. Tseng

DOZ: Lāpchikpā (लाप्चिकपा). NEP-L: Bānko (बाँको). NEP: Talu (तलु).

Perennial herbs, with a cormose tuber; leaves entire or sagittate-hastate or 3-lobed; spathe green.

*Habitat:* Meadows, damp slopes, forests, between rocks, fallow fields.

*Distribution:* Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, mainland SE Asia, SC China.

NEPAL: W, C & E; 1200–4300 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal; 1200–3800 m [Pithoragarh District, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** On trail from Budkhori to Dhahidunga Kharka, 3200 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911112, 12 Jul 2009; E00509966' image, KATH<sup>1</sup>). **DARCHULA:** Okhal, Guljar VDC, 1230 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal 824, 24 Oct 2014; TUCH<sup>1</sup>); between Ngali & Thapaligad, 2390 m (SK Ghimire, B Awasthi, S Budha Magar, B Jnawali, S Nepal, MR Paudeyal & DJ Chapagain 3176, 1 Sept 2017; TUCH<sup>1</sup>). **HUMLA:** Manal, above Dozam, 2700 m (SK Ghimire, RP Chaudhary & team P12102, 25 May 2010; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, Sumdum [Pithoragarh], 2440 m (WN Koelz 20995, 6 Jul 1948; NY03804041' image).

*Local abund.:* Frequent to common.

*Ethnobot. use:* Tubers and young leaves are cooked as vegetable.

## ALISMATACEAE

**Sagittaria** L., Sp. Pl. 2: 993 (1753).

**Sagittaria trifolia** L. Sp. Pl. 2: 993 (1753). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 93 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 42 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 74 (2018).

*Sagittaria sagittifolia* L. var. *diversifolia* M. Mich.

NEP: Kānpāte (कान्पाते).

ENG: Threeleaf arrowhead.

Perennial aquatic herbs, stoloniferous.

*Habitat*: Ponds, lakes, marshes, paddy fields, moist and shady places.

*Distribution*: S European Russia, tropical to temperate regions in Asia.

NEPAL: W & C; 100–1650 m.

KSL: Neighboring Bajura District; 1000–1500 m.

*Representative specimen*. **BAJURA**: Kaudegaon–Babali, 1510 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193843, 29 Aug 1991; KATH<sup>1</sup>).

*Consv. status*: GLB., Least Concern (Zhuang 2011).

## JUNCAGINACEAE

**Triglochin** Riv. ex L., Sp. Pl. 1: 338 (1753).

**Triglochin maritima** L. Sp. Pl. 1: 105, 339 (1753). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 94 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 45 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 76 (2018).

ENG: Sea arrowgrass, Seaside arrowgrass. TIB: naram (ན་རམ་).

Perennial aquatic herbs; rhizomes short, thick; leaves basal, linear, obtuse; scapes erect, stout, 3–30 cm; racemes densely many-flowered; perianth segments green; fruits oblong-ovoid, rounded at base.

*Habitat*: Marshy places near streams, marshy meadows, damp grasslands.

*Distribution*: Temperate N Hemisphere, Himalaya (Pakistan to Bhutan & NE India), S America.

NEPAL: W & C; 2500–4700 m.

KSL: Humla District in KSL Nepal; 4300 m [also in adjoining Pulan Xian, SW Xizang, China].

*Representative specimens*. **HUMLA**: Ning Tsho, Talung Valley, 4350 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa and S Lama CHH-1363B, 12 Sept 2012; TUCH<sup>1</sup>). **XIZANG (CHINA)**: Pulan Xian (Qinghai-Tibet team vegetation group 6751249, 1976; PE) fide Kong & Yang (2019).

*Local abund.*: Occasional in Humla.

*Consv. status*: GLB., Least Concern (Maiz-Tome 2016a).

**Triglochin palustris** L., Sp. Pl. 1: 338 (1753). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 94 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 46 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 77 (2018).

*Triglochin himalensis* Royle

ENG: Marsh arrowgrass.

Perennial aquatic herbs similar to *T. maritima*, but with longer and slender scapes, loosely flowered racemes, and cylindric fruits tapering at base.

*Habitat*: Marshy places near streams, wet meadows.

*Distribution*: Subarctic and Temperate N Hemisphere, Himalaya (N Pakistan to Bhutan), S America.

NEPAL: W, C & E; 2300–4700 m.

KSL: Darchula District in KSL Nepal; 2900 m.

*Representative specimen*. **DARCHULA**: Chhangru, 2900 m (KR Rajbhandari & KJ Malla 5764, 30 Aug 1980; KATH<sup>1</sup>).

*Consv. status*: GLB., Least Concern (Akhani & Zehzad 2014a).

## POTAMOGETONACEAE

**Potamogeton** L., Sp. Pl. 1: 126 (1753).

**Potamogeton natans** L., Sp. Pl. 1: 126 (1753). Dandy in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 95 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 47 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 77 (2018).

*Potamogeton morongii* A. Benn.; *Spirillus natans* (L.) Nieuwl.

ENG: Broad-leaved pondweed.

Perennial aquatic herbs, rhizomatous; stems usually simple or sparsely branched; leaves dimorphic; submerged leaves absent or reduced to narrowly linear, opaque phyllodes.

*Habitat*: Lakes, ponds, channels.

*Distribution*: Temperate and Subtropical Northern Hemisphere.

NEPAL: W, C & E; (1200–)2400–4400 m.

KSL: Bajhang District in KSL Nepal; 1210 m.

*Representative specimen*. **BAJHANG**: Chainpur – Jimkot, 1210 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193388, 25 Aug 1991; TI) fide SHB 2013–2020.

*Conserv. status*: GLB., Least Concern (Gupta 2013).

**Potamogeton nodosus** Poir., Encycl., Suppl. 4: 535 (1816). Dandy in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 95 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 47 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 77 (2018).

*Potamogeton indicus* Roxb.; *Potamogeton leschenaultii* Cham. & Schltdl.; *Potamogeton roxburghianus* Schult. & Schult. f.

ENG: Loddon pondweed.

Perennial aquatic herbs, rhizomatous; stems usually simple or sparsely branched; leaves dimorphic; submerged leaves petiolate, with expanded lanceolate blade.

*Habitat*: Wetlands, such as ponds and channels, rice fields.

*Distribution*: Europe, Africa, tropical to warm temperate regions in Asia, Australia, N & S America.

NEPAL: W, C & E; 200–3000 m.

KSL: Bajhang District in KSL Nepal, and neighboring Mugu; 1100–3000 m.

*Representative specimens*. **BAJHANG**: Chainpur – Jimkot, 1140–1480 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9161015, 25 Aug 1991; E00228799<sup>1</sup> image, TI). **MUGU**: Rara Lake, 2930 m (TB Shrestha & NP Manandhar 283, 15 Oct 1975; E00645622<sup>1</sup> image).

*Conserv. status*: GLB., Least Concern (Lansdown 2017a).

**Potamogeton octandrus** Poir., Encycl., Suppl. 4: 534 (1816). Dandy in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 95 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 47 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 78 (2018).

*Potamogeton asiaticus* A. Benn.; *Potamogeton parvifolius* Buchenau

ENG: Pondweed.

Annual or perennial aquatic herbs; stems filiform, branched; leaves dimorphic; submerged leaves sessile, linear to filiform.

*Habitat*: Ponds and channels, streams.

*Distribution*: Tropical Africa, tropical to temperate regions in Asia, Australasia.

NEPAL: W & C; 400–3000 m.

KSL: Known from neighboring Bajura District. It is likely also to be present within the KSL area of Nepal.

*Representative specimen.* **BAJURA:** Khaptad National Park to Kaudegaon, 2980–1900 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9161103, 28 Aug 1991; E00241010<sup>1</sup> image, KATH<sup>1</sup>, TI).

*Consv. status:* GLB., Least Concern (Lansdown 2019a).

**Potamogeton pusillus** L., Sp. Pl. 1: 127 (1753). Dandy in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 95 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 48 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 78 (2018).

*Potamogeton panormitanus* Biv.; *Spirillus pusillus* (L.) Nieuwl.

ENG: Baby pondweed, Lesser pondweed, Slender pondweed, Small pondweed.

Annual aquatic herbs; stems filiform, branched; leaves monomorphic, submerged, sessile, linear.

*Habitat:* Lakes, ponds, marshes, slowly moving water, fast flowing irrigation channels.

*Distribution:* Cosmopolitan (Europe, Africa, Asia, Americas).

NEPAL: W & C; 2100–3000 m.

KSL: Known from neighboring Mugu District. It is likely also to be present in KSL Nepal.

*Representative specimens.* **MUGU:** Near Lumsa, NW of Jumla, 2740 m (O Polunin, WR Sykes & LHJ Williams 5100, 10 Aug 1952; BM000638577, E00735791<sup>1</sup> image); Rara Daha, 2985 m (O Polunin, WR Sykes & LHJ Williams 5160, 13 Aug 1952; E00735793<sup>1</sup> image).

*Consv. status:* GLB., Least Concern (Lansdown 2019b).

## NARTHECIACEAE

**Aletris** L., Sp. Pl. 1: 319 (1753).

**Aletris pauciflora** (Klotzsch) Hand.-Mazz., Symb. Sin. 7: 1220 (1936). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 70 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 49 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 79 (2018). **PI. 5.**

*Stachyopogon pauciflorus* Klotzsch in Klotzsch & Garcke, Bot. Ergebn. Reise Waldemar: 49 (1862); *Aletris mairei* H. Lév.; *Aletris nepalensis* Hook. f. var. *delavayi* Franch.

Perennial herbs, grass-like, 10–30 cm tall; rhizome stout; leaves linear-lanceolate to linear.

*Habitat:* Open grassy slopes, rocky slopes, meadows, among shrubs, moraines.

*Distribution:* Himalaya (Pakistan to Bhutan & NE India), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 2500–4900 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Doti; 3000–4200 m.

*Representative specimens.* **BAJHANG:** Manane Lekh, summit, 4060 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915103, 13 Jul 2009; E00623909<sup>1</sup> image); between Kariganga & Aletsoura, near Saipal, 4090 m (H Tabata, KR Rajbhandari & K Tsuchiya 1881, 31 Jul 1976; KATH<sup>1</sup>). **DARCHULA:** Gauchhalighol, Pilkanda, 3800 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain 1282, 21 Jul 2015; TUCH<sup>1</sup>); upper Chamaliya Valley, Thadeula, Pilkanda, 4200 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain 1823, 21 Jul 2016; TUCH<sup>1</sup>). **DOTI:** Khaptad, 2980 m (H Tabata KR Rajbhandari & K Tsuchiya 1122, 9 Jul 1976; KATH<sup>1</sup>).

*Local abund.:* Common.

## DIOSCOREACEAE

**Dioscorea** L., Sp. Pl. 2: 1032 (1753).

**Dioscorea alata** L., Sp. Pl. 2: 1033 (1753). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 67 (1978). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 80 (2018).

NEP-L: Taud (तौड). NEP: Ghar tarul (घर तरुल).

ENG: Greater yam, Guyana arrowroot, Purple yam, Water yam.

Perennial climbing herbs, twining to right, with branched annual tubers; stems winged.

*Habitat*: Cultivated for its edible tuber.

*Distribution*: Probably originated in Tropical Asia; cultivated throughout moist tropics.

NEPAL: W, C & E; 100–1800 m.

KSL: Bajhang District in KSL Nepal; c. 1150–1500 m.

*Representative specimen*. **BAJHANG**: Chainpur–Jimkot, 1140–1480 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9191496, 25 Aug 1991; TI) fide SHB 2013–2020.

**Dioscorea belophylla** (Prain) Voigt ex Haines, Forest Fl. Chota Nagpur: 530 (1910). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 67 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 51 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 80 (2018).

*Dioscorea nummularia* Lam. var. *belophylla* Prain

NEP: Pānu tarul, Githā tarul (पानु तरुल, गिद्धा तरुल).

ENG: Spear-leaved yam. HIN: Turar (तुरर).

Perennial climbing herbs, twining to right; tubers small; stems glabrous; leaves simple, coriaceous.

*Habitat*: Plantation forests, shrublands, subtropical forests, forest margins.

*Distribution*: Tropical and subtropical regions in S Asia from Pakistan to Assam.

NEPAL: W, C & E; 100–2400 m.

KSL: Bajhang District in KSL Nepal; 2000–2100 m [Bageshwar District, Uttarakhand in KSL India]. It is likely also to be present in Baitadi and Darchula districts in Far West Nepal.

*Representative specimens*. **BAJHANG**: Between Talkot & Panalta, 2000–2100 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0221, 12 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon, Bagesar, 915 m (R Strachey & JE Winterbottom 3 [Wallich Cat. 5105]; K001142799<sup>1</sup> image).

*Local abund.*: Rare to occasional.

**Dioscorea bulbifera** L., Sp. Pl. 2: 1033 (1753). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 67 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 51 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 80 (2018). **PI. 5.**

*Dioscorea versicolor* Buch.-Ham. ex Wall., nom. nud.

NEP-L: Van taud (वन तौड). NEP: Van tarul, Githā, Githe tarul, Tarul (वन तरुल, गिद्धा, गिट्ठे तरुल, तरुल).

ENG: Aerial yam, Air yam, Bitter yam, Potato yam. HIN: Zimikand (जिमीकंद). SAN: Mukhālu (मुखालु).

Perennial climbing herbs, twining to left, with usually solitary tubers; stems glabrous; leaves simple.

*Habitat*: Forests, forest margins, shrubberies, river banks, open rocky slopes, along trail.

*Distribution*: Tropical and subtropical regions of the Old World.

NEPAL: W, C & E; 100–2800 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal; 1000–2800 m [also in Uttarakhand, India]. It is likely also to be present in Baitadi, Nepal.

*Representative specimens.* **BAJHANG:** Chainpur–Jimkot, 1140–1480 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9161011, 25 Aug 1991; E00232542<sup>1</sup> image, TI<sup>1</sup> image); Kinara–Chainpur, 1310–1540 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160999, 24 Aug 1991; E00223586<sup>1</sup> image, KATH<sup>1</sup>, TI<sup>1</sup>); between Talkot & Panalta, 2000–2100 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0182, 12 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **DARCHULA:** Lattenath, 1050 m (SK Ghimire 1821, 30 Aug 2017; TUCH<sup>1</sup>); below Paiya bisauna, way to Ghusa, 1500 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal 548, 15 Oct 2014; TUCH<sup>1</sup>); way to Lolu–Pilkanda, between Simar & Domul, 2800 m (SK Ghimire 3474, 17 Jul 2016; TUCH<sup>1</sup>). **HUMLA:** Between Darma & Pipilang, 1840 m (CA Pendry, S Baral, S Noshiro, S Rajbhandari, PP Kurmi, B Dell & B Adhikari JRS A137, 14 Jun 2008; E00392186<sup>1</sup> image, KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, Almora, 1675 m (R Strachey & JE Winterbottom 2; BM001049280<sup>1</sup> image, K001142209<sup>1</sup> image).

*Local abund.:* Frequent to common.

*Ethnobot. use:* Tubers are eaten as vegetable.

**Dioscorea deltoidea** Wall. ex Griseb. in Mart., Fl. Bras. 3(1): 43 (1842). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 67 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 51 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 80 (2018). **Pl. 5.**

*Dioscorea nepalensis* (Jacquem. ex Prain & Burkill) Sweet ex Bernardi; *Tamus nepalensis* Jacquem. ex Prain & Burkill

NEP-L: Van taud (वन तौड). NEP: Bhyākūr, Kukur tarul (भ्याकुर, कुकुर तरुल).

ENG: Deltoid yam, Nepal yam.

Perennial climbing herbs, twining to left; tubers horizontal, ginger-shaped; leaves hastate.

*Habitat:* Forests, scrubs, thickets, stream banks.

*Distribution:* Afghanistan, Himalaya (Pakistan to Bhutan & NE India), Tibetan Plateau, SC China, mainland SE Asia.

NEPAL: W, C & E; (200–)500–3100(–3900) m.

KSL: Baitadi, Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura and Mugu; 1800–2900 m [Bageshwar and neighboring Almora District, Uttarakhand in KSL India].

*Representative specimens.* **BAITADI:** Khateda, 1900 m (LP Kattel 834, 2 Jun 1982; KATH<sup>1</sup>). **BAJHANG:** Dhalaun–Rasa, 1980–2880 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9195041, 20 Aug 1991; E00223766<sup>1</sup> image, KATH<sup>1</sup>, TI<sup>1</sup>); Khaptad National Park, trail from Ghodadaune to Lohhada, 2415 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913054, 3 Jul 2009; E00624426<sup>1</sup> image). **DARCHULA:** Ngali, way to Sithi, Ghusa VDC, 2400 m (SK Ghimire IM0791, 17 Jul 2015; TUCH<sup>1</sup>). **HUMLA:** Between Dharma & Pipilang, 1840 m (CA Pendry, S Baral, S Noshiro, PP Kurmi, B Dell & B Adhikari JRS A137, 14 Jun 2008; E00392186<sup>1</sup> image); between Kermi & Salli Pass, 2600 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama 1586, 15 Sept 2012; TUCH<sup>1</sup>); Dozam, 2700 m (TR Pandey & DR Kandel 2016925, 11 Sep 2016; KATH<sup>1</sup>); Simikot, 2896 m (O Polunin, WR Sykes & LHJ Williams 4287, 9 Jun 1952; BM001049344<sup>1</sup> image, E00735828<sup>1</sup> image). **MUGU:** between Ruga & Luma, 2090 m (CA Pendry, S Baral, S Noshiro, PP Kurmi, B Dell & B Adhikari JRS A101, 10 Jun 2008; E00397501<sup>1</sup> image). **UTTARAKHAND (INDIA):** Kumaon, Binsar, 2225 m (R Strachey & JE Winterbottom 1, Wallich Cat. 51330; P00275918<sup>1</sup> image); Kumaon, Kathi, 2285 m (R Strachey & JE Winterbottom 1; K001142035<sup>1</sup> image).

*Local abund.:* Occasional to frequent.

*Ethnobot. use:* In Darchula and Humla, tuber extract is used as fish poison and to deter lice.

*Conserv. status*: NAT., Endangered (Tandon *et al.* 2001). *LOC.*, Near Threatened. It is frequently found in most of the districts in KSL Nepal. The major threats are tuber harvesting and habitat destruction. The species was subjected to heavy commercial harvesting in the past, with an annual quantity of tubers traded to be 5,200 kg in 1997/1998 from Darchula alone (Pyakurel 2018). Commercial harvesting of *Dioscorea deltoidea* tubers has declined greatly in Nepal since the past 12–15 years. At present, only a small amount of which are collected, mostly for local use in KSL Nepal.

**Dioscorea glabra** Roxb., Fl. Ind. ed. 1832, 3: 804 (1832). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 67 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 51 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 81 (2018).

NEP: Pātālī tarul (पातली तरुल).

Perennial climbing herbs, twining to right, glabrous; stems terete; leaves thin-textured, shallowly cordate or truncate at base, cuspidate or acuminate at apex.

*Habitat*: Forests.

*Distribution*: Tropical and subtropical regions in S Asia to S China and mainland SE Asia.

NEPAL: W, C & E; 100–2400 m.

KSL: Known from Bageshwar District, Uttarakhand in KSL India; and nearby Kailali District, Nepal. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimens*. **KAILALI**: South of Dhangari, 200 m (DH Nicolson 2810, 1 Dec 1966; BM001049402<sup>1</sup> image). **UTTARAKHAND (INDIA)**: Kumaon, Bagesar, 915 m (R Strachey & JE Winterbottom 3; BR0000013343590<sup>1</sup> image).

**Dioscorea hamiltonii** Hook. f., Fl. Brit. India 6: 294 (1892). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 67 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 52 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 81 (2018). **PI. 5.**

NEP-L: Van taud (वन तौड). NEP: Van tarul (वन तरुल).

ENG: Mountain yam.

Perennial climbing herbs, twining to right, glabrous; tubers cylindric, vertical; stems narrowly winged; leaves deeply cordate, cuspidate.

*Habitat*: Forests, scrubs, thickets, mountain slopes.

*Distribution*: Tropical and subtropical regions in S Asia to S China and mainland SE Asia.

NEPAL: W, C & E; 200–2400 m.

KSL: Darchula District in KSL Nepal; 1100–1300 m.

*Representative specimen*. **DARCHULA**: Lattenath, 1100 m (SK Ghimire & B Awasthi 1795, 29 Aug 2017; TUCH<sup>1</sup>).

*Local abund.*: Rare.

*Ethnobot. use*: Boiled tubers are cooked as vegetable. Tuber extract is used to treat dysentery.

*Conserv. status*: GLB., Near Threatened (Omosowon & Kell 2019). *LOC.*, Data Deficient.

**Dioscorea kamoonsensis** Kunth, Enum. Pl. 5: 395 (1850). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 68 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 52 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 81 (2018).

*Dioscorea kamoonsensis* var. *vera* Prain & Burkill

NEP: Rānī bhyākur (रानी भ्याकुर).

Perennial climbing herbs, twining to left, pubescent; stems lacking prickles; leaves palmately 3 or 5-foliate.

*Habitat:* Forests, forest margins, scrubs.

*Distribution:* Himalaya (India, Nepal, Bhutan), Tibetan Plateau, S China, mainland SE Asia.

NEPAL: W, C & E; 1500–2500(–3800) m.

KSL: Bajhang District in KSL Nepal, and neighboring Dadeldhura; 1700–2000 m [Pithoragarh, Uttarakhand in KSL India]. It is likely also to be present in Baitadi and Darchula, Nepal.

*Representative specimens.* **BAJHANG:** Talkot–Aagar, 1980 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170741, 18 Aug 1991; E00223324<sup>1</sup> image, KATH<sup>1</sup>, TI<sup>1</sup> image). **DADEL DHURA:** Dadeldhura, 1730 m (I Sharma, R Joshi, R Uprety & I Pandey 521, 17 Sept 1981; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, Lohathal [Pithoragarh], 1830 m (R Strachey & JE Winterbottom 6; islectotype of *Dioscorea kamoonsensis* var. *vera* GH 00030433<sup>1</sup> image).

*Local abund.:* Rare to occasional.

***Dioscorea melanophyma*** Prain & Burkill, J. Proc. Asiat. Soc. Bengal 4: 452 (1908). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 68 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 52 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 81 (2018).

*Dioscorea tenii* R. Knuth

Perennial climbing herbs, twining to left; stems glabrous, lacking prickles; leaves palmately 3–7-foliate.

*Habitat:* Forests, forest margins, shrubberies.

*Distribution:* W Pakistan, Himalaya (India, Nepal, Bhutan), Tibetan Plateau, SC China.

NEPAL: W & C; 1150–2500 m.

KSL: Neighboring Doti and Mugu districts in Nepal; 1400–1800 m [also in Almora, Uttarakhand, India]. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimens.* **DOTI:** Gayer, 1430 m (I Sharma, R Joshi, RK Uprety & I Pandey 509, 16 Sept 1981; KATH<sup>1</sup>); on the trail from Chainpur to Patiudi, 1800 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20919029, 6 Jul 2009; E00625014<sup>1</sup> image, KATH<sup>1</sup>). **MUGU:** Mugu-Karnali Valley, between Daura & Mangri, 2435 m (O Polunin, WR Sykes & LHJ Williams 3025, 25 Aug 1952; BM001049441<sup>1</sup> image, E00735846<sup>1</sup> image). **UTTARAKHAND (INDIA):** Kumaon, Almora, 1615 m (R Strachey & JE Winterbottom 5; BM001049443<sup>1</sup> image, K001142330<sup>1</sup> image).

***Dioscorea pentaphylla*** L., Sp. Pl. 2: 1032 (1753). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 68 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 53 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 81 (2018).

*Dioscorea jacquemontii* Hook. f.; *Dioscorea pentaphylla* var. *jacquemontii* (Hook. f.) Prain & Burkill; *Dioscorea pentaphylla* var. *suli* Prain & Burkill; *Dioscorea spinosa* Burm.; *Dioscorea triphylla* L.

NEP: Van tarul, Mithe githo, Jangali tarul (वन तरुल, मीठे गिट्टो, जङ्गली तरुल).

ENG: Fiveleaf yam. HIN: Genthī (गेंठी). SAN: Varāhi, Varāhakanda (वराही, वराहकन्द).

Perennial climbing herbs, twining to left, pubescent; stems sometimes with prickles; leaves palmately 3- or 5-foliate.

*Habitat:* Forests, forest margins, open places.

*Distribution:* Tropical region in S Asia, Himalaya (India, Nepal, Bhutan), Tibetan Plateau, S China, mainland SE Asia to N Australia.

NEPAL: W, C & E; 100–2700 m.

KSL: Known from Uttarakhand, India, and nearby Kanchanpur District, Nepal. It is likely also to be present in KSL area of Far West Nepal.



*Representative specimens.* **KANCHANPUR:** Sukla Phanta to Mahendra Nagar, 190 m (I Sharma, R Joshi, R Uprety & I Pandey 281, 11 Sept 1981; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, Almora, 1675 m (R Strachey & JE Winterbottom 4; K001142564<sup>1</sup> image).

## MELANTHIACEAE

**Paris** L., Sp. Pl. 1: 367 (1753).

**Paris polyphylla** Sm. in Rees, Cyclop. 26: Paris n. 2 (1813). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 76 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 54 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 83 (2018). **PI. 6.**

*Daiswa polyphylla* (Sm.) Raf.; *Paris daiswus* Buch.-Ham. ex D. Don; *Paris polyphylla* var. *wallichii* H. Hara

NEP-L: Sato, Satuwā (सतो, सतुवा). NEP: Satuwā, Tintale bānko (सतुवा, तीनतले बाँको).

HIN: Satwā (सतवा). TIB: loma dūnchen dawa (ལོ་མ་དུ་ནེན་དཔ་དཔ་པ་).

Erect perennial herbs, 30–60 cm tall; rhizomes thick creeping; leaves whorled, 4 or more per whorl.

*Habitat:* Moist and shady slopes, humid forests, open grassy slopes, thickets, streamsides.

*Distribution:* Himalaya (India, Nepal, Bhutan), Tibetan Plateau, C & SE China, mainland SE Asia.

NEPAL: W, C & E; 1300–3600 m.

KSL: Baitadi, Bajhang, Darchula, Humla in KSL Nepal, and neighboring Bajura and Doti; 1700–3300 m [also in Uttarakhand, India].

*Representative specimens.* **BAJHANG:** Rasa – Roshidanda, 1980–2540 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160862, 21 Aug 1991; TI<sup>1</sup> image); Bauli Gad, 2300 m (JF Dobremez 2052, 4 May 1973; BM001122830<sup>1</sup> image, KATH<sup>1</sup>); Launi, 2800 m (JF Dobremez 2096, 6 May 1973; BM001122829<sup>1</sup> image). **BAJURA:** Majpali – Pategaon, 2100 m (KR Rajbhandari 15074, 15 Aug 1991; KATH<sup>1</sup>). **DARCHULA:** Ghusa VDC, near Sithi, 2230 m (SK Ghimire, S Thapa, B Awasthi, S Lo, C Thapa Magar & MR Paudeyal 609, 16 Oct 2014; TUCH<sup>1</sup>); Brahma Lekh, 3250 m (PR Shakya & DP Joshi 558, 19 May 1971; KATH<sup>1</sup>). **DOTI:** Khaptad National Park, trail from Jhigrana to Bichpani, 2270 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911022, 1 Jul 2009; E00509854<sup>1</sup> image). **HUMLA:** Rimi – Chankheli, 2600 m (KR Rajbhandari & B Roy 4283, 2 Aug 1979; KATH<sup>1</sup>); Phucha, 2743 m (O Polunin, WR Sykes & LHJ Williams 4154, 24 May 1952; BM001122841<sup>1</sup> image, E00723793<sup>1</sup> image); Chhipra, 3200 m (SK Ghimire, RP Chaudhary & team P12410, 26 May 2010; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon (R Blinkworth Cat. no. 3710; K001119877<sup>1</sup> image).

*Local abund.:* Rare to occasional.

*Ethnobot. use:* Powder or extract of tubers is used as an external application to treat cuts and wounds, and skin affections. Tuber extract, in very small amount, is also taken to treat intestinal worms, diarrhoea and stomach pain. Plant is considered to be toxic.

*Conserv. status:* GLB., Vulnerable A4cd (Chauhan 2020). NAT., Vulnerable (Tandon *et al.* 2001). LOC., Endangered A2acd. The major threats are overharvesting of tubers for commercial trade, livestock grazing, and habitat degradation and loss. According Pyakurel *et al.* (2017, 2018), a total of 7,333 kg of *P. polyphylla* (probably also including *Trillium govanianum*) tubers were traded in the fiscal year 2014/015 from Baitadi (2,085 kg) and Darchula (5,248 kg) alone. Trade-driven harvesting has resulted population fragmentation and reduction in size. In KSL Nepal, about 50–70% population size reduction has been suspected to have occurred over the past 10 years. A recent global assessment

by Chauhan (2020) indicated a continuous population decline (>30%) over the past 10 years, and predicted further decline of >30–50% to occur between 2010 and 2070.

**Trillium** L., Sp. Pl. 1: 339 (1753).

**Trillium govanianum** Wall. ex D. Don in Royle, Ill. Bot. Himal. Mts.: 384 (1839). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 55 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 83 (2018). **Pl. 6.**

*Trillidium govanianum* (Wall. ex D. Don) Kunth, Enum. Pl. 5: 120 (1850).

NEP-L: Lek satuwā (लेक सतुवा). NEP: Nakalī satuwā (नक्कली सतुवा).

Erect perennial herbs, 5–30 cm tall, with creeping rhizomes; leaves 3, whorled.

*Habitat*: Moist and shady places, shady floor in *Abies-Betula* forests, among shrubs, rock shelters.

*Distribution*: NE Afghanistan, Himalaya (Pakistan to Bhutan), Tibetan Plateau.

NEPAL: W, C & E; 2700–4300 m.

KSL: Darchula in KSL Nepal, and neighboring Doti and Mugu; 3100–3500 m [also in Uttarakhand, India]. It is likely also to be present in Bajhang and Humla, Nepal.

*Representative specimens*. **DARCHULA**: Upper Chameliya Valley, Domul Deurali, way to Pilkanda, Ghusa VDC, 3100 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1136B, 18 Jul 2015, TUCH). **DOTI**: Khaptad, 3090 m (H Tabata, KR Rajbhandari & K Tsuchiya 1156, 12 Jul 1976; KATH). **MUGU**: Ghurchi Lagna, 3460 m (CA Pendry, S Baral, S Noshiro, S Rajbhandari, PP Kurmi, B Del & B Adhikari JRS A79, 7 Jun 2008; E00397524<sup>4</sup> image). **UTTARAKHAND (INDIA)**: Kumaon (R Blinkworth Cat. no. 812; K001111946<sup>6</sup> image, K001111947<sup>7</sup> image); Kumaon, Madhari Pass [Almora], 2895 m (R Strachey & JE Winterbottom 1; P01776293<sup>3</sup> image).

*Local abund.*: Rare.

*Ethnobot. use*: Tuber extract is applied to treat cuts and wounds. Tuber extract is also taken to treat intestinal worms, diarrhoea and stomach pain.

*Conserv. status*: GLB., Endangered A4cd (Chauhan & Bisht 2020). LOC., Critically Endangered A2acd. In KSL area, it occurs in very small, isolated populations, which are subjected to continuous human harvesting, livestock grazing, and habitat degradation and loss. In recent years, depletion of *Paris polyphylla* populations has resulted a shift in commercial harvesting pressure towards *Trillium govanianum*. Tubers of both species are indistinguishable in trade (both are traded as ‘satuwa’). In KSL area, commercial overharvesting has led to a great impact on *T. govanianum*, a population size reduction of about 80% has been suspected to have occurred over the past 10 years. A recent global assessment by Chauhan and Bisht (2020) indicated a population decline of 30–50% over the past 10 years, and predicted further decline of >50–80% to occur between 2010 and 2079 as the commercial demand of its rhizomes is expected to continue in the future.

## COLCHICACEAE

**Disporum** Salisb. ex D. Don, Prodr. Fl. Nepal. 50 (1825).

**Disporum cantoniense** (Lour.) Merr., Philipp. J. Sci. 15: 229 (1919). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 56 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 84 (2018). **Pl. 6.**

*Fritillaria cantoniensis* Lour., Fl. Cochinch.: 206 (1790); *Disporum cantoniense* var. *parviflorum* (Wall.) H. Hara; *Disporum parviflorum* (Wall.) D. Don; *Uvularia parviflora* Wall.; *Uvularia umbellata* Wall.

NEP-L: Khiraunle, Khiraunlo (खिरौले, खिरौलो). NEP: Mahājari, Sāno kukurdāino (महाजरी, सानो कुरडाइनो).

Perennial herbs, 0.5–1 m, with thick creeping rhizome and dichotomously branched stems.

*Habitat*: Shady places in forests, forest margins, among shrubs.

*Distribution*: Himalaya (India, Nepal, Bhutan), Peninsular India, Sri Lanka, Tibetan Plateau, C & SE China, mainland SE Asia to Indonesia.

NEPAL: W, C & E; (850–)1100–3000 m.

KSL: Bajhang, Darchula and Humla Districts in KSL Nepal; 2000–2500 m [Pithoragarh District, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Agara, 2000–2100 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0339, 13 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>); Bauli Gad, 2300 m (JF Dobremez 2053, 4 May 1973; E00758019<sup>1</sup> image, KATH<sup>1</sup>); Talkot, 2500 m (JF Dobremez 2365, 22 May 1973; E00758020<sup>1</sup> image).

**DARCHULA**: Nahli deurali, way to Sithi, 2300 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA 1032B, 17 Jul 2015; TUCH<sup>1</sup>). **HUMLA**: Near Darma, Tanke Khola, 2134–2438 m (O Polunin, WR Sykes & LHJ Williams, 4130, 20 May 1952; E00831113<sup>1</sup> image).

*Remarks*: Distribution records for Pithoragarh, India fide GMBA (2012–2016).

*Local abund.*: Rare to occasional in Darchula; not known for other regions.

*Ethnobot. use*: Rhizomes and young leaves are eaten as vegetable.

## **Gloriosa** L., Sp. Pl. 1: 305 (1753).

**Gloriosa superba** L., Sp. Pl. 1: 305 (1753). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 73 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 57 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 84 (2018).

*Gloriosa doniana* Schult. & Schult. f.; *Gloriosa nepalensis* G. Don

NEP: Kewari, Nepāle keorā, Pahlenlo sarvajā, Twākphūl (केवरी, नेपाले केवरा, पहेलो सर्वजा, ट्वाकफूल).

ENG: Climbing lily. HIN: Kalihārī (कलियारी). SAN: Lāngalī, Agnimukhī (लाङ्गली, अग्निमुखी).

Perennial herbs, to 1.5 m, with stout, tuberous rhizome.

*Habitat*: Open places, grassy slopes, roadsides.

*Distribution*: Tropical Africa and Asia.

NEPAL: W, C & E; 400–2200 m.

KSL: Baitadi District in KSL Nepal; 600–1000 m.

*Representative specimen*. **BAITADI**: Dhik Gad to Gokule, 600 m (PR Shakya, MK Adhikari & MN Subedi 7834, 12 Jul 1984; KATH<sup>1</sup>).

*Conserv. status*: GLB., Least Concern (Contu 2013a).

## **Iphigenia** Kunth, Enum. Pl. 4: 212 (1843).

**Iphigenia indica** (L.) A. Gray ex Kunth, Enum. Pl. 1: 213 (1833). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 73 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 57 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 84 (2018).

*Melanthium indicum* L., Mant. Pl.: 226 (1771); *Anguillaria indica* (L.) R. Br.; *Hypoxidopsis pumila* Steud. ex Baker

ENG: Indian grass lily.

Perennial herbs, 10–25 cm; bulb globose; stem erect, slender, leafy.

*Habitat*: Pine forests, shrubland, open rocky places, moist grasslands, open fields.

*Distribution*: W & C Himalaya (NW India, Nepal), Peninsular India, Sri Lanka, SC China, mainland SE Asia to Australasia.

NEPAL: W & C; 1200–2500 m.

KSL: Darchula in KSL Nepal, and neighboring Bajura; 1300–1700 m [Bageshwar District, Uttarakhand in KSL India].

*Representative specimens*. **BAJURA**: Porakya – Serigaon, 1725 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193235, 13 Aug 1991; TI) fide SHB 2013–2020. **DARCHULA**: Near Makarigad, 1400 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain 1598, 2 Aug 2015; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Bageshwar, Kumaon (R Blinkworth Wall. Cat. no. 5085; *Anguillaria indica* K001104698<sup>1</sup> image).

*Local abund.*: Rare in Darchula; not known for other regions.

## SMILACACEAE

**Smilax** L., Sp. Pl. 2: 1028 (1753).

**Smilax aspera** L., Sp. Pl. 2: 1028 (1753). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 78 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 58 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 85 (2018). **Pl. 6.**

*Smilax capitata* Buch.-Ham. ex D. Don; *Smilax maculata* Roxb. ex D. Don

NEP-L: Kukryāulo, Kukudeulo, Bākhrelaharo (कुक्याउलो, कुकुडेउलो, बाखेलहरो). NEP: Kukurdāino (कुकुरडाइनो).

ENG: Common smilax, Prickly ivy, Rough bindweed, Sarsaparilla. HIN: Chobchini, Kukurjari (चोबचिनी, कुकुरजरी). SAN: Dvīpāntaravachā, Madhusnuhi, Nāgdantī (द्वीपान्तरवचा, मधुसुन्ही, नागदन्ती).

Dioecious climbing shrubs; stems woody, ridged-angled, flexuose, unarmed or sparsely prickly.

*Habitat*: Forests, disturbed forests, forest margins, among shrubs on grassy slopes, shrubland.

*Distribution*: Macaronesia, S Europe, Africa, Tropical and Subtropical Asia (Turkey to SC China).

NEPAL: W, C & E; 400–3000 m.

KSL: Baitadi, Bajhang and Darchula in KSL Nepal, and neighboring Bajura and Doti; 800–3000 m [also in Uttarakhand, India].

*Representative specimens*. **BAJHANG**: Hillside west of Chainpur, 1333 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915052, 5 Jul 2009; E00619039<sup>1</sup> image, KATH<sup>1</sup>); Panalta, 1900–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0251, 12 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA**: Berma–Kolti, 1100 m (KR Rajbhandari 14746, 10 Aug 1991; KATH<sup>1</sup>). **DARCHULA**: Okhal, 1230 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-820, 28 Oct 2014; TUCH<sup>1</sup>); Khar VDC-2, 1930 m (BB Shrestha, M Pandey & R Chhetri 209, 29 Sept 2015; TUCH<sup>1</sup>); between Ngali & Sithi, Ghusa, 2300 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-575, 16 Oct 2014; TUCH<sup>1</sup>). **DOTI**: Gadshera, 1480 m (H Tabata, KR Rajbhandari & K Tsuchiya 717, 27 Jun 1976; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon (R Blinkworth Cat. no. 5113; K001104838<sup>1</sup> image).

*Local abund.*: Frequent to common.

*Ethnobot. use*: Plant is given as fodder to goats. Tender shoots are also consumed as vegetable. Root or leaf juice is used in folk medicine to treat wounds, skin diseases and stomach disorders.

**Smilax elegans** Wall. ex Kunth, Enum. Pl. 5: 163 (1850). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 58 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 85 (2018). **Pl. 6.**

*Smilax elegans* subsp. *glaucophylla* (Klotzsch) Noltie; *Smilax glaucophylla* Klotzsch

NEP-L: Kukryāulo, Kukudeulo, Bākhrelaharo (कुर्क्याउलो, कुकुडेउलो, बाखेलहरो). NEP: Kukurdāino (कुर्कुरडाइनो).

Dioecious climbing shrubs; stems woody, branched, without prickles; young branches zigzagged.

*Habitat*: Oak-rhododendron forests, alder secondary forests, among shrubs, thickets, shady cliffs.

*Distribution*: Himalaya (Pakistan to Bhutan & NE India), Tibetan Plateau, Myanmar.

NEPAL: W, C & E; 1300–3100 m.

KSL: Bajhang, Darchula and Humla districts in KSL Nepal, and neighboring Bajura and Doti; 1600–2700 m.

*Representative specimens*. **BAJHANG**: Badigaon – Dantola, 2230–1660 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160723, 17 Aug 1991; *Smilax glaucophylla* KATH<sup>1</sup>, TI<sup>1</sup> image). **BAJHANG/BAJURA**: Pategaon – Badigaon, 2190–2230 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160699, 16 Aug 1991; *Smilax glaucophylla* E00229418<sup>1</sup> image, TI<sup>1</sup> image); Pategaon – Badigaon, 2700 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170707, 16 Aug 1991; KATH<sup>1</sup>, TI<sup>1</sup>). **DARCHULA**: Khar VDC-2, 2150 m (BB Shrestha, M Pandey & R Chhetri 239, 29 Sept 2015; TUCH<sup>1</sup>); between Ngali & Sithi, Ghusa, 2300 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudyal & DJ Chapagain ANCA-2110, 2 Aug 2016; TUCH<sup>1</sup>). **DOTI**: Khaptad National Park, trail from Jhigrana to Bichpani, 2270 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911020, 1 Jul 2009; E00623969<sup>1</sup> image). **HUMLA**: Humla-Karnali, between Sarkeghat & Unapani, 1740 m (CA Pendry, SR Baral, S Noshiro, S Rajbhandari, PP Kurmi, B Dell & B Adhikari JRS A145, 15 Jun 2008; *Smilax elegans* subsp. *glaucophylla* E00392153<sup>1</sup> image, KATH).

*Local abund.*: Frequent.

*Ethnobot. use*: The plant is given as fodder to goats. Tender shoots are consumed as vegetable. Root or leaf juice is used as medicine to treat wounds, skin diseases and stomach disorders.

**Smilax ferox** Wall. ex Kunth, Enum. Pl. 5: 251 (1850). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 78 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 59 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 85 (2018).

NEP: Kukurdāino (कुर्कुरडाइनो).

Dioecious climbing shrubs; stems branched, woody, with recurved prickles.

*Habitat*: Broad-leaved forests, disturbed places, thickets, shrubberies.

*Distribution*: C & E Himalaya (Nepal to Bhutan & NE India), Bangladesh, S China, mainland SE Asia.

NEPAL: W, C & E; 1100–2700 m.

KSL: Known from neighboring Doti District, Nepal.

*Representative specimen*. **DOTI**: Between Saheipur & Doti (H Tabata, KR Rajbhandari & K Tsuchiya 9056, 24 Jun–4 Jul 1976; KATH<sup>1</sup>).

*Local abund.*: Not known.

**Smilax menispermoides** A. DC. in A. DC. & C. DC., Monogr. Phan. 1: 108 (1878). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 79 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 60 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 86 (2018).

*Smilax luteocaulis* H. Lévl.; *Smilax rubriflora* Rehder

NEP: Hāde kukurdāino (हाडे कुर्कुरडाइनो).

Dioecious climbing shrubs; stem branched, terete, woody, without prickles.

*Habitat*: Broad-leaved forests, disturbed places, thickets, open and rocky places.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, C China, mainland SE Asia.

NEPAL: W, C & E; 1100–3500 m.

KSL: Baitadi and Bajhang in KSL Nepal, and neighboring Bajura and Doti; 1150–3350 m.

*Representative specimens*. **BAITADI**: Shribhawar, 2480 m (TR Pandey & GD Bhatt 2016645, 6 Jun 2016, KATH<sup>1</sup>). **BAJHANG**: Chimnya, way to Kalapani, NE of Dhalun, 2900–3200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0498, 16 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA**: Berma–Kolti, 1150 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9192267, 10 Aug 1991; TI) fide SHB 2013–2020. **DOTI**: Khaptad, 3330 m (H Tabata, KR Rajbhandari & K Tsuchiya 1074, 9 Jul 1976; KATH<sup>1</sup>).

*Local abund.*: Occasional.

*Ethnobot. use*: The plant is given as fodder to goats. Root or leaf juice is used as medicine to treat wounds, skin diseases and stomach disorders.

## LILIACEAE

**Cardiocrinum** (Endl.) Lindl., Veg. Kingd. 205 (1846).

**Cardiocrinum giganteum** (Wall.) Makino, Bot. Mag. (Tokyo) 27: 125 (1913). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 71 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 62 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 88 (2018). **Pl. 6, 7.**

*Lilium giganteum* Wall., Tent. Fl. Nepal.: 21 (1826); *Lilium cordifolium* subsp. *giganteum* (Wall.) Baker

NEP: Ghiupāt (घिउपात).

ENG: Giant Himalayan lily.

Robust bulbiferous perennial herbs, 1–4 m tall; leaves >12 cm broad, heart-shaped, glossy.

*Habitat*: Shady moist places, broad-leaved forests, streamsides.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Myanmar.

NEPAL: W, C & E; 1800–3100 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Mugu; 1900–2900 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Rasa–Roshiadanda, 1950 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170869, 21 Aug 1991; KATH<sup>1</sup>, TI); between Dhalun & Kakarkot, below Deurali, 2900–2200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0560, 16 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>); between Dhuli & Inuldar, 2510 m (H Tabata, KR Rajbhandari & K Tsuchiya 1704, 26 Jun 1976, KATH); Thongnada, 2700 m (PR Shakya, LR Sharma & KR Amatya 6345, 8 Jul 1981; KATH<sup>1</sup>). **DARCHULA**: Between Bayeli & Simar, Ghusa VDC, 2400 m (SK Ghimire IM-1306, 18 Jul 2015; TUCH). **HUMLA**: On the way to Darma, 2400 m (SB Malla 14185, 9 Jul 1968; KATH<sup>1</sup>). **HUMLA/MUGU**: Chankheli Lagna, 2895 m (O Polunin, WR Sykes & LHJ Williams 4335, 19 Jun 1952; E00736106<sup>1</sup> image). **UTTARAKHAND (INDIA)**: Kumaon, Younrani, 2130 m (RC Thakur 797, 25 Jun 1948; MICH1489908<sup>1</sup> image).

*Local abund.*: Rare to occasional.

**Clintonia** Raf., Amer. Monthly Mag. & Crit. Rev. 2: 266 (1818).

**Clintonia udensis** Trautv. & C.A. Mey. var. **alpina** (Kunth ex Baker) H. Hara, J. Jap. Bot. 38: 72 (1963). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 72 (1978). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 88 (2018). **Pl. 7.**

*Clintonia alpina* Kunth ex Baker, J. Linn. Soc., Bot. 14: 585 (1875); *Clintonia udensis* subsp. *alpina* (Kunth ex Baker) Kitam

Perennial herbs; with short, stiff rhizome, covered with fibrous sheaths; leaves in basal rosettes.

*Habitat*: Shady places in mixed forests, shady banks, streamsides.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 3000–4100 m.

KSL: Darchula, Bajhang and Humla in KSL Nepal, and neighboring Bajura and Mugu; 3000–3600 m.

*Representative specimens*. **BAJHANG**: Dhuli, 3000 m (JF Dobremez 2224, 14 May 1973; E00758090<sup>3</sup> image); Thongnada – Surmasarowar, 3353 m (TB Shrestha 4175, 6 Jun 1965; KATH<sup>1</sup>). **HUMLA/MUGU**: Chankheli, 3350 m (PR Shakya, MN Subedi & RK Uprety 8646, 14 Aug 1985; KATH<sup>1</sup>); Chankheli Lagna, 3350 m (O Polunin, WR Sykes & LHJ Williams 4119, 19 May 1952; E00736031<sup>1</sup> image). **MUGU**: Ghurchi Lekh, between Lumsa & Murma, 3350 m (O Polunin, WR Sykes & LHJ Williams 5141, 11 Aug 1952; E00736028<sup>1</sup> image).

*Local abund.*: Rare to occasional in Bajhang and Darchula, not known for other districts.

**Fritillaria** L., Sp. Pl. 1: 303 (1753).

**Fritillaria cirrhosa** D. Don, Prodr. Fl. Nepal.: 51 (1825). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 72 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 63 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 88 (2018). **Pl. 7.**

*Baimo cirrhosa* (D. Don) Raf.; *Fritillaria cirrhosa* subsp. *roylei* (Hook.) Ali; *Fritillaria roylei* Hook.

NEP: Ghāndevish, Podyā (घण्डेविष, पोड्या). NEP: Van lasun, Kākoli (वन लसुन, काकोली).

ENG: Himalayan fritillaria. HIN/SAN: Kākoli (काकोली). TIB: abisha (ཇའིཤ).

Perennial bulbous herbs; bulbs subglobose, with whitish fleshy scales; stem erect, simple, leafy; flowers campanulate, nodding, with yellow or yellowish-green tepals spotted with purple.

*Habitat*: Open grassy slopes, moist alpine meadows, among shrubs, thickets, forests.

*Distribution*: Himalaya (Pakistan to Bhutan & NE India), Tibetan Plateau, N Myanmar, C China.

NEPAL: W, C & E; 3000–4800 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Doti and Mugu; 3000–4500 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: South of Dhuli, 3200 m (TB Shrestha 4137, 21 May 1965; KATH<sup>1</sup>); Ramkot, 3500 m (JF Dobremez 2195, 13 May 1973; E00758023<sup>1</sup> image); Surmasarowar, 3500 m (JF Dobremez 2121, 8 May 1973; E00758022<sup>1</sup> image, KATH<sup>1</sup>). **DARCHULA**: Lolu, Pilkanda, 3710 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1226, 21 Jul 2015; TUCH<sup>1</sup>); Dhaulio Odar to Nete, 3800 m (CK Subedi, J Gurung & S Thapa 85, 22 Jun 2014; TUCH<sup>1</sup>); way to Kalidhunga Tal, above Pilkanda campside, 3800 m (SK Ghimire & B Awasthi IM-4117, 27 Jul 2016, TUCH<sup>1</sup>). **DOTI**: Kaptar [Khaptad], 3000 m (JF Dobremez 1921, 22 Apr 1973; E00758025<sup>1</sup> image). **HUMLA**: Above Tugling, Changla Khola, Dozam, 3600 m (SK Ghimire, RP Chaudhary & team P11080, 23 May 2010; TUCH<sup>1</sup>); Chungsa Valley, Khyunkar La, 4500 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH 1243, 7 Sept 2012; TUCH<sup>1</sup>). **MUGU**: Ghurchi Lagna, 3505 m (O Polunin, WR Sykes & LHJ Williams 4077, 14 May 1952; E00736054<sup>1</sup> image). **UTTARAKHAND (INDIA)**: Kumaon, Yangchar, 3350 m (RC Thakur 759, 22 Jun 1948; L.1444771<sup>1</sup> image, MICH 1489887<sup>1</sup> image).

*Local abund.*: Rare to occasional.

*Ethnobot. use*: Bulbs are used to treat respiratory and gastrointestinal disorders, and eaten raw or roasted as a general tonic. Bulbs are also given to livestock as an antidote against aconite or other poisonings.

*Conserv. status*: NAT., Vulnerable (Tandon *et al.* 2001). LOC., Vulnerable A2acd. Threat is mainly due to unsustainable harvesting of underground bulbs, and overgrazing. Bulbs are extensively harvested for trade in almost all of the districts within KSL, leading to a decline (suspected to be 30–50%) of natural population over the past 10 years. According to Pyakurel *et al.* (2018), 1,530 kg of *Fritillaria cirrhosa* bulbs were traded in the fiscal year 2014/015 from Darchula District alone.

**Gagea** Salisb., Ann. Bot. (Oxford). 2: 555 (1806).

**Gagea lutea** (L.) Ker Gawl., Bot. Mag. 30: t. 1200 (1809). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 63 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 88 (2018). **Pl. 7.**

*Ornithogalum luteum* L., Sp. Pl. 1: 306 (1753); *Gagea elegans* Wall. ex G. Don

NEP-L: Khiraunle (खिरौले).

ENG: Yellow star of bethlehem.

Small perennial herbs; bulbs small, ovoid, with membranous, chocolate-brown tunic; stem simple; basal leaves linear; flowers yellow.

*Habitat*: Shady places in forests, thickets, grassy slopes, grazed pastures.

*Distribution*: Europe, Temperate Asia, Himalaya (N Pakistan to NE India: Sikkim).

NEPAL: W & C; 2800–4300 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal; 3000–3700 m [also in Uttarakhand, India].

*Representative specimens*. **BAJHANG**: Gurel Lekh, 3000 m (NK Bhattarai 90/1193, 1 Sept 1990; KATH<sup>1</sup>); near Dochand, north of Dhuli, 3475 m (TB Shrestha 4157, 25 May 1965; KATH<sup>1</sup>). **DARCHULA**: Api Khola (JB Tyson 19; BM) fide Rajbhandari & Rai (2017); Bramha Daha, Kawa Lekh, 3680 m (PR Shakya & DP Joshi 550, 18 May 1971; KATH<sup>1</sup>). **HUMLA**: Above Tugling, Changla Khola, Dozam, 3600 m (SK Ghimire, RP Chaudhary & team P10753, 21 May 2010; TUCH<sup>1</sup>); Dozam Khola, near Simikot, 3658 m (O Polunin, WR Sykes & LHJ Williams 4233, 31 May 1952; E00214412<sup>1</sup> image). **UTTARAKHAND (INDIA)**: Near the Pindari Glacier (CE Parkinson 5963, 10 Jun 1935; B100190826<sup>1</sup> image).

*Local abund.*: Rare to occasional in Darchula and Humla; not known for Bajhang.

*Ethnobot. use*: Bulbs are eaten as tonic.

**Gagea serotina** (L.) Ker Gawl., Quart. J. Roy. Inst. 1: 180 (1816). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 64 (2017). **Pl. 8.**

*Bulbocodium serotinum* L., Sp. Pl. 1: 294 (1753); *Lloydia serotina* (L.) Rchb.; *Lloydia serotina* f. *parva* C. Marq. & Airy Shaw; *Lloydia serotina* var. *parva* (C. Marq. & Airy Shaw) H. Hara; *Ornithogalum serotinum* (L.) Rchb.

NEP-L: Nān kākoli, Nān podyā (नान काकोली, नान पोड्या).

ENG: Common alplily, Snowdon alplily.

Perennial herbs; bulbs small, ovoid, covered with a membranous, pale tunic, forming an elongate collar; stems simple; basal leaves filiform; flowers white, with pinkish-purple veins; filaments glabrous.

*Habitat*: Thickets, grassy slopes, alpine meadows, rock ledges, moss covered rocks, rocky cliffs.

*Distribution*: Europe, N Africa, subtropical and temperate regions in Asia, N America.



NEPAL: W, C & E; 3300–4900 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal; 3500–4700 m.

*Representative specimens.* **BAJHANG:** Dachaud, Saipal, 3475 m (TB Shrestha 4156, 25 May 1965; KATH<sup>3</sup>); Aletsoura, near Saipal, 4363 m (H Tabata, KR Rajbhandari & K Tsuchiya 1923, 31 Jul 1976; KATH<sup>3</sup>). **DARCHULA:** Gauchhalighol, Api base, GLORIA SMD, 4250 m (SK Ghimire & B Awasthi IM-2910, 24 Jul 2015; TUCH<sup>3</sup>). **HUMLA:** Dozam Khola, near Simikot, 3505 m (O Polunin, WR Sykes & LHJ Williams 4226, 30 May 1952; E00214423<sup>3</sup> image); Simikot Lagna, above Simikot, 4230 m (CA Pendry, S Baral, S Noshiro, PP Kurmi, B Dell & B Adhikari JRS A200, 20 Jun 2008; E00392115<sup>3</sup> image); Chungsa, Khyunkar La, 4640 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1802, Sept 2012; TUCH<sup>3</sup>).

*Local abund.:* Rare to occasional in Darchula and Humla; not known for Bajhang.

*Ethnobot. use:* Bulbs are eaten as tonic for strengthening physical vigour.

## **Lilium** L., Sp. Pl. 1: 302 (1753).

**Lilium nanum** Klotzsch in Klotzsch and Garcke, Bot. Ergebn. Reise Pr. Waldemar: 53 (1862). Stern in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 73 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 64 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 89 (2018). **PI. 7.**

*Fritillaria gardneriana* Wall. ex Baker; *Fritillaria stracheyi* Hook. f.; *Nomocharis nana* (Klotzsch) E.H. Wilson

NEP-L: Podyā, Nān podyā (पोड्या, नान पोड्या).

Erect perennial herbs, 15–25 cm tall; bulbs small, oblong, with many imbricate, fleshy, white scales, without tunic; leaves linear; flowers small, drooping, reddish-purple to lilac.

*Habitat:* Forest margins, meadows, alpine thickets, alpine grasslands, open slopes.

*Distribution:* Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 3400–4800 m.

KSL: Darchula and Humla in KSL Nepal, and neighboring Bajura; 3400–4500 m.

*Representative specimens.* **BAJURA:** Babali – Sanfegagar (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9161152, 30 Aug 1991; TI) fide SHB 2013–2020. **DARCHULA:** Ghusa VDC, near Bhabaye Khola, above Dhauleodar, 3600 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain 1096, 18 Jul 2015; TUCH<sup>3</sup>); Thadapani, Pilkanda, 4100 m (SK Ghimire, B Awasthi, S Budha Magar, B Jnawali, S Nepal, MR Paudeyal & DJ Chapagain 3373, 6 Sept 2017; TUCH<sup>3</sup>); Thadeula, Pilkanda, 4200 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain 1827, 21 Jul 2016; TUCH<sup>3</sup>). **HUMLA:** Margor Lagna, 3962 m (O Polunin, WR Sykes & LHJ Williams 4318, 16 Jun 1952; E00736123<sup>3</sup> image); Chungsa Valley, Khyunkar La, 4500 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1243B, 7 Sept 2012; TUCH<sup>3</sup>).

*Local abund.:* Rare to occasional in Darchula and Humla.

*Ethnobot. use:* Bulbs are eaten as tonic for strengthening physical vigour.

*Conserv. status:* LOC., Near Threatened. Threat is mainly due to unsustainable harvesting and over-grazing. Bulbs of *Lilium nanum* are traded mixed with those of *Fritillaria cirrhosa*.

**Lilium nepalense** D. Don, Mem. Wern. Nat. Hist. Soc. 3: 412 (1820). Stern in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 74 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 65 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 89 (2018). **PI. 7.**

*Lilium ochroleucum* Wall. ex Baker

NEP-L: Khiraunle, Pindarā, Pinarā (खिरौले, पिंडरा, पिनरा). NEP: Khiraunle, Van lasun (खिरौले, वन लसुन).

ENG: Nepal lily.

Erect perennial herbs, 50–100 cm tall; bulbs subglobose, with fleshy white scales without tunic; leaves elliptic to oblong-lanceolate; flowers large, drooping, greenish-yellow outside, purplish within.

*Habitat*: Shady places in forests, forest margins, thickets, moist grasslands, grassy slopes, rocky banks.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, mainland SE Asia, SC China.

NEPAL: W, C & E; 1500–3800 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Mugu; 2300–3300 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: On trail from Pasela to Banjh, 2372 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911134, 16 Jul 2009; E00509932<sup>1</sup> image, KATH<sup>1</sup>); Chimnya, way to Kalapani, NE of Dhalun, 2900–3200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0507, 16 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **DARCHULA**: Between Patu & Ghusa, 2100 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1002, 16 Jul 2015; TUCH<sup>1</sup>); Shitri Deurali, way to Khayakot, 2200 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1025, 17 Jul 2015; TUCH<sup>1</sup>); Kasoti–Chheti, 2550 m (PR Shakya, MK Adhikari & MN Subedi 7976, 20 Jul 1984; KATH<sup>1</sup>); Chheti, 3275 m (TR Pandey & S Panthi, 2014914, 27 Sept 2014, KATH<sup>1</sup>). **HUMLA**: Puma (FM Bailey s.n., 16 Jun 1936; E00736119<sup>1</sup> image). **MUGU**: Bumra, near Ghurchi Lagna, 3200 m (O Polunin, WR Sykes & LHJ Williams 4355, 22 Jun 1952; E00736110<sup>1</sup> image). **UTTARAKHAND (INDIA)**: Kumaon, between Paton and Chilkot, 2830 m (RC Thakur 819, 26 Jun 1948; L.1451284<sup>1</sup> image, MICH 1489849<sup>1</sup> image).

*Local abund.*: Occasional to frequent.

*Ethnobot. use*: Bulbs are eaten raw or roasted.

*Conserv. status*: NAT., Data Deficient (Tandon *et al.* 2001). LOC., Least Concern.

**Lilium oxypetalum** (D. Don) Baker, J. Linn. Soc. Bot. 14: 234 (1874). Stern in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 74 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 65 (2017). **PI. 7.**

*Fritillaria oxypetala* D. Don in Royle, Ill. Bot. Himal. Mts. 1: 388 (1840); *Lilium oxypetalum* var. *insigne* Sealy; *Lilium triceps* Klotzsch; *Nomocharis oxypetala* (D. Don) E.H. Wilson

NEP-L: Kākoli, Podyā (काकोली, पोड्या).

ENG: Oxypetalum lily, Yellow Himalayan lily.

Erect perennial herbs, 30–50 cm tall; bulbs large with imbricate, fleshy scales, without tunic; leaves many, elliptic-lanceolate; flowers pale yellow.

*Habitat*: Forests, thickets, grassy slopes, meadows.

*Distribution*: W & C Himalaya (Kashmir to Nepal).

NEPAL: W; 3100–4100(–?5100) m.

KSL: Darchula and Humla in KSL Nepal, and neighboring Mugu; 3300–4100 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **DARCHULA**: Marma – Khadi, Muna Lekh 3353 m (TB Shrestha 4215, 17 Jun 1965; KATH<sup>1</sup>); Pilkanda, 3700 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1203, 21 Jul 2015; TUCH<sup>1</sup>); Ringde, way to Pilkanda, 3850 m (SK Ghimire, B Awasthi, S Budha Magar, B Jnawali, S Nepal, MR Paudeyal & DJ Chapagain 3320, 6 Sept 2017; TUCH<sup>1</sup>). **HUMLA**: Durpa, Humla Karnali, 3350 m (O Polunin, WR Sykes & HJ Williams 4309, 15 Jun 1952; P02105844<sup>1</sup> image); Simikot Lagna, above Simikot, 3850 m (CA Pendry, S Baral, S Noshiro, S Rajbhandary, PP Kurmi, B Dell & B Adhikari JRS A231, 21 Jun 2008; E00397487<sup>1</sup> image). **MUGU**: Wangri, 3100 m (PR Shakya & B Roy 5645, 13

Jun 1980; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon, Pindari, 3655 m (R Strachey & JE Winterbottom 4; K000900788' image).

*Local abund.*: Rare to occasional in Nepal.

*Ethnobot. use*: Bulbs are eaten as tonic for strengthening physical vigour, and also to treat respiratory and gastrointestinal disorders.

*Conserv. status*: LOC., Data Deficient. It is suspected to be threatened due to harvesting of bulbs for trade, and overgrazing. However, there is a lack of information on amount of trade, population size and extent of harvesting impact.

**Lloydia** Salisb. ex Rchb., Fl. Germ. Excurs.: 102 (1830).

**Lloydia longiscapa** Hook., Hooker's Icon. Pl. 9: t. 834 (1851). Stern in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 74 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 66 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 90 (2018). **PI. 8.**

*Gagea pulchella* Wall., nom. nud.

NEP-L: Nān kākoli, Nān podyā (नान काकोली, नान पोड्या).

Perennial herbs like *Gagea serotina*, but with inner petals hairy within at the base and with hairy stamens.

*Habitat*: Thickets, grassy slopes, mossy rock, cliffs, meadows.

*Distribution*: Himalaya (Kashmir to Bhutan).

NEPAL: W, C & E; 3600–5000 m.

KSL: Darchula in KSL Nepal; 4100–4500 m.

*Representative specimens*. **DARCHULA**: Thadapani, Pilkanda-Lolu, 4100 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1401, 23 Jul 2015; TUCH<sup>1</sup>); Channi-API Base, Pilkanda-Lolu, 4400–4500 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1460, 24 Jul 2015; TUCH<sup>1</sup>).

*Local abund.*: Rare to occasional.

*Ethnobot. use*: Bulbs are eaten as a tonic for strengthening physical vigour. Bulbs are also used to treat stomach disorders.

**Notholirion** Wall. ex Boiss., Fl. Orient. 5: 190 (1882).

**Notholirion macrophyllum** (D. Don) Boiss., Fl. Orient. 5: 190 (1882). Stern in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 75 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 67 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 91 (2018).

*Fritillaria macrophylla* D. Don, Prodr. Fl. Nepal.: 51 (1825); *Lilium macrophyllum* (D. Don) Voss

Perennial herbs; bulbs narrowly ovoid, few-scaled, covered with brown outer tunic; stem erect, stout, to 40 cm, leafy; leaves linear to linear-lanceolate; flowers funnel-shaped, pale violet to purple-red borne on few-flowered racemes.

*Habitat*: On mossy rocks in forests, forest margins, moist or shady grassy slopes, rocky slopes.

*Distribution*: C & E Himalaya (Nepal to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; (1400–)2100–4400 m.

KSL: Humla in KSL Nepal; 3300 m.

*Representative specimen*. **HUMLA**: Lare Khola, 3300 m (D Pyakurel 40, 4 Jun 2000; TUCH<sup>1</sup>).

*Local abund.*: Not known (probably rare).

**Streptopus** Michx., Fl. Bor.-Amer. 1: 200 (1803).

**Streptopus simplex** D. Don, Prodr. Fl. Nepal.: 48 (1825). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 80 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 67 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 91 (2018). **Pl. 8.**

NEP-L: Khiraunlo (खिरौलो).

Perennial herbs, with creeping rhizome; stem erect or ascending, simple or branched above, glabrous.

*Habitat*: Forests, forest margins, bamboo thickets, along streams.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, N Myanmar, SC China.

NEPAL: W, C & E; 1800–4000 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 2400–4000 m.

*Representative specimens*. **BAJHANG**: Godi Lekh, 3333 m (H Tabata, KR Rajbhandari & K Tsuchiya 2432, 13 Aug 1976; KATH<sup>1</sup>); Ghodi Lekh, 4000 m (MS Bista & DP Joshi 496, 17 August 1972; KATH<sup>1</sup>). **BAJURA**: Pategaon – Badigaon (M Suziki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160664, 16 Aug 1991; TI) fide SHB 2013–2020. **DARCHULA**: Ghusa VDC, between Simar & Domul, 2800 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1056, 18 Jul 2015; TUCH<sup>1</sup>); between Domul & Dhauliodar, way to Lolu, 3000 m (SK Ghimire & B Awasthi IM-2172, 3 Sept 2017; TUCH<sup>1</sup>).

*Local abund.*: Occasional in Darchula; not known for other districts.

*Ethnobot. use*: Young rhizomes and tender shoots are eaten as vegetable.

## ORCHIDACEAE

**Aerides** Lour., Fl. Cochinch. 2: 525 (1790).

**Aerides multiflora** Roxb., Pl. Coromandel 3: 68 (1820). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 31 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 68 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 92 (2018). **Pl. 8.**

*Aerides affinis* Wall. ex Lindl.; *Epidendrum geniculatum* Hook. f.

NEP: Sunākharī (सुनाखरी).

ENG: Cat's tail orchid, Fox brush orchid, Foxtail orchid.

Epiphytic herbs, erect or pendent; roots fibrous, fleshy; stems stout, many-leaved.

*Habitat*: On trees in forests.

*Distribution*: Tropical region S Asia, Himalaya (India, Nepal, Bhutan), mainland SE Asia.

NEPAL: W, C & E; 200–1700 m.

KSL: Darchula and Bajhang in KSL Nepal; 750–1650 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Sundi Khola, 960 (PR Shakya, MK Adhikari & MN Subedi 8313, 5 Aug 1984; KATH<sup>1</sup>); Chir, 1650 m (P Pradhan, RK Uprety, N Pradhan & N Dabadi 1302, 14 Apr 1984; KATH<sup>1</sup>).

*Remarks*: Distribution record for Pithoragarh fide Jalal (2004).

**Brachycorythis** Lindl., Gen. Sp. Orchid. Pl.: 363 (1838).

**Brachycorythis obcordata** (Lindl.) Summerh., Kew Bull. 10: 243 (1955). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 32 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 71 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 95 (2018).

*Platanthera obcordata* Lindl., Gen. Sp. Orchid. Pl.: 290 (1835); *Gymnadenia obcordata* (Lindl.) Rchb. f.; *Habenaria obcordata* (Lindl.) Fyson; *Phyllomphax obcordata* (Lindl.) Schltr.

NEP: Gāmdol, Gāngdol (गामढोल, गाङ्गडोल).

Terrestrial herbs, to 20 cm; tubers globose to cylindric; stems erect, glandular-pubescent.

*Habitat*: Shady places in forests, moist slopes, open rocky slopes.

*Distribution*: Tropical region in S Asia, Himalaya (India, Nepal, Bhutan), Bangladesh, Myanmar.

NEPAL: W, C & E; 600–2600 m.

KSL: Baitadi, Darchula and Bajhang in KSL Nepal, and neighboring Bajura and Dadeldhura; 900–2200 m [Pithoragarh and neighboring Almora District, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Kinara–Chainpur, 1310–1540 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160994, 24 Aug 1991; A 01949358<sup>1</sup> image, E00104752<sup>1</sup> image, TI<sup>1</sup> image); Agar, 1540 m (MS Bista & DP Joshi 559, 18 Aug 1972; KATH<sup>1</sup>). **BAJURA**: Rigla, 1200 m (MS Bista & DP Joshi 320, 11 Aug 1972; KATH<sup>1</sup>). **DADEL DHURA**: Lipna, 900 m (KR Rajbhandari, PM Regmi & KJ Malla 5184, 11 Aug 1980; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Pithoragarh, Thal, 1219 m (WN Koelz 21509, 5 Aug 1948; MICH1492865<sup>1</sup> image); Almora, Jagesar, 2134 m (R Strachey & JE Winterbottom 40; GH 01949347<sup>1</sup> image, P00364009<sup>1</sup> image).

*Local abund.*: Rare to occasional.

*Ethnobot. use*: Tubers are used as an expectorant and tonic.

*Conserv. status*: LOC., Vulnerable A2acd. The major threats are overharvesting of tubers for trade, livestock grazing, and habitat degradation. Pyakurel *et al.* (2018) estimated the annual trade of tubers from Darchula District alone to be 200 kg in the fiscal year 2014/015. The quantity traded from the same district in 1997/98 was 1,200 kg (cited in Pyakurel *et al.* 2018). About 30–50% population size reduction has been suspected over the last 10 years mainly due to trade-driven harvesting.

## **Bulbophyllum** Thouars, Hist. Orchid.: t. 3 (1822).

**Bulbophyllum triste** Rchb. f. in W.G. Walpers, Ann. Bot. Syst. 6: 253 (1861). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 34 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 77 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 99 (2018).

*Bulbophyllum alopecurus* Rchb. f.; *Bulbophyllum mackeanum* Guillaumin; *Bulbophyllum micranthum* Hook. f.; *Phyllorkis alopecurus* (Rchb. f.) Kuntze; *Phyllorkis tristis* (Rchb. f.) Kuntze

Epiphytic herbs, with stout rhizomes and subglobose pseudobulbs.

*Habitat*: Forests.

*Distribution*: Himalaya (India, Nepal, Bhutan), Myanmar, SC China, Thailand.

NEPAL: C & E; 1200–2300 m.

KSL: Pithoragarh, Uttarakhand in KSL India. It is likely also to be present in Far West Nepal.

*Representative specimen*. **UTTARAKHAND (INDIA)**: Kumaon, Shanidev, Askot, 1900 m (CM Arora 36448, 12 Nov 1965; L.1493444<sup>1</sup> image).

## **Calanthe** R. Br., Bot. Reg. 7: 573 (1821).

**Calanthe alpina** Hook. f. ex Lindl., Fol. Orchid. 6: 4 (1855). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 34 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 78 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 100 (2018).

*Alismorkis alpina* (Hook. f. ex Lindl.) Kuntze; *Calanthe fimbriata* Franch.

Terrestrial herbs, 20–40 cm tall.

*Habitat*: Moist places in forests, grassy slopes.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, C China to Japan.

NEPAL: W, C & E; 1900–4000 m.

KSL: Bajhang and Humla in KSL Nepal, and neighboring Mugu; 2700–3030 m.

*Representative specimens*. **BAJHANG**: Above Thongnada, 2700 m (PR Shakya, LR Sharma & KR Amatya 6344, 8 Jul 1981; KATH<sup>1</sup>). **HUMLA/MUGU**: Chankheli Lagna, 3030 m (O Polunin, WR Sykes & LHJ Williams 4332, 19 Jun 1952; BM000514457<sup>1</sup> image).

*Local abund.*: Not known (probably rare).

***Calanthe himalaicum*** Raskoti, Phytotaxa 394 (4): 257 (2019).

Terrestrial herbs, 20–32 cm tall.

*Habitat*: Forest margins, moist shady slopes.

*Distribution*: Endemic to Nepal, W; 2200 m.

KSL: Known from neighboring Doti District, Nepal; 2200 m.

*Representative specimen*. **DOTI**: Wagalek, 2200 m (BB Raskoti 0019, 11 Aug 2011; holotype KATH<sup>1</sup>).

***Calanthe mannii*** Hook. f., Fl. Brit. India 5: 850 (1890). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 34 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 80 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 101 (2018). **PI. 9.**

*Alismorkis mannii* (Hook. f.) Kuntze; *Calanthe brachychila* Gagnep.; *Calanthe pusilla* Finet

Terrestrial herbs, 30–40 cm tall.

*Habitat*: Shady and moist places, forests.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, S China to Japan, mainland SE Asia.

NEPAL: W, C & E; 1500–2500 m.

KSL: Darchula in KSL Nepal; 2100–2300 m [also in Almora, Uttarakhand, India].

*Representative specimens*. **DARCHULA**: Khar VDC-5, 2090 m (BB Shrestha, M Pandey & R Chhetri 277, 3 Oct 2015; TUCH<sup>1</sup>); Paripatal CF, Khar, 2300 m (CK Subedi, J Gurung & M Pandey 4017, 4 Jun 2015; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Below Ranikhet (JF Duthie 5996, 30 May 1886; K000810903<sup>1</sup> image).

*Local abund.*: Rare in Darchula.

***Calanthe plantaginea*** Lindl., Gen. Sp. Orchid. Pl.: 250 (1833). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 35 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 80 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 101 (2018).

Terrestrial herbs, 30–60 cm tall.

*Habitat*: Shady places in evergreen broad-leaved forests.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, SC China.

NEPAL: W & C; 1200–2500 m.

KSL: Bajhang and Darchula in KSL Nepal; 1900–2000 m.

*Representative specimen*. **BAJHANG**: Dyolekh, 1950 m (P Pradhan, RK Uprety, N Pradhan & N Dabadi 1317, 15 Apr 1984; KATH<sup>1</sup>).

*Remarks*: Distribution record for Darchula (Cat. no. 40797991) fide Ueda (2020).

*Local abund.*: Not known (probably rare).

**Calanthe puberula** Lindl., Gen. Sp. Orchid. Pl.: 252 (1833). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 35 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 80 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 101 (2018).

*Alismorkis puberula* (Lindl.) Kuntze; *Calanthe amoena* W.W. Sm.; *Calanthe similis* Schltr.

Terrestrial herbs, 25–60 cm tall.

*Habitat*: Moist and shady places, broad-leaved forests.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Bangladesh, mainland SE Asia, S China to Japan.

NEPAL: W, C & E; 1500–3000 m.

KSL: Bajhang in KSL Nepal, and neighboring Doti; 2500–2700 m.

*Representative specimens*. **BAJHANG**: Surma Sarovar to Takundanda, 2500 m (JF Dobremez 2140, 9 May 1973; E00614271<sup>1</sup> image); Dhuli, 2700 m (JF Dobremez 2213, 14 May 1973; E00614272<sup>1</sup> image). **DOTI**: Kapthad, 2600 m (H Tabata, Rajbhandari & K Tsuchiya 1294, 15 Jul 1976; KATH<sup>1</sup>).

*Local abund.*: Not known (probably rare).

**Calanthe tricarinata** Lindl., Gen. Sp. Orchid. Pl.: 252 (1833). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 35 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 81 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 101 (2018). **PI. 8.**

*Alismorkis tricarinata* (Lindl.) Kuntze; *Calanthe occidentalis* Lindl.; *Calanthe pantlingii* Schltr.

Terrestrial herbs, 30–50 cm tall.

*Habitat*: Moist grassy slopes, dense mixed forests, forest margins, trailsides.

*Distribution*: Himalaya (Pakistan to Bhutan), Tibetan Plateau, mainland SE Asia, C China to Japan.

NEPAL: W, C & E; 1350–3500 m.

KSL: Baitadi, Bajhang, Darchula and Humla in KSL Nepal, and neighboring Mugu; 2100–3300 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAITADI**: Shribhawa, 2432 m (TR Pandey & GD Bhatt 2016601, 5 Jun 2016, KATH<sup>1</sup>). **BAJHANG**: Dhuli, Seti Khola, 2500 m (A Maire AMA 949; 14 May 1973; E00634730<sup>1</sup> image); Gorkhali Lekh, 3300 m (NK Bhattarai 90/1231, 1 Sept 1990; KATH<sup>1</sup>). **DARCHULA**: Khandeshwari, 2500 m (CK Subedi, J Gurung & S Thapa 3008, 16 Jun 2014; TUCH<sup>1</sup>); Ghusa VDC, Domul Deurali, 2950 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain 1136, 18 Jul 2015; TUCH<sup>1</sup>). **HUMLA**: Between Chankheli Lagna & Darma, 2134–2438 m (O Polunin, WR Sykes & LHJ Williams 4135, 20 May 1952; E00694038<sup>1</sup> image). **MUGU**: Ghurchi Lekh, 2800 m (PR Shakyia & B Roy 5437, 29 May 1980; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Pithoragarh, Girgaon, 2438 m (WN Koelz 20616, 6 Jul 1948; NY 04012704<sup>1</sup> image).

*Local abund.*: Occasional to frequent in Baitadi and Darchula; not known for other regions.

**Cephalanthera** Rich., De Orchid. Eur. 21, 29, 38 (1817).

**Cephalanthera erecta** (Thunb.) Blume, Coll. Orchid.: 188 (1859).

*Serapias erecta* Thunb. in J.A. Murray, Syst. Veg., ed. 14: 816 (1784); *Cephalanthera erecta* var. *oblanceolata* N. Pearce & P.J. Cribb; *Epipactis erecta* (Thunb.) Sw. **PI. 9.**

Terrestrial herbs, 10–30 cm tall.

*Habitat*: *Quercus-Rhododendron* forests.

*Distribution*: C & E Himalaya (Nepal, Bhutan), C & SE China to Japan.

NEPAL: W & C; 2000–2300 m.

KSL: Darchula in KSL Nepal; 2100–2300 m.

*Representative specimen.* **DARCHULA:** Api-Nampa Conservation Area, Khar VDC, Paripatal Women Community Forest, 2100–2300 m (P Bhandari, M Pandey & S Thapa K100–2016, 2 Jun 2016; KATH<sup>1</sup>).

*Local abund.:* Rare.

*Conserv. status:* GLB., Data Deficient (BEFPW 2017).

**Cephalanthera longifolia** (L.) Fritsch, Oesterr. Bot. Z. 38: 81 (1888). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 35 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 81 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 102 (2018). **Pl. 9.**

*Serapias helleborine* L. var. *longifolia* L., Sp. Pl. 1: 950 (1753); *Cephalanthera acuminata* Wall. ex Lindl.; *Epipactis longifolia* (L.) All.

NEP-L: Kaunphalo (कौफलो).

ENG: Narrow-leaved helleborine, Sword-leaved helleborine.

Terrestrial herbs, 20–50 cm tall.

*Habitat:* Forests, thickets, streamsides, grassy slopes.

*Distribution:* Europe, N Africa, European Russia, W & C Asia, Afghanistan, Himalaya (Pakistan to Bhutan), Tibetan Plateau, C & SE China, Japan.

NEPAL: W & C; 1200–3400 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Mugu; 2100–3400 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Haute vallée de la Seti Khola, 2700 m (A Maire AMA 991; 17 May 1973; E00624090<sup>1</sup> image); Surmasarovar, 2800 m (JF Dobermez 2070, 5 May 1973; KATH<sup>1</sup>); Thar, 2900 m (JF Dobremez 2254, 15 May 1973; E00624089<sup>1</sup> image); Surmasarovar, 3400 m (A Maire AMA 884; 6 May 1973; E00624091<sup>1</sup> image). **DARCHULA:** Paripatal, Khar, 2305 m (CK Subedi, J Gurung & M Pandey 33, 4 Jun 2015; TUCH<sup>1</sup>); above Domule, 3100 m (CK Subedi, J Gurung & S Thapa 72, 21 Jun 2014; TUCH<sup>1</sup>). **HUMLA:** Between Chankheli Lagna & Darma, 2134–2438 m (O Polunin, WR Sykes & LHJ Williams 4132, 20 May 1952; E00768741<sup>1</sup> image). **MUGU:** Rara, 2800 m (PR Shakya & B Roy 5455, 2 Jun 1980; KATH<sup>1</sup>).

*Remarks:* Distribution record for Pithoragarh fide GMBA (2012–2016).

*Local abund.:* Occasional to frequent.

**Coelogyne** Lindl., Coll. Bot. t. 33 (1824).

**Coelogyne corymbosa** Lindl., Fol. Orchid. 5: 7 (1854). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 36 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 84 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 103 (2018).

*Pleione corymbosa* (Lindl.) Kuntze

NEP: Chāndī gābhā (चाँदी गाभा).

Epiphytic or lithophytic rhizomatous herbs.

*Habitat:* Forests, forest margins, moist cliffs.

*Distribution:* C & E Himalaya (Nepal to Bhutan & NE India), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 1500–2900 m.

KSL: Bajhang in KSL Nepal; 2000–2100 m.

*Representative specimen.* **BAJHANG:** Between Agara & Dhalun, 2000–2100 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0368, 14 Sept 2017; KATH<sup>1</sup>).



**Coelogyne cristata** Lindl., Coll. Bot. t. 33 (1824). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 36 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 85 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 104 (2018).

*Cymbidium speciosissimum* D. Don; *Pleione speciosissima* (D. Don) Kuntze

NEP: Chāndī gābhā (चाँदी गाभा).

Epiphytic or lithophytic rhizomatous herbs.

*Habitat*: On rocks or tree trunk in forests, along forest margins.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau.

NEPAL: W, C & E; 1000–2600 m.

KSL: Baitadi and Bajhang in KSL Nepal; 1250–1650 m [also in Uttarakhand, India].

*Representative specimens*. **BAITADI**: Bhumeswor-3, Kholsi, 1250 m (GD Bhatt & BD Bhatt 808, 16 Mar 2010; KATH<sup>1</sup>). **BAJHANG**: Chir, 1650 m (P Pradhan, RK Uprety, N Pradhan & N Dabadi 1301, 14 Apr 1984; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon (R Blinkworth Cat. no. 1958/3; K001114810<sup>1</sup> image); Champawat, Kumaon, 1524 m (R Strachey & JE Winterbottom 15, 1843; P00385594<sup>1</sup> image).

*Local abund.*: Rare to occasional.

**Corallorhiza** Gagnebin, Acta Helv. Phys.-Math. 2: 61 (1755).

**Corallorhiza trifida** Châtel., Specim. Inaug. Corallorh.: 8 (1760). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 37 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 87 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 106 (2018). **PI. 9.**

*Corallorhiza anandae* Malhotra & Balodi; *Corallorhiza innata* R. Br.; *Corallorhiza jacquemontii* Decne.; *Epipactis corallorhiza* (L.) Crantz; *Neottia corallorhiza* (L.) Kuntze; *Ophrys corallorhiza* L.

ENG: Early coralroot, Yellow coralroot.

Leafless heteromycotrophic herbs; plants slender, 10–25 cm tall, with branched coral-shaped rhizomes; scapes yellow-green; flowers ascending, pale yellowish green to white.

*Habitat*: Moist shady places in forests, forest margins.

*Distribution*: Europe, subtropical and temperate regions in Asia, N America, Greenland.

NEPAL: W & C; 3500–4000 m.

KSL: Humla in KSL Nepal; 3500–4000 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **HUMLA**: Tugling, above Dozam, 3520 m (SK Ghimire, RP Chaudhary & team P11701; 24 May 2010; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Gori Valley, Martoli, Bughyals, 4500 m (TA Rao 6851A, 15 Jun 1958; holotype of *Corallorhiza anandae* CAL) fide Samaddar (1991).

*Local abund.*: Occasional.

**Crepidium** Blume, Bijdr. 387 (1825).

**Crepidium acuminatum** (D. Don) Szlach., Fragm. Florist. Geobot., Suppl. 3: 123 (1995). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 88 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 106 (2018). **PI. 9.**

*Malaxis acuminata* D. Don, Prodr. Fl. Nepal.: 29 (1825); *Microstylis biloba* Lindl.; *Microstylis wallichii* Lindl.

NEP-L: Kaunphalo (कौफलो).

Terrestrial herbs; stem cylindric, fleshy.

*Habitat*: Forests, shady places, mossy rocks.

*Distribution*: Tropical and subtropical regions in Asia, N Australia.

NEPAL: W, C & E; (400–)1100–3100 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Doti; 1300–3000 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Talkot, between Seti bridge & camp site, 1500–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0127, 11 Sept 2017; KATH<sup>1</sup>); Pasela–Banjh, 2372 m (H Ikeda, CA Pendry, AP Bhattarai, GD Bhatta, S Noshiro, M Amano, T Tanaka, YJ Wang, BI Dell & N Yamamoto 20915147, 16 Jul 2009; KATH<sup>1</sup>). **DARCHULA:** Kholadhar Deurali, before Okhal, way to Makarigad, 1330 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1001, 15 Jul 2015; TUCH<sup>1</sup>); Domul Deurali, way to Pilkanda, Ghusa VDC, 2950 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA 1135, 18 Jul 2015; TUCH<sup>1</sup>). **DOTI:** Telia Lekh, 1800 m (PR Shakya, LR Sharma & KR Amatya 6196, 27 Jun 1981; KATH<sup>1</sup>).

*Remarks:* Distribution record for Pithoragarh fide Jalal (2004).

*Local abund.:* Rare to occasional.

## **Cypripedium** L., Sp. Pl. 2: 951 (1753).

**Cypripedium cordigerum** D. Don, Prodr. Fl. Nepal.: 37 (1825). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 38 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 91 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 109 (2018). **PI. 9.**

NEP: Jibre, Thulo kākolī (जिब्रे, ठूलो काकोली).

ENG: Heart-shaped lip cypripedium.

Terrestrial rhizomatous herbs, 25–60 cm tall; stem erect, solitary, glandular pubescent, sheathed at base; leaves 2–5, distant along stem, broadly elliptic or ovate, apex acute to acuminate; flowers solitary, terminal; sepals and petals pale green; lip white, inflated, sac-like.

*Habitat:* Forests, *Berberis* and *Juniperus* woodlands, dry open hillsides, grassy slopes, meadows.

*Distribution:* Himalaya (Pakistan to Bhutan), Tibetan Plateau.

NEPAL: W & C; 2100–4000 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Doti and Mugu, Nepal; 2900–3800 m [Bageshwar, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Dhuli, 2900 m (JF Dobermez 2233, 14 May 1973; E00612935<sup>1</sup> image); Surma Sarovar Tal, 3300 m (PR Shakya, LR Sharma & KR Amatya 6350, 8 Jul 1981; KATH<sup>1</sup>). **HUMLA/ MUGU:** Changkheli Lagna, 2895 m (O Polunin, WR Sykes & LHJ Williams 4334, 19 Jun 1952, E00736163<sup>1</sup> image). **MUGU:** Chuchamara Danda, 3820 m (KR Rajbhandari & B Roy 3600, 19 Jul 1979; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, Pindar Valley, 2135 m (R Strachey & JE Winterbottom s.n.; GH 01952356<sup>1</sup> image, P00329158<sup>1</sup> image).

*Local abund.:* Rare.

*Consu. status:* GLB., Vulnerable B2ab (ii,iii,iv,v) (Rankou 2014a). LOC., Data Deficient. Global assessment by Rankou (2014a) revealed decreasing population with an area of occupancy below 2,000 km<sup>2</sup>; and identified habitat loss, overgrazing, trampling, deforestation and plant collection as the major threats.

**Cypripedium elegans** Rchb. f., Flora 59: 561 (1886). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 38 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 91 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 109 (2018). **PI. 10.**

NEP-L: Kaunphalo (कौफलो).

ENG: Elegant cypripedium, Elegant slipper orchid.

Terrestrial rhizomatous herbs, 10–15 cm tall; stem erect, densely villous; leaves 2, opposite, broadly ovate, pubescent; flowers solitary, terminal; sepals and petals dull scarlet or greenish with purplish streaks; lip sac-like, shorter than sepals, whitish, front side with 3 purplish-red warty stripes.

*Habitat*: Forests, forest margins, thickets, meadows.

*Distribution*: Himalaya (NW India to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 3200–4200 m.

KSL: Darchula in KSL Nepal; 3500–3600 m.

*Representative specimen*. **DARCHULA**: Upper Chameliya, above Dhauliodar, 3600 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1744, 18 Jul 2016; TUCH<sup>1</sup>).

*Local abund.*: Very rare.

*Conserv. status*: GLB., Endangered B2ab(ii,iii,v) (Rankou 2014b). LOC., Data Deficient. Global assessment by Rankou (2014b) revealed significantly decreasing population with an area of occupancy of about 90 km<sup>2</sup>. Habitat loss, overgrazing, trampling, deforestation, and direct harvesting are the major threats to the population (Rankou 2014b). Locally, in KSL Nepal, it occurs in small isolated populations, which are threatened by livestock grazing, trampling, and forest degradation as a result of fuel wood collection and tree felling for timber.

**Cypripedium himalaicum** Rolfe, J. Linn. Soc., Bot. 29: 319 (1892). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 38 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 91 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 110 (2018). **PI. 9.**

*Cypripedium macranthos* Sw. var. *himalaicum* (Rolfe) Kraenzl.

NEP-L: Kaunphale, Kaunphalo (कौफले, कौफलो). NEP: Lek jibre, Rāto jibre (लेक जिब्रे, रातो जिब्रे).

ENG: Himalayan cypripedium, Himalayan slipper orchid. TIB: khujukpa (ཁུ་ཇུ་ཁ་པ་).

Terrestrial rhizomatous herbs, 15–30 cm tall; stem erect, sparsely pubescent; leaves 3–4, broadly elliptic, crowded, sparsely pubescent, ciliate at margins; flowers solitary, terminal, green or reddish-purple with red stripes; lip inflated, longer than sepals, pinkish-white or reddish-purple with red stripes.

*Habitat*: Forest margins, among dwarf shrubs, alpine meadows, rocky slopes.

*Distribution*: Himalaya (NW India to Bhutan), Tibetan Plateau.

NEPAL: W, C & E; 2800–4900 m.

KSL: Bajhang and Darchula in KSL Nepal; 3300–4100 m [also in Kumaon, Uttarakhand, India].

*Representative specimens*. **BAJHANG**: Above Surma Village, N of Chainpur, 3502 m (Bajhang09 20915065, 8 Jul 2009) fide RBGE (2014). **DARCHULA**: Opposite Budhi Village, 3350–3650 m (JF Duthie s.n.; CAL) fide Rajbhandari & Rai (2017); Gauchhalighol, Pilkanda, 3950 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1227, 20 Jul 2015; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon, Kanta [Kanda], 2438 m (RC Thakur 762, 23 Jun 1948; MICH 1493347<sup>1</sup> image).

*Local abund.*: Rare in Darchula.

*Ethnobot. use*: Tubers are eaten as tonic. Tuber paste is applied to treat swollen glands.

*Conserv. status*: GLB., Endangered B2ab(ii,iii,v), D (Rankou 2014c). LOC., Data Deficient. Global assessment by Rankou (2014c) revealed severely fragmented population with the total area of occupancy of about 110 km<sup>2</sup>; and identified overgrazing, trampling, deforestation and direct harvesting as the major threats.

**Dactylorhiza** Necker ex Nevski, Fl. URSS. 4: 697, 713 (1935).

**Dactylorhiza hatagirea** (D. Don) Soó, Nom. Nov. Gen. Dactylorhiza 4 (1962). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 38 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 91 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 110 (2018). **PI. 10.**

*Orchis hatagirea* D. Don, Prodr. Fl. Nepal. 23 (1825); *Orchis latifolia* L. var. *indica* Lindl.

NEP-L: Hattājādī, Hātejadī (हत्ताजडी, हातेजडी). NEP: Pānchaunle (पाँचऔले).

ENG: Himalayan marsh orchid. HIN-L: Salāmpanjā (सलामपञ्जा). SAN: Karajodī, Hastajodī, Munjātaka (करजोडी, हस्तजोडी, मुञ्जातक). TIB: wangpo lakpa (དངཔ་ལཀཔ་).

Terrestrial herbs, 20–50 cm tall, with palmately 3–5-lobed tubers; stem erect, stout, with 2 or 3 tubular sheaths at base, 3–6-leaved; flowers lilac to purplish rose, spotted.

*Habitat*: Wet places along forest margins, shrubby slopes, wet meadows, grassy slopes, marshy places.

*Distribution*: Afghanistan, Himalaya (Pakistan to Bhutan), Tibetan Plateau, N China, Mongolia.

NEPAL: W, C & E; 2800–4100(–4600) m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Doti and Mugu; 2900–4100 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Kali Gad, 3030 m (JDA Stainton 4918, 11 Jun 1965; BM) fide RBGE (2014). **DARCHULA**: Dhauliodar, 3330 m (CK Subedi, J Gurung & S Thapa 80, 22 Jun 2014; TUCH<sup>1</sup>); Chheti, 3900 m (TR Pandey & S Panthi, 2014903, 27 Sept 2014, KATH<sup>1</sup>); Dhauliodar to Pilkanda, 3750–4100 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1204, 20 Jul 2015; TUCH<sup>1</sup>). **DOTI**: Khaptad, 3180 m (LR Sharma & PP Kurmi 5061, 3 Sep 1984; KATH<sup>1</sup>). **HUMLA**: Durpa, north of Margor Lagna, 2895 m (O Polunin, WR Sykes & LHJ Williams 4166, 25 May 1952; E00736205<sup>1</sup> image); Chankheli Langa, 3500 m (KR Rajbhandari & B Roy 3874, 25 Jul 1979; KATH<sup>1</sup>). **MUGU**: Rara, 3000 m (NK Bhattarai R/87, 10 Jun 1983; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon, Tola, 3505 m (R Strachey & JE Winterbottom 201, 15 Jun 1948; GH 01950617<sup>1</sup> image).

*Local abund.*: Occasional to frequent.

*Ethnobot. use*: Tubers are roasted and eaten to increase vitality and restore bodily strength. Tuber paste is applied to treat cuts and wound.

*Conserv. status*: NAT., Endangered (Tandon *et al.* 2001). LOC., Endangered A2acd. Tubers are extensively collected, mostly for trade. About 30–50 kg of *D. hatagirea* tubers are annually collected for trade from Darchula District alone (Pyakurel *et al.* 2018; personal observations 2013–2017). In addition, overgrazing, trampling and habitat loss are the other major threats to the populations. Locally, it exhibits severely fragmented populations. About 50–70% population size reduction has been suspected to have occurred over the past 10 years mainly due to trade-driven overharvesting.

**Dendrobium** Swartz, Nova Acta Regiae Soc. Sci. Upsal., ser. 2. 6: 82 (1799).

**Dendrobium amoenum** Wall. ex Lindl., Gen. Sp. Orchid. Pl.: 78 (1830). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 38 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 92 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 110 (2018). **PI. 10.**

*Callista amoena* (Wall. ex Lindl.) Kuntze; *Dendrobium egertoniae* Lindl.; *Dendrobium mesochlorum* Lindl.

Epiphytic herbs, pendulous; stems slender.

*Habitat*: Mixed evergreen forests.

*Distribution*: Himalaya (India, Nepal, Bhutan), Bangladesh, Myanmar.

NEPAL: W, C & E; (400–)1100–2900 m.

KSL: Baitadi in KSL Nepal; 2500 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimen.* **BAITADI:** Shribhawar, 2509 m (TR Pandey & GD Bhatt 2016668, 6 Jun 2016, KATH').

*Remarks:* Distribution records for Pithoragarh fide Jalal (2004).

*Local abund.:* Rare.

**Dendrobium denudans** D. Don, Prodr. Fl. Nepal.: 34 (1825). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 39 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 94 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 112 (2018).

*Callista denudans* (D. Don) Kuntze

Epiphytic herbs, pendulous.

*Habitat:* Mixed evergreen forests, oak forests.

*Distribution:* Himalaya (India, Nepal, Bhutan).

NEPAL: W, C & E; 1000–2200 m.

KSL: Pithoragarh District, Uttarakhand in KSL India. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimen.* **UTTARAKHAND (INDIA):** Pithoragarh, Didihat, 1900 m (CM Arora 36490, 12 Oct 1967; L.1498314' image).

**Dendrobium eriiflorum** Griff., Itin. Pl. Khasiyah Mts. 66: no. 1020 (1848). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 39 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 94 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 112 (2018).

*Callista eriiflora* (Griff.) Kuntze

Small-sized epiphytic or lithophytic herbs; stems erect, clusterd, fleshy at the base.

*Habitat:* Forests, forest margins, open places, grasslands, rocky slopes.

*Distribution:* C & E Himalaya (Nepal to Bhutan & NE India), mainland SE Asia.

NEPAL: W, C & E; 1200–2300 m.

KSL: Baitadi District in KSL Nepal, and neighboring Doti; 1500–2000 m.

*Representative specimens.* **BAITADI:** Rim, 1950 m (NN Bhatta 9, 9 Oct 2000; TUCH'). **DOTI:** Silinge to Khated, 1490–1880 m (I Sharma, R Joshi, R Uprety & I Pandey 571, 19 Sept 1981; KATH').

**Dendrobium fimbriatum** Hook., Exot. Fl. 1: t. 71 (1823). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 39 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 94 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 112 (2018).

*Callista fimbriata* (Hook.) Kuntze; *Dendrobium fimbriatum* var. *oculatum* Hook.; *Dendrobium normale* Falc.

Epiphytic herbs; stems stout, decumbent or pendulous.

*Habitat:* Forests.

*Distribution:* Himalaya (India, Nepal, Bhutan), Bangladesh, S China, mainland SE Asia.

NEPAL: C & E; 200–2100 m.

KSL: Bageshwar and Pithoragarh districts, Uttarakhand in KSL India. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimen.* **UTTARAKHAND (INDIA):** Jagthana, Kumaon, 1676 m (R Strachey & JE Winterbottom 6; K000943945' image).

*Remarks:* Distribution records for Pithoragarh fide Jalal (2004).

**Dendrobium polyanthum** Wall. ex Lindl., Gen. Sp. Orchid. Pl.: 81 (1830). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 97 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 114 (2018).

*Callista primulina* (Lindl.) Kuntze; *Dendrobium cretaceum* Lindl.; *Dendrobium primulinum* Lindl.

Small-sized epiphytic herbs; stems clustered, cylindric, pendant.

*Habitat*: On tree trunks in open forests.

*Distribution*: Himalaya (India, Nepal), SC China, mainland SE Asia.

NEPAL: W & C; 1200–1400 m.

KSL: Pithoragarh, Uttarakhand in KSL India; and neighboring Doti District, Nepal. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimen*. **DOTI**: Nahapani, 1400 m (JF Dobremez 1878, 18 Apr 1973; KATH<sup>1</sup>).

*Remarks*: Distribution records for Pithoragarh fide Jalal (2004).

**Dendrolirium** Blume, Bijdr. Fl. Ned. Ind.: 343 (1825).

**Dendrolirium lasiopetalum** (Willd.) S.C. Chen & J.J. Wood, Fl. China 25: 351 (2009). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 114 (2018).

*Aerides lasiopetala* Willd., Sp. Pl. 4(1): 130 (1805); *Eria flava* Lindl.; *Eria lasiopetala* (Willd.) Ormerod; *Eria pubescens* (Hook.) Lindl. ex G. Don

ENG: Shaggy eria, Woolly orchid.

Epiphytic herbs, with fusiform-ellipsoid pseudobulbs; racemes white-woolly, floral bracts yellowish.

*Habitat*: Forests, along streams.

*Distribution*: Himalaya (India, Nepal, Bhutan), SE China, mainland SE Asia to Indonesia.

NEPAL: W, C & E; 500–1700 m.

KSL: Bajhang in KSL Nepal; 1000 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimen*. **BAJHANG**: Rupal, 1000 m (P Pradhan, RK Uprety, N Pradhan & N Dabadi 1300, 14 Apr 1984; KATH<sup>1</sup>).

*Remarks*: Distribution records for Pithoragarh fide Jalal (2004).

**Dienia** Lindl., Bot. Reg. 10: ad t. 825 (1824).

**Dienia cylindrostachya** Lindl., Gen. Sp. Orchid. Pl. 22 (1830). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 98 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 115 (2018).

*Malaxis cylindrostachya* (Lindl.) Kuntze; *Microstylis cylindrostachya* (Lindl.) Rchb. f.

Small terrestrial herbs, with small conical pseudobulbs; stem erect, arising from base of pseudobulb.

*Habitat*: Moist shady places, forests, exposed slopes, rocky and mossy slopes.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Myanmar.

NEPAL: W, C & E; (1300–)2000–4100(–4300) m.

KSL: Darchula in KSL Nepal, and neighboring Doti; 2170–2700 m [also in Uttarakhand, India].

*Representative specimens*. **DARCHULA**: Khadeswori, 2170 m (PR Shakya, MK Adhikari & MN Subedi 7936, 19 Jul 1984; KATH<sup>1</sup>); Dopakhe–Thin, 2700 m (KR Rajbhandari & KJ Malla 5883, 11 Sept 1980, KATH<sup>1</sup>).

**DOTI**: Doti, 2850 m (MS Bista & DP Joshi 172, 2 Aug 1972; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Jagesar [Almora], Kumaon, 2130 m (R Strachey & JE Winterbottom 4; GH 02091783<sup>1</sup> image).

**Epipactis** Zinn, Cat. Pl. Hort. Gott. 85 (1757).

**Epipactis helleborine** (L.) Crantz, Stirp. Austr. Fasc., ed. 2, 2: 467 (1769). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 41 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 99 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 116 (2018). **Pl. 10.**

*Serapias helleborine* L., Sp. Pl. 2: 949 (1753); *Amesia latifolia* (L.) A. Nelson & J.F. Macbr.; *Epipactis consimilis* D. Don; *Epipactis latifolia* (L.) All.; *Epipactis macrostachya* Lindl.; *Serapias helleborine* var. *latifolia* L.

NEP-L: Kaunphalo (कौफलो).

ENG: Broad-leaved helleborine.

Terrestrial herbs, up to 1 m tall, with short rhizome; stem erect, leafy; inflorescence densely many-flowered, one-sided, terminal raceme; flowers greenish with redish or purplish tings.

*Habitat*: Forests, thickets, shrublands, grasslands, damp places on the banks of streams.

*Distribution*: Europe, N Africa, subtropical and temperate regions in Asia.

NEPAL: W, C & E; 1500–3900(–4400) m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura; 1700–3500 m [Bageshwar, Pithoragarh and neighboring Almora District, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: 1660–2180 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160747, 18 Aug 1991; TI) fide SHB 2013–2020. **BAJURA**: 2810 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193284, 16 Aug 1991; TI) fide SHB 2013–2020. **DARCHULA**: Upper Chameliya, between Khayakot & Simar, 2600 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1101, 18 Jul 2015; TUCH<sup>1</sup>). **HUMLA**: Humla-Karnali, below Sallidanda, way to Limi, 3000 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama 1631, 28 August CHH-2012; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Jagesar, Kumaon, 1980 m (R Strachey & JE Winterbottom 50; GH 01941517<sup>1</sup> image); Binsar, Kumaon, 2286 m (R Strachey & JE Winterbottom 50; P00301732<sup>1</sup> image).

*Local abund.*: Occasional to frequent in Darchula and Humla.

*Ethnobot. use*: Tuber paste is applied to treat cuts and wound.

**Epipactis veratrifolia** Boiss. & Hohen. in Boiss., Diagn. Pl. Orient. 13: 11 (1854). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 41 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 99 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 116 (2018).

*Epipactis amoena* Buch.-Ham. ex Wall., nom. nud.; *Epipactis consimilis* Wall. ex Hook. f. (1890), nom. illeg., non D. Don (1825); *Epipactis wallichii* Schltr.; *Helleborine consimilis* Druce

ENG: Eastern marsh helleborine.

Terrestrial herbs, up to 1.5 m tall; rhizome short, woody; stem erect or flexuous, densely leafy; inflorescence laxly many-flowered raceme; flowers greenish-purple with yellowish-green central line.

*Habitat*: Forest margins, marshy places, wet and mossy rocks, wet cliffs, river banks.

*Distribution*: NE Africa, Turkey and Arabian Peninsula to Turkmenistan, Afghanistan, Himalaya (Pakistan to NE India: Sikkim), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 600–1900(–3400) m.

KSL: Bajhang in KSL Nepal; c. 1800 m [also in Uttarakhand, India].

*Representative specimens*. **BAJHANG**: North of Chainpur, 1829 m (TB Shrestha 4120, 19 May 1965; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon, Kalapathar, 915 m (R Strachey & JE Winterbottom 51 [Wallich Cat. 7403]; GH 01941548<sup>1</sup> image).

*Conserv. status*: GLB., Least Concern (Fay 2013).

**Galearis** Rafinesque, Herbs. Raf. 71 (1833).

**Galearis roborovskii** (Maxim.) S.C. Chen, P.J. Cribb & S.W. Gale in W. Zhengyi et al. (eds.), Fl. China 25: 92 (2009). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 105 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 120 (2018).

*Orchis roborovskii* Maxim., Bull. Acad. Imp. Sci. Saint-Petersbourg, sér. 3, 31: 104 (1886); *Aorchis roborovskii* (Maxim.) Seidenf.; *Chusua roborovskii* (Maxim.) P.F.Hunt; *Galearis stracheyi* (Hook. f.) P.F. Hunt; *Orchis stracheyi* Hook. f.

Small terrestrial herbs; rhizome small, ellipsoid, fleshy; stem with basal sheath, glabrous, 1–2-leaved.

*Habitat*: Open forests, amongst scrub, under rhododendrom bushes, alpine meadows.

*Distribution*: Himalaya (N India [Garhwal, Sikkim], Nepal), Tibetan Plateau, N to SE China.

NEPAL: W, C & E; 3300–4800 m.

KSL: Darchula in KSL Nepal.

*Representative specimen*. **DARCHULA**: Nampa Khola (JB Tyson 40, 14 Jun 1953; *Orchis stracheyi* BM000013397).

**Galearis spathulata** (Lindl.) P.F. Hunt, Kew Bull. 26: 172 (1971). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 43 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 105 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 120 (2018).

*Gymnadenia spathulata* Lindl., Gen. Sp. Orchid. Pl.: 280 (1835); *Aorchis spathulata* (Lindl.) Verm.; *Galeorchis spathulata* (Lindl.) Soó; *Orchis diantha* Schltr.; *Orchis spathulata* (Lindl.) Rchb. f. ex Hook. f.

Small terrestrial herbs; rhizome slender; stem with basal sheath, glabrous, 1–2-leaved.

*Habitat*: Forest margins, open forests, scrub, open slopes, damp rocks, alpine meadows.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Myanmar, C China.

NEPAL: W, C & E; 3000–4500(–5000) m.

KSL: Bajhang in KSL Nepal; 3800–4000 m.

*Representative specimen*. **BAJHANG**: Manane Lekh, 3807–4000 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915105, 13 Jul 2009; E00623908, KATH<sup>!</sup>).

**Gastrochilus** D. Don, Prodr. Fl. Nepal.: 32 (1825).

**Gastrochilus distichus** (Lindl.) Kuntze, Revis. Gen. Pl. 2: 661 (1891). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 44 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 106 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 121 (2018).

*Saccolabium distichum* Lindl., J. Proc. Linn. Soc., Bot. 3: 36 (1858).

Epiphytic herbs, monopodial; stems slender, clustered, pendent, branched, enveloped by leaf sheaths; leaves many, distichous; racemes 2–4-flowered.

*Habitat*: On moss covered trees in forests.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, SC China, mainland SE Asia.

NEPAL: W, C & E; 1700–2900 m.

KSL: Darchula in KSL Nepal; 2000 m.

*Representative specimen*. **DARCHULA**: Khar, Paripatal Women C.F., 2000 m (P Bhandari, CK Subedi, M Pandey & S Thapamagar 1672, 30 May 2016; KATH<sup>!</sup>).

*Local abund.*: Rare.



**Goodyera** R. Br. in W.T. Aiton, Hortus Kew., ed. 2. 5: 197 (1813).

**Goodyera biflora** (Lindl.) Hook. f., Fl. Brit. India 6: 114 (1890). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 44 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 108 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 122 (2018). **PI. 10.**

*Georchis biflora* Lindl., Gen. Sp. Orchid. Pl. 496 (1840).

NEP: Nakkali bhringraj, Nakkali jivantî (नक्कली भृङ्गराज, नक्कली जीवन्ती).

Terrestrial herbs, 5–15 cm tall; stem ascending; leaves reticulate, clustered at stem apex.

*Habitat*: Damp places in forests, forest margins, shady slopes.

*Distribution*: Himalaya (India, Nepal), Tibetan Plateau, C & SE China to Japan, Vietnam.

NEPAL: W & C; 1900–2200 m.

KSL: Darchula in KSL Nepal; 2150–2200 m.

*Representative specimens*. **DARCHULA**: Khar VDC-7, 2150 m (BB Shrestha, M Pandey & R Chhetri 181, 28 Sept 2015; TUCH<sup>1</sup>); Paripatal Community Forest, Khar, 2211 m (CK Subedi, J Gurung & M Pandey 34, 13 Jun 2015; TUCH<sup>1</sup>).

*Local abund.*: Rare to occasional.

*Ethnobot. use*: Rhizomes are used as tonic.

*Conserv. status*: LOC., Near Threatened. The species occurs in very small and isolated populations within KSL Nepal, which are severely fragmented due to habitat loss, overgrazing, trampling, deforestation, and occasional harvesting for trade. The commercial harvesting has started very recently. The trade of *Goodyera biflora* was recorded for the first time in 2014/2015 from Darchula, with a total amount of leaves and rhizomes traded in that year being 500 kg (Pyakurel *et al.* 2018).

**Goodyera foliosa** (Lindl.) Benth. ex C.B. Clarke, J. Linn. Soc., Bot. 25: 73 (1889). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 44 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 108 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 122 (2018).

*Georchis foliosa* Lindl., Gen. Sp. Orchid. Pl.: 496 (1840); *Goodyera secundiflora* Griff.

Terrestrial herbs, up to 30 cm tall; stem erect; leaves widely spaced along stem, not reticulate.

*Habitat*: Shady and moist places in forests.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, mainland SE Asia, S China to Japan.

NEPAL: W, C & E; 2000–2700 m.

KSL: Darchula in KSL Nepal; 2100–2200 m.

*Representative specimen*. **DARCHULA**: Khar VDC-7, 2150 m (BB Shrestha, M Pandey & R Chhetri 181P, 28 Sept 2015; TUCH<sup>1</sup>).

*Local abund.*: Rare.

**Goodyera repens** (L.) R. Br. in Aiton, Hortus Kew., ed. 2. 5: 198 (1813). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 44 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 109 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 123 (2018). **PI. 10.**

*Satyrium repens* L., Sp. Pl. 2: 945 (1753); *Goodyera marginata* Lindl.

ENG: Creeping lady's-tresses, Dwarf rattlesnake plantain, Lesser rattlesnake plantain.

Terrestrial herbs, up to 20 cm tall; stem erect, pubescent; leaves reticulate, clustered at the stem base.

*Habitat*: Shady and moist places in forests, open mossy ground, open grassy slopes, among shrubs.

*Distribution*: Europe, subtropical and temperate regions in Asia, N America.

NEPAL: W, C & E; 1000–4350 m.

KSL: Baitadi, Bajhang, Darchula and Humla in KSL Nepal, and neighboring Mugu; 2100–4000 m [also in Uttarakhand, India].

*Representative specimens.* **BAITADI:** Shribhawa, 2480 m (TR Pandey & GD Bhatt 2016635, 6 Jun 2016; KATH<sup>1</sup>). **BAJHANG:** Godilekh, 3030 m (H Tabata, KR Rajbhandari & K Tsuchiya 2409, 13 Aug 1976; KATH<sup>1</sup>). **DARCHULA:** Upper Chameliya, Gauchhalighol, Pilkanda, 3950 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1263, 21 Jul 15; TUCH<sup>1</sup>); Chheti, 4005 m (TR Pandey & S Panthi 20140906, 27 Sept 2014; KATH<sup>1</sup>). **HUMLA:** Lohachaur, 2780 m (PR Shakya, MN Subedi & R Uprety 8689, 17 Aug 1985; KATH<sup>1</sup>). **MUGU:** Gamgari, 2050 m (NP Manandhar & DP Joshi 6984, 10 Aug 1981; KATH<sup>1</sup>). **UTARAKHAND (INDIA):** Kumaon (R Blinkworth Cat. no. 7394; *Goodyera marginata* K001127282<sup>1</sup> image); Kumaon, 460 m (R Strachey & JE Winterbottom 54; *G. marginata* GH 02091494<sup>1</sup> image).

*Local abund.:* Occasional to frequent in Baitadi and Darchula; not known for other regions.

**Gymnadenia** R. Br. in W.T. Aiton, Hortus Kew., ed. 2. 5: 191 (1813).

**Gymnadenia orchidis** Lindl., Gen. Sp. Orchid. Pl.: 278 (1835). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 45 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 110 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 124 (2018). **PI. 10.**

*Gymnadenia cylindrostachya* Lindl.; *Gymnadenia himalayica* Schltr.; *Gymnadenia violacea* Lindl.; *Habenaria orchidis* (Lindl.) Hook. f.; *Orchis cylindrostachya* (Lindl.) Kraenzl.; *Orchis habenarioides* King & Pantl.; *Platanthera orchidis* Lindl. ex Wall., nom. nud.

NEP-L: Hattājādī, Hātejādī (हत्ताजडी, हातेजडी). NEP: Nakkali pānchaunle (नक्कली पाँचऔलै).

Terrestrial herbs, 30–50 cm tall; tubers fleshy, palmately lobed; stem stout, leafy.

*Habitat:* Forest margins, thickets, open grassy slopes, alpine meadows.

*Distribution:* Himalaya (Pakistan to Bhutan & NE India), Tibetan Plateau, Myanmar, C China.

NEPAL: W, C & E; (1850–)2700–4700 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Doti and Mugu; 2800–4000 m.

*Representative specimens.* **BAJHANG:** Thogun Danda, 2800 m (MS Bista & DP Joshi 753, 27 Aug 1972; KATH<sup>1</sup>); Dhansera, 3800 m (PR Shakya, MK Adhikari & MN Subedi 8203, 26 Jul 1984; KATH<sup>1</sup>). **DARCHULA:** Upper Chameliya, Lolu-Pilkanda, 3750 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain IM-3596, 20 Jul 2016; TUCH<sup>1</sup>); Tinkan Khola 3940 m (JB Tyson 72b, 3 Jul 1953; BM000015961). **MUGU:** Ghurchi (SB Malla 10776, 3 Jul 1968; KATH<sup>1</sup>).

*Local abund.:* Rare to occasional in Darchula; not known from other districts.

*Ethnobot. use:* Tubers are used medicinally to treat cuts and wounds.

**Habenaria** Willd., Sp. Pl. 4: 5, 44 (1805).

**Habenaria aitchisonii** Rchb. f., Trans. Linn. Soc. London, Bot. 3: 113 (1886). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 45 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 110 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 124 (2018).

*Habenaria diceras* Schltr.

Terrestrial tuberous herbs, 15–50 cm tall; leaves 2, basal, subopposite, flat on the ground.

*Habitat:* Moist and shady places, open forests, grassy slopes.

*Distribution:* Afghanistan, SW Pakistan, Himalaya (Kashmir to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 2400–4150 m.

KSL: Pithoragarh District, Uttarakhand in KSL India; and neighboring Mugu District, Nepal; 2750–3350 m. It is likely also to be present in Darchula District, Nepal.

*Representative specimens.* **MUGU (NEPAL):** Pina, 2800 m (PR Shakya, MN Subedi & R Uprety 8783, 23 Aug 1985; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, Palang Garh, Byans, 2743–3048 m (JF Duthie 6002, 19 Jul 1886; K000247483<sup>1</sup> image); Kumaon, Kali Valley, above Budhi, 3048–3353 m (JF Duthie 3419, 16 Sept 1884; K000247482<sup>1</sup> image).

**Habenaria arietina** Hook. f., Fl. Brit. India 6: 138 (1890). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 45 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 110 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 124 (2018).

*Habenaria intermedia* D. Don var. *arietina* (Hook. f.) Finet; *Habenaria pectinata* D. Don var. *arietina* (Hook. f.) Kraenzl.; *Ochyrorchis arietina* (Hook. f.) Szlach.

Terrestrial tuberous herbs, 25–60 cm tall; stem erect, leafy; raceme with many whitish or pale green pubescent flowers; petals simple, with a gibbous base; lip deeply 3-lobed, with the two lateral lobes deeply fimbriate; spur as long as or slightly longer than ovary.

*Habitat:* Forests, forest margins, open grassy slopes, meadows, steep banks.

*Distribution:* Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Vietnam.

NEPAL: W, C & E; 1400–3300(–3900) m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Mugu; 2000–2700 m.

*Representative specimens.* **BAJHANG:** Talkot – Agar, 2000 m (KR Rajbhandari 15351, 18 Aug 1991; KATH<sup>1</sup>); along Ghat Khola near Kanda, 2310 m (H Tabata, KR Rajbhandari & K Tsuchiya 1560, 24 Jul 1976; KATH<sup>1</sup>). **DARCHULA:** Kasoti, 2430 m (PR Shakya, MK Adhikari & MN Subedi 7970, 20 Jul 1984; KATH<sup>1</sup>). **MUGU:** Luma, 2591 m (O Polunin, WR Sykes & LHJ Williams 378, 29 Jul 1952; E00814630<sup>1</sup> image).

**Habenaria commelinifolia** (Roxb.) Wall. ex Lindl., Gen. Sp. Orchid. Pl. 325 (1835). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 45 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 110 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 124 (2018).

*Orchis commelinifolia* Roxb., Fl. Ind. ed. 1832, 3: 451 (1832); *Orchis stylosanthes* Ham. ex Hook. f.; *Platanthera commelinifolia* Lindl. ex Wall., nom. nud.

Terrestrial tuberous herbs to 60 cm; stem erect, stout, with few scattered leaves below and several bractlike leaves above; raceme laxly many-flowered; flowers white; lip 3-lobed, lateral lobes not fimbriate.

*Habitat:* Forests, open slopes, moist and shady places on partial rock shelter.

*Distribution:* Himalaya (India, Nepal), S & C India, Sri Lanka, SC China, mainland SE Asia.

NEPAL: W & C; 250–3200 m.

KSL: Darchula in KSL Nepal, and neighboring Doti; 2900–3200 m [also in Uttarakhand, India].

*Representative specimens.* **DARCHULA:** Upper Chameliya Valley, Domul Deurali, way to Pilkanda, Ghusa VDC, 3200 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal and DJ Chapagain ANCA-1578 & ANCA-1579, 31 Jul 15; TUCH<sup>1</sup>). **DOTI:** Khaptad, 2940 m (H Tabata, KR Rajbhandari & K Tsuchiya 1285, 15 Jul 1976; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, Ramganga River, 1065 m (R Strachey & JE Winterbottom 43; GH 01946596<sup>1</sup> image).

*Local abund.:* Rare in Darchula.

**Habenaria intermedia** D. Don, Prodr. Fl. Nepal.: 24 (1825). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 45 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 111 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 125 (2018). **PL 10.**

*Kryptostoma intermedium* (D. Don) Olszewski & Szlach.; *Ochyrorchis intermedia* (D. Don) Szlach.

NEP-L: Junge, Junge titmirido, Titmirido, Kaunphalo (जुंगे, जुंगे तीत्मिरिडो, तीत्मिरिडो, कौफलो).

Terrestrial tuberous herbs like *H. arietina*, but raceme 2–6-flowered, petals with flat bases not gibbous, lateral lobes of lip much longer than mid lobe and with more segments, spur much longer than ovary.

*Habitat*: Forests, forest margins, open pasture.

*Distribution*: Himalaya (Pakistan to Nepal), C India, Tibetan Plateau, Myanmar.

NEPAL: W & C; (900–)1500–3300 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Doti and Mugu; 2000–2900 m.

*Representative specimens*. **BAJHANG**: Agara – Dhalun, 2000–2100 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0363, 14 Sept 2017; KATH<sup>1</sup>); **DARCHULA**: Between Patu & Ghusa, 2100 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1003, 16 Jul 2015; TUCH<sup>1</sup>). **DOTI**: Tele Lekh, 2000 m (MS Bista & DP Joshi 95, 28 Jul 1972; KATH<sup>1</sup>). **HUMLA**: Durpa, 2900 m (KR Rajbhandari & B Roy 4152, 30 Jul 1980; KATH<sup>1</sup>). **MUGU**: Ghurchi, 2820 m (PR Shakya, MN Subedi & RK Uprety 8551, 7 Aug 1985; KATH<sup>1</sup>).

*Local abund.*: Occasional to frequent.

*Ethnobot. use*: Raw or roasted tubers are used to treat cold and cough.

*Conserv. status*: LOC., Near Threatened. Threat is due to habitat degradation, overgrazing and harvesting of tubers for trade (for detail, see description under *Habenaria pectinata*).

**Habenaria marginata** Colebr. in Hook., Exot. Fl. 2: t. 136 (1824). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 45 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 112 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 126 (2018).

*Habenaria aurantiaca* Rolfe ex Downie; *Habenaria flavescens* Hook. f.; *Habenaria fusifera* Hook. f.; *Habenaria promensis* Lindl.; *Orchis clavata* B. Heyne ex Hook. f.; *Platanthera marginata* Lindl. ex Wall., nom. nud.

ENG: Golden yellow habenaria.

Terrestrial tuberous herbs; stem reduced, sub-scapigerous; leaves 3–5, sub-radical, sessile, oblong to oblong-lanceolate; bractlike leaves 3–5, lanceolate; raceme many flowered; petals and lip lemon yellow.

*Habitat*: Pine forests, forest margins, grasslands.

*Distribution*: Himalaya (NE Pakistan to Bhutan), Peninsular India, Myanmar, SC China, Thailand.

NEPAL: W & C; 100–1500 m.

KSL: Known from Pithoragarh District, Uttarakhand and adjoining area in KSL India. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimens*. **UTTARAKHAND (INDIA)**: Kumaon (R Blinkworth Cat. no. 7038; K001126627<sup>1</sup> image); Kumaon, Berinag, 1675 m (WN Koelz 21520, 6 Aug 1948; NY 04097144<sup>1</sup> image); Kumaon, Jagesar, 2130 m (R Strachey & JE Winterbottom 38; GH 01946722<sup>1</sup> image, P00430634<sup>1</sup> image).

**Habenaria pectinata** D. Don, Prodr. Fl. Nepal.: 24 (1825). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 46 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 112 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 126 (2018).

*Kryptostoma pectinatum* (D. Don) Olszewski & Szlach.; *Ochrorchis pectinata* (D. Don) Szlach.

NEP-L: Titmirido, Kaunphalo (तीत्मिरिडो, कौफलो).

Terrestrial tuberous herbs close to *H. arietina*, but petals glabrous and with short clawed lip base, not gibbous; and mid lobe of lip longer than lateral lobes.

*Habitat*: Moist and shady places in forests, grassy slopes.

*Distribution*: Himalaya (Pakistan to Nepal), Myanmar, SC China.

NEPAL: W, C & E; (500–)1400–3500 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura and Doti; 1400–2500 m.

*Representative specimens.* **BAJHANG:** Dhalaun, 1940 m (H Tabata, KR Rajbhandari & K Tsuchiya 1493, 23 Jul 1976; KATH<sup>1</sup>). **BAJURA:** 2090 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193275, 15 Aug 1991; TI) fide SHB 2013–2020. **DARCHULA:** Khar VDC-5, 1980 m (BB Shrestha, M Pandey & R Chhetri 506, 6 Oct 2015; TUCH<sup>1</sup>); Chameliya River, between Nahli & Sithi, Panelpani, Ghusa, 2350 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1720, 16 Jul 2016; TUCH<sup>1</sup>). **DOTI:** Kola-Gadsera, 1400 m (MS Bista & DP Joshi 66, 27 Jul 1972; KATH<sup>1</sup>). **HUMLA:** Rimi, 2450 m (KR Rajbhandari & B Roy 4274, 2 Aug 1979; KATH<sup>1</sup>).

*Local abund.:* Rare to occasional.

*Ethnobot. use:* In Darchula, raw or roasted tubers are used to treat cold and cough.

*Conserv. status:* LOC., Near Threatened. Threat is due to habitat degradation, overgrazing and harvesting of tubers for trade. Tubers are harvested for trade during November–December with a total annual quantity estimated for Darchula District to be about 400 kg in 2016–17 combining both *H. pectinata* and *H. intermedia*.

**Habenaria plantaginea** Lindl., Gen. Sp. Orchid. Pl.: 323 (1835). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 46 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 113 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 126 (2018).

*Plantaginorchis plantaginea* (Lindl.) Szlach.

Terrestrial tuberous herbs, 10–30 cm tall; stem erect; leaves sub-basal, sheathing at the base; raceme lax; flowers white; lip spurred, 3-lobed, lobes entire to denticulate.

*Habitat:* Shady places, forests.

*Distribution:* Himalaya (India, Nepal, Bhutan), Tropical S Asia, mainland SE Asia to Indonesia.

NEPAL: W, C & E; 200–2500 m.

KSL: Baitadi/Darchula in KSL Nepal, and neighboring Achham and Bajura; 600–1200 m.

*Representative specimens.* **BAITADI/DARCHULA:** ? (JB Tyson 140, 30 Jul 1953; BM000033166). **ACHHAM/BAJURA:** 660 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9171075, 30 Aug 1991; TT<sup>1</sup> image).

**Habenaria plantaginea** Lindl. var. **nepalensis** (Kolan.) Rajbhandari & Rita Chhetri in Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 113 (2017).

*Habenaria nepalensis* Kolan., Phytotaxa 261: 92 (2016).

Terrestrial tuberous herbs close to *H. plantaginea*, but lip mid-lobe trilobulate.

*Habitat:* Shady places.

*Distribution:* Endemic to Nepal, W & C; 300–1000 m.

KSL: Known from neighboring Doti District, Nepal; 1000 m.

*Representative specimen.* **DOTI:** Sirkhauli, 1000 m (LP Kattel 1111, 6 Sept 1982; KATH) fide Rajbhandari & Rai (2017).

**Habenaria stenopetala** Lindl., Gen. Sp. Orchid. Pl.: 319 (1835). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 46 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 113 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 126 (2018).

*Habenaria amanoana* Ohwi; *Habenaria sutepensis* Rolfe ex Downie

Terrestrial tuberous herbs, to 1 m tall; stem erect, stout, 5–8-leaved; raceme densely many flowered.

*Habitat:* Forests, forest margins, open ground.

*Distribution:* Himalaya (India, Nepal, Bhutan), Peninsular India, Sri Lanka, SC China, Japan, mainland SE Asia to New Guinea.

NEPAL: W, C & E; 400–2500 m.

KSL: Known from Uttarakhand, India.

*Representative specimen.* **UTTARAKHAND (INDIA):** NW Himalaya, Mussoorie (PW MacKinnon 22980, 20 Aug 1899; AMES 01946817<sup>1</sup> image).

## **Hemipilia** Lindl., Gen. Sp. Orchid. Pl. 296 (1835).

**Hemipilia cordifolia** Lindl., Gen. Sp. Orchid. Pl.: 296 (1835). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 46 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 114 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 127 (2018).

*Hemipilia bulleyi* Rolfe; *Hemipilia cruciata* Finet

Terrestrial tuberous herbs.

*Habitat:* Forests, shrubberies, rocky slopes, shady places.

*Distribution:* Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Myanmar, SC China, Taiwan.

NEPAL: W & C; (1300–)1800–2600 m.

KSL: Darchula in KSL Nepal, and neighboring Bajura; 1300–2200 m.

*Representative specimens.* **BAJURA:** Bashala – Pategaon, 1760–2190 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160642, 15 Aug 1991; KATH<sup>1</sup>; T<sup>1</sup> image).

**DARCHULA:** Makarigad, 1300 m (PR Shakya, MK Adhikari & MN Subedi 7890, 18 Jul 1984; KATH<sup>1</sup>).

## **Herminium** L., Opera Var. 251 (1758).

**Herminium clavigerum** (Lindl.) X.H. Jin, Schuit., Raskoti & Lu Q. Huang, Cladistics 32: 210 (2015). Raskoti *et al.*, PhytoKeys 79: 29 (2017). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 115 (2017).

*Platanthera clavigera* Lindl., Gen. Sp. Orchid. Pl.: 289 (1835); *Habenaria clavigera* (Lindl.) Dandy; *Habenaria densa* Wall. ex Lindl.; *Platantheroides clavigera* (Lindl.) Szlach.; *Platantheroides densa* (Wall. ex Lindl.) Szlach.

Terrestrial tuberous herbs, 12–70 cm tall; stem erect, with tubular sheaths at base; leaves widely spaced.

*Habitat:* Forest margins, thickets, open grassy slopes, meadows.

*Distribution:* Himalaya (India, Nepal, Bhutan), Tibetan Plateau.

NEPAL: W, C & E; (1100–)1800–3600(–4600) m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 2000–3200 m.

*Representative specimens.* **BAJHANG:** Godilekh, 3180 m (H Tabata, KR Rajbhandari & K Tsuchiya 2442, 14 Aug 1976; KATH<sup>1</sup>). **BAJURA:** Birseni–Porakya, 1560–2650 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160512, 12 Aug 1991; E00104854<sup>1</sup> image, KATH<sup>1</sup>).

**DARCHULA:** Thin, 2300 m (KR Rajbhandari & KJ Malla 5635, 27 Aug 1980; KATH<sup>1</sup>).

**Herminium edgeworthii** (Hook. f. ex Collett) X.H. Jin, Schuit., Raskoti & Lu Q. Huang, Cladistics 32: 32 (2015). Raskoti *et al.*, PhytoKeys 79: 33 (2017). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 115 (2017). **PI. 11.**

*Habenaria edgeworthii* Hook. f. ex Collett, Fl. Siml.: 504 (1902); *Platanthera edgeworthii* (Hook. f. ex Collett) R.K. Gupta

Terrestrial tuberous herbs, 20–50 cm tall; stem erect, with tubular sheaths at base, 3–5-leaved.

*Habitat*: Shady ground in oak forests, forest margins, mossy rocks, moist grassy slopes.

*Distribution*: Himalaya (Pakistan to NE India), Tibetan Plateau, Myanmar.

NEPAL: W & C; (1200–)1800–3600 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura, Doti and Mugu; 1900–2900 m [Pithoragarh District, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Dhalaun, 2134 m (H Tabata, KR Rajbhandari & K Tsuchiya 1492, 23 Jul 1976; KATH<sup>1</sup>). **BAJURA**: Jillii, 1900 m (MS Bista & DP Joshi 327, 12 Aug 1972; KATH<sup>1</sup>). **DARCHULA**: Makarigad, 2000 m (PR Shakya, MK Adhikari & MN Subedi 7895, 18 Jul 1984; KATH<sup>1</sup>); Chameliya Valley, Nahli, above Ghusa Village, 2300 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1005B, 16 Jul 2015; TUCH<sup>1</sup>); Kasoti, 2430 m (PR Shakya, MK Adhikari & MN Subedi 7968, 20 Jul 1984; KATH<sup>1</sup>). **DOTI**: Tele Lekh, 2000 m (MS Bista & DP Joshi 99, 28 Jul 1972; KATH<sup>1</sup>). **MUGU**: Rara, 2900 m (NP Manandhar 8149, 10 Aug 1981; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Pithoragarh, Sirka [Sirkha], Kumaon, 2591 m (WN Koelz 21359, 27 Jul 1948; NY 04097094<sup>1</sup> image).

*Local abund.*: Occasional to frequent in Darchula; not known for other regions.

**Herminium elisabethae** (Duthie) Tang & F.T. Wang, Bull. Fan Mem. Inst. Biol., Bot. 7: 129 (1936). Raskoti *et al.*, PhytoKeys 79: 33 (2017). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 115 (2017).

*Habenaria elisabethae* Duthie, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 71: 44 (1902); *Peristylus elisabethae* (Duthie) R.K. Gupta

Terrestrial tuberous herbs, 10–30 cm tall; stem erect, with 1 or 2 tubular sheaths at base, 2–3-leaved.

*Habitat*: Mixed forests, meadows, mossy rocks.

*Distribution*: Himalaya (NW India to Bhutan), Tibetan Plateau.

NEPAL: W, C & E; 2000–3900 m.

KSL: Darchula in KSL Nepal; 2600–2900 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **DARCHULA**: Tipulchyaakti, 2850 m (KR Rajbhandari & KJ Malla 5858, 10 Sept 1980; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Pithoragarh, Sirka [Sirkha], Kumaon, 2591 m (WN Koelz 21355, 27 Jul 1948; NY 04097103<sup>1</sup> image).

**Herminium fallax** (Lindl.) Hook. f., Fl. Brit. India 6: 129 (1890). Raskoti *et al.*, PhytoKeys 79: 35 (2017). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 115 (2017).

*Peristylus fallax* Lindl., Gen. Sp. Orchid. Pl.: 298 (1835); *Habenaria fallax* (Lindl.) King & Pantl.; *Monorchis fallax* (Lindl.) O. Schwarz; *Platanthera fallax* (Lindl.) Schltr.

Terrestrial tuberous herbs, 15–30 cm tall; stem erect, with tubular sheaths at base and 1–2 leaved.

*Habitat*: Forests, forest margins, open grassy places, alpine grasslands, open rocky slopes.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 2000–4000 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; 2200–3700 m [Pithoragarh District, Uttarakhand in KSL India].

*Representative specimens*. **BAJURA & BAJHANG**: Pategaon – Ghodi Lekh Deurali – Badigaon, 2190–3350 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160679, 16 Aug 1991; A 01945577<sup>1</sup> image, E00104855<sup>1</sup> image, KATH<sup>1</sup>, TT<sup>1</sup> image). **UTTARAKHAND (INDIA)**: Ralam, Kumaon, 3658 m (R Strachey & JE Winterbottom 32, Wall. Cat. 7412; GH 01948767<sup>1</sup> image).

**Herminium josephi** Rchb. f., Flora 55: 276 (1872). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 46 (1978). Raskoti *et al.*, PhytoKeys 79: 45 (2017). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 116 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 127 (2018).

*Androcorys josephi* (Rchb. f.) Agrawala & H.J. Chowdhery.; *Herminium duthiei* Hook. f., Fl. Brit. India 6: 130 (1890); *Herminium forrestii* Schltr.; *Monorchis forrestii* (Schltr.) O. Schwarz, *Monorchis duthiei* (Hook. f.) O. Schwarz; *Monorchis josephi* (Rchb. f.) O. Schwarz; *Peristylus duthiei* (Hook. f.) Deva & H.B. Naithani

Terrestrial tuberous herbs, 5–25 cm tall; stem erect, with 2–3 tubular sheaths, and two opposite or subopposite leaves at base.

*Habitat*: Humid forests, forest margins, short turf on grassy slopes, alpine meadows, on mossy rocks.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 2000–4600 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Mugu; 2200–4000 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Thongnada, 2700 m (PR Shakya, LR Sharma & KR Amatya 6347, 8 Jul 1981; *Herminium duthiei* KATH<sup>1</sup>); Godilekh, 4000 m (MS Bista & DP Joshi 526, 17 Aug 1972; KATH<sup>1</sup>).

**DARCHULA**: Ghusa VDC, above Nahli, 2200 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1093, 17 Jul 2015; TUCH<sup>1</sup>); Chhetti – Mechchra, 3400 m (PR Shakya, MK Adhikari & MN Subedi 8014, 22 Jul 1984; KATH<sup>1</sup>). **HUMLA**: Chankheli, 3500 m (KR Rajbhandari & B Roy 3849, 25 Jul 1979; *Herminium duthiei* KATH<sup>1</sup>). **UTARAKHAND (INDIA)**: Barphu, Gori Valley, 3353 m (Inayat 24105, 12 Aug 1900; *Herminium duthiei* K000852822<sup>1</sup> image).

*Local abund.*: Occasional in Darchula; not known for other regions.

**Herminium lanceum** (Thunb. ex Sw.) Vuijk, Blumea 11: 228 (1961). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 46 (1978). Raskoti *et al.*, PhytoKeys 79: 48 (2017). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 117 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 128 (2018).

*Ophrys lancea* Thunb. ex Sw., Kongl. Vetensk. Acad. Handl. 21: 223 (1800); *Herminium angustifolium* (Lindl.) Ridl.; *Platanthera angustifolia* (Lindl.) Rchb. f.; *Spiranthes lancea* (Thunb. ex Sw.) Bakh. f. & Steenis

Terrestrial tuberous herbs, 20–40 cm tall; stem erect, with 2 tubular sheaths at base and 2–5 leaves.

*Habitat*: Forests, thickets, grassy slopes, damp ground, wet mossy rocks.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, C & SE China to Mongolia and Japan, mainland SE Asia to New Guinea.

NEPAL: W, C & E; 1100–4000(–4200) m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Dadeldhura [Pithoragarh, Uttarakhand in KSL India]; 1600–2750 m.

*Representative specimens*. **BAJHANG**: Talkot – Aagar, 1660–2180 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160748, 18 Aug 1991; KATH<sup>1</sup>, TI).

**DADEL DHURA**: Ghanteswor, 1900 m (KR Rajbhandari, PM Regmi & KJ Malla 5431, 16 Aug 1980; KATH<sup>1</sup>).

**DARCHULA**: Makarigad, 2000 m (PR Shakya, MK Adhikari & MN Subedi 7894, 18 Jul 1984; KATH<sup>1</sup>).

**UTARAKHAND (INDIA)**: Kumaon, Ralam Valley, 2438–2743 m (JF Duthie 3413, 21 Aug 1884; K000796954<sup>1</sup>); Kumaon, Budhi, Kali Valley, 2743 m (Inayat 24104, 14 Sept 1900; K000079027<sup>1</sup> image).

**Herminium latilabre** (Lindl.) X.H. Jin, Schuit., Raskoti & Lu Q. Huang, Cladistics 32: 210 (2015). Raskoti *et al.*, PhytoKeys 79: 51 (2017). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 118 (2017).

*Platanthera latilabris* Lindl., Gen. Sp. Orchid. Pl.: 289 (1835); *Habenaria latilabris* (Lindl.) Hook. f.; *Habenella latilabris* (Lindl.) Szlach. & Kras-Lap.; *Platanthera acuminata* Lindl.; *Platantheroides latilabris* (Lindl.) Szlach.

Terrestrial tuberous herbs, 25–60 cm tall; stem erect, with 2–3 tubular sheaths at base, 3–5 leaved.



*Habitat*: Forest margins, thickets, grasslands, open grassy slopes, on mossy rocks.

*Distribution*: Himalaya (Pakistan to NE India), Tibetan Plateau, SC China.

NEPAL: W, C & E; (900–)1400–3700(–4200) m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura and Mugu; 1700–3500 m [Pithoragarh and neighboring Almora, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Naya Odar – Topu, 3090 m (PR Shakya, MK Adhikari & MN Subedi 8276, 28 Jul 1984; KATH<sup>1</sup>). **BAJURA**: Basala – Pategaon, 1760–2190 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160628, 15 Aug 1991; KATH<sup>1</sup>, TI). **DARCHULA**: Ghusa VDC, above Nahli, 2400 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1005C, 16 Jul 2015; TUCH<sup>1</sup>). **HUMLA**: Durpa, 2900 m (KR Rajbhandari & B Roy 4151, 30 Jul 1979; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Almora, Kumaon, 1676 m (R Strachey & JE Winterbottom 41; *Platanthera acuminata* P00411202<sup>1</sup> image); Paton, Kumaon 2134 m (RC Thakur 809, 26 Jun 1948; MICH 1495067<sup>1</sup> image); above Bona, Kumaon, 3048 m (WN Koelz 20922, 1 Jul 1948; NY 04097119<sup>1</sup> image).

*Local abund.*: Occasional to frequent in Darchula.

**Herminium macrophyllum** (D. Don) Dandy, J. Bot. 70: 328 (1932). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 46 (1978). Raskoti *et al.*, PhytoKeys 79: 54 (2017). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 118 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 128 (2018).

*Neottia macrophylla* D. Don, Prodr. Fl. Nepal.: 27 (1825); *Herminium congestum* Lindl.; *Peristylus duthiei* var. *inayatii* Deva & H.B. Naithani; *Peristylus macrophyllum* (D. Don) Lawkush, V. Kumar & Bankoti; *Spiranthes macrophylla* (D. Don) Spreng.

Terrestrial tuberous herbs, 8–30 cm tall; stem erect, with 2–3 tubular sheaths, and 2–3 leaves at base.

*Habitat*: Broad-leaved and coniferous forests, forest margins, thickets, scrub, grassy slopes, meadows.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau.

NEPAL: W, C & E; (2750–)3100–4700 m.

KSL: Pithoragarh, Uttarakhand in KSL India; and neighboring Mugu, Nepal; 2100–3300 m. It is likely also to be present in Darchula and Humla districts, Nepal.

*Representative specimens*. **MUGU (NEPAL)**: Chankheli Lekh, 3250 m (PR Shakya, MN Subedi & R Upreti 8600, 13 Aug 1985; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Paton, Kumaon, 2135 m (RC Thakur 809A, 26 Jun 1948; MICH 1493501<sup>1</sup> image); Tola, Kumaon, 3505 m (R Strachey & JE Winterbottom 34; GH 01948760<sup>1</sup> image).

**Herminium monophyllum** (D. Don) P.F. Hunt & Summerh., Kew Bull. 20: 51 (1966). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 47 (1978). Raskoti *et al.*, PhytoKeys 79: 57 (2017). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 119 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 128 (2018). **Pl. 11.**

*Neottia monophylla* D. Don, Prodr. Fl. Nepal.: 27 (1825); *Androcorys monophylla* (D. Don) Agrawala & H.J. Chowdhery; *Herminium gramineum* Lindl.; *Monorchis monophylla* (D. Don) O. Schwarz; *Spiranthes monophylla* (D. Don) Spreng.

Terrestrial tuberous herbs, 6–15 cm tall; stem slender, with tubular sheaths and 1 leaf at base.

*Habitat*: Shady places in forests, forest margins, open slopes, mossy rocks.

*Distribution*: Himalaya (India, Nepal, Bhutan).

NEPAL: W & C; 1000–2700(–4200) m.

KSL: Baitadi, Bajhang and Darchula in KSL Nepal, and neighboring Doti; 1000–2600 m [also in Kumaon, Uttarakhand, India].

*Representative specimens.* **BAITADI:** Ganna–Nalabagar, 1000 m (PR Shakya, MK Adhikari & MN Subedi 7859, 15 Jul 1984; KATH<sup>1</sup>). **BAJHANG:** Between Chainpur & Rishinri, 1480 m (H Tabata, KR Rajbhandari & K Tsuchiya 1405, 20 Jul 1976; KATH<sup>1</sup>). **DARCHULA:** Above Ngali, way to Sithi, Ghusa VDC, 2350 m (SK Ghimire & B Awasthi IM-0934, 17 Jul 2015; TUCH<sup>1</sup>). **DOTI:** Baga Lekh, 1950 m (PR Shakya, LR Sharma & KR Amatya 6223, 30 Jun 1981; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, 2591 m (R Strachey & JE Winterbottom 31; GH 01948770<sup>1</sup> image).

*Local abund.:* Rare in Darchula; not known for other regions.

**Herminium monorchis** (L.) R. Br. in W.T. Aiton, Hortus Kew., ed. 2. 5: 191 (1813). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 47 (1978). Raskoti *et al.*, PhytoKeys 79: 58 (2017). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 119 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 128 (2018). **PI. 11.**

*Ophrys monorchis* L., Sp. Pl.: 947 (1753); *Monorchis herminium* O. Schwarz; *Satyrrium monorchis* (L.) Pers.

ENG: Musk orchid.

Terrestrial tuberous herbs, 5–25 cm tall; stem erect with tubular sheaths at base, 2–3-leaved.

*Habitat:* Forest margins, moist places in thickets, meadows, marshy fields, glacier moraine.

*Distribution:* Europe to Temperate Asia, Himalaya (Pakistan to NE India: Sikkim).

NEPAL: W, C & E; (2300–)3200–4600(–4900) m.

KSL: Darchula and Humla in KSL Nepal, and neighboring Mugu; 3700–4300 m [Pithoragarh, Uttarakhand in KSL India; and Pulan Xian, SW Xizang in KSL China].

*Representative specimens.* **DARCHULA:** Api Base Camp, Gauchhalighol, Pilkanda, 3850–4000 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudyal 761, 22 Oct 2014; TUCH<sup>1</sup>). **HUMLA:** Chungsa Valley, Dharmashala, 4300 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH 1801, Sept 2012; TUCH<sup>1</sup>). **MUGU:** Chuchamara Danda, 3750 m (KR Rajbhandari & B Roy 3628, 19 Jul 1979; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Pithoragarh (Inayat 24106; K) fide Raskoti *et al.* (2017). **XIZANG (CHINA):** Pulan Xian (Tibet Expedition Team 5217333; PE) fide Kong & Yang (2019).

*Local abund.:* Occasional to frequent at higher elevations.

**Liparis** Rich., De Orchid. Eur. 21, 30, 38 (1817).

**Liparis campylostalix** Rchb.f., Linnaea 41: 45 (1876).

*Leptorkis campylostalix* (Rchb.f.) Kuntze

Terrestrial herbs; pseudobulbs clustered, ovoid to globose, enclosed by membranous sheaths, 2-leaved.

*Habitat:* Forest thickets on moist slopes.

*Distribution:* Nepal, Tibetan Plateau, SC China to Japan and Russian Far East, Vietnam.

NEPAL: W; 3000 m.

KSL: Known from neighboring Doti District, Nepal; 3000 m.

*Representative specimen.* **DOTI:** On the way to Bichpani, 3000 m (BB Raskoti 008378, 5 Sept 2008; KATH<sup>1</sup>).

**Liparis glossula** Rchb. f., Linnaea 41: 44 (1876). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 47 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 122 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 130 (2018).

*Leptorkis glossula* (Rchb. f.) Kuntze

Terrestrial herb; pseudobulbs clustered, oblong to ovoid; 1-leaved.

*Habitat:* Shady places in forests, forest margins, thickets, open places.

*Distribution:* Himalaya (India, Nepal), Tibetan Plateau, SC China.

NEPAL: W, C & E; 1800–4300 m.

KSL: Known from neighboring Doti District, Nepal; 2850 m.

*Representative specimen.* **DOTI:** Doti–Salimgado, 2850 m (MS Bista & DP Joshi 171, 2 Aug 1972; KATH<sup>1</sup>).

**Luisia** Gaudich., Voy. Uranie, Bot. 426 (1829).

**Luisia tristis** (G. Forst.) Hook. f., Fl. Brit. India 6: 25 (1890). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 124 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 132 (2018).

*Epidendrum triste* G. Forst., Fl. Ins. Austr.: 60 (1786); *Luisia zeylanica* Lindl.

ENG: Velvet orchid.

Epiphytic monopodial herbs; stem stout, noded, covered by leaf sheaths; leaves fleshy, terete.

*Habitat:* On exposed trees in moist forests.

*Distribution:* Tropical and Subtropical Asia to N Australia and S Pasific.

NEPAL: W, C & E; 300–1400 m.

KSL: Baitadi and Darchula in KSL Nepal; 700–1100 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAITADI:** Pangsera – Bagadi, 770 m (PR Shakya, MK Adhikari & MN Subedi 7839, 14 Jul 1984; KATH<sup>1</sup>). **DARCHULA:** Dhrampati, 1050 m (GD Mishra G145, 28 Mar 1994; TUCH<sup>1</sup>).

*Remarks:* Distribution records for Pithoragarh fide Jalal (2004).

**Malaxis** Sol. ex Sw., Prodr. 8, 119 (1788).

**Malaxis muscifera** (Lindl.) Kuntze, Revis. Gen. Pl. 2: 673 (1891). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 49 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 125 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 133 (2018).

*Dienia muscifera* Lindl., Gen. Sp. Orchid. Pl.: 23 (1830); *Microstylis muscifera* (Lindl.) Ridl.

NEP-L: Kaunphalo (कौफलो).

ENG: Adder's mouth orchid, Fly-bearing Malaxis.

Terrestrial herbs, 10–30 cm; pseudobulbs ovoid; leaves 2, subopposite, unequal; raceme many-flowered.

*Habitat:* Moist and shady places, birch forests, fir-rhododendron forests, open slopes, on mossy rock.

*Distribution:* Himalaya (Pakistan to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; (2000–)2500–4300 m.

KSL: Darchula in KSL Nepal, and neighboring Bajura and Doti; 2800–3900 m. It is likely also to be present in Bajhang, Nepal.

*Representative specimens.* **DARCHULA:** Chheti, 3090 m (PR Shakya, MN Subedi & RK Upreti 8001, 22 Jul 1984; KATH<sup>1</sup>); Ringde, way to Pilkanda, 3850 m (SK Ghimire, B Awasthi, S Budha Magar, B Jnawali, S Nepal, MR Paudeyal & DJ Chapagain 3322, 6 Sept 2017; TUCH<sup>1</sup>). **DOTI:** Salimgado, 2840 m (MS Bista & DP Joshi 172, 2 Aug 1972; KATH<sup>1</sup>).

*Local abund.:* Occasional in Darchula.

*Ethnobot. use:* Pseudobulbs are edible, used as a general tonic.

*Conserv. status:* GLB., Vulnerable A2cd (Saha *et al.* 2015). LOC., Data Deficient. Assessment by Saha *et al.* (2015) revealed that more than 40% of the wild populations in the Indian Himalayan region

declined over 10 years. Commercial harvesting has been considered as the main cause of population decline. In KSL Nepal, although *Malaxis muscifera* occurs in small isolated populations, it is not subjected to large-scale commercial harvesting. Sporadic harvesting exists mainly for local use in some areas, like Darchula. It is, however, threatened due to habitat loss, overgrazing, trampling and deforestation.

**Neottia** Guett., Hist. Acad. Roy. Sci. Mém. Math. Phys. (Paris, 4<sup>e</sup>) 1750: 374 (1754).

**Neottia listeroides** Lindl. in Royle, Ill. Bot. Himal. Mts.: 368 (1839). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 49 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 127 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 134 (2018).

*Listera lindleyana* (Decne.) King & Pantl.; *Neottia lindleyana* Decne.

Terrestrial holomycotrophic herbs; stems erect, pubescent, with scale-line basal sheaths, true leaf absent.

*Habitat*: Shady places, oak and fir forests, grassy slopes.

*Distribution*: Himalaya (Pakistan to Bhutan & NE India), Tibetan Plateau, NC & SC China.

NEPAL: W & C; (2200–)2700–3800(–4150) m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura and Mugu; 2700–3350 m.

*Representative specimens*. **BAJHANG**: (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160883, 21 Aug 1991; TI) fide SHB 2013–2020. **BAJURA**: Khaptad National Park to Kaudegaon, 1900–2980 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9161101, 28 Aug 1991; KATH<sup>1</sup>, TI<sup>1</sup> image). **DARCHULA**: Simar, 2862 m (CK Subedi, J Gurung & S Thapa 54, 21 Jun 2014; TUCH<sup>1</sup>). **HUMLA**: Kallas, 2700 m (KR Rajbhandari & B Roy 4230, 1 Aug 1979; KATH<sup>1</sup>); Marghor Lekh, 3100 m (KR Rajbhandari & B Roy 4182, 31 Jul 1979; KATH<sup>1</sup>); Daha Kharka – Rimi, 3270 m (PR Shakya, MN Subedi & RK Uprety 8745, 19 Aug 1985; KATH<sup>1</sup>). **MUGU**: Chankheli Lagna, 3350 m (KR Rajbhandari & B Roy 3847, 25 Jul 1979; KATH<sup>1</sup>).

*Local abund.*: Rare in Darchula; not known for other regions.

**Neottia longicaulis** (King & Pantl.) Szlach., Fragm. Florist. Geobot., Suppl. 3: 117 (1995). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 49 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 127 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 134 (2018).

*Listera longicaulis* King & Pantl., J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 65: 126 (1896).

Terrestrial autotrophic herbs.

*Habitat*: Broad-leaved forests.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, SC China.

NEPAL: W; 2400 m.

KSL: Neighboring Doti District, Nepal; 2400 m.

*Representative specimen*. **DOTI**: Wagalek, 2400 m (BB Raskoti 0878, 5 Sept 2008; KATH<sup>1</sup>).

**Oberonia** Lindl., Gen. Sp. Orchid. Pl. 15 (1830).

**Oberonia falconeri** Hook. f., Hooker's Icon. Pl. 18: t. 1780 (1888). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 50 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 130 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 137 (2018).

*Iridorkis falconeri* (Hook. f.) Kuntze; *Oberonia calcicola* Holttum; *Oberonia siamensis* Schltr.

Epiphytic herbs; acaulescent or with short stem; leaves 3–6, subbasal, overlapping; flowers pedicellate.

*Habitat*: Forests, thickets.

*Distribution:* Himalaya (India, Nepal), Peninsular India, Bangladesh, SC China to Malaysia.

NEPAL: W, C & E; 150–1300 m.

KSL: Bajhang in KSL Nepal; 1100 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimen.* **BAJHANG:** Chir, 1100 m (P Pradhan, RK Uprety, N Pradhan & N Dabadi 1303, 14 Apr 1984; KATH<sup>1</sup>).

*Remarks:* Distribution record for Pithoragarh fide Jalal (2004).

**Oberonia pachyrachis** Rchb. f. ex Hook. f., Fl. Brit. India 5: 681 (1888). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 50 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 132 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 137 (2018).

*Iridorkis pachyrachis* (Rchb. f. ex Hook. f.) Kuntze; *Oberonia umbraticola* Rolfe

Epiphytic herbs; stem short, tufted; leaves subbasal; flowers embedded in the fleshy rachis.

*Habitat:* Forests.

*Distribution:* Himalaya (India, Nepal, Bhutan), Tibetan Plateau, SC China, mainland SE Asia.

NEPAL: W, C & E; 600–1800(–3500) m.

KSL: Pithoragarh District, Uttarakhand and adjoining areas in KSL India; and neighboring Doti District, Nepal; 600 – 1400 m.

*Representative specimens.* **DOTI:** Kalima VDC-9, 1400 m (P Bhatta 65, 17 Oct 2003; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, hot valleys, 610 m (R Strachey & JE Winterbottom 2; isosyntype GH 00556561<sup>1</sup> image); Kumaon, Askot, 1000 m (PC Pant 31841, 28 Apr 1964; L.1513778<sup>1</sup> image, U.1459082<sup>1</sup> image).

**Oreorchis** Lindl., J. Proc. Linn. Soc., Bot. 3: 26 (1858).

**Oreorchis foliosa** (Lindl.) Lindl., J. Proc. Linn. Soc. Bot. 3: 27 (1858). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 51 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 133 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 138 (2018).

*Corallorhiza foliosa* Lindl., Gen. Sp. Orchid. Pl.: 535 (1840); *Kitigorchis foliosa* (Lindl.) Maek.

Terrestrial herbs, 25–30 cm tall; pseudobulb corm-like, bearing solitary leaf at the apex.

*Habitat:* Shady floor in oak forest, forest margins, cliff sides.

*Distribution:* Himalaya (NW India to Bhutan), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 2500–3800(–4500) m.

KSL: Darchula in KSL Nepal, and neighboring Doti; 2900–3000 m.

*Representative specimens.* **DARCHULA:** Tologaon (Marma), 2880 m (JDA Stainton 4939, 15 Jun 1965; BM) fide RBGE (2014). **DOTI:** Khaptad, 2950 m (PR Shakya, LR Sharma & KR Amatya 6284, 2 Jul 1981; KATH<sup>1</sup>).

**Pecteilis** Raf., Fl. Tellur. 2: 37 (1837).

**Pecteilis gigantea** (Sm.) Raf., Fl. Tellur. 2: 38 (1837).

*Orchis gigantea* Sm., Exot. Bot. 2: 79 (1806); *Habenaria gigantea* (Sm.) D. Don; *Platanthera gigantea* Lindl. ex Wall., nom. nud.

Terrestrial tuberous herbs; plant robust up to 100 cm or more; stem erect, stout, leafy; inflorescence 2–6-flowered; flowers white, fragrant.

*Habitat:* Forest margins, grassy slopes, open places.

*Distribution:* Himalaya (Pakistan, India, Nepal), Myanmar.

NEPAL: W, C & E; 400–1700 m.

KSL: Known from Amora, Uttarakhand, India; and nearby Kanchanpur District in Far West Nepal. It is likely also to be present in KSL area of Nepal.

*Representative specimens.* **KANCHANPUR (NEPAL):** Bedkot to Naula, 500–960 m (I Sharma, R Joshi, R Uprety & I Pandey 300, 13 Sept 1981; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Almora, Kumaon 1675 m (R Strachey & JE Winterbottom 39; GH 01948940<sup>1</sup> image).

**Pecteilis triflora** (D. Don) Tang & F.T. Wang, Acta Phytotax. Sin. 1: 62 (1951). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 52 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 137 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 142 (2018).

*Habenaria triflora* D. Don, Prodr. Fl. Nepal.: 25 (1825); *Habenaria uniflora* Buch.-Ham. ex D. Don; *Pecteilis candida* (Lindl.) Schltr.; *Platanthera candida* Lindl.; *Platanthera triflora* (D. Don) Pradhan; *Platanthera uniflora* (Buch.-Ham. ex D. Don) Lindl.

Terrestrial tuberous herbs; stem erect, stout; inflorescence 1–3-flowered; flowers white.

*Habitat:* Forests, forest margins.

*Distribution:* W & C Himalaya (NW India, Nepal), Bangladesh.

NEPAL: W, C & E; 300–1800 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; 1200–1800 m [Bageshwar and Pithoragarh districts, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** 1390–2180 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160969, 23 Aug 1991; TI) fide SHB (2013–2020). **BAJURA:** Rigla, 1200 m (MS Bista & DP Joshi 319, 11 Aug 1972; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon (R Blinkworth 7035, 2 Jul 1981; K001126620<sup>1</sup> image); Bagesar, Kumaon 915 m (R Strachey & JE Winterbottom 44; GH 01948490<sup>1</sup> image).

**Peristylus** Blume, Bijdr. 404 (1825).

**Peristylus constrictus** (Lindl.) Lindl., Gen. Sp. Orchid. Pl. 300 (1835). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 52 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 138 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 142 (2018).

*Herminium constrictum* Lindl., Edwards's Bot. Reg. 18: t. 1499 (1832); *Habenaria constricta* (Lindl.) Hook. f.; *Platanthera constricta* Lindl. ex Wall., nom. nud.

Terrestrial tuberous herbs; stem erect, with basal sheaths, bracteate above; leaves 4–6 on lower half.

*Habitat:* Shady places, scrub, open ground.

*Distribution:* Himalaya (India, Nepal, Bhutan), SW & C India, Bangladesh, SC China, mainland SE Asia to Philippines.

NEPAL: W, C & E; 300–2300 m.

KSL: Baitadi in KSL Nepal [Pithoragarh, Uttarakhand in KSL India]; 600–1800 m.

*Representative specimens.* **BAITADI:** Dhik Gad to Gokule, 600 m (PR Shakya, MK Adhikari & MN Subedi 7833, 12 Jul 1984; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, Pithoragarh, 1800 m (CM Arora 38891, 28 Jul 1969; L.1519178<sup>1</sup> image).

**Peristylus goodyeroides** (D. Don) Lindl., Gen. Sp. Orchid. Pl.: 299 (1835). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 52 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 138 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 143 (2018).

*Habenaria goodyeroides* D. Don; *Habenaria goodyeroides* var. *affinis* King & Pantl.

Terrestrial tuberous herbs to 70 cm tall, stem erect, with 2–4 tubular basal sheaths, bracteate above, leaves 4–6, clustered midway along stem; flowers yellowish white or pale yellowish green.

*Habitat*: Pine forests, open grassy places.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tropical and Subtropical Asia.

NEPAL: W, C & E; 500–1500 m.

KSL: Pithoragarh, Uttarakhand in KSL India; and nearby Kanchanpur District of Far West and Kalikot District of Mid West Nepal. It is likely also to be present in KSL area of Nepal.

*Representative specimens*. **KALIKOT (NEPAL)**: Badarigaon – Kota, 1330–810 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160318, 6 Aug 1991; KATH<sup>1</sup>, TT<sup>1</sup> image). **KANCHANPUR (NEPAL)**: Lipna, 1000 m (KR Rajbhandari, PM Regmi & KJ Malla 5241, 12 Aug 1980; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon, Berinag, 1675 m (WN Koelz 21515, 6 Aug 1948; NY 04111226<sup>1</sup> image).

**Peristylus prainii** (Hook. f.) Kraenzl., *Orchid. Gen. Sp.* 1: 514 (1898). Rajbhandari & Rai, *Handbk. Fl. Pl. Nepal* 1: 139 (2017). Shrestha *et al.*, *Handbk. Fl. Pl. Nepal* 1: 144 (2018).

*Habenaria prainii* Hook. f., *Fl. Brit. India* 6: 159 (1890).

Terrestrial tuberous herbs, stem slender, with basal sheaths, bracteate above, leaves 3–4, distantly arranged.

*Habitat*: Forests, open places.

*Distribution*: C & E Himalaya (Nepal to Bhutan & NE India), mainland SE Asia.

NEPAL: W, C & E; 700–2100 m.

KSL: Known from neighboring Doti District, Nepal; 2100 m.

*Representative specimen*. **DOTI**: Doti to Bagalekh, 2100 m (MS Bista & DP Joshi 142, 1 Aug 1972; KATH<sup>1</sup>).

**Phalaenopsis** Blume, *Bijdr.* 294 (1825).

**Phalaenopsis taenialis** (Lindl.) Christenson & Pradhan, *Indian Orchid J.* 1: 154 (1985). Rajbhandari & Rai, *Handbk. Fl. Pl. Nepal* 1: 141 (2017). Shrestha *et al.*, *Handbk. Fl. Pl. Nepal* 1: 145 (2018). **PI. 11.**

*Aerides taenialis* Lindl., *Gen. Sp. Orchid. Pl.*: 239 (1833); *Bierrmannia taenialis* (Lindl.) Tang & F.T. Wang; *Doritis braceana* Hook. f.; *Doritis taenialis* (Lindl.) Hook. f.; *Kingidium taeniale* (Lindl.) P.F. Hunt

Epiphytic monopodial herbs, with tufted, long, flattened roots; stems short, 1–2 leaved.

*Habitat*: On tree trunks in forests.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Peninsular India, Bangladesh, SC China, mainland SE Asia.

NEPAL: W, C & E; 1100–2300 m.

KSL: Darchula and Bajhang in KSL Nepal, and neighboring Doti; 1700–2300 m [Pithoragarh and neighboring Champawat District, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Rupatola, 2300 m (P Bhandari, M Pandey, & S Thapamagar 1671, 25 May 2016; KATH<sup>1</sup>). **DOTI**: On the way to Baglekh, 1690 m (P Pradhan, RK Uprety, N Pradhan & N Dabadi 1168, 6 Apr 1984; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Champawat, Kumaon, 1250 m (CM Arora 38890, 23 Jul 1969; L.1519430<sup>1</sup> image).

*Remarks*: Records for Pithoragarh fide Jalal (2004).

**Pholidota** Lindl. ex Hook., Exot. Fl. 2: ad t. 138 (1825).

**Pholidota articulata** Lindl., Gen. Sp. Orchid. Pl.: 38 (1830). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 53 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 141 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 145 (2018). **Pl. 11.**

*Coelogyne articulata* (Lindl.) Rchb. f.; *Pholidota griffithii* Hook. f.; *Pholidota obovata* Hook. f.

NEP-L: Bhāḷkelā, Bhālu-kelā (भाल्केला, भालू-केला). NEP: Bhālu-kerā (भालू-केरा).

Epiphytic or lithophytic herbs; pseudobulbs slender, swollen, superposed and connected to each other.

*Habitat*: Moist forests, rocks on shady places.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, SC China, mainland SE Asia to Indonesia.

NEPAL: W, C & E; 500–2500 m.

KSL: Darchula in KSL Nepal, and neighboring Doti; 800–1700 m [Bageshwar and Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **DARCHULA**: Paribagar–Makarigad, 1250 m (PR Shakya, MK Adhikari & MN Subedi 7870, 17 Jul 1984; KATH<sup>1</sup>); Chameliya Valley, Khumbhalotey, way to Khandeshowari & Ghusa, 1550 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1021, 16 Jul 2015; TUCH<sup>1</sup>). **DOTI**: Above Silgadi on trail to Khaptad, 1664 m (Bajhang09 20919002, 29 Jun 2009) fide RBGE (2014). **UTTARAKHAND (INDIA)**: Kumaon, Bageshwar, 914 m (R Strachey & JE Winterbottom 17, 1843; P00403258<sup>1</sup> image); Kumaon, Didihat, 2000 m (CM Arora 37872, 17 Oct 1967; L.1519449<sup>1</sup> image).

*Local abund.*: Occasional in Darchula.

*Ethnobot. use*: Pseudobulbs are edible, also used medicinally to treat stomach disorders.

**Pholidota imbricata** Hook., Exot. Fl. 2: t. 138 (1825). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 53 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 141 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 145 (2018).

*Coelogyne imbricata* (Hook.) Rchb. f.; *Cymbidium imbricatum* (Hook.) Roxb.; *Pholidota bracteata* (D. Don) Seidenf.; *Ptilocnema bracteata* D. Don

NEP: Patthar-kerā, Bhālu-kerā (पत्थर-केरा, भालू-केरा).

ENG: Common rattlesnake orchid, Necklace orchid. HIN-L: Hāth-kelā (हाथ-केला).

Epiphytic or lithophytic herbs with creeping rhizomes; pseudobulbs contiguous.

*Habitat*: Forests.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tropical and Subtropical Asia, Australasia.

NEPAL: W, C & E; 300–2900 m.

KSL: Bageshwar and Pithoragarh districts, Uttarakhand in KSL India. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimens*. **UTTARAKHAND (INDIA)**: Kumaon [Pithoragarh], Jauljibi, 1000 m (PC Pant 31832, 27 Apr 1964; L.1519677<sup>1</sup> image); Kumaon [Bageshwar], Kapkot, 1067 m (R Strachey & JE Winterbottom 16, 1843; P00391033<sup>1</sup> image).

**Pinalia** Lindl., Orchid. Scelet.: 14, 21, 23 (1826).

**Pinalia leucantha** Kuntze, Revis. Gen. Pl. 2: 679 (1891). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 147 (2018).

*Eria alba* Lindl.; *Octomeria alba* (Lindl.) Wall. ex Hook. f.

ENG: White eria, White pinalia.



Epiphytic herbs; pseudobulbs ovoid, clustered, 2–6 leaved; raceme terminal, laxly flowered.

*Habitat*: Moist forests, shady places.

*Distribution*: Himalaya (India, Nepal, Bhutan).

NEPAL: W, C & E; 1500–2500 m.

KSL: Darchula in KSL Nepal, and neighboring Doti; 1500–2100 m.

*Representative specimens*. **DARCHULA**: Khar, 2000–2100 m (P Bhandari, M Pandey & S Thapamagar 1670, 30 May 2016; KATH<sup>1</sup>). **DOTI**: Bhasu – Saheipur, 1515 m (H Tabata, KR Rajbhandari & K Tsuchiya 581, 19 Jun 1976; KATH<sup>1</sup>).

**Pinalia spicata** (D. Don) S.C. Chen & J.J. Wood, Fl. China 25: 354 (2009). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 147 (2018). **PI. 11.**

*Octomeria spicata* D. Don, Prodr. Fl. Nepal.: 31 (1825); *Eria convallarioides* Lindl.; *Eria spicata* (D. Don) Hand.-Mazz.

NEP-L: Bhālkelā, Bhālu-kelā (भाल्केला, भालू-केला).

Epiphytic herbs; pseudobulbs fusiform, tufted, 4–6-leaved; raceme axillary, cylindric, densely flowered.

*Habitat*: Moist forests, shady places.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Bangladesh, SC China, mainland SE Asia.

NEPAL: W, C & E; (300–)900–2200 m.

KSL: Darchula in KSL Nepal; 1100–1500 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **DARCHULA**: Above Okhal, way to Makarigad, 1300 m (SK Ghimire, B Awasthi, S Budha Magar, B Jnawali, S Nepal, MR Paudeyal & DJ Chapagain ANCA-1704, 14 Jul 2017; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Thal, Pithoragarh, 1200 m (CM Arora 36406, 6 Nov 1965; L.1510468<sup>1</sup> image).

*Local abund.*: Rare in Darchula.

*Ethnobot. use*: Pseudobulbs are edible. Pseudobulbs and rhizomes are also used to treat stomach disorder.

**Platanthera** Rich., De Orchid. Eur. 20, 26, 35 (1817).

**Platanthera bakeriana** (King & Pantl.) Kraenzl., Orchid. Gen. Sp. 1: 632 (1899). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 54 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 144 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 148 (2018).

*Habenaria bakeriana* King & Pantl., J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 65: 132 (1896).

Terrestrial tuberous herbs, 30–50 cm tall; stem erect, stout, 3–5-leaved; raceme laxly many flowered.

*Habitat*: Mixed broad-leaved forests, fir forests, thickets, mossy rocks.

*Distribution*: C & E Himalaya (Nepal to Bhutan & NE India), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; (1500–)2000–4100 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; 2200–3400 m.

*Representative specimen*. **BAJURA & BAJHANG**: Pategaon – Ghodi Lekh Deurali – Badigaon, 2190–3350 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160687, 16 Aug 1991; KATH<sup>1</sup>, TI).

**Platanthera japonica** (Thunb.) Lindl., Gen. Sp. Orchid. Pl.: 290 (1835). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 145 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 149 (2018). **PI. 11.**

*Orchis japonica* Thunb., Syst. Veg. ed. 14: 811 (1784); *Habenaria arcuata* (Lindl.) Hook. f.; *Habenaria japonica* (Thunb.) A. Gray; *Habenaria omeiensis* Rolfe; *Platanthera arcuata* Lindl.

Terrestrial tuberous herbs, 50–80 cm tall; stem erect, robust, 3–6 leaved; raceme laxly many flowered.

*Habitat*: Moist and shady places in forests, open grassy slopes.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, C & SE China to Japan.

NEPAL: W & C; (600–)2300–3200 m.

KSL: Darchula and Humla in KSL Nepal, and neighboring Doti; 2600–3200 m.

*Representative specimens*. **DARCHULA**: Ghusa VDC, Domul Deurali, way to Pilkanda, 3200 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1579A; TUCH<sup>1</sup>). **DOTI**: Khaptad Daha, 2800 m (PR Shakya, LR Sharma & KR Amatya 6319, 3 Jul 1981; KATH<sup>1</sup>). **HUMLA**: On the way to Darma, 2660 m (SB Malla 14186, 9 Jul 1968; KATH<sup>1</sup>).

*Local abund.*: Rare in Darchula; not known for other districts.

**Platanthera stenantha** (Hook. f.) Soó, Ann. Hist.-Nat. Mus. Natl. Hung. 26: 363 (1929). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 54 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 146 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 149 (2018).

*Habenaria stenantha* Hook. f.; *Hemihabenaria stenantha* (Hook. f.) Finet

Terrestrial herbs, to 40 cm, stoloniferous; stem erect, stout, 2–4-leaved; raceme laxly many flowered.

*Habitat*: Forests, open slopes.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 1200–3600 m.

KSL: Known from neighboring Bajura, Nepal.

*Representative specimen*. **BAJURA**: (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160696, 16 Aug 1991; TI) fide SHB 2013–2020.

**Pleione** D. Don, Prodr. Fl. Nepal. 36 (1825).

**Pleione humilis** (Sm.) D. Don, Prodr. Fl. Nepal.: 37 (1825). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 55 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 147 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 150 (2018).

*Epidendrum humile* Sm., Exot. Bot. 2: 75 (1806); *Coelogyne humilis* (Sm.) Lindl.

Epiphytic or lithophytic herbs; pseudobulbs ovoid-conical, with 1 leaf at apex.

*Habitat*: On mossy rocks or tree trunk in forests.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Myanmar.

NEPAL: W, C & E; 1800–3000 m.

KSL: Known from neighboring Doti, Nepal; 2300 m.

*Representative specimen*. **DOTI**: On the way to Khaptad, 2300 m (P Pradhan, RK Uprety, N Pradhan & N Dabadi 1217, 7 Apr 1984; KATH<sup>1</sup>).

**Ponerorchis** Rchb. f., Linnaea. 25: 227 (1852).

**Ponerorchis chusua** (D. Don) Soó, Acta Bot. Acad. Sci. Hung. 12: 352 (1966). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 55 (1978). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 150 (2018). **Pl. 12.**

*Orchis chusua* D. Don, Prodr. Fl. Nepal.: 23 (1825); *Chusua donii* Nevski; *Chusua nana* (King & Pantl.) Pradhan; *Chusua pauciflora* (Lindl.) P.F. Hunt; *Habenaria chusua* (D. Don) Benth.; *Gymnadenia pauciflora* Lindl.

NEP-L: Kaunphalo (कौफलो).

Terrestrial tuberous herbs, 10–30 cm tall; stem erect, with basal sheaths, 1–3-leaved.

*Habitat*: Forests, rhododendron scrub, moist alpine meadows, grassy slopes, scree.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Myanmar, C China to Russian Far East.

NEPAL: W, C & E; 2400–4900 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Doti; 2700–4100 m.

*Representative specimens*. **BAJHANG**: Surma Sarovar, 3800 m (PR Shakya, MK Adhikari & MN Subedi 6364, 9 Jul 1984; KATH<sup>1</sup>); Manane Lekh, 3807 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915106, 13 Jul 2009; E00623907<sup>1</sup> image, KATH<sup>1</sup>). **DARCHULA**: Chheti, 3200 m (TB Shrestha 4234, 21 Jun 1965; KATH<sup>1</sup>); near Thadapani, Pilkanda, 3900 m (SK Ghimire, B Awasthi, S Budha Magar, B Jnawali, S Nepal, MR Paudeyal & DJ Chapagain ANCA-3434, 8 Sept 2017; TUCH<sup>1</sup>). **DOTI**: Khaptad, 2950 m (PR Shakya, LR Sharma & KR Amatya 6299, 3 Jul 1981; KATH<sup>1</sup>). **HUMLA**: Raniban, Simikot, 2990 m (TR Pandey & DR Kandel 2016903, 9 Sep 2016, KATH<sup>1</sup>).

*Local abund.*: Rare to occasional in Darchula and Humla; not known for other districts.

*Ethnobot. use*: In Darchula, tubers are used in medicine to treat cuts, scrapes and burns.

**Ponerorchis cucullata** (L.) X.H. Jin, Schuit. & W.T. Jin, *Molec. Phylogen. Evol.* 77: 51 (2014).

*Orchis cucullata* L., *Sp. Pl.* 2: 939 (1753); *Gymnadenia cucullata* (L.) Rich.; *Neottianthe cucullata* (L.) Schltr.

NEP-L: Kaunphalo (कौफलो).

Terrestrial tuberous herbs; 10–20 cm tall; stem erect or ascending, with tubular sheaths and 1–2 subopposite leaves at base, and small sterile bracts above; raceme laxly 5–11-flowered; flowers purple or pink; lip 3-lobed, spurred, lateral lobes linear, spur curved forward.

*Habitat*: Open places in forests, forest margins, thickets, moist meadows, open grassy slopes.

*Distribution*: NE Europe to Russia, Himalaya (India, Nepal, Bhutan), Tibetan Plateau, C & SE China to Japan.

NEPAL: W, C & E; (2300–)2700–4500 m.

KSL: Darchula in KSL Nepal; 3900–4000 m.

*Representative specimen*. **DARCHULA**: Chameliya Mool, Pilkanda, Lolu, 3950 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1529, 28 Jul 2015; TUCH<sup>1</sup>).

*Local abund.*: Occasional.

*Ethnobot. use*: Tubers are used in medicine to treat cuts and wounds.

**Ponerorchis cucullata** var. **calcicola** (W.W. Sm.) X.H. Jin, Schuit. & W.T. Jin, *Molec. Phylogen. Evol.* 77: 51 (2014). **Pl. 11.**

*Gymnadenia calcicola* W.W. Sm., *Notes Roy. Bot. Gard. Edinburgh* 8: 188 (1914); *Neottianthe calcicola* (W.W. Sm.) Schltr.; *Neottianthe cucullata* (L.) Schltr. var. *calcicola* (W.W. Sm.) Soó

NEP-L: Kaunphalo (कौफलो).

Terrestrial tuberous herbs, close to typical *P. cucullata*, but stem slightly curved, ebracteate, and spur straight to slightly curved.

*Habitat*: Thickets, open grassy slopes, moist meadows.

*Distribution*: C & E Himalaya (Nepal to Bhutan), Tibetan Plateau, C China.

NEPAL: W, C & E; 3500–5000 m.

KSL: Darchula and Humla in KSL Nepal; 3800–3900 m.

*Representative specimens.* **DARCHULA:** Way to Dopakhe, Lolu-Pilkanda, 3800 m (SK Ghimire, B Awasthi, S Budha Magar, B Jnawali, S Nepal, MR Paudeyal & DJ Chapagain ANCA-2085, 30 Jul 2016; TUCH<sup>1</sup>). **HUMLA:** Above Suma Kharka, 3850 m (PR Shakya, MN Subedi & RK Uprety 8735, 18 Aug 1985; KATH<sup>1</sup>).

*Local abund.:* Rare.

*Ethnobot. use:* Tubers are used in medicine to treat cuts and wounds.

**Ponerorchis secundiflora** (Kraenzl.) X.H. Jin, Schuit. & W.T. Jin, *Molec. Phylogen. Evol.* 77: 51 (2014).

*Peristylus secundiflorus* Kraenzl., *Orchid. Gen. Sp.* 1: 518 (1898); *Habenaria secundiflora* Hook. f. (1890), nom. illeg., non Barb. Rodr. (1881); *Gymnadenia secundiflora* (Kraenzl.) Kraenzl.; *Neottianthe mairei* Schltr.; *Neottianthe secundiflora* (Kraenzl.) Schltr.

NEP-L: Kaunphalo (कौफलो).

Terrestrial tuberous herbs, similar to *P. cucullata*, but leaves 2–3, alternate, widely spaced along stem.

*Habitat:* Forest margins, grassy slopes, moist meadows, mossy rocks.

*Distribution:* Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 2100–4350 m.

KSL: Darchula in KSL Nepal, and neighboring Mugu; 2200–3500 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **DARCHULA:** Upper Chameliya Valley, above Khayakot, way to Pilkanda, 2200 m (SK Ghimire, B Awasthi, S Budha Magar, B Jnawali, S Nepal, MR Paudeyal & DJ Chapagain ANCA-3231, 3 Sept 2017; TUCH<sup>1</sup>). **MUGU:** Pina–Ghurchii, 2800 m (PR Shakya, MN Subedi & R Uprety 8784, 23 Aug 1985; KATH<sup>1</sup>); Ghurchi Lagna, 3045 m (O Polunin, WR Sykes & LHJ Williams 3066, 28 Aug 1952; BM000885701). **UTTARAKHAND (INDIA):** Pithoragarh, Dharchula, forest near Sosa, 2743–3048 m (JF Duthie 3421, 20 Sept 1884; K000796374<sup>1</sup> image).

*Local abund.:* Rare in Darchula; not known for other regions.

*Ethnobot. use:* In Darchula, tubers are used in medicine to treat cuts and wounds.

**Rhynchostylis** Blume, *Bijdr. Fl. Ned. Ind.* 7: 285 (1825).

**Rhynchostylis retusa** (L.) Blume, *Bijdr. Fl. Nederl. Ind.* 7: 286, t. 49 (1825). Hara *et al.*, *Enum. Fl. Pl. Nepal* 1: 55 (1978). Rajbhandari & Rai, *Handbk. Fl. Pl. Nepal* 1: 149 (2017). Shrestha *et al.*, *Handbk. Fl. Pl. Nepal* 1: 151 (2018). **PI. 12.**

*Epidendrum retusum* L., *Sp. Pl.* 2: 953 (1753); *Aerides spicatum* D. Don; *Epidendrum hippium* Buch.-Ham. ex D. Don

NEP: Ghoge gābhā (घोगे-गाभा).

Epiphytic monopodial herbs, with thick roots; stems short, stout, ascending; inflorescences pendulous, densely many flowered.

*Habitat:* Open forests, forest margins.

*Distribution:* Himalaya (India, Nepal, Bhutan), Tropical and Subtropical Asia.

NEPAL: W, C & E; 300–1800 m.

KSL: Pithoragarh, Uttarakhand in KSL India, and neighboring Doti District, Nepal; 1300–1700 m. It is likely also to be present in Baitadi and Darchula districts in KSL Nepal.

*Representative specimen.* **DOTI:** Sahejpur (H Tabata, KR Rajbhandari & K Tsuchiya 618, 20 Jun 1976; KATH<sup>1</sup>).

*Remarks:* Distribution records for Pithoragarh fide Jalal (2004).

**Satyrium** Sw., Kongl. Vetensk. Acad. Nya Handl. 21: 214 (1800).

**Satyrium nepalense** D. Don, Prodr. Fl. Nepal.: 26 (1825). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 56 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 150 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 152 (2018). **PI. 12.**

*Satyrium albiflorum* A. Rich.

NEP-L: Kaunphalo (कौफलो). NEP: Gāmdol (गामडोल).

Terrestrial tuberous herbs, 10–60 cm; stem erect, stout; leaves 2–3, sub-basal, clasping; inflorescence terminal, many flowered; flowers usually pink; spurs slender, as long as or longer than ovary.

*Habitat*: Open forests, forest margins, grassy slopes, marshy land.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Peninsular India, Sri Lanka, SC China, mainland SE Asia.

NEPAL: W, C & E; (600–)1300–3800(–4600) m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura and Doti; 1400–2500 m.

*Representative specimens*. **BAJHANG**: Between Talkot & Panalta, 2000–2100 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0174, 12 Sept 2017; KATH<sup>1</sup>). **BAJURA**: Bashala–Pategaon, 1760–2190 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160626, 15 Aug 1991; A 01944144<sup>1</sup> image, TI). **DARCHULA**: Makarigad, 1400 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1701, 14 Jul 2016; TUCH<sup>1</sup>); Thin, 2300 m (KR Rajbhandari & KJ Malla 5640, 27 Aug 1980; KATH<sup>1</sup>); Kasoti, 2430 m (PR Shakya, MK Adhikari & MN Subedi 7966, 20 Jul 1984; KATH<sup>1</sup>). **DOTI**: Baglek, 2120 m (LR Sharma & PP Kurmi 4831, 21 Sept 1982; KATH<sup>1</sup>).

*Local abund.*: Occasional to frequent.

*Ethnobot. use*: Young leaves are cooked as vegetable. Tubers are used to treat cuts and wounds, and fever.

**Satyrium nepalense** var. **ciliatum** (Lindl.) Hook. f., Fl. Brit. India 6: 168 (1890). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 150 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 152 (2018).

*Satyrium ciliatum* Lindl., Gen. Sp. Orchid. Pl.: 341 (1838).

Terrestrial herbs, differs from above in having stout, conic spurs, shorter than ovary.

*Habitat*: Open forests, forest margins, grassy slopes, open fields.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, S China.

NEPAL: W, C & E; 1400–4300 m.

KSL: Known from neighboring Bajura, Nepal; 2900 m [also in Uttarakhand, India].

*Representative specimens*. **BAJURA**: 2900 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9192400, 16 Aug 1991; TI) fide SHB 2013–2020. **UTTARAKHAND (INDIA)**: Almora, Kumaon, 1615 m (R Strachey & JE Winterbottom 30, Wall. Cat. 7025; GH 01944168<sup>1</sup> image).

**Spiranthes** Rich., De Orchid. Eur. 20, 28, 36 (1817).

**Spiranthes australis** (R. Br.) Lindl., Bot. Reg. 10: t. 823 (1824). Pace *et al.*, Bot. J. Linean. Soc. 20: 15 (2018). **PI. 12.**

*Neottia australis* R. Br., Prodr. Fl. Nov. Holland.: 319 (1810); *Calanthe australis* (R. Br.) Aiton ex Loudon; *Neottia amoena* M. Bieb.; *Spiranthes amoena* (M. Bieb.) Spreng.; *Spiranthes sinensis* (Pers.) Ames subsp. *australis* (R. Br.) S. Kitam.; *Spiranthes sinensis* var. *amoena* (M. Bieb.) H. Hara; *Spiranthes sinensis* var. *australis* (R. Br.) H. Hara & S. Kitam.

ENG: Ladies tresses, Austral ladies tresses.

Terrestrial herbs, with shortened rhizome and narrowly cylindric, fleshy roots; inflorescence pubescent.

*Habitat*: Open and moist areas in forests, thickets, grassy slopes, wet grasslands, meadows, marshes.

*Distribution*: E European Russia, Tropical to Temperate Asia, E Australia, SW Pacific.

NEPAL: W, C & E; (100–)1000–3800(–4600) m.

KSL: Baitadi, Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura and Doti; 1500–2900 m.

*Representative specimens*. **BAJHANG**: Kalagad, 1830 m (PR Shakya & DP Joshi 570, 20 May 1971; KATH<sup>1</sup>). **BAJURA**: Birseni – Porakya, 1560–2650 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160510, 12 Aug 1991; E00113581<sup>1</sup> image, KATH<sup>1</sup>). **DARCHULA**: Khar VDC-5, 1770 m (BB Shrestha, M Pandey & R Chhetri 12, 26 Sept 2015; TUCH<sup>1</sup>); between Ngali & Thapali Gad, way to Sithi, 2390 m (SK Ghimire, B Awasthi, S Budha Magar, B Jnawali, S Nepal, MR Paudeyal & DJ Chapagain ANCA-3143, 1 Sept 2017; TUCH<sup>1</sup>); Chhangru, 2900 m (KR Rajbhandari & KJ Malla 5759, 30 Aug 1980; KATH<sup>1</sup>). **DOTI**: Jhingdara, 2000 m (LP Kattel 1141, 9 Sept 1982; KATH<sup>1</sup>). **HUMLA**: Poom Gaon, 2700 m (KR Rajbhandari & B Roy 4064, 28 Jul 1979; KATH<sup>1</sup>).

*Local abund.*: Occasional to frequent.

**Thunia** Rchb. f., Bot. Zeitung (Berlin) 10: 764 (1852).

**Thunia alba** (Lindl.) Rchb. f., Zeitung (Berlin) 10: 764 (1852). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 57 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 152 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 154 (2018).

*Phaius albus* Lindl. in Wall., Pl. Asiat. Rar. 2: 85 (1831).

NEP: Chāndephūl (चदिफूल).

Epiphytic, terrestrial or lithophyte herbs; stem fasciculate, erect, stout.

*Habitat*: Forests.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tropical and Subtropical Asia.

NEPAL: W, C & E; 500–1900 m.

KSL: Pithoragarh, Uttarakhand in KSL India; and neighboring Doti, Nepal; 1500–1900 m. It is likely also to be present in Baitadi and Darchula in KSL Nepal.

*Representative specimens*. **DOTI**: Bhasu – Sahejpur, 1515 m (H Tabata, KR Rajbhandari & K Tsuchiya 580, 19 Jun 1976; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Pithoragarh, Dharchula, Narayannagar, Askot, 1900 m (CM Arora 36495, 12 Oct 1967; L.1518976<sup>1</sup> image).

**Vanda** Jones ex R. Br., Bot. Reg. 6: ad t. 506 (1820).

**Vanda alpina** (Lindl.) Lindl., Fol. Orchid. 4: 10 (1853). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 57 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 154 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 155 (2018).

*Luisia alpina* Lindl., Edwards's Bot. Reg. 24(Misc.): 56 (1838); *Stauroopsis alpina* (Lindl.) Tang & F.T. Wang; *Trudelia alpina* (Lindl.) Garay

Epiphytic monopodial herbs; stems stout covered with imbricate leaf sheaths; flowers green to yellow-green with lip striped violet; lip apex simple.

*Habitat*: Forests.

*Distribution*: Himalaya (India, Nepal, Bhutan), SC China, mainland SE Asia.

NEPAL: W, C & E; 1100–1900 m.

KSL: Bajhang in KSL Nepal, and neighboring Dadeldhura; 1100–1900 m.

*Representative specimens.* **BAJHANG:** Chir, 1100 m (P Pradhan, RK Uprety, N Pradhan & N Dabadi 1304, 14 Apr 1984; KATH<sup>1</sup>). **DADEL DHURA:** Bhuntare, 1640 m (P Pradhan, RK Uprety, N Pradhan & N Dabadi 1120, 1 Apr 1984; KATH<sup>1</sup>).

**Vanda cristata** Wall. ex Lindl., Gen. Sp. Orchid. Pl.: 216 (1833). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 57 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 154 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 155 (2018).

*Aerides cristata* (Wall. ex Lindl.) Wall. ex Hook. f.; *Luisia striata* (Rchb. f.) Kraenzl.; *Trudelia cristata* (Wall. ex Lindl.) Senghas ex Roeth; *Vanda striata* Rchb. f.

NEP: Bhyāgutephūl, Nakkalī harchūr (भ्यागुतेफूल, नक्कली हरचूर).

Epiphytic monopodial herbs; stems stout covered with imbricate leaf sheaths; flowers yellow-green with lip light brown, yellow or white conspicuously striped with purple; lip apex with 2-lobed processes.

*Habitat:* Forests.

*Distribution:* Himalaya (India, Nepal, Bhutan), Tibetan Plateau, SC China, mainland SE Asia.

NEPAL: W, C & E; 1000–2300 m.

KSL: Darchula and Bajhang in KSL Nepal, and neighboring Doti; 1400–2000 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Rupatola, 1500–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0089, 11 Sept 2017; KATH<sup>1</sup>). **DOTI:** Nahapani, 1400 m (JF Dobremez 1877, 18 Apr 1973; KATH<sup>1</sup>).

*Remarks:* Distribution records for Darchula fide Ueda (2020), and for Pithoragarh fide Jalal (2004).

## HYPOXIDACEAE

**Hypoxis** L., Syst. Nat., ed. 10. 2: 972 (1759).

**Hypoxis aurea** Lour., Fl. Cochinch.: 200 (1790). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 66 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 157 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 158 (2018). **PI. 12.**

*Curculigo graminifolia* Nimmo; *Hypoxis minor* D. Don.

NEP: Van siru, Karshūl (वन सिरु, कर्शूल).

ENG: Golden stargrass. HIN: Bhuin-khajūr (भुईं खजूर).

Slender perennial herbs, with globose, fleshy rhizomes; scapes 1–2 flowered, to 10 cm; flowers yellow.

*Habitat:* Forests, forest margins, grassland, moist grassy slopes.

*Distribution:* Himalaya (Pakistan to Bhutan & NE India), Tropical S Asia, S China, Japan, mainland SE Asia to New Guinea.

NEPAL: W, C & E; 1300–2900 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Dadeldhura and Mugu; 1500–2600 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** North of Patiudi, Deuli Gad, 2043 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911074, 7 Jul 2009; KATH<sup>1</sup>); between Talkot & Panalta, 2000–2100 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0158, 12 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **DADEL DHURA:** Gogan, 1500 m (LP Kattel 974, 31 Aug 1982; KATH<sup>1</sup>). **DARCHULA:** Khar VDC-4, 2150 m (BB Shrestha, M Pandey & R Chhetri 450P, 6 Oct 2015;

TUCH'). **MUGU**: Near Bam (Flora of Nepal Collecting Trip A110, 11 Jun 2008; E00397506).

*Remarks*: Distribution records for Pithoragarh fide GMBA (2012–2016).

## IRIDACEAE

**Iris** L., Sp. Pl. 1: 38 (1753).

**Iris decora** Wall., Pl. Asiat. Rar. 1: 77, t. 86 (1830). Stern in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 64 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 159 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 159 (2018). **Pl. 12.**

*Evansia nepalensis* Klatt; *Iris nepalensis* D. Don; *Iris nepalensis* var.  *khasiana* Baker; *Junopsis decora* (Wall.) W. Schulze; *Neubeckia decora* (Wall.) Klatt; *Neubeckia sucala* Klatt

NEP-L: Piperî (पिपेरी). NEP: Padmapuskar (पद्मपुष्कर).

ENG: Nepal iris, Graceful Himalayan iris. TIB: drema (འབྲེམ་མ་).

Tufted perennial herbs; flowering stems 10–25 cm; flowers pale blue, violet to reddish purple; falls with a raised central ridge, yellow at base without beard; standards narrowly elliptic, smaller.

*Habitat*: Open grassy slopes, meadows, stony pastures, open rocky slopes, cliffs, among low scrub.

*Distribution*: Himalaya (Pakistan to Bhutan & NE India), Tibetan Plateau, SC China.

NEPAL: W, C & E; 1600–4100 m.

KSL: Darchula and Humla in KSL Nepal; 1700–3900 m [Bageshwar, Uttarakhand in KSL India].

*Representative specimens*. **DARCHULA**: Kalidhunga, 3903 m (KM Ghimire & M Adhikari F213, 11 Sept 2015, TUCH'). **HUMLA**: Kermi, 2300 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1405, 14 Sept 2012; TUCH'); Simikot Lagna, above Simikot, 3880 m (Flora of Nepal Collecting Trip A244, 21 Jun 2008; E00397535). **UTTARAKHAND (INDIA)**: Kumaon (R Blinkworth 5049; K001104610' image); Bageshwar, 1676 m (N Wallich 5059B; BM000832586' image).

*Ethnobot. use*: Roots are used as diuretic, and to treat cuts and wounds, sores, and pimples.

**Iris kemaonensis** Wall ex D. Don in Royle, Ill. Bot. Himal. Mts. 1: 372 (1839). Stern in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 64 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 159 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 159 (2018). **Pl. 12.**

*Iris duthiei* Foster; *Iris kingiana* Foster; *Iris tigrina* Jacquem. ex Baker

NEP-L: Piperî (पिपेरी).

ENG: Kumaon iris. TIB: drema po (འབྲེམ་པོ་).

Tufted perennial herbs; flowering stems absent or very short; flowers blue to lilac purple with darker spots; falls with a dense beard of white hairs tipped with yellow or orange; standards oblanceolate.

*Habitat*: Grassy slopes, grazed pastures.

*Distribution*: Himalaya (Kashmir to Bhutan), Tibetan Plateau, Myanmar.

NEPAL: W, C & E; (2000–)2500–4600 m.

KSL: Humla in KSL Nepal; 3600–4300 m [Bageshwar, Uttarakhand in KSL India; and Pulan Xian, SW Xizang in KSL China].

*Representative specimens*. **HUMLA**: Nyalthang, Changla Khola, Dozam, 3640 m (SK Ghimire, RP Chaudhary & team P10830, 21 May 2010; TUCH'); Seding, Changla Khola, Dozam, 3700 m (SK Ghimire, RP Chaudhary & team P11407, 23 May 2010; TUCH'); Simikot Lagna, above Simikot, 4030 m (Flora of Nepal Collecting Trip A197, 20 Jun 2008; E00392151). **UTTARAKHAND (INDIA)**: Pindari, Kumaon, 3658 m (R



Strachey & JE Winterbottom s.n.; P02154998<sup>1</sup> image). **XIZANG (CHINA)**: Pulan Xian (Qinghai-Tibet Team 5672530, 1976; PE) fide Kong & Yang (2019).

*Local abund.*: Frequent in Humla.

*Ethnobot. use*: In Dozam, Humla, roots and seeds are used to treat wounds and stomach disorders.

## AMARYLLIDACEAE

**Allium** L., Sp. Pl. 1: 294 (1753).

**Allium carolinianum** Redouté, Liliac. 2: t. 101 (1804). Stern in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 65 (1978). Singh & Sanjappa, Fasc. Fl. India 23: 10 (2006). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 160 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 161 (2018).

*Allium aitchisonii* Boiss. (1882), nom. illeg., non Regel (1879); *Allium blandum* Wall.; *Allium obtusifolium* Klotzsch; *Allium polyphyllum* Kar. & Kir.; *Allium thomsonii* Baker

NEP: Jangali lasun (जङ्गली लसुन).

TIB: gyagok (ཐུག་མོག་), rigok (རིག་མོག་).

Perennial herbs; bulbs large, oblong, with fibrous papery scales; leaves several, broadly linear, flattened, blunt; scape stout, 10–40 cm; inflorescence a dense globular umbel; perianth pink; stamens exserted.

*Habitat*: Dry stony slopes, open hillsides, alpine steppes.

*Distribution*: C Asia, E Afghanistan, NW China (Xinjiang), Karakoram, W & C Himalaya (Pakistan to Nepal), Tibetan Plateau, Mongolia.

NEPAL: W & C; (2700–)3000–5200 m.

KSL: Upper Mahakali in KSL India and Nepal, and Bajhang in KSL Nepal; c. 3050–5200 m.

*Representative specimens*. **BAJHANG**: Urai Lagna, 5180 m (JB Tyson 86, 8 Jul 1953; BM, L.1442704<sup>1</sup> image).

**UPPER MAHAKALI**: Kuti, 3045 m (RC Thakur 893B; 15 Jul 1948; MICH 1492133<sup>1</sup> image).

*Local abund.*: Not known, probably rare.

**Allium prattii** C.H. Wright, J. Linn. Soc., Bot. 36: 124 (1903). Stern in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 65 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 161 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 161 (2018). **PL 13**.

*Allium cannifolium* H. Lév.; *Allium ellipticum* Wall. ex Kunth, nom. inval.; *Allium prattii* var. *ellipticum* F.T. Wang & Tang; *Allium victoralis* L. var. *angustifolium* Hook. f., nom. illeg.

NEP-L: Danu, Lasan (दनु, लसन). NEP: Jangali lasun, Lasune sāg (जङ्गली लसुन, लसुनेसाग).

TIB: rukgok (རུག་མོག་).

Perennial bulbous herbs; bulbs cylindric, with reticulate fibrous tunic; leaves 2, elliptic, narrowed into a petiole; scape 30–40 cm; umbel many-flowered; perianth pink; stamens exserted.

*Habitat*: Forests, forest margins, thickets, shrubberies, open moist slopes, meadows, stream banks.

*Distribution*: C & E Himalaya (Nepal to NE India), Tibetan Plateau, Myanmar, C & SE China.

NEPAL: W, C & E; 2400–4600 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Mugu; 2900–4600 m.

*Representative specimens*. **BAJHANG**: Tapaun, 3800 m (PR Shakya, MK Adhikari & MN Subedi 8160, 25 Jul 1984; KATH<sup>1</sup>). **DARCHULA**: Chirkiti Lekh, Marma, 2880 m (TB Shrestha 4205, 15 Jun 1965; KATH<sup>1</sup>); Dhaulidhar, 3400 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain

ANCA-1152, 19 Jul 2015; TUCH<sup>3</sup>); Chheti – Melchhra, 3500 m (PR Shakya, MK Adhikari & MN Subedi 8016, 22 Jul 1984; KATH<sup>1</sup>). **MUGU:** Khaptang, Mugu Khola, 4572 m (O Polunin, WR Sykes & LHJ Williams 5375, 21 Aug 1952; P01773918<sup>1</sup> image).

*Local abund.:* Rare to occasional in Darchula; not known for other districts.

*Ethnobot. use:* Leaves are cooked as vegetable and also used as flavouring agent.

*Conserv. status:* LOC., Near Threatened. Threat is mainly due to overgrazing and overharvesting.

**Allium przewalskianum** Regel, Trudy Imp. S.-Peterburgsk. Bot. Sada 3(2): 164 (1875). Stern in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 65 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 161 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 162 (2018).

*Allium jacquemontii* Regel (1875), nom. illeg., non Kunth (1843); *Allium junceum* Jacquem. ex Baker (1874), nom. illeg., non Sm. (1809); *Allium stenophyllum* Wall., nom. nud.; *Allium stoliczkae* Regel

NEP: Jimbu (जिम्बु).

TIB: zimnak (འཛོམ་ནག་).

Perennial bulbous herbs; bulbs narrowly ovoid-cylindric with reticulate tunic; leaves linear, hollow; scape 10–40 cm; umbel many-flowered; perianth purple or mauve; stamens as long as perianth segments.

*Habitat:* Dry stony slopes, rock outcrops, rock crevices, dry grassy slopes.

*Distribution:* Karakoram, Himalaya (Kashmir to Nepal), Tibetan Plateau, N & C China.

NEPAL: W & C; 2500–4500 m.

KSL: Pithoragarh, Uttarakhand in KSL India; and Pulan Xian, SW Xizang in KSL China; 3450–4450 m. It is likely also to be present in upper Darchula and Humla, Nepal.

*Representative specimen.* **XIZANG (CHINA):** Pulan Xian (Tibet Expedition Team 6537671, 1974; PE) fide Kong & Yang (2019).

*Remarks:* Distribution records for Pithoragarh fide GMBA (2012–2016).

**Allium spicatum** (Prain) N. Friesen, Molec. Phylogen. Evol. 17: 216 (2000). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 162 (2017).

*Milula spicata* Prain, Sci. Mem. Off. Med. Dept. Gov. India 9: 57, t. 1 (1895); Ann. Roy. Bot. Gard. (Calcutta) 5: 165, t. 200 (1896).

Perennial bulbous herbs; leaves basal, linear; scape erect, 5–20 cm; inflorescence a terminal elongated spike, densely flowered, subtended by a membranous spathe; perianth pale purple or pinkish.

*Habitat:* Dry alpine pastures, sandy grasslands, steppe.

*Distribution:* Himalaya (NW India to Bhutan), Tibetan Plateau.

NEPAL: C; 3000–4500 m.

KSL: Pulan Xian, SW Xizang in KSL China. It is likely also to be found in upper Humla, Nepal.

*Representative specimen.* **XIZANG (CHINA):** Pulan Xian (Qinghai-Tibet team vegetation group 6692508, 1976; PE) fide Kong & Yang (2019).

**Allium stracheyi** Baker, J. Bot. 12: 293 (1874). Singh & Sanjappa, Fasc. Fl. India 23: 38 (2006). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 162 (2017). **PI. 13.**

*Allium longistaminum* Royle, nom. inval.

NEP-L: Danu, Lasan, Jimbu (दनु, लसन, जिम्बु).

HIN-L: Jambu (जम्बु).

Perennial bulbous herbs; bulbs oblong-ovoid, with fibrous tunic; scape erect or ascending, 20–30 cm; leaves basal, narrowly linear, obtuse; umbel subglobose, 8–23-flowered; pedicels shorter than flowers; perianth whitish with pink veins; stamens exserted.

*Habitat*: Dry stony and grassy slopes, rock outcrops, rock crevices.

*Distribution*: W & C Himalaya (Pakistan to Nepal).

NEPAL: W; 2300–4000 m.

KSL: Darchula in KSL Nepal; 2300–3700 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **DARCHULA**: Chameliya Valley, beyond Ngali Deurali, between Nahli & Sithi, 2300 m (SK Ghimire, LR Joshi, B Awasthi & C Subedi ANCA-203, 23 Oct 2013; TUCH<sup>1</sup>); upper Chameliya Valley, Dhauliodaar, below Pilkanda, Ghusa VDC, 3400 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-707, 18 Oct 2014; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon, Ralam, 3658 m (R Strachey & JE Winterbottom 5; BM000958330<sup>1</sup> image, K000844253<sup>1</sup> image, syntype P00747982<sup>1</sup> image).

*Local abund.*: Occasional to frequent in Darchula.

*Ethnobot. use*: Leaves and bulbs are used in folk medicine to treat cold and cough, stomach disorders and wounds. Leaves and bulbs are cooked as vegetable or used as a flavouring agent.

*Conserv. status*: LOC., Near Threatened. Threat is mainly due to overharvesting.

**Allium tuberosum** Rottler ex Spreng., Syst. Veg. 2: 38 (1825). Stern in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 65 (1978). Singh & Sanjappa, Fasc. Fl. India 23: 39 (2006). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 162 (2017).

*Allium clarkei* Hook. f.; *Allium roxburghii* Kunth; *Allium sulvia* Buch.-Ham. ex D. Don; *Allium tuberosum* Roxb., nom. inval.; *Nothoscordum sulvia* (Buch.-Ham. ex D. Don) Kunth

ENG: Chinese chives.

Perennial bulbous herbs.

*Habitat*: Open slopes, on rocks.

*Distribution*: W & C Himalaya (Pakistan to Nepal), NC China, Japan.

NEPAL: W & C; 1300–2800 m.

KSL: Bajhang in KSL Nepal; 1338 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimen*. **UTTARAKHAND (INDIA)**: Kumaon, Dafia Dhura (CM Arora 49535; CAL) fide Singh & Sanjappa (2006).

*Remarks*: Record for Bajhang (Cat. No. 1052768) fide US National Plant Germplasm System (2018).

**Allium wallichii** Kunth, Enum. Pl. 4: 443 (1843). Stern in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 65 (1978). Singh & Sanjappa, Fasc. Fl. India 23: 43 (2006). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 162 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 162 (2018). **Pl. 13.**

*Allium caeruleum* Wall., nom. nud.; *Allium lancifolium* Stearn; *Allium polyastrum* Diels; *Allium violaceum* Wall. ex Regel, nom. inval.; *Allium wallichianum* Steud., nom. inval.

DOZ: Gokpā (गोकपा). NEP-L: Danu, Lasan (दनु, लसन). NEP: Jimbu-ghāns, Van lasun (जिम्बु-घाँस, वन लसुन).

TIB: zimnak (འཛིན་ནག་).

Perennial herbs; bulbs usually absent; roots fibrous; leaves basal, linear, flat, sheatheing; scape erect, to 50 cm, winged; umbels rounded, laxly many-flowered; perianth purple.

*Habitat*: Forest margins, meadows, open grassy slopes, among rocks, stream banks.

*Distribution*: Himalaya (India, Nepal, Bhutan), Myanmar, Tibetan Plateau, S China.

NEPAL: W, C & E; 2100–4800 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura; 3000–4300 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Thogundanda, 3400 m (MS Bista & DP Joshi 739, 27 Aug 1972; KATH<sup>1</sup>); Gurel Lekh, 3450 m (NK Bhattarai 90/1206, 1 Sept 1990; KATH<sup>1</sup>), Ghodilekh, 4000 m (MS Bista & DP Joshi 499, 17 Aug 1972; KATH<sup>1</sup>). **BAJURA/BAJHANG:** Pategaon – Ghodi Lekh Deurali – Badigaon, 2190–3350 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160669, 16 Aug 1991; KATH<sup>1</sup>, TI). **DARCHULA:** Upper Chameliya Valley, Kalidhunga, Lolu-Pilkanda, 4050 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1969, 25 Jul 2016; TUCH<sup>1</sup>). **HUMLA:** Phwaso, Changla Khola, Dozam, 3550 m (SK Ghimire, RP Chaudhary & team P10824, 21 May 2010; TUCH<sup>1</sup>).

*Remarks:* Distribution records for Pithoragarh fide GMBA (2012–2016).

*Local abund.:* Occasional.

*Ethnobot. use:* Whole plant is pickled or used as condiment. The plant is also cooked as vegetable. Roots and leaves are used in folk medicine to treat cold and cough, stomach disorders and wounds.

*Conserv. status:* LOC., Near Threatened. Threat is mainly due to overgrazing and overharvesting.

## **Crinum** L., Sp. Pl.: 292 (1753).

**Crinum latifolium** L., Sp. Pl.: 291 (1753). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 164 (2018). **Pl. 12.**

NEP: Hāde-phūl (हाडेफूल).

ENG: Pink-striped trumpet lily.

Perennial bulbous herbs; flowering stems stout, 1–2 m; flowers white streaked with pink.

*Habitat:* Garden, margins of crop fields.

*Distribution:* Native to S Asia (India, Bangladesh, Sri Lanka), S China, and mainland SE Asia; cultivated and naturalized elsewhere.

NEPAL: W & C; 1000–1500 m.

KSL: Darchula in KSL Nepal; 1100–1200 m (planted).

*Representative specimen.* **DARCHULA:** Lattenath, 1100 m (SK Ghimire & B Awasthi IM-1751, 2 Aug 2015; TUCH<sup>1</sup>).

## **Narcissus** L., Sp. Pl. 1: 289 (1753).

**Narcissus tazetta** L., Sp. Pl. 1: 290 (1753). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 164 (2018).

NEP: Gunakesari (गुनकेसरी).

ENG: Daffodil, Bunchflower daffodil, Bunch-flowered narcissus, Chinese sacred lily.

Perennial bulbous herbs; scape erect or ascending; flowers in umbels; perianth segments white, broad ovate, entire; corona yellow, cup-shaped.

*Habitat:* Cultivated.

*Distribution:* Native to S Europe, N Africa, W Asia and S Russia; widely cultivated.

NEPAL: W & C; 1300–2500 m (cultivated).

KSL: Baitadi in KSL Nepal; 1450 m.

*Representative specimen.* **BAITADI:** Gothalapani, 1450 m (LP Kattel 175, 1 Jan 1981; KATH<sup>1</sup>).

## ASPARAGACEAE

**Agave** L., Sp. Pl. 1: 323 (1753).

**Agave americana** L., Sp. Pl. 1: 323 (1753). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 164 (2018).

NEP: Bāns keorā, Ketukī (बाँस केवरा, केतुकी).

ENG: American aloe, Century plant.

Perennial herbs.

*Habitat:* Hedge, field margins.

*Distribution:* Native to S America; widely cultivated or naturalized elsewhere.

NEPAL: W, C & E; 200–1400 m.

KSL: Darchula in KSL Nepal; 900–1200 m.

*Representative specimens.* **DARCHULA:** Api-13, Khlanga, 960 m (BB Shrestha, M Pandey & R Chhetri 440P, 9 Oct 2015; TUCH<sup>1</sup>); above Betale, 1000 m (SK Ghimire, LR Joshi & B Awasthi ANCA-A051, 20 Oct 2013; TUCH<sup>1</sup>).

*Ethnobot. use:* Leaves are the source of fiber in making ropes and cordage. Cultivated as a hedge plant.

**Asparagus** L., Sp. Pl. 1: 313 (1753).

**Asparagus curillus** Buch.-Ham. ex Roxb., Fl. Ind. 2: 152 (1832). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 70 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 164 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 165 (2018).

*Asparagus nepalensis* Baker; *Protasparagus curillus* (Buch.-Ham. ex Roxb.) Kamble

NEP: Van kurilo (वन कुरिलो).

Perennial herbs or subshrubs; stem weak, diffuse or subscandent; spines solitary, recurved; cladodes small, 3–6, linear, 3-sided, acute, incurved; flowers white, long-pedicelled, in few-flowered lateral racemes.

*Habitat:* Open slopes, forests, moist grassland.

*Distribution:* W & C Himalaya (NW India, Nepal).

NEPAL: W & C; 700–2800 m.

KSL: Baitadi, Bajhang and Darchula in KSL Nepal; c. 1000–1600 m.

*Representative specimens.* **BAITADI:** Baitadi (PN Yogi 15, 2 Jun 2004; TUCH<sup>1</sup>); **BAJHANG:** Bangh, 1000 m (LP Kattel 1212, 13 Sept, 1982; KATH<sup>1</sup>).

**Asparagus filicinus** Buch.-Ham. ex D. Don, Prodr. Fl. Nepal.: 49 (1825). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 71 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 164 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 165 (2018). **Pl. 13.**

*Asparagus filicinus* var. *brevipes* Baker; *Asparagus filicinus* var. *microclada* Hook. f.; *Protasparagus filicinus* (Buch.-Ham. ex D. Don) Kamble

DOZ: Tikpā (तिक्पा). NEP: Van kurilo (वन कुरिलो).

ENG: Fern asparagus. TIB: nyeshing (ཉེ་ཤིང་).

Straggling perennial herbs, dioecious; stems without spines; cladodes in whorls of 4–6, flat, curved; flowers greenish or reddish green, borne singly or in pairs.

*Habitat*: Shady moist places in forests, forest margins, thickets.

*Distribution*: Karakoram, Himalaya (Kashmir to Bhutan), C & SE China, mainland SE Asia.

NEPAL: W, C & E; 1700–3450 m.

KSL: Baitadi, Bajhang and Humla in KSL Nepal, and neighboring Bajura and Doti; 1700–2700 m.

*Representative specimens*. **BAITADI**: Shribhawar, 2434 m (TR Pandey & GD Bhatt 2016630, 6 Jun 2016, KATH<sup>1</sup>). **BAJHANG**: Matuwa, 1700 m (NK Bhattari 90/1143, 29 Aug 1990; KATH<sup>1</sup>); between Dhalun & Pansalegi, 2300–2700 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0516, 16 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA**: Porakya – Serigaon, 1620–2540 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9191351, 13 Aug 1991; TI<sup>1</sup> image). **DOTI**: Khaptad, 2420 m (H Tabata, KR Rajbhandari & K Tsuchiya 1299, 15 Jul 1976; KATH<sup>1</sup>). **HUMLA**: Changla Khola, above Dozam, 2650 m (SK Ghimire, RP Chaudhary & team P12149, 25 May 2010; TUCH<sup>1</sup>).

*Local abund.*: Rare to occasional.

*Ethnobot. use*: Young shoots are eaten as vegetable; root juice is used as tonic, and to treat toothache.

*Conserv. status*: GLB., Data Deficient (Rhodes & Maxted 2016).

**Asparagus lycopodineus** (Baker) E.T. Wang & Tang, Bull. Fan Mem. Inst. Biol. 7: 291 (1937). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 164 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 165 (2018).

*Asparagus filicinus* Buch.-Ham. ex D. Don var. *lycopodineus* Baker, J. Linn. Soc., Bot. 14: 605 (1875).

Climbing or straggling perennial herbs, dioecious; stems without spines; cladodes 3 per whorl, linear, curved, flowers white, borne singly or in clusters of 2–4.

*Habitat*: Forests, thickets.

*Distribution*: C & E Himalaya (Nepal to NE India), Myanmar, C China.

NEPAL: W & C; 1500–2600 m.

KSL: Baitadi in KSL Nepal; 1800–2500 m.

*Representative specimen*. **BAITADI**: Gwallev Village, 1800–2500 m (SC Bhatt 197, 22 Jan 2005, TUCH<sup>1</sup>).

**Asparagus racemosus** Willd., Sp. Pl. 2: 152 (1799). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 71 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 165 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 166 (2018).

*Asparagus racemosus* var. *subacerosus* Baker; *Protasparagus racemosus* (Willd.) Oberm.

NEP-L: Jhijhelkând, Jhijhelkândi (झिझेलकाँड, झिझेलकाँडी). NEP: Van kurilo, Shatāvarī (वन कुरिलो, शतावरी).

ENG: Wild asparagus. HIN: Shatāvar (शतावर). SAN: Shatāvarī (शतावरी). TIB: nyeshing (ཉེཤིང་).

Climbing or straggling perennial herbs or subshrubs; stem woody, much-branched, with straight or sub-recurved spines; cladodes linear, slightly curved, in whorls of 3–8; flowers white, in racemes or panicles.

*Habitat*: Forests, forest margins, thickets.

*Distribution*: Africa, Tropical and Subtropical Asia, N Australia.

NEPAL: W, C & E; 100–2200 m.

KSL: Baitadi and Darchula in KSL Nepal; 1000–2000 m.

*Representative specimens*. **DARCHULA**: Kumbhalotey, way to Khandeshowri, 1500 m (SK Ghimire, S Thapa, B Awasthi, S Lo, C Thapa & MR Paudeyal 549, 15 Oct 2014; TUCH<sup>1</sup>); Khar VDC-4, 1930 m (BB Shrestha, M Pandey & R Chhetri 234P, 29 Sept 2015; TUCH<sup>1</sup>).

*Local abund.:* Occasional.

*Ethnobot. use:* Tubers are used as a tonic and to treat fever. Tender shoots are cooked and eaten as vegetable. Spiny twigs are used in religious ceremonies, and to protect against evil spirits.

**Chlorophytum** Ker Gawl., Bot. Mag. 27: t. 1071 (1807).

**Chlorophytum nepalense** (Lindl.) Baker, J. Linn. Soc. Bot. 15: 330 (1876). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 71 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 165 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 166 (2018). **PI. 13.**

*Phalangium nepalense* Lindl., Trans. Hort. Soc. London 6: 277 (1826); *Anthericum nepalense* (Lindl.) Spreng.; *Chlorophytum flaccidum* W.W. Sm.; *Chlorophytum khasianum* Hook. f.; *Chlorophytum undulatum* Wall. ex Hook. f.

NEP-L/NEP: Van pyāj, Seto muslī (वन प्याज, सेतो मुस्ली).

Perennial herbs; rhizome inconspicuous; roots clustered, thickened; flowering stem erect, 30–60 cm.

*Habitat:* Shady places, forests, forest margins, grassy slopes, rocky slopes.

*Distribution:* Himalaya (India, Nepal, Bhutan), Tibetan Plateau, SC China, mainland SE Asia.

NEPAL: W, C & E; (900–)1200–3200 m.

KSL: Darchula and Humla in KSL Nepal, and neighboring Bajura; 1700–2400 m.

*Representative specimens.* **BAJURA:** Bashala–Pategaon, 1760–2190 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160633; 15 Aug 1991, TI<sup>1</sup> image).

**DARCHULA:** Between Nahli & Sithi, Ghusa VDC, 2350 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1737B, 16 Jul 2016; TUCH<sup>1</sup>). **HUMLA:** Humla–Karnali, 2400 m (SK Ghimire, A Paudel, L Joshi, S Lama, P Subedi & C Thapa 1640, 15 Sept 2012; TUCH<sup>1</sup>).

*Local abund.:* Occasional to frequent.

*Ethnobot. use:* Rhizomes are used as a tonic to strengthen physical vigor.

**Dipcadi** Medik., Hist. & Commentat. Acad. Elect. Sci. Theod.-Palat. 6: 431 (1790).

**Dipcadi reidii** Deb & S. Dasgupta, J. Bombay Nat. Hist. Soc. 75: 69 (1978). Deb & Dasgupta, Fasc. Fl. India 7: 7 (1981).

*Ornithogalum reidii* (Deb & S. Dasgupta) J.C. Manning & Goldblatt

Perennial bulbous herbs. Leaves broadly linear. Scape erect, 30–40 cm. Racemes 10–18-flowered, lax; bracts membranous, triangular, acuminate. Flowers campanulate, light brown; perianth lobes subequal, in two whorls, both united up to one-third from the base forming tube, remaining free above.

*Habitat:* Open slopes.

*Distribution:* Endemic to NW India.

KSL: Known from adjoining Byans area in Pithoragarh District, Uttarakhand in KSL India. It is likely also to be present in Darchula District, Nepal.

*Representative specimen.* **UTTARAKHAND (INDIA):** Near Malpagarh, Byans, Kali Valley, 2134 m (JR Reid s.n., 16 Jul 1888; holotype E00393328<sup>1</sup> image).

**Dipcadi serotinum** (L.) Medik., Hist. & Commentat. Acad. Elect. Sci. Theod.-Palat. 6: 431 (1790). Deb & S. Dasgupta, J. Bombay Nat. Hist. Soc. 75: 52 (1978). Deb & Dasgupta, Fasc. Fl. India 7: 9 (1981). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 166 (2018). **PI. 13.**

*Hyacinthus serotinus* L., Sp. Pl. 1: 317 (1753); *Dipcadi hysudricum* (Edgew.) Baker; *Uropetalon hysudricum* Edgew., 'hysudricum'

Perennial bulbous herbs. Leaves broadly linear. Scape erect, 20–40 cm, glabrous. Racemes 7–15-flowered, lax; bracts membranous, triangular, acuminate. Flowers campanulate, white with light brown to pink-brown line on outer surface; pedicel stout; perianth segments narrowly oblong, thickened, subequal, outer three united one-third of their length below, free and spreading above, inner three united up to two-third of their length forming tube.

*Habitat*: Open rocky slopes along the trail, river banks, grassy slopes.

*Distribution*: S Europe to Arabian Peninsula, Pakistan, W & C Himalaya (NW India, Nepal).

NEPAL: W; 1200–3000 m.

KSL: Darchula and Humla in KSL Nepal; 1300–3000 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **DARCHULA**: Chameliya Valley, way to Guljar VDC, 1300–1500 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1599, 2 Aug 2015; TUCH<sup>1</sup>).

**HUMLA**: Simikot–Durpa, 3000 m (SB Malla 14268, 17 Jul 1968; BM) fide Deb & Dasgupta (1978).

**UTTARAKHAND [INDIA]**: Dar, Kumaon 2438 m (RC Thakur 859, 7 Jul 1948; MICH 1492042<sup>1</sup> image).

*Local abund.*: Very rare in Darchula.

## **Maianthemum** Wigg., Prim. Fl. Holsat. 14 (1780).

**Maianthemum fuscum** (Wall.) LaFrankie, Taxon 35: 588 (1986). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 166 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 167 (2018).

*Smilacina fusca* Wall., Pl. Asiat. Rar. 3: 37 (1832); *Smilacina fusca* var. *pilosa* H. Hara; *Tovaria fusca* (Wall.) Baker

NEP-L: Khiraunlo (खिरौलो).

Perennial rhizomatous herbs, up to 50 cm tall; stems simple, leafy; leaves petiolate; blade ovate, acuminate or caudate; flowers in a terminal panicle; perianth greenish to purplish.

*Habitat*: Forests, forest margins, thickets, moist rocky places.

*Distribution*: C & E Himalaya (Nepal to NE India), Myanmar, SC China.

NEPAL: W, C & E; 2200–3200 m.

KSL: Bajhang in KSL Nepal; 2900–3200 m.

*Representative specimen*. **BAJHANG**: Chimnya, way to Kalapani, NE of Dhalun, 2900–3200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0509, 16 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>).

*Local abund.*: Rare.

**Maianthemum purpureum** (Wall.) LaFrankie, Taxon 35: 589 (1986). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 167 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 167 (2018). **PI. 13.**

*Smilacina purpurea* Wall., Pl. Asiat. Rar. 2: 38 (1831); *Jocaste purpurea* (Wall.) Kunth; *Tovaria purpurea* (Wall.) Baker

DOZ: Thāling (थालिङ्ग). NEP-L: Sallisāg, Tîte kaunphalo, Khiraunlo (सल्लिसाग, तीते कौंफलो, खिरौलो).

Perennial rhizomatous herbs, 20–50 cm tall; stems simple, leafy, pubescent above; leaves sessile, clasping, or shortly petiolate; blade ovate-oblong or broadly elliptic, acuminate, ciliate; inflorescence a raceme or sometimes with a few basal branches; perianth dark purple outside, greenish purple inside.

*Habitat*: Broad-leaved and mixed forests, forest margins, thickets, open slopes.

*Distribution*: Himalaya (NW India to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 2500–4300 m.



KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura and Doti; 2700–3900 m [also in Kumaon, Uttarakhand, India].

*Representative specimens.* **BAJHANG:** Khaptad National Park, 2980–3030 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9161052, 27 Aug 1991; TI) fide SHB 2013–2020; Thogundanda, Kaligad, 2743–3353 m (TB Shrestha 4182, 10 Jun 1965; US 03965649<sup>i</sup> image). **DARCHULA:** Simar, above Khayakot, 2780 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1080, 18 Jul 2015; TUCH<sup>i</sup>); above Domule, 3229 m (CK Subedi, J Gurung & S Thapa 71, 21 Jun 2014; TUCH<sup>i</sup>). **DOTI:** Khaptad National Park, on the trail from Bichpani to Ghoda daune, 3060 m (Nepal Bajhang 2009 Expedition 20919021, 2 Jul 2009; E00625005). **HUMLA:** Jabkung, Changla Khola, Dozam, 3300 m (SK Ghimire, RP Chaudhary & team P10659, 21 May 2010; TUCH<sup>i</sup>); Salli Khola, 3600–3900 m (SK Ghimire, A Paudel, L Joshi, S Lama, P Subedi & C Thapa CHH-1638, 15 Sept 2012; TUCH<sup>i</sup>). **UTTARAKHAND (INDIA):** Kumaon (R Blinkworth 4201B; K000846058<sup>i</sup> image); Kumaon, Kanta [Kanda], 2438 m (RC Thakur 777, 23 Jun 1948; MICH 1492366<sup>i</sup> image).

*Local abund.:* Frequent in Darchula and Humla; not known for other regions.

*Ethnobot. use:* Tender shoots are cooked and eaten as vegetable.

### **Ophiopogon** Ker Gawl., Bot. Mag. 27: t. 1063 (1807).

**Ophiopogon clarkei** Hook. f., Fl. Brit. India 6: 268 (1892). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 75 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 167 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 167 (2018). **Pl. 13.**

*Mondo dracaenoides* (Baker) Farw. var. *clarkei* (Hook. f.) Farw.

NEP-L: Dhachade (धचडे).

ENG: Himalayan mondo grass.

Perennial stoloniferous herbs; leaves basal, grasslike; scape 10–20 cm, shorter than leaves; inflorescence short, few-flowered; flowers white with light purple streaks.

*Habitat:* Moist forests, mossy rocks, streamsides.

*Distribution:* C & E Himalaya (Nepal to NE India), Tibetan Plateau, SC China.

NEPAL: W, C & E; 1500–3500 m.

KSL: Bajhang and Darchula in KSL Nepal; 1900–2500 m.

*Representative specimens.* **BAJHANG:** Rasa–Roshiadanda, 1980–2540 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160866, 21 Aug 1991; TI) fide SHB (2013–2020). **DARCHULA:** between Simar & Domul, way to Lolu-Pilkanda, Ghusa VDC, 2500 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1742B, 17 Jul 2016; TUCH<sup>i</sup>).

**Ophiopogon intermedius** D. Don, Prodr. Fl. Nepal.: 48 (1825). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 75 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 167 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 167 (2018). **Pl. 14.**

*Flueggea intermedia* (D. Don) Kunth; *Flueggea jacquemontiana* Kunth; *Flueggea wallichiana* Kunth; *Mondo intermedium* (D. Don) L.H. Bailey; *Mondo wallichianum* (Kunth) L.H. Bailey; *Ophiopogon parviflorus* (Hook. f.) H. Hara; *Ophiopogon wallichianus* (Kunth) Hook. f.

NEP-L: Dhachade (धचडे). NEP: Van kasur (वन कसुर).

ENG: Himalayan lily turf, White mondo grass.

Perennial rhizomatous tufted herbs; leaves basal, grasslike; scapes up to 40 cm or more, shorter than or sometimes equalling to leaves; inflorescence many-flowered; flowers white or pale purple.

*Habitat:* Forests, along streams, damp gullies, grassy slopes.

*Distribution:* Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Peninsular India, Sri Lanka, Bangladesh, C & SE China, mainland SE Asia.

NEPAL: W, C & E; 700–3900 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Doti; 1900–3400 m [also in Kumaon, Uttarakhand, India].

*Representative specimens.* **BAJHANG:** Trail from Budkhori to Pasela, 2308 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915135, 15 Jul 2009; *Ophiopogon wallichianus* KATH<sup>1</sup>). **DARCHULA:** Khar, 1930 m (BB Shrestha, M Pandey & R Chhetri 219, 2 Oct 2015; TUCH<sup>1</sup>). **DOTI:** Khaptad National Park, trail from Jhingrana to Bichpani, 2815 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911027, 1 Jul 2009; *O. wallichianus* KATH<sup>1</sup>). **HUMLA:** Phucha, 2895 m (O Polunin, WR Sykes & LHJ Williams 4160, 24 May 1952; L.1460610<sup>1</sup> image); on way to Darma, 3050–3355 m (SB Malla & PS Jayswal 14187, 9 Jul 1968; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, Urting, 2590 m (RC Thakur 869, 7 Jul 1948; L.1460599<sup>1</sup> image, MICH 1492334<sup>1</sup> image).

*Local abund.:* Frequent.

*Ethnobot. use:* Tubers are useful for the treatment of lymphatic disorders.

## **Polygonatum** Mill., Gard. Dict. Abr., ed. 4., vol. 3 (1754).

**Polygonatum cirrhifolium** (Wall.) Royle, Ill. Bot. Himal. Mts. 1: 380 (1839). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 77 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 169 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 168 (2018).

*Convallaria cirrhifolia* Wall., Asiat. Res. 13: 382 (1820); *Convallaria cirrhosa* Griff.

NEP-L: Khiraunlo, Nigālī-sāg, Rasmalo (खिरौलो, निगाली-साग, रसमलो). NEP-L: Khiraunlā (खिरौला).

ENG: Coiled-leaf Solomon seal. SAN: Medā, Mahāmedā (मेदा, महामेदा). TIB: ramnyé (རམ་ཡེ་).

Perennial rhizomatous herbs; stem erect or scandent to 100 cm; leaves linear to narrow-lanceolate, coiled at apex, borne in whorls of 3–6; flowers creamy white, greenish or purple in shortly-stalked, 2–4-flowered axillary clusters.

*Habitat:* Forest margins, thickets, dry shrubby slopes, grassy slopes.

*Distribution:* Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Myanmar, C & SE China.

NEPAL: W, C & E; 1200–4600 m.

KSL: Darchula and Humla in KSL Nepal, and neighboring Mugu; 1200–3200 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **DARCHULA:** Okhal, way to Makarigad, 1230 m (SK Ghimire, S Thapa, B Awasthi, S Lo, C Thapa & MR Paudeyal ANCA-823, 28 Oct 2014; TUCH<sup>1</sup>); Paripatal Community Forest, Khar, 2287 m (CK Subedi, J Gurung & M Pandey 41, 21 Jun 2015; TUCH<sup>1</sup>). **HUMLA:** Above Jabkung, Dozam, 3200 m (SK Ghimire, RP Chaudhary & team P10633, 21 May 2010; TUCH<sup>1</sup>). **HUMLA/MUGU:** Bawa (Banwa), between Ruga & Changkheli Lagna, 2743 m (O Polunin, WR Sykes & LHJ Williams 4107, 18 May 1952; E00813026<sup>1</sup> image). **UTTARAKHAND (INDIA):** Tola, Kumaon, 3048 m (WN Koelz 20722, 15 Jun 1948; NY 03229982<sup>1</sup> image); Pithoragarh, above Tola, Kumaon, 3658 m (RC Thakur 739, 16 Jun 1948; MICH 1492397<sup>1</sup> image).

*Local abund.:* Rare in Darchula and Humla, not known for other regions.

*Ethnobot. use:* In Darchula, rhizomes are taken as a tonic to restore physical vigor, and are also fed to cattle to increase milk production. Tender shoots are occasionally cooked and eaten as vegetable.

*Conserv. status:* LOC., Near Threatened. Threat is mainly due to habitat degradation, overgrazing and

overharvesting for local use and occasional trade.

**Polygonatum curvistylum** Hua, J. Bot. (Morot) 6: 424 (1892). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 77 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 169 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 168 (2018). **Pl. 14.**

NEP-L: Khiraunlo, Nigālī-sāg (खिरौलो, निगाली-साग). NEP: Khiraunlā (खिरौला).

Perennial rhizomatous herbs; stem erect, 20–30 cm; leaves linear, in whorls of 3–6, some alternate or opposite, sessile; flowers pale purple in shortly-stalked, 1- or 2-flowered axillary clusters.

*Habitat*: Alpine meadows, among shrubs.

*Distribution*: C & E Himalaya (Nepal, Bhutan), SC China.

NEPAL: W & C; 2600–3650 m.

KSL: Humla in KSL Nepal; 3650 m.

*Representative specimen*. **HUMLA**: Phwaso, Changla Khola, Dozam, 3650 m (SK Ghimire, RP Chaudhary & team P10901, 22 May 2010; TUCH<sup>1</sup>).

*Local abund.*: Rare.

*Ethnobot. use*: Rhizomes are eaten to restore physical vigor. Tender shoots are cooked as vegetable.

**Polygonatum graminifolium** Hook., Hooker's Icon. Pl. 9: t. 833 (1851). Wilford & Rix, Curtis's Botanical Magazine 24: 61 (2007). **Pl. 14.**

NEP-L: Nān khiraunlo, Nigālī-sāg (नान खिरौलो, निगाली-साग).

Perennial rhizomatous herbs; stem erect, 5–10 cm; leaves linear, linear-lanceolate or linear-oblongate in pairs or whorls of 3–5; flowers solitary or paired, axillary; peduncle 8–18 mm; corolla purplish-pink to 10 mm long with the tube, the lobes ovate, 5–6 mm long, spreading, margin white papillose.

*Habitat*: Alpine meadows, open grass slopes.

*Distribution*: W & C Himalaya (Kashmir to Nepal), ?SC China.

NEPAL: W & C; 3300–4000 m.

KSL: Darchula and Humla in KSL Nepal; 3300–4000 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **DARCHULA**: Upper Chameliya Valley, Gauchhalighol, Pilkanda, 3900 m (SK Ghimire, S Thapa, B Awasthi, S Lo, C Thapa & MR Paudeyal ANCA-736, 20 Oct 2014, TUCH<sup>1</sup>); Upper Chameliya Valley, Chameliya Mool, Pilkanda, 3950 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1516, 28 Jul 2015, TUCH<sup>1</sup>). **HUMLA**: Dozam Khola, near Simikot, 3658 m (O Polunin, WR Sykes & LHJ Williams 4251, 2 Jun 1952; E00950134<sup>1</sup> image). **UTTARAKHAND (INDIA)**: Tola, Kumaon, 3353 m (RC Thakur 729, 15 Jun 1948; MICH 1492396<sup>1</sup> image).

*Local abund.*: Occasional to frequent.

*Ethnobot. use*: Tender shoots and leaves are occasionally cooked as vegetable. Rhizomes are used as tonic for general debility. Rhizomes are also used to treat wounds, inflammation and stomach disorders.

**Polygonatum singalilense** H. Hara, J. Jap. Bot. 40: 102 (1965). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 77 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 170 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 169 (2018). **Pl. 14.**

NEP-L: Khiraunlo, Nigālī-sāg (खिरौलो, निगाली-साग). NEP-L: Khiraunlā (खिरौला).

Perennial rhizomatous herbs; stem erect or suberect, 12–50 cm; leaves opposite or in whorls of 3, few lower leaves alternate, blade lanceolate, oblong or elliptic, sessile, acuminate, blunt; flowers yellow or

greenish white in shortly-stalked, 2-flowered axillary clusters. It is close to *P. geminiflorum* Decne. of W. Himalaya.

*Habitat*: Forests, among shrubs, rock crevices, wet meadows.

*Distribution*: C & E Himalaya (Nepal to Bhutan).

NEPAL: W, C & E; 2800–4400 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Doti; 2900–3500 m.

*Representative specimens*. **BAJHANG**: Trail from Surma Village (Dhunga Danda) to Madhukharka, returned to Surma Village, 3386 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20919036, 8 Jul 2009; E00813052' image, KATH<sup>1</sup>). **DARCHULA**: Dhauliodar, 3450 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1181, 19 Jul 2015; TUCH<sup>1</sup>). **DOTI**: Khaptad, 2880 m (H Tabata, KR Rajbhandari & K Tsuchiya 1202, 14 Jul 1976; KATH<sup>1</sup>).

*Local abund.*: Rare in Darchula; not known for other districts.

*Ethnobot. use*: Tender shoots are occasionally cooked as vegetable. Rhizomes are used as tonic.

**Polygonatum verticillatum** (L.) All., Fl. Pedemont. 1: 131 (1785). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 77 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 170 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 169 (2018). **Pl. 14.**

*Convallaria verticillata* L., Sp. Pl. 1: 315 (1753); *Convallaria leptophylla* D. Don; *Polygonatum jacquemontianum* Kunth; *Polygonatum kansuense* Maxim. ex Batalin; *Polygonatum leptophyllum* (D. Don) Royle

NEP-L: Khiraunlā, Khiraunlo, Khilaudo, Nigālī-sāg (खिरौला, खिरौलो, खिलौडो, निगाली-साग).

ENG: Whorled Solomon's-seal. TRD: Setakchini (सेतकचिनी). TIB: ramnyé (རམ་ནལེ་).

Robust perennial rhizomatous herbs; stem robust, erect, 40–150 cm; leaves in whorls of 3–8, occasionally alternate or subopposite near base of stem, blade linear-lanceolate to lanceolate, with acute or subacute apex, not coiled; flowers white, greenish or pale yellow, in shortly-stalked, usually 2-flowered axillary clusters.

*Habitat*: Moist forests, grassy slopes, rocky slopes.

*Distribution*: Europe, W Asia, Afghanistan, Pakistan, Himalaya (India, Nepal, Bhutan), Tibetan Plateau, C China.

NEPAL: W, C & E; 2100–4000(–4800) m.

KSL: Baitadi, Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura and Doti; 2400–3500 m [Bageshwar and Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAITADI**: Shribhawar, 2445 m (TR Pandey & GD Bhatt 2016650, 6 Jun 2016; KATH<sup>1</sup>). **BAJHANG**: Between Dhalun & Panselegi, 2300–2700 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0492, 16 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>); above Surma Village, 3075 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911084, 8 Jul 2009; *Polygonatum leptophyllum* E00509736' image, KATH<sup>1</sup>). **BAJHANG/BAJURA**: Pategaon – Ghodi Lehk Deorali – Badigaon, 3200 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9192406, 16 Aug 1991; TI) fide SHB (2013–2020). **DARCHULA**: Above Khayakot, 2780 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1077, 18 Jul 2015; TUCH<sup>1</sup>); Nete, 3715 m (KM Ghimire & M Adhikari F021, 11 Sept 2015; TUCH<sup>1</sup>). **DOTI**: Kapthad, 3090 m (H Tabata, KR Rajbhandari & K Tsuchiya 1159, 12 Jul 1976; KATH<sup>1</sup>). **HUMLA**: Raniban, Simikot, 2990 m (TR Pandey & DR Kandel 2016905, 9 Sep 2016; KATH<sup>1</sup>); Jabkung-Tugling, Changla Khola, Dozam, 3100–3500 m (SK Ghimire, RP Chaudhary & team P10650, 21 May 2010; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Bageshwar (N Wallich s.n.; BM000069457).

*Local abund.:* Frequent to common.

*Ethnobot. use:* Rhizomes are used as tonic for general debility. Rhizomes are also used to treat wounds and stomach disorders. Tender shoots and leaves are eaten as vegetable.

*Conserv. status:* LOC., Near Threatened. Threat is mainly due to habitat destruction, overgrazing and overharvesting for local use and occasional trade.

**Theropogon** Maxim., Bull. Acad. Imp. Sci. Saint-Petersbourg 15: 89 (1870).

**Theropogon pallidus** (Wall. ex Kunth) Maxim., Bull. Acad. Imp. Sci. Saint-Petersbourg 15: 90 (1870). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 80 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 171 (2017). **Pl. 15.**

*Ophiopogon pallidus* Wall. ex Kunth, Enum. Pl. 5: 300 (1850).

NEP-L: Dhachade (धचडे). NEP: Jangali pyaj (जङ्गली प्याज).

Tufted perennial herbs with thickened roots; leaves grass-like; scape to 30 cm, shorter than leaves; flowers white or pink, campanulate, in few to many-flowered racemes; tepals erect, free to base.

*Habitat:* Forests, thickets, rocky grasslands, shady rocky slopes, shady banks, cliffs in forest.

*Distribution:* Himalaya (India, Nepal, Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 1500–2800 m.

KSL: Baitadi and Darchula in KSL Nepal, and neighboring Doti; 1500–2400 m.

*Representative specimens.* **DARCHULA:** Between Nahli & Sithi, Panelpani, Ghusa, 2350 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1718, 16 Jul 2016; TUCH<sup>1</sup>). **DOTI:** Napani, 2390 m (H Tabata, KR Rajbhandari & K Tsuchiya 909, 2 Jul 1976; KATH<sup>1</sup>).

*Local abund.:* Frequent to common.

## ARECACEAE

(Palmae)

**Phoenix** L., Sp. Pl. 2: 1188 (1753).

**Phoenix loureiroi** Kunth var. **pedunculata** (Griff.) Govaerts, World Checkl. Palms: 171 (2005). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 173 (2017). **Pl. 15.**

*Phoenix pedunculata* Griff., Palms Brit. E. Ind.: 139 (1850); *Phoenix humilis* (L.) Cav. var. *pedunculata* (Griff.) Becc.; *Phoenix loureiroi* var. *humilis* S. Barrow

NEP: Thakal (थाकल).

Low growing palms; stems to 3 m; inflorescences exerted from prophyll on long scapes.

*Habitat:* Open forests, dry hillsides along river.

*Distribution:* Tropical and subtropical regions in S Asia.

NEPAL: W, C & E; 150–1500 m.

KSL: Baitadi and Darchula in KSL Nepal; 600–1300 m.

*Representative specimen.* **DARCHULA:** Betale, 1000 m (SK Ghimire, LR Joshi & B Awasthi A52, 20 Oct 2013; TUCH<sup>1</sup>).

*Local abund.:* Occasional along Chameliya River.

## COMMELINACEAE

**Commelina** L., Sp. Pl. 1: 40 (1753).

**Commelina benghalensis** L., Sp. Pl. 1: 41 (1753). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 82 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 174 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 174 (2018).

*Commelina cavaleriei* H. Lév.; *Commelina cucullata* L.; *Commelina mollis* Jacq.; *Commelina nervosa* Burm. f.

NEP-L: Kanjado, Kanjadā, Vishkāpado (कञ्जडो, कञ्जडा, विष्कापडो). NEP: Kānejhār (कानेभार).

ENG: Benghal commelina, Day flower, Tropical spiderwort, Wandering jew.

Perennial much branched herbs with creeping stems, ascending distally, sparsely pubescent.

*Habitat*: Moist rocky slopes, wet grasslands, marshy places by stream, roadsides, weed of cultivation.

*Distribution*: Tropical and subtropical regions in Old World.

NEPAL: W, C & E; 100–2100(–3000) m.

KSL: Darchula in KSL Nepal; 900–2100 m.

*Representative specimens*. **DARCHULA**: Darchula–Huti, 900 m (KR Rajbhandari & KJ Malla 5549, 24 Aug 1980; KATH<sup>1</sup>); Khar VDC-7, 2070 m (BB Shrestha, M Pandey & R Chhetri 131, 27 Sept 2015; TUCH<sup>1</sup>); Chameliya Valley, Patu, near Ghusa, 2100 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa and MR Paudeyal ANCA-510A, 15 Oct 2014; TUCH<sup>1</sup>).

*Local abund.*: Frequent.

*Ethnobot. use*: Young shoots are eaten as vegetable. Root juice is used to treat stomach disorders and burns.

*Conserv. status*: GLB., Least Concern (Beentje & Lansdown 2018a).

**Commelina diffusa** Burm. f., Fl. Indica: 18 (1768). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 82 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 175 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 174 (2018).

*Commelina agraria* Kunth; *Commelina caespitosa* Roxb.; *Commelina gracilis* Ruiz & Pav.; *Commelina obtusifolia* Vahl

ENG: Climbing dayflower.

Annual herbs with branched creeping stems.

*Habitat*: Forests, thickets, open slopes, waste places, roadsides, fields.

*Distribution*: Pantropical and warm temperate regions.

NEPAL: W, C & E; 60–3700 m.

KSL: Known from neighboring Bajura, Nepal; 600–1400 m.

*Representative specimen*. **BAJURA**: Babali – Sanfebagar, 600–1410 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193862, 30 Aug 1991; TI) fide SHB (2013–2020).

*Conserv. status*: GLB., Least Concern (Lansdown 2018a).

**Commelina maculata** Edgew., Trans. Linn. Soc. London 20: 89 (1846). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 82 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 175 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 174 (2018). **Pl. 15.**

*Commelina obliqua* Vahl var. *viscida* C.B. Clarke; *Commelina paludosa* Blume var. *viscida* (C.B. Clarke) Rao & Kammathy.

NEP-L: Kanjado, Kanjadā, Vishkāpado (कञ्जडो, कञ्जडा, विष्कापडो).

ENG: Day flower.

Perennial herbs with creeping or procumbent stems, ascending distally, glabrous or sparsely pubescent.

*Habitat*: Forests, forest margins, open slopes, grasslands, roadsides, ditches.

*Distribution:* Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Myanmar, SC China, Malaysia.

NEPAL: W, C & E; 300–3100 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 1500–2500 m.

*Representative specimens.* **BAJHANG:** Agara – Talkot, 1900–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0605, 18 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>); Talkot – Aagar, 2100 m (KR Rajbhandari 15347, 18 Aug 1991; KATH<sup>1</sup>). **BAJURA:** Berma – Kolti (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160455, 10 Aug 1991; TI) fide SHB (2013–2020). **DARCHULA:** Chameliya Valley, Patu, way to Ghusa, 2100 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-510B, 15 Oct 2014; TUCH<sup>1</sup>).

*Local abund.:* Occasional to frequent.

*Ethnobot. use:* Young leafy shoots and roots are eaten as vegetable.

**Commelina paludosa** Blume, Enum. Pl. Javae. 1: 2 (1827). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 82 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 176 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 174 (2018).

*Commelina donii* A. Dietr.; *Commelina obliqua* Buch.-Ham. ex D. Don

NEP: Kānejhār (कानेभार).

Perennial straggling herbs; stems branched, erect to suberect or ascending, glabrous or pubescent.

*Habitat:* Forests, among scrub, open slopes, streamsides.

*Distribution:* Tropical and subtropical regions in Asia, Himalaya.

NEPAL: W, C & E; 100–3500 m.

KSL: Bajhang in KSL Nepal.

*Representative specimen.* **BAJHANG:** Aagar – Dhalaun (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160769, 19 Aug 1991; TI) fide SHB (2013–2020).

**Cyanotis** D. Don, Prodr. Fl. Nepal. 45 (1825).

**Cyanotis cristata** (L.) D. Don, Prodr. Fl. Nepal.: 46 (1825). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 82 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 177 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 175 (2018).

*Commelina cristata* L., Sp. Pl. 1: 42 (1753).

NEP: Sāno kānejhār (सानो कानेभार).

Prostrate annual herbs with erect or ascending branches; roots fibrous.

*Habitat:* Damp grassy slopes, mossy rocks, streamsides, trailsides.

*Distribution:* Tropical Africa, tropical and subtropical regions in Asia, Himalaya.

NEPAL: W, C & E; 100–2400 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; *c.* 1450–2100 m.

*Representative specimens.* **BAJHANG:** Between Talkot & Panalta, 2000–2100 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0141, 12 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA:** Porakya, 1460 m (BSH A27, 11 Aug 2017) fide RBGE (2014).

*Conserv. status:* GLB., Least Concern (Watve 2011a).

**Cyanotis vaga** (Lour.) Schult. & Schult. f. in Roem. & Schult., Syst. Veg., ed. 15 bis 7: 1153 (1830). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 82 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 177 (2017). **Pl. 15.**

*Tradescantia vaga* Lour., Fl. Cochinch. 1: 193 (1790); *Cyanotis barbata* D. Don

NEP-L: Kaukhutte (कौखुटे).

Perennial bulbiferous herbs; stem branched, scandent to suberect, glabrous to pubescent.

*Habitat*: Open rocky slopes, rocky slopes in pine forests, forest margins, open grassy places, trailsides.

*Distribution*: Tropical Africa, tropical and subtropical regions in Asia.

NEPAL: W, C & E; 300–2800 m.

KSL: Baitadi, Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 1100–2400 m.

*Representative specimens*. **BAJHANG**: Aagar – Kinara, 1390–2180 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160963, 23 Aug 1991; KATH<sup>1</sup>, TI<sup>1</sup> image); Dhuli, 2360 m (H Tabata, KR Rajbhandari & K Tsuchiya 1610, 25 Jul 1976; KATH<sup>1</sup>). **BAJURA**: Dhamkane, 2200 m (BSH A20, 9 Aug 2017) fide RBGE (2014). **DARCHULA**: Api-13, Khlanga, 1120 m (BB Shrestha, M Pandey & R Chhetri 471, 9 Oct 2015; TUCH<sup>1</sup>); Okhal–Makarigad, 1300 m (SK Ghimire, B Awasthi, S Budha Magar, B Jnawali, S Nepal, MR Paudeyal & DJ Chapagain ANCA-3023, 31 Aug 2017; TUCH<sup>1</sup>); Makarigad, 1500 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-2146, 3 Aug 2016; TUCH<sup>1</sup>).

*Local abund.*: Frequent to common.

**Murdannia** Royle, Ill. Bot. Himal. Mts. 1: 403, pl. 95, f. 3 (1839).

**Murdannia divergens** (C.B. Clarke) G. Brückn. in Engler & Prantl, Nat. Pfl.-Syst., ed. 2, 15a: 173 (1930). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 83 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 178 (2017). **Pl. 15**.

*Aneilema herbaceum* (Roxb.) Wall. ex C.B. Clarke var. *divergens* C.B. Clarke, J. Linn. Soc., Bot. 11: 448 (1871);

*Aneilema divergens* (C.B. Clarke) C.B. Clarke; *Phaeneilema divergens* (C.B. Clarke) G. Brückn.

Erect perennial herbs; roots fibrous or tuberous; stem simple, leafy, sparsely hairy; flowers purple.

*Habitat*: Forests, forest margins, open grassy slopes.

*Distribution*: Himalaya (India, Nepal, Bhutan), S China, mainland SE Asia.

NEPAL: W, C & E; 1000–2400 m.

KSL: Baitadi, Bajhang and Darchula in KSL Nepal, and neighboring Bajura; *c.* 1500–2400 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Talkot – Aagar, 1660–1840 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160696, 18 Aug 1991; KATH<sup>1</sup>, TI<sup>1</sup>); Aagar – Dhalaun, 1840–2400 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160757, 19 Aug 1991; KATH<sup>1</sup>, TI<sup>1</sup>). **BAJURA**: Serigaon – Bashala, 1510 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193264, 14 Aug 1991; TI<sup>1</sup>) fide SHB (2013–2020); Porakya – Serigaon, 1725 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193236, 13 Aug 1991; TI<sup>1</sup>) fide SHB (2013–2020). **DARCHULA**: Above Makarigad, way to Khandeshowari, 1550 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1007, 16 Jul 2015; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Pithoragarh, 2200 m (CM Arora 38832, 8 Sept 1968; L.1427324<sup>1</sup> image).

*Local abund.*: Frequent to common.

**Murdannia nudiflora** (L.) Brenan, Kew Bull. 7: 189 (1952). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 83 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 179 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 176 (2018).

*Commelina nudiflora* L., Sp. Pl. 1: 41 (1753); *Aneilema nudiflorum* (L.) Sweet; *Aneilema radicans* D. Don



NEP: Kānejhār (कानेझार).

ENG: Doveweed, Nakedstem dewflower.

Weak decumbent annual herbs, much branched at base; branches leafy, semi-erect or ascendant.

*Habitat*: Wet places in forests, roadside, open slopes.

*Distribution*: Tropical and subtropical regions in Asia to W Pacific.

NEPAL: W, C & E; 65–2400 m.

KSL: Bajhang in KSL Nepal, and neighboring Achham and Bajura; 600–2400 m.

*Representative specimens*. **BAJHANG**: Aagar – Dhalaun, 1700–2400 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160770, 19 Aug 1991; KATH<sup>1</sup>, TI<sup>1</sup> image); Talkot–Aagar, 2000 m (KR Rajbhandari 15281, 18 Aug 1991; KATH<sup>1</sup>). **ACHHAM/BAJURA**: Babali – Sanfebagar, 600–1410m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9161146, 30 Aug 1991; TI<sup>1</sup> image).

**Murdannia spirata** (L.) G. Brückn. in H.G.A. Engler, Nat. Pflanzenfam. ed. 2, 15a: 173 (1930). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 83 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 180 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 177 (2018).

*Commelina spirata* L., Mant. Pl. 2: 176 (1771); *Ancilema spiratum* (L.) Sweet; *Commelina nana* Roxb.

ENG: Asiatic dewflower.

Perennial herbs, with elongate rhizomes; stems slender, creeping.

*Habitat*: Wet places in forests, wastelands, sandy places by streams, around fields.

*Distribution*: Tropical and subtropical regions in Asia.

NEPAL: W, C & E; 100–1900 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; 800–1800 m.

*Representative specimens*. **BAJHANG**: Talkot – Aagar, 1660–1840 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160736, 18 Aug 1991; TI<sup>1</sup> image). **BAJURA**: Babali – Sanfebagar, 800 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9171074, 30 Aug 1991; TI) fide SHB (2013–2020).

*Conse. status*: GLB., Least Concern (Mani 2011a).

**Streptolirion** Edgew., Proc. Linn. Soc. London. 1: 254 (1845).

**Streptolirion volubile** Edgew., Proc. Linn. Soc. London 1: 254 (1845). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 83 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 181 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 177 (2018). **Pl. 16.**

*Streptolirion cordifolium* (Griff.) Kuntze; *Tradescantia cordifolia* Griff.

NEP: Thūlo kānejhār (ठूलो कानेझार).

Perennial climbing or erect herbs; leaves ovate-cordate.

*Habitat*: Shady forests, moist slopes, on rocks.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, C & SE China to Russian Far East, and mainland SE Asia.

NEPAL: W, C & E; 1200–3200 m.

KSL: Humla in KSL Nepal, and neighboring Bajura; 1600–2900 m [Pithoragarh, Uttarakhand in KSL India]. It is likely also to be present in Bajhang and Darchula within KSL Nepal.

*Representative specimens.* **BAJURA:** Porakya – Serigaon, 1690–2540 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayamo & K Terada 9160540, 13 Aug 1991; TI<sup>1</sup> image); Baudi Khola, below Kuru, 1920 m (BSH A137, 21 Aug 2017) fide RBGE (2014). **HUMLA:** Humla-Karnali, between Dharapori & Kermi, 2800–2900 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama 1399, 14 Sept 2012; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon (R Blinkworth Cat. no. 8976; K001131967<sup>1</sup> image); Dhowli [Dhauli] Valley, 1825–2130 m (MP Edgeworth s.n., 1844; K000854207<sup>1</sup> image).

*Local abund.:* Occasional in Humla.

## PONTEDERIACEAE

**Monochoria** C. Presl, Reliq. Haenk. 1: 127 (1827).

**Monochoria vaginalis** (Burm. f.) C. Presl, Rel. Haenk. 1: 128 (1827). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 81 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 182 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 178 (2018).

*Pontederia vaginalis* Burm. f., Fl. Ind.: 80 (1768); *Pontederia pauciflora* Blume; *Pontederia plantaginea* Roxb.

NEP: Nilo jaluke, Nilo jaluko (नीलो जलुके, नीलो जलुको).

ENG: Pickerel weed.

Annual or perennial aquatic herbs, with creeping rootstocks; plant glabrous.

*Habitat:* Marshy places, rice fields, ditches, ponds.

*Distribution:* Tropical and subtropical regions in Asia to N Australia.

NEPAL: W, C & E; 150–2000(–2650) m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; 1400–2000 m.

*Representative specimens.* **BAJHANG:** Talkot – Aagar, 2000 m (KR Rajbhandari 15292, 18 Aug 1991; KATH<sup>1</sup>).

**BAJURA:** Kaudegaon – Babali, 1410–1900 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayamo & K Terada 9193841, 29 Aug 1991; TI) fide SHB (2013–2020).

*Consu. status:* GLB., Least Concern (Lansdown 2011a).

## ZINGIBERACEAE

**Cautleya** Hook. f., Bot. Mag. 114: t. 6991 (1888).

**Cautleya gracilis** (Sm.) Dandy, J. Bot. 70: 328 (1932). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 59 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 183 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 181 (2018). **Pl. 16.**

*Roscoeia gracilis* Sm., Trans. Linn. Soc. London 13: 460 (1822); *Cautleya lutea* (Royle) Hook. f.; *Roscoeia lutea* Royle

NEP-L: Van haldo (वन हल्दो). NEP: Van besār, Gagletto, Hardî-jhār (वन बेसार, गगलेटो, हर्दी-झार).

Slender, rhizomatous perennial herbs, 30–60 cm; leaves lanceolate, caudate-acuminate, sessile; spikes terminal, few-flowered; calyx reddish; corolla yellow or orange; bracts red or green, shorter than calyx.

*Habitat:* Moist and shady places in forests, also epiphytic on moist rocks and oak trees in forest.

*Distribution:* Himalaya (India, Nepal, Bhutan), Tibetan Plateau, SC China, mainland SE Asia.

NEPAL: W, C & E; 1200–3100 m.

KSL: Baitadi, Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 1800–2600 m.

*Representative specimens.* **BAITADI:** Shribhawar, 2480 m (TR Pandey & GD Bhatt 2016638, 6 Jun 2016, KATH<sup>1</sup>). **BAJHANG:** Trail from Thalara to Budkhor, Lekgaon VDC, 2573 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915086, 11 Jul 2009; E00509870<sup>1</sup> image, KATH<sup>1</sup>). **BAJURA:** Dhamkane, 2250 m (BSH A17, 9 Aug 2017) fide RBGE (2014). **DARCHULA:** Between Khayakot and Bhattar, Ghusa, 2080 m (SK Ghimire, B Awasthi, S Budha Magar, B Jnawali, S Nepal, MR Paudeyal & DJ Chapagain ANCA-3502, 10 Sept 2017; TUCH<sup>1</sup>).

*Local abund.:* Occasional to frequent.

*Ethnobot. use:* In Darchula, rhizomes are used to treat wounds and stomach disorders.

*Conserv. status:* GLB., Least Concern (Newman & Olander 2019a).

**Cautleya spicata** (Sm.) Baker in Hook. f., Fl. Brit. India 6: 209 (1890). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 59 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 184 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 181 (2018). **PL 16.**

*Roscoeia spicata* Sm., Trans. Linn. Soc. London 13: 460 (1822); *Cautleya petiolata* Baker; *Cautleya robusta* Baker

NEP-L: Van haldō (वन हल्दो). NEP: Van besār, Gagletō, Pāni sarro (वन बेसार, गगलेटो, पानी सर्रो).

Differs from *C. gracilis* in its robust habit, much broader and petiolate leaves, densely many-flowered terminal spike, and longer reddish bracts.

*Habitat:* Open areas in forests, forest margins, also epiphytic on trees.

*Distribution:* Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 1800–3100(–3600) m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 1900–2600 m.

*Representative specimens.* **BAJHANG:** Between Panalta & Kuwa, 1900–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0293, 13 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>); trail from Thalara to Budkhor, Lekgaon VDC, 2573 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915085, 11 Jul 2009; E00509895<sup>1</sup> image, KATH<sup>1</sup>). **BAJURA:** Pategaon – Ghodi Lehk Deorali – Badigaon, 2550 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9192423, 16 Aug 1991; TI) fide SHB (2013–2020). **DARCHULA:** Above Khayakot, Ghusa, 2100 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1112, 18 Jul 2015; TUCH<sup>1</sup>).

*Local abund.:* Occasional to frequent.

*Ethnobot. use:* In Darchula, rhizomes are used to treat wounds, indigestion and constipation.

*Conserv. status:* GLB., Least Concern (Newman & Olander 2019b).

**Globba** L., Mant. Pl. 2: 143 (1771).

**Globba macroclada** Gagnep., Bull. Soc. Bot. France 50: 257 (1903). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 185 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 182 (2018).

Perennial rhizomatous herbs, 40–55 cm tall.

*Habitat:* Steep hillsides, open places.

*Distribution:* C & E Himalaya (Nepal, Sikkim).

NEPAL: W, C & E; 500–1500 m.

KSL: Baitadi in KSL Nepal; c. 900 m.

*Representative specimen.* **BAITADI:** Near Jhulaghat, 915 m (JB Tyson 142, 30 Jul 1952; E00095801<sup>1</sup> image).

**Hedychium** König in Retzius, *Observ. Bot.* 3: 73 (1783).

**Hedychium ellipticum** Buch.-Ham. ex Sm. in Rees, *Cyclop.* 16: n. 2 (1811). Hara *et al.*, *Enum. Fl. Pl. Nepal* 1: 60 (1978). Rajbhandari & Rai, *Handbk. Fl. Pl. Nepal* 1: 187 (2017). Shrestha *et al.*, *Handbk. Fl. Pl. Nepal* 1: 183 (2018). **Pl. 16.**

*Hedychium fastigiatum* Wall., nom. nud.

NEP-L: Van haldî, Van haldo (वन हल्दी, वन हल्दो). NEP: Sarro (सर्रो).

ENG: Ginger lily, Rock butterfly lily, Shaving brush ginger.

Perennial rhizomatous herbs, to 1.5 m tall; leaves elliptic or oblong, shortly acuminate. Flowers in dense spike, flat-topped, with densely imbricating bracts; corolla tube yellow, tinged orange, much longer than bracts; corolla lobes white with yellow base; stamens orange-red, much longer than petals.

*Habitat*: Dry hillsides, rocky and scree slopes at the margin of pine forests, subtropical forests.

*Distribution*: Himalaya (India, Nepal, Bhutan), mainland SE Asia.

NEPAL: W, C & E; 300–3500 m.

KSL: Darchula in KSL Nepal; 1300–1400 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **DARCHULA**: Kholadhar Deurali, between Paribagar & Makarigad, 1330 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA 995, 15 Jul 2015; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kali Valley, 914 m (JF Duthie [interpreted] s.n., Jul 1886; E00499875<sup>1</sup> image).

*Local abund.*: Occasional in Darchula.

*Ethnobot. use*: In Darchula, rhizomes are used to treat stomach disorders and lung disorders.

**Hedychium spicatum** Sm. in Rees, *Cyclop.* 17: n. 8 (1811). Hara *et al.*, *Enum. Fl. Pl. Nepal* 1: 61 (1978). Rajbhandari & Rai, *Handbk. Fl. Pl. Nepal* 1: 188 (2017). Shrestha *et al.*, *Handbk. Fl. Pl. Nepal* 1: 184 (2018). **Pl. 16.**

*Hedychium acuminatum* Roscoe; *Hedychium album* Buch.-Ham. ex Wall.; *Hedychium spicatum* var. *acuminatum* (Roscoe) Wall.; *Hedychium trilobum* Wall. ex Roscoe

NEP-L: Van haldî, Van haldo (वन हल्दी, वन हल्दो). NEP-L: Gâi sarro, Pankhâ-phûl (गाई सर्रो, पङ्खा-फूल).

ENG: Spiked ginger lily.

Perennial rhizomatous herbs, similar to *H. ellipticum*, but with more robust in habit, flowering spike elongated-cylindrical, bracts not overlapping, and stamens shorter than petals.

*Habitat*: Broad-leaved forests, forest margins, shrublands, grassy slopes, trailsides, edges of cultivation.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, SC China, mainland SE Asia.

NEPAL: W, C & E; (300–)1800–3000 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Dadeldhura and Mugu; 1500–2600 m.

*Representative specimens*. **BAJHANG**: Agar – Dhalaum, 2000 m (KR Rajbhandari 15406, 19 Aug 1991; KATH<sup>1</sup>); between Talkot & Panalta, 2000–2100 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0204, 12 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>); Rasa – Roshidanda, 2260–2540 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160844, 21 Aug 1991; E00229974<sup>1</sup> image, TI). **DARCHULA**: Makarigad, way to Khandesowari, 1550 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-500, 15 Oct 2014; TUCH<sup>1</sup>). **MUGU**: Mugu Karnali Valley, between Mangri & Lumsa, 2130 m (O Polunin, WR Sykes & LHJ Williams 3043, 16 Aug 1952; E00507991<sup>1</sup> image).

*Local abund.*: Occasional to frequent.

*Ethnobot. use*: Rhizomes are used in stomach disorders and asthma.

**Roscoea** Sm. Exot. Bot. 2: 97 (1806).

**Roscoea alpina** Royle, Ill. Bot. Himal. Mts. 361 (1839). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 61 (1978). Cowley, Kew Bulletin 36: 766 (1982). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 189 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 185 (2018). **PI. 17.**

*Roscoea alpina* var. *minor* Royle; *Roscoea intermedia* Gagnep.; *Roscoea longifolia* Baker; *Roscoea purpurea* Sm. var. *minor* Wall., nom. nud.

NEP-L: Nān katāre (नान कटारे).

Perennial rhizomatous herbs, 10–20 cm tall; leaves 2–3, linear, elliptic or lanceolate; bracts short, obtuse; flowers purple, pink or white, opening one at a time, corolla tube long exerted from calyx.

*Habitat*: Forest margins, open rocky slopes, meadows.

*Distribution*: Himalaya (Kashmir to Bhutan), Tibetan Plateau.

NEPAL: W, C & E; 2100–4000(–4250) m.

KSL: Darchula and Humla in KSL Nepal, and neighboring Doti and Mugu; 2100–3300 m [Bageshwar, Uttarakhand in KSL India].

*Representative specimens*. **DARCHULA**: Upper Chameliya Valley, above Khayakot, 2780 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1066, 18 Jul 2015; TUCH<sup>1</sup>); Simar, 2833 m (CK Subedi, J Gurung & S Thapa 55, 20 Jun 2014; TUCH<sup>1</sup>). **DOTI**: Khaptad National Park, on the trail from Ghigrana to Bichpani, 2039 m (Bajhang09 20919012, 1 Jul 2009) fide RBGE (2014). **HUMLA**: Between Puma & Melchham, 2740 m (O Polunin, WR Sykes & LHJ Williams 4340, 17 Jun 1952; E00063136<sup>1</sup> image). **MUGU**: Above Dharkya, south of Chankheli Lagna, 3280 m (CA Pendry, S Baral, S Noshiro, PP Kurmi, B Dell & B Adhikari A117, 12 Jun 2008; E00392174<sup>1</sup> image).

*Remarks*: Distribution records for Uttarakhand fide GMBA (2012–2016).

*Local abund.*: Occasional to frequent.

**Roscoea purpurea** Sm., Exot. Bot. 2: 97 (1806). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 61 (1978). Cowley, Kew Bulletin 36: 752 (1982). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 190 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 185 (2018). **PI. 17.**

*Roscoea procera* Wall.; *Roscoea purpurea* var. *gigantea* Wall.; *Roscoea purpurea* var. *procera* (Wall.) Baker

NEP-L: Katāre, Rāsgarī (कटारे, रासगरी). NEP: Bhuin sarro, Kālo muslī (भुईसरो, कालो मुस्ली).

Perennial herbs with short rhizome and tuberous fusiform roots; leafy shoots 25–50 cm high; leaves 4–8, elliptic, lanceolate to oblong-ovate, slightly auriculate at base; bracts acute; spike terminal, flowers hidden by leaf sheaths, pale purple or pale pinkish; corolla tube little longer than calyx.

*Habitat*: Margins of broad-leaved and mixed forests, open grassy slopes, rocky slopes, steep hillsides.

*Distribution*: Himalaya (NW India to Bhutan).

NEPAL: W, C & E; 1400–3200 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 1570–3000 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Dhalun Village, 2300–2400 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0585, 17 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>); Dhuli, 2743 m (JB Tyson 101, 15 Jul 1953; E00035021<sup>1</sup> image); above Surma Village, 2945 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911081, 8 Jul 2009; E00509734<sup>1</sup> image). **BAJURA**: Martadi, 1570 m (BSH A13, 8 Aug 2017) fide RBGE (2014). **DARCHULA**: Khar VDC-4, 2150 m (BB Shrestha, M Pandey & R Chhetri 30, 26 Sept 2015; TUCH<sup>1</sup>); Chameliya Valley, between Nahli & Sithi, 2300 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1027A, 17

Jul 2015; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon (R Blinkworth Cat. no. 6528; K001124109<sup>1</sup> image, K001124112<sup>1</sup> image).

*Remarks*: Distribution records for Pithoragarh, India fide GMBA (2012–2016).

*Local abund.*: Frequent.

*Ethnobot. use*: In Darchula, the plant is collected for fodder.

## ERIOCAULACEAE

**Eriocaulon** L., Sp. Pl. 1: 87 (1753).

**Eriocaulon cinereum** R. Br., Prodr. Fl. Nov. Holland.: 254 (1810). Satake in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 96 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 192 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 188 (2018).

*Eriocaulon sieboldianum* Siebold & Zucc. ex Steud.; *Leucocephala spathacea* Roxb.

ENG: Ashy pipewort.

Small tufted annual herbs with linear to acicular leaves; scapes slender, to 10 cm.

*Habitat*: Wet places, along streams, flooded rice fields.

*Distribution*: Tropical Africa, tropical and subtropical regions in Asia, N Australia.

NEPAL: W, C & E; 900–2400 m.

KSL: Bajhang in KSL Nepal; 1400 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Kinara – Chainpur, 1410 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayamo & K Terada 9193380, 24 Aug 1991; TI) fide SHB (2013–2020). **UTTARAKHAND (INDIA)**: Kumaon, Thal – Bageshwar Rd. (C Arora 37897, 26 Aug 1968; US 03843444<sup>1</sup> image).

*Conserv. status*: GLB., Least Concern (Mesterházy 2020).

**Eriocaulon nepalense** J.D. Prescott ex Bong., Mém. Acad. Imp. Sci. St.-Petersbourg, Sér. 6, Sci. Math. 1: 610 (1831). Satake in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 96 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 193 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 188 (2018).

*Eriocaulon nepalense* Kunth, nom. illeg.; *Eriocaulon viride* Körn.

NEP: Bhurighāns (भुरी-घाँस).

ENG: Pipewort.

Small tufted annual herbs with fibrous roots; leaves linear, blunt; scape slender, 5–15 cm.

*Habitat*: Damp places, swamps, marshy grasslands.

*Distribution*: Himalaya (India, Nepal, Bhutan), S China, mainland SE Asia to Indonesia.

NEPAL: W, C & E; 1500–3000 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; 1500–2500 m.

*Representative specimens*. **BAJHANG**: Between Panalta & Kuwa, 1900–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0313, 13 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA**: Berseni – Porakya Deorali – Porakya, 1560–2540 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayamo & K Terada 9160499, 12 Aug 1991; KATH<sup>1</sup>, TI).

*Conserv. status*: GLB., Least Concern (Arisdason 2011).

## JUNCACEAE

**Juncus** L., Sp. Pl. 1: 325 (1753).

**Juncus allioides** Franch., Nouv. Arch. Mus. Hist. Nat. Paris sér. 2, 10: 99 (1887). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 84 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 195 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 189 (2018). **PI. 17.**

Caespitose perennial herbs, 10–40 cm tall, with short rhizomes; leaves septate.

*Habitat*: Wet places in forests, wet meadows, open grasslands, river banks, glacial sand.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 2000–5000 m.

KSL: Darchula and Bajhang in KSL Nepal, and neighboring Doti and Mugu; 2000–4200 m.

*Representative specimens*. **BAJHANG**: Between Panalta & Kuwa, 1900–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0304, 13 Sept 2017; KATH<sup>1</sup>; PE<sup>1</sup>); between Karinganga and Aletsoura, near Saipal, 4181 m (H Tabata, KR Rajbhandari & K Tsuchiya 1876, 31 Jul 1976; KATH<sup>1</sup>). **DOTI**: Khaptad National Park, trail from Bichpani to Ghoda daune, 3063 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911049, 2 Jul 2009; E00509710<sup>1</sup> image). **MUGU**: Between Ghurchi & Chuchamara Danda, 3500 m (KR Rajbhandari & B Roy 3568, 19 Jul 1979; KATH<sup>1</sup>).

*Local abund.*: Occasional to frequent.

**Juncus articulatus** L., Sp. Pl. 1: 327 (1753). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 84 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 195 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 189 (2018).

*Juncus lampocarpus* Ehrh. ex Hoffm.

ENG: Jointed rush, Joint-leaf rush.

Caespitose perennial herbs, 20–40 cm tall; rhizomes creeping.

*Habitat*: Wet meadows, riversides, open grasslands.

*Distribution*: Europe, N Africa, Temperate Asia, Himalaya (Pakistan to Bhutan), N America.

NEPAL: W & C; (1200–)2300–3900 m.

KSL: Bajhang in KSL Nepal; 3000 m.

*Representative specimen*. **BAJHANG**: Khaptad, 3000 m (H Tabata, KR Rajbhandari & K Tsuchiya 178, 9 Jul 1976; KATH) fide Rajbhandari & Rai (2017).

*Conserv. status*: GLB., Least Concern (Allen 2011).

**Juncus benghalensis** Kunth, Enum Pl. 3: 360 (1841). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 84 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 195 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 189 (2018). **PI. 17.**

*Juncus bracteatus* Buchenau; *Juncus sphenostemon* Buchenau

Loosely caespitose perennial herbs, with short rootstocks; stems thin, slender, up to 20 cm.

*Habitat*: Moist grasslands, wet meadows, sandy moraines, stream banks.

*Distribution*: Himalaya (Pakistan to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 2200–5000 m.

KSL: Darchula and Humla in KSL Nepal, and neighboring Bajura and Doti; 3000–4200 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJURA:** Chauki Lekh, 4211 m (BSH C59, 18 Aug 2017) fide RBGE (2014). **DARCHULA:** Upper Chameliya, Pilkand, Gauchhalighol, 4150 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-2045, 31 Jul 2016; TUCH<sup>1</sup>). **DOTI:** Khaptad, 3000 m (MS Bista & DP Joshi 200, 3 Aug 1972; KATH<sup>1</sup>). **HUMLA:** Marghor Lekh, 3200 m (KR Rajbhandari & B Roy 4174, 31 Jul 1979; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, Barji Kang Pass, 4420 m (R Strachey & JE Winterbottom 13; P01747692<sup>1</sup> image).

*Local abund.:* Frequent in Darchula.

**Juncus clarkei** Buchenau, Bot. Jahrb. Syst. 6: 210 (1885). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 197 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 190 (2018).

Loosely caespitose perennial herbs, 20–30 cm tall; rhizomes short, slender.

*Habitat:* Forest margins, mossy rocks, cliff ledges, moist grasslands.

*Distribution:* C & E Himalaya (Nepal to NE India), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 2900–3900 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; 3100 m.

*Representative specimen.* **BAJURA & BAJHANG:** Pategaon – Ghodi Lehk Deorali – Badigaon, 3100 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayamo & K Terada 9170688, 16 Aug 1991; TI) fide SHB (2013–2020).

**Juncus concinnus** D. Don, Prodr. Fl. Nepal.: 44 (1825). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 84 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 197 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 190 (2018). **PI. 17.**

*Juncus elegans* Royle ex Sam.; *Juncus luteocarpus* Satake

Caespitose perennial herbs, 10–40 cm tall; rhizomes short, usually not creeping.

*Habitat:* Wet meadows, moist grassy slopes, mossy rocks, moist gravelly areas.

*Distribution:* Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 1600–4500(–5200) m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura, Dadeldhura and Doti; 1600–4000 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Talkot–Agar, 2000 m (KR Rajbhandari 15327, 18 Aug 1991; KATH); above Surma Village, 3073 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911086, 8 Jul 2009; E00509738<sup>1</sup> image, KATH<sup>1</sup>). **BAJURA:** Porakya – Serigaon, 2260 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayamo & K Terada 9170547, 13 Aug 1991; TI) fide SHB (2013–2020). **DARCHULA:** Upper Chameliya Valley, Lolu, Pilkanda, 2950 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1126, 20 Jul 2015; TUCH<sup>1</sup>); between Dhauliodar & Pilkanda, 3600 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1197, 19 Jul 2015; TUCH<sup>1</sup>). **DADELDHURA:** Kataunje – Gogan Pani, 1600 m (KR Rajbhandari, P.M. Regmi & K.J. Malla 5378, 15 Aug 1980; KATH<sup>1</sup>). **DOTI:** Khaptad, 3000 m (MS Bista & DP Joshi 266, 4 Aug 1972; KATH<sup>1</sup>).

*Remarks:* Distribution records for Pithoragarh, India fide GMBA (2012–2016).

*Local abund.:* Frequent in Darchula; not known for other districts.

**Juncus duthiei** (C.B. Clarke) H.J. Noltie, Edinb. J. Bot. 51: 134 (1994). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 197 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 190 (2018).

*Microschoenus duthiei* C.B. Clarke in Hook. f., Fl. Brit. India 6 (1894); *Schoenus duthiei* (C.B. Clarke) Kükenh.



Caespitose perennial herbs, 3–15 cm tall; rhizomes short, slender.

*Habitat*: Wet grasslands, river banks, open grassy hillsides, among boulders, rock-ledges.

*Distribution*: W & C Himalaya (NW India, Nepal), Tibetan Plateau.

NEPAL: W, C & E; 3000–4900 m.

KSL: Known from neighboring Bajura, Nepal; *c.* 3750 m. It is likely to be present in Darchula and Bahang in KSL Nepal.

*Representative specimen*. **BAJURA**: Chauki Lekh, 3747 m (BSH C67, 19 Aug 2017) fide RBGE (2014).

**Juncus effusus** L., Sp. Pl. 1: 326 (1753). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 84 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 198 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 190 (2018).

NEP: Jwāne-ghāns (ज्वाने-घाँस).

ENG: Common rush, Soft rush.

Densely caespitose perennial herbs to 100 cm tall, with shortly creeping rhizomes.

*Habitat*: Forests, forest margins, wet grasslands, river banks, fields.

*Distribution*: Cosmopolitan, widespread in temperate and montane-tropical regions of Europe, Africa, Asia, Australia and America.

NEPAL: W, C & E; 1300–3000 m.

KSL: Bajhang and Humla in KSL Nepal; 2200–2900 m.

*Representative specimens*. **BAJHANG**: Kaudo, 2200 m (JF Dobremez 2350, 20 May 1973; E00314634<sup>1</sup> image); Dhalaun – Rasa, 2700 m (KR Rajbhandari 15450, 20 Aug 1991; KATH<sup>1</sup>). **HUMLA**: Chankheli – Rimi, 2900 m (KR Rajbhandari & B Roy 3986, 26 Jul 1979; KATH<sup>1</sup>).

*Conserv. status*: GLB., Least Concern (Lansdown 2017b).

**Juncus himalensis** Klotzsch in Klotzsch & Garcke, Bot. Ergebn. Reise Waldemar 60, t. 97 (1862). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 84 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 199 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 191 (2018). **Pl. 17**.

*Juncus himalensis* var. *schlagintweitii* (Buchenau) Buchenau; *Juncus schlagintweitii* Buchenau; *Juncus sphacelatus* Decne. var. *himalensis* (Klotzsch) Jafri

Loosely caespitose perennial herbs, 20–60 cm tall, with stout, creeping rhizomes.

*Habitat*: Forests, wet meadows, boggy places, among rocks in moist places, gravelly stream banks.

*Distribution*: C Asia, Afghanistan, Pakistan, Himalaya (Kashmir to Bhutan), Tibetan Plateau, C China.

NEPAL: W, C & E; (1700–)2600–5200 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura and Mugu; 3200–5000 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJURA** & **BAJHANG**: Pategaon – Ghodi Lehk Deorali – Badigaon, 3200 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170665, 16 Aug 1991; TI) fide SHB (2013–2020). **DARCHULA**: Dhauliodar, way to Pilkanda, 3400 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1569, 31 Jul 2015; TUCH<sup>1</sup>); Lolu, Pilkanda, 3800 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1535, 28 Jul 2015; TUCH<sup>1</sup>); below Kalidhunga Tal, 4200 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1330, 22 Jul 2015; TUCH<sup>1</sup>). **HUMLA**: Chankheli Lagna, 3500 m (KR Rajbhandari & B Roy 3918, 25 Jul 1979; KATH); Nyalu La, 5010 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1191, 6 Sept 2012; TUCH<sup>1</sup>). **MUGU**: Ghurchi – Chuchamara (KR Rajbhandari & B Roy 3569, 19

Jul 1979; KATH<sup>3</sup>). **UTTARAKHAND (INDIA)**: Tola, Kumaon, 3505 m (R Strachey & JE Winterbottom 5; W 1906-0006766<sup>3</sup> image).

*Local abund.*: Frequent.

**Juncus inflexus** L., Sp. Pl. 1: 326 (1753). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 84 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 199 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 191 (2018).

*Juncus glaucus* Ehrh. ex Sibth.; *Juncus glaucus* var. *leptocarpus* Buchenau

ENG: Hard rush.

Densely caespitose perennial herbs, 50–120 cm, with short stout rhizomes; stems leafless, terete.

*Habitat*: Wet places, flood plains, wet grasslands, marshes, river banks, edges of cultivation.

*Distribution*: Macaronesia, Europe, Africa, Subtropical and Temperate Asia, Himalaya.

NEPAL: W, C & E; 1400–3500 m.

KSL: Bajhang in KSL Nepal; 1700–2850 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Aagar – Dhalaun, 1770 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayamo & K Terada 9170786, 19 Aug 1991; TI<sup>1</sup> fide SHB (2013–2020); Dhalaun – Rasa, 2840 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayamo & K Terada 9170839, 20 Aug 1991; TI<sup>1</sup> image).

*Remarks*: Distribution records for Pithoragarh, India fide GMBA (2012–2016).

*Conserv. status*: GLB., Least Concern (Gupta 2014).

**Juncus leucanthus** Royle ex D. Don, Trans. Linn. Soc. London, Bot. 18: 318 (1840). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 84 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 200 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 192 (2018).

*Juncus leucanthus* var. *alpinus* Buchenau; *Juncus tanguticus* Sam.

Densely to loosely caespitose perennial herbs, 8–20 cm tall, with short-noded or ascending rhizomes.

*Habitat*: Forests, alpine meadows, damp ground, mossy rocks.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; (2000–)3000–5000 m.

KSL: Bajhang in KSL Nepal; 3500–3700 m.

*Representative specimens*. **BAJHANG**: Manane Lekh, above Dhahidunga Kharka, 3550 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913131, 14 Jul 2009; E00509645<sup>1</sup> image, KATH<sup>3</sup>); Manane Lekh, above Dhahidunga Kharka, 3685 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913134, 14 Jul 2009; E00509660<sup>1</sup> image, KATH<sup>3</sup>).

**Juncus leucomelas** Royle ex D. Don, Trans. Linn. Soc. London, Bot. 18: 319 (1840). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 84 (1978). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 192 (2018).

*Juncus bhutanensis* Satake

Densely caespitose perennial herbs, 5–25 cm tall, with short creeping rhizomes.

*Habitat*: Wet meadows, open grassy slopes, gravel by glacial streams.

*Distribution*: Karakoram, Himalaya (NE Pakistan to Bhutan), Tibetan Plateau, C China.

NEPAL: W, C & E; 2900–5600 m.

KSL: Upper Mahakali in KSL India and Nepal; 3800 m; 3800–4700 m.

*Representative specimen.* Byans, 3810 m (JF Duthie [interpreted] s.n., 29 Jul 1886; E00976839<sup>i</sup> image).

*Remarks:* Further records for Pithoragarh, India fide GMBA (2012–2016).

**Juncus membranaceus** Royle ex D. Don, Trans. Linn. Soc. London, Bot. 18: 320 (1840). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 85 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 201 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 192 (2018).

*Juncus hoffmeisteri* Klotzsch

Loosely caespitose perennial herbs, usually 8–40 cm tall; rhizome slender, ±creeping.

*Habitat:* Wet meadows, gravelly areas, grassy and rocky slopes, stream banks.

*Distribution:* C Asia, Afghanistan, Pakistan, W & C Himalaya (Kashmir to Nepal), Tibetan Plateau, SC China.

NEPAL: W & C; 2400–4200 m.

KSL: Darchula in KSL Nepal; 3300–4200 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **DARCHULA:** Chameliya, Gauchhalighol, 3950 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-760, 22 Oct 2014; TUCH<sup>i</sup>); below Kalidhunga Tal, Pilkanda-Lolu, 4200 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1331, 22 Jul 2015; TUCH<sup>i</sup>). **UTTARAKHAND (INDIA):** Tola, Kumaon, 3500 m (R Strachey & JE Winterbottom 12, 1843; P01746984<sup>i</sup> image).

*Local abund.:* Occasional in Darchula.

**Juncus prismatocarpus** R. Br. subsp. **leschenaultii** (J. Gay ex Laharpe) Kirschner, Preslia 74: 249 (2002).

*Juncus leschenaultii* J. Gay ex Laharpe, Mém. Soc. Hist. Nat. Paris 3: 137 (1827); *Juncus prismatocarpus* R. Br. var. *leschenaultii* (J. Gay ex Laharpe) Buchenau; *Juncus sinensis* J. Gay ex Laharpe

Densely to loosely caespitose perennial herbs, 15–60 cm tall.

*Habitat:* Wet grasslands, thickets, marshy places.

*Distribution:* Himalaya (India, Nepal, Bhutan), Tibetan Plateau, Peninsular India, S China to Mongolia, Japan and Russian Far East, mainland SE Asia to New Guinea.

NEPAL: W, C & E; 500–2800 m.

KSL: Known from neighboring Doti District, Nepal; 1400 m.

*Representative specimen.* **DOTI:** Barigad – Gadsera, 1400 m (H Tabata, KR Rajbhandari & K Tsuchiya 151, 27 Jun 1976; KATH).

**Juncus sphacelatus** Decne. in Jacquem., Voy. Inde 4 (Bot.): 172 (1844). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 85 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 203 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 193 (2018). **Pl. 17.**

Loosely caespitose perennial herbs, 20–40 cm tall; rhizomes stout, long creeping.

*Habitat:* Wet meadows, marshy places, moist gravelly areas, moist stream banks.

*Distribution:* Karakoram, Himalaya (NE Pakistan to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 3600–5200 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal; 4100–4700 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Aletsoura, near Saipal, 4348 m (H Tabata, KR Rajbhandari & K Tsuchiya 1904, 31 Jul 1976; KATH<sup>i</sup>). **DARCHULA:** Chameliya Valley, Thadeul, above Pilkanda, 4100 m (SK Ghimire, S Thapa, B Awasthi, S Lo, C Thapa & MR Paudeyal ANCA-753, 22 Oct 2014; TUCH<sup>i</sup>). **HUMLA:**

Above Seliman-Tsho way to Nyaula La, 4700 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1810, 11 Sept 2012; TUCH<sup>3</sup>). **UTTARAKHAND (INDIA)**: Milam, 3505 m (R Strachey & JE Winter-bottom 4; P01747697<sup>1</sup> image).

*Local abund.*: Occasional to frequent.

**Juncus thomsonii** Buchenau, Bot. Zeitung (Berlin) 25: 148 (1867). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 85 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 204 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 193 (2018). **PI. 17.**

*Juncus leucomelas* Royle ex D. Don var. *thomsonii* (Buchenau) Buchenau

Densely caespitose perennial herbs, 5–20 cm tall; rhizomes short.

*Habitat*: Wet places, marshy places, alpine meadows, sandy moraine.

*Distribution*: C Asia, Karakoram, Himalaya (NE Pakistan to Bhutan), Tibetan Plateau, N & C China.

NEPAL: W, C & E; 2700–5200 m.

KSL: Humla in KSL Nepal; 2700–5100 m [Pithoragarh, Uttarakhand in KSL India; and Pulan Xian, SW Xizang in KSL China].

*Representative specimens*. **HUMLA (NEPAL)**: Chungsa Valley, above Seliman-Tsho, 4640 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1164, 5 Sept 2012; TUCH<sup>3</sup>); Chungsa Valley, above Seliman-Tsho towards NE, 4880–5100 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1123, 5 Sept 2012; TUCH<sup>3</sup>). **UTTARAKHAND (INDIA)**: Martoli, Kumaon, 2743 m (RC Thakur 711, 14 Jun 1948; L.1445224<sup>4</sup>, MICH 1519548<sup>1</sup> image). **XIZANG (CHINA)**: Pulan Xian (Qinghai-Tibet Team 5453954; PE) fide Kong & Yang (2019).

*Local abund.*: Occasional in upper Humla.

**Juncus wallichianus** J. Gay ex Laharpe, Mém. Soc. Hist. Nat. Paris 3: 139 (1827). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 85 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 205 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 193 (2018).

*Juncus indicus* Royle ex D. Don; *Juncus monticola* Steud.

Densely caespitose perennial herbs, 30–40 cm tall.

*Habitat*: Wet grassy slopes, moist meadows, marshy places, riversides.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Peninsular India, Sri Lanka, C & SE China to Japan and Russian Far East, mainland SE Asia to New Guinea.

NEPAL: W, C & E; 1300–3400 m.

KSL: Known from neighboring Bajura and Doti, Nepal; 2300–3000 m. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimens*. **BAJURA**: Kuru, 2285 m (BSH C74, 20 Aug 2017) fide RBGE (2014). **DOTI**: Doti – Khaptad, 3000 m (MS Bista & DP Joshi 274, 4 Aug 1972; KATH).

*Conserv. status*: GLB., Least Concern (Lansdown 2011b).

**Luzula** DC. in Lam. & DC., Fl. France, ed. 3: 158 (1805).

**Luzula multiflora** (Ehrh.) Lej., Fl. Env. Spa 1: 169 (1811). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 85 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 205 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 194 (2018).

*Juncus campestris* L. var. *multiflorus* Ehrh., Beitr. Naturk. 5: 14 (1790).

ENG: Common woodrush.

Densely caespitose perennial herbs, 10–40 cm tall.

*Habitat:* Wet ground in forests, forest margins, exposed places, stream banks, damp meadows.

*Distribution:* Subarctic and Temperate N Hemisphere, Himalaya, C & S America.

NEPAL: W, C & E; 2700–4100 m.

KSL: Bajhang in KSL Nepal, and neighboring Doti; 2700–3100 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Roshidanda – Aagar, 2700 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170887, 22 Aug 1991; TI<sup>1</sup> image). **DOTI:** Khaptad National Park, trail from Bichpani to Ghoda daune, 3063 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911044, 2 Jul 2009; E00509862<sup>1</sup> image).

*Remarks:* Records for Pithoragarh, India fide GMBA (2012–2016).

**Luzula oligantha** Sam. in Hultén, Fl. Kamt. 1: 227 (1927). Hara *et al.*, Enum. Fl. Pl. Nepal 1: 85 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 206 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 194 (2018).

Caespitose perennial herbs, 10–25 cm tall.

*Habitat:* Open moist places, forest slopes, meadows.

*Distribution:* Himalaya (N India, Nepal), Tibetan Plateau, NC China to Japan and Russian Far East.

NEPAL: W, C & E; 1900–4000 m.

KSL: Bajhang in KSL Nepal; c. 3300 m.

*Representative specimen.* **BAJHANG:** Dhahidunga Kharka, 3281 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911126, 14 Jul 2009; E00509845<sup>1</sup> image).

## CYPERACEAE

**Blysmus** Panz. ex Schult., Mant. 2: 41 (1824).

**Blysmus compressus** (L.) Panz. ex Link, Hort. Berol. 1: 278 (1827). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 195 (2018).

*Schoenus compressus* L., Sp. Pl. 1: 43 (1753); *Scirpus compressus* (L.) Pers. (1805), nom. illeg., non Moench (1794).

ENG: Broad blysmus, Flat-sedge.

Loosely caespitose perennial herbs, 10–40 cm tall; rhizomes creeping.

*Habitat:* Wet meadows, wet grounds, marshy places.

*Distribution:* Europe, NW Africa, W & C Asia, Himalaya (India, Nepal), Tibetan Plateau, N China.

NEPAL: W, C, E; 2300–4500 m.

KSL: Darchula and Humla in KSL Nepal; 3400–3500 m [Pithoragarh, Uttarakhand in KSL India, and Pulan Xian, SW Xizang in KSL China].

*Representative specimens.* **DARCHULA:** Dhaulio Odar to Joge Tal, 3399 m (Ikeda *et al.* 1215040; E, TI) fide Yano *et al.* (2015). **HUMLA:** Tugling, Changla Khola, Dozam, 3520 m (SK Ghimire, RP Chaudhary & team P10682, 21 May 2010; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, Palang Gadh, Byans, 2743–3048 m (JF Duthie 6070, 19 Jul 1886; US 02248693<sup>1</sup> image). **XIZANG (CHINA):** Pulan Xian, 30.29° N 81.17° E (Qinghai-Tibet team vegetation group 5215962; PE) fide Kong & Yang (2019).

*Local abund.:* Occasional in upper Humla; not known for other regions.

*Conserv. status:* GLB., Least Concern (Akhani & Zehzad 2014b).

**Bulbostylis** Kunth, Enum. Pl. 2: 205 (1837).

**Bulbostylis barbata** (Rottb.) C.B. Clarke in Hook. f., Fl. Brit. India 6: 651 (1893).

*Scirpus barbatus* Rottb., Descr. Icon. Rar. Pl.: 52 (1773).

NEP: Jhusejhār (झुसे-झार).

ENG: Watergrass.

Densely caespitose annual herbs, 5–20 cm tall.

*Habitat*: Moist sandy places, fields.

*Distribution*: Tropical and subtropical regions of the Old World.

NEPAL: W, C & E; 100–1700 m.

KSL: Bageshwar, Uttarakhand in KSL India, and neighboring Doti District, Nepal; 1100–1200 m.

It is likely to be present in Baitadi and Darchula in KSL Nepal.

*Representative specimens*. **DOTI**: Ritha – Rauttukatte, 1120 m (H Tabata, KR Rajbhandari & K Tsuchiya 143, 25 Jun 1976; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Bageshwar, 1200 m (CM Arora 41408, 9 Aug 1970; L.1348246<sup>1</sup> image).

**Bulbostylis densa** (Wall.) Hand.-Mazz., Vegetationsbilder 20(7): 16 (1930). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 98 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 207 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 195 (2018).

*Scirpus densus* Wall. in Roxb., Fl. Ind. 1: 231 (1820); *Bulbostylis capillaris* D. Don var. *trifida* (Nees) C.B. Clarke; *Isolepis densa* (Wall.) Schult.; *Isolepis tenuissima* D. Don

NEP: Jhuse-jhār (झुसे-झार).

Caespitose annual herbs, 10–30 cm tall, with fibrous roots.

*Habitat*: Forests, marshy meadows, sandy and gravelly areas, rocky slopes, cultivated fields.

*Distribution*: Africa, Tropical and Subtropical Asia to S Russian Far East, Australia.

NEPAL: W, C & E; (700–)1300–3500 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; 1700–3500 m.

*Representative specimens*. **BAJHANG**: Talkot – Aagar, 1660–2180 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama and K Terada 9193765, 18 Aug 1991; TI) fide SHB (2013–2020); Chimnya, way to Kalapani, NE of Dhalun, 2900–3200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0496, 16 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA**: Porakya Pass, 2545 m (H Tabata, KR Rajbhandari & K Tsuchiya 2615, 19 Aug 1976; KATH<sup>1</sup>).

*Conserv. status*: GLB., Least Concern (Watve 2011b).

**Carex** L., Sp. Pl. 2: 972 (1753).

**Carex atrata** L., Sp. Pl. 2: 976 (1753). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 208 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 195 (2018). **Pl. 18.**

ENG: Black alpine sedge.

Caespitose perennial herbs with a short rhizome; culms erect, 20–50 cm long, scabrous above.

*Habitat*: Alpine meadows, rocky slopes, rock ledges.

*Distribution*: W Europe to East European Russia, W Asia, C & E Himalaya (Nepal to Bhutan), Tibetan Plateau, SC & NE China to Japan and Russian Far East, Greenland.

NEPAL: W, C & E; 3400–5000 m.

KSL: Humla in KSL Nepal; 5000 m [Pulan Xian, SW Xizang in KSL China].

*Representative specimens.* **HUMLA:** Nyalu La, 5010 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1188, 6 Sept 2012; TUCH<sup>1</sup>). **XIZANG (CHINA):** Pulan Xian (Qinghai-Tibet team vegetation group 5379470 & 5379472; PE) fide Kong & Yang (2019).

*Local abund.:* Occasional in Humla.

**Carex atrata** L. subsp. **pullata** (Boott) Kük in Engler, Pflanzenr., IV, 20(38): 400 (1909). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 101 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 207 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 195 (2018).

*Carex atrata* var. *pullata* Boott, Ill. Gen. Carex 3: 114 (1862); *Carex atrata* var. *glacialis* Boott; *Carex atrata* var. *subglacilenta* Kük.; *Carex duthiei* C.B. Clarke var. *glacialis* (Boott) C.B. Clarke

Caespitose perennial herbs; culms shorter, scabrous above.

*Habitat:* Alpine meadows, rocky slope, rock ledges.

*Distribution:* Himalaya (India, Nepal), Tibetan Plateau, SC China.

NEPAL: W, C & E; 3400–4600 m.

KSL: Darchula in KSL Nepal; c. 3650 m.

*Representative specimen.* **DARCHULA:** Api Khola, 3650 m (JB Tyson 15; BM) fide Rajbhandari & Rai (2017).

**Carex atrofusca** Schkuhr subsp. **minor** (Boott) T. Koyama in H. Ohashi, Fl. E. Himal. 3: 122 (1975). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 101 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 209 (2017). **Pl. 18.**

*Carex ustulata* Wahlenb. var. *minor* Boott, Ill. Gen. Carex 1: 71 (1858); *Carex angustifructus* (Kük.) Nelmes; *Carex atrofusca* var. *angustifructus* Kük.; *Carex atrofusca* var. *minor* (Boott) Kük.

Perennial herbs with creeping rhizomes; culms erect, 10–40 cm long.

*Habitat:* Meadows, thickets, rock ledges, grassy stream banks.

*Distribution:* C Asia, Himalaya (Kashmir to Bhutan), Tibetan Plateau, C China.

NEPAL: W, C & E; 3600–5600 m.

KSL: Darchula and Humla in KSL Nepal; 3950–4600 m.

*Representative specimen.* **DARCHULA:** Nampa Gádh, 3962–4267 m (JF Duthie 6109, 27 Jul 1886; K000999101<sup>1</sup> image).

**Carex breviculmis** R. Br., Prodr. Fl. Nov. Holland. : 242 (1810). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 101 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 210 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 196 (2018).

*Carex royleana* Nees; *Carex breviculmis* subsp. *royleana* (Nees) Kük.

Caespitose perennial herbs; rhizomes stoloniferous; culms 8–40 cm long, scabrid above.

*Habitat:* Open grassy slopes.

*Distribution:* Afghanistan, Himalaya (India, Nepal, Bhutan), C & SE China to Japan and Russian Far East, mainland SE Asia to Australasia.

NEPAL: W & C; 2500–3200 m.

KSL: Bajhang in KSL Nepal; 2500 m [also in Kumaon, Uttarakhand, India].

*Representative specimens.* **BAJHANG:** On trail from Thalara to Budkhor, 2496 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911101, 11 Jul 2009; E00509923, KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, 2130 m (T Thomson s.n.; P00280073<sup>1</sup> image).

**Carex cardiolepis** Nees in Wight, Contr. Bot. India: 127 (1834). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 211 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 196 (2018).

Densely caespitose perennial herbs; rhizomes stout, obliquely ascending; culms 20–40 cm long.

*Habitat*: Moist rocky slopes, cliffs.

*Distribution*: Afghanistan, Pakistan, W & C Himalaya, Tibetan Plateau, SC China.

NEPAL: W & C; 2200–3900 m.

KSL: Known from Pithoragarh, Uttarakhand in KSL India; *c.* 3050 m. It is likely also to be present in Darchula, Nepal.

*Representative specimen*. **UTTARAKHAND (INDIA)**: Namik, Kuamon, 3048 m (R Strachey & JE Winterbottom 8, 1843; P00280735<sup>1</sup> image).

**Carex clavisipica** S.R. Zhang, Bot. J. Linean. Soc. 179: 20 (2015). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 210 (2017).

*Kobresia duthiei* C.B. Clarke in Hook. f., Fl. Brit. India 6: 697 (1894).

Densely caespitose perennial herbs; rhizomes short; culms erect, 0.5–40 cm long.

*Habitat*: Moist rocky slopes, wet mossy places, wet grassy slopes.

*Distribution*: Himalaya (NW India to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 3500–4900(–5700) m.

KSL: Bajhang, Darchula and Humla in KSL Nepal; 3500–4900 m [Pithoragarh, Uttarakhand in KSL India; and Pulan Xian, SW Xizang in KSL China].

*Representative specimens*. **BAJHANG**: Saipal, 3878 m (H Tabata, KR Rajbhandari & K Tsuchiya 1788, 30 Jul 1976, KATH<sup>1</sup>). **HUMLA**: Upper Chungsa Valley, above Seliman Tsho towards NE, 4880 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1162, 5 Sept 2012; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon, Palang Garh, Byans, 3353–3658 m (JF Duthie 6093, 20 Jul 1886; isolectotype of *Kobresia duthiei* BM001217325<sup>1</sup> image, K000794656<sup>1</sup> image, K000794658<sup>1</sup> image).

*Remarks*: Distribution records for Pulan Xian fide GMBA (2012–2016).

*Local abund.*: Frequent in upper Humla.

**Carex condensata** Nees in Wight, Contr. Bot. India: 123 (1834). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 212 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 197 (2018). **Pl. 18**.

NEP-L: Kathero, Pārtay-ghāns (कठेरो, पार्ते-घाँस).

Caespitose perennial herbs; rhizomes short, woody; culms stout, 50–70 cm long.

*Habitat*: Forests, grasslands, open slopes, stony banks.

*Distribution*: Himalaya (NW India to Bhutan), Thailand.

NEPAL: W, C & E; 900–2100 m.

KSL: Darchula and Bajhang in KSL Nepal; 2000–2100 m [Almora District, Uttarakhand, India].

*Representative specimens*. **BAJHANG**: Agara, 2000–2100 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0359, 13 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **DARCHULA**: Chameliya Valley, Patu, near Ghusa Village, 2100 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-512, 15 Oct 2014; TUCH). **UTTARAKHAND (INDIA)**: Binsar, Kumaon, 2285 m (R Strachey & JE Winterbottom 2, 1843; P00280925<sup>1</sup> image).

*Local abund.*: Occasional to frequent.

*Ethnobot. use*: Plant is collected for cattle fodder.



**Carex cruciata** Wahlenb., Kongl. Vetensk. Acad. Nya Handl. 24: 149 (1803). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 101 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 212 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 197 (2018).

*Carex cruciata* var. *argocarpus* C.B. Clarke; *Carex bengalensis* Roxb.

NEP-L: Kathero (कठेरो).

Caespitose perennial herbs; rhizomes long, woody; culms to 100 cm long.

*Habitat*: Forests, forest margins, grasslands, stony slopes.

*Distribution*: Himalaya (India, Nepal, Bhutan), Tibetan Plateau, SC China to S Japan, mainland SE Asia to New Guinea.

NEPAL: W, C & E; 800–3400 m.

KSL: Darchula in KSL Nepal, and neighboring Bajura; 1500–2200 m [Bageshwar and Pithoragarh in KSL India, and neighboring Almora].

*Representative specimens*. **BAJURA**: Dargali, 2200 m (MS Bista & DP Joshi 373, 14 Aug 1972; KATH<sup>1</sup>).

**DARCHULA**: Makarigad Danda, way to Khandesowari, 1550 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-551B, 15 Oct 2014; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Shai Devi, Kumaon (R Strachey & JE Winterbottom s.n., 1843; P00281092<sup>1</sup> image).

*Local abund.*: Occasional in Darchula.

*Ethnobot. use*: Plant is collected for cattle fodder.

**Carex cruenta** Nees in Wight, Contr. Bot. Ind.: 128 (1834). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 101 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 213 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 197 (2018).

*Carex heterolepis* Boeckeler

Perennial herbs; rhizomes creeping; culms slender, erect, 25–80 cm long.

*Habitat*: Forests, forest margins, moist grasslands, meadows.

*Distribution*: Himalaya (Pakistan to NE India: Sikkim), Tibetan Plateau, SC China.

NEPAL: W, C & E; 3000–5600 m.

KSL: Darchula in KSL Nepal; c. 3050–4050 m [Pithoragarh, Uttarakhand and adjoining areas in KSL India].

*Representative specimens*. **DARCHULA**: Joge Tal, 4030 m (Ikeda *et al.* 1215052; E, TI) fide Yano *et al.* (2015); Opposite Buddhi Village, 3050–3350 m (JF Duthie 6110, 18 Jul 1886; DD) fide Rajbhandari & Rai (2017).

**UTTARAKHAND (INDIA)**: Kumaon (R Blinkworth Wallich Cat. 3389B, 1831; isosyntype E00393443<sup>1</sup> image, isotype P00281202<sup>1</sup> image, NY 00011566<sup>1</sup> image).

**Carex deasyi** (C.B. Clarke) O. Yano & S.R. Zhang, Bot. J. Linn. Soc. 179: 20 (2015). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 213 (2017).

*Kobresia deasyi* C.B. Clarke, Bull. Misc. Inform. Kew, Addit. Ser. 8: 68 (1908); *Elyna schoenoides* C.A. Mey.; *Kobresia pamiroalaica* N.A. Ivanova; *Kobresia schoenoides* (C.A. Mey.) Steud.

Caespitose perennial herbs; rhizomes short; culms erect, up to 50 cm long.

*Habitat*: Grassy slopes, wet meadows.

*Distribution*: W & C Asia, Afghanistan, Pakistan, Himalaya (Kashmir to Bhutan), Tibetan Plateau, N & C China.

NEPAL: W, C & E; 3500–5600 m.

KSL: Known from Pulan Xian, SW Xizang in KSL China; and nearby Dolpa District, Nepal. It is

likely also to be present in upper Humla in KSL Nepal.

*Representative specimen.* **XIZANG (CHINA):** Pulan Xian (Qinghai-Tibet team vegetation group 6760955; PE) fide Kong & Yang (2019).

**Carex esbirajbhandarii** (Rajbh. & H. Ohba) O. Yano, Bot. J. Linn. Soc. 179: 21 (2015). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 215 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 198 (2018).

*Kobresia esbirajbhandarii* Rajbh. & H. Ohba, J. Jap. Bot. 62: 272 (1987).

Perennial herbs; rhizomes elongated; culms slender, 5–10 cm long, curved.

*Habitat:* Open rocky slopes.

*Distribution:* Endemic to Nepal, W, C & E; 3900–4700 m.

KSL: Darchula in KSL Nepal; 4100 m.

*Representative specimen.* **DARCHULA:** Joge Tal, 4100 m (Ikeda *et al.* 1215049; E, TI) fide Yano *et al.* (2015).

**Carex esenbeckii** Kunth, Enum. Pl. 2: 522 (1837). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 215 (2017).

*Carex mutans* Boott ex C.B. Clarke; *Carex trinervis* Nees (1834), nom. illeg., non Degland (1807); *Kobresia esenbeckii* (Kunth) Noltie; *Kobresia foliosa* C.B. Clarke; *Kobresia seticulmis* Boeckeler

Densely caespitose perennial herbs; rhizomes short; culms slender, erect, 20–30 cm long.

*Habitat:* Wet rocks, cliff-ledges, grazed slopes, alpine meadows.

*Distribution:* Himalaya (NW India to Bhutan), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 2800–4600 m.

KSL: Bajhang in KSL Nepal; 3400–4100 m.

*Representative specimens.* **BAJHANG:** Above Surma Village, north of Chainpur, 3890 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915070, 8 Jul 2009; E00624434, KATH<sup>1</sup>); Manane Lekh above Dhahidunga Kharka, 4053 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913125, 13 Jul 2009; E00509639, KATH<sup>1</sup>).

**Carex filicina** Nees in Wight, Contr. Bot. India: 123 (1834). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 102 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 216 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 198 (2018).

*Carex caricina* (D. Don) Ghildyal & U.C. Bhattach.; *Carex pseudofilicina* Hayata; *Cyperus caricinus* D. Don

Caespitose perennial herbs; rhizomes thick, woody; culms stout, erect or ascending, 30–100 cm long.

*Habitat:* Forests, forest margins, wet slopes, grassland, trailsides.

*Distribution:* Himalaya (N Pakistan to Bhutan & NE India), Tibetan Plateau, Peninsular India, Sri Lanka, S China, mainland SE Asia to Indonesia.

NEPAL: W, C & E; 1100–4000 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura and Mugu; 1800–3200 m.

*Representative specimens.* **BAJHANG:** West peak from Deurali, near Dhalun, 2500–3200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0427, 15 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA:** Kuru, 2324 m (BSH C95, 20 Aug 2017) fide RBGE (2014). **DARCHULA:** Khar VDC-2, 1840 m (BB Shrestha, M Pandey & R Chhetri 13, 26 Sept 2015; TUCH<sup>1</sup>). **MUGU:** Luma – Mangri, 2130 m (O Polunin, WR Sykes & LHJ Williams 5242, 15 Aug 1952; E) fide Rajbhandari & Rai (2017).

*Conserv. status:* GLB., Least Concern (Rehel 2011a).

**Carex fissiglumis** (C.B. Clarke) S.R. Zhang & O. Yano, Bot. J. Linean. Soc. 179: 21 (2015). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 217 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 198 (2018).

*Kobresia fissiglumis* C.B. Clarke in Hook. f., Fl. Brit. India 6: 696 (1894); *Kobresia esenbeckii* (Kunth) Noltie var. *fissiglumis* (C.B. Clarke) Noltie

Densely caespitose perennial herbs; rhizomes short; culms slender, erect, 6–14 cm long.

*Habitat*: Grassy slopes, rocks, cliff ledges.

*Distribution*: Himalaya (NW India to Bhutan), Tibetan Plateau, SC China.

NEPAL: W & C; 3600–4300(–5600) m.

KSL: Darchula in KSL Nepal; 3600–4000 m.

*Representative specimen*. **DARCHULA**: Nampa Gad, 3658–3962 m (JF Duthie 6092, 25 Jul 1886; K000794669<sup>1</sup> image).

**Carex fusiformis** Nees in Wight, Contr. Bot. India: 128 (1834). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 217 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 199 (2018).

Densely caespitose perennial herbs; rhizomes slender; culms erect, 30–80 cm long.

*Habitat*: Wet slopes, streamsides, cliffs, grassland.

*Distribution*: Himalaya (NW India to Bhutan).

NEPAL: W & C; 2200–3500 m.

KSL: Known from Almora District, Uttarakhand, India; and neighboring Doti District, Nepal; 2100–3100 m. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimens*. **DOTI**: Khaptad National Park, trail from Bichpani to Ghodadaune, 3072 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattacharai 20911039, 2 Jul 2009; E00624562<sup>1</sup> image). **UTTARAKHAND (INDIA)**: Binsar, 2134 m (R Strachey & JE Winterbottom 10; K000999154<sup>1</sup> image).

**Carex gracilenta** Boott ex Boeckeler, Linnaea 41: 185 (1877). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 199 (2018).

*Carex alpina* Swartz var. *gracilenta* (Boott ex Boeckeler) C.B. Clarke; *Carex duthiei* C.B. Clarke; *Carex infusata* Nees var. *gracilenta* (Boott ex Boeckeler) P.C. Li

NEP-L: Pateri-ghāns (पतेरी-घाँस).

Loosely to densely caespitose perennial herbs; rhizomes short, woody; culms erect, 15–40 cm long.

*Habitat*: Meadows, rocky slopes.

*Distribution*: C & E Himalaya (Nepal to Bhutan), SC China.

NEPAL: W, C & E; 3300–5000 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Mugu; 3300–5000 m.

*Representative specimens*. **BAJHANG**: Around Dhahidunga Kharka, 3281 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattacharai 20911125, 14 Jul 2009; E00509831<sup>1</sup> image). **DARCHULA**: Upper Chameliya Valley, below Pilkanda, Lolu, 3600 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1168, 19 Jul 2015; TUCH<sup>1</sup>); Thadapani ridge, Pilkanda, 4575 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1939, 27 Jul 2016; TUCH<sup>1</sup>). **HUMLA**: Chungsa Valley, above Seliman Tsho, 4600 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1134, 4 Sept 2012, TUCH<sup>1</sup>); Chungsa Valley, above Seliman Tsho, 4880 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1773, 5 Sept 2012, TUCH<sup>1</sup>). **MUGU**: Ghurchi – Chuchamara, 3400 m (KR

Rajbhandari & B Roy 3583, 19 Jul 1979; KATH) fide Rajbhandari (2010).

*Local abund.*: Occasional to frequent.

**Carex haematostoma** Nees in Wight, Contr. Bot. India: 125 (1834). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 102 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 218 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 199 (2018).

*Carex bhutanica* T. Koyama

NEP-L: Thūlo phyūncho (ठूलो फ्यूँचो).

Caespitose perennial herbs; rhizomes short, woody; culms erect, 25–100 cm long.

*Habitat*: Open slopes, meadows, thickets, forest margins.

*Distribution*: C Asia, Afghanistan, Pakistan, Himalaya (Kashmir to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 2900–5000 m.

KSL: Darchula in KSL Nepal; 3600–3950 m [also in Kumaon, Uttarakhand, India].

*Representative specimens*. **DARCHULA**: Chameliya Valley, below Pilkanda, 3600 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1169, 20 Jul 2015; TUCH<sup>1</sup>); Chameliya Valley, Gauchhalighol, 3950 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1251, 21 Jul 2015; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon, 2134–2743 m (R Strachey & JE Winterbottom s.n., 1851; K000999115<sup>1</sup> image).

*Local abund.*: Occasional in Darchula.

**Carex inanis** Kunth, Enum. Pl. 2: 522 (1837). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 103 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 220 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 200 (2018).

Caespitose perennial herbs; rhizomes short, thick, obliquely ascending; culms erect, 10–50 cm long.

*Habitat*: Grassy slopes, forests, riversides.

*Distribution*: Himalaya (Kashmir to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 1400–4200 m.

KSL: Bajhang and Darchula in KSL Nepal; 2000–3900 m.

*Representative specimens*. **BAJHANG**: Rasa – Roshadanda, 2000 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170852, 21 Aug 1991; KATH<sup>1</sup>, TI); Dhuli – Inuldar, 2450 m (H Tabata, KR Rajbhandari & K Tsuchiya 1660, 26 Jul 1976; KATH<sup>1</sup>). **DARCHULA**: Ringde, west of Pilkanda, 3850 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1534A, 28 Jul 2015; TUCH<sup>1</sup>).

**Carex kokanica** (Regel) S.R. Zhang, Bot. J. Linn. Soc. 179: 22 (2015). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 221 (2017).

*Elyna kokanica* Regel, Trudy Imp. S.-Peterburgsk. Bot. Sada 7: 563 (1881); *Elyna stenocarpa* Kar. & Kir.; *Kobresia royleana* (Nees) Boeckeler; *Kobresia stenocarpa* (Kar. & Kir.) Steud.; *Kobresia stenocarpa* var. *royleana* (Nees) C.B. Clarke; *Trilepis royleana* Nees

Densely caespitose perennial herbs; rhizomes short, woody; culms erect, 5–75 cm long, rigid.

*Habitat*: Moist grassy slopes, meadows, among scrub.

*Distribution*: C Asia, Afghanistan, Pakistan, Himalaya (Kashmir to Bhutan), Tibetan Plateau, N & C China, E Siberia.

NEPAL: W & C; 3000–4800 m.

KSL: Bajhang and Darchula in KSL Nepal; 3000–4700 m [Pithoragarh, Uttarakhand in KSL India; and Pulan Xian, SW Xizang in KSL China]. It is likely also to be present in upper Humla, Nepal.

*Representative specimens.* **BAJHANG:** Saipal, 3878 m (H Tabata, KR Rajbhandari & K Tsuchiya 1786, 30 Jul 1976; KATH<sup>1</sup>). **DARCHULA:** Nampa Gadhi, 3045 m (Duthie 6068, 25 Jul 1886; K) fide Rajbhandari & Ohba (1991). **UTTARAKHAND (INDIA):** Kumaon, Kalamuni Pass, 2700 m (NC Nair 35525, 22 Apr 1965; L1389307<sup>1</sup> image); Kumaon, near Byans, 4115 m (Duthie 6069, 2 Aug 1886; BM) fide Rajbhandari & Ohba (1991). **XIZANG (CHINA):** Pulan Xian (Qinghai-Tibet team vegetation group 6760194; PE) fide Kong & Yang (2019).

**Carex kumaonensis** Kük. in H.G.A. Engler (ed.), *Pflanzenr.*, IV, 20(38): 544 (1909). Koyama in Hara *et al.*, *Enum. Fl. Pl. Nepal* 1: 103 (1978). Rajbhandari & Rai, *Handbk. Fl. Pl. Nepal* 1: 222 (2017). Shrestha *et al.*, *Handbk. Fl. Pl. Nepal* 1: 200 (2018).

Loosely caespitose perennial herbs; rhizomes short; culms erect, 15–50 cm long.

*Habitat:* Grassy slopes, trailside in wet soil.

*Distribution:* W & C Himalaya (NW India, Nepal).

NEPAL: W & C; 1800–3700 m.

KSL: Darchula in KSL Nepal; 2400–2500 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **DARCHULA:** Simar Kharka to Khayekot, 2480 m (H Ikeda, S Noshiro, K Yonekura, K Akai, O Yano, N Yamamoto, CA Pendry, A Elliott, GD Bhatt & M Pathak 1215062, 19 Jul 2012; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, Younrani, 2134 m (RC Thakur 781, 24 Jun 1948; MICH1488996<sup>1</sup> image); Kali Valley, Byans, 2438–2743 m (JF Duthie 6117, 17 Jul 1886; K000999052<sup>1</sup> image).

**Carex lehmannii** Drejer, *Symb. Caric.*: 13 (1844). Koyama in Hara *et al.*, *Enum. Fl. Pl. Nepal* 1: 103 (1978). Rajbhandari & Rai, *Handbk. Fl. Pl. Nepal* 1: 222 (2017). Shrestha *et al.*, *Handbk. Fl. Pl. Nepal* 1: 201 (2018).

Caespitose perennial herbs with stoloniferous rhizomes; culms erect, 20–60 long.

*Habitat:* Forests, thickets, grassy slopes, riversides.

*Distribution:* C & E Himalaya (Nepal to Bhutan), Tibetan Plateau, SC China to Japan.

NEPAL: W, C & E; 3100–4100 m.

KSL: Darchula and Humla in KSL Nepal; 3400–4000 m.

*Representative specimens.* **DARCHULA:** Upper Chameliya Valley, Gauchhalighol, Pilkanda, 3850 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1473, 26 Jul 2015; TUCH<sup>1</sup>). **HUMLA:** Chankheli Lagna, 3450 m (KR Rajbhandari & B Roy 3903, 25 Jul 1979; KATH<sup>1</sup>).

*Local abund.:* Occasional in Darchula.

**Carex longicuris** Nees in Wight, *Contr. Bot. India*: 124 (1834). Koyama in Hara *et al.*, *Enum. Fl. Pl. Nepal* 1: 103 (1978). Rajbhandari & Rai, *Handbk. Fl. Pl. Nepal* 1: 223 (2017). Shrestha *et al.*, *Handbk. Fl. Pl. Nepal* 1: 201 (2018).

Caespitose perennial herbs with short rhizomes; culms up to 1.5 m long.

*Habitat:* Wet humus-rich slopes in oak forests, moist cliffs in forested slopes.

*Distribution:* Himalaya (Kashmir to Bhutan), Peninsular India, Sri Lanka.

NEPAL: W & C; 1400–2700 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; 1470–2100 m.

*Representative specimens.* **BAJHANG:** Rasa – Roshidanda, 1950 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miya-moto, KR Rajbhandari, H Takayama & K Terada 9170877, 21 Aug 1991; KATH<sup>1</sup>, TI). **BAJURA:** Serigaon – Bashala, 1470 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170602, 14 Aug 1991; KATH<sup>1</sup>, TI); Bashala – Pategaon, 2100 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170626, 15 Aug 1991; KATH<sup>1</sup>, TI).

**Carex longipes** D. Don, Philos. Mag. J. 62: 455 (1823). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 103 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 223 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 201 (2018).

*Carex longipes* var. *nepalensis* (Spreng.) Boott; *Carex nepalensis* Spreng.

Caespitose perennial herbs; rhizomes short, woody; culms 20–70 cm long.

*Habitat*: Open slopes, damp grasslands, riversides, forest margins.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Peninsular India (Nilgiri Mountains), Sri Lanka, Myanmar, SC China, SE Asia, New Guinea.

NEPAL: W, C & E; 1400–3000 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura and Doti; 1500–2800 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Dhalaun – Rasa, 2000 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170812, 20 Aug 1991; KATH<sup>1</sup>); on trail from Thalara to Budkhor, 2496 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911102, 11 Jul 2009; E00624418<sup>1</sup> image, KATH<sup>1</sup>). **BAJURA**: Berseni – Porakya (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160501, 12 Aug 1991; TI) fide SHB (2013–2020). **DARCHULA**: Chameliya Valley, between Simar & Domul, 2600 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-2091, 1 Aug 2016; TUCH<sup>1</sup>). **DOTI**: Above Silgadi on trail to Khaptad National Park (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911006, 29 Jun 2009; *Carex longipes* var. *nepalensis* E00623974<sup>1</sup> image).

*Remarks*: Distribution records for Pithoragarh fide GMBA (2012–2016).

*Local abund.*: Frequent.

*Conserv. status*: GLB., Least Concern (Rehel 2011b).

**Carex microglochin** Wahlenb., Kongl. Vetensk. Acad. Nya Handl. 24: 140 (1803). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 104 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 224 (2017). **PI. 18.**

*Kobresia microglochin* (Wahlenb.) Tang & W.T. Wang; *Uncinia microglochin* (Wahlenb.) Spreng.

ENG: Fewseeded bog sedge.

Loosely caespitose perennial herbs; rhizome slender, creeping; culms 10–20 cm long.

*Habitat*: Wetlands, wet meadows, along streams.

*Distribution*: W Europe to N European Russia, W & C Asia, Afghanistan, Pakistan, Himalaya (Kashmir to Bhutan), Tibetan Plateau, N & C China to Russian Far East, N & S America, Greenland.

NEPAL: W, C & E; 3400–4600 m.

KSL: Darchula in KSL Nepal; 3400–4100 m.

*Representative specimens*. **DARCHULA**: Simar Kharka to Dhaulo Odar, 3400 m (Ikeda *et al.* 1215038; E, TI) fide Yano *et al.* (2015); Pilkanda, Lolu, 3700–4100 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1533, 28 Jul 2015; TUCH<sup>1</sup>).

*Local abund.*: Common around Pilkanda, Darchula.

*Conserv. status*: GLB., Least Concern (Lansdown 2014b).

**Carex montis-everestii** Kük., Bull. Misc. Inform. Kew 1934: 261 (1934). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 224 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 201 (2018).

Densely caespitose perennial herbs; rhizomes woody, stoloniferous; culms 2–10 cm long.

*Habitat:* Meadows, moraines, flood lands.

*Distribution:* C & E Himalaya (Nepal, NE India: Sikkim), Tibetan Plateau.

NEPAL: C; 3800–5500 m.

KSL: Known from upper Karnali and Manasarowar (*ma pham g.yu mtsho*) areas of Pulan Xian, SW Xizang in KSL China; 4570–4800 m. It is likely also to be present in upper Humla in KSL Nepal.

*Representative specimen.* **XIZANG (CHINA):** Pulan Xian (Qinghai-Tibet team vegetation group 5379464, 5379468, 5379499 & 5379535; PE) fide Kong & Yang (2019).

*Remarks:* Distribution records for upper Karnali and Manasarowar fide GMBA (2012–2016).

**Carex moorcroftii** Falc. ex Boott, Proc. Linn. Soc. London 1: 288 (1846). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 224 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 202 (2018).

*Carex melanantha* C.A. Mey. ex Ledeb. var. *moorcroftii* (Falc. ex Boott) Kük.

Caespitose perennial herbs with thick creeping rhizomes; culms 7–24 cm long, curved.

*Habitat:* Glacial sand, alpine meadows, thickets.

*Distribution:* Himalaya (Pakistan to NE India: Sikkim), Tibetan Plateau, N & C China.

NEPAL: W, C & E; 3800–5700 m.

KSL: Bajhang in KSL Nepal; 4875 m [Pulan Xian, SW Xizang in KSL China]. It is likely also to be present in upper Humla, Nepal.

*Representative specimens.* **BAJHANG:** Two miles west of Saipal, 4875 m (JEM Arnold 296, 31 Aug 1954; BM) fide Rajbhandari & Rai (2017). **XIZANG (CHINA):** Pulan Xian, 30.29° N 81.17° E (Qinghai-Tibet Team 5200877; PE) fide Kong & Yang (2019).

**Carex myosurus** Nees, in Wight, Contrib. Bot. India 122 (1834). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 104 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 225 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 202 (2018).

*Carex myosurus* subsp. *spiculata* (Boott) Kük.; *Carex myosurus* var. *praestans* (C.B. Clarke) Kük.; *Carex praestans* C.B. Clarke; *Carex spiculata* Boott

Caespitose perennial herbs with short, thick rhizomes; culms stout, 80–150 cm, long.

*Habitat:* Open forests, forest margins, grassland, damp rocky slopes.

*Distribution:* Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, Peninsular India, SC China, mainland SE Asia to Indonesia.

NEPAL: W, C & E; 300–3000 m.

KSL: Bajhang and Darchula in KSL Nepal; 1900–2700 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Panalta – Kuwa, 1900–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0312, 13 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>); Dhalaun – Rasa, 2200 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170836, 20 Aug 1991; KATH<sup>1</sup>, TI); Dhalaun – Mt. Rosia Pass, 2700 m (H Tabata, KR Rajbhandari & K Tsuchiya 1505, 24 Jul 1976; KATH<sup>1</sup>). **DARCHULA:** Khar VDC-2, 1959 m (BB Shrestha, M Pandey & R Chhetri 468, 1 Oct 2015; TUCH<sup>1</sup>); Thin, 2300 m (KR Rajbhandari & KJ Malla 5632, 27 Aug 1980; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Bona, Kumaon, 1829 m (RC Thakur 824, 28 Jun 1948; MICH 1489103<sup>1</sup> image); Kumaon, forest above Shinkola, 2134–2438 m (JF Duthie 6118, 15 Jul 1886; CAL, K000998852<sup>1</sup> image)

*Local abund.:* Occasional to frequent in Bajhang and Darchula.

*Conserv. status:* GLB., Least Concern (Rehel 2011c).

**Carex nivalis** Boott, Proc. Linn. Soc. London 1: 256 (1845). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 104 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 226 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 202 (2018).

*Carex griffithii* Boott; *Carex nivalis* var. *griffithii* (Boott) T. Koyama

Caespitose perennial herbs with stoloniferous rhizomes; culms 20–50 cm long.

*Habitat*: Grassland, alpine meadows, rocky areas, thickets, river/streambanks.

*Distribution*: C Asia, E Afghanistan, Karakoram, W & C Himalaya (Kashmir to Nepal), Tibetan Plateau, SC China.

NEPAL: W, C & E; 3800–4900 m.

KSL: Bajhang in KSL Nepal; 4150 m.

*Representative specimen*. **BAJHANG**: Surmasarovar, 4150 m (MS Bista & DP Joshi 584, 26 Aug 1972; KATH<sup>1</sup>).

**Carex notha** Kunth, Enum. Pl. 2: 421 (1837). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 226 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 202 (2018).

Caespitose perennial herbs with spreading rhizomes; culms 25–40 cm long.

*Habitat*: Damp grassy slopes, marshes, streambanks.

*Distribution*: Himalaya (NW India to Bhutan).

NEPAL: W, C & E; 2400–3500 m.

KSL: Khaptad area in KSL Nepal; 3050–3350 m.

*Representative specimen*. Khaptar [Khaptad] forest, 3045–3350 m (JF Duthie 54, 26 Jun 1883; DD) fide Rajbhandari & Rai (2017).

**Carex nubigena** D. Don, Philos. Mag. J. 62: 455 (1823). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 104 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 226 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 202 (2018).

Caespitose perennial herbs; rhizomes short, woody, not stoloniferous; culms slender, 7–70 cm long.

*Habitat*: Forests, forest margins, grassland, streambanks, roadsides on slopes.

*Distribution*: Afghanistan, NW Pakistan, Himalaya (Kashmir to Bhutan), Tibetan Plateau, Peninsular India, Sri Lanka, N & C China, mainland SE Asia to Indonesia.

NEPAL: W, C & E; 1500–4200 m.

KSL: Bajhang and Humla in KSL Nepal, and neighboring Bajura, Doti and Mugu; 2300–3500 m [Bageshwar and Pithoragarh districts, Uttarakhand in KSL India and neighboring areas]. It is likely also to be present in Darchula, Nepal.

*Representative specimens*. **BAJHANG**: On trail from Surma Village to Thalara, 2995 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911098, 10 Jul 2009; E00624433, KATH<sup>1</sup>); Chimnya, way to Kalapani, NE of Dhalun, 2700–3200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0543, 16 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA**: Kuru, 2285 m (BSH C73, 20 Aug 2017) fide RBGE (2014); Chauki Lekh, 3276 m (BSH C69, 19 Aug 2017) fide RBGE (2014). **DOTI**: Khaptad National Park, trail from Jhingrana to Bichpani, 2270 m (Nepal Bajhang 2009 Expedition 20911019, 1 Jul 2009; E00624563). **HUMLA**: Changkheli Lagna, 3450 m (KR Rajbhandari & B Roy 3871, 25 Jul 1979; KATH<sup>1</sup>). **MUGU**: Edge of Rara Lake, 2980 m (Flora of Nepal Collecting Trip-2008 B79, 8 Jun 2008; E00397366). **UTTARAKHAND (INDIA)**: Kumaon (T Thomson s.n., 1845; P00292556<sup>1</sup> image); Binsar, Kumaon, 2438 m (R Strachey & JE Winterbottom 5; P00292574<sup>1</sup> image).

*Remarks*: Further distribution records for Uttarakhand fide GMBA (2012–2016).



**Carex nudicarpa** (Y.C. Yang) S.R. Zhang, Bot. J. Linn. Soc. 179: 23 (2015). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 226 (2017).

*Blismocarex nudicarpa* Y.C. Yang, Acta Bot. Yunnan. 4: 325 (1982); *Blismocarex macrantha* (Boeckeler) N.A. Ivanova; *Blismocarex macrantha* subsp. *nudicarpa* (Y.C. Yang) D.S. Deng; *Kobresia macrantha* Boeckeler; *Kobresia macrantha* var. *nudicarpa* (Y.C. Yang) P.C. Li; *Kobresia nudicarpa* (Y.C. Yang) S.R. Zhang

Perennial herbs; rhizomes elongate, stoloniferous; culms scattered, erect, to 10 cm long.

*Habitat*: Grassy slopes, stony meadows, moist sandy places.

*Distribution*: W & C Himalaya (Kashmir to Nepal), Tibetan Plateau, N & C China

NEPAL: W, C & E; 3700–5000 m.

KSL: Humla in KSL Nepal; 5000 m [Pulan Xian, SW Xizang in KSL China].

*Representative specimen*. HUMLA: Near Nyalu La, 5000 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1308, 9 Sept 2012; TUCH<sup>1</sup>).

*Remarks*: Records for Pulan Xian fide GMBA (2012–2016).

*Local abund.*: Occasional in Humla.

**Carex obscura** Nees in Wight, Contr. Bot. India: 126 (1834). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 104 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 227 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 202 (2018).

Caespitose perennial herbs; rhizomes horizontal, not stoloniferous; culms erect, 15–50 cm long.

*Habitat*: Meadows, open slopes.

*Distribution*: Himalaya (Pakistan to NE India: Sikkim).

NEPAL: W, C & E; 3000–4300 m.

KSL: Darchula in KSL Nepal; 3150 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. DARCHULA: Simar Kharka to Dhaulok Odar, 3150 m (Ikeda *et al.* 1215037; E, TI) fide Yano *et al.* (2015). UTTARAKHAND (INDIA): Ralam, Kumaon, 3048 m (R Strachey & JE Winterbottom 14, 1843; P00292636' image); above Bona, Kumaon, 3048 m (NK Walter 20941, 1 Jul 1948; MICH 1489093' image).

**Carex obscura** var. **brachycarpa** C.B. Clarke in Hook. f., Fl. Brit. India 6: 731 (1894). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 104 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 227 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 202 (2018).

Caespitose perennial herbs; rhizomes short; culms erect, 15–90 cm long.

*Habitat*: Forest margins, meadows.

*Distribution*: Himalaya (NW India to Bhutan), Tibetan Plateau, SC China.

NEPAL: W & C; 3050–4000 m.

KSL: Darchula in KSL Nepal; 3050–3350 m.

*Representative specimen*. DARCHULA: Opposite Budhi Village, 3050–3350 m (JF Duthie 6112, 18 Jul 1886; K000998986' image).

**Carex ovoidispica** O. Yano, Bot. J. Linn. Soc. 179: 24 (2015). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 227 (2017). **Pl. 18.**

*Kobresia nitens* C.B. Clarke, J. Linn. Soc. Bot. 20: 379 (1883).

Densely caespitose perennial herbs; rhizomes short; culms erect, 5–45 cm long.

*Habitat*: Open grassy slopes, rocky slopes, moist alpine meadows.

*Distribution*: NE Afghanistan, Karakoram, W & C Himalaya (Pakistan to Nepal), Tibetan Plateau.

NEPAL: W; 4800–5500 m.

KSL: Bajhang and Humla in KSL Nepal; 5000–5500 m [Pithoragarh, Uttarakhand in KSL India; and upper Karnali area in Pulan Xian, SW Xizang in KSL China].

*Representative specimens.* **BAJHANG:** Five miles NE of Saipal, NW Nepal, 5485 m (JEM Arnold 204, 24 Aug 1954; BM) fide Rajbhandari & Ohba (1991). **HUMLA:** Chungsa Valley, near Nyalu La, above Seliman Tsho, 5010 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1189, 6 Sept 2012; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaun, Dhaul Valley near Bidang, 4265–4570 m (JF Duthie 3462, K) fide Rajbhandari & Ohba (1991).

*Remarks:* Distribution records for Pulan Xian fide GMBA (2012–2016).

*Local abund.:* Rare to occasional in Humla; not known for other regions.

**Carex parvula** O. Yano, Bot. J. Linean. Soc. 179: 24 (2015). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 228 (2017).

*Hemicarex pygmaea* C.B. Clarke; *Kobresia pygmaea* (C.B. Clarke) C.B. Clarke; *Kobresia pygmaea* var. *filiculmis* Kük

Densely caespitose perennial herbs, forming turfs or tight cushions; culms erect, 0.5–6 cm long.

*Habitat:* Grassy slopes, dry alpine meadows, rocky slopes, riverside gravelly places.

*Distribution:* Himalaya (Pakistan to Bhutan), Tibetan Plateau, Myanmar, N & C China.

NEPAL: W, C & E; 3100–5600 m.

KSL: Humla in KSL Nepal; 4600–5000 m [Pithoragarh, Uttarakhand in KSL India; and Pulan Xian, SW Xizang in KSL China].

*Representative specimens.* **HUMLA:** Upper Chungsa Valley, Khyunkar La 4650 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1201, 6 Sept 2012; TUCH<sup>1</sup>); Nyalu La, 5010 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1307, 9 Sept 2012; TUCH<sup>1</sup>). **XIZANG (CHINA):** Pulan Xian (Qinghai-Tibet team vegetation group 6760911 & 6760912; PE) fide Kong & Yang (2019).

*Remarks:* Distribution records for Pithoragarh fide GMBA (2012–2016).

*Local abund.:* Occasional in Humla.

**Carex pseudolaxa** (C.B. Clarke) O. Yano & S.R. Zhang, Bot. J. Linn. Soc. 179: 24 (2015). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 230 (2017).

*Kobresia pseudolaxa* C.B. Clarke, J. Linn. Soc., Bot. 20: 381 (1883); *Elyna laxa* (Nees) Kunth; *Hemicarex laxa* (Nees) Benth.; *Kobresia laxa* Nees; *Schoenoxiphium laxum* (Nees) N.A. Ivanova

Loosely caespitose perennial herbs; rhizomes shortly elongated; culms 5–40 cm long.

*Habitat:* Grassy slopes, alpine meadows, rock crevices.

*Distribution:* C Asia, Afghanistan, Himalaya (Pakistan to Bhutan), Tibetan Plateau.

NEPAL: W, C & E; 3000–3800 m.

KSL: Darchula and Humla in KSL Nepal; 3050–3350 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **DARCHULA:** Opposite Budhi Village, 3050–3350 m (JF Duthie 6090, 18 Jul 1886; BM) fide Rajbhandari & Ohba (1991). **HUMLA:** Dozam Khola, near Timikot [Simikot], 3350 m (O Polunin, WR Sykes & LHJ Williams 4225, 30 May 1952; TI 10006596<sup>1</sup> image). **UTTARAKHAND (INDIA):** Kumaun, Dhaul Valley, 2440–2740 m (JF Duthie 6114, K) fide Rajbhandari & Ohba (1991).

**Carex psychrophila** Nees in Wight, Contr. Bot. India: 127 (1834). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 104 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 230 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 202 (2018).

*Carex celsa* Boott

Caespitose perennial herbs with stoloniferous rhizomes; culms slender, 40–90 cm long.

*Habitat*: Open grassland, marshy ground on shady slopes

*Distribution*: E Afghanistan, Himalaya (Pakistan to Bhutan), Tibetan Plateau, SC China.

NEPAL: W & C; 3000–3800 m.

KSL: Bajhang in KSL Nepal, and neighboring Mugu; 3500 m.

*Representative specimens*. **BAJHANG**: Dhuli [interpreted] (JF Dobremez 2219, 14 May 1973; E00683889).

**MUGU**: West of Ghurchi Lagna, 3500 m (S Mische 99-07-01, Jun 1999; E00180501<sup>1</sup> image).

**Carex rara** Boott, Proc. Linn. Soc. London 1: 284 (1845). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 105 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 231 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 204 (2018).

Densely caespitose perennial herbs; rhizomes short, woody; culms erect, slender, 10–40 cm long.

*Habitat*: Forests, forest margins, streamsides, we meadows, open grassy slopes.

*Distribution*: C & E Himalaya (Nepal to NE India), Tibetan Plateau, S & E China to Japan.

NEPAL: W, C & E; 2400–4000 m.

KSL: Known from neighboring Doti District, Nepal; *c.* 3060 m.

*Representative specimen*. **DOTI**: Khaptad National Park, trail from Bichpani to Ghoda daune, 3063 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911048, 2 Jul 2009; E00624526, KATH).

**Carex remota** L. subsp. **stewartii** Kukkonen, Ann. Bot. Fenn. 21: 385 (1984). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 231 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 204 (2018).

Caespitose perennial herbs; rhizomes creeping; culms slender, 30–40 cm long.

*Habitat*: Open slopes.

*Distribution*: E Afghanistan, Himalaya (Pakistan to Bhutan).

NEPAL: W, C & E; 2200–3500 m.

KSL: Known from neighboring Doti and Mugu, Nepal; 2700–3000 m.

*Representative specimens*. **DOTI**: Khaptad National Park, trail from Bichpani to Ghoda daune, near Bichpani, 3000 m (Nepal Bajhang 2009 Expedition 20911035; 2 Jul 2009; E00623959). **MUGU**: Rara – Khatyar Khola, 2700 m (KR Rajbhandari & B Roy 3768, 22 Jul 1979; KATH) fide Rajbhandari (2010).

**Carex rochebrunei** Franch. & Sav., Enum. Pl. Jap. 2: 555 (1878), "*rochebruni*". Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 105 (1978).

*Carex monopoleura* V.I. Krecz.; *Carex remota* L. subsp. *rochebrunei* (Franch. & Sav.) Kük.; *Carex remota* var. *rochebrunei* (Franch. & Sav.) C.B. Clarke

Caespitose perennial herbs; rhizomes short, woody; culms slender, to 25 cm long.

*Habitat*: Open slopes, trailsides, edges of fields, meadows.

*Distribution*: Himalaya (N India, Nepal, Bhutan), C & SE China to Japan, SE Asia.

NEPAL: W, C & E; 1700–3200 m.

KSL: Bajhang in KSL Nepal; 2800–2900 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Dhalaun – Rasa, 2840 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170838, 20 Aug 1991; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, Younrani, 2134 m (RC Thakur 779, 24 Jun 1948; *Carex monopleura* MICH 1488965<sup>1</sup> image).

**Carex rufulistolon** T. Koyama, Acta Phytotax. Geobot. 15: 111 (1954). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 105 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 232 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 204 (2018).

*Carex griersonii* Noltie

Loosely caespitose perennial herbs; rhizomes slender, spreading; culms slender, 4–12 cm long.

*Habitat:* Moist places, rocky grasslands.

*Distribution:* Himalaya (NW India to Bhutan).

NEPAL: W & C; 2200–4300 m.

KSL: Darchula in KSL Nepal; 3000 m.

*Representative specimen.* **DARCHULA:** Simar Kharka to Dhaulo Odar, 3010 m (Ikeda *et al.* 1215033; E, TI) fide Yano *et al.* (2015).

**Carex setigera** D. Don var. **schlagintweitiana** (Boeckeler) Kük. in Engler (ed.), Pflanzenr., 4, Fam. 20(38): 419 (1909). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 204 (2018).

*Carex schlagintweitiana* Boeckeler, Beitr. Cyper. 1: 48 (1888); *Carex schlagintweitiana* subsp. *deformis* Noltie

Caespitose perennial herbs; rhizomes slender, spreading; culms slender, 10–25 cm long.

*Habitat:* Forests, rocky slopes, screes, open places.

*Distribution:* Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 2700–4000 m.

KSL: Known from Pulan Xian, SW Xizang in KSL China, and neighboring Doti District, Nepal. It is likely also to be present in upper Humla and Bajhang in KSL Nepal.

*Representative specimen.* **DOTI:** Khaptad [interpreted] (JF Dobremez 1924; E00683911).

*Remarks:* Distribution records for Pulan Xian fide GMBA (2012–2016).

**Carex setosa** Boott, Ill. Gen. Carex 3: 108 (1862). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 105 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 233 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 204 (2018).

*Carex pachyrrhiza* Franch.

Caespitose perennial herbs; rhizomes elongate, woody; culms slender, 15–50 cm long.

*Habitat:* Grassy slopes, meadows, marshes.

*Distribution:* Himalaya (Pakistan to Bhutan), Tibetan Plateau, C & SE China.

NEPAL: W, C & E; 3000–4500 m.

KSL: Known from upper Karnali in Pulan Xian, SW Xizang, KSL China; 4400–4530 m. It is likely also to be present in upper Humla, Nepal.

*Remarks:* Records for Pulan Xian fide GMBA (2012–2016).

**Carex speciosa** Kunth, Enum. Pl. 2: 504 (1837). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 233 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 205 (2018).

Caespitose perennial herbs; rhizomes elongate; culms slender, 15–30 cm long.

*Habitat*: Grassy slopes.

*Distribution*: Tropical and subtropical regions in Asia.

NEPAL: C; 2300–2500 m.

KSL: Known from Bageshwar, Uttarakhand in KSL India; 1950 m.

*Remarks*: Records for Uttarakhand (B Dickoré [Coll. MSB]) fide GMBA (2012–2016).

**Carex stracheyi** Boot ex C.B. Clarke in Hook. f., Fl. Brit. India 6: 727 (1894). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 105 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 233 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 205 (2018).

Caespitose perennial herbs; rhizomes short; culms 30–60 cm long.

*Habitat*: Open places.

*Distribution*: W & C Himalaya (NW India, Nepal).

NEPAL: W & C; 1800–3200 m.

KSL: Darchula in KSL Nepal; c. 2950 m [Almora District, Uttarakhand, India].

*Representative specimens*. **DARCHULA**: Simar Kharka – Dhaulo Odar, 2930 m (H Ikeda, S Noshiro, K Yonekura, K Akai, O Yano, N Yamamoto, CA Pendry, A Elliott, GD Bhatt & M Pathak 1215029, 13 Jul 2012; KATH<sup>1</sup>). **UTTARAKHAND [INDIA]**: Kumaon, below Madhari Pass, 2438 m (R Strachey & JE Winterbottom 18, 15 May 1848; isosyntype GH 00249983<sup>1</sup> image, CAL).

**Carex supina** Willd. ex Wahlenb., Kongl. Vetensk. Acad. Nya Handl. 24: 158 (1803). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 105 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 234 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 205 (2018).

ENG: Weak arctic sedge.

Caespitose perennial herbs; culms slender, 4–17 cm long.

*Habitat*: Open grassy slopes.

*Distribution*: Temperate Eurasia, W & C Himalaya (Pakistan to Nepal), Tibetan Plateau, NE Asia.

NEPAL: W & C; 3500–5700 m.

KSL: Humla in KSL Nepal, 4875 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimen*. **HUMLA**: Dojam Khola, 4875 m (O Polunin, WR Sykes & LHJ Williams 1497, 5 Jul 1952; BM) fide Rajbhandari & Rai (2017).

*Remarks*: Distribution records for Uttarakhand fide GMBA (2012–2016).

**Carex unciniformis** Boeckeler, Beitr. Cyper. 1: 40 (1888).

*Carex linearis* Boott (1858), nom. illeg., non Clairv. (1811); *Carex linearis* var. *elachista* C.B. Clarke; *Carex neesii* S.R. Zhang; *Hemicarex linearis* Benth.; *Kobresia nepalensis* (Nees) Kük.; *Kobresia nepalensis* var. *elachista* (C.B. Clarke) Kük.; *Uncinia nepalensis* Nees

NEP-L: Sāno phyūncho (सानो फ्यूँचो).

Caespitose perennial herbs; rhizomes short; culms erect, filiform, 10–30 cm long.

*Habitat*: Shrubby meadows, open grassy slopes, scree slopes, rocky grassland, wet rocky cliffs.

*Distribution*: Himalaya (N Pakistan to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 2600–5700 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura; 2600–5000 m [Pithoragarh, Uttarakhand in KSL India; and Pulan Xian, SW Xizang in KSL China].

*Representative specimens.* **BAJHANG:** Above Surma Village, 3410 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911091, 8 Jul 2009; E00509742, KATH<sup>1</sup>); Saipal, 3878 m (H Tabata, KR Rajbhandari & K Tsuchiya 1781, 30 Jul 1976; KATH<sup>1</sup>); Manane Lekh above Dhahidunga Kharka, 4053 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913126, 13 Jul 2009; E00509640, KATH<sup>1</sup>). **BAJURA & BAJHANG:** Pategaon – Ghodi Lekh Deorali – Badigaon, 2950 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170652, 16 Aug 1991; KATH<sup>1</sup>, TI). **DARCHULA:** Opposite Budhi Village, 3353–3658 m (JF Duthie 6091, 18 Jul 1886; K000794651<sup>1</sup> image); Chameliya Valley, Gauchhalighol, 3950 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1252, 21 Jul 2015; TUCH<sup>1</sup>); Kalidhunga, 4000 m (KM Ghimire & M Adhikari F205, 12 Sept 2015; TUCH). **HUMLA:** Chungsa Valley, Dharmashala, 4300 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1053, 2 Sept 2012; TUCH<sup>1</sup>).

*Remarks:* Records for Pithoragarh and Pulan Xian fide GMBA (2012–2016).

*Local abund.:* Frequent to common.

**Carex vesiculosa** Boott, Ill. Gen. Carex 3: 107 (1862). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 105 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 235 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 205 (2018).

*Carex diffusa* Boott ex C.B. Clarke

Caespitose perennial herbs; culms stout, erect, 30–70 cm; leaf blades rough with vesicle-based short hairs.

*Habitat:* Damp open slopes, grassy slopes, damp places in *Quercus-Rhododendron* forests.

*Distribution:* C & E Himalaya (Nepal, Bhutan, NE India), mainland SE Asia to Indonesia.

NEPAL: W, C & E; 900–3200 m.

KSL: Bajhang in KSL Nepal; 2500–3200 m.

*Representative specimen.* **BAJHANG:** West peak from Deurali, near Dhalun, 2500–3200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0446, 15 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>).

**Carex wallichiana** Spreng., Syst. Veg. 3: 812 (1826). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 206 (2018).

*Carex foliosa* D. Don (1823), nom. illeg., non All. (1785); *Carex echinochloiformis* Y.L. Chang ex Y.C. Yang; *Carex lebrunii* H. Lév.; *Carex muricata* L. var. *foliosa* C.B. Clarke; *Carex notoleia* Nees; *Vignea wallichiana* (Spreng.) Soják

Caespitose perennial herbs; rhizomes short, woody; culms 25–100 cm long.

*Habitat:* Wet and grassy areas in forests.

*Distribution:* Himalaya (Pakistan to NE India), Tibetan Plateau, Peninsular India (Nilgiri), SC China.

NEPAL: W, C & E; 1800–3000 m.

KSL: Darchula in KSL Nepal and upper Mahakali in KSL Nepal and India; 2100–2500 m.

*Representative specimens.* **MAHAKALI:** Kuthi [Kuti], 2195 m (R Strachey & JE Winterbottom 4, 1843; P00283133<sup>3</sup>). **DARCHULA:** Lithi to Khayekot, 2200 m (Ikeda *et al.* 1215019; E, TI, *Carex foliosa*) fide Yano *et al.* (2015).

**Carex winterbottomii** C.B. Clarke in J.D. Hooker, Fl. Brit. India 6: 727 (1894). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 105 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 236 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 206 (2018).

*Carex setigera* D. Don var. *fasciculata* Strachey

Caespitose perennial herbs; rhizomes creeping, woody; culms to 25 cm long.

*Habitat:* Open grassy slopes, gravelly slopes.

*Distribution:* Himalaya (NW India, Nepal).

NEPAL: C; 3000–3200 m.

KSL: Known from Bageshwar District, Uttarakhand in KSL India. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimen.* **UTTARAKHAND (INDIA):** Kumaon, Jugthana Pass, 2438 m (R Strachey & JE Winterbottom 16; isotype GH 00135258' image, K000999053' image).

## **Cyperus** L., Sp. Pl. 1: 44 (1753).

**Cyperus albescens** (Steud.) Larridon & Govaerts, Kew Bull. 71(2)-30: 1 (2016).

*Kyllinga albescens* Steud.; Syn. Pl. Glumac. 2: 68 (1854); *Hypolytrum argenteum* Kunth, nom. illeg. superfl.; *Lipocarpha argentea* (Kunth) R. Br., nom. illeg. superfl.; *Lipocarpha chinensis* (Osbeck) J. Kern; *Scirpus chinensis* Osbeck

Caespitose annual or perennial herbs; culms 10–40 cm long.

*Habitat:* Marshy places, field margins, streamsides.

*Distribution:* Africa, tropical to warm temperate regions in Asia, Australasia.

NEPAL: W, C & E; 300–2100 m.

KSL: Known from Almora, Uttarakhand, India; and nearby Kalikot District, Nepal. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimens.* **KALIKOT:** Chaukebada – Badarigaon, 1860 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170320, 5 Aug 1991; *Lipocarpha chinensis* TI) fide SHB (2013–2020). **UTTARAKHAND [INDIA]:** Kumaon, Almora, 1370 m (R Strachey & JE Winterbottom s.n.; *Lipocarpha argentea* P00075545' image).

**Cyperus alulatus** J. Kern, Reinwardtia 1: 463 (1952). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 107 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 237 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 206 (2018).

Loosely caespitose annual herbs; culms 10–30 cm long.

*Habitat:* Rice fields, wet places, marshes.

*Distribution:* Afghanistan, Pakistan, Tropical and Subtropical Himalaya, S & C India (widespread).

NEPAL: W; 700–1500 m.

KSL: Bajhang in KSL Nepal; 1200 m.

*Representative specimen.* **BAJHANG:** Chainpur – Jimkot, 1200 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170938, 25 Aug 1991; TI) fide SHB (2013–2020).

*Conserv. status:* GLB., Least Concern (Anitha 2013).

**Cyperus brevifolius** (Rottb.) Hassk, Cat. Hort. Bot. Bogor. Alt.: 24 (1844).

*Kyllinga brevifolia* Rottb., Descr. Icon. Rar. Pl.: 13 (1773).

ENG: Shortleaf spikeseedge.

Perennial herbs; rhizomes creeping; culms serially arranged or laxly tufted, 5–40 cm long.

*Habitat:* Moist grasslands, wet meadows, margins of agricultural lands, paddy fields.

*Distribution:* Tropical and subtropical regions of the World.

NEPAL: W, C & E; 65–2500 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura and Doti; 1400–2300 m.

*Representative specimens.* **BAJHANG:** Rupatola, 1500–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0116, 11 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>); north of Patiudi, Jeuli Gad, 2043 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911073, 7 Jul 2009; E00509707, KATH<sup>1</sup>). **BAJURA:** Kuru, 2285 m (BSH C75, 20 Aug 2017) fide RBGE (2014). **DOTI:** Doti – Kola, 1400 m (MS Bista & DP Joshi 57, 27 Jul 1972; KATH<sup>1</sup>).

*Conserv. status:* GLB., Least Concern (Lansdown 2017c).

**Cyperus compressus** L., Sp. Pl. 1: 46 (1753). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 107 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 237 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 207 (2018).

*Cyperus pectinatus* Roxb. (1820), nom. illeg., non Vahl (1805).

NEP: Mothe-jhār (मोथे-झार).

ENG: Flatsedge, Poorland flatsedge.

Caespitose annual herbs with fibrous roots; culms 5–30 cm long.

*Habitat:* Marshy places, wet grasslands, roadside ditches, waste places, fallow rice fields.

*Distribution:* Tropical and subtropical regions of the World.

NEPAL: W, C & E; 150–2000 m.

KSL: Known from neighboring Bajura District, Nepal; 1000–1100 m.

*Representative specimen.* **BAJURA:** Babali – Sanfegar, 1060 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193428, 30 Aug 1991; TI) fide SHB (2013–2020).

*Conserv. status:* GLB., Least Concern (Beentje & Lansdown 2018b).

**Cyperus cuspidatus** Kunth in Humboldt *et al.*, Nov. Gen. Sp. 1: 204 (1816). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 107 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 238 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 207 (2018).

*Cyperus angustifolius* Buch.-Ham. ex Nees; *Cyperus setifolius* D. Don

ENG: Flatsedge, Coastal plain flatsedge.

Caespitose annual herbs, forming small tufts; culms slender, 3–10 cm long.

*Habitat:* Moist slopes, degraded forests, grasslands at water margins, river beds, fields, rocky cliffs.

*Distribution:* Tropical and subtropical regions of the World.

NEPAL: W, C & E; 350–2500 m.

KSL: Bajhang and Humla in KSL Nepal, and neighboring Bajura; 800–2500 m.

*Representative specimens.* **BAJHANG:** Rupatola, 1500–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0095, 11 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA:** Babali – Sanfegar, 600–1410 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193852, 30 Aug 1991; TI) fide SHB (2013–2020). **HUMLA:** Between Kermi & Dharapori, 2500 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1420, 16 Sept 2012; TUCH<sup>1</sup>).

*Local abund.:* Frequent at lower elevations.

**Cyperus cyperinus** (Retz.) Valck. Sur., Cyperus Mal. Arch.: 154 (1898). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 238 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 207 (2018).

*Kyllinga cyperina* Retz., Observ. Bot. 6: 21 (1791); *Mariscus cyperinus* (Retz.) Vahl

ENG: Old World flatsedge.



Perennial herbs with short rhizomes; culms tufted or scattered, erect, 20–30 cm long.

*Habitat*: Grasslands, forests, wet places on mountain slopes, water margins.

*Distribution*: E Africa, tropical and subtropical regions in Asia, Australasia.

NEPAL: W, C & E; 600–2500 m.

KSL: Bajhang and Darchula in KSL Nepal; 2100–2500 m.

*Representative specimens*. **BAJHANG**: On trail from Thalara to Budkhori, 2495 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911103, 11 Jul 2009; E00509925, KATH). **DARCHULA**: Khar VDC-4, 2190 m (BB Shrestha, M Pandey & R Chhetri 48, 26 Sept 2015; TUCH<sup>1</sup>); Chameliya Valley, Shithi Deurali, 2300 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1043, 17 Jul 2015; TUCH<sup>1</sup>).

*Local abund.*: Frequent at lower elevations.

**Cyperus cyperoides** (L.) Kuntze, Revis. Gen. Pl. 3: 333 (1898). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 238 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 207 (2018).

*Scirpus cyperoides* L., Mant. Pl. Alt. 181 (1771); *Kyllinga sumatrensis* Retz.; *Mariscus sumatrensis* (Retz.) J. Raynal

NEP: Karaunte, Mothe (करौते, मोथे).

ENG: Pacific island flatsedge.

Perennial herbs with short rhizomes; culms laxly tufted, erect, 20–50 cm long.

*Habitat*: Edges of agricultural land, wet places in grasslands, swamps, roadsides.

*Distribution*: Africa, tropical and subtropical regions in Asia to Pacific.

NEPAL: W, C & E; 100–2600 m.

KSL: Bajhang in KSL Nepal; 1700–2200 m.

*Representative specimen*. **BAJHANG**: Between Agara & Dhalun, 2000–2100 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0388, 14 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>).

*Conserv. status*: GLB., Least Concern (Kumar 2011a).

**Cyperus difformis** L., Cent. Pl. 2: 6 (1756). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 107 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 239 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 207 (2018).

ENG: Small-flower umbrella sedge, Dirty-Dora.

Caespitose annual herbs with fibrous roots; culms erect, 15–45 cm long.

*Habitat*: Wet places in grasslands, shallow water, rice fields, ditches, channels.

*Distribution*: Tropical and subtropical regions of the Old World.

NEPAL: W, C & E; 100–3000 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; 1100–3000 m.

*Representative specimens*. **BAJHANG**: Chainpur – Jimkot, 1140–1400 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193804, 25 Aug 1991; TI) fide SHB (2013–2020); Jimkot – Khaptad National Park, 1480–2980 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193817, 26 Aug 1991; TI) fide SHB (2013–2020).

**BAJURA**: Tolebhir – Berma, 1535 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama and K Terada 9193190, 9 Aug 1991; TI) fide SHB (2013–2020).

*Conserv. status*: GLB., Least Concern (Gupta *et al.* 2018).

**Cyperus flavidus** Retz., *Observ. Bot.* 5: 13 (1788).

*Cyperus strictus* Roxb.; *Pycnus flavidus* (Retz.) T. Koyama

Annual or perennial herbs; culms tufted, erect, 10–50 cm long.

*Habitat*: Shady wet places, marshy places near streams, shallow water, meadows, rice fields, roadsides.

*Distribution*: S Europe, Africa, tropical to warm temperate regions in Asia, Australia.

NEPAL: W, C & E; 100–3800 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura and Dadeldhura; 400–2300 m.

*Representative specimens*. **BAJHANG**: Chainpur – Jimkot, 1200 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170945, 25 Aug 1991; KATH<sup>1</sup>, TI).

**BAJURA**: Kuru, 2285 m (BSH C72, 20 Aug 2017) fide RBGE (2014). **DADEL DHURA**: Jogbura – Mauri, 400 m (KR Rajbhandari, PM Regmi & KJ Malla 5354, 14 Aug 1980; KATH<sup>1</sup>).

*Conserv. status*: GLB., Least Concern (Kavak 2014).

**Cyperus iria** L. *Sp. Pl.* 1: 45 (1753). Koyama in Hara *et al.*, *Enum. Fl. Pl. Nepal* 1: 107 (1978). Rajbhandari & Rai, *Handbk. Fl. Pl. Nepal* 1: 242 (2017). Shrestha *et al.*, *Handbk. Fl. Pl. Nepal* 1: 209 (2018).

NEP: Mothe, Mothe-jhâr, Thûlo mothe (मोथे, मोथे-झार, ठूलो मोथे).

ENG: Grasshopper's cyperus, Ricefield flatsedge, Umbrella sedge.

Annual herbs with fibrous roots; culms solitary or tufted, slender or stout, erect, 20–60 cm long.

*Habitat*: Grassy swamps, edges of irrigation channels, streambanks, paddy fields.

*Distribution*: Africa, tropical to warm temperate regions in Asia to Pacific.

NEPAL: W, C & E; 100–2200 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura and Dadeldhura; 400–2200 m.

*Representative specimens*. **BAJHANG**: Chainpur – Jimkot, 1180 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama and K Terada 9193391, 25 Aug 1991; TI) fide SHB (2013–2020); Rupatola, 1500–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0112, 11 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA**: Berseni – Porakya, 1590 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193232, 12 Aug 1991; TI) fide SHB (2013–2020).

**DADEL DHURA**: Jogbura – Mauri, 400 m (KR Rajbhandari, PM Regmi & KJ Malla 5344, 14 Aug 1980; KATH<sup>1</sup>).

*Conserv. status*: GLB., Least Concern (Mesterházy *et al.* 2020a).

**Cyperus metzii** (Hochst. ex Steud.) Mattf. & Kük. in H.G.A.Engler (ed.), *Pflanzenr.*, IV, 20(101): 25 (1935).

*Kyllinga metzii* Hochst. ex Steud., *Syn. Pl. Glumac.* 2: 70 (1854); *Kyllinga cristata* Afzel. ex A. Rich.; *Kyllinga squamulata* Vahl

ENG: Asian spikesedge.

Annual or short-lived perennial herbs with fibrous roots; culms tufted, erect, 1–20 cm long.

*Habitat*: Wet grassland, forests, field margins, roadsides.

*Distribution*: Tropical Africa, tropical and subtropical regions in Asia, NE Australia.

NEPAL: W, C & E; 1100–2600 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; 1100–2200 m.

*Representative specimens*. **BAJHANG**: Rupatola, 1500–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0117, 11 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA**: Babali – Sanfagar, 600–1410 m (M

Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193859, 30 Aug 1991; TI) fide SHB (2013–2020).

**Cyperus niveus** Retz., *Observ. Bot.* 5: 12 (1788). Koyama in Hara *et al.*, *Enum. Fl. Pl. Nepal* 1: 108 (1978). Rajbhandari & Rai, *Handbk. Fl. Pl. Nepal* 1: 243 (2017). Shrestha *et al.*, *Handbk. Fl. Pl. Nepal* 1: 210 (2018).

NEP: Seto mothe (सेतो मोथे).

ENG: Snow white sedge.

Perennial herbs; rhizomes short, woody, creeping; culms tufted, 10–40 cm long, swollen at base.

*Habitat*: Roadsides, forest floor, grassy slopes, streamsides.

*Distribution*: Africa, SW Asia, tropical and subtropical regions in S Asia, Tibetan Plateau, SC China, mainland SE Asia to Indonesia.

NEPAL: W, C & E; 200–2900 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura and Mugu; 1150–2300 m.

*Representative specimens*. **BAJHANG**: Dilbagar, 1150 m (H Tabata, KR Rajbhandari & K Tsuchiya 215, 17 Jul 1976; KATH<sup>1</sup>); trail from Lokhada to Tameil, 2151 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911064, 4 Jul 2009; E00624415, KATH<sup>1</sup>). **BAJURA**: Tolebhir – Kabhri, 1500 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9195006, 9 Aug 1991; TI) fide SHB (2013–2020); above Kolti, 1872 m (BSH C21, 11 Aug 2017) fide RBGE (2014). **MUGU**: Above Luma, 2300 m (Flora of Nepal Collecting Trip-2008 B94; E00392277) fide RBGE (2018).

**Cyperus pilosus** Vahl, *Enum. Pl. Obs.* 2: 354 (1805). Koyama in Hara *et al.*, *Enum. Fl. Pl. Nepal* 1: 108 (1978). Rajbhandari & Rai, *Handbk. Fl. Pl. Nepal* 1: 243 (2017). Shrestha *et al.*, *Handbk. Fl. Pl. Nepal* 1: 210 (2018).

*Cyperus donianus* A. Dietr.; *Cyperus obliquus* Nees; *Cyperus paniculatus* D. Don; *Cyperus pauciflorus* Steud.; *Cyperus pilosus* var. *obliquus* (Nees) C.B. Clarke

ENG: Fuzzy flatsedge.

Perennial stoloniferous herbs; culms 40–70 cm long, smooth or scabrid on angles.

*Habitat*: Sparse forests, forest margins, grassy slopes, marshes, meadows, rice fields.

*Distribution*: Tropical and subtropical regions in Asia to E Australia.

NEPAL: W, C & E; 65–1600 m.

KSL: Darchula in KSL Nepal, and neighboring Dadeldhura; 400–1550 m.

*Representative specimens*. **DADEL DHURA**: Jogbura – Mauri, 400 m (KR Rajbhandari, PM Regmi & KJ Malla 5340, 14 Aug 1980; KATH<sup>1</sup>). **DARCHULA**: Makari Gad Danda, way to Khandesowari, 1550 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-513, 15 Oct 2014; TUCH<sup>1</sup>).

*Local abund.*: Occasional in Darchula.

*Conserv. status*: GLB., Least Concern (Rehel 2011d).

**Cyperus pseudokyllingioides** Kük. in Engler (ed.), *Pflanzenr.*, 4, 20(101): 14 (1935). Rajbhandari in Rajbhandari & Baral, *Cat. Nepal. Fl. Pl.* 1: 93 (2010).

*Courtoisia cyperoides* (Roxb.) Nees; *Courtoisia cyperoides* (Roxb.) Soják; *Cyperus kleinianus* Hochst. ex Steud.; *Indocourtoisia cyperoides* (Roxb.) Bennet & Raizada; *Kyllinga cyperoides* Roxb.; *Mariscus cyperoides* (Roxb.) A. Dietr.

Annuals or short-lived perennial herbs, with slender rootstocks; culms tufted, 5–60 cm long.

*Habitat*: Marshes and boggy grasslands, rice fields.

*Distribution:* C & S Africa, Madagascar, tropical and subtropical regions in S Asia, Tibetan Plateau, SC China, mainland SE Asia.

NEPAL: W, C & E; 200–1500 m.

KSL: Bajhang in KSL Nepal; 1200 m.

*Representative specimen.* **BAJHANG:** Chainpur – Jimkot, 1200 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170939, 25 Aug 1991; *Mariscus cyperoides* TI) fide SHB (2013–2020).

*Consv. status:* GLB., Least Concern (Lansdown 2018b).

### **Cyperus pumilus** L., Cent. Pl. 2: 6 (1756).

*Cyperus breviculmis* F. Muell.; *Cyperus commutatus* Steud.; *Cyperus nitens* Retz.; *Cyperus punctatus* Roxb., nom. illeg.; *Pycneus nitens* (Retz.) Nees; *Pycneus pumilus* (L.) Nees

NEP: Low flatsedge.

Annual herbs, with fibrous roots; culms tufted, slender, 5–23 cm long.

*Habitat:* Wet places, paddy fields, disturbed places.

*Distribution:* Tropical and subtropical regions of the Old World to N Australia.

NEPAL: W, C & E; 80–2300 m.

KSL: Bajhang in KSL Nepal, and neighboring Achham and Bajura; 600–2200 m.

*Representative specimens.* **ACHHAM & BAJURA:** Babali – Sanfebagar, 600–1410 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193852-b, 30 Aug 1991; *Pycneus pumilus* TI<sup>1</sup> image). **BAJHANG:** Chainpur – Jimkot, 1200 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170942, 25 Aug 1991; TI) fide SHB (2013–2020); Badigaon – Talkot, 1660–2230 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193753-a, 17 Aug 1991; *Pycneus pumilus* TI<sup>1</sup> image).

*Consv. status:* GLB., Least Concern (Gupta & Lansdown 2018).

### **Cyperus rotundus** L., Sp. Pl.: 45 (1753). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 108 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 244 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 210 (2018).

*Chlorocyperus rotundus* (L.) Palla; *Cyperus tuberosus* Rottb.

NEP: Mothe, Nāgarmothe (मोथे, नागरमोथे).

ENG: Nutgrass, Nutsedge. SAN: Mustā, Mustakā (मुस्ता, मुस्तका). HIN: Nāgarmothā (नागरमोथा).

Perennial herbs with slender tuber-bearing stolons; culms solitary, 15–30 cm long, nodose at base.

*Habitat:* Marshy ground, grasslands, stream margins, along trails, weed in rice and maize fields.

*Distribution:* S Europe, Africa, tropical to warm temperate regions in Asia, Australia, America.

NEPAL: W, C & E; 100–2400 m.

KSL: Bajhang and Humla in KSL Nepal; 800–1700 m.

*Representative specimens.* **BAJHANG:** On trail from Banjh to Kalanga Nadi, 857 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911141, 17 Jul 2009; E00509830, KATH<sup>1</sup>); Chainpur – Jimkot, 1200 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170941, 25 Aug 1991; TI) fide SHB (2013–2020).

**HUMLA:** Lothi Khola, 1680 m (KR Rajbhandari & B Roy 4256, 1 Aug 1979, KATH<sup>1</sup>).

*Consv. status:* GLB., Least Concern (Lansdown *et al.* 2018).

**Cyperus sanguinolentus** Vahl, Enum. Pl. Obs. 2: 351 (1805).

*Cyperus atratus* Steud.; *Pycrus sanguinolentus* (Vahl) Nees

NEP: Jhuse mothe, Ragate mothe (झुसे मोथे, रगते मोथे).

ENG: Purple-glume flatsedge.

Annual or short-lived perennial herbs; culms solitary or tufted, erect or decumbent, 10–60 cm long.

*Habitat*: Forest margins, marshy grassland, lake/river margins, trailsides, field margins, paddy fields.

*Distribution*: E Africa, tropical to warm temperate regions in Asia, Australasia.

NEPAL: W, C & E; 60–3000 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; 1400–2550 m.

*Representative specimens*. **BAJHANG**: Agara to Dhalun, 2000–2100 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0377, 14 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA**: Porakya Pass, 2545 m (H Tabata, KR Rajbhandari & K Tsuchiya 2622, 19 Aug 1976; KATH<sup>1</sup>).

*Conserv. status*: GLB., Least Concern (Mani & Lansdown 2018).

**Cyperus squarrosus** L., Cent. Pl. 2: 6. (1756). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 245 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 211 (2018).

*Cyperus aristatus* Rottb.; *Mariscus aristatus* (Rottb.) Cherm.; *Mariscus squarrosus* (L.) C.B. Clarke

ENG: Bearded flatsedge, Awned flatsedge.

Annual herbs with fibrous roots; culms solitary or densely caespitose, 5–15 cm long.

*Habitat*: Open moist grounds, grasslands, forests, river margins, along trail, field margins.

*Distribution*: Tropical and subtropical regions of the World.

NEPAL: W & C; 1100–2700 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 1500–2700 m.

*Representative specimens*. **BAJHANG**: Between Dhalun & Panselegi, NE of Dhalun, 2300–2700 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0519, 16 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA**: Tolebhir – Berma, 1535 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193561, 9 Aug 1991; TT<sup>1</sup> image). **DARCHULA**: Khar VDC-2, 1570 m (BB Shrestha, M Pandey & R Chhetri 153, 29 Sept 2015; TUCH<sup>1</sup>); Rapla – Tangbang, 2000 m (KR Rajbhandari & KJ Malla 5603, 26 Aug 1980; KATH<sup>1</sup>).

*Local abund.*: Occasional to frequent.

*Conserv. status*: GLB., Least Concern (Kumar *et al.* 2018).

**Cyperus tenuispica** Steud., Syn. Pl. Glumac. 2: 11 (1854). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 108 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 245 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 211 (2018).

*Cyperus delicatulus* Steud.

ENG: Slender spikesedge.

Annual herbs, with fibrous roots; culms tufted, erect, 3–30 cm long.

*Habitat*: Marshy places, sparse forests, along trails, river banks, weed in rice fields.

*Distribution*: Tropical Africa, C Asia, Tropical S Asia, Himalaya, Tibetan Plateau, C & SE China to Japan, mainland SE Asia to Australia.

NEPAL: W, C & E; 100–1600 m.

KSL: Bajhang in KSL Nepal; 1200–1600 m.

*Representative specimens.* **BAJHANG:** Chainpur – Jimkot, 1200 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170936, 25 Aug 1991; TI) fide SHB (2013–2020); Jimkot – Khaptad National Park, 1480–2980 (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193813, 26 Aug 1991; TI) fide SHB (2013–2020).

*Consv. status:* GLB., Least Concern (Kumar & Lansdown 2018).

## **Eleocharis** R. Br., Prodr. 224 (1810).

**Eleocharis atropurpurea** (Retz.) J. Presl & C. Presl, Reliq. Haenk. 1: 196 (1828). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 246 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 211 (2018).

*Scirpus atropurpureus* Retz., Observ. Bot. 5: 14 (1788); *Isolepis atropurpurea* (Retz.) Roem. & Schult.

ENG: Purple spikerush, Purple sikesedge.

Small annual herbs, forming small tufts; roots fibrous; culms slender, erect, 2–10 cm long.

*Habitat:* Rice fields, wet meadows, seasonally flooded grasslands, pond and lake edges.

*Distribution:* Africa, tropical and subtropical regions in Asia, Australia, N & S America.

NEPAL: W, C & E; 100–1500 m.

KSL: Bajhang in KSL Nepal; 1100–1500 m.

*Representative specimen.* **BAJHANG:** Chainpur – Jimkot, 1180 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193390, 25 Aug 1991; TI image).

*Consv. status:* GLB., Least Concern (Mesterházy & Kumar 2020).

**Eleocharis congesta** D. Don, Prodr. Fl. Nepal.: 41 (1825). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 109 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 246 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 211 (2018).

*Eleocharis purpurascens* Boeckeler

ENG: Spikerush.

Densely caespitose perennial herbs, rhizomatous; culms 5–30 cm long.

*Habitat:* Moist places, edges of ponds and lakes, streamsides.

*Distribution:* Himalaya, Peninsular India, Sri Lanka, SC China to Japan and SE Asia.

NEPAL: W, C & E; 200–3000 m.

KSL: Known from Munsyari, Pithoragarh District, Uttarakhand in KSL India; 2450 m. It is likely also to be present in KSL Nepal.

*Remarks:* Distribution record for Pithoragarh fide GMBA (2012–2016).

*Consv. status:* GLB., Least Concern (Kumar 2011b).

**Eleocharis palustris** (L.) Roem. & Schult., Syst. Veg. 2: 151 (1817). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 109 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 247 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 212 (2018).

*Scirpus palustris* L., Sp. Pl. 1: 47 (1753).

ENG: Common spikerush.

Loosely caespitose perennial herbs; rhizomes creeping; culms few, 5–35 cm long.

*Habitat:* Swamps, wet meadows.

*Distribution:* Europe, N Africa, subtropical and temperate regions in Asia, N America, Greenland.

NEPAL: W & C; 2000–3800 m.

KSL: Bajhang in KSL Nepal; 2900–3000 m [also in Kumaon, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Khaptad, 2940 m (H Tabata, KR Rajbhandari & K Tsuchiya 187, 12 Jul 1976; KATH<sup>1</sup>). **UTTARAKHAND [INDIA]:** Kumaon, Radgadi, 3000 m (NC Nair 35644, 3 May 1965; L.1391165<sup>1</sup> image).

*Cons. status:* GLB., Least Concern (Lansdown 2013a).

**Eleocharis quinqueflora** (Hartmann) O. Schwarz, Mitt. Thüring. Bot. Ges. 1: 89 (1949). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 109 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 247 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 212 (2018).

*Scirpus quinqueflorus* Hartmann, Primae Lin. Inst. Bot., ed. 2: 85 (1767); *Eleocharis obscura* T. Koyama; *Eleocharis pauciflora* (Lightf.) Link; *Scirpus pauciflorus* Lightf.

ENG: Few-flower spikerush.

Caespitose perennial herbs; rhizomes stout, stoloniferous; culms erect, 2–20 cm long.

*Habitat:* Swamps, lake margins, wet meadows.

*Distribution:* Temperate N Hemisphere, Himalaya (Pakistan to Nepal), S America.

NEPAL: W & C; 2000–4300(–4900) m.

KSL: Humla in KSL Nepal; 4200–4700 m [Pulan Xian, SW Xizang in KSL China].

*Representative specimens.* **HUMLA:** Talung Valley, Ning Tsho, 4350 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa and S Lama CHH-1363A, 12 Sept 2012; TUCH<sup>1</sup>). **XIZANG (CHINA):** Pulan Xian (Qinghai-Tibet team vegetation group 5215984; PE) fide Kong & Yang (2019).

*Cons. status:* GLB., Least Concern (Akhani & Zehzad 2014c).

**Eleocharis uniglumis** (Link) Schult. in Schult. & Schult., Mant. 2: 88 (1824). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 248 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 212 (2018).

*Scirpus uniglumis* Link; *Eleocharis affinis* C.A. Mey. ex Claus; *Eleocharis uniglumis* var. *affinis* (C.A. Mey. ex Claus) Nyman

ENG: Slender spikerush, Onescale spikerush.

Perennial herbs with creeping rhizomes; culms single or tufted, erect, 8–30 cm long.

*Habitat:* Marshy areas, swamps, wet meadows.

*Distribution:* Subarctic and Temperate N Hemisphere, W & C Himalaya (Pakistan to Nepal).

NEPAL: W; 3300–3400 m.

KSL: Darchula in KSL Nepal; 3400 m.

*Representative specimen.* **DARCHULA:** Joge Tal – Simar Kharka, 3399 m (H Ikeda, S Noshiro, K Yonekura, K Akai, O Yano, N Yamamoto, CA Pendry, A Elliott, GD Bhatt & M Pathak 1215059, 18 Jul 2012; KATH<sup>1</sup>).

*Cons. status:* GLB., Least Concern (Lansdown 2013b).

**Erioscirpus** Palla, Bot. Zeitung, 2. Abt. 54: 151 (1896).

**Erioscirpus comosus** (Wall.) Palla, Bot. Zeitung (Berlin) 54: 151 (1896). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 248 (2017). **PI. 18.**

*Scirpus comosus* Wall. in Roxb., Fl. Ind. 1: 234 (1820); *Eriophorum comosum* (Wall.) Nees

NEP/NEP-L: Phurke-jhâr, Rânî bâbiyo (फुर्के-झार, रानी बाबियो).

ENG: Hairy cottongrass.

Densely caespitose perennial herbs with short, stout rhizomes; culms up to 120 cm.

*Habitat*: Rocky slopes, cliffs, dry grassy slopes, riversides.

*Distribution*: SW Asia, tropical and subtropical regions in S Asia (including Himalaya) to C & SE China, mainland SE Asia.

NEPAL: W, C & E; 160–2600 m.

KSL: Bajhang and Darchula in KSL Nepal; 900–2200 m.

*Representative specimens*. **BAJHANG**: Aagar – Dhalaun, 1770 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170792, 19 Aug 1991; KATH<sup>1</sup>, TI). **DARCHULA**: Darchula – Huti, 900 m (KR Rajbhandari & KJ Malla 5552, 24 Aug 1980; KATH<sup>1</sup>); Khar VDC-5, 1970 m (BB Shrestha, M Pandey & R Chhetri 90, 27 Sept 2015; TUCH<sup>1</sup>); above Janjari, Ghusa VDC, 2125 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-805, 26 Oct 2014; TUCH<sup>1</sup>).

*Local abund.*: Frequent in Darchula.

**Erioscirpus microstachyus** (Boeckeler) Palla, Bot. Zeitung (Berlin) 54: 151 (1896). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 248 (2017).

*Eriophorum microstachyum* Boeckeler, Linnaea 38: 399 (1874); *Scirpus microstachyus* (Boeckeler) T. Koyama

Densely caespitose perennial herbs; culms up to 20 cm.

*Habitat*: Rocky slopes, dry cliffs, moist rock crevices.

*Distribution*: Himalaya (Pakistan to Bhutan).

NEPAL: C & E; 500–2900 m.

KSL: Pithoragarh District, Uttarakhand in KSL India. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimen*. **UTTARAKHAND [INDIA]**: Kumaon, between Munsiri & Lilam, 1400 m (NC Nair 35562, 23 Apr 1965; L.1391384<sup>1</sup> image).

**Fimbristylis** Vahl, Enum. Pl. 2: 285 (1805).

**Fimbristylis bisumbellata** (Forssk.) Bubani, Dodecanthea: 30 (1850). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 110 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 249 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 213 (2018).

*Scirpus bisumbellatus* Forssk.; *Fimbristylis pallescens* (Roxb.) Nees; *Scirpus pallescens* Roxb.

Densely caespitose annual herbs, forming small tufts; culms slender, 5–30 cm.

*Habitat*: Wet places, marshy places.

*Distribution*: Europe, Africa, tropical to warm temperate regions in Asia, Australia.

NEPAL: W & C; 150–1100 m.

KSL: Known from Almora District, Uttarakhand, India. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimen*. **UTTARAKHAND [INDIA]**: Kumaon, below Almora, 1219 m (R Strachey & JE Winterbottom s.n.; *Fimbristylis pallescens* P00038222<sup>1</sup> image).

*Consu. status*: GLB., Least Concern (Mesterházy & Lansdown 2020).



**Fimbristylis complanata** (Retz.) Link, Hort. Bot. Berol. 1: 292 (1827). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 111 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 249 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 213 (2018).

*Scirpus complanatus* Retz., Observ. Bot. 5: 14 (1788).

ENG: Puerto Rico fimbry.

Caespitose perennial herbs with short rhizomes; culms 20–60 cm long or more.

*Habitat*: Marshes, wet grasslands, streamsides.

*Distribution*: Africa, tropical and subtropical regions in Asia, N Australia, S Pacific, C & S America.

NEPAL: W, C & E; 300–3200 m.

KSL: Bajhang and Darchula in KSL Nepal ; 2200 m.

*Representative specimens*. **BAJHANG**: Aagar – Dhalaun, 2200 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170787, 19 Aug 1991; TI) fide SHB (2013–2020). **DARCHULA**: Lithi to Khayekot, 2200 m (Ikeda *et al.* 1215021) fide Yano *et al.* (2015).

*Conserv. status*: GLB., Least Concern (Mesterházy & Anitha 2020).

**Fimbristylis dichotoma** (L.) Vahl, Enum. Pl. 2: 287 (1805). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 111 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 250 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 213 (2018).

*Scirpus dichotomus* L., Sp. Pl. 1: 50 (1753).

NEP: Pānī mothe (पानी मोथे).

ENG: Common fringe-rush, Forked fimbry, Tall fringe-rush.

Caespitose annuals or short-lived perennial herbs, with short rhizomes; culms deeply grooved.

*Habitat*: Damp grasslands, rocky slopes, marshes, along rivers, irrigation canals, weed in paddy fields.

*Distribution*: S Europe, Africa, tropical to warm temperate regions in Asia to S Pacific, N & S America.

NEPAL: W, C & E; 100–3000 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura and Doti; 1400–2200 m.

*Representative specimens*. **BAJHANG**: Aagar – Dhalaun, 1900 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170794, 19 Aug 1991; TI: image); between Talkot & Panalta, 2000–2100 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0146, 12 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA**: Serigaon – Bashala, 1550 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama and K Terada 9170587, 14 Aug 1991; KATH<sup>1</sup>, TI). **DARCHULA**: Khar VDC-2, 2150 m (BB Shrestha, M Pandey & R Chhetri 152, 28 Sept 2015; TUCH<sup>1</sup>). **DOTI**: Kola, 1400 m (MS Bista & DP Joshi 59, 27 Jul 1972, KATH<sup>1</sup>).

*Conserv. status*: GLB., Least Concern (Mesterházy *et al.* 2020b).

**Fimbristylis falcata** (Vahl) Kunth, Enum. Pl. 2: 239 (1837). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 111 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 250 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 213 (2018).

*Scirpus falcatus* Vahl, Enum. Pl. Obs. 2: 275 (1805); *Fimbristylis chaetorrhiza* (Nees) Kunth; *Fimbristylis junciformis* (Nees) Kunth; *Trichelostylis chaetorrhiza* Nees; *Trichelostylis junciformis* Nees

NEP: Mothe (मोथे).

Perennial herbs with short horizontal rhizomes.

*Habitat*: Grassy hillsides, wet ground.

*Distribution*: W Indian Ocean Islands, Himalaya, Tropical Asia to W Pacific Islands.

NEPAL: W & C; 200–1200 m.

KSL: Darchula in KSL Nepal; 920 m [also in Almora, Uttarakhand, India].

*Representative specimens.* **DARCHULA:** Bitale to Paribagar, 920 m (Ikeda *et al.* 1215011) fide Yano *et al.* (2015). **UTTARAKHAND [INDIA]:** Kumaon, Almora, 1000 m (R Strachey & JE Winterbottom s.n.; *Fimbristylis chaetorrhiza* P00045308<sup>1</sup> image).

**Fimbristylis rigidula** Nees in R. Wight, Contr. Bot. India: 99 (1834). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 112 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 252 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 215 (2018).

Loosely caespitose perennial herbs, with short rhizomes.

*Habitat:* Grasslands.

*Distribution:* Tropical and subtropical regions in Asia from Pakistan to Philippines.

NEPAL: C; 700–1300 m.

KSL: Known from Almora District, Uttarakhand, India. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimen.* **UTTARAKHAND (INDIA):** Binsar, Kumaon, 2286 m (R Strachey & JE Winterbottom 4; P00051220<sup>1</sup> image).

**Fimbristylis schoenoides** (Retz.) Vahl, Enum. Pl. 2: 286 (1805). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 112 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 252 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 215 (2018).

*Scirpus schoenoides* Retz., Observ. Bot. 5: 14 (1788).

NEP: Mothe (मोथे).

ENG: Ditch fimbry.

Caespitose annual or perennial herbs, with short rhizomes; culms slender, 10–40 cm.

*Habitat:* Cultivated fields, along streams, ditches, roadsides, marshy grasslands.

*Distribution:* Tropical Africa, tropical and subtropical regions in Asia, N Australia.

NEPAL: W, C & E; 150–1800 m.

KSL: Bajhang in KSL Nepal; 1200 m.

*Representative specimen.* **BAJHANG:** Chainpur – Jimkot, 1200 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170940, 25 Aug 1991; TI) fide SHB (2013–2020).

*Conserv. status:* GLB., Least Concern (Kumar 2011c).

**Isolepis** R. Br., Prodr. 221 (1810).

**Isolepis setacea** (L.) R. Br., Prodr.: 222 (1810). Koyama in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 112 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 253 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 215 (2018).

*Scirpus setaceus* L., Sp. Pl. 1: 49 (1753); *Mariscus setaceus* (L.) Moench; *Schoenoplectus setaceus* (L.) Palla

ENG: Bristle clubrush, Bristleleaf bulrush.

Caespitose annual herbs, with fibrous roots; culms 3–15 cm, filiform.

*Habitat:* Marshes, wet places, near streams.

*Distribution:* Europe, Africa, SW & C Asia to E Himalaya, Tibetan Plateau, N & SE China, mainland SE Asia.

NEPAL: W, C & E; 1300–4100 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 2500–3400 m.

*Representative specimens.* **BAJHANG:** On the way to Deurali from Dhalun, 2500–3200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0423, 15 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA:** Porakya Pass, 2545 m (H Tabata, KR Rajbhandari & K Tsuchiya 2617, 19 Aug 1976; KATH<sup>1</sup>). **DARCHULA:** Joge Tal to Simar Kharka, 3399 m (Ikeda *et al.* 1215060; E, TI) fide Yano *et al.* (2015).

*Conserv. status:* GLB., Least Concern (Lansdown 2013c).

## **Schoenoplectiella** Lye, Lidia 6: 20 (2003).

**Schoenoplectiella fuscrobens** (T. Koyama) Hayasaka, J. Jap. Bot. 87: 182 (2012). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 259 (2017).

*Scirpus fuscrobens* T. Koyama, Willdenowia 5: 491 (1969); *Schoenoplectus fuscrobens* (T. Koyama) T. Koyama  
Perennial herbs with decumbent rhizomes; culms not tufted.

*Habitat:* Moist places, damp meadows.

*Distribution:* C & E Himalaya (Nepal to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 1100–3200 m.

KSL: Darchula in KSL Nepal; 1100 m.

*Representative specimen.* **DARCHULA:** Okhal to Bitale, 1100 m (H Ikeda, S Noshiro, K Yonekura, K Akai, O Yano, N Yamamoto, CA Pendry, A Elliott, GD Bhatt & M Pathak 1215066, 22 Jul 2012; KATH<sup>1</sup>).

**Schoenoplectiella juncoides** (Roxb.) Lye, Lidia 6: 25 (2003). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 259 (2017).

*Scirpus juncoides* Roxb., Fl. Ind. 1: 216 (1820); *Schoenoplectus juncoides* (Roxb.) Palla; *Scirpus donianus* Spreng.;  
*Scirpus junciformis* Nees (1834), nom. illeg., non Retz. (1791); *Scirpus quadrangulus* D. Don

Caespitose herbs with fibrous roots; rhizomes inconspicuous or absent; culms fascicled.

*Habitat:* Wetlands, marshy places near streams, rice field margins.

*Distribution:* W Indian Ocean Islands, SW & C Asia, tropical and subtropical regions in S Asia, Himalaya, Tibetan Plateau, N & C China to Japan, mainland SE Asia to Pacific.

NEPAL: W, C & E; 100–2700 m.

KSL: Bajhang in KSL Nepal; 1200 m.

*Representative specimen.* **BAJHANG:** Chainpur – Jimkot, 1200 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170944, 25 Aug 1991; KATH<sup>1</sup>, TT<sup>1</sup> image).

**Schoenoplectiella lateriflora** (J.F. Gmel.) Lye, Lidia 6: 25 (2003). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 259 (2017).

*Scirpus lateriflorus* J.F. Gmel., Syst. Nat. ed. 13[bis]: 127 (1791); *Isolepis oryzetorum* Steud.; *Scirpus oryzetorum* (Steud.) Ohwi; *Scirpus supinus* var. *lateriflorus* (J.F. Gmel.) T. Koyama; *Schoenoplectus lateriflorus* (J.F. Gmel.) Lye; *Schoenoplectus supinus* (L.) Palla subsp. *lateriflorus* (J.F. Gmel.) Soják

Caespitose annual herbs; roots fibrous; culms 7–30 cm, terete, spikelets appearing pseudolateral.

*Habitat:* Wet ground, swamps, paddy fields.

*Distribution:* Tropical Africa, W Indian Oceanic Islands, SW & C Asia, West Siberia, tropical and subtropical regions in S Asia, S China, mainland SE Asia to N Australia.

NEPAL: W, C & E; 700–2000 m.

KSL: Bajhang in KSL Nepal; 1300–2000 m.

*Representative specimens.* **BAJHANG:** Kinara – Chainpur, 1310–1540 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193793, 24 Aug 1991; TI) fide SHB (2013–2020); Jimkot – Khaptad National Park, 1480–2980 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193812, 26 Aug 1991; TI) fide SHB (2013–2020).

*Conserv. status:* GLB., Least Concern (Mesterházy & Mani 2020).

## POACEAE

**Achnatherum** P. Beauv., Ess. Agrostogr.: 19, 146, pl. 6, f. 7 (1812).

**Achnatherum brandisii** (Mez) Z.L. Wu, Acta Phytotax. Sin. 34: 154 (1996). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 262 (2017).

*Stipa brandisii* Mez, Repert. Spec. Nov. Regni Veg. 17: 207 (1921).

Loosely caespitose perennial herbs; culms erect, 70–150 cm.

*Habitat:* Dry stony slopes.

*Distribution:* NE Afghanistan, NW Pakistan, Himalaya (NW India to Bhutan), Tibetan Plateau, W & C China.

NEPAL: W & C; 2200–4000 m.

KSL: Known from Pithoragarh, Uttarakhand in KSL India. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimen.* **UTTARAKHAND (INDIA):** Kumaon, Kali Valley, near Garbyang, 3353–3658 m (JF Duthie 3585, 14 Sept 1884; *Stipa brandisii* BM011026738<sup>1</sup> image).

**Achnatherum staintonii** (Bor) M. Nobis & P.D. Gudkova, PhytoKeys 128: 112 (2019).

*Stipa staintonii* Bor, Bull. Bot. Surv. India 7: 133 (1965); *Stipella staintonii* (Bor) Röser & Hamasha; *Stipellula staintonii* (Bor) Röser & H.R. Hamasha

Caespitose perennial herbs; culms erect, 30–65 cm.

*Habitat:* Dry stony slopes, exposed cliffs, stony sandy slopes, scrublands.

*Distribution:* Endemic to Nepal, W & C; 2600–4200 m.

KSL: Humla in KSL Nepal; 3500 m.

*Representative specimen.* **HUMLA:** Chankheli Lagna, 3500 m (KR Rajbhandari & B Roy 3861, 25 Jul 1979; KATH<sup>1</sup>).

**Agropyron** Gaertn., Novi Comment. Acad. Sci. Imp. Petrop. 14(1): 539 (1770).

**Agropyron thomsonii** Hook. f., Fl. Brit. India 7: 370 (1896). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 223 (2018).

*Elymus nayarii* Karthik.; *Elymus thomsonii* (Hook. f.) Melderis

Caespitose perennial herbs; culms 13–50(–100) cm.

*Habitat:* Grassy slopes.

*Distribution:* W & C Himalaya (NW India, Nepal).

NEPAL: W & C; 2600–3800 m.

KSL: Known from Pithoragarh, Uttarakhand in KSL India. It is likely also to be present in KSL area of Far West Nepal.

*Remarks:* Records for Uttarakhand fide GMBA (2012–2016).

## **Agrostis** L., Sp. Pl. 1: 61 (1753).

**Agrostis micrantha** Steud., Syn. Pl. Glumac. 1: 170 (1854). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 120 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 263 (2017).

*Agrostis himalayana* Bor; *Agrostis myriantha* Hook. f.

Caespitose perennial herbs; culms erect, geniculately ascending or decumbent, 30–100 cm.

*Habitat:* Grassland, marshes, riversides, roadsides, grassy places in mixed broad-leaved forests.

*Distribution:* Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, C & SE China, mainland SE Asia.

NEPAL: W, C & E; 1400–4000 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 1450–3800 m.

*Representative specimens.* **BAJHANG:** Talkot – Setibagar, 1450 m (KR Rajbhandari 15525, 23 Aug 1991; KATH<sup>1</sup>); between Dhalun & Kakarkot, below Deurali, NW aspect, 2900–2200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0559, 16 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA:** Pategaon – Badigaon, 3100 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170697, 16 Aug 1991; TI) fide SHB (2013–2020). **DARCHULA:** Chameliya Valley, Nete, 3800 m (KM Ghimire & M Adhikari F048, 13 Sept 2015; TUCH<sup>1</sup>).

**Agrostis munroana** Aitch. & Hemsl., J. Linn. Soc., Bot. 19: 192 (1882). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 120 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 264 (2017).

*Calamagrostis munroana* (Aitch. & Hemsl.) Boiss.; *Calamagrostis munroana* var. *stricta* Hook. f.

Caespitose annual herbs; culms erect or geniculately ascending, 10–55 cm long.

*Habitat:* Grassy slopes, moist meadows.

*Distribution:* Afghanistan, NW Pakistan, W & C Himalaya (Kashmir to Nepal), Tibetan Plateau, SC China.

NEPAL: W & C; 2500–4900 m.

KSL: Darchula in KSL Nepal [Pithoragarh, Uttarakhand in KSL India]; 2550–4570 m.

*Representative specimens.* **DARCHULA (NEPAL):** Kuntisau, 2550 m (KR Rajbhandari & KJ Malla 5698, 29 Aug 1980; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, Ralam river, 3350 m (Strachey & Winterbottom 3; BM011027990<sup>1</sup> image); above Garbyang in Kali Valley, Byans, 3655 m (JF Duthie ?3536, 15 Sept 1884; BM011027989<sup>1</sup> image); Kumaon, Nipchang Valley in Darma, 4265–4570 m (JF Duthie 3536, 31 Aug 1884; E00240914<sup>1</sup> image); Barji Kang Pass, 4420 m (R Strachey & JE Winterbottom 4; lectotype of *Calamagrostis munroana* var. *stricta* K000032340<sup>1</sup> image).

**Agrostis nervosa** Nees ex Trin., Mém. Acad. Imp. Sci. Saint-Petersbourg, Sér. 6, Sci. Math., Seconde Pt. Sci. Nat. 6(2): 328 (1841). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 120 (1978).

*Agrostis clarkei* Hook. f.; *Agrostis divaricata* Griseb. (1868), nom illeg., non Hoffm. (1800); *Agrostis sikkimensis* Bor

Caespitose perennial herbs; culms slender, erect, 10–45 cm.

*Habitat:* Grassy slopes, meadows, stony slopes, open forests, wet sand and gravel.

*Distribution:* NW Pakistan, Himalaya (Kashmir to Bhutan), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 2300–4300 m.

KSL: Known from neighboring Bajura District, Nepal; 3300–4250 m.

*Representative specimens.* **BAJURA:** Ghodi Lekh, 3300 m (KR Rajbhandari 15166, 16 Aug 1991; KATH<sup>1</sup>); Chauki Lekh, 4222 m (BSH C62, 18 Aug 2017) fide RBGE (2014).

*Consu. status:* GLB., Least Concern (Romand-Monnier 2013).

**Agrostis pendryi** Paszko, Phytotaxa 175: 29 (2014). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 224 (2018).

Caespitose perennial herbs; culms slender, erect, 8–45 cm.

*Habitat:* Open grassy slopes, streamsides.

*Distribution:* W & C Himalaya (NW India, Nepal).

NEPAL: C & E; 3000–4200 m.

KSL: Known from upper Mahakali in KSL India. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimen.* **UTTARAKHAND (INDIA):** Barjikang Pass, 4420 m (R Strachey & JE Winterbottom s.n.; K000838175<sup>1</sup> image).

**Agrostis pilosula** Trin., Mém. Acad. Imp. Sci. Saint-Pétersbourg, Sér. 6, Sci. Math., Seconde Pt. Sci. Nat. 6(2): 372 (1841). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 120 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 264 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 224 (2018).

*Agrostis pilosula* var. *wallichiana* (Steud.) Bor; *Agrostis pilosula* var. *alpestris* (Hook. f.) Veldkamp; *Agrostis royleana* Trin.; *Agrostis wallichiana* Steud.; *Calamagrostis jacquemontii* Hook. f.; *Calamagrostis pilosula* (Trin.) Hook. f.; *Calamagrostis pilosula* var. *alpestris* Hook. f.

NEP-L: Gājyo (गाज्यो).

Caespitose annual or short-lived perennial herbs; culms erect or ascending, 10–40 cm long.

*Habitat:* Grassy slopes, open moist slopes, cliffs, rock ledges, alpine pasture, open forests, river banks.

*Distribution:* SW Pakistan, Himalaya (Kashmir to Bhutan), Tibetan Plateau, Peninsular India, Sri Lanka, SC China.

NEPAL: W, C & E; 1100–4900 m.

KSL: Baitadi, Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura; 1400–3900 m [Bageshwar and Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAITADI:** Baitadi, 1500 m (I Sharma, R Joshi, R Uprety & I Pandey 643, 22 Aug, 1981; KATH<sup>1</sup>). **BAJHANG:** Gangadi, between Rishinri & Talkot, 1550 m (H Tabata, KR Rajbhandari & K Tsuchiya 226, 21 Jul 1976; KATH<sup>1</sup>); Saipal, 3909 m (H Tabata, KR Rajbhandari & K Tsuchiya 1815 A, 31 Jul 1976; KATH<sup>1</sup>). **BAJURA:** Porakya, 2600 m (KR Rajbhandari 14785, 12 Aug 1991; KATH<sup>1</sup>). **DARCHULA:** Khar VDC-2, 1835 m (BB Shrestha, M Pandey & R Chhetri 162, 28 Sept 2015; TUCH<sup>1</sup>); near Ghusa, 2025 m (SK Ghimire, LR Joshi, B Awasthi & CK Subedi ANCA-19, 23 Oct 2013; TUCH<sup>1</sup>); opposite Budhi Village, 3048–3353 m (JF Duthie 6229, 18 Jul 1886; K000032341<sup>1</sup> image); Thadapani, 3900 m (KM Ghimire & M Adhikari F211, 11 Sept 2015; TUCH<sup>1</sup>). **HUMLA:** Above Juma Kharka, 3850 m (PR Shakya, MN Subedi & R Uprety 8737, 18 Aug 1985; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Bageshwar, 1676 m (R Blinkworth, Wallich Catalogue 3775a; syntype of *Agrostis wallichiana* BM001122921<sup>1</sup> image); above Namik, 3048 m (R Strachey & JE Winterbottom 5, 1840; P02244299<sup>1</sup> image).

*Local abund.:* Frequent in Darchula; not known for other regions.

*Ethnobot. use:* In Darchula, the plant is harvested and stored for winter fodder.

**Andropogon** L., Sp. Pl. 2: 1045 (1753).

**Andropogon munroi** C.B. Clarke, J. Linn. Soc., Bot. 25: 87, t. 37 (1889). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 266 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 225 (2018).

*Andropogon hookeri* Munro ex Hack.; *Andropogon tristis* Nees ex Hack.; *Cymbopogon hookeri* (Munro ex Hack.) Stapf ex Bor; *Cymbopogon munroi* (C.B. Clarke) Noltie; *Cymbopogon tibeticus* Bor

Caespitose perennial herbs, rhizomatous; culms 30–150 cm high.

*Habitat*: Open slopes, steep rocky slopes, among scrubs, pine forests.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 1200–4000 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 1800–3350 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Talkot–Aagar, 2100 m (KR Rajbhandari 15330, 18 Aug 1991; KATH<sup>1</sup>). **BAJURA**: Bashala – Pategaon, 1890 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170625, 15 Aug 1991; TI) fide SHB (2013–2020). **DARCHULA**: Khar VDC-4, 1845 m (BB Shrestha, M Pandey & R Chhetri D308, 29 Sept 2015; TUCH<sup>1</sup>); near Ghusa, 2025 m (SK Ghimire, LR Joshi, B Awasthi & CK Subedi 20, 23 Oct 2013; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Káli Valley, Byáns, 3048–3353 m (JF Duthie 6130, 27 Jul 1886; syntype of *A. tristis* W 1916-0028554<sup>1</sup> image); Dhauli Valley, 3048–3353 m (JF Duthie 6136, 6 Aug 1886; K000245815<sup>1</sup> image).

*Local abund.*: Occasional in Darchula; not known for other regions.

**Anthoxanthum** L., Sp. Pl. 1: 28 (1753).

**Anthoxanthum hookeri** (Griseb.) Rendle, J. Linn. Soc., Bot. 36: 380 (1904). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 121 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 267 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 225 (2018).

*Ataxia hookeri* Griseb., Nachr. Königl. Ges. Wiss. Georg-Augusts-Univ. 3: 77 (1868); *Hierochloe elongata* Hand.-Mazz.; *Hierochloe hookeri* (Griseb.) Maxim.

Loosely caespitose perennial herbs; rhizomes short; culms erect or ascending, 20–80 cm long.

*Habitat*: Grassy slopes, dry rocky ridges, cliffs, scrub, open forests.

*Distribution*: C & E Himalaya (Nepal to Bhutan), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 1900–4000 m.

KSL: Humla in KSL Nepal, and neighboring Bajura; 3100–3500 m.

*Representative specimens*. **BAJURA**: Ghodi Lekh, 3100 m (KR Rajbhandari 15210, 16 Aug 1991; KATH<sup>1</sup>). **HUMLA**: Chankheli Lagna, 3500 m (KR Rajbhandari & B Roy 3884, 25 Jul 1979; KATH<sup>1</sup>).

**Anthoxanthum laxum** (Hook. f.) Veldkamp, Blumea 30: 348 (1985). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 267 (2017).

*Hierochloe laxa* Hook. f., Fl. Brit. India 7: 222 (1896).

NEP-L: Dhādadi (धदडी).

Caespitose perennial herbs; culms erect, 20–75 cm high.

*Habitat*: Alpine meadows, open grassy slope, rock ledges, rock cliff.

*Distribution*: Afghanistan, Pakistan, W & C Himalaya (Kashmir to Nepal).

NEPAL: W & C; 3000–4200 m.

KSL: Bajhang and Darchula in KSL Nepal; 3000–4200 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Between Chaurapani & Dahachaur, 3695 m (H Tabata, KR Rajbhandari & K Tsuchiya 2003, 1 Aug 1976; KATH<sup>1</sup>). **DARCHULA:** Upper Chameliya Valley, Thadapani, Pilkanda, 4000 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1413, 23 Jul 2015; TUCH<sup>1</sup>); upper Chameliya, Api Base Camp, Thadapani-Pilkanda, 4200 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-780, 24 Oct 2014; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA):** Tola, 3658 m (RC Thakur 728, 15 Jun 1948; L.1211872<sup>1</sup> image; MICH 1489466<sup>1</sup> image); Kumaon (R Blinkworth 3796a; lectotype K000032280<sup>1</sup> image).

*Local abund.:* Frequent in Darchula at high altitudes, nor known for other regions.

## **Apluda** L., Sp. Pl. 1: 82 (1753).

**Apluda mutica** L., Sp. Pl. 1: 82 (1753). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 121 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 268 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 226 (2018).

*Apluda aristata* L.; *Apluda mutica* subsp. *aristata* (L.) Babu; *Apluda varia* Hack.; *Apluda varia* var. *aristata* (L.) Rendle

NEP-L: Phulero (फुलेरो). NEP: Dānkle khar, Dhalke khar (डाँक्ले खर, ढल्के खर).

ENG: Mauritian grass.

Rambling perennial herbs; culms up to about 3 m long, rooting from the lower nodes.

*Habitat:* Open grassy slopes, thickets, along forest margins.

*Distribution:* W Indian Ocean Islands, tropical and subtropical regions in Asia to W Pacific.

NEPAL: W, C & E; 65–2800 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 1200–2200 m.

*Representative specimens.* **BAJHANG:** Aagar – Dhalaun, 2100 m (KR Rajbhandari 15382, 19 Aug 1991; KATH<sup>1</sup>).

**BAJURA:** Kolti – Birseni, 1400 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170461, 11 Aug 1991; TI) fide SHB (2013–2020); Bashala Gaon to Majpali Gaon, 2000 m (KR Rajbhandari 15041, 15 Aug 1991; KATH<sup>1</sup>). **DARCHULA:** Chameliya Valley, Okhal, 1230 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-832, 28 Oct 2014; TUCH<sup>1</sup>); Khar VDC, 1865 m (BB Shrestha, M Pandey & R Chhetri 336, 1 Oct 2015; TUCH<sup>1</sup>); Chameliya Valley, above Janjari, Ghusa VDC, 2125 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-803, 26 Oct 2014; TUCH<sup>1</sup>).

*Local abund.:* Frequent in Darchula.

## **Aristida** L., Sp. Pl. 1: 82 (1753).

**Aristida adscensionis** L., Sp. Pl. 1: 82 (1753). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 121 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 268 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 226 (2018).

*Aristida bromoides* Kunth; *Aristida depressa* Retz.; *Aristida maritima* Steud.; *Aristida vulgaris* Trin. & Rupr.

ENG: Annual bristle grass, Annual three-awn.

Caespitose annual herbs; culms slender, erect or geniculately ascending, 10–100 cm.

*Habitat:* Dry slopes, rocky slopes, river banks.

*Distribution:* Tropical to warm temperate regions of the World.

NEPAL: W, C & E; 200–2100 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; 1100–2100 m.

*Representative specimens.* **BAJHANG:** Aagar – Dhalaun, 2100 m (KR Rajbhandari 15380, 19 Aug 1991; KATH<sup>1</sup>). **BAJURA:** Berma – Kolti, 1100 m (KR Rajbhandari 14760, 10 Aug 1991, KATH<sup>1</sup>).



**Arthraxon** P. Beauv., Ess. Agrostogr. 111 (1812).

**Arthraxon hispidus** (Thunb.) Makino, Bot. Mag. (Tokyo) 26: 214 (1912). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 269 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 226 (2018).

*Phalaris hispida* Thunb. in J.A. Murray, Syst. Veg., ed 14: 104 (1784); *Alectoridia quartiniana* A. Rich.; *Arthraxon quartinianus* (A. Rich.) Nash; *Batratherum micans* Nees; *Andropogon micans* (Nees) Steud.; *Arthraxon micans* (Nees) Hochst.; *Arthraxon ciliaris* P. Beauv.

NEP: Jhyānte-ghāns (भ्यान्टे-घाँस).

ENG: Jointhead, Hairy jointgrass, Small carpetgrass.

Mat-forming annual herbs; culms slender, decumbent, weakly ascending, to 30 cm long.

*Habitat*: Moist places, streamsides, damp meadows, rocky cliffs.

*Distribution*: Tropical Africa, W Indian Ocean Islands, SW & C Asia, tropical and subtropical regions in S Asia, Himalaya, Tibetan Plateau, N & C China to Japan, mainland SE Asia to E Australia.

NEPAL: W, C & E; 300–2900 m.

KSL: Bajhang in KSL Nepal; 2000–2100 m.

*Representative specimen*. **BAJHANG**: Between Talkot & Panalta, 2000–2100 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0189, 12 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>).

**Arthraxon lancifolius** (Trin.) Hochst., Flora 39: 188 (1856). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 121 (1978). Rajbhan-dari & Rai, Handbk. Fl. Pl. Nepal 1: 269 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 227 (2018).

*Andropogon lancifolius* Trin., Mém. Acad. Imp. Sci. St.-Petersbourg, Sér. 6, Sci. Math. 2(4): 271 (1832).

NEP: Chitre-ghāns (चित्रे-घाँस).

Loosely caespitose mat-forming annual herbs; culms slender, decumbent, 5–30 cm long.

*Habitat*: Grasslands, damp rocky slopes, forest margins.

*Distribution*: Tropical Africa, Arabian Peninsula, tropical and subtropical regions S Asia, Himalaya, SC China, mainland SE Asia to New Guinea.

NEPAL: W, C & E; 800–2700 m.

KSL: Bajhang and Darchula in KSL Nepal; 1600–2050 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Talkot – Aagar (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193768, 18 Aug 1991; TI) fide SHB (2013–2020).

**DARCHULA**: Khar VDC-2, 1845 m (BB Shrestha, M Pandey & R Chhetri D56, 26 Sept 2015; TUCH<sup>1</sup>).

*Remarks*: Records for Pithoragarh fide GMBA (2012–2016).

**Arthraxon prionodes** (Steud.) Dandy in F.W. Andrews, Fl. Pl. Sudan 3: 399 (1956). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 122 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 270 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 227 (2018).

*Andropogon prionodes* Steud., Syn. Pl. Glumac. 1: 383 (1854); *Andropogon serrulatus* A. Rich.

Loosely caespitose rhizomatous perennial herbs; culms stiff, erect or trailing, up to 100 cm long.

*Habitat*: Rocky slopes, sandy or gravelly banks, streamsides, roadsides, open forests.

*Distribution*: E Africa, Arabian Peninsula to Afghanistan, tropical and subtropical regions in S Asia, Himalaya, Tibetan Plateau, C & SE China, mainland SE Asia.

NEPAL: W & C; 1100–2500 m.

KSL: Known from neighboring Bajura District, Nepal; 1400–2200 m.

*Representative specimens.* **BAJURA:** Kolti – Birseni, 1390 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193208, 11 Aug 1991; TI) fide SHB (2013–2020); Birseni – Porakya, 2200 m (KR Rajbhandari 14819, 12 Aug 1991; KATH<sup>1</sup>).

## **Arundinella** Raddi, Agrostogr. Bras. 36 (1823).

**Arundinella nepalensis** Trin., Gram. Panic.: 62 (1826). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 122 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 271 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 228 (2018).

*Acratherum miliaceum* Link; *Arundinella glabra* Hook. & Arn.; *Arundinella miliacea* (Link) Nees; *Arundinella rigida* Nees; *Arundinella virgata* Janowski

NEP: Phurke khar, Rānī khar (फुर्के खर, रानी खर).

ENG: Reed grass.

Caespitose perennial herbs, with short, woody rhizomes; culms erect, to 100 cm or more in length.

*Habitat:* Grassland, grassy slopes, thickets, forests, rocky places.

*Distribution:* Tropical Africa, W Indian Ocean Islands, Arabian Peninsula, tropical and subtropical regions in S Asia, Himalaya, Tibetan Plateau, S China, mainland SE Asia to N & E Australia.

NEPAL: W, C & E; 200–3900 m.

KSL: Darchula in KSL Nepal, and neighboring Bajura; 1600–1900 m.

*Representative specimens.* **BAJURA:** Bashala – Majpani – Pategaon, 1890 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170607, 15 Aug 1991; KATH<sup>1</sup>, TI).

**DARCHULA:** Khar VDC-2, 1580 m (BB Shrestha, M Pandey & R Chhetri 324, 30 Sept 2015; TUCH<sup>1</sup>).

*Conserv. status:* GLB., Least Concern (Diop 2020a).

**Arundinella setosa** Trin., Gram. Panic. 63 (1826). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 122 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 272 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 228 (2018).

*Arundinella bidentata* Keng; *Arundinella capillaris* Hook. f., nom. illeg. superfl.; *Arundinella mutica* Nees ex Steud.; *Arundinella setosa* var. *esetosa* Bor ex S.M. Phillips & S.L. Chen

NEP-L: Gājyo (गाज्यो).

ENG: Reed grass.

Caespitose perennial herbs, with short woody rhizomes; culms slender, erect or geniculately ascending, to 100 cm or more in length.

*Habitat:* Open forests, forest margins, open grassland, grassy slopes, margin of paddy fields.

*Distribution:* Tropical and subtropical regions in S Asia, Himalaya, S China, mainland SE Asia to W & N Australia.

NEPAL: W, C & E; (500–)1200–2600 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 1500–2600 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Rupatola, 1500–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0079, 11 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>); Rosa – Roshila Danda, 2100 m (KR Rajbhandari 15503, 21 Aug 1991, KATH<sup>1</sup>). **BAJURA:** Bashala – Majpani – Pategaon, 1890 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170623, 15 Aug 1991; KATH<sup>1</sup>, TI). **DARCHULA:** Chameliya Valley, above Makarigad, Khandeshwari VDC, 1500 m (SK Ghimire, LR Joshi, B Awasthi & CK Subedi ANCA-016, 22 Oct 2013; TUCH<sup>1</sup>); Chameliya Valley, above

Janjari, Ghusa VDC, 2125 m (SK Ghimire, S Thapa, B Awasthi, S Lo, C Thapa & MR Paudeyal ANCA-808, 26 Oct 2014; TUCH<sup>1</sup>).

*Remarks:* Records for Pithoragarh fide GMBA (2012–2016).

*Local abund.:* Common.

*Ethnobot. use:* The plant is harvested and stored for later use as winter fodder.

## **Arundo** L., Sp. Pl. 1: 81 (1753).

**Arundo donax** L., Sp. Pl. 1: 81 (1753). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 123 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 272 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 229 (2018).

*Arundo bifaria* Retz.; *Arundo bambusifolia* Hook. f.; *Arundo bengalensis* Retz.; *Donax arundinaceus* P. Beauv.

NEP: Thūlo narkat (ठूलो नरकट).

ENG: Bamboo reed, Giant-reed, Spanish-reed. HIN: Badā nal, Naldurā (बडा नल, नलदुरा).

Robust perennial reeds, with creeping woody rhizomes; culms stout, erect, 2–3 m or more in length.

*Habitat:* Damp places, river banks, forests, also thrives in dry habitats.

*Distribution:* Native to tropical and warm temperate regions of the Old World; now widely dispersed into all warmer climates of the world.

NEPAL: W, C & E; 1500–2800 m.

KSL: Bajhang in KSL Nepal; 1800–2300 m [also in Uttarakhand, India].

*Representative specimens.* **BAJHANG:** Rasa – Roshila Danda, 2100 m (KR Rajbhandari 15506, 21 Aug 1991; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaun (JF Duthie 5102, 2 Oct 1885; BM000949274<sup>1</sup> image).

*Conserv. status:* GLB., Least Concern (Lansdown 2013d).

## **Avena** L., Sp. Pl. 1: 79 (1753).

**Avena fatua** L., Sp. Pl. 1: 80 (1753). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 123 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 273 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 229 (2018).

*Avena fatua* var. *glabrata* Peterm.; *Avena fatua* var. *pilosa* Syme; *Avena japonica* Steud.; *Avena sativa* var. *sericea* Hook. f.

NEP: Jangalī jau (जङ्गली जौ).

ENG: Wild-oat, Spring wild-oat.

Annual herbs; culms erect or geniculate at base, 50–150 cm long, unbranched.

*Habitat:* Open places, grassy slopes, wheat fields.

*Distribution:* Native to Macaronesia, Europe, N Africa, subtropical and temperate regions in Asia; introduced and naturalized elsewhere.

NEPAL: W, C & E; 1800–3600 m.

KSL: Known from Bageshwar District, Uttarakhand in KSL India, and nearby Jumla District, Nepal. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimen.* **UTTARAKHAND (INDIA):** Loharkhet, 1676 m (K Walter 20060, 23 Apr 1948; NCSC 00006126<sup>1</sup> image).

*Conserv. status:* GLB., Least Concern (Rhodes *et al.* 2016).

**Axonopus** P. Beauv., Ess. Agrostogr. 12 (1812).

**Axonopus compressus** (Sw.) P. Beauv., Ess. Agrostogr. 12 (1812). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 123 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 273 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 229 (2018).

*Milium compressum* Sw., Prodr.: 24 (1788); *Paspalum compressum* (Sw.) Raspail. (1825), nom. illeg., non Raf (1817); *Paspalum depressum* Steud.; *Paspalum macropodium* Steud.;

NEP: Chapare-jhār (चपरे-झार).

ENG: Broad-leaved carpet grass, Dorrington grass.

Mat-forming perennial herbs, with creeping stolons; culms decumbent, 15–60 cm long, hairy at nodes.

*Habitat*: Moist places, grassy slopes, fields, roadside.

*Distribution*: Native to Tropical America; widely naturalized elsewhere.

NEPAL: W, C & E; 400–2000 m.

KSL: Darchula in KSL Nepal; 860 m.

*Representative specimen*. **DARCHULA**: Khalanga, 860 m (BB Shrestha, M Pandey & R Chhetri 435, 9 Oct 2015; TUCH<sup>1</sup>).

**Bothriochloa** Kuntze, Revis. Gen. Pl. 2: 762 (1891).

**Bothriochloa bladhii** (Retz.) S.T. Blake, Proc. Roy. Soc. Queensland 80: 62 (1969). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 275 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 231 (2018).

*Andropogon bladhii* Retz., Observ. Bot. 2: 27 (1781); *Andropogon glaber* Roxb.; *Andropogon intermedius* R. Br.; *Andropogon punctatus* Roxb.; *Bothriochloa glabra* (Roxb.) A. Camus; *Bothriochloa intermedia* (R. Br.) A. Camus; *Bothriochloa intermedia* var. *punctata* (Roxb.) Keng

ENG: Australian bluestem, Caucasian bluestem.

Caespitose perennial herbs with short rhizomes; culms erect, 30–100 cm or more in length.

*Habitat*: Exposed slopes, grassland, rocky slopes, streamsides, swamp margins.

*Distribution*: Africa, W Indian Ocean Islands, SW & C Asia, tropical and subtropical regions in S Asia, N & C China, Japan, mainland SE Asia to Australasia.

NEPAL: W, C & E; 200–2600 m.

KSL: Darchula in KSL Nepal, and neighboring Bajura and Dadeldhura; 900–2300 m.

*Representative specimens*. **BAJURA**: Kuru, 2285 m (BHS C83, 20 Aug 2017) fide RBGE (2014). **DADEL DHURA**: Gaire, 1800 m (KR Rajbhandari, PM Regmi and KJ Malla 5404, 15 Aug 1980, KATH<sup>1</sup>, TT<sup>1</sup> image). **DARCHULA**: Khar, 1770 m (BB Shrestha, M Pandey & R Chhetri 157, 28 Sept 2015; TUCH<sup>1</sup>).

**Bothriochloa ischaemum** (L.) Keng, Contr. Biol. Lab. Sci. Soc. China, Bot. Ser. 10: 201 (1936). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 123 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 275 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 231 (2018).

*Andropogon ischaemum* L., Sp. Pl. 2: 1047 (1753); *Dichanthium ischaemum* (L.) Roberty

ENG: Yellow bluestem.

Caespitose perennial herbs; culms slender, erect or geniculately ascending, 20–70 cm long.

*Habitat*: Dry rocky and sandy slopes, roadsides, disturbed places, open grasslands.

*Distribution*: Europe, NW Africa, SW & C Asia through Himalaya to China and Korea.

NEPAL: W, C & E; 100–3600 m.

KSL: Humla in KSL Nepal, and neighboring Mugu; 1800–2700 m.

*Representative specimens.* HUMLA: Pucha, 2650 m (KR Rajbhandari & B Roy 4081, 28 Jul 1979; KATH<sup>1</sup>).

MUGU: Gumgadi – Ruga, 1800 m (KR Rajbhandari & B Roy 3800, 23 Jul 1979; KATH<sup>1</sup>).

**Bothriochloa pertusa** (L.) A. Camus, Ann. Soc. Linn. Lyon, n.s., 76: 164 (1931). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 123 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 275 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 231 (2018).

*Holcus pertusus* L., Mant. Pl. 2: 301 (1771); *Amphilophis pertusa* (L.) Nash ex Stapf; *Andropogon pertusus* (L.) Willd.

ENG: Indian couch grass, Pitted beardgrass, Pitted bluestem.

Mat-forming perennial herbs, stoloniferous; culms erect or geniculately ascending, 30–60 cm long.

*Habitat*: Grassy slopes, disturbed ground.

*Distribution*: W Indian Ocean Islands, SW Asia, tropical and subtropical regions in S Asia, S China, mainland SE Asia to W Pacific.

NEPAL: W, C & E; 200–3800 m.

KSL: Humla in KSL Nepal; 2400 m.

*Representative specimen.* HUMLA: Rimi Gaon, 2400 m (KR Rajbhandari & B Roy 4012, 27 Jul 1979; KATH<sup>1</sup>).

**Brachypodium** P. Beauv., Ess. Agrostogr.: 100 (1812).

**Brachypodium pinnatum** (L.) P. Beauv., Ess. Agrostogr.: 101, 155 (1812). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 124 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 278 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 232 (2018).

*Bromus pinnatus* L., Sp. Pl. 1: 78 (1753); *Agropyron pinnatum* (L.) Chevall.

ENG: False brome, Heath falsebrome, Tor-grass.

Caespitose perennial herbs; rhizomes slender, spreading; culms erect, up to 120 cm long.

*Habitat*: Grassy slopes.

*Distribution*: NW Africa, Europe, SW & N Asia, Himalaya (N India, Nepal), Tibetan Plateau, SC China to Mongolia.

NEPAL: W, C & E; 1800–3800 m.

KSL: Bajhang and Darchula in KSL Nepal; 2000–2100 m.

*Representative specimens.* BAJHANG: Talkot – Agar, 2100 m (KR Rajbhandari 15268, 18 Aug 1991; KATH<sup>1</sup>).

DARCHULA: Khar-7, 2060 m (BB Shrestha, M Pandey and R Chhetri 245, 30 Sept 2015; TUCH<sup>1</sup>).

**Brachypodium sylvaticum** (Huds.) P. Beauv., Ess. Agrostogr.: 101, 155 (1812). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 124 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 278 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 233 (2018).

*Festuca sylvatica* Huds., Fl. Angl. 1: 38 (1762); *Brachypodium sylvaticum* var. *khasianum* Hook. f.; *Brachypodium sylvaticum* var. *longe-aristatum* Hook. f.; *Brachypodium sylvaticum* var. *luzoniense* (Hack.) H. Hara; *Brachypodium sylvaticum* var. *pseudodistachyon* Hook. f.

ENG: False brome, False wood brome, Slender false brome.

Caespitose perennial herbs; culms slender to stout, erect or geniculately ascending, 30–100 cm long.

*Habitat*: Forests, open slopes among bushes, grassy and rocky slopes, grazed meadows.

*Distribution*: Macaronesia, Europe, N Africa, tropical to temperate regions in Asia.

NEPAL: W, C & E; 1200–4000 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura; 1500–2900 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Trail from Budkhori to Dhahidunga Kharka, 2829 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913102, 12 Jul 2009; E00509688, KATH<sup>1</sup>). **BAJURA:** Birseni – Porakya, 2000 m (KR Rajbhandari 14878, 12 Aug 1991; KATH<sup>1</sup>). **DARCHULA:** Thin – Dandap, 2500 m (KR Rajbhandari & KJ Malla 5671, 28 Aug 1980; KATH<sup>1</sup>). **HUMLA:** Durpa – Simikot, 2300 m (KR Rajbhandari & B Roy 4160, 30 Jul 1979; KATH<sup>1</sup>); Melchham, 2500 m (KR Rajbhandari & B Roy 4069, 28 Jul 1979; KATH<sup>1</sup>). **UTTRARAKHAND (INDIA):** Dhauli Valley, Kumaon, 2743–2438 m (JF Duthie 6227, 7 Aug 1886; K000913805<sup>1</sup> image).

## **Briza** L., Sp. Pl. 1: 70 (1753).

**Briza media** L., Sp. Pl. 1: 70 (1753). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 124 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 278 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 233 (2018).

*Poa media* (L.) Cav.

ENG: Perennial quaking grass.

Caespitose perennial herbs with short rhizomes; culms erect, slender, 40–60 cm long.

*Habitat:* Alpine meadows, grassland, among shrubs in grassland.

*Distribution:* Europe, N Africa, SW Asia, N Asia (Russia), Himalaya (Kashmir to Bhutan), Tibetan Plateau, SC China, Japan.

NEPAL: W, C & E; (100–)800–4000 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura; 3100–3800 m.

*Representative specimens.* **BAJHANG/BAJURA:** Pategaon – Ghodi Lehk Deorali – Badigaon, 3100 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170689, 16 Aug 1991; TT<sup>1</sup> image); Ghodi Lehk, 3300 m (KR Rajbhandari 15109, 16 Aug 1991; KATH<sup>1</sup>). **DARCHULA:** Kalidhunga, 3800 m (KM Ghimire & M Adhikari F203, 10 Sept 2015; TUCH<sup>1</sup>). **HUMLA:** Chankheli Langa, 3500 m (KR Rajbhandari & B Roy 3886, 25 Jul 1979; KATH<sup>1</sup>).

## **Bromus** L., Sp. Pl. 1: 76 (1753).

**Bromus himalaicus** Stapf in Hook. f., Fl. Brit. India 7: 358 (1896). Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 125 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 279 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 233 (2018).

*Bromopsis himalaica* (Stapf) Holub; *Zerna himalaica* (Stapf) Henrard

ENG: Himalayan brome.

Loosely caespitose perennial herbs; culms erect, 25–80 cm long.

*Habitat:* Forest margins, grassy slopes, alpine meadows, rocky slopes.

*Distribution:* C & E Himalaya (Nepal to NE India), Tibetan Plateau, SC China.

NEPAL: W, C & E; 2900–4000 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 2900–3900 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Chimnya, way to Kalapani, NE of Dhalun, 2900–3200 (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0504, 16 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA:** Ghodi Lehk, 3300 m (KR Rajbhandari 15121, 16 Aug 1991, KATH<sup>1</sup>). **DARCHULA:** Upper Chameliya Valley,

Pilkanda, Lolu, 3800 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1446, 26 Jul 2015; TUCH<sup>1</sup>); upper Chameliya Valley, Gauchhalighol, Pilkanda, 3850 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1479, 27 Jul 2015; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Near Ralam, Kumaon (R Strachey & JE Winterbottom 2; CAL) fide BSI (2021).

*Local abund.*: Occasional to frequent.

**Bromus japonicus** Houtt., Nat. Hist. 2(13): 315 (1782). Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 125 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 279 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 233 (2018).

*Bromus patulus* Mert. & W.D.J. Koch

ENG: Japanese brome.

Caespitose annual herbs; culms erect or geniculately ascending, 35–75 cm long.

*Habitat*: Rocky slopes, open grassy slopes, forest margins.

*Distribution*: Europe, N Africa, W & C Asia to Russia, Afghanistan to E Himalaya, Tibetan Plateau, N & C China, Mongolia, NE Asia.

NEPAL: W & C; 3600–4200 m.

KSL: Known from Pulan Xian, SW Xizang in KSL China; and neighboring Doti District, Nepal. It is likely also to be present in KSL area of Nepal.

*Representative specimens*. **DOTI (NEPAL)**: Bag Lekh (Bis Ram 410, 15 May 1929, BM) fide Rajbhandari & Rai (2017). **XIZANG (CHINA)**: Pulan Xian, 30.29° N 81.17° E (Qinghai-Tibet team vegetation group 6751748, 1976; PE) fide Kong & Yang (2019).

**Bromus porphyranthos** Cope, Fl. Pakistan 143: 574 (1982). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 279 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 233 (2018).

*Bromus grandis* (Stapf) Melderis; *Bromus himalaicus* Stapf var. *grandis* Stapf

Loosely caespitose perennial herbs; culms erect or geniculately ascending, 35–75 cm long.

*Habitat*: Grassy slopes, meadows.

*Distribution*: NW Pakistan, Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 2800–5000 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal; 3600–5000 m [Pithoragarh District, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Saipal, 4570 m (JEM Arnold 99, 19 Aug 1954; BM) fide Rajbhandari & Rai (2017). **DARCHULA**: Below Kalidhunga Tal, 4100 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-786, 24 Oct 2014; TUCH<sup>1</sup>). **HUMLA**: Chungsa Valley, Dharmashala, 4300 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1051, 1 Sept 2012; TUCH<sup>1</sup>); Chungsa Valley, Nyalu La, 5010 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1199, 6 Sept 2012; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Ralam, Kumaon, 3658 m (R Strachey & JE Winterbottom s.n.; type of *Bromus himalaicus* Stapf var. *grandis* K000032407<sup>1</sup> image).

*Local abund.*: Occasional.

**Bromus staintonii** Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 125 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 279 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 233 (2018).

*Bromus staintonii* var. *pilosiusculus* Melderis

Loosely caespitose perennial herbs, with short rhizome; culms erect, decumbent at base, 70–150 cm.

*Habitat*: Forests, grassy slopes.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau.

NEPAL: W, C & E; 2100–3800 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; 3100 m.

*Representative specimen*. **BAJURA & BAJHANG**: Pategaon – Ghodi Lekh Deurali – Badigaon, 3100 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170692, 16 Aug 1991; T<sup>f</sup> image).

**Bromus tectorum** L., Sp. Pl. 1: 77 (1753). Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 125 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 280 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 233 (2018).

*Bromus australis* R. Br.; *Festuca tectorum* (L.) Jess.; *Schedonorus tectorum* (L.) Fr.

ENG: Drooping brome.

Solitary or caespitose annual herbs; culms erect or geniculately ascending, 10–50 cm long.

*Habitat*: Dry grassy slopes, riverside sandy places, roadsides, cultivated fields.

*Distribution*: Europe, N Africa, W & C Asia, Afghanistan to E Himalaya, Tibetan Plateau, N & C China, Mongolia.

NEPAL: W & C; 3100–4400 m.

KSL: Bajhang in KSL Nepal; 2000 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Bauli Gad, 2000 m (JF Dobremez 2044, 4 May 1973; BM011029385<sup>1</sup> image, E00656024); Dhuli [interpreted] (A Maire 943, 14 May 1973; E00656023). **UTTARAKHAND (INDIA)**: Kumaon, Kali Valley, Byans (JF Duthie 6138, 17 Jul 1886; BM011029390<sup>1</sup> image).

**Calamagrostis** Adans., Fam. Pl. 2: 31, 530 (1763).

**Calamagrostis abnormis** (Hook. f.) U. Shukla, Grasses N.-East India: 45 (1996).

*Deyeuxia abnormis* Hook. f., Fl. Brit. India. 7: 268 (1896); *Agrostis petelotii* (Hitchc.) Noltie; *Aulacolepis petelotii* Hitchc.; *Calamagrostis petelotii* (Hitchc.) Govaerts; *Deyeuxia petelotii* (Hitchc.) S.M. Phillips & Wen L. Chen

Caespitose perennial herbs; culms slender, ascending, often scrambling, 30–50 cm or more in length.

*Habitat*: Grasslands, open blue pine forests, roadsides.

*Distribution*: C & E Himalaya (Nepal to NE India), SC China, Vietnam.

NEPAL: W, C & E; 2000–3600 m.

KSL: Bajhang in KSL Nepal; 2000 m.

*Representative specimen*. **BAJHANG**: Jimkot – Khaptad, 2000 m (KR Rajbhandari 15592, 26 Aug 1991; KATH) fide Rajbhandari & Rai (2017).

**Calamagrostis emodensis** Griseb., Nachr. Königl. Ges. Wiss. Georg-Augusts-Univ. 3: 80 (1868). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 126 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 280 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 234 (2018).

*Calamagrostis garhwalensis* C.E. Hubb. & Bor

Caespitose perennial herbs, with elongated rhizomes; culms stout, erect, to 100 cm or more in length.

*Habitat*: Stream banks, landslide areas.



*Distribution:* Pakistan, Himalaya (NW India to Bhutan), Tibetan Plateau, C China, N Myanmar.

NEPAL: W, C & E; 2300–4100 m.

KSL: Known from Pithoragarh (Darma Valley, Lingurani, and Milam Glacier area), Uttarakhand in KSL India; 2300–3500 m. It is likely also to be present in Darchula, Nepal.

*Remarks:* Records for Uttarakhand fide GMBA (2012–2016).

**Calamagrostis holciformis** Jaub. & Spach, Ill. Pl. Orient. 4: 61, t. 340 (1851). Rajbhandari in Rajbhandari & Baral, Cat. Nepal. Fl. Pl. 1: 109 (2010).

*Calamagrostis compacta* (Munro ex Hook. f.) Hack. ex Paulsen; *Deyeuxia compacta* Munro ex Hook. f.; *Deyeuxia holciformis* (Jaub. & Spach) Bor

Caespitose perennial herbs, rhizomatous; culms erect, 5–30 cm long.

*Habitat:* Grassy slopes.

*Distribution:* C Asia, Afghanistan, Pakistan, W & C Himalaya (NW India, Nepal), N & C China.

NEPAL: W & C; 3600–4400 m.

KSL: Pulan Xian, SW Xizang in KSL China. It is likely also to be present in Humla, Nepal.

*Representative specimen.* **XIZANG (CHINA):** Pulan Xian, 30.29° N 81.17° E (Qinghai-Tibet team vegetation group 6736743, 1976; PE) fide Kong & Yang (2019).

**Calamagrostis lahulensis** G. Singh, Taxon 33: 94 (1984). Noltie, Fl. Bhutan 3(2): 613 (2000). Rajbhandari in Rajbhandari & Baral, Cat. Nepal. Fl. Pl. 1: 109 (2010).

*Calamagrostis pulchella* Griseb. (1868), nom. illeg., non Saut. ex Rchb. (1830); *Deyeuxia pulchella* Hook. f.; *Deyeuxia pulchella* var. *laxa* P.C. Kuo & S.L. Lu

Densely caespitose perennial herbs; rhizomes slender, spreading; culms erect, 10–40 cm long.

*Habitat:* Forests, thickets, alpine meadows, open places.

*Distribution:* Himalaya (NW India to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 2200–5200 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura and Mugu; 2500–4400 m [Pithoragarh, Uttarakhand in KSL India; Pulan Xian, SW Xizang in KSL China].

*Representative specimens.* **BAJHANG:** Trial from Budkhori to Dhahidunga Kharka, 3253 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913114, 12 Jul 2009; KATH<sup>1</sup>); Saipal, 3909 m (H Tabata, KR Rajbhandari & K Tsuchiya 1816, 31 Jul 1976; KATH<sup>1</sup>); Aletsoura, near Saipal, 4333 m (H Tabata, KR Rajbhandari & K Tsuchiya 1917, 31 Jul 1976; KATH<sup>1</sup>). **DARCHULA:** Thin – Dandap, 2500 m (KR Rajbhandari & KJ Malla 5669, 28 Aug 1980; KATH<sup>1</sup>); Nampa Gad, 3000 m (KR Rajbhandari & KJ Malla 5748, 30 Aug 1980; KATH<sup>1</sup>). **HUMLA/MUGU:** Chankheli Lagna, 3550 m (KR Rajbhandari & B Roy 3872, 25 Jul 1979, KATH<sup>1</sup>); Chankheli Lagna, 3550 m (KR Rajbhandari & B Roy 3887, 25 Jul 1979; TI 10004070<sup>1</sup> image). **MUGU:** Ghurchi – Chuchamara Danda, 3400 m (KR Rajbhandari & B Roy 3602, 19 Jul 1979; TI 10004023<sup>1</sup> image). **XIZANG (CHINA):** Pulan Xian, 30.29° N 81.17° E (Qinghai-Tibet team vegetation group 5228791, 1976; PE) fide Kong & Yang (2019).

**Calamagrostis nivicola** (Hook. f.) Hand.-Mazz., Symb. Sin. 7: 1299 (1936). Noltie, Fl. Bhutan 3(2): 613 (2000). Rajbhandari in Rajbhandari & Baral, Cat. Nepal. Fl. Pl. 1: 110 (2010).

*Deyeuxia nivicola* Hook. f., Fl. Brit. India 7: 267 (1896).

Caespitose perennial herbs; rhizomes spreading; culms slender, erect or ascending, 5–20 cm long.

*Habitat*: Grassy and stony mountain slopes.

*Distribution*: C & E Himalaya (Nepal to NE India), Tibetan Plateau, SC China.

NEPAL: W, C & E; 3900–5700 m.

KSL: Humla in KSL Nepal; 4300 m.

*Representative specimen*. **HUMLA**: Chungsa Valley, Dharmashala, below Seliman Tsho, 4310 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1132, 2 Sept 2012; TUCH<sup>1</sup>).

*Local abund.*: Occasional.

**Calamagrostis pseudophragmites** (Haller f.) Koeler, Descr. Gramin.: 106 (1802). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 126 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 281 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 234 (2018).

*Arundo pseudophragmites* Haller f., Arch. Bot. (Leipzig) 1(2): 11 (1796); *Calamagrostis littorea* (Schrad.) P. Beauv. var. *tartarica* Hook. f.; *Calamagrostis nepalensis* Nees ex Steud.; *Calamagrostis pseudophragmites* subsp. *tartarica* (Hook. f.) Tzvelev

Caespitose perennial herbs; rhizomes spreading; culms stout, erect, 25–100 cm or more in length.

*Habitat*: Damp grassy slopes, damp rocky slopes, along streams, sandy river banks, edges of crop fields.

*Distribution*: Europe, subtropical and temperate regions in Asia (Turkey to Japan and Russia).

NEPAL: W, C & E; 1500–4600 m.

KSL: Bajhang and Darchula in KSL Nepal [Pithoragarh, Uttarakhand in KSL India]; 1800–3600 m.

*Representative specimens*. **BAJHANG**: Trail from Ghodadaune to Lokhada, Khaptad National Park, 2559 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913045, 3 Jul 2009; E, KATH<sup>1</sup>). **DARCHULA**: Kuntisau, 2550 m (KR Rajbhandari & KJ Malla 5689, 29 Aug 1980; KATH<sup>1</sup>); Dhaulodhar, 3610 m (KM Ghimire & M Adhikari F200, 10 Sept 2015; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon, Bona, 1830 m (RC Thakur 823, 28 Jun 1948; US 04032404<sup>1</sup> image); Kumaon, Dar 2135 m (WN Koelz 21006, 7 Jul 1948; US 00990430<sup>1</sup> image); Kumaon, Budi, 2440 m (WN Koelz 21261, 22 Jul 1948; US 00990431<sup>1</sup> image).

*Consu. status*: GLB., Least Concern (Akhani 2014a).

**Calamagrostis scabrescens** Griseb., Nachr. Königl. Ges. Wiss. Georg-Augusts-Univ. 3: 79 (1868). Noltie, Fl. Bhutan 3(2): 615 (2000). Rajbhandari in Rajbhandari & Baral, Cat. Nepal. Fl. Pl. 1: 110 (2010).

*Calamagrostis scabrescens* Griseb. var. *humilis* Griseb.; *Deyeuxia scabrescens* (Griseb.) Munro ex Duthie; *Deyeuxia scabrescens* var. *humilis* (Griseb.) Hook. f.;

Caespitose perennial herbs, rhizomatous; culms stout, erect, 50–150 cm long.

*Habitat*: Grassy slopes, among shrubs, riverside gravel.

*Distribution*: Pakistan, Himalaya (NW India to Bhutan), Tibetan Plateau, Myanmar, C China.

NEPAL: W, C & E; 2400–4700 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 3100–4700 m [Pithoragarh, Uttarakhand in KSL India; and Pulan Xian, SW Xizang in KSL China].

*Representative specimens*. **BAJURA & BAJHANG**: Pategaon – Ghodi Lekh Deurali – Badigaon, 3100 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170699, 16 Aug 1991; KATH<sup>1</sup>, TI). **BAJURA**: Godilekh, 3333 m (H Tabata, KR Rajbhandari & K Tsuchiya 2434, 13 Aug 1976; KATH<sup>1</sup>). **DARCHULA**: Thadapani, 3810 m (KM Ghimire & M Adhikari F208, 13 Sept 2015; TUCH<sup>1</sup>); Chameliya, Gauchhalighol, 3950 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR

Paudeyal ANCA-746, 26 Oct 2014; TUCH<sup>1</sup>). **XIZANG (CHINA)**: Pulan Xian, 30.29° N 81.17° E (Qinghai-Tibet team vegetation group 6238606, 1976; PE) fide Kong & Yang (2019).

**Capillipedium** Stapf in Prain, Fl. Trop. Africa. 9: 169 (1917).

**Capillipedium assimile** (Steud.) A. Camus in P.H. Lecomte *et al.*, Fl. Indo-Chine 7: 314 (1922). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 126 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 281 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 234 (2018).

*Andropogon assimilis* Steud., Syn. Pl. Glumac. 1: 397 (1854); *Andropogon glaucopsis* Steud.; *Andropogon subrepens* Steud.; *Capillipedium glaucopsis* (Steud.) Stapf; *Capillipedium subrepens* (Steud.) Henrard; *Dichanthium assimile* (Steud.) Deshp.

NEP: Muse khar, Muse kharukî, Hâtî-khurkî (मुसे खर, मुसे खरुकी, हाती-खुर्की).

Straggling perennial herbs; culms stout, decumbent, 1–3 m long, woody at base, branched.

*Habitat*: Grassy and rocky slopes, streamside, forests, roadside.

*Distribution*: Tropical and subtropical regions in Asia.

NEPAL: W, C & E; 200–2200 m.

KSL: Darchula in KSL Nepal; 1700–1800 m.

*Representative specimens*. **DARCHULA**: Khar VDC-2, 1775 m (BB Shrestha, M Pandey & R Chhetri 318, 28 Sept 2015; TUCH<sup>1</sup>); Dumli, Rapla, 1800 m (KR Rajbhandari & KJ Malla 5891, 22 Sept 1982, KATH<sup>1</sup>).

**Capillipedium parviflorum** (R. Br.) Stapf in Oliver *et al.*, Fl. Trop. Africa 9: 169 (1917). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 126 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 281 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 234 (2018).

*Holcus parviflorus* R. Br., Prodr. Fl. Nov. Holland.: 199 (1810); *Anatherum parviflorum* (R. Br.) Spreng.; *Andropogon alternans* J. Presl; *Andropogon micranthus* Kunth; *Bothriochloa parviflora* (R. Br.) Ohwi

ENG: Golden-beard, Scented top.

Caespitose perennial herbs; culms slender, erect or ascending, 50–150 cm long, unbranched.

*Habitat*: Forest margins, open grassy slopes, streamsides.

*Distribution*: Africa, tropical to warm temperate regions in Asia, N & E Australia.

NEPAL: W, C & E; 150–3200 m.

KSL: Bajhang in KSL Nepal; 2200–3200 m.

*Representative specimens*. **BAJHANG**: Agar – Dhalun, 2200 m (KR Rajbhandari 15375, 19 Aug 1991; KATH<sup>1</sup>); on the way to Deurali from Dhalun, 2500–3200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0415, 15 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>).

**Catabrosella** (Tzvelev) Tzvelev, Bot. Zhurn. (Moscow & Leningrad) 50: 1320 (1965).

**Catabrosella himalaica** (Hook. f.) Tzvelev, Novosti Sist. Vyssh. Rast. 3: 32 (1966).

*Phippsia himalaica* Hook. f., Fl. Brit. India 7: 240 (1896); *Catabrosa himalaica* (Hook. f.) Stapf; *Colpodium himalaicum* (Hook. f.) Bor; *Colpodium subspicatum* Hack. ex Stapf

Densely caespitose perennial herbs; rhizomes short; culms erect or ascending, 5–30 cm long.

*Habitat*: Grassy slopes, stony or sandy slopes, glacial moraine.

*Distribution*: Afghanistan, Pakistan, W & C Himalaya (NW India, Nepal).

NEPAL: ?W & C; 4400–4500 m.

KSL: Known from Pithoragarh, Uttarakhand in KSL India; 4400–4700 m. It is likely also to be

present in KSL area of Far West Nepal.

*Representative specimen.* **UTTARAKHAND (INDIA)**: Barjikan Pass, 4420 m (R Strachey & JE Winterbottom 2; CAL, K000032215<sup>1</sup> image).

**Cenchrus** L., Sp. Pl. 2: 1049 (1753).

**Cenchrus americanus** (L.) Morrone, Ann. Bot. (Oxford) 106: 127 (2010).

*Panicum americanum* L., Sp. Pl. 1: 56 (1753); *Panicum glaucum* L.; *Pennisetum americanum* (L.) Leeke; *Pennisetum glaucum* (L.) R. Br.; *Pennisetum spicatum* (L.) Körn.; *Setaria glauca* (L.) P. Beauv.

NEP: Bhāle banso (भाले बन्सो).

ENG: Pearl millet. HIN: Bājṛā (बाजरा).

Annual herbs; culms stout, erect.

*Habitat*: Cultivated for grain and forage; also escaped from cultivation.

*Distribution*: Originated in Africa; introduced into Asia, Australasia, N & S America.

NEPAL: W, C & E; 900–2600 m.

KSL: Bajhang in KSL Nepal; 1600–2600 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG**: Badigaon – Talkot, 1660–2230 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193743, 17 Aug 1991; *Setaria glauca* TI) fide SHB (2013–2020); Aagar – Dhalaun, 2600 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9192480, 19 Aug 1991; *Setaria glauca* TI) fide SHB (2013–2020).

*Remarks*: Distribution records for Uttarakhand fide FES (2003).

**Cenchrus flaccidus** (Griseb.) Morrone, Ann. Bot. (Oxford) 106: 128 (2010).

*Pennisetum flaccidum* Griseb., Nachr. Königl. Ges. Wiss. Georg-Augusts-Univ. 3: 86 (1868).

NEP-L: Biralchhe (बिरलछे).

ENG: Flaccidgrass, Himalayan fountain grass.

Caespitose perennial herbs; rhizomes long creeping; culms erect, 30–100 cm long, branched near base.

*Habitat*: Grassy slopes, open rocky places, field margins.

*Distribution*: W & C Asia, Afghanistan, Pakistan, Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, N & E China, Mongolia.

NEPAL: W, C & E; 900–4300 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura; 1200–3500 m [Pithoragarh, Uttarakhand in KSL India; and Pulan Xian, SW Xizang in KSL China].

*Representative specimens.* **BAJHANG**: Talkot – Aagar, 1900 m (KR Rajbhandari 15279, 18 Aug 1991; KATH<sup>1</sup>). **BAJURA**: Kuru, 2285 m (BSH C71, 20 Aug 2017) fide RBGE (2014). **DARCHULA**: Chameliya Valley, Okhal, 1230 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-833, 28 Oct 2014; TUCH<sup>1</sup>); Khar VDC-2, 2060 m (BB Shrestha, M Pandey & R Chhetri 340, 29 Sept 2015; TUCH<sup>1</sup>); Tinkar, 3500 m (KR Rajbhandari & KJ Malla 5779, 1 Sept 1980; KATH<sup>1</sup>). **HUMLA**: Pucha, 2700 m (KR Rajbhandari & B Roy 4075, 28 Jul 1979; KATH<sup>1</sup>). **XIZANG (CHINA)**: Pulan Xian, 30.29° N 81.17° E (Qinghai-Tibet team vegetation group 5178434, 1976; PE) fide Kong & Yang (2019).

*Remarks*: Records for Uttarakhand fide FES (2003).

*Conserv. status*: GLB., Least Concern (Allen 2018).

**Cenchrus orientalis** (Rich.) Morrone, Ann. Bot. (Oxford) 106: 128 (2010).

*Pennisetum orientale* Rich. in Pers., Syn. Pl. 1: 72 (1805); *Panicum orientale* (Rich.) Willd.; *Pennisetum triflorum* Nees ex Steud.

ENG: Oriental fountain grass.

Caespitose perennial herbs; rhizomes short; culms woody, erect or ascending, 20–100 cm long.

*Habitat*: Shrubland, grassland, dry rocky areas, roadside.

*Distribution*: N Africa, W & C Asia, Afghanistan, tropical and subtropical regions in S Asia, Himalaya (Kashmir to Bhutan), mainland SE Asia.

NEPAL: W & C; 700–2200 m.

KSL: Bajhang and Darchula in KSL Nepal; 1000–2200 m [Pithoragarh and neighboring Almora District, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Chainpur, 1350 m (KR Rajbhandari 15550, 24 Aug 1991; KATH<sup>1</sup>); trail from Dhahidunga Kharka to Pasela, 2179 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913145, 15 Jul 2009; E00509670, KATH<sup>1</sup>). **DARCHULA**: Darchula–Huti, 1000 m (KR Rajbhandari & KJ Malla 5540, 24 Aug 1980; KATH<sup>1</sup>); Khar-2, 1775 m (BB Shrestha, M Pandey & R Chhetri 319, 29 Sept 2015; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Dar, Kumaon (W Koelz 21005, 7 Jul 1948; K000731204); Almora, Kumaon, 1675 m (R Strachey & JE Winterbottom s.n.; *Pennisetum triflorum* BM012549760<sup>1</sup> image).

*Conserv. status*: GLB., Least Concern (Rhodes & Maxted 2017).

**Chrysopogon** Trin., Fund. Agrost. 187 (1820).

**Chrysopogon aciculatus** (Retz.) Trin., Fund. Agrost.: 188 (1820). Bor in Hara et al., Enum. Fl. Pl. Nepal 1: 126 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 283 (2017). Shrestha et al., Handbk. Fl. Pl. Nepal 1: 236 (2018).

*Andropogon aciculatus* Retz., Observ. Bot. 5: 22 (1789).

NEP: Kurre-ghāns (कुर्रे-घाँस).

ENG: Golden false beardgrass, Lovegrass, Mackie's pest.

Mat-forming perennial herbs; culms erect or ascending.

*Habitat*: Grasslands.

*Distribution*: Africa, W Indian Ocean Islands, tropical and subtropical regions in Asia to Pacific.

NEPAL: W, C & E; 100–1800 m.

KSL: Known from Pithoragarh, Uttarakhand in KSL India. It is likely also to be present in KSL area of Far West Nepal.

*Remarks*: Records for Uttarakhand fide Duthie (1906) and FES (2003).

**Chrysopogon gryllus** (L.) Trin., Fund. Agrost.: 188 (1820). Bor in Hara et al., Enum. Fl. Pl. Nepal 1: 126 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 284 (2017). Shrestha et al., Handbk. Fl. Pl. Nepal 1: 236 (2018).

*Andropogon gryllus* L., Cent. Pl. II: 33 (1756); *Andropogon echinulatus* Steud.; *Andropogon glabratus* (Trin.) Steud.; *Andropogon gryllus* subsp. *echinulatus* (Nees) Hack.; *Andropogon royleanus* Steud.; *Chrysopogon echinulatus* (Nees) W. Watson; *Chrysopogon glabratus* Trin.; *Chrysopogon royleanus* (Steud.) W. Watson

NEP-L: Gājyo (गाज्यो). NEP: Dhāple-ghāns, Patapate khar (धाप्ले-घाँस, पटपटे खर).

Tussock-forming perennial herbs; culms erect, 50–150 cm long, unbranched.

*Habitat*: Grassy slopes, rock banks, cliffs, along trail.

*Distribution*: S Europe, N Africa, W Asia, Afghanistan, Pakistan, Himalaya (Kashmir to Bhutan), Tibetan Plateau, SC China, mainland SE Asia.

NEPAL: W, C & E; 250–2900 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 1500–2500 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Between Talkot & Panalta, 2000–2100 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0191, 12 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA**: Majpali – Pategaon, 1900 m (KR Rajbhandari 15099, 15 Aug 1991, KATH<sup>1</sup>). **DARCHULA**: Khar VDC-2, 1780 m (BB Shrestha, M Pandey & R Chhetri 325, 29 Sept 2015; TUCH<sup>1</sup>); Lower Chameliya Valley, above Janjari, Ghusa VDC, 2125 m (SK Ghimire, S Thapa, B Awasthi, S Lo, C Thapa & MR Paudeyal ANCA-801, 26 Oct 2014; TUCH<sup>1</sup>).

*Remarks*: Records for Uttarakhand (B Dickoré [Coll. MSB]) fide GMBA (2012–2016).

*Local abund.*: Frequent.

**Chrysopogon serrulatus** Trin., Mém. Acad. Imp. Sci. St.-Pétersbourg, Sér. 6, Sci. Math. 2: 318 (1832). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 127 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 284 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 236 (2018).

*Andropogon coeruleus* Steud.; *Andropogon monticola* Roem. & Schult. var. *trinii* (Steud.) Hook. f.; *Andropogon trinii* Steud.; *Chrysopogon fulvus* (Spreng.) Chiov. var. *serrulatus* (Trin.) R.R. Stewart

Caespitose perennial herbs; culms robust, erect, to 150 cm or more in length, branched below.

*Habitat*: Open slopes in pine forests, grassy slopes, dry cliff walls.

*Distribution*: E & S Africa, Madagascar, SW Asia, tropical and subtropical regions in S Asia, mainland SE Asia to Indonesia.

NEPAL: W, C & E; 200–1500 m.

KSL: Bajhang in KSL Nepal; 1500 m [also in Almora, Uttarakhand, India].

*Representative specimens*. **BAJHANG**: Bajhang, 1500 m (LP Kattel 1218, 13 Sept 1982; KATH<sup>1</sup>). **UTTARAKHAND [INDIA]**: Almora, Kumaon, 1676 m (R Strachey & JE Winterbottom 1; K000245837<sup>1</sup> image).

**Cymbopogon** Spreng., Pl. Min. Cogn. Pug. 2: 14 (1815).

**Cymbopogon distans** (Nees ex Steud.) W. Watson in Atkins., Gaz. N.W. Prov. India 10: 392 (1882). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 127 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 286 (2017).

*Andropogon distans* Nees ex Steud., Syn. Pl. Glumac. 1: 387 (1854).

Caespitose perennial herbs, shortly rhizomatous; culms erect or ascending, up to 100 cm long.

*Habitat*: Open dry rocky places, open grassy slopes, dry river banks.

*Distribution*: NW Pakistan to C Nepal, Tibetan Plateau, C China.

NEPAL: W & C; 1400–3500 m.

KSL: Bajhang in KSL Nepal; 2000 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Talkot – Agar, 2000 m (KR Rajbhandari 15354A, 18 Aug 1991; KATH<sup>1</sup>). **UTTARAKHAND [INDIA]**: Kumaon, near Bhim Tal, 1219–1524 m (Duthie 5059, 4 Oct 1885; BM012551313<sup>1</sup> image).

*Remarks*: Records for Pithoragarh fide FES (2003).

**Cymbopogon jwarancusa** (Jones) Schult., Mant. 2: 458 (1824), "*iwarancusa*". Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 127 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 286 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 238 (2018).

*Andropogon jwarancusa* Jones, Asiat. Res. 4: 109 (1795); *Andropogon himalayensis* Gand. (1899), nom. illeg., non Steud. (1854)

NEP: Kāgati-ghāns, Sotī-ghāns (कागती-घाँस, सोती-घाँस).

ENG: Karnkusa grass.

Caespitose perennial herbs, shortly rhizomatous; culms erect or ascending, 30–150 cm long.

*Habitat*: Grassy slopes, dry valleys, open places, forests.

*Distribution*: Tropical S Asia, Himalaya, Tibetan Plateau, SC China, Vietnam.

NEPAL: W, C & E; 200–2400 m.

KSL: Known from Pithoragarh, Uttarakhand in KSL India. It is likely also to be present in KSL area of Far West Nepal.

*Remarks*: Records for Uttarakhand (B Dickoré [Coll. MSB]) fide GMBA (2012–2016).

**Cymbopogon pendulus** (Nees ex Steud.) W. Watson in Atkins., Gaz. N.W. Prov. India 10: 392 (1882). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 127 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 287 (2017).

*Andropogon pendulus* Nees ex Steud., Syn. Pl. Glumac. 1: 388 (1854).

NEP: Pirre-ghāns, Pirre khar (पिरे-घाँस, पिरे खर).

Caespitose perennial herbs, with short rhizome; culms erect, robust, up to 150 cm long.

*Habitat*: Open, dry grassy slopes.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Bangladesh, Myanmar, SC China.

NEPAL: W, C & E; 100–3500 m.

KSL: Darchula in KSL Nepal; 1845 m.

*Representative specimen*. **DARCHULA**: Khar VDC-5, 1845 m (BB Shrestha, M Pandey & R Chhetri 363, 30 Sept 2015; TUCH<sup>1</sup>).

**Cymbopogon pospischilii** (K. Schum.) C.E. Hubb., Kew Bull. 4: 175 (1949). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 287 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 238 (2018).

*Andropogon pospischilii* K. Schum., Bot. Jahrb. Syst. 24: 328 (1897); *Andropogon nardus* L. var. *stracheyi* Hook. f.; *Cymbopogon stracheyi* (Hook. f.) Raizada & S.K. Jain

ENG: Bitter turpentine grass.

Densely caespitose perennial herbs; culms wiry, erect or geniculately ascending, 50–100 cm long.

*Habitat*: Dry grassy and stony slopes, mixed forests.

*Distribution*: E & S Africa, Arabian Peninsula, Afghanistan, Pakistan, W & C Himalaya (Kashmir to Nepal), Tibetan Plateau, SC China.

NEPAL: W, C & E; 900–3400 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal [also in Almora, Uttarakhand, India]; 1800–2600 m.

*Representative specimens*. **BAJHANG**: Talkot – Aagar, 2100 m (KR Rajbhandari 15345, 18 August 1991; KATH<sup>1</sup>). **DARCHULA**: Dumli Rapla, 1800 m (KR Rajbhandari & KJ Malla 5892, 22 Sept 1982; KATH<sup>1</sup>). **HUMLA**: Between Kermi & Dharapori, 2500 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa &

S Lama CHH-1411, 15 Sept 2012; TUCH<sup>1</sup>). **UTTARAKHAND [INDIA]**: Almora, Kalinath, Kumaon, 1830 m (R Strachey & JE Winterbottom 4; isosyntype of *Andropogon nardus* var. *stracheyi* BR0000006864705<sup>1</sup> image).

**Cymbopogon schoenanthus** (L.) Spreng., Pl. Min. Cogn. Pug. 2: 15 (1815). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 127 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 287 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 239 (2018).

*Andropogon schoenanthus* L., Sp. Pl.: 1046 (1753).

ENG: Camel grass, West Indian lemon grass.

Caespitose perennial herbs; culms 30–120 cm long.

*Habitat*: Grassy slopes.

*Distribution*: N Africa, Arabian Peninsula to SW India, Himalaya (Nepal).

NEPAL: W & C; 250–3000 m.

KSL: Known from neighboring Doti District, Nepal; 1500 m.

*Representative specimen*. **DOTI**: Above Silgadi on trail to Khaptad, 1513 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911001, 29 Jun 2009; E00623977; KATH).

**Cynodon** Rich. in Pers., Syn. Pl. 1: 85 (1805).

**Cynodon dactylon** (L.) Pers., Syn. Pl. 1: 85 (1805). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 128 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 288 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 239 (2018).

*Panicum dactylon* L., Sp. Pl. 1: 58 (1753).

NEP-L/NEP: Dûbo (दूबो).

ENG: Bermuda grass, Common quick grass, Couch grass. HIN: Dûb (दूब). SAN: Dûrvā (दूर्वा).

Mat-forming stoloniferous perennial herbs; culms slender, geniculately ascending, up to 40 cm long.

*Habitat*: Grasslands, open grounds, roadsides, field margins.

*Distribution*: Tropical to warm temperate regions of the World.

NEPAL: W, C & E; 100–3000 m.

KSL: Baitadi, Bajhang, Darchula and Humla in KSL Nepal; 600–2700 m.

*Representative specimens*. **BAJHANG**: Trail from Thalara to Budkhor, Lekgaun VDC, 2501 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913097, 11 Jul 2009; E, KATH<sup>1</sup>). **DARCHULA**: Khar VDC-4, 1840 m (BB Shrestha, M Pandey & R Chhetri 337P, 26 Sept 2015; TUCH<sup>1</sup>). **HUMLA**: Humla Karnali, between Dharapori & Simikot, 2100 m (SK Ghimire, A Paudel, L Joshi, S Lama, P Subedi & C Thapa CHH-1826, 16 Sept 2012; TUCH<sup>1</sup>).

*Local abund.*: Frequent to common at lower elevations.

*Ethnobot. use*: Plant is culturally important, offered in different religious functions. The whole plant is also used medicinally to treat indigestion and intestinal worms.

**Cyrtococcum** Stapf in Prain, Fl. Trop. Africa. 9: 15 (1917).

**Cyrtococcum patens** (L.) A. Camus, Bull. Mus. Natl. Hist. Nat. 27: 118 (1921). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 128 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 288 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 239 (2018).

*Panicum patens* L., Sp. Pl. 1: 58 (1753).



Mat-forming perennial herbs; culms decumbent, 10–45 cm long.

*Habitat*: Moist grasslands, forests, disturbed places.

*Distribution*: Tropical and subtropical regions in Asia to W Pacific.

NEPAL: W, C & E; 100–1900 m.

KSL: Darchula in KSL Nepal, and nearby Dadeldhura; 700–1850 m.

*Representative specimens*. **DADEL DHURA**: Lipha – Jogbudha, 700 m (KR Rajbhandari, S Bhattacharai, I Sharma & R Joshi 7052, 17 Jan 1983; KATH<sup>1</sup>). **DARCHULA**: Khar-2, 1840 m (BB Shrestha, M Pandey & R Chhetri 452, 30 Sept 2015; TUCH<sup>1</sup>).

## **Dactylis** L., Sp. Pl. 1: 71 (1753).

**Dactylis glomerata** L., Sp. Pl. 1: 71 (1753). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 128 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 289 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 240 (2018). **Pl. 19**.

*Bromus glomeratus* (L.) Scop.; *Dactylis glomerata* subsp. *himalayensis* Domin; *Festuca glomerata* (L.) All.

ENG: Cat grass, Cocksfoot, Orchardgrass.

Caespitose perennial herbs; culms erect or geniculately ascending, to 100 cm or more in length.

*Habitat*: Grassy slopes, moist ground, light forests.

*Distribution*: Europe, N Africa, subtropical and temperate regions in Asia, Peninsular India, Sri Lanka.

NEPAL: W, C & E; 2100–3800 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 2200–3800 m [Pithoragarh, Uttarakhand in KSL India; and Pulan Xian, SW Xizang in KSL China].

*Representative specimens*. **BAJHANG**: Dhalaun – Rasa, 2510 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170821, 20 Aug 1991; KATH<sup>1</sup>, TT<sup>1</sup> image); Dhansera, 3780 m (PR Shakya, MK Adhikari & MN Subedi 8201, 26 Jul 1984; KATH<sup>1</sup>). **BAJHANG/BAJURA**: Pategaon – Ghodi Lehk Deoral – Badigaon, 2190–3350 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170656, 16 Aug 1991; KATH<sup>1</sup>, TT<sup>1</sup> image). **DARCHULA**: Thin, 2300 m (KR Rajbhandari & KJ Malla 5634, 27 Aug 1980; KATH<sup>1</sup>); upper Chameliya Valley, Pilkanda, Lolu, 3750 m (SK Ghimire, LR Joshi, B Awasthi & C Subedi ANCA-201, 25 Oct 2013; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Tejam, Jakola Valley (JF Duthie 25025, 01 Aug 1900; K001065087<sup>1</sup> image). **XIZANG (CHINA)**: Pulan Xian, 30.29° N 81.17° E (Qinghai-Tibet team 6257996, 1976; PE) fide Kong & Yang (2019).

*Local abund.*: Occasional to frequent in Darchula; not known for other regions.

## **Dactyloctenium** Willd., Enum. Pl. 2: 1029 (1809).

**Dactyloctenium aegyptium** (L.) Willd., Enum. Pl. 2: 1029 (1809). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 128 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 289 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 240 (2018).

*Cynosurus aegyptius* L., Sp. Pl. 1: 72 (1753); *Dactyloctenium mucronatum* (Michx.) Willd.; *Eleusine aegyptia* (L.) Desf.

NEP: Dityāune-jhār (दत्याउने-झार).

ENG: Common crowfoot grass, Crowfoot, Egyptian finger grass.

Mat-forming or caespitose annual herbs; culms ascending or decumbent, 2–30 cm or more in length.

*Habitat*: Sandy places, roadside, farmland.

*Distribution*: Africa, tropical and subtropical regions in Asia.

NEPAL: W, C & E; 100–1600 m.

KSL: Known from neighboring Bajura District, Nepal; 1050–1450 m.

*Representative specimen.* **BAJURA:** Babali – Sanfebagar, 1060 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193423, 30 Aug 1991; TI) fide SHB (2013–2020).

**Deschampsia** P. Beauv., Ess. Agrostogr.: 91 (1812).

**Deschampsia cespitosa** (L.) P. Beauv., Ess. Agrostogr.: 91 (1812). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 128 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 290 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 241 (2018).

*Aira cespitosa* L., Sp. Pl. 1: 64 (1753).

ENG: Tufted hair grass.

Densely caespitose, tussock-forming perennial herbs; culms erect, 20–60 cm long.

*Habitat:* Forests, grassland, wet places in meadows, riverside sand and gravel, lake margins.

*Distribution:* Europe, Africa, subtropical and temperate regions in Asia, Australasia, N & S America, Greenland, Subantarctic islands.

NEPAL: W, C & E; 2600–4900 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Mugu; 2900–4100 m [also in Uttarakhand, India, and Mapam Yumtso, SW Xizang, China].

*Representative specimens.* **BAJHANG:** Trail from Budkhori to Dhahidunga Kharka, 3253 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913112, 12 Jul 2009; KATH<sup>1</sup>). **DARCHULA:** Thadapani, 3703 m (KM Ghimire & M Adhikari F204, 12 Sept 2015; TUCH<sup>1</sup>); Chameliya Mool, Pilkanda, 3800 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Pauveyal & DJ Chapagain 1607, 31 Jul 2015; TUCH<sup>1</sup>). **HUMLA:** Changkheli – Rimi, 2900 m (KR Rajbhandari & B Roy 4001, 26 Jul 1979; KATH<sup>1</sup>). **MUGU:** Rara, 2850 m (KR Rajbhandari & B Roy 3785, 22 Jul 1979; TI) fide SHB (2013–2020).

*Remarks:* Records Uttarakhand and SW Xizang fide GMBA (2012–2016).

*Local abund.:* Frequent in Darchula; not known for other regions.

**Dichanthium** Willemet, Ann. Bot. (Usteri). 18: 11 (1796).

**Dichanthium annulatum** (Forssk.) Stapf in Oliver *et al.*, Fl. Trop. Africa 9: 178 (1917). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 129 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 292 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 242 (2018).

*Andropogon annulatus* Forssk., Fl. Aegypt.-Arab.: 173 (1775); *Andropogon scandens* Roxb.

ENG: Bluestem, Diaz bluestem, Kleberg's bluestem, Ringed dichanthium.

Caespitose perennial herbs; culms erect or geniculate ascending, 25–50 cm or more in length.

*Habitat:* Open slopes, rock ledges, disturbed places, field margins, trailside.

*Distribution:* Africa, tropical and subtropical regions in Asia, Australia.

NEPAL: W, C & E; 100–2000 m.

KSL: Bajhang in KSL Nepal; 1900–2000 m.

*Representative specimen.* **BAJHANG:** Between Panalta & Kuwa, 1900–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0299, 13 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>).

**Digitaria** Haller, Hist. Stirp. Helv. 2: 244 (1768).

**Digitaria abludens** (Roem. & Schult.) Veldkamp, Blumea. 21: 53 (1973). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 129 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 293 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 243 (2018).

*Panicum abludens* Roem. & Schult., Syst. Veg. 2: 457 (1817); *Digitaria granularis* (Trin.) Henrard; *Digitaria pedicellaris* Prain, nom. superfl.; *Paspalum granulare* Trin.; *Paspalum pedicellare* Trin. ex Hook. f., nom. superfl.; *Paspalum pedicellatum* Nees ex Duthie

Annual herbs; culms erect or decumbent and ascending, 12–60 cm or more in length.

*Habitat*: Grassy slopes, forest margins, disturbed areas.

*Distribution*: Tropical and subtropical regions in Asia.

NEPAL: W, C & E; 300–2000 m.

KSL: Known from Pithoragarh, Uttarakhand and neighboring areas in KSL India; and nearby Dadeldhura District, Nepal. It is likely also to be present in the KSL area of Far West Nepal.

*Representative specimens*. **DADEL DHURA**: Jogbura, 350 m (KR Rajbhandari, PM Regmi & KJ Malla 5323, 13 Aug 1980, KATH<sup>1</sup>, TI). **UTTARAKHAND (INDIA)**: Kumaon (Lindley s.n.; E00393973<sup>1</sup> image); Kumaon, Dhauli Valley, 1219–1524 m (JF Duthie 3115, 22 Sept 1884; *Paspalum pedicellatum* BM012549341<sup>1</sup> image).

**Digitaria ciliaris** (Retz.) Koeler, Descr. Gramin.: 27 (1802). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 129 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 293 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 243 (2018).

*Panicum ciliare* Retz., Observ. Bot. 4: 16 (1786); *Digitaria adscendens* (Kunth) Henrard; *Panicum adscendens* Kunth; *Panicum sanguinale* L. var. *ciliare* (Retz.) St.-Amans

NEP: Banso, Chitre banso (बन्सो, चित्रे बन्सो).

ENG: Hairy crabgrass, Southern crabgrass, Tropical fingergrass. HIN: Tikhria.

Annual herbs; culms geniculately ascending, decumbent at base, 10–60 cm or more in length.

*Habitat*: Grassy fields, roadsides, disturbed areas, forests.

*Distribution*: Native to Africa and Asia; now distributed throughout the tropics and sub-tropics of both hemispheres.

NEPAL: W, C & E; 150–2500 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 1000–2500 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Talkot – Agar, 1940 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193342, 18 Aug 1991; TI) fide SHB (2013–2020); Between Dhalun & Panselegi, NE of Dhalun, 2300–2700 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0554, 16 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA**: Berma – Kolti, 1060 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193602, 10 Aug 1991; TI) fide SHB (2013–2020); Berseni to Porakya, 1590 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193231, 12 Aug 1991; TI) fide SHB (2013–2020). **DARCHULA**: Khar VDC-2, 1856 m (BB Shrestha, M Pandey & R Chhetri D330, 30 Sept 2015; TUCH<sup>1</sup>).

*Remarks*: Records for Pithoragarh fide GMBA (2012–2016).

**Digitaria cruciata** (Nees ex Steud.) E.G. Camus & A. Camus in H. Lecomte, Fl. Indo-Chine 7: 399 (1922). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 129 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 293 (2017).

*Panicum cruciatum* Nees ex Steud., Syn. Pl. Glumac. 1: 39 (1853); *Paspalum sanguinale* (L.) Lam. var. *cruciatum* (Nees ex Steud.) Hook. f.

Annual herbs; culms geniculately ascending, decumbent at base, 10–100 cm long.

*Habitat*: Grasslands, disturbed grassy places, fields.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 1000–3500 m.

KSL: Darchula in KSL Nepal, and neighboring Mugu; 1800–2600 m.

*Representative specimens*. **DARCHULA**: Dumli – Ralpa, 1800 m (KR Rajbhandari & KJ Malla 5894, 12 Sept 1980; KATH<sup>1</sup>); Dandap, 2500 m KR Rajbhandari & KJ Malla 5685, 28 Aug 1980; KATH<sup>1</sup>). **MUGU**: Mugu Karnali Valley, between Mangri & Daura, 2591 m (O Polunin, WR Sykes & LHJ Williams 5254, 16 Aug 1952; BM012549291<sup>1</sup> image).

**Digitaria longiflora** (Retz.) Pers., Syn. Pl. 1: 85 (1805). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 129 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 294 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 243 (2018).

*Paspalum longiflorum* Retz., Observ. Bot. 4: 15 (1786); *Panicum longiflorum* (Retz.) Gmel.

ENG: False couchgrass, Indian crabgrass, Wire crabgrass.

Annual or short-lived perennial herbs; culms decumbent and ascending, 10–40 cm long.

*Habitat*: Open slopes, grassland, field margins, roadsides.

*Distribution*: Tropical and subtropical regions of the Old World.

NEPAL: W, C & E; 150–2100 m.

KSL: Pithoragarh, Uttarakhand in KSL India; and nearby Dadeldhura District, Nepal. It is likely also to be present in the KSL area of Far West Nepal.

*Representative specimen*. **DADEL DHURA**: Jogbura – Mauri, 400 m (KR Rajbhandari, PM Regmi & KJ Malla 5335, 14 Aug 1980; KATH<sup>1</sup>, TI).

*Remarks*: Records for Pithoragarh fide GMBA (2012–2016).

**Digitaria ternata** (A. Rich.) Stapf in W.H. Harvey & auct. suc. (eds.), Fl. Cap. 7: 376 (1898). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 130 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 295 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 244 (2018).

*Cynodon ternatus* A. Rich., Tent. Fl. Abyss. 2: 405 (1850); *Panicum ternatum* (A. Rich.) Steud.; *Paspalum ternatum* (A. Rich.) Hook. f.

ENG: Blackseed crabgrass.

Loosely caespitose annual herbs; culms erect or geniculately ascending, up to 100 cm long.

*Habitat*: Grassy slopes, weedy places, roadsides.

*Distribution*: Tropical and subtropical regions of the Old World.

NEPAL: W, C & E; 1600–2500 m.

KSL: Humla in KSL Nepal; 1900 m

*Representative specimen*. **HUMLA**: Ruga – Luma Gaon, 1900 m (KR Rajbhandari & B Roy 3807, 24 Jul 1979, KATH<sup>1</sup>).

**Digitaria violascens** Link, Hort. Bot. Berol. 1: 229 (1827). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 130 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 295 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 244 (2018).

*Digitaria chinensis* (Nees) A. Camus (1923), nom. illeg., non Hornem. (1819); *Digitaria fusca* (J. Presl) Merr.; *Panicum violascens* (Link) Kunth; *Paspalum chinense* Nees; *Paspalum fuscum* J. Presl

ENG: Purple crabgrass, Violet crabgrass.

Loosely caespitose or mat-forming annual herbs; culms ascending or decumbent, up to 60 cm long.

*Habitat*: Grassy slopes, roadsides, field margins, sandy river banks.

*Distribution*: Tropical and subtropical regions in Asia, N & E Australia.

NEPAL: W, C & E; 300–2500 m.

KSL: Pithoragarh, Uttarakhand in KSL India, and neighboring Bajura District, Nepal; 1800–2100 m. It is likely also to be present in the KSL area of Far West Nepal.

*Representative specimens*. **BAJURA**: Babali – Sanfebagar, 1060 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193424, 30 Aug 1991; TI) fide SHB (2013–2020); Damkane – Serigaon, 1800 m (KR Rajbhandari 14972, 13 Aug 1991, KATH<sup>1</sup>).

*Remarks*: Records for Pithoragarh fide GMBA (2012–2016).

## **Drepanostachyum** Keng f., J. Bamboo Res. 2(1): 16 (1983).

**Drepanostachyum falcatum** (Nees) Keng f., J. Bamboo Res. 2(1): 16 (1983). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 296 (2017).

*Arundinaria falcata* Nees, Linnaea 9: 478 (1835); *Arundinaria interrupta* Trin.; *Sinarundinaria falcata* (Nees) C.S. Chao & Renvoize

NEP-L: Nigālo (निगालो). NEP: Diu nigālo, Ghore nigālo (दिउ निगालो, घोरे निगालो).

ENG: Himalayan bamboo, Himalayan weeping bamboo.

Tall shrubby bamboos, with short pachymorph rhizomes; culms erect, woody, up to 3.5 m long.

*Habitat*: Bamboo thickets, roadside, evergreen mixed broad-leaved forests.

*Distribution*: W & C Himalaya (Kashmir to Nepal), mainland SE Asia.

NEPAL: W, C & E; 1000–2450 m.

KSL: Baitadi, Darchula, Bajhang and Humla in KSL Nepal, and neighboring Bajura; 1900–2450 m.

*Representative specimens*. **BAITADI**: Shribhwar, 2443 m (TR Pandey & GD Bhatt 2016655, 6 Jun 2016, KATH<sup>1</sup>). **BAJHANG**: Between Panalta & Kuwa, 1900–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0309, 13 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA**: Bashala – Pategaon, 2050 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9192368, 15 Aug 1991; TI<sup>1</sup> image). **HUMLA**: Chhipra, 2400 m (SK Ghimire, RP Chaudhary & team P12301, 26 May 2010; TUCH<sup>1</sup>).

*Ethnobot. use*: Culms are used for construction purposes. Culms are most commonly used to prepare outer frame of 'chalni' (utensil consisting of a round frame surrounding a mesh made up of goat leather with large pores, used for hand sieving of wheat, barley, etc.).

*Local abund.*: Occasional to frequent.

**Drepanostachyum intermedium** (Munro) Keng f., J. Bamboo Res. 2(1): 18 (1983). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 296 (2017).

*Arundinaria intermedia* Munro, Trans. Linn. Soc. London 26: 28 (1868); *Chimonobambusa intermedia* (Munro) Nakai; *Sinarundinaria intermedia* (Munro) C.S. Chao & Renvoize

NEP-L: Nigālo (निगालो). NEP: Nigālo bāns, Tite nigālo (निगालो बाँस, तीते निगालो).

ENG: Intermediate cane bamboo.

Tall shrubby bamboos, with short pachymorph rhizomes; culms erect, woody, up to 4 m long.

*Habitat:* Bamboo thickets, roadside, forests.

*Distribution:* C & E Himalaya (Nepal to Bhutan).

NEPAL: W, C & E; (200–)1000–2400 m.

KSL: Bajhang in KSL Nepal; 2200–2400 m.

*Representative specimen.* **BAJHANG:** Between Dhalun & Kakarkot, below Deurali, NW aspect, 2900–2200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0570, 16 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>).

*Ethnobot. use:* Culms are used for construction purposes and to prepare different articles.

## **Echinochloa** P. Beauv., Ess. Agrostogr. 53 (1812).

**Echinochloa colona** (L.) Link, Hort. Bot. Berol. 2: 209 (1833). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 130 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 297 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 245 (2018).

*Panicum colonum* L., Syst. Nat., ed. 10, 2: 870 (1759); *Echinochloa crus-galli* (L.) P. Beauv. subsp. *colona* (L.) Honda

NEP: Sāmā, Sāmā-ghāns (सामा, सामा-घाँस).

ENG: Awnless barnyard grass, Bird's grass, Deccan grass, Jungle-rice, Pigeon millet, Marsh grass.

Laxly caespitose annual herbs; culms stout, erect or geniculately ascending, up to 100 cm long.

*Habitat:* Open damp places, marshes, weeds in irrigated fields.

*Distribution:* Probably native to tropical and subtropical regions in Africa and Asia; now widespread throughout the tropical and subtropical regions of the World

NEPAL: W, C & E; 100–2400 m.

KSL: Pithoragarh, Uttarakhand in KSL India; and neighboring Bajura District, Nepal.

*Representative specimens.* **BAJURA:** Babali – Sanfebagar, 1060 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193425, 30 Aug 1991; TI) fide SHB (2013–2020); Kaudegaon – Babali, 1400 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9192636, 29 Aug 1991; TI) fide SHB (2013–2020).

*Remarks:* Records for Pithoragarh fide CIAT (2018).

*Conserv. status:* GLB., Least Concern (Lansdown 2013e).

**Echinochloa crus-galli** (L.) P. Beauv., Ess. Agrostogr.: 53, 161 (1812). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 130 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 297 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 245 (2018).

*Panicum crus-galli* L., Sp. Pl. 1: 56 (1753).

NEP: Sāmā, Sāmā-ghāns, Tunde sāmā (सामा, सामा-घाँस, टुँडे सामा).

ENG: Barnyard grass, Barnyard millet, Cocksfoot punicum, Cockspur grass.

Laxly caespitose annual herbs; culms stout, erect or geniculately ascending, up to 100 cm long.

*Habitat:* Damp weedy places, ditches, streamsides, roadsides, paddy fields, waste places, fallow fields.

*Distribution:* Probably native to S & E Europe, Africa, and tropical to warm temperate regions in Asia; now distributed throughout the tropical and warm temperate regions of the World.

NEPAL: W, C & E; 300–2600 m.

KSL: Bajhang and Darchula in KSL Nepal and neighboring Bajura and Dadeldhura; 1500–2300 m.

*Representative specimens.* **BAJHANG:** Rupatola, 1500–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0110, 11 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>); Jimkot – Khaptad National Park, 2050 m (M Suzuki, H

Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9192554, 26 Aug 1991; TI) fide SHB (2013–2020). **BAJURA**: Kuru, 2285 m (BSH C80, 20 Aug 17) fide RBGE (2014). **DADEL DHURA**: Jogbura – Mauri, 400 m (KR Rajbhandari, PM Regmi & KJ Malla 5343, 14 Aug 1980; KATH<sup>1</sup>). **DARCHULA**: Rapla, 1800 m (KR Rajbhandari & KJ Malla 5581, 25 Aug 1980; KATH<sup>1</sup>).

*Conserv. status*: GLB., Least Concern (Gupta & Lansdown 2013).

## **Eleusine** Gaertn., Fruct. Sem. Pl. 1: 7 (1788).

**Eleusine coracana** (L.) Gaertn., Fruct. Sem. Pl. 1: 8 (1788). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 130 (1978). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 246 (2018).

*Cynosurus coracanus* L., Syst. Nat. ed. 10, 2: 875 (1759).

NEP-L: Kodo (कोदो). NEP: Kodo, Manduwā, Maruwā (कोदो, मडुआ, मरुवा).

ENG: African millet, Finger millet. HIN: Manduā, Mandwā, Maruwā, Rāgī (मडुआ, मंडवा, मरुवा, रागी).

Caespitose annual herbs; culms erect or ascending, to 100 cm or more in length.

*Habitat*: Cultivated, occasionally escape.

*Distribution*: Originated in highlands of E Africa, widely cultivated as a cereal crop in tropical and subtropical regions of the Old World.

NEPAL: W, C & E; 700–2500 m.

KSL: Baitadi, Bajhang and Darchula in KSL Nepal, and neighboring Bajura and Doti; 800–2500 m.

*Representative specimens*. **BAJHANG**: Rupatola, 1500–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0073, 11 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>); Aagar – Dhalaun, 1800 m (KR Rajbhandari 15384, 19 Aug 1991; KATH<sup>1</sup>). **BAJURA**: Berseni – Porakya, 1560–2540 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9195011, 12 Aug 1991; KATH<sup>1</sup>, TI<sup>1</sup> image).

*Ethnobot. use*: Grains are used as cereal to make a kind of porridge. Plants are used as forage for livestock. Grains are also used for brewing alcoholic beverages.

**Eleusine indica** (L.) Gaertn., Fruct. Sem. Pl. 1: 8 (1788). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 131 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 298 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 246 (2018).

*Cynosurus indicus* L., Sp. Pl. 1: 72 (1753).

NEP-L: Van kode (वन कोदे). NEP: Kode-ghāns, Kode-jhār (कोदे-घाँस, कोदे-झार).

ENG: Crowsfoots grass, Indian goosegrass. HIN: Jangalī marwā, Jīngārī (जङ्गली मरुवा, जीङ्गारी).

Caespitose annual herbs; culms slender, erect or geniculately ascending, to 55 cm or more in length.

*Habitat*: Grassland, disturbed places, roadsides, agriculture fields.

*Distribution*: Native to tropical and subtropical regions in Africa and Asia; now distributed as a weed almost throughout the tropics and subtropics of the world.

NEPAL: W, C & E; 160–2600 m.

KSL: Baitadi and Darchula in KSL Nepal, and neighboring Bajura; 900–2000 m.

*Representative specimens*. **BAJURA**: Birseni – Porakya, 1590 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193229, 12 Aug 1991; TI) fide SHB (2013–2020). **DARCHULA**: Darchula–Huti, 900 m (KR Rajbhandari & KJ Malla 5557, 24 Aug 1980; KATH<sup>1</sup>); Khar VDC, 1960 m (BB Shrestha, M Pandey & R Chhetri 347, 3 Oct 2015; TUCH<sup>1</sup>).

*Conserv. status*: GLB., Least Concern (Watve 2011c).

**Elymus** L., Sp. Pl. 1: 83 (1753).

**Elymus antiquus** (Nevski) Tzvelev, Trudy Bot. Inst. Komarova Akad. Nauk SSSR, Rast. Tsentral. Azii 4: 220 (1968). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 298 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 246 (2018).

*Agropyron antiquum* Nevski, Izv. Bot. Sada Akad. Nauk S.S.S.R. 30: 515 (1931 publ. 1932); *Agropyron microlepis* Melderis; *Elymus microlepis* (Melderis) Melderis

Caespitose perennial herbs; culms erect, to 45 cm or more in length.

*Habitat*: Open stony slopes.

*Distribution*: Nepal, Tibetan Plateau, SC China.

NEPAL: W & C; 3900–4100 m.

KSL: Known from neighboring Mugu District, Nepal; 3660 m.

*Representative specimens*. MUGU: Between Mugu & Purana Mugu, Mugu Khola, 3962 m (O Polunin, WR Sykes & LHJ Williams 5325, 10 Aug 1952; holotype of *Agropyron microlepis* BM000884600<sup>1</sup> image, isotype of *A. microlepis* E00393854<sup>1</sup> image, isotype of *A. microlepis* FR 0031113<sup>1</sup> image).

**Elymus dahuricus** Turcz. ex Griseb. in Ledeb., Fl. Ross. 4: 331 (1852). Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 131 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 299 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 247 (2018).

*Clinelymus dahuricus* (Turcz. ex Griseb.) Nevski; *Clinelymus tangutorum* Nevski; *Elymus tangutorum* (Nevski) Hand.-Mazz.

ENG: Wildrye, Dahurian wildrye.

Caespitose perennial herbs; culms erect, robust, up to 120 cm long.

*Habitat*: Open grassy slopes, moist and swampy places, field margins.

*Distribution*: Subtropical and temperate regions in Asia, Himalaya.

NEPAL: W & C; 2600–4400 m.

KSL: Humla in KSL Nepal; 2700–3100 m.

*Representative specimen*. HUMLA: Marghor, 2745–3050 m (SB Malla 14120, 21 Jul 1968; *Elymus tangutorum* BM000064659<sup>1</sup> image).

**Elymus longearistatus** (Boiss.) Tzvelev, Novosti Sist. Vyssh. Rast. 9: 62 (1972).

*Brachypodium longearistatum* Boiss., Diagn. Pl. Orient. 7: 127 (1846); *Agropyron canaliculatum* Nevski; *Agropyron flexuosissimum* Nevski; *Agropyron longearistatum* (Boiss.) Boiss.; *Elymus canaliculatus* (Nevski) Tzvelev; *Elymus longearistatus* subsp. *canaliculatus* (Nevski) Tzvelev; *Elymus longearistatus* subsp. *flexuosissimus* (Nevski) Tzvelev

Caespitose perennial herbs; culms erect or geniculately ascending, up to 70 cm long.

*Habitat*: Open grassy slopes, rocks.

*Distribution*: Turkey, Arabian Peninsula, C Asia, Afghanistan to C Himalaya, Tibetan Plateau.

NEPAL: C & E; 3400–4800 m.

KSL: Pithoragarh, Uttarakhand in KSL India; and SW Xizang in KSL China. It is likely also to be present in upper Darchula and upper Humla in KSL Nepal.

*Representative specimens*. XIZANG (CHINA): Gnari Khorsum [Ngari Korsum], northern foot of the Uta Dhura Pass across the Kiungar Pass to its northern foot, 4938–5364 m (Schlagintweit 7342, 9–12 Jul 1855; L.1205358<sup>1</sup> image); Gnari Khorsum [Ngari Korsum], Poti via Lomorti to Poling (Schlagintweit 7113, 5–15 Sept 1855; L.1205359<sup>1</sup> image). WEST HIMALAYA: without locality (JF Duthie 22673a, s.n.; BM011029507<sup>1</sup> image).

*Remarks*: Records for Pithoragarh fide GMBA (2012–2016).



**Elymus nepalensis** (Melderis) Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 131 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 299 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 247 (2018).

*Agropyron nepalense* Melderis in Bor, Grass. Burma, Ceylon, India & Pakistan: 692 (1960).

Loosely caespitose perennial herbs; culms erect or geniculately ascending, 30–70 cm long.

*Habitat*: Open grassy slopes, beside abandoned fields.

*Distribution*: Endemic to Nepal, W, C & E; 1500–4000 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura and Mugu; 2000–3350 m.

*Representative specimens*. **BAJHANG**: Khaptad National Park, trail from Ghoda daune to Lokhada, 2559 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913046, 3 Jul 2009; E00624566, KATH<sup>1</sup>). **BAJURA**: Birseni – Porakya, 2000 m (KR Rajbhandari 14880, 12 Aug 1991; KATH<sup>1</sup>). **DARCHULA**: Nampa Gadh, 3050–3350 m (JF Duthie 6226, 25 Jul 1886; *Agropyron nepalense* K000032430<sup>1</sup> image).

**Elymus nutans** Griseb., Nachr. Königl. Ges. Wiss. Georg-Augusts-Univ. 3: 72 (1868). Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 132 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 299 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 247 (2018).

*Clinelymus nutans* (Griseb.) Nevski

Caespitose perennial herbs; culms erect or geniculately ascending, 15–80 cm or more in length.

*Habitat*: Grassy slopes, riverside sands and pebbles, open rocky slopes.

*Distribution*: C Asia, Afghanistan to E Himalaya, Tibetan Plateau, N & SE China, Mongolia.

NEPAL: W, C & E; 2700–4600 m.

KSL: Bajhang and Humla in KSL Nepal; 2700–4600 m [Pulan Xian, SW Xizang in KSL China].

*Representative specimens*. **BAJHANG**: Kaliganga, near Saipal, 3939 m (H Tabata, KR Rajbhandari & K Tsuchiya 1843, 31 Jul 1976; KATH<sup>1</sup>); Saipal, 4572 m (JEM Arnold 59, 19 Aug 1954; BM000064580<sup>1</sup> image). **HUMLA**: Marghor (SB Malla 14130, 23 Jul 1968; BM000064558<sup>1</sup> image); Marghor, 3048–3353 m (SB Malla 14122, 21 Jul 1968; BM000064559). **XIZANG (CHINA)**: Pulan Xian, 30.29°N 81.17°E (Qinghai-Tibet team vegetation group 6737129, 1976; PE) fide Kong & Yang (2019).

**Elymus schrenkianus** (Fisch. & C.A. Mey. ex Schrenk) Tzvelev, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 20: 428 (1960). Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 132 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 300 (2017).

*Triticum schrenkianum* Fisch. & C.A. Mey. ex Schrenk, Bull. Cl. Phys.-Math. Acad. Imp. Sci. Saint-Pétersbourg 3: 305 (1845); *Agropyron schrenkianum* (Fisch. & C.A. Mey. ex Schrenk) P. Candargy; *Elymus pamiricus* Tzvelev

Caespitose perennial herbs; culms robust, erect or geniculately ascending, up to 100 cm long.

*Habitat*: Grassy slopes, alpine grassland.

*Distribution*: C Asia, Afghanistan to E Himalaya, Tibetan Plateau, N China, Russia (S Siberia), Mongolia.

NEPAL: W, C & E; 2700–4800 m.

KSL: Bajhang and Humla in KSL Nepal, and neighboring Mugu; 2900–4500 m [also in Ralam, Pithoragarh, KSL India; and upper Karnali region of Pulan Xian, SW Xizang in KSL China].

*Representative specimens*. **BAJHANG**: Saipal, 3878 m (H Tabata, KR Rajbhandari & Tsuchiya 1780, 30 Jul 1976; KATH<sup>1</sup>); Saipal, 3909 m (H Tabata, KR Rajbhandari & Tsuchiya 1811, 31 Jul 1976; KATH<sup>1</sup>). **MUGU**: Rara, 2900 m (KR Rajbhandari & B Roy 3684, 21 Jul 1979; KATH, TI<sup>1</sup> image).

*Remarks*: Records for Pithoragarh and Pulan Xian fide GMBA (2012–2016).

**Elymus semicostatus** (Nees ex Steud.) Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 132 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 300 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 247 (2018).

*Agropyron semicostatum* Nees ex Steud., Syn. Pl. Glumac. 1: 346 (1854); *Agropyron striatum* (Steud.) Hook. f.; *Triticum semicostatum* Steud.; *Triticum striatum* Steud.

ENG: Drooping wildrye.

Caespitose perennial herbs; culms erect or geniculately ascending, 30–90 cm or more in length.

*Habitat*: Open places, grassy slopes.

*Distribution*: Afghanistan, NW Pakistan to E Himalaya.

NEPAL: W & C; 1700–4000 m.

KSL: Known from Pithoragarh, Uttarakhand in KSL India, and neighboring Bajura and Mugu, Nepal; 2000–2600 m. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimens*. **BAJURA**: Birseni – Porakya, 2000 m (KR Rajbhandari 14879, 12 Aug 1991; KATH<sup>1</sup>). **MUGU**: Ghurchi Lekh – Jhyari Gaon, 2600 m (KR Rajbhandari & B Roy 3669, 20 Jul 1979; TI) fide SHB (2013–2020). **UTTARAKHAND (INDIA)**: Almora, Kumaon, 1676 m (R Strachey & JE Winterbottom 1179; BM000064599<sup>1</sup> image); Kumaon (JF Duthie 6137, 8 Aug 1886; BM000064640<sup>1</sup> image).

**Elymus sibiricus** L., Sp. Pl. 1: 83 (1753). Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 132 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 300 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 247 (2018).

*Bromus dubius* Jacq. ex Hook. f.; *Clinelymus sibiricus* (L.) Nevski; *Hordeum sibiricum* (L.) Schenck

ENG: Siberian wildrye.

Caespitose perennial herbs; culms erect, decumbent at base, 30–50 cm or more in length.

*Habitat*: Moist open places, grassland, sandy places.

*Distribution*: NE Europe, subtropical and temperate regions in Asia (from C Asia to N & NE Russia, Himalaya, China, Japan), Subarctic N America.

NEPAL: W & C; 2650–4400 m.

KSL: Known from neighboring Mugu District, Nepal [also in Pulan Xian, SW Xizang in KSL China]; 3100–4500 m. It is likely also to be present in upper Humla in KSL Nepal.

*Representative specimens*. **MUGU**: Ghurchi Lekh, 3100 m (KR Rajbhandari & B Roy 3520, 18 Jul 1979; TI 10003999<sup>1</sup> image). **XIZANG (CHINA)**: Pulan Xian, 30.29°N 81.17°E (Qinghai-Tibet team vegetation group 6737137, 1976; PE) fide Kong & Yang (2019).

**Elymus sikkimensis** (Melderis) Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 132 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 300 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 247 (2018).

*Agropyron sikkimense* Melderis in Bor, Grass. Burma, Ceylon, India & Pakistan: 694 (1960).

Caespitose perennial herbs; culms erect, up to 40–90 cm or more in length.

*Habitat*: Moist open places, grassland, stream banks.

*Distribution*: C & E Himalaya (Nepal to Bhutan).

NEPAL: W, C & E; 2000–3200 m.

KSL: Bajhang in KSL Nepal; *c.* 2900 m.

*Representative specimen*. **BAJHANG**: North slope of Mt. Rosia range, 2880 m (H Tabata, KR Rajbhandari & K Tsuchiya 1511, 24 Jul 1976; KATH<sup>1</sup>).

## **Eragrostis** Wolf, Gen. Pl. 23 (1776).

**Eragrostis minor** Host, Fl. Austriaca 1: 135 (1827). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 132 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 304 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 249 (2018).

*Poa eragrostis* L., Sp. Pl. 1: 68 (1753).

ENG: Lesser love grass, Little lovegrass.

Loosely caespitose annual herbs; culms erect or geniculately ascending, 5–30 cm or more in length.

*Habitat*: Open places, grassy slopes, roadsides, irrigated fields, margin of paddy fields, ditches.

*Distribution*: S & E Europe, N Africa, tropical to temperate regions in Asia.

NEPAL: W & C; (700–)1400–3600 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; 1500–2000 m.

*Representative specimens*. **BAJHANG**: Rupatola, 1500–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0135, 11 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA**: Kolti – Birseni, 1400–1560 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170467, 11 Aug 1991; TT<sup>1</sup> image).

**Eragrostis nigra** Nees ex Steud., Syn. Pl. Glumac. 1: 267 (1854). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 132 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 304 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 249 (2018).

*Eragrostis atropurpurea* Hochst. ex Steud.; *Eragrostis degenensis* B.S. Sun & S. Wang

NEP: Phurke khar (फुर्के खर).

Caespitose perennial herbs; culms stout, erect or geniculate at base, 30–50 cm long.

*Habitat*: Grassland, open slopes, edges of agriculture fields, waste places, roadsides.

*Distribution*: W Asia (Transcaucasus), tropical and subtropical regions in S Asia, Himalaya, Tibetan Plateau, C & SE China, mainland SE Asia.

NEPAL: W, C & E; 800–3200 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura and Mugu; 1500–2900 m [also in Pithoragarh District, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Khaptad National Park, trail from Ghoda daune to Lokhada, 2559 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913047, 3 Jul 2009; E00509898, KATH). **BAJURA**: Bashala Gaon to Majpali Gaon, 2000 m (KR Rajbhandari 15057, 15 Aug 1991, KATH<sup>1</sup>). **DARCHULA**: Khar VDC-4, 2060 m (BB Shrestha, M Pandey & R Chhetri 176P, 29 Sept 2015; TUCH<sup>1</sup>); Thin – Dandap, 2500 m (KR Rajbhandari & KJ Malla 5660, 28 Aug 1980; KATH<sup>1</sup>). **HUMLA**: Rimi Gaon, 2400 m (KR Rajbhandari & B Roy 4022, 27 Jul 1979; KATH, TI 10006998); Durpa, 2900 m (KR Rajbhandari & B Roy 4158, 30 Jul 1979; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Dharchula, 1524 m (RC Thakur 913, 30 Jul 1948; MICH 1486664<sup>1</sup> image).

**Eragrostis pilosa** (L.) P. Beauv., Ess. Agrostogr.: 71 (1812). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 133 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 304 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 250 (2018).

*Poa pilosa* L., Sp. Pl. 1: 68 (1753); *Eragrostis indica* (J. Koenig ex Rottler) Willd. ex Steud.; *Eragrostis tenuiflora* Rupr. ex Steud.; *Poa indica* J. Koenig ex Rottler

ENG: Hairy lovegrass, India lovegrass, Soft lovegrass.

Caespitose annual herbs; culms slender, erect, up to 50 cm or slightly more in length.

*Habitat*: Grassland, roadsides, crop fields.

*Distribution:* Europe, Africa, tropical to warm temperate regions in Asia; introduced into Australia and tropical and warmer regions of the Americas.

NEPAL: W, C & E; 200–2850 m.

KSL: Known from neighboring Doti District, Nepal; 2100–2850 m. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimens.* **DOTI:** Above Silgadi on trail to Khaptad National Park, 2110 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911010, 30 Jun 2009, E00624556); Salimgado to Choya Katney Odar, 2850 m (MS Bista & DP Joshi 191, 2 Aug 1972; KATH<sup>1</sup>).

**Eragrostis tenella** (L.) P. Beauv. ex Roem. & Schult., Syst. Veg., ed. 15 bis 2: 576 (1817). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 133 (1978). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 250 (2018).

*Poa tenella* L., Sp. Pl. 1: 69 (1753); *Eragrostis amabilis* (L.) Wight & Arn.; *Eragrostis plumosa* (Retz.) Link; *Eragrostis tenella* (L.) P. Beauv. var. *plumosa* (Retz.) Stapf; *Poa amabilis* L.; *Poa plumosa* Retz.

NEP: Banso, Junge banso, Charindā (बन्सो, जुँगे बन्सो, चरिन्दा).

ENG: Bug's egg grass, Lovegrass. HIN: Bhārbhūṣī (भारभूसी).

Caespitose annual herbs; culms decumbent or geniculate ascending, up to 50 cm long.

*Habitat:* Crop fields, grasslands, waste places, roadsides.

*Distribution:* Native to tropical and subtropical regions in Africa and Asia; introduced and or naturalized in Australasia, and tropical and subtropical regions of the Americas.

NEPAL: W, C & E; 100–1500 m.

KSL: Darchula in KSL Nepal; 1400–1500 m.

*Representative specimen.* **DARCHULA:** Khar VDC-7, 1468 m (BB Shrestha, M Pandey and R Chhetri 434, 29 Sept 2015; TUCH<sup>1</sup>).

**Eragrostis unioides** (Retz.) Nees ex Steud., Syn. Pl. Glumac. 1: 264 (1854). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 133 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 305 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 250 (2018).

*Poa unioides* Retz., Observ. Bot. 5: 19 (1788); *Eragrostis rubens* (Lam.) Hochst. ex Miq.; *Poa rubens* Lam.

NEP: Banso, Tilke-jhār (बन्सो, तिल्केभार).

ENG: Chinese lovegrass.

Caespitose annual or short-lived perennial herbs; culms erect or ascending, 5–40 cm long.

*Habitat:* Grassy slopes, roadsides, river banks, fields.

*Distribution:* Tropical and subtropical regions in Asia, NE Australia; introduced into Africa, Pacific Islands, and tropical and subtropical regions of the Americas.

NEPAL: W, C & E; 100–2200 m.

KSL: Darchula in KSL Nepal, and nearby Dadeldhura and Doti; 400–2100 m.

*Representative specimens.* **DADEL DHURA:** Jogbura – Mauri, 400 m (KR Rajbhandari, PM Regmi, & KJ Malla 5345, 14 Aug 1980; KATH<sup>1</sup>). **DARCHULA:** Khar VDC-4, 1850 m (BB Shrestha, M Pandey & R Chhetri 176, 26 Sept 2015; TUCH<sup>1</sup>, TI 10005688<sup>1</sup> image). **DOTI:** Above Silgadi on trail to Khaptad National Park, 2050 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911017, 30 Jun 2009, E00624564; KATH<sup>1</sup>).

*Conserv. status:* GLB., Least Concern (Watve 2011d).

**Eulalia** Kunth, Révis. Gramin. 1: 160 (1829).

**Eulalia mollis** (Griseb.) Kuntze, Revis. Gen. Pl. 2: 775 (1891). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 134 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 306 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 251 (2018).

*Erianthus mollis* Griseb., Nachr. Königl. Ges. Wiss. Georg-Augusts-Univ. 3: 92 (1868); *Pogonatherum molle* (Griseb.) Roberty; *Pollinia mollis* (Griseb.) Hack.

Caespitose perennial herbs; rhizomes elongated, spreading; culms ascending, 30–50 cm.

*Habitat*: Dry mountain slopes, rocky slopes.

*Distribution*: Himalaya (NW India to Bhutan), Tibetan Plateau.

NEPAL: W, C & E; 1100–3800 m.

KSL: Bajhang and Darchula in KSL Nepal [Almora, Uttarakhand, India]; 1200–2100 m.

*Representative specimens*. **BAJHANG**: Dhalaun – Rasa, 2050 m (KR Rajbhandari 15486, 20 Aug 1991; KATH<sup>1</sup>). **DARCHULA**: Near Ratapani, Guljar VDC, 1200 m (SK Ghimire, LR Joshi, B Awasthi & CK Subedi 13, 21 Oct 2013; TUCH<sup>1</sup>); Khar VDC-2, 2060 m (BB Shrestha, M Pandey & R Chhetri 158, 29 Sept 2015; TUCH<sup>1</sup>). **UTTARAKHAND [INDIA]**: Almora, Kumaon, 1676 m (R Strachey & JE Winterbottom 5 (=931 in herb ‘munro’); isosynotype of *Erianthus mollis* K000245571<sup>1</sup> image).

*Local abund.*: Frequent in Darchula.

**Eulalia staintonii** Bor, Kew Bull. 12: 411 (1958). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 134 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 307 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 251 (2018).

Caespitose perennial herbs; culms erect or ascending, 25–45 cm long.

*Habitat*: Open grassy slopes.

*Distribution*: W & C Himalaya (NW India, Nepal).

NEPAL: W & C; (1050–)1900–2800 m.

KSL: Known from neighboring Bajura District, Nepal; and Kumaon, Uttarakhand, India.

*Representative specimens*. **BAJURA**: Majpali – Pategaon, 1900 m (KR Rajbhandari 15063, 15 Aug 1991, KATH) fide Rajbhandari & Rai (2017). **UTTARAKHAND (INDIA)**: Kumaon, 2130–2440 m (JF Duthie 3554, 17 Sept 1884; CAL) fide Samaddar (1991).

**Eulalia trispicata** (Schult.) Henrard, Blumea 3: 453 (1940). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 134 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 307 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 251 (2018).

*Andropogon trispicatus* Schult., Mant. 2: 452 (1824); *Andropogon hexastachyus* (Hochst.) Steud.; *Andropogon tristachyos* Roxb.; *Erianthus hexastachyus* Hochst.; *Erianthus tristachyus* Nees ex Hook. & Arn.; *Eulalia tristachya* Kuntze; *Pseudopogonatherum trispicatum* (Schult.) Ohwi

Densely caespitose perennial herbs; culms slender, erect, to 60 cm or more in length.

*Habitat*: Open slopes, stony bank, among scrub.

*Distribution*: Tropical and subtropical regions in S Asia, Himalaya, SC China, mainland SE Asia to NE Australia.

NEPAL: W, C & E; 1100–2900 m.

KSL: Bajhang in KSL Nepal [also in Kumaon, Uttarakhand, India]; 1500–2000 m.

*Representative specimens*. **BAJHANG**: Aagar – Dhalaun, 2000 m (KR Rajbhandari 15401, 19 Aug 1991; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Below Jaleat, Kumaon, 1524 m (R Strachey & JE Winterbottom 4; *Erianthus tristachyus* K000943488<sup>1</sup> image).

**Eulaliopsis** Honda, Bot. Mag. (Tokyo). 38: 56 (1924).

**Eulaliopsis binata** (Retz.) C.E. Hubb., Hooker's Icon. Pl. 33: t. 3262: p. 6 (1935). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 134 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 307 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 252 (2018).

*Andropogon binatus* Retz., Observ. Bot. 5: 21 (1789); *Andropogon notopogon* Steud.; *Eulaliopsis angustifolia* (Trin.) Honda; *Eulaliopsis duthiei* Sur; *Ischaemum angustifolium* (Trin.) Hack.; *Pollinidium angustifolium* (Trin.) Haines; *Pollinidium binatum* (Retz.) C.E. Hubb.; *Spodiopogon angustifolius* Trin.

NEP-L/NEP: Bābiyo (बाबियो).

ENG: Sabaigrass. HIN: Bhābar-ghāns (भाबर-घाँस).

Caespitose perennial herbs; culms slender, erect, to 50 cm or more in length.

*Habitat*: Dry slopes, rocky slopes.

*Distribution*: Afghanistan, tropical and subtropical regions in S Asia, Himalaya, C & SE China, mainland SE Asia to Philippines.

NEPAL: W, C & E; 150–2600 m.

KSL: Bajhang and Darchula in KSL Nepal; 1800–2200 m [Kumaon, Uttarakhand, India].

*Representative specimens*. **BAJHANG**: Badigaon – Dantola, 1800 m (KR Rajbhandari 15330, 17 Aug 1991, KATH<sup>1</sup>). **DARCHULA**: Between Ngali & Ghusa, 2200 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-850, 27 Oct 2014; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon (R Strachey & JE Winterbottom s.n.; *Spodiopogon angustifolius* K000943462<sup>1</sup> image).

**Festuca** L., Sp. Pl. 1: 73 (1753).

**Festuca leptopogon** Stapf in Hook. f., Fl. Brit. India 7: 354 (1896). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 134 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 308 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 253 (2018).

*Festuca subulata* Trin. var. *leptopogon* (Stapf) St.-Yves

Loosely caespitose perennial herbs; culms ascending, up to 120 cm or more in length.

*Habitat*: Forests, forest margins, grassy slopes.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, SC China, mainland SE Asia to Indonesia.

NEPAL: W, C & E; 1800–3850 m.

KSL: Darchula and Humla in KSL Nepal; 3000–3850 m.

*Representative specimens*. **DARCHULA**: Upper Chameliya Valley, Gauchhalighol, Pilkanda, 3850 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1478, 27 Jul 2015; TUCH). **HUMLA**: Marghore Lekh, 3050–3350 m (SB Malla 14124a, 27 Jul 1968; BM011026961<sup>1</sup> image).

**Festuca modesta** Steud., Syn. Pl. Glumac. 1: 316 (1854). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 134 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 309 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 253 (2018).

Solitary or laxly caespitose perennial herbs; culms stout, erect, up to 100 cm long.

*Habitat*: Grassy slopes, forests.

*Distribution*: W & C Himalaya (NW India, Nepal), Tibetan Plateau, C China.

NEPAL: W & C; 2500–4300 m.

KSL: Bajhang in KSL Nepal; 2500–3500 m [Uttarakhand, India].

*Representative specimens.* **BAJHANG:** Launi [interpreted] (JF Dobremez 2099, 6 May 1973; E00622526); Kali Gad, 2590 m (JDA Stainton 4849, 10 May 1965; BM) fide Rajbhandari & Rai (2017). **UTTARAKHAND (INDIA):** NW India (JF Royle s.n.; K000032119<sup>1</sup> image).

**Festuca nitidula** Stapf in Hook.f., Fl. Brit. India 7: 350 (1896). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 134 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 309 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 253 (2018).

Laxly caespitose perennial herbs; culms slender, erect or geniculately ascending, (8–)15–45 cm long.

*Habitat:* Wet places in meadows, open grassy slopes.

*Distribution:* W & C Himalaya (Kashmir to Nepal), Tibetan Plateau, C China.

NEPAL: W & C; 3200–5000 m.

KSL: Bajhang in KSL Nepal; 4150 m.

*Representative specimen.* **BAJHANG:** Surmasarowar, 4150 m (MS Bista & DP Joshi 582, 26 Aug 1972; KATH<sup>1</sup>).

**Festuca ovina** L., Sp. Pl. 1: 73 (1753). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 134 (1978). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 253 (2018).

ENG: Sheep fescue.

Densely caespitose perennial herbs; culms erect or geniculately ascending, (2.5–)10–40 cm long.

*Habitat:* Meadows, steppe, forests.

*Distribution:* Europe, N Africa, W & N Asia, Afghanistan to E Himalaya, Tibetan Plateau, N & C China to Japan and Russian Far East, N America.

NEPAL: W, C & E; 2900–5600 m.

KSL: Bajhang and Humla in KSL Nepal, and neighboring Mugu; 2900–3900 m [Pulan Xian, SW Xizang in KSL China].

*Representative specimens.* **HUMLA:** Chankheli Lagna, 3500 m (KR Rajbhandari & B Roy 3863, 25 Jul 1979; TI 10010113) fide SHB (2013–2020); Marghor Lagna, 3650 m (KR Rajbhandari & B Roy 4114, 29 Jul 1979; TI 10010114) fide SHB (2013–2020). **MUGU:** Rara, 2900 m (KR Rajbhandari & B Roy 3689, 21 Jul 1979; TI 10010111) fide SHB (2013–2020). **XIZANG (CHINA):** Pulan Xian, 30.29°N 81.17°E (Qinghai-Tibet team vegetation group 6686993, 1976; PE) fide Kong & Yang (2019).

**Festuca parvigluma** Steud., Syn. Pl. Glumac. 1: 305 (1854). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 134 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 309 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 253 (2018).

Loosely caespitose or turf-forming perennial herbs; culms erect or geniculately ascending, 30–60 cm long.

*Habitat:* Grassy slopes, forests, river banks, roadsides and other disturbed areas.

*Distribution:* C & E Himalaya (Nepal, NE India), Tibetan Plateau, C & SE China to Japan.

NEPAL: W, C & E; 1900–3700 m.

KSL: Known from neighboring Doti and Mugu districts, Nepal; 2900–3300 m.

*Representative specimens.* **DOTI:** Khaptad, 2970 m (H Tabata, KR Rajbhandari & K Tsuchiya 189, 12 Jul 1976; KATH<sup>1</sup>). **MUGU:** Ghurchi to Chuchamara Danda, 3300 m (KR Rajbhandari & B Roy 3555, 19 Jul 1979; TI 10007168) fide SHB (2013–2020).

*Conserv. status:* GLB., Least Concern (Brummitt 2013a).

**Festuca polycolea** Stapf in Hook. f., Fl. Brit. India 7: 349 (1896). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 134 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 309 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 253 (2018).

*Festuca ovina* L. subsp. *polycolea* (Stapf) St.-Yves; *Festuca polycolea* var. *brevis* Stapf

Densely caespitose perennial herbs; culms slender, erect, 8–20 cm long.

*Habitat*: Grassland, scree slopes.

*Distribution*: Himalaya (NW India to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; (2200–)2800–4800 m.

KSL: Bajhang and Humla in KSL Nepal, and neighboring Doti and Mugu; 3000–4600 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Saipal, 4570 m (JEM Arnold 62, 19 Aug 1954; BM011026919<sup>1</sup> image). **DOTI**: Khaptad, 3000 m (H Tabata, KR Rajbhandari & K Tsuchiya 181, 9 Jul 1976; KATH<sup>1</sup>). **HUMLA**: Chankheli Lagna, 3500 m (KR Rajbhandari & B Roy 3851, 25 Jul 1979; TI 10010095) fide SHB (2013–2020). **MUGU**: Ghurchi – Chuchamara Danda, 3400 m (KR Rajbhandari & B Roy 3574, 19 Jul 1979; *Festuca polycolea* var. *brevis* TI 10010078) fide SHB (2013–2020). **UTTARAKHAND (INDIA)**: Dhaul Valley, Kumaon, 3048–3353 m (JF Duthie 6156, 6 Aug 1886; syntype K000032191<sup>1</sup> image).

**Festuca tibetica** (Stapf) E.B. Alexeev, Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol. 83(4): 118 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 310 (2017).

*Festuca valesiaca* Schlecht. ex Gaudin var. *tibetica* Stapf in Hook. f., Fl. Brit. India 7(22): 349 (1896).

Densely caespitose perennial herbs; culms erect, 4–15 cm long.

*Habitat*: Open grassy slopes, among rocks on steep grassy slopes, scree slopes.

*Distribution*: Karakoram, Himalaya (Kashmir to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 3700–6000 m.

KSL: Upper Mahakali in KSL India and Nepal; and Pulan Xian, SW Xizang in KSL China; 4600–5500 m. It is likely also to be present in Humla (upper Limi) in KSL Nepal.

*Remarks*: Specimen records for upper Mahakali (B Dickoré Coll. MSB; and JF Duthie Coll. K) and SW Xizang (G & S Miehe Coll. Miehe) fide GMBA (2012–2016).

**Glyceria** R. Br., Prodr. 179 (1810).

**Glyceria tonglensis** C.B. Clarke, J. Linn. Soc., Bot. 15: 119 (1876). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 135 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 312 (2017).

*Glyceria kashmiriensis* Kelso; *Glyceria ovatiflora* Keng ex Tzvelev; *Glyceria rivularis* Jacquem. ex Hook. f.

Solitary or caespitose perennial herbs, rhizomes elongated; culms ascending, 20–50 cm long.

*Habitat*: Forests, among shrubs, moist grasslands, marshy places, streamsides.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, Myanmar, S China.

NEPAL: W, C & E; 2000–4100 m.

KSL: Bajhang and Humla in KSL Nepal, and neighboring Bajura and Mugu; 2400–3300 m.

*Representative specimens*. **BAJHANG**: Khaptad, 2930 m (KR Rajbhandari 15639, 28 Aug 1991; KATH<sup>1</sup>); trail from Budkhor to Dhahidunga Kharka, 3253 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913110, 12 Jul 2009; KATH<sup>1</sup>). **BAJURA**: Porakya, 2600 m (KR Rajbhandari 14816, 12 Aug 1991, KATH<sup>1</sup>). **HUMLA**: Chankheli – Rimi, 2450 m (KR Rajbhandari & B



Roy 3953, 26 Jul 1979; KATH<sup>1</sup>); Marghor Langa, 3300 m (KR Rajbhandari & B Roy 4167, 31 Jul 1979; KATH<sup>1</sup>). **MUGU**: Ghurchi Lekh – Jhyari Gaon, 3000 m (KR Rajbhandari & B Roy 3660, 20 Jul 1979; KATH<sup>1</sup>).

## **Hackelochloa** Kuntze, Revis. Gen. Pl. 2: 776 (1891).

**Hackelochloa granularis** (L.) Kuntze, Revis. Gen. Pl. 2: 776 (1891). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 135 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 312 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 254 (2018).

*Cenchrus granularis* L., Mant. Pl. 2: 575 (1771); *Manisuris granularis* (L.) L. f.; *Mnesithea granularis* (L.) de Koning & Sosef

ENG: Pitscale grass.

Caespitose annual herbs; culms erect, 20–50 cm or more in length.

*Habitat*: Open grassy places, disturbed places, fallow fields.

*Distribution*: Tropical and subtropical regions of the Old World.

NEPAL: W, C & E; 100–1500 m.

KSL: Baitadi and Darchula in KSL Nepal, and neighboring Bajura; 850–1500 m.

*Representative specimens*. **BAITADI**: Baitadi, 1500 m (I Sharma, R Joshi, R Uprety & I Pandey 642, 22 Aug 1981; KATH<sup>1</sup>). **BAJURA**: Tolebhir – Berma, 1125 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193595, 9 Aug 1991; TI) fide SHB (2013–2020); Kolti, 1393 m (H Tabata, KR Rajbhandari & K Tsuchiya 2687, 20 Aug 1976; KATH<sup>1</sup>). **DARCHULA**: Api-13, Khalanga, 860 m (BB Shrestha, M Pandey & R Chhetri 430, 10 Oct 2015; TUCH<sup>1</sup>).

## **Hemarthria** R. Br., Prodr. Fl. Nov. Holl.: 207 (1810).

**Hemarthria compressa** (L. f.) R. Br., Prodr. Fl. Nov. Holl.: 207 (1810). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 135 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 313 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 255 (2018).

*Rottboellia compressa* L. f., Suppl. Pl. 114 (1782); *Hemarthria glabra* (Roxb.) Blatt. & McCann; *Hemarthria laxa* Nees ex Steud.; *Rottboellia glabra* Roxb.

NEP: Ghode dûbo, Makaiya ghâns (घोडे दूबो, मकैया-घाँस).

ENG: Jove grass, Whip grass.

Stoloniferous perennial herbs; culms decumbent, up to 100 cm long.

*Habitat*: Grassy slopes, marshes, wet places, roadsides.

*Distribution*: E Africa, Arabian Peninsula, Afganistan, tropical and subtropical regions in S Asia, Himalaya, C & SE China to Japan, SE Asia.

NEPAL: W, C & E; 100–2900 m.

KSL: Known from neighboring Bajura District, Nepal; 1400–1500 m.

*Representative specimen*. **BAJURA**: Serigaon – Bashalagaon, 1450 m (KR Rajbhandari 14985, 14 Aug 1991, KATH) fide Rajbhandari & Rai (2017).

*Conserv. status*: GLB., Least Concern (Kumar 2011d).

## **Heteropogon** Pers., Syn. Pl. 2: 533 (1807).

**Heteropogon contortus** (L.) P. Beauv. in Roem. & Schult., Syst. Veg., ed. 15 bis 2: 836 (1817). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 135 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 313 (2017).

*Andropogon contortus* L., Sp. Pl. 2: 1045 (1753).

NEP: Arthunge, Dāpsu khar (अर्थुङ्गे, दाप्सु खर).

ENG: Black spear-grass, Spear-grass, Stick-grass, Tanglehead.

Caespitose perennial herbs; culms slender, erect, sometimes geniculate at base, up to 100 cm long.

*Habitat*: Dry grassy slopes, along the trail.

*Distribution*: S & C Europe and tropical and subtropical regions of the World.

NEPAL: W, C & E; 300–2800 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 800–2100 m.

*Representative specimens*. **BAJHANG**: Talkot – Aagar, 2000 m (KR Rajbhandari 15260, 18 Aug 1991; KATH<sup>1</sup>); Agara – Dhalun, 2000–2100 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0385, 14 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA**: Kolti – Birseni, 1400 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170460, 11 Aug 1991; TI) fide SHB (2013–2020). **DARCHULA**: Khar VDC-2, 1780 m (BB Shrestha, M Pandey & R Chhetri 320, 29 Sept 2015; TUCH<sup>1</sup>). Sunchera, 1800 m (KR Rajbhandari & KJ Malla 5566, 25 Aug 1980; KATH<sup>1</sup>).

**Hordeum** L., Sp. Pl. 1: 84 (1753).

**Hordeum vulgare** L., Sp. Pl. 1: 84 (1753).

DOZ/LIM: Uwā (उवा). NEP: Jau (जौ).

ENG: Barley, Six-rowed barley. HIN: Jau (जौ). SAN: Akchhata, Yava (अक्षत, यव). TIB: né (ने).

Caespitose annual herbs; culms erect, 40–80 cm long.

*Habitat*: Commonly cultivated.

*Distribution*: Cultivated worldwide in all non-tropical countries and in montane areas of tropics.

NEPAL: W, C & E; 600–4200 m.

KSL: Cultivated in most of the KSL districts in Nepal; 2400–3500 m.

*Representative specimens*. **DARCHULA**: Tinkar, 3500 m (KR Rajbhandari & KJ Malla 5776, 1 Sept 1980; KATH<sup>1</sup>). **HUMLA**: Between Kermi & Salli Pass, 2800 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1811, 14 Sept 2012; TUCH<sup>1</sup>).

*Ethnobot. use*: Grains are mostly used for preparing ‘satu’ and brewing alcohol or local beer.

**Imperata** Cirillo, Pl. Rar. Neapol. 2: 26 (1792).

**Imperata cylindrica** (L.) P. Beauv., Ess. Agrostogr.: 165 (1812). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 136 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 316 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 258 (2018).

*Lagurus cylindricus* L., Syst. Nat. ed. 10, 2: 878 (1759); *Imperata arundinacea* Cirillo; *Saccharum cylindricum* (L.) Lam.

NEP: Siru, Khar (सिरु, खर).

ENG: Bedding grass, Cogon grass, Sword grass, Thatch grass.

Perennial herbs, with elongated rhizomes; culms erect, 10–100 cm or more in length.

*Habitat*: Open grasslands, forests, disturbed areas, riverside, fields.

*Distribution*: Native to S Europe and humid tropics of Africa and Asia; now widespread as a weed in the warmer climate in temperate regions of Asia, Australia and America.

NEPAL: W, C & E; 100–2400 m.

KSL: Baitadi, Bajhang, and Darchula in KSL Nepal; 600–1850 m.

*Representative specimens.* **BAJHANG:** Trail from Chainpur to Patiudi, 1269 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913065, 6 Jul 2009; E00509880, KATH<sup>1</sup>). **DARCHULA:** Way to Makarigad, 1200 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Pauveyal & DJ Chapagain 2167, 3 Aug 2016; TUCH<sup>1</sup>); Khar VDC-4, 1840 m (BB Shrestha, M Pandey & R Chhetri 250P, 29 Sept 2015; TUCH<sup>1</sup>).

*Ethnobot. use:* Rhizome juice is used in folk medicine to treat diarrhea and dysentery. Whole aerial parts are sometimes used for roofing.

**Isachne** R. Br., Prodr. Fl. Nov. Holl.: 196 (1810).

**Isachne albens** Trin., Sp. Gram.: 1, t. 85 (1828).

*Panicum albens* (Trin.) Steud.

Perennial herbs; culms erect or decumbent at base, 30–100 cm long.

*Habitat:* Forests, forest margins, rocky slopes, grassland.

*Distribution:* Africa, tropical and subtropical regions in Asia.

NEPAL: W, C & E; 1400–2800 m.

KSL: Known from Pithoragarh District, Uttarakhand in KSL India, and neighboring Bajura District, Nepal. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimens.* **BAJURA:** Porakya – Serigaon (M Suzuki, H Hata, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170546, 13 Aug 1991; TI) fide SHB (2013–2020).

**UTTARAKHAND (INDIA):** Girgoan, Kumoan, 1830 m (R Strachey & JE Winterbottom s.n.; K000245405<sup>1</sup> image).

*Conserv. status:* GLB., Least Concern (IUCN 2011).

**Koeleria** Pers., Syn. Pl. 1: 97 (1805).

**Koeleria pyramidata** (Lam.) P. Beauv., Ess. Agrostogr. 84, 166, 175 (1812). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 260 (2018).

*Poa pyramidata* Lam., Tabl. Encycl 1: 183 (1791); *Aira cristata* L.; *Aira gracilis* Trin.; *Aira macrantha* Ledeb.; *Koeleria cristata* Pers., nom. superfl.; *Koeleria gracilis* Pers., nom. superfl.; *Koeleria macrantha* (Ledeb.) Schult.; *Poa nitida* Lam.

ENG: Prairie June grass, Prairie crested hair grass.

Caespitose perennial herbs, with short rhizomes; culms erect, 5–50 cm long.

*Habitat:* Oak forests, forest margins, dry open slopes, grassy slopes, alpine meadows, small ravines.

*Distribution:* Temperate N Hemisphere, W Asia, Himalaya.

NEPAL: W & C; 1900–4500 m.

KSL: Humla in KSL Nepal, and neighboring Bajura, Doti and Mugu [also known from upper Karnali in adjoining Pulan Xian, SW Xizang, China]; 2400–4450 m.

*Representative specimens.* **DOTI:** Napani, 2360 m (H Tabata, KR Rajbhandari & K Tsuchiya 164, 1 Jul 1976; *Koeleria cristata* KATH<sup>1</sup>). **HUMLA:** Simikot Lagna, above Simikot, 3850 m (CA Pendry, S Baral, S Noshiro, S Rajbhandary, PP Kurmi, B Dell & B Adhikari JRS A232, 21 Jun 2008; *Koeleria cristata*, E00392134, KATH<sup>1</sup>).

**MUGU:** Ghurchi Lekh – Jhyari Gaon, 2600 m (KR Rajbhandari & B Roy 3673, 20 Jul 1979; TI 10001874)

fide SHB (2013–2020); above Dharkya, south of Chankheli Lagna, 2990 m (CA Pendry, S Baral, S Noshiro, S Rajbhandary, PP Kurmi, B Dell & B Adhikari JRS A116, 12 Jun 2008; *Koeleria cristata* E00397512, KATH<sup>1</sup>).

*Remarks:* Specimen records for Pulan Xian fide GMBA (2012–2016).

**Koeleria spicata** (L.) Barberá, A. Quintanar, Soreng & P.M. Peterson subsp. **virescens** (Regel) Barberá, A. Quintanar, Soreng & P.M. Peterson, *Phytoneuron* 2019-46: 9 (2019). Kellogg *et al.*, *PhytoKeys* 163: 155 (2020).

*Avena flavescens* L. var. *virescens* Regel, Bull. Soc. Imp. Naturalistes Moscou 41(2): 299 (1868); *Koeleria spicata* subsp. *himalaica* (Hultén ex Veldkamp) Barberá, A. Quintanar, Soreng & P.M. Peterson; *Trisetum spicatum* (L.) Richt. subsp. *virescens* (Regel) Tzvelev; *Trisetum spicatum* subsp. *himalaicum* Hultén ex Veldkamp; *Trisetum subspicatum* (L.) P. Beauv.; *Trisetum virescens* (Regel) B. Fedtsch. (1915), nom. illeg., non Nees ex Steud. (1854).

Caespitose perennial herbs; rhizomes elongated; culms erect or ascending, to 30 cm long.

*Habitat:* Forests, thickets, grassy slopes, meadows, glacial moraine, streamsides.

*Distribution:* C Asia, Afghanistan to E Himalaya, Tibetan Plateau, N & C China.

NEPAL: W, C & E; 2500–5600 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 2500–4300 m.

*Representative specimens.* **BAJHANG:** Trail from Budkhori to Dhahidunga Kharka, 3253 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913113, 12 Jul 2009; E, KATH<sup>1</sup>); Aletsoura, near Saipal, 4333 m (H Tabata, KR Rajbhandari & K Tsuchiya 1938, 31 Jul 1976; KATH<sup>1</sup>). **DARCHULA:** Kalidhunga, 3902 m (KM Ghimire & M Adhikari F201, 11 Sept 2015; TUCH<sup>1</sup>); upper Chameliya Valley, Gauchhalighol, Pilkanda, 3950 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Pauveyal & DJ Chapagain ANCA-1477, 27 Jul 2015; TUCH<sup>1</sup>).

*Local abund.:* Frequent to common in Darchula.

**Lolium** L., Sp. Pl. 1: 83 (1753).

**Lolium giganteum** (L.) Darbysh., *Novon* 3: 241 (1993). Kellogg *et al.*, *PhytoKeys* 163: 158 (2020).

*Bromus giganteus* L., Sp. Pl. 1: 77 (1753); *Avena flaccida* Hack. ex Hook. f.; *Festuca gigantea* (L.) Vill.; *Trisetum flaccidum* (Hack. ex Hook. f.) R.R. Stewart

ENG: Giant fescue, Giant ryegrass.

Loosely caespitose perennial herbs; culms erect or geniculately ascending, 30–100 cm long.

*Habitat:* Grassy slopes, forest margins, field margins, roadsides.

*Distribution:* Europe, subtropical and temperate Asia from Turkey to Russia, Himalaya and SC China.

NEPAL: W & C; 1850–3900 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura and Doti; 1900–2600 m [Pithoragarh District, Uttarakhand and neighboring areas in KSL India].

*Representative specimens.* **BAJHANG:** Khaptad – Talkot (H Tabata, KR Rajbhandari & K Tsuchiya 9296, 15 Jul 1976; KATH<sup>1</sup>); between Panalta & Kuwa, 1900–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0311, 13 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA:** Porakya – Serigaon, 2460 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170565, 13 Aug 1991; T<sup>1</sup> image). **DOTI:** Khaptad National Park, trail from Jhigrana to Bichpani, 2606 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911024, 1 Jul 2009; E00623968<sup>1</sup> image).

*Remarks:* Specimen records for Uttarakhand fide Duthie (1906) and GMBA (2012–2016).

**Melica** L., Sp. Pl. 1: 66 (1753).

**Melica onoei** Franch. & Sav., Enum. Pl. Jap. 2: 603 (1878). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 320 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 261 (2018).

*Melica scaberrima* (Nees ex Steud.) Hook. f. var. *micrantha* Hook. f.

Caespitose perennial herbs, with elongated rhizomes; culms erect or ascending, to 40 cm or more in length.

*Habitat*: Grassy slopes, among scrub.

*Distribution*: NW Pakistan to E Himalaya, Tibetan Plateau, N & E China to Japan.

NEPAL: W, C & E; 2500–3500 m.

KSL: Darchula and Humla in KSL Nepal; 2500–2900 m.

*Representative specimens*. **DARCHULA**: Dandap, 2500 m (KR Rajbhandari & KJ Malla 5686, 28 Aug 1980; KATH<sup>1</sup>). **HUMLA**: Durpa, 2900 m (KR Rajbhandari & B Roy 4156, 30 Jul 1979; KATH<sup>1</sup>).

**Melica persica** Kunth, Révis. Gramin. 1: 351 (1830). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 320 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 261 (2018).

*Melica jacquemontii* Decne.

Caespitose perennial herbs, with elongated rhizomes; culms erect or ascending, 8–25 cm long.

*Habitat*: Grassy slopes, among scrub.

*Distribution*: N Africa, W & C Asia, Afghanistan to C Himalaya, Tibetan Plateau, N & C China.

NEPAL: W, C & E; 3200–4000 m.

KSL: Known from Kumaon, Uttarakhand, India; and nearby Dolpa District, Nepal. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimen*. **UTTARAKHAND (INDIA)**: Monte supra Kamaun [Kumaon] (V Jacquemont 294; holotype of *Melica jacquemontii* K000032234<sup>1</sup> image).

**Microstegium** Nees in Lindley, Nat. Syst. Bot., ed. 2. 447 (1836).

**Microstegium nudum** (Trin.) A. Camus, Fl. Indo-Chine 7: 261 (1922). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 137 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 321 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 262 (2018).

*Pollinia nuda* Trin., Mém. Acad. Imp. Sci. St.-Pétersbourg, Sér. 6, Sci. Math. 2: 307 (1832); *Eulalia nuda* (Trin.)

Kuntze.; *Leptatherum nudum* (Trin.) C.Hui Chen, Kuoh & Veldkamp; *Leptatherum royleanum* Nees

Mat-forming annual herbs; culms slender, spreading, up to 100 cm long.

*Habitat*: Moist slopes, forest understory, grasslands.

*Distribution*: Tropical Africa, tropical and subtropical regions in S Asia, Himalaya, Tibetan Plateau, C & SE China to Japan, SE Asia.

NEPAL: W, C & E; 800–3200 m.

KSL: Bajhang and Darchula in KSL Nepal; 2000–2200 m.

*Representative specimens*. **BAJHANG**: Rasa – Roshidanda, 2000 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170844, 21 Aug 1991; TI) fide SHB (2013–2020); Jimkot – Khaptad, 2100 m (KR Rajbhandari 15593, 26 Aug 1991; KATH<sup>1</sup>). **DARCHULA**: Tipulchyakti – Dopakhe, 2200 m (KR Rajbhandari & KJ Malla 5861, 10 Sept 1980; KATH<sup>1</sup>).

**Microstegium petiolare** (Trin.) Bor, Indian Forest Rec., Bot., n.s., 1(3): 87 (1938). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 137 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 321 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 262 (2018).

*Spodiopogon petiolaris* Trin., Mém. Acad. Imp. Sci. St.-Pétersbourg, Sér. 6, Sci. Math. 2: 301–302 (1832); *Andropogon petiolaris* (Trin.) Steud.; *Ischaemum petiolare* (Trin.) Hack.; *Pollinia lehmannii* Arn. & Nees; *Spodiopogon lehmannii* (Arn. & Nees) Griseb.

Mat-forming perennial herbs; culms rambling or scandent, reed-like, to 100 cm or more in length.

*Habitat*: Grassy slopes.

*Distribution*: W & C Himalaya, India, Myanmar, SC China, Thailand.

NEPAL: W & C; 1700–2550 m.

KSL: Known from KSL India. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimen*. UTTARAKHAND (INDIA): Almora, 1675 m (R Strachey & JE Winterbottom 2; isosyntype of *Spodiopogon petiolaris* K000245718<sup>1</sup> image).

**Miscanthus** Anderss., Öfvers. Kongl. Vetensk.-Akad. Förh. 12: 165 (1855).

**Miscanthus nepalensis** (Trin.) Hack. in A. DC. & C. DC., Monogr. Phan. 6: 104 (1889). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 137 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 322 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 262 (2018).

*Eulalia nepalensis* Trin., Mém. Acad. Imp. Sci. St.-Pétersbourg, Sér. 6, Sci. Math. 2: 333 (1832); *Diandranthus nepalensis* (Trin.) L. Liu.; *Erianthus nepalensis* (Trin.) Steud.

ENG: Himalayan fairy grass.

Caespitose perennial herbs, with short rhizomes; culms stout, erect, up to 150 cm long.

*Habitat*: Rocky and grassy slopes, roadside cliffs/banks, forest clearings, scrub.

*Distribution*: NW Pakistan to E Himalaya, Tibetan Plateau, SC China, mainland SE Asia.

NEPAL: W, C & E; 1100–3000 m.

KSL: Bajhang and Darchula in KSL Nepal; 1800–2300 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. BAJHANG: Dhalaun – Rasa, 2250 m (KR Rajbhandari 15467, 20 Aug 1991; KATH<sup>1</sup>). DARCHULA: Khar VDC-2, 1860 m (BB Shrestha, M Pandey & R Chhetri 250, 30 Sept 2015; TUCH<sup>1</sup>); Palaa – Kuntisau, 2300 m (KR Rajbhandari & KJ Malla 5704, 29 Aug 1980; KATH<sup>1</sup>).

*Remarks*: Records for Pithoragarh fide GMBA (2012–2016).

**Muhlenbergia** Schreb., Gen. Pl., ed. 8. 1: 44 (1789).

**Muhlenbergia duthieana** Hack., Öesterr. Bot. Z. 52: 11 (1902). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 137 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 323 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 263 (2018).

Loosely caespitose perennial herbs; culms erect, ascending or procumbent, 10–35 cm long.

*Habitat*: Grassy slopes, boulders of terrace wall.

*Distribution*: NW Pakistan, W & C Himalaya (Kashmir to Nepal).

NEPAL: W & C; 2000–3400 m.

KSL: Known from Pithoragarh, Uttarakhand in KSL India, and neighboring Bajura and Mugu districts, Nepal; 2600–3100 m. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimens*. BAJURA: Porakya, 2600 m (KR Rajbhandari 14776, 12 Aug 1991; KATH<sup>1</sup>). MUGU: Banwa Gaon – Chankheli, 3000 m (KR Rajbhandari & B Roy 3825, 24 Jul 1979; TI 10001895) fide SHB

(2013–2020). **UTTARAKHAND (INDIA)**: Kalamoni [Kalamuni], Kumaon (JF Duthie 25031, 4 Aug 1900; K000496628); Kali Valley in Byans, 2740–3050 m (JF Duthie 3579, 16 Sept 1884; K000496626).

*Conserv. status*: GLB., Least Concern (Brummitt 2013b).

**Muhlenbergia himalayensis** Hack. ex Hook. f., Fl. Brit. India 7: 259 (1896). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 138 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 323 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 263 (2018).

Loosely caespitose perennial herbs; culms ascending or procumbent, to 40 cm long.

*Habitat*: Open moist slopes, meadows, thickets.

*Distribution*: Afghanistan, Pakistan, Himalaya (NW India to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 1800–3600 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 1800–2500 m.

*Representative specimens*. **BAJHANG**: Talkot – Aagar, 2000 m (KR Rajbhandari 15353, 18 Aug 1991; KATH<sup>1</sup>).

**BAJURA**: Porakya – Serigaon, 2460 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170566, 13 Aug 1991; TI) fide SHB (2013–2020). **DARCHULA**: Rapla – Tangbang, 1800 m (KR Rajbhandari & KJ Malla 5593, 26 Aug 1980; KATH<sup>1</sup>).

**Muhlenbergia huegelii** Trin., Mém. Acad. Imp. Sci. Saint-Pétersbourg, Sér. 6, Sci. Math., Seconde Pt. Sci. Nat. 6(2): 293 (1845). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 138 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 323 (2017).

*Muhlenbergia geniculata* Nees ex Steud.; *Muhlenbergia viridissima* Nees ex Steud.

Perennial herbs; culms ascending or procumbent, to 100 cm or more in length.

*Habitat*: Grassy slopes, moist shady places, riversides, forests.

*Distribution*: C Asia, Afghanistan, NW Pakistan to E Himalaya, Tibetan Plateau, N & C China to Japan, mainland SE Asia to New Guinea.

NEPAL: W, C & E; 1500–2700 m.

KSL: Bajhang in KSL Nepal; 1900–2500 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Dhalaun – Rasa, 1980 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170841, 20 Aug 1991; TI) fide SHB (2013–2020); Dhalaun – Rasa, 2500 m (KR Rajbhandari 15463, 20 Aug 1991; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Dhauli Valley, Kumaon, 1220–1525 m (JF Duthie 6170, 10 Aug 1886; BM012547594<sup>1</sup> image).

**Neyraudia** Hook. f., Fl. Brit. India 7: 305 (1896).

**Neyraudia arundinacea** (L.) Henrard, Meded. Rijks-Herb. 58: 8 (1929). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 324 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 263 (2018).

*Aristida arundinacea* L., Mant. Pl. 2: 186 (1771); *Arundo madagascariensis* Kunth; *Neyraudia madagascariensis* (Kunth) Hook. f.

Stout, reed-like perennials; rhizomes short, scaly; culms erect, solid, to 1 m or more in length.

*Habitat*: Dry open slopes.

*Distribution*: E Africa, Afghanistan, tropical and subtropical region in S Asia, Himalaya, S China, mainland SE Asia.

NEPAL: W, C & E; 150–3000 m.

KSL: Known from neighboring Mugu District, Nepal; c. 2900 m [also in Uttarakhand, India].

*Representative specimens.* **MUGU:** Mugu Khola, Daura, 2895 m (O Polunin, WR Sykes & LHJ Williams 3023, 24 Aug 1952; BM011029789<sup>1</sup> image). **UTTARAKHAND (INDIA):** Kumaon (Strachey s.n.; WU 0068033<sup>1</sup> image).

**Oplismenus** P. Beauv., Fl. Oware. 2: 14 (1810).

**Oplismenus burmanni** (Retz.) P. Beauv., Ess. Agrostogr.: 54 (1812). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 138 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 325 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 263 (2018).

*Panicum burmanni* Retz., Observ. Bot. 3: 10 (1783).

ENG: Burmann's basketgrass.

Creeping annual herbs; culms prostrate or trailing, up to 60 cm long.

*Habitat:* Light forests, shady banks, roadsides, disturbed places, rocky cliffs.

*Distribution:* Tropical and subtropical regions of the Old World.

NEPAL: W, C & E; 65–2100 m.

KSL: Bajhang in KSL Nepal; 2000–2100 m.

*Representative specimen.* **BAJHANG:** Between Talkot & Panalta, 2000–2100 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0186, 12 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>).

**Oplismenus compositus** (L.) P. Beauv., Ess. Agrostogr.: 54 (1812). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 138 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 325 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 264 (2018).

*Panicum compositum* L., Sp. Pl. 1: 57 (1753); *Oplismenus decompositus* Nees; *Oplismenus lanceolatus* (Retz.) Kunth

ENG: Running mountaingrass.

Stoloniferous perennial herbs; culms straggling, prostrate or ascending, up to 100 cm long.

*Habitat:* Moist and shady places in forests, forest margins, trailsides, field margins.

*Distribution:* Tropical and subtropical regions of the World.

NEPAL: W, C & E; 180–2800 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura and Dadeldhura [Pithoragarh, Uttarakhand in KSL India]; 600–2300 m.

*Representative specimens.* **BAJHANG:** Rupatola, 1500–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0091, 11 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>); Talkot – Aagar, 2000 m (KR Rajbhandari 15314, 18 Aug 1991; KATH<sup>1</sup>). **BAJURA:** Berma – Kolti, 1150 m (KR Rajbhandari 14750, 10 Aug 1991; KATH<sup>1</sup>). **DADEL DHURA:** Ruwakhola, 1400 m (KR Rajbhandari, PM Regmi & KJ Malla 5446, 17 Aug 1980; TI) fide SHB (2013–2020). **DARCHULA:** Rapla – Sunchera, 1800 m (KR Rajbhandari & KJ Malla 5899, 12 Sept 1980; KATH<sup>1</sup>); Rapla – Tangbang, 1800 m (KR Rajbhandari & KJ Malla 5586, 26 Aug 1980; KATH<sup>1</sup>); Khar-4, 2060 m (BB Shrestha, M Pandey & R Chhetri 180, 29 Sept 2015; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, Kali Valley, 610–915 m (JF Duthie 3502, 24 Sept 1884; BM012547824<sup>1</sup> image).

**Oplismenus undulatifolius** (Ard.) P. Beauv., Ess. Agrostogr.: 54, 171 (1812). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 138 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 325 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 264 (2018).

*Panicum undulatifolium* Ard., Animadv. Bot. Spec. Alt. 14, t. 4 (1764); *Oplismenus hirtellus* (L.) P. Beauv. subsp. *undulatifolius* (Ard.) U. Scholz

ENG: Basketgrass, Wavyleaf basketgrass.

Perennial herbs; culms straggling, prostrate or ascending, up to 50 cm long.



*Habitat:* Moist and shady places, shady floor in forests.

*Distribution:* S Europe, Africa, tropical and subtropical regions in Asia, Australasia.

NEPAL: W, C & E; 2000–2300 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura [Pithoragarh District, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Talkot – Aagar, 2000 m (KR Rajbhandari 15311, 18 Aug 1991; KATH<sup>1</sup>). **BAJURA:** Porakya – Damkane, 2200 m (KR Rajbhandari 14881, 13 Aug 1991, KATH<sup>1</sup>). **DARCHULA:** Rapla – Sunchera, 1800 m (KR Rajbhandari & KJ Malla 5898, 12 Sept 1980; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, forest above Sini, 1830–2130 m (JF Duthie 3503, 17 Aug 1884; US 04287407<sup>1</sup> image).

## **Orthoraphium** Nees, Proc. Linn. Soc. London. 1: 94 (1841).

**Orthoraphium roylei** Nees, Proc. Linn. Soc. London 1: 94 (1841). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 326 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 264 (2018). Nobis *et al.*, PhytoKeys 128: 102 (2019).

*Stipa orthoraphium* Steud.; *Stipa roylei* (Nees) Duthie

Loosely caespitose perennial herbs, shortly rhizomatous; culms 30–60 cm long.

*Habitat:* Forest clearings, forest margins, open slopes, rocky slopes.

*Distribution:* Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 2000–4300 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura; 2200–3500 m.

*Representative specimens.* **BAJHANG:** Near Dhalun, 2500–3200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0445, 15 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA:** Ghodi Lekh, 3200 m (KR Rajbhandari 15219, 6 Aug 1991; KATH<sup>1</sup>). **DARCHULA:** Dandap – Dopakhe, 2200 m (KR Rajbhandari & KJ Malla 5684, 28 Aug 1980; KATH<sup>1</sup>). **HUMLA:** Chankheli Lagna, 3500 m (KR Rajbhandari & B Roy 4445, 9 Aug 1979; KATH<sup>1</sup>).

## **Oryza** L., Sp. Pl. 1: 333 (1753).

**Oryza sativa** L., Sp. Pl. 1: 333 (1753). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 138 (1978). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 265 (2018).

NEP: Dhān (धान).

ENG: Asian rice, Rice.

Caespitose annual herbs; culms erect.

*Habitat:* Cultivated.

*Distribution:* Cultivated throughout the warmer parts of S Europe, Africa, tropical and temperate regions in Asia, Australia, America.

NEPAL: W, C & E; 100–2200 m.

KSL: Cultivated in all four districts in KSL Nepal; 700–2200 m.

*Representative specimens.* **BAJHANG:** Dhalaun, 2200 m (KR Rajbhandari 15399, 19 Aug 1991; KATH<sup>1</sup>). **BAJURA:** Serigaon – Bashala 1690–1760 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9195016, 14 Aug 1991; TI<sup>1</sup> image). **DARCHULA:** Sunchera, 1750 m (KR Rajbhandari & KJ Malla 5584, 25 Aug 1980; KATH<sup>1</sup>).

**Panicum** L., Sp. Pl. 1: 55 (1753).

**Panicum miliaceum** L., Sp. Pl. 1: 58 (1753). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 139 (1978). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 266 (2018). **PI. 19.**

*Milium panicum* Mill.; *Panicum densepilosum* Steud.

NEP-/L/NEP: Chino, Thūlo kāgun (चिनो, ठूलो कागुन).

ENG: Broomcorn millet, Chinese millet, Hog millet, Proso millet.

Robust annual herbs; culms erect or geniculately ascending, up to 100 cm long.

*Habitat*: Cultivated in mountainous regions.

*Distribution*: Widely cultivated.

NEPAL: W & C; 1500–3250 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal; 1800–2600 m.

*Representative specimens*. **BAJHANG**: Agar – Dhalaun, 1800 m (KR Rajbhandari 15383, 19 Aug 1991; KATH<sup>1</sup>). Agar – Kinara, 2100 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9192523, 23 Aug 1991; TI) fide SHB (2013–2020). **DARCHULA**: Sunchera, 1800 m (KR Rajbhandari & KJ Malla 5570, 25 Aug 1980; KATH<sup>1</sup>). **HUMLA**: Humla-Karnali, Simikot, 2600 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama 1779A, 27 Aug 2012; TUCH<sup>1</sup>).

**Panicum sumatrense** Roth in Roem. & Schult., Syst. Veg., ed. 15 bis 2: 434 (1817). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 139 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 330 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 266 (2018).

*Panicum psilopodium* Trin.; *Panicum sumatrense* Roth subsp. *psilopodium* (Trin.) de Wet.

ENG: Barefoot panicgrass, Little millet.

Annual herbs; culms erect or decumbent, up to 100 cm long.

*Habitat*: Grassland, dry slopes.

*Distribution*: Tropical and subtropical regions in S Asia, Himalaya, Tibetan Plateau, SC China to Japan, mainland SE Asia to Indonesia.

NEPAL: W, C & E; 100–2300 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; 1050–1950 m.

*Representative specimens*. **BAJHANG**: Talkot – Agar, 1940 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193343, 18 Aug 1991; TI) fide SHB (2013–2020).

**BAJURA**: Babali – Sanfegar, 1060 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193421, 30 Aug 1991; TI) fide SHB (2013–2020); Dhamkane – Jilli, 1800 m (KR Rajbhandari 14959, 13 Aug 1991; KATH<sup>1</sup>).

*Conserv. status*: GLB., Least Concern (Mani 2011b).

**Paracolpodium** (Tzvelev) Tzvelev, Bot. Zhurn. (Moscow & Leningrad) 50: 1320 (1965).

**Paracolpodium wallichii** (Hook. f. ex Stapf) E. B. Alexeev., Novosti Sist. Vyssh. Rast. 18: 94 (1981).

*Catabrosa wallichii* Hook.f. ex Stapf in Hook.f., Fl. Brit. India 7(22): 312 (1896); *Colpodium wallichii* (Hook.f. ex Stapf) Bor

Caespitose perennial herbs with short rhizomes; culms erect, 10–35 cm long.

*Habitat*: Moist stony or sandy slopes, marshy places near stream.

*Distribution:* C & E Himalaya (Nepal to Bhutan), SC China.

NEPAL: W, C & E; 3600–5000 m.

KSL: Bajhang in KSL Nepal; 4100 m.

*Representative specimen.* **BAJHANG:** Dubai Pass – Sunigad, 4100 m (PR Shakya, MK Adhikari & MN Subedi 8135, 24 Jul 1984; KATH<sup>1</sup>).

**Paspalum** L., Syst. Nat., ed. 10. 2: 855 (1759).

**Paspalum notatum** Flügge, Gram. Monogr., Paspalum. 106 (1810). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 331 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 267 (2018).

*Paspalum taphrophyllum* Steud.

NEP-L/NEP: Kode-ghāns, Kodī-ghāns (कोदे-घाँस, कोदी-घाँस).

ENG: Bahiagrass, Common bahia.

Mat-forming perennial herbs; rhizomes stout, elongated; culms erect, 15–50 cm long.

*Habitat:* Moist places, grassy places.

*Distribution:* Native to S America; naturalized elsewhere in S Europe, Africa, Asia, N America.

NEPAL: W, C & E; 500–1700 m.

KSL: Known from neighboring Bajura District, Nepal; 1060 m.

*Representative specimen.* **BAJURA:** Babali – Sanfebagar, 1060 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193419, 30 Aug 1991; TI) fide SHB (2013–2020).

**Paspalum scrobiculatum** L., Mant. Pl. 1: 29 (1767). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 139 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 331 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 267 (2018).

*Paspalum cartilagineum* J. Presl; *Paspalum commersonii* Lam.; *Paspalum orbiculare* G. Forst.

NEP-L/NEP: Banso, Janai-ghāns, Kode banso, Kode-ghāns (बन्सो, जनै-घाँस, कोदे बन्सो, कोदे-घाँस).

ENG: Creeping paspalum, Ditch grass, Indian paspalum, Kodomillet, Ricegrass.

Mat-forming or caespitose perennial herbs; culms erect or geniculately ascending, up to 150 cm long.

*Habitat:* Wetlands, waste ground, roadsides.

*Distribution:* Tropical and subtropical regions of the Old World to N Australia.

NEPAL: W, C & E; 65–2500 m.

KSL: Baitadi and Bajhang in KSL Nepal; 900–1500 m.

*Representative specimen.* **BAITADI:** Shimar, 890 m (PR Shakya, MK Adhikari & MN Subedi 7846, 14 Jul 1984; KATH<sup>1</sup>).

*Conserv. status:* GLB., Least Concern (Knees & Gupta 2013).

**Phacelurus** Griseb., Spicil. Fl. Rumel. Bithyn. 2: 423 (1846).

**Phacelurus speciosus** (Steud.) C.E. Hubb., Bull. Misc. Inform. Kew 1928: 35 (1928). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 333 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 269 (2018).

*Andropogon speciosus* Steud., Syn. Pl. Glumac. 1: 375 (1854); *Ischaemum robustum* Hook. f.; *Ischaemum speciosum* (Steud.) W. Watson; *Manisuris speciosa* (Steud.) Kuntze; *Rottboellia speciosa* (Steud.) Hack.

Loosely caespitose perennial herbs; rhizomes elongated; culms erect, 30–150 cm long.

*Habitat:* Grassy slopes, open coniferous forests.

*Distribution:* Afghanistan, Pakistan, W & C Himalaya (Kashmir to Nepal).

NEPAL: W; 2500–3100 m.

KSL: Darchula in KSL Nepal; 2500–3100 m [Bageshwar and Pithoragarh in KSL India].

*Representative specimens.* **DARCHULA:** Dhandap, 2500 m (KR Rajbhandari and KJ Malla 5683, 28 Aug 1980, KATH) fide Rajbhandari & Rai (2017). **UTTARAKHAND (INDIA):** Kumaon (R Strachey & JE Winterbottom s.n.; BM012551586<sup>1</sup> image).

*Remarks:* Further records for Uttarakhand fide GMBA (2012–2016).

## **Phleum** L., Sp. Pl. 1: 59 (1753).

**Phleum alpinum** L., Sp. Pl. 1: 59 (1753). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 140 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 334 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 270 (2018).

*Phleum commutatum* Gaudin

NEP-L: Tāuke-ghāns (टाउके-घाँस).

ENG: Alpine cat's-tail, Alpine timothy, Mountain timothy.

Loosely caespitose perennial herbs, rhizomes short; culms erect or decumbent at base, 5–40 cm long.

*Habitat:* Wet meadows, open grassy slopes, thickets, stream banks.

*Distribution:* Europe, subtropical and temperate regions in Asia, N & S America.

NEPAL: W, C & E; 2400–4700 m.

KSL: Bajhang and Darchula in KSL Nepal; 3600–4500 m [Pithoragarh and neighboring areas in KSL India].

*Representative specimens.* **BAJHANG:** Kariganga, near Saipal, 3939 m (H Tabata, KR Rajbhandari & K Tsuchiya 1844, 31 Jul 1976; KATH<sup>1</sup>); Dubai Pass – Sunigad, 4000 m (PR Shakya, MK Adhikari & MN Subedi 8139, 24 Jul 1984; KATH<sup>1</sup>). **DARCHULA:** Upper Chameliya Valley, below Pilkanda, Ghusa VDC, 3600 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1170, 20 Jul 2015; TUCH<sup>1</sup>); Pilkanda, 3703 m (KM Ghimire & M Adhikari F209, 12 Sept 2015; TUCH<sup>1</sup>); upper Chameliya Valley, below Kalidhunga Tal, Pilkanda-Lolu, 4200 m (SK Ghimire, S Thapa, B Awasthi, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1395, 22 Jul 2015; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon (R Strachey & JE Winterbottom s.n.; BM011029274<sup>1</sup> image); Kumaon (R Blinkworth 3779; K001119989<sup>1</sup> image).

*Remarks:* Further records for Uttarakhand fide Duthie (1906) and GMBA (2012–2016).

*Local abund.:* Frequent in Darchula.

*Conserv. status:* GLB., Least Concern (Brummitt 2013c).

## **Piptatherum** P. Beauv., Ess. Agrostogr. 17 (1812).

**Piptatherum aequiglume** (Duthie ex Hook. f.) Roshev., Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk SSSR 14: 113 (1951). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 270 (2018). Nobis *et al.*, PhytoKeys 128: 113 (2019).

*Oryzopsis aequiglumis* Duthie ex Hook. f., Fl. Brit. India 7: 234 (1896); *Oryzopsis fasciculata* Hack.; *Piptatherum aequiglume* var. *fasciculatum* (Hack.) Freitag; *Piptatherum fasciculatum* (Hack.) Roshev.

Loosely caespitose perennial herbs; rhizomes short; culms stout, erect, 45–130 cm long.

*Habitat:* Grassy slopes, open rocky slopes, scree slopes, thickets, riversides.

*Distribution:* Turkmenistan to NW Pakistan, Himalaya, Tibetan Plateau and SC China.

NEPAL: W, C & E; 2300–4300 m.

KSL: Darchula in KSL Nepal [also in adjoining Kumaon region, Uttarakhand, India; 2500–4000 m.

*Representative specimens.* **DARCHULA:** Thin – Dandap, 2500 m (KR Rajbhandari & KJ Malla 5666, 28 Aug 1980; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon (R Strachey & JE Wintebottom 2; syntype of *Oryzopsis aequiglumis* BM001217078<sup>1</sup> image).

**Piptatherum gracile** Mez, Repert. Spec. Nov. Regni Veg. 17: 211 (1921). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 270 (2018). Nobis *et al.*, PhytoKeys 128: 114 (2019).

*Oryzopsis gracilis* (Mez) Pilg.; *Oryzopsis brachyclada* Pilg.; *Piptatherum brachycladum* (Pilg.) Romasch.

Densely caespitose perennial herbs; rhizomes short; culms erect, 10–50 cm long.

*Habitat:* Dry steep banks, gravelly slopes.

*Distribution:* W & C Asia (from Iran to Tajikistan), NW Pakistan, W & C Himalaya (Kashmir to Nepal), Tibetan Plateau, SC China.

NEPAL: W & C; 2500–4000 m.

KSL: Known from Pithoragarh, Uttarakhand in KSL India; and Pulan Xian, SW Xizang in KSL China. It is likely also to be present in upper Darchula and upper Humla in KSL Nepal.

*Representative specimen.* **XIZANG (CHINA):** Pulan Xian, 30.29°N 81.17°E (Qinghai-Tibet team 6122080, 1976; PE) fide Kong & Yang (2019).

*Remarks:* Records for Uttarakhand fide GMBA (2012–2016).

**Piptatherum laterale** (Regel) Nevski, Trudy Bot. Inst. Akad. Nauk S.S.S.R., Ser. 1, Fl. Sist. Vyssh. Rast. 4: 217 (1937). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 271 (2018). Nobis *et al.*, PhytoKeys 128: 115 (2019).

*Milium laterale* Regel, Trudy Imp. S.-Peterburgsk. Bot. Sada 7: 645 (1880); *Oryzopsis lateralis* (Regel) Stapf ex Hook. f.

Densely caespitose perennial herbs; rhizomes short; culms erect, 10–60 cm long.

*Habitat:* Grassy slopes, gravelly and stony slopes, among shrubs.

*Distribution:* W & C Asia (Turkey to Kazakhstan), NW Pakistan, Himalaya (Kashmir to Nepal), Tibetan Plateau, SC China,

NEPAL: W & C; 2600–4000 m.

KSL: Known from Pulan Xian, SW Xizang in KSL China; and neighboring Mugu District, Nepal. It is likely also to be present in upper Humla, Nepal.

*Representative specimens.* **MUGU:** Padi – Murma, near Rara Lake, 2606 m (H Tabata, KR Rajbhandari & K Tsuchiya 2895, 24 Aug 1976; KATH) fide Rajbhandari & Rai (2017). **XIZANG (CHINA):** Pulan Xian, 30.29°N 81.17°E (Qinghai-Tibet team 6122043, 1976; PE) fide Kong & Yang (2019).

**Piptatherum munroi** (Stapf ex Hook. f.) Mez, Repert. Spec. Nov. Regni Veg. 17: 212 (1921). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 271 (2018). Nobis *et al.*, PhytoKeys 128: 114 (2019).

*Oryzopsis munroi* Stapf ex Hook. f., Fl. Brit. India 7: 234 (1896); *Oryzopsis stewartiana* Bor

Loosely caespitose perennial herbs; rhizomes short; culms erect, 30–80 cm long.

*Habitat:* Open forests, grassy slopes, alpine meadows, scrub, rock-ledges.

*Distribution:* Iran to Pakistan, Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, N & C China.

NEPAL: W, C & E; 2100–4900 m.

KSL: Humla in KSL Nepal; 2100–3800 m [also known from upper Karnali in Pulan Xian, SW Xizang, China; 4250–4440 m].

*Representative specimens.* **HUMLA:** Lothikhola – Melchham, 2120 m (KR Rajbhandari & B Roy 4055, 27 Jul 1979; KATH) fide Rajbhandari & Rai (2017); Changla Khola Valley, Dozam, above Seding, Chhudalongbo, 3800 m (SK Ghimire, RP Chaudhary & team P11440, 23 May 2010; TUCH<sup>1</sup>). **XIZANG (CHINA):** Pulan Xian, 30.29°N 81.17°E (Qinghai-Tibet Team Plant Group 5183999, 1976; PE) fide Kong & Yang (2019).

*Remarks:* Further records for Pulan Xian fide GMBA (2012–2016).

**Poa** L., Sp. Pl. 1: 67 (1753).

**Poa alpina** L., Sp. Pl. 1: 67 (1753). Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 142 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 335 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 271 (2018).

ENG: Alpine meadow-grass, Alpine bluegrass (En).

Caespitose perennial herbs; culms erect or ascending, 1–20 cm long.

*Habitat:* Open grassy slopes, alpine meadows.

*Distribution:* Europe, N Africa, subtropical and temperate regions in Asia, N America to Mexico.

NEPAL: W; 3800 m.

KSL: Bajhang in KSL Nepal [Pithoragarh and neighboring area in KSL India]; 3200–3800 m.

*Representative specimens.* **BAJHANG:** Chaurpani, 3800 m (JF Dobremez 2302, 17 May 1973; BM, E). **UTTARAKHAND (INDIA):** Kumaon, Dugli, 3200 m (R. Strachey & J.E. Winterbottom 12; BM011027085); Kumaon, 3350–3655 m (JF Duthie 6192, 10 Jul 1886; BM011027068<sup>1</sup> image).

*Remarks:* Further records for Pithoragarh fide GMBA (2012–2016).

**Poa annua** L., Sp. Pl. 1: 68 (1753). Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 142 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 335 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 271 (2018).

NEP: Pode-ghāns (पोडे-घाँस).

ENG: Annual bluegrass, Annual meadow-grass, Annual wintergrass, Goosegrass.

Caespitose annual or short-lived perennial herbs; culms erect, spreading or prostrate, up to 30 cm long.

*Habitat:* Weed of disturbed areas, open places, meadows, road/trailsides, agriculture fields.

*Distribution:* Native to Temperate Eurasia; now almost cosmopolitan.

NEPAL: W, C & E; 1200–4500 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura and Mugu; 2500–3200 m.

*Representative specimens.* **BAJHANG:** On the way to Deurali from Dhalun, 2500–3200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0420, 15 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA:** Birseni – Porakya, 2500 m (KR Rajbhandari 14823, 12 Aug 1991; KATH<sup>1</sup>). **MUGU:** Rara, 2850 m (KR Rajbhandari & B Roy 3717, 21 Jul 1979; TI) fide SHB (2013–2020).

*Conserv. status:* GLB., Least Concern (Brummitt 2013d).

**Poa arnoldii** Melderis in H. Hara *et al.*, Enum. Fl. Pl. Nepal 1: 142 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 335 (2017).

*Poa alberti* Regel subsp. *arnoldii* (Melderis) Olonova & G.H. Zhu, Fl. China 22: 308 (2006).

Loosely to densely caespitose perennial herbs; culms erect, to 20 cm in length.

*Habitat:* Alpine grassy slopes, scree slopes.

*Distribution:* W & C Himalaya (NW India, Nepal), Tibetan Plateau, N & C China.

NEPAL: W; 5400–5600 m.

KSL: Bajhang District in KSL Nepal; *c.* 5485 m.

*Representative specimen.* **BAJHANG:** Five miles NE of Saipal, 5485 m (JEM Arnold 226, 25 Aug 1954; holotype BM000521759<sup>1</sup> image).

**Poa calliopsis** Litv. ex Ovcz., Trudy Tadzhisk. Bot. Sada 1(1): 11, 18 (1933). Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 143 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 335 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 272 (2018).

*Poa phariana* Bor

Solitary or loosely caespitose perennial herbs; rhizomes elongated; culms erect, 2–15 cm long.

*Habitat:* Meadows, rocky slopes, glacial moraines.

*Distribution:* C Asia, Himalaya (Pakistan to Bhutan), Tibetan Plateau, N & C China.

NEPAL: W & C; 3500–5600 m.

KSL: Bajhang District in KSL Nepal; *c.* 4360 m.

*Representative specimen.* **BAJHANG:** Allechaur, near Saipal, 4363 m (H Tabata, KR Rajbhandari & K Tsuchiya 1775, 29 Jul 1976; KATH) fide Rajbhandari & Rai (2017).

**Poa hylobates** Bor, Bull. Bot. Surv. India 7: 132 (1965). Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 143 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 336 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 272 (2018).

Caespitose annual herbs; culms erect, 25–50 cm long.

*Habitat:* Meadows, grassy places, among boulders.

*Distribution:* W & C Himalaya (NW India, Nepal), Tibetan Plateau, NW & SC China.

NEPAL: W & C; 3000–3800 m.

KSL: Known from neighboring Mugu District, Nepal [Pithoragarh District, Uttarakhand in KSL India]. It is likely also to be present in Darchula and Humla in KSL Nepal.

*Representative specimens.* **MUGU (NEPAL):** Below Mugu, Mugu Khola, 3200 m (O Polunin, WR Sykes & LHJ Williams 5303, 18 Aug 1952; paratype BM000521764<sup>1</sup> image). **UTTARAKHAND (INDIA):** Pithoragarh, Panchachuli Base, 4000 m (MK Kandwal 111796, 26 Jul 2004; BSD) fide Nautiyal & Gaur (2017).

**Poa koelzii** Bor, Kew Bull. 3: 139 (1948).

*Poa albertii* Regel subsp. *kunlunensis* (N.R. Cui) Olonova & G.H. Zhu

Densely caespitose perennial herbs; culms erect or ascending, 2–10 cm long.

*Habitat:* Dry stony places, sandy places, dry meadows.

*Distribution:* C Asia, S Russia, W Himalaya (Pakistan to NW India: Kumaon), Tibetan Plateau.

NEPAL: Not known.

KSL: Known from Pulan Xian, SW Xizang in KSL China, and nearby Uttarkashi District, Uttarakhand, India. It is likely also to be present in KSL area of Nepal.

*Representative specimens.* **UTTARAKHAND (INDIA):** Uttarkashi, near Gaumukh, 4000 m (DC Nautiyal 14909, 23 Oct 1994; GUH) fide Nautiyal & Gaur (2017). **XIZANG (CHINA):** Pulan Xian, 30.29°N 81.17°E (Qinghai-Tibet team vegetation group 5719961, 1976; PE) fide Kong & Yang (2019).

**Poa lahulensis** Bor, Kew Bull. 1948: 138 (1948).

*Poa albertii* Regel subsp. *lahulensis* (Bor) Oronova & G.H. Zhu

Caespitose perennial herbs; culms erect, up to 30 cm long.

*Habitat*: Meadows, dry steep slopes.

*Distribution*: NW Pakistan, Karakoram, W Himalaya, Tibetan Plateau, SC China.

NEPAL: Not known.

KSL: Known from Pulan Xian, SW Xizang in KSL China; and nearby Uttarkashi District, Uttarakhand, India. It is likely also to be present in KSL area of India and Nepal.

*Representative specimens*. **UTTARAKHAND (INDIA)**: Uttarkashi, Gangotri, 3000 m (Uniyal *et al.* 109867, 8 Aug 1992; BSD) fide Nautiyal & Gaur (2017). **XIZANG (CHINA)**: Pulan Xian, 30.29°N 81.17°E (Qinghai-Tibet team 6636148, 1975; PE) fide Kong & Yang (2019).

**Poa lhasaensis** Bor, Bull. Bot. Surv. India 7: 132 (1965). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 337 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 273 (2018).

*Poa jaunsarensis* Bor, Kew Bull. 3 (1): 143 (1948).

Caespitose perennial herbs; rhizomes elongated; culms erect or ascending, 30–46 cm long.

*Habitat*: Open forests, grassy slopes, meadows.

*Distribution*: N Pakistan, W & C Himalaya (NW India, Nepal), Tibetan Plateau, SC China.

NEPAL: W, C & E; 3600–4000 m.

KSL: Upper Mahakali in KSL India and Nepal; 3650–4000 m.

*Representative specimen*. Kutti Yangti Valley, Byans, 3658–3962 m (JF Duthie 6224, 30 Jul 1886; holotype of *Poa jaunsarensis* K000789644<sup>i</sup> image, isotype of *Poa jaunsarensis* K000789643<sup>i</sup> image, BM011027337<sup>i</sup> image).

**Poa nepalensis** (Wall. ex Griseb.) Duthie, List Grasses NW India: 40 (1883). Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 143 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 337 (2017).

*Poa annua* L. var. *nepalensis* Wall. ex Griseb., Nachr. Königl. Ges. Wiss. Georg-Augusts-Univ. 3: 75 (1868).

Caespitose annual or short-lived perennial herbs; culms erect or ascending, 10–50 cm long.

*Habitat*: Forest margins, meadows, moist grassland, open slopes, roadsides, disturbed ground.

*Distribution*: Himalaya (Kashmir to NE India), Tibetan Plateau, Myanmar, C & SE China.

NEPAL: W, C & E; 1800–3600 m.

KSL: Bajhang in KSL Nepal, and neighboring Mugu [also in Almora District, Uttarakhand, India]; 2100–3000 m.

*Representative specimens*. **BAJHANG**: Mt. Roshia range, 2820 m (H Tabata, KR Rajbhandari & K Tsuchiya 1520, 24 Jul 1976; KATH<sup>i</sup>); Dhuli, 3000 m (JF Dobremez 2220, 14 May 1973; BM011027274<sup>i</sup> image, E00666444). **MUGU**: Rara, 2850 m (KR Rajbhandari & B Roy 3750, 22 Jul 1979; KATH<sup>i</sup>, TI). **UTTARAKHAND (INDIA)**: Kumaon, Binsar, 2134 m (R Strachey & JE Winterbottom 13; lectotype of *Poa annua* var. *nepalensis* K000789542<sup>i</sup> image, BM011027275<sup>i</sup> image, P02663490<sup>i</sup> image).

**Poa pagophila** Bor, Kew Bull. 4: 239 (1949). Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 143 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 338 (2017).

Caespitose perennial herbs; culms slender, erect or ascending, 10–40 cm long.

*Habitat*: Grassy slopes, moist grassland, thickets, scree/rocky slopes, river beds.



*Distribution:* Afghanistan, NW Pakistan, Himalaya (Kashmir to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 3000–5300 m.

KSL: Bajhang and Humla in KSL Nepal; 3050–5000 m.

*Representative specimens.* **BAJHANG:** Saipal, 3300 m (JF Dobremez 2286, 16 May 1973; BM011027304<sup>1</sup> image, E00666434). **HUMLA:** Chungsa Valley, Khyunkar La, above Seliman Tsho towards NW, 4640 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1303A, 9 Sept 2012; TUCH<sup>1</sup>).

**Poa polycolea** Stapf in Hook. f., Fl. Brit. India 7: 342 (1896). Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 143 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 338 (2017).

*Poa chalarantha* Keng ex L. Liu; *Poa lithophila* Keng ex L. Liu; *Poa triglumis* Keng ex L. Liu

Caespitose perennial herbs; culms erect or geniculately ascending, 10–30 cm long.

*Habitat:* Grassy places, alpine meadows, among boulders, riversides.

*Distribution:* Afghanistan, Himalaya (Pakistan to NE India), Tibetan Plateau, NW & SC China.

NEPAL: W, C & E; 3500–5600 m.

KSL: Known from Pithoragarh District and neighboring area in KSL India (3050–3350 m), and Pulan Xian, SW Xizang in KSL China (4000–4570 m). In Nepal, it is known from Dolpa in the west to Sankhuwasabha in the east. It is very likely also to be present in KSL area of Nepal.

*Representative specimens.* **UTTARAKHAND (INDIA):** Kumaon, Kali Valley, 3048–3353 m (JF Duthie 6159, 24 Jul 1886; BM011027338<sup>1</sup> image); Kumaon, Dugli, 3200 m (R Strachey & JE Winterbottom 11; isosyntype BM000812703<sup>1</sup> image, syntype K000789596<sup>1</sup> image).

*Remarks:* Records for Pulan Xian fide GMBA (2012–2016).

**Poa poophagorum** Bor, Kew Bull. 3: 143 (1948). Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 143 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 338 (2017).

*Poa alberti* Regel subsp. *poophagorum* (Bor) Olonova & G.H. Zhu, Fl. China 22: 308 (2006).

Densely caespitose perennial herbs; culms erect, 10–20 cm long.

*Habitat:* Open slopes, alpine grassland.

*Distribution:* Himalaya (NW India to Bhutan), Tibetan Plateau, NW & SC China.

NEPAL: W, C & E; (2550–)3600–5800 m.

KSL: Humla District in KSL Nepal; 4400–5000 m.

*Representative specimen.* **HUMLA:** Chungsa Valley, Khyunkar La, above Seliman Tsho towards NW, 4640 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1305, 9 Sept 2012; TUCH<sup>1</sup>).

*Local abund.:* Frequent.

**Poa pratensis** L., Sp. Pl. 1: 67 (1753). Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 143 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 338 (2017).

ENG: Common meadow-grass, English meadow-grass, Kentucky bluegrass, Smooth meadow-grass.

Caespitose perennial herbs; culms erect or geniculately ascending, 20–60 cm long.

*Habitat:* Open grassland, alpine meadows.

*Distribution:* Europe, Asia, Australia, N & S America

NEPAL: W, C & E; 2000–4400 m.

KSL: Known from Pithoragarh, Uttarakhand in KSL India; and nearby Mugu District, Nepal. It is likely also to be present in Darchula and Humla in KSL Nepal.

*Representative specimens.* **MUGU (NEPAL):** Ghurchi – Chuchamara, 3400 m (KR Rajbhandari & B Roy 3587, 19 Jul 1979; KATH) fide Rajbhandari & Rai (2017). **UTTARKHAND (INDIA):** Kumaun, Nipchang Valley, 3655–3960 (JF Duthie 3522, 31 Aug 1884; BM011027369<sup>9</sup> image); Pithoragarh, Leptal, 3500–4000 m (DC Nautiyal 13801, 26 August 1995; GUH) fide Nautiyal & Gaur (2017).

*Conserv. status:* GLB., Least Concern (Maiz-Tome 2016b).

**Poa pratensis** L. subsp. **angustifolia** (L.) Lej., Comp. Fl. Belg.: 82 (1828). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 339 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 274 (2018).

*Poa angustifolia* L., Sp. Pl. 1: 67 (1753).

ENG: Narrow-leaved meadow-grass.

Caespitose perennial herbs; culms erect or ascending, to 70 cm long.

*Habitat:* Forest margins, open grassy slopes.

*Distribution:* Europe, N Africa, subtropical and temperate Asia; introduced into N & S America.

NEPAL: W & C; 2500–4100 m.

KSL: Bajhang and Humla in KSL Nepal, and neighboring Mugu [Pithoragarh, Uttarakhand in KSL India]; 2500–4000 m.

*Representative specimens.* **BAJHANG:** Launi, 2500 m (JF Dobremez 2098, 6 May 1973; BM011027098<sup>8</sup> image). **HUMLA:** Marghor Lagna, 3650 m (Rajbhandari & Roy 4115, 29 Jul 1979; KATH) fide Rajbhandari (1991). **MUGU:** Ghurchi Lekh, 3300 m (Rajbhandari & Roy 3575, 19 Jul 1979; TI) fide SHB (2013–2020). **UTTARKHAND (INDIA):** Pithoragarh, above Sumna, 4000 m (DC Nautiyal 13801, 25 August 1995; GUH) fide Nautiyal & Gaur (2017).

*Conserv. status:* GLB., Least Concern (Contu 2013b).

**Poa rajbhandarii** Noltie, Edinburgh J. Bot. 57: 288 (2000). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 339 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 274 (2018).

Loosely caespitose annual or short-lived perennial herbs; culms slender, erect or geniculate, to 30 cm.

*Habitat:* Forests, grassland, shady and marshy ground.

*Distribution:* C & E Himalaya (Nepal to Bhutan & NE India), Tibetan Plateau, SC China.

NEPAL: W, C & E; 2500–4100 m.

KSL: Bajhang in KSL Nepal, and neighboring Mugu; 3200–3400 m.

*Representative specimens.* **BAJHANG:** Trail from Budkhor to Dhahidunga Kharka, 3253 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913111, 12 Jul 2009; E00509689, KATH). **MUGU:** Ghurchi – Chuchamara, 3400 m (Rajbhandari & Roy 3590, 19 Jul 1979; KATH, TI) fide Rajbhandari & Rai (2017).

**Poa sikkimensis** (Stapf) Bor, Kew Bull. 7: 130 (1952). Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 144 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 339 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 275 (2018).

*Poa annua* L. var. *sikkimensis* Stapf in Hook. f., Fl. Brit. India 7: 346 (1896).

Caespitose annual or perennial herbs; culms erect or geniculately ascending, up to 40 cm long.

*Habitat:* Grassy slopes, meadows, disturbed ground.

*Distribution:* Himalaya (Kashmir to Bhutan), Tibetan Plateau, C China.

NEPAL: W, C & E; 3000–4800 m.

KSL: Humla in KSL Nepal, and neighboring Doti and Mugu; 3100–3400 m.

*Representative specimens.* **DOTI:** Khaptad National Park, trail from Ghodadauni to Lokhada, 3082 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913041, 3 Jul 2009, E00623936) fide RBGE (2018). **HUMLA:** Chankheli Lagna, 3400 m (KR Rajbhandari & B Roy 3846, 25 Jul 1979; TI 10001979) fide SHB (2013–2020). **MUGU:** Ghurchi – Chuchamara Danda, 3400 m (KR Rajbhandari & B Roy 3595, 19 Jul 1979; TI 10001982) fide SHB (2013–2020).

**Poa stapfiana** Bor, Kew Bull. 4: 239 (1949). Melderis in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 144 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 340 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 275 (2018).

*Poa stapfiana* var. *micrathera* (Stapf) Bor; *Poa tremula* Stapf (1836), nom. illeg., non Lam (1791); *Poa tremula* var. *micranthera* Stapf

Loosely caespitose perennial herbs, stoloniferous; culms erect or ascending, 20–60 cm long.

*Habitat:* Alpine meadows, grassland.

*Distribution:* NW Pakistan to NE India (Sikkim).

NEPAL: W, C & E; 2100–4700 m.

KSL: Darchula District in KSL Nepal; c. 3800 m.

*Representative specimen.* **DARCHULA:** Nete, 3792 m (KM Ghimire & M Adhikari F047, 13 Sept 2015; TUCH<sup>1</sup>).

**Poa trivialis** L., Sp. Pl. 1: 67 (1753).

ENG: Rough-stalked meadow grass, Rough bluegrass.

Loosely caespitose perennial herbs, stoloniferous; culms decumbent to ascending, up to 100 cm long.

*Habitat:* Moist places, slopes in open forests, slopes in grassland.

*Distribution:* Macaronesia, Europe, N Africa, subtropical and temperate regions in Asia.

NEPAL: W & C; 2500–4000 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura [Pithoragarh District, Uttarakhand in KSL India].

*Representative specimens.* **BAJURA & BAJHANG:** Pategaon – Ghodi Lehk Deorali – Badigaon, 3100 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170696, KATH<sup>1</sup>, TT<sup>1</sup> image). **UTTARKHAND (INDIA):** Pithoragarh, Lohaghat area, 1800–2200 m (MK Kandwal 111421, 14 August 2002; BSD) fide Nautiyal & Gaur (2017).

**Pogonatherum** P. Beauv., Ess. Agrostogr. 56 (1812).

**Pogonatherum crinitum** (Thunb.) Kunth, Enum. Pl. 1: 478 (1833). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 144 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 340 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 275 (2018).

*Andropogon crinitus* Thunb. in J.A. Murray, Syst. Veg. ed. 14: 903 (1784); *Andropogon monandrus* Roxb.; *Ischaemum crinitum* (Thunb.) Trin.; *Pollinia monandra* (Roxb.) Spreng.

NEP: Bhuse kharî, Kharukî, Muse-jhâr (भुसे खरी, खरुकी, मुसे-झार).

Mat-forming perennial herbs; culms slender, wiry, prostrate, erect or geniculate, up to 30 cm long.

*Habitat*: Forests, grassy slopes, moist places along roadsides, stream banks.

*Distribution*: Madagascar, tropical and subtropical regions in Asia to Western N Pacific.

NEPAL: W, C & E; 600–2800 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 1100–1800 m.

*Representative specimens*. **BAJHANG**: Chainpur – Jimkot, 1140–1480 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170953, 25 Oct 1991; KATH<sup>1</sup>, TI). **BAJURA**: Basala, 1300 m (JF Dobremez 1854, 17 Apr 1973; BM012550494<sup>1</sup> image). **DARCHULA**: Khar VDC-4, 1800 m (BB Shrestha, M Pandey & R Chhetri 115, 28 Sept 2015; TUCH<sup>3</sup>).

## **Polypogon** Desf., Fl. Atlant. 1: 66 (1798).

**Polypogon fugax** Nees ex Steud., Syn. Pl. Glumac. 1: 184 (1854). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 144 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 341 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 276 (2018).

*Polypogon higegaweri* Steud.; *Polypogon littoralis* Sm. var. *higegaweri* (Steud.) Hook. f.

NEP: Jhyāple-ghāns, Kharāyo-pāile (भ्याप्ले-घाँस, खरायो-पाइले).

ENG: Asia minor bluegrass.

Solitary or caespitose annual herbs; culms erect or geniculate, sometimes decumbent, to 30 cm long.

*Habitat*: Open moist places, marshy places, stream banks, rocky stream beds, fields.

*Distribution*: Africa, tropical to warm temperate regions in Asia, Australasia.

NEPAL: W, C & E; 1100–3700 m.

KSL: Bajhang and Humla in KSL Nepal, and neighboring Doti and Mugu; 1400–3000 m.

*Representative specimens*. **BAJHANG**: Khaptad National Park, trail from Ghodadaune to Lokhada, 2559 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913049, 3 Jul 2009; E00509899, KATH<sup>1</sup>). **DOTI**: Doti – Silgadhi, 1372 m (N Ecker-Racz 40, 1 Apr 1967; US 01948222<sup>1</sup> image). **HUMLA**: Poom – Kallas, 3000 m (KR Rajbhandari & B Roy 4103, 28 Jul 1979; KATH<sup>1</sup>). **MUGU**: Rara, 2850 m (KR Rajbhandari & B Roy 3755, 22 Jul 1979; TI 10001997) fide SHB (2013–2020).

## **Ptilagrostis** Griseb. in Ledeb., Fl. Ross. 4: 447 (1852).

**Ptilagrostis concinna** (Hook. f.) Roshev. in V.L. Komarov (ed.), Fl. URSS 2: 75 (1934). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 342 (2017). Nobis *et al.*, PhytoKeys 128: 109 (2019).

*Stipa concinna* Hook. f., Fl. Brit. India 7: 230 (1897).

Caespitose perennial herbs; culms erect, 10–30 cm long.

*Habitat*: Grassy slopes, alpine meadows, scrub.

*Distribution*: C Asia, Himalaya (Pakistan to NE India: Sikkim), Tibetan Plateau, N & SC China.

NEPAL: C & E; 3700–5300 m.

KSL: Known from upper Karnali in adjoining Pulan County, SW Xizang in KSL China; 4000–4700 m. It is likely also to be present in upper Humla in KSL Nepal.

*Representative specimen*. **XIZANG (CHINA)**: Pulan Xian, 30.29°N 81.17°E (Qinghai-Tibet team 6092087, 1976; PE) fide Kong & Yang (2019).

*Remarks*: Further records for upper Karnali fide GMBA (2012–2016).

**Ptilagrostis dichotoma** Keng ex Tzvelev, Trudy Bot. Inst. Akad. Nauk S.S.S.R., Rast. Tsentral. Azii 4: 43 (1968). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 342 (2017). Nobis *et al.*, PhytoKeys 128: 107 (2019).

Densely caespitose perennial herbs; culms erect, 10–20 cm long.

*Habitat*: Open grassy slopes, alpine meadows, alpine steppes.

*Distribution*: Himalaya (NW India to Bhutan), Tibetan Plateau, C China.

NEPAL: W, C & E; 3300–5000 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; 3800–4500 m.

*Representative specimens*. **BAJHANG**: Manane Lekh, 3830 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20917078, 14 Jul 2009; E00509786<sup>1</sup> image, KATH<sup>1</sup>); Saipal, 3909 m (H Tabata, KR Rajbhandari & K Tsuchiya 1808; KATH<sup>1</sup>).

**Ptilagrostis yadongensis** Keng f. & J.S. Tang, J. S. W. Agric. Univ. 4: 44 (1985). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 343 (2017). Nobis *et al.*, PhytoKeys 128: 108 (2019).

*Ptilagrostis macrospicula* L.B. Cai; *Ptilagrostis milleri* (Noltie) M. Nobis & A. Nobis; *Stipa milleri* Noltie

Caespitose perennial herbs; culms erect.

*Habitat*: Grassy slopes, alpine meadows.

*Distribution*: C & E Himalaya (Nepal to Bhutan), Tibetan Plateau.

NEPAL: W, C & E; 3600–4600 m.

KSL: Bajhang District in KSL Nepal; 4300 m.

*Representative specimen*. **BAJHANG**: Aletsoura, near Saipal, 4333 m (H Tabata, KR Rajbhandari & K Tsuchiya 1941, 31 Jul 1976; KATH<sup>1</sup>).

**Saccharum** L., Sp. Pl. 1: 54 (1753).

**Saccharum filifolium** Steud., Syn. Pl. Glumac. 1(6): 409 (1854). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 344 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 277 (2018).

*Erianthus filifolius* (Steud.) Nees ex Hack.

Caespitose perennial herbs; culms erect, robust, to 100 cm long.

*Habitat*: Grassland, rocky bank, dry slopes.

*Distribution*: Afghanistan, Pakistan, NW India, Nepal.

NEPAL: W, C & E; 2100–2500 m.

KSL: Humla in KSL Nepal, and neighboring Doti [Pithoragarh, Uttarakhand in KSL India]; 1600–2300 m.

*Representative specimens*. **HUMLA**: Melchham, 2286 m (O Polunin, WR Sykes & LHJ Williams 4144, 21 May 1952; BM012550188<sup>1</sup> image). **DOTI**: Ratuli Gaon (Bis Ram 346, 2 May 1929; BM012550194<sup>1</sup> image). **UTTARAKHAND (INDIA)**: Kumaon, above Kota, 1615 m (R Strachey & JE Winterbottom 3; P01992084<sup>1</sup> image).

**Saccharum longesetosum** (Andersson) V. Naray. ex Bor, Fl. Assam 5(App. 1): 461 (1940). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 344 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 277 (2018).

*Erianthus longesetosus* Andersson, Öfvers. Kongl. Vetensk.-Akad. Förh. 12: 163 (1855); *Erianthus hookeri* Hack.; *Erianthus longisetosus* var. *hookeri* (Hack.) Bor; *Saccharum hookeri* (Hack.) V. Naray. ex Bor

Caespitose perennial herbs; culms erect, robust, to 2 m or more in length.

*Habitat:* Grassy slopes, steep scrubby banks, forest gullies.

*Distribution:* Himalaya (NW India to Bhutan), Tibetan Plateau, Bangladesh, S China, mainland SE Asia.

NEPAL: W, C & E; 200–2200 m.

KSL: Humla in KSL Nepal; 2200 m.

*Representative specimen.* **HUMLA:** Darma Gaon, 2200 m (KR Rajbhandari & B Roy 4031, 27 Jul 1979; KATH<sup>1</sup>).

**Saccharum rufipilum** Steud., Syn. Pl. Glumac. 1: 409 (1854). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 345 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 278 (2018).

*Erianthus fulvus* Nees ex Hack. (1889), nom. illeg., non (R. Br.) Kunth (1829); *Erianthus pallens* Hack.; *Erianthus rufipilus* (Steud.) Griseb.

Caespitose perennial herbs; culms erect, robust, to 2 m or more in length.

*Habitat:* Grassy and rocky slopes, river banks.

*Distribution:* NW Pakistan, Himalaya (Kashmir to Bhutan), Tibetan Plateau, C & SE China, mainland SE Asia.

NEPAL: W, C & E; 1300–3200 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Mugu; 1750–2450 m.

*Representative specimens.* **BAJHANG:** Agar – Dhalaun, 1770 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170791, 19 Aug 1991; TI<sup>1</sup> image); Dhalaun – Rasa, 2250 m (KR Rajbhandari 15466, 20 Aug 1991; KATH<sup>1</sup>). **DARCHULA:** Khar VDC-7, 1860 m (BB Shrestha, M Pandey & R Chhetri 341, 30 Sept 2015; TUCH<sup>1</sup>); Palaa – Kuntisau, 2300 m (KR Rajbhandari & KJ Malla 5703, 29 Aug 1980; KATH<sup>1</sup>). **MUGU:** Mugu Karnali Valley, Mangri, 2438 m (O Polunin, WR Sykes & LHJ Williams 3027, 25 Aug 1952; BM012550229<sup>1</sup> image).

**Saccharum spontaneum** L., Mant. Pl. 2: 183 (1771). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 145 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 346 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 278 (2018).

*Saccharum canaliculatum* Roxb.; *Saccharum chinense* Nees ex Hook. & Arn.; *Saccharum insulare* Brongn.; *Saccharum propinquum* Steud.; *Saccharum semidecumbens* Roxb.

NEP: Kāns, Sāno kāns (काँस, सानो काँस).

ENG: Fodder cane, Kans grass, Thatch grass, Tiger grass, Wild cane, Wild sugarcane. HIN: Kāns (काँस).

Spreading perennial herbs; rhizomes elongated; culms erect, robust, up to 3 m or more in length.

*Habitat:* Grassland, dry slopes, riversides, trailsides.

*Distribution:* NE Africa, tropical to warm temperate regions in Asia, N Australia.

NEPAL: W, C & E; 100–2100 m.

KSL: Bajhang and Darchula in KSL Nepal; 800–2000 m.

*Representative specimens.* **BAJHANG:** Agar – Dhalaun, 1770 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170790, 19 Aug 1991; KATH<sup>1</sup>, TI); Talkot – Agar, 1900 m (KR Rajbhandari 15307, 18 Aug 1991, KATH<sup>1</sup>); between Panalta & Kuwa, 1900–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0307, 13 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **DARCHULA:** Darchula – Huti, 1000 m (KR Rajbhandari & KJ Malla 5517, 24 Aug 1980; KATH<sup>1</sup>, TI); between Lattenath & Paribagar, 1000–1100 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-2170, 3 Aug 2016, TUCH<sup>1</sup>).

*Local abund.:* Frequent.

*Conserv. status:* GLB., Least Concern (Diop & Mani 2020).

**Sacciolepis** Nash, Man. Fl. N. States. 89 (1901).

**Sacciolepis indica** (L.) Chase, Proc. Biol. Soc. Wash. 21: 8 (1908). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 145 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 346 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 279 (2018).

*Aira indica* L., Sp. Pl. 1: 63 ("spicata"), 1231 ("indicum"), in errata after index (1753); *Panicum indicum* (L.) L. (1771), nom. illeg., non Mill. (1768).

NEP: Kāune banso, Kāgune-ghāns (काउने बन्सो, कागुने-घाँस).

ENG: Glenwoodgrass, Chase's glenwoodgrass, Indian cupscale-grass.

Caespitose annual herbs; culms slender, ascending, 30–100 cm long.

*Habitat*: Grassy slopes, moist open slopes, marshy places, streamsides.

*Distribution*: Africa, tropical and subtropical regions in Asia to N & E Australia.

NEPAL: W, C & E; 70–2600 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Doti; 1100–1800 m.

*Representative specimens*. **BAJHANG**: Jimkot – Khaptad, 1600 m (KR Rajbhandari 15591, 26 Aug 1991, KATH<sup>1</sup>).

**DARCHULA**: Khar VDC-2, 1836 m (BB Shrestha, M Pandey & R Chhetri D154, 29 Sept 2015; TUCH<sup>1</sup>). **DOTI**: Rautkutte – Barigad, 1120 m (H Tabata, KR Rajbhandari and K Tsuchiya 148, 26 Jun 1976, KATH<sup>1</sup>).

*Conserv. status*: GLB., Least Concern (Diop 2020b).

**Setaria** P. Beauv., Ess. Agrostogr. 51 (1812).

**Setaria flavidula** (Retz.) Veldkamp, Blumea 39: 376 (1994).

*Panicum flavidum* Retz., Observ. Bot. 4: 15 (1786); *Paspalidium flavidum* (Retz.) A. Camus

Caespitose perennial herbs; culms erect or geniculately ascending, 10–40 cm or more in length.

*Habitat*: Marshy places, grassland, weed of rice fields, roadsides, moist open places.

*Distribution*: W Indian Ocean Islands, tropical and subtropical regions in Asia to E Australia.

NEPAL: W, C & E; 100–1700 m.

KSL: Darchula in KSL Nepal; 1700 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **DARCHULA**: Khar-7, 1700 m (BB Shrestha, M Pandey & R Chhetri D451, 1 Oct 2015, TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon, Jomsar, 1524 m (R Strachey & JE Winterbottom 1; BM012549203<sup>1</sup> image).

*Remarks*: Further records for Pithoragarh fide FES (2003).

*Conserv. status*: GLB., Least Concern (Lansdown & Knees 2013).

**Setaria forbesiana** (Nees ex Steud.) Hook. f., Fl. Brit. India 7: 81 (1896). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 145 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 347 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 280 (2018).

*Panicum forbesianum* Nees ex Steud., Syn. Pl. Glumac. 1: 98 (1854).

Perennial herbs; culms erect or geniculately ascending, to 60 cm or more in length.

*Habitat*: Grassy slopes.

*Distribution*: Himalaya (NW India to Bhutan), C & SE China, mainland SE Asia.

NEPAL: C & E; 1200–2000 m.

KSL: Known from Pithoragarh, Uttarakhand in KSL India; 1200–1900 m. It is likely also to be present in Darchula District in KSL Nepal.

*Representative specimen.* **UTTARAKHAND (INDIA):** Kumaon, Kali Valley, 1220–1525 m (JF Duthie 6204, 12 Aug 1886; BM012548915<sup>1</sup> image).

*Remarks:* Further records for Pithoragarh fide GMBA (2012–2016).

**Setaria homonyma** (Steud.) Chiov., Nuovo Giorn. Bot. Ital., n.s., 26: 78 (1919). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 347 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 280 (2018).

*Panicum homonymum* Steud., Syn. Pl. Glumac. 1: 48 (1853).

ENG: Fan-leaved bristlegrass.

Loosely caespitose annual herbs; culms erect or decumbent, 20–70 cm or more in length.

*Habitat:* Grassy slopes.

*Distribution:* Tropical Africa, S Asia.

NEPAL: W; 1000 m.

KSL: Darchula District in KSL Nepal; 1000 m [Pithoragarh District, Uttarakhand in KSL India].

*Representative specimen.* **DARCHULA:** Darchula – Huti, 1000 m (KR Rajbhandari & KJ Malla 5553, 24 Aug 1980, KATH<sup>1</sup>).

*Remarks:* Records for Pithoragarh fide FES (2003).

**Setaria intermedia** Roem. & Schult., Syst. Veg. 2: 489 (1817). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 348 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 280 (2018).

*Panicum hookerianum* Balansa; *Panicum intermedium* (Roem. & Schult.) Roth; *Panicum tomentosum* Roxb.; *Setaria tomentosa* (Roxb.) Kunth

Annual herbs; culms slender, ascending or decumbent, 40–100 cm long.

*Habitat:* Grassland, fields, wet places.

*Distribution:* E Africa, Arabian Peninsula, S Asia, SC China, mainland SE Asia.

NEPAL: W, C & E; 400–1800 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; 1100–1700 m [Pithoragarh District, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Trail from Tameil to Chainpur, 1113 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913057, 5 Jul 2009; E00509903, KATH<sup>1</sup>). **BAJURA:** Berseni – Porakya, 1590 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193230, 12 Aug 1991; TI<sup>1</sup> image).

*Remarks:* Records for Pithoragarh fide FES (2003).

**Setaria italica** (L.) P. Beauv., Ess. Agrostogr.: 51 (1812). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 145 (1978). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 280 (2018). **PI. 19.**

*Panicum italicum* L., Sp. Pl. 1: 56 (1753); *Pennisetum italicum* (L.) R. Br.

NEP-L/NEP: Kāguno, Kāun, Kāunī (कागुनो, काउन, काउनी).

ENG: Foxtail millet, Foxtail bristlegrass.

Annual herbs; culms robust, erect or geniculate, up to 150 cm long.

*Habitat:* Cultivated.

*Distribution:* Probably originated in C & E China; cultivated as a crop worldwide.

NEPAL: W, C & E; 1100–2700 m.



KSL: Bajhang and Humla in KSL Nepal, and neighboring Bajura; 1800–2600 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Agar – Dhalaun, 1800 m (KR Rajbhandari 15385, 19 Aug 1991; KATH<sup>1</sup>); Rasa – Roshidanda, 2350 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9192514, 21 Aug 1991; TI) fide SHB (2013–2020). **BAJURA:** Birseni – Porakya, 1560–2540 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9195010, 12 Aug 1991; TI<sup>1</sup> image). **HUMLA:** Humla-Karnali, Simikot, 2600 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama 1779B, 28 Aug 2012; TUCH<sup>1</sup>).

*Remarks:* Records for Pithoragarh fide CIAT (2018).

**Setaria palmifolia** (J. Koenig) Stapf, J. Linn. Soc., Bot. 42: 186 (1914). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 146 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 348 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 280 (2018).

*Panicum palmifolium* J. Koenig, Naturforscher (Halle) 23: 208 (1788), “*palmaefolium*”.

ENG: Palmgrass, Broad-leaved bristlegrass, Highland pitpit.

Caespitose perennial herbs; culms robust, erect or ascending, 60–100 cm long.

*Habitat:* Shady grassy slopes, forests, thickets.

*Distribution:* Tropical and subtropical regions in Asia to E Australia.

NEPAL: W, C & E; 200–2800 m.

KSL: Known from neighboring Bajura District, Nepal; 1550 m.

*Representative specimen.* **BAJURA:** Martadi, 1554 m (BSH C1, 7 Aug 2017) fide RBGE (2014).

**Setaria parviflora** (Poir.) Kerguelen, Lejeunia, n.s. 120: 161 (1987). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 348 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 280 (2018).

*Cenchrus parviflorus* Poir. in Lam., Encycl. 6: 52 (1804); *Chaetochloa parviflora* (Poir.) Scribn.; *Panicum geniculatum* Lam.; *Pennisetum geniculatum* (Lam.) Jacq.; *Pennisetum parviflorum* (Poir.) Trin.; *Setaria geniculata* P. Beauv.

NEP-L/NEP: Kanike kâguno, Kâgune-jhâr (कनिके कागुनो, कागुने-झार).

ENG: Knotroot bristlegrass, Marsh bristlegrass.

Annual or short-lived perennial herbs; culms erect or ascending, up to 100 cm long.

*Habitat:* Open slopes, roadsides, waste places, agriculture margins.

*Distribution:* N & S America; introduced into Africa, Tropical and Subtropical Asia to Pacific.

NEPAL: W, C & E; 100–2500 m.

KSL: Bajhang in KSL Nepal; 1500–2000 m.

*Representative specimen.* **BAJHANG:** Rupatola, 1500 – 2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0062, 11 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>).

*Consv. status:* GLB., Least Concern (Thacker 2013).

**Setaria plicata** (Lam.) T. Cooke, Fl. Bombay 2: 919 (1908). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 146 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 348 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 281 (2018).

*Panicum plicatum* Lam., Tabl. Encycl. 1: 171 (1791); *Panicum excurrens* Trin.; *Panicum neurodes* Schult. var. *blepharoneuron* A. Braun; *Setaria excurrens* (Trin.) Miq.; *Setaria palmifolia* Stapf var. *blepharoneuron* (A. Braun) Veldkamp

Loosely caespitose perennial herbs; culms robust, erect or decumbent, to 100 cm long.

*Habitat:* Open forests, grassland.

*Distribution:* S Asia, Himalaya (N India, Nepal), Tibetan Plateau, S China to Japan, mainland SE Asia to New Guinea.

NEPAL: W, C & E; 900–2000 m.

KSL: Bajhang in KSL Nepal; 1100 m [Bageshwar and Pithoragarh districts, Uttarakhand in KSL India; 600–1500 m].

*Representative specimens.* **BAJHANG:** Bajhang, 1100 m (KR Rajbhandari 15567, KATH). **UTTARAKHAND (INDIA):** Kumaon, Kapkot, 1220–1525 m (JF Duthie 3505, 13 Aug 1884; BM012549114<sup>1</sup> image).

*Remarks:* Further records for Pithoragarh fide Duthie (1906).

**Setaria pumila** (Poir.) Roem. & Schult., Syst. Veg., 2: 891 (1817). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 349 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 281 (2018).

*Panicum pumilum* Poir. in Lamarck, Encycl., Suppl. 4: 273 (1816); *Panicum pallide-fuscum* Schumach.; *Setaria pallide-fusca* (Schumach.) Stapf & C.E. Hubb.; *Setaria pumila* var. *pallide-fusca* (Schumach.) B.K. Simon

NEP: Bālā banso, Ghoge banso, Kāgune-jhār, Kanike kāguno (बाला बन्सो, घोगे बन्सो, कागुने-भार, कनिके कागुनो).

ENG: Yellow bristlegrass, Yellow foxtail, Pigeon grass.

Loosely caespitose annual herbs; culms erect or ascending, 10–50 cm or more in length.

*Habitat:* Waste places, grassy places, roadsides, forest margins, field margins.

*Distribution:* S & E Europe, Africa, tropical to warm temperate regions in Asia.

NEPAL: W, C & E; 100–2500 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 900–2100 m.

*Representative specimens.* **BAJHANG:** Badigaon, 2100 m (KR Rajbhandari 15246, 17 Aug 1991; KATH<sup>1</sup>).

**BAJURA:** Serigaon – Bashala, 1540 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193268, 14 Aug 1991; TI) fide SHB (2013–2020); Birseni to Porakya, 1800 m (KR Rajbhandari 14869, 12 Aug 1991, KATH<sup>1</sup>). **DARCHULA:** Khar-4, 2040 m (BB Shrestha, M Pandey & R Chhetri 43, 26 Sept 2015; TUCH<sup>1</sup>).

**Setaria verticillata** (L.) P. Beauv., Ess. Agrostogr.: 51 (1812). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 146 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 349 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 281 (2018).

*Panicum verticillatum* L., Sp. Pl. ed. 2: 82 (1762); *Chaetochloa verticillata* (L.) Scribn.; *Panicum adhaerens* Forssk.; *Pennisetum verticillatum* (L.) R. Br.

NEP: Jhuse kāgune-ghāns, Kāgune-jhār (भुसे कागुने-घाँस, कागुने-भार).

ENG: Bristly foxtail, Bur bristlegrass, Hooked bristlegrass, Rough bristlegrass, Sticky bristle grass.

Loosely caespitose annual herbs; culms decumbent or ascending, 20–40 cm or more in length.

*Habitat:* Grassland, roadsides, among shrubs.

*Distribution:* Europe, Africa, tropical to warm temperate regions in Asia, Australasia.

NEPAL: W, C & E; 200–900 m.

KSL: Darchula in KSL Nepal; 900 m.

*Representative specimen.* **DARCHULA:** Darchula – Huti, 900 m (KR Rajbhandari & KJ Malla 5555, 24 Aug 1980; KATH<sup>1</sup>).

**Setaria viridis** (L.) P. Beauv., Ess. Agrostogr.: 51 (1812). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 146 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 349 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 281 (2018).

*Panicum viride* L., Syst. Nat. ed. 10, 2: 870 (1759); *Pennisetum viride* (L.) R.Br.; *Setaria italica* (L.) P. Beauv. subsp. *viridis* (L.) Thell.; *Setaria weinmannii* Roem. & Schult.

NEP: Kāgune-ghāns (कागुने-घाँस).

ENG: Green bristlegrass, Green foxtail.

Loosely caespitose annual herbs; culms erect or ascending, 10–50 cm long.

*Habitat*: Grassy slopes, grassland, waste places, roadsides, edge of fields.

*Distribution*: Europe, N Africa, tropical to temperate regions in Asia, C & SE Australia.

NEPAL: W & C; 1000–3900 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; 1050–2200 m.

*Representative specimens*. **BAJHANG**: Talkot – Aagar, 1660–2180 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193762, 18 Aug 1991; TI) fide SHB (2013–2020). **BAJURA**: Babali – Sanfebagar, 1060 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193426, 30 Aug 1991; TI) fide SHB (2013–2020).

## **Sporobolus** R. Br., Prodr. 169 (1810).

**Sporobolus diandrus** (Retz.) P. Beauv., Ess. Agrostogr.: 26 (1812). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 146 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 350 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 283 (2018).

*Agrostis diandra* Retz., Observ. Bot. 5: 19 (1789); *Sporobolus diandrus* var. *nanus* Hook. f.; *Sporobolus indicus* (L.) R. Br. var. *diandrus* (Retz.) Jovet & Guédès; *Sporobolus indicus* var. *flaccidus* (Roth) Veldkamp

NEP: Khude-ghāns (खुदे-घाँस).

ENG: Tussock dropseed, Indian dropseed.

Caespitose perennial herbs; culms slender, erect or ascending, 12–50 cm long.

*Habitat*: Chir pine forests, dry slopes, grassland, roadsides.

*Distribution*: W Indian Ocean Islands, S Arabian Peninsula, tropical and subtropical regions in S Asia, SC & SE China, mainland SE Asia to New Guinea.

NEPAL: W, C & E; 65–2100 m.

KSL: Known from neighboring Bajura and Dadeldhura districts, Nepal; 1000–1750 m. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimens*. **BAJURA**: Baudi Khola, 1750 m (BSH C101, 21 Aug 2017) fide RBGE (2014). **DADEL DHURA**: Lipna, 1000 m (KR Rajbhandari, PM Regmi & KJ Malla 5289, 12 Aug 1980; KATH<sup>1</sup>).

**Sporobolus fertilis** (Steud.) Clayton, Kew Bull. 19: 291 (1965). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 146 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 350 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 283 (2018).

*Agrostis fertilis* Steud., Syn. Pl. Glumac. 1: 170 (1854); *Sporobolus diandrus* (Retz.) P. Beauv. var. *major* Buse; *Sporobolus indicus* (L.) R. Br. var. *fertilis* (Steud.) Jovet & Guédès; *Sporobolus indicus* var. *major* (Buse) Baaijens

NEP: Jarkhare-ghāns, Bandhan-jhār (जरखरे-घाँस, बन्धन-झार).

ENG: Bloomsbury grass, Giant parramatta grass, Smutgrass.

Densely caespitose perennial herbs; culms stout, erect, 25–60 cm long.

*Habitat*: Roadsides, grassy slopes, field margins.

*Distribution*: Tropical S Asia, Himalaya, C & SE China to Japan, mainland SE Asia to Indonesia.

NEPAL: W, C & E; 300–2800 m.

KSL: Bajhang and Darchula in KSL Nepal; 1500–2300 m.

*Representative specimens.* **BAJHANG:** Rupatola, 1500–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0111, 11 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>); trail from Surma to Thalara, 2230 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913085, 10 Jul 2009; E00395785, KATH<sup>1</sup>). **DARCHULA:** Khar-2, 1860 m (BB Shrestha, M Pandey & R Chhetri 388, 30 Sept 2015; TUCH<sup>1</sup>).

**Sporobolus pilifer** (Trin.) Kunth, Enum. Pl. 1: 211 (1833). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 146 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 350 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 283 (2018).

*Vilfa pilifera* Trin., Gram. Unifl. Sesquifl. 157 (1824); *Agrostis japonica* Steud.; *Sporobolus ciliatus* J. Presl; *Sporobolus japonicus* (Steud.) Maxim. ex Rendle.; *Sporobolus stachyanthus* A. Rich.; *Sporobolus villosus* Kunth

ENG: Barundi dropseed.

Caespitose annual herbs; culms slender, erect, 3–25 cm long.

*Habitat:* Moist open places, open grassy slopes, edge of paddy fields.

*Distribution:* Tropical and subtropical regions of the World.

NEPAL: W, C & E; 900–2700 m.

KSL: Darchula District in KSL Nepal [Pithoragarh and neighboring Almora District, Uttarakhand in KSL India]; 900–1800 m.

*Representative specimens.* **DARCHULA:** Dumli – Ralpa, 1800 m (KR Rajbhandari & KJ Malla 5896, 12 Sept 1980; KATH<sup>1</sup>); Khar VDC-2, 1836 m (BB Shrestha, M Pandey & R Chhetri D442, 30 Sept 2015; TUCH<sup>1</sup>).

**UTTARAKHAND (INDIA):** Kumaon, Dhauri Valley, 915–1220 m (JF Duthie 3529, 22 Sept 1884; BM012547495<sup>1</sup> image); Kumaon, below Almora, 1220–1525 m (JF Duthie 6206, 24 Aug 1886; BM012547501<sup>1</sup> image).

**Stipa** L., Sp. Pl. 1: 78 (1753).

**Stipa breviflora** Griseb., Nachr. Königl. Ges. Wiss. Georg-Augusts-Univ. 3: 82 (1868). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 351 (2017). Nobis *et al.*, PhytoKeys 128: 104 (2019).

*Stipa aliciae* Kanitz

Caespitose perennial herbs; culms erect, 10–50 cm.

*Habitat:* Dry slopes, scree, among shrubs.

*Distribution:* C Asia, W & C Himalaya (NW India, Nepal), Tibetan Plateau, N China, Mongolia.

NEPAL: C; 2800–4500 m.

KSL: Known from adjoining Ngari Korum, including Pulan County, SW Xizang in KSL China. It is likely also to be present in upper Darchula and upper Humla in KSL Nepal.

*Representative specimens.* **XIZANG (CHINA):** Gnari Korum [Ngari Korum] (Schlagintweit 7105; holotype GOET 013761<sup>1</sup> image); province of Gnari Korum [Ngari Korum], northern foot of the Uta Dhura Pass across the Kiungar Pass to its northern foot, 4940–5360 m (Schlagintweit 7318, 9–12 Jul 1855; unspecified type GH 00024484<sup>1</sup> image); Pulan Xian, 30.29°N 81.17°E (Qinghai-Tibet team 6030814, 1976; PE) fide Kong & Yang (2019).

**Stipa capillacea** Keng, Sunyatsenia 6(2): 100, pl. 15 (1941). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 351 (2017). Nobis *et al.*, PhytoKeys 128: 106 (2019).

*Stipa koelzii* R.R. Stewart

Caespitose perennial herbs; culms erect, 10–40 cm long.

*Habitat*: Grassy slopes, meadows.

*Distribution*: Himalaya (NW India to Bhutan), Tibetan Plateau, N & C China.

NEPAL: W, C & E; 2800–4100 m.

KSL: Known from Pulan County, SW Xizang in KSL China. It is likely also to be present in upper Humla in KSL Nepal.

*Representative specimen*. **XIZANG (CHINA)**: Pulan Xian, 30.29°N 81.17°E (Qinghai-Tibet team 6030416, 1976; PE) fide Kong & Yang (2019).

**Stipa krylovii** Roshev., Izv. Glavn. Bot. Sada S.S.S.R. 28: 379 (1929). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 352 (2017). Nobis *et al.*, PhytoKeys 128: 105 (2019).

*Stipa sareptana* A.K. Becker var. *krylovii* (Roshev.) P.C. Kuo & Y.H. Sun

Densely caespitose perennial herbs; culms erect, up to 50 cm long.

*Habitat*: Dry sandy ground.

*Distribution*: C & N Asia, Himalaya (N India, Nepal), Tibetan Plateau, N China.

NEPAL: W & C; 3600–4000 m.

KSL: Upper Humla in KSL Nepal; 4000 m [Pulan County, SW Xizang in KSL China]. It is likely also to be present in upper Mahakali in Darchula, Nepal.

*Representative specimen*. **XIZANG (CHINA)**: Pulan Xian, 30.29°N 81.17°E (Qinghai-Tibet team 6029395, 1976; PE) fide Kong & Yang (2019).

**Tenaxia** N.P. Barker & H.P. Linder, Ann. Missouri Bot. Gard. 97(3): 350–351, f. 16 (2010).

**Tenaxia cachemyriana** (Jaub. & Spach) N.P. Barker & H.P. Linder, Ann. Missouri Bot. Gard. 97: 352 (2010).

*Danthonia cachemyriana* Jaub. & Spach, Ill. Pl. Orient. 4: 46, t. 331 (1851); *Danthonia exilis* Hook. f.

Densely caespitose perennial herbs; culms filiform, erect or decumbent at the base, up to 25 cm long.

*Habitat*: Dry rocky slopes, rock crevices.

*Distribution*: E Afghanistan, Pakistan to E Himalaya (Sikkim), Tibetan Plateau, SC China.

NEPAL: W, C & E; 3000–4450 m.

KSL: Darchula District in KSL Nepal; 3700 m [Pithoragarh, Uttarakhand in KSL India; and Pulan County, SW Xizang in KSL China]. It is likely also to be present in upper Humla in KSL Nepal.

*Representative specimens*. **DARCHULA**: Dhaulo Odhar, 3703 m (KM Ghimire & M Adhikari F218, 12 Sept 2015; TUCH). **UTTARAKHAND (INDIA)**: Ralam, 3655 m (R Strachey & JE Winterbottom 1; P02260974<sup>1</sup> image). **XIZANG (CHINA)**: Pulan Xian, 30.29°N 81.17°E (Tibet Expedition Team 6257898, 1974; PE) fide Kong & Yang (2019).

**Tenaxia cumminsii** (Hook. f.) N.P. Barker & H.P. Linder, Ann. Missouri Bot. Gard. 97: 352 (2010). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 353 (2017). Nobis *et al.*, PhytoKeys 128: 106 (2019).

*Danthonia cumminsii* Hook. f., Fl. Brit. India 7: 282 (1896); *Danthonia cachemyriana* Jaub. & Spach var. *minor* Hook. f.; *Danthonia jacquemontii* Bor; *Danthonia minor* (Hook. f.) L. Liu; *Danthonia schneideri* Pilg.

NEP: Sāno phyūncho (सानो फ्यूँचो).

Caespitose, tussock-forming perennial herbs; culms erect, up to 60 cm long.

*Habitat*: Open grassy slopes, rocky outcrop, alpine meadows, forests, near streams, dry rocky slopes.

*Distribution*: E Afghanistan, NW Pakistan to E Himalaya, Tibetan Plateau, SC China.

NEPAL: W, C & E; 2200–4800 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura; 2900–4700 m [Pithoragarh, Uttarakhand in KSL India; and Pulan Xian, SW Xizang in KSL China].

*Representative specimens*. **BAJHANG**: Khaptad, 2930 m (KR Rajbhandari 15643, 28 Aug 1991; KATH<sup>1</sup>). **BAJANG/BAJURA**: Pategaon – Ghodi Lehk Deorali – Badigaon, 3100 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170693, 16 Aug 1991; TI) fide SHB (2013–2020); Ghodi Lekh, 3300 m (KR Rajbhandari 15108, 16 Aug 1991; KATH<sup>1</sup>). **DARCHULA**: Upper Chameliya Valley, Gauchhalighol, Pilkanda, 3950 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1250, 21 Jul 2015; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon, W Tola, 3655 m (R Strachey & JE Winterbottom 2; BM000959459<sup>1</sup> image, P02260975<sup>1</sup> image). **XIZANG (CHINA)**: Pulan Xian, 30.29°N 81.17°E (Qinghai-Tibet team vegetation group 6751502, 1976; PE) fide Kong & Yang (2019).

*Local abund.*: Frequent in Darchula and Humla at higher elevations.

**Thamnocalamus** Munro, Trans. Linn. Soc. London. 26: 33 (1868).

**Thamnocalamus spathiflorus** (Trin.) Munro, Trans. Linn. Soc. Lond. 26: 34 (1868). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 147 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 354 (2017).

*Arundinaria spathiflora* Trin., Mém. Acad. Imp. Sci. Saint-Pétersbourg, Sér. 6, Sci. Math., Seconde Pt. Sci. Nat. 1: 617 (1835); *Arundinaria aristata* Gamble; *Bambusa aristata* Lodd. ex Lindl.; *Thamnocalamus aristatus* (Gamble) E.G.Camus; *Thamnocalamus nepalensis* (Stapleton) Stapleton; *Thamnocalamus occidentalis* (Stapleton) Stapleton; *Thamnocalamus spathiflorus* subsp. *nepalensis* Stapleton; *Thamnocalamus spathiflorus* subsp. *occidentalis* Stapleton

NEP: Nigālo, Rāto nigālo (निगालो, रातो निगालो).

ENG: Himalayan bamboo, Red Himalayan bamboo.

Shrubby bamboos, rhizomatous; culms caespitose, erect, woody, 1.5–3 m or more in length.

*Habitat*: Coniferous and mixed broad-leaved forests, oak forests.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau.

NEPAL: W, C & E; 2200–3900 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 2300–3050 m.

*Representative specimens*. **BAJHANG & BAJURA**: Khaptad National Park, 2980–3030 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9161055, 27 Aug 1991; TI<sup>1</sup> image). **DARCHULA**: Between Ghusa & Nahli, 2390 m (SK Ghimire, LR Joshi, B Awasthi & CK Subedi ANCA-A70, 23 Oct 2013, TUCH<sup>1</sup>).

*Local abund.*: Occasional in Darchula.

**Themeda** Forssk., Fl. Aegypt.-Arab.: 178 (1775).

**Themeda anathera** (Nees ex Steud.) Hack. in DC., Monogr. Phan. 6: 669 (1889). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 147 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 354 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 285 (2018).

*Anthistiria anathera* Nees ex Steud., Syn. Pl. Glumac. 1: 402 (1854); *Androscepia anathera* (Nees ex Steud.) Andersson

NEP-L: Chunero (चुनेरो). NEP: Dhaddi (ढड्डी).

Caespitose perennials; rhizomes creeping; culms slender, erect or ascending, up to 1.4 m long.

*Habitat*: Open slopes, grassy slopes, forests, terraced fields.

*Distribution*: E Afghanistan, NW & S Pakistan to Nepal, Tibetan Plateau.

NEPAL: W & C; 700–2650 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Mugu; 1200–2200 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Jimkotgaon, 1270 m (H Tabata, KR Rajbhandari & K Tsuchiya 209, 17 Jul 1976; KATH<sup>1</sup>); Rishinri, 1450 m (H Tabata, KR Rajbhandari & K Tsuchiya 225, 20 Jul 1976; KATH<sup>1</sup>); Talkot – Aagar, 2000 m (KR Rajbhandari 15216, 18 Aug 1991, KATH<sup>1</sup>). **DARCHULA**: Chameliya Valley, below Ghusa, 2000 m (SK Ghimire, S Thapa, B Awasthi, S Lo, C Thapa & MR Paudeyal ANCA-547, 15 Oct 2014; TUCH<sup>1</sup>); Chameliya Valley, Janjari, way to Ghusa Village, 2100 m (SK Ghimire, S Thapa, B Awasthi, S Lo, C Thapa & MR Paudeyal ANCA-810, 26 Oct 2014; TUCH<sup>1</sup>). **MUGU**: Mugu Karnali Valley, between Lumra & Mangri, 2134 (O Polunin, WR Sykes & LHJ Williams 5235, 15 Aug 1952; BM012551491<sup>1</sup> image). **UTTARAKHAND (INDIA)**: Kali Valley, between Shirkha to Sosa, 2438–2743 (JF Duthie; BM012551468<sup>1</sup> image).

*Local abund.*: Frequent to common.

***Themeda caudata*** (Nees) A. Camus in Lecomte, Fl. Indo-Chine 7: 364 (1922). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 147 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 355 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 286 (2018).

*Anthistiria caudata* Nees in Hook. & Arn., Bot. Beechey Voy. 245 (1838); *Androscepija gigantea* (Cav.) Brongn. var. *armata* Andersson; *Themeda gigantea* (Cav.) Hack. subsp. *caudata* (Nees) Hack.; *Themeda gigantea* (Cav.) Hack. var. *longispatha* Hack.

Caespitose perennials; culms robust, erect, 1.5–3 m long.

*Habitat*: Open places.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, S China, SE Asia.

NEPAL: C & E; 100–2100 m.

KSL: Known from Kumaon, Uttarakhand, India. It is likely to be present in KSL India and Nepal.

*Representative specimen*. **UTTARAKHAND (INDIA)**: Kumaon, valley of Sarju, 1067 m (R Strachey & JE Winter-bottom s.n.; K000911701<sup>1</sup> image).

***Themeda hookeri*** (Griseb.) A. Camus, Bull. Mus. Natl. Hist. Nat. 26: 425 (1920). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 147 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 355 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 286 (2018).

*Anthistiria hookeri* Griseb., Nachr. Königl. Ges. Wiss. Georg-Augusts-Univ. 3: 91 (1868).

Caespitose perennials; culms slender, geniculately ascending, to 100 cm long.

*Habitat*: Grassland, open slopes.

*Distribution*: Himalaya (Nepal to Bhutan), Tibetan Plateau, SC China, Thailand.

NEPAL: W, C & E; 1500–3400 m.

KSL: Darchula in KSL Nepal, and neighboring Bajura; 1900–2200 m.

*Representative specimens*. **DARCHULA**: Khar-2, 2190 m (BB Shrestha, M Pandey & R Chhetri D263, 29 Sept 2015, TUCH<sup>1</sup>). **BAJURA**: Majpali – Pategaon, 1900 m (KR Rajbhandari 15078, 15 Aug 1991, KATH<sup>1</sup>).

***Themeda triandra*** Forssk., Fl. Aegypt.-Arab.: 178 (1775). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 147 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 356 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 286 (2018).

*Anthistiria australis* R. Br.; *Anthistiria imberbis* Retz.; *Themeda australis* (R. Br.) Stapf; *Themeda imberbis* (Retz.) T. Cooke

ENG: Kangaroo grass.

Tussock-forming perennials; culms erect, to 60 cm or more in length.

*Habitat*: Forests, forest margins, grassland, dry slopes, roadsides.

*Distribution*: Africa, tropical and subtropical regions of Asia to Australia.

NEPAL: W, C & E; 1100–4200 m.

KSL: Bajhang and Humla in KSL Nepal, and neighboring Bajura and Mugu; 2000–3200 m [also in Kumaon, Uttarakhand, India].

*Representative specimens*. **BAJHANG**: Trail from Thalara to Budkhori, Lekgaun VDC, 2481 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913096, 11 Jul 2009; E00509638<sup>1</sup> image); west peak from Deurali, near Dhalun, 2500–3200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0431, 15 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA**: Bashala – Pategaon (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170634, 15 Aug 1991; TI) fide SHB (2013–2020); Dhamkane, 2150 m (KR Rajbhandari 14883, 13 Aug 1991, KATH<sup>1</sup>). **HUMLA**: Durpa, 2600 m (KR Rajbhandari & B Roy 4161, 30 Jul 1979; KATH). **MUGU**: Rara, 2900 m (KR Rajbhandari & B Roy 3703, 21 Jul 1979; TI 10004683<sup>1</sup> image). **UTTARAKHAND (INDIA)**: Kumaon, above Jallat, 2285 m (R Strachey & JE Winterbottom 3; BM012551445<sup>1</sup> image).

**Thysanolaena** Nees, Edinburgh New Philos. J. 18: 180 (1835).

**Thysanolaena latifolia** (Roxb. ex Hornem.) Honda, J. Fac. Sci. Univ. Tokyo, Sect. 3, Bot. 3: 312 (1930). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 356 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 286 (2018).

*Melica latifolia* Roxb. ex Hornem., Suppl. Hort. Bot. Hafn. 117 (1819); *Agrostis maxima* Roxb.; *Thysanolaena maxima* (Roxb.) Kuntze

NEP: Amriso (अम्रिसो).

ENG: Broomgrass, Asian broomgrass, Nepalese broomgrass.

Reed-like caespitose perennials; rhizomes stout; culms erect, 1–3 m long, hard, unbranched.

*Habitat*: Open slopes, shady cliffs, forest margins, river banks.

*Distribution*: Tropical and subtropical regions in Asia.

NEPAL: W, C & E; 100–2050 m.

KSL: Darchula in KSL Nepal; 900–2050 m [Bageshwar and Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **DARCHULA**: Darchula – Huti, 900 m (KR Rajbhandari & KJ Malla 5551, 24 Aug 1980; TI 10002041) fide SHB (2013–2020); Khar VDC-2, 2050 m (BB Shrestha, M Pandey & R Chhetri 218P, 29 Sept 2015; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon, Kapkot, 1370 m (WN Koelz 20563, 3 Jun 1948; US 04218614<sup>1</sup> image).

*Local abund.*: Occasional in Darchula.

**Tripogon** Roem. & Schult., Syst. Veg. 2: 34 (1817).

**Tripogon filiformis** Nees ex Steud., Syn. Pl. Glumac. 1: 301 (1854). Bor in Hara *et al.*, Enum. Fl. Pl. Nepal 1: 148 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 357 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 287 (2018).

*Tripogon filiformis* var. *tenuispicus* Hook.f.

Caespitose perennial herbs; culms slender, erect, 10–30 cm long.



*Habitat*: Dry grassy slopes, rocky cliffs, among rocks.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, C & S China, SE Asia.

NEPAL: W, C & E; (300–)1000–3600 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura and Mugu; 1500–3200 m.

*Representative specimens*. **BAJHANG**: Aagar – Dhalaun, 1700 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170801, 19 Aug 1991; KATH<sup>1</sup>); Dhalaun – Rasa, 2500 m (KR Rajbhandari 15438, 20 Aug 1991; KATH<sup>1</sup>). **BAJURA**: Serigaon – Bashala, 1460 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170603, 14 Aug 1991; TI) fide SHB (2013–2020). **MUGU**: Below Mugu, Mugu Khola, 3200 m (O Polunin, WR Sykes & LHJ Williams 5304, 18 Aug 1952; BM012546500<sup>1</sup> image).

**Trisetopsis** Röser & A. Wölk, *Schlechtendalia* 25: 57 (2013).

**Trisetopsis virescens** (Nees ex Steud.) Röser & A. Wölk, *Taxon* 66: 38 (2017).

*Trisetum virescens* Nees ex Steud., *Syn. Pl. Glumac.* 1: 226 (1854); *Avena roylei* (Hook. f.) Keng; *Helictotrichon roylei* (Hook.f.) Keng; *Helictotrichon virescens* (Nees ex Steud.) Henrard

Loosely caespitose perennial herbs; culms slender, erect, 25–70 cm or more in length.

*Habitat*: Dry grassy slopes, forests, damp places.

*Distribution*: NW Pakistan to E Himalaya, Tibetan Plateau, Peninsular India, Sri Lanka, C & SE China, mainland SE Asia.

NEPAL: W, C & E; 1800–4200 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura and Mugu; 2500–3500 m.

*Representative specimens*. **BAJHANG**: Near Dhuli, 2545 m (H Tabata, KR Rajbhandari & K Tsuchiya 2199, 4 Aug 1976; *Helictotrichon virescens* KATH<sup>1</sup>). **MUGU**: Rara Lake, 2818 m (H Tabata, KR Rajbhandari & K Tsuchiya 2993, 25 Aug 1976; *Helictotrichon virescens* KATH<sup>1</sup>).

**Triticum** L., *Sp. Pl.* 1: 85 (1753).

**Triticum aestivum** L., *Sp. Pl.* 1: 85 (1753). Bor in Hara *et al.*, *Enum. Fl. Pl. Nepal* 1: 148 (1978). Shrestha *et al.*, *Handbk. Fl. Pl. Nepal* 1: 288 (2018).

*Triticum vulgare* Vill.

NEP: Gahun (गहुँ).

ENG: Bread wheat, Common wheat, Wheat. HIN: Gehūn (गेहूँ). SAN: Godhūm (गोधूम).

Caespitose annual herbs; culms erect, 50–100 cm long.

*Habitat*: Cultivated.

*Distribution*: Probably originating in Mediterranean region and W Asia, cultivated worldwide.

NEPAL: W, C & E; 100–3500 m.

KSL: Cultivated in Baitadi, Bajhang, Darchula and Humla districts in KSL Nepal, and adjoining Kumaon, Uttarakhand, India (Bioversity International 2018; CIAT 2018; Gaisberger & Endresen 2019); 800–3500 m.

*Representative specimen*. **DARCHULA**: Tinkar, 3500 m (KR Rajbhandari & KJ Malla 5778, 1 Sept 1980; KATH).

**Urochloa** P. Beauv., Ess. Agrostogr.: 52 (1812).

**Urochloa villosa** (Lam.) T.Q. Nguyen, Novosti Sist. Vyssh. Rast. 3: 14 (1966). Rajbhandari in Rajbhandari & Baral, Cat. Nepal. Fl. Pl. 1: 146 (2010).

*Panicum villosum* Lam., Tab. Encycl. Méth. Bot. 1: 173 (1791); *Brachiaria villosa* (Lam.) A. Camus; *Brachiaria villosa* var. *barbata* Bor; *Panicum grossarium* Roxb. (1820), nom. illeg., non L. (1759); *Panicum nanum* Royle ex Steud.; *Urochloa villosa* var. *barbata* (Bor) Noltie

Loosely caespitose or creeping annual herbs; culms slender, ascending or decumbent, 10–40 cm long.

*Habitat*: Grassy slopes, fields, roadsides.

*Distribution*: Africa, tropical and subtropical regions of Asia.

NEPAL: W, C & E; 100–2500 m.

KSL: Known from neighboring Bajura and Dadeldhura districts, Nepal; 1300–1500 m [Bageshwar and Pithoragarh districts in KSL India, and neighboring Almora].

*Representative specimens*. **BAJURA**: Tolebhir – Berma, 1535 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193570, 9 Aug 1991; TI) fide SHB (2013–2020).

**DADELDHURA**: Ruwakhola, 1300 m (KR Rajbhandari & KJ Malla 5479, 17 Aug 1980; KATH<sup>1</sup>).

**UTTARAKHAND (INDIA)**: Near Ranikhet (JF Duthie 6177, Sept 1886; BM012548825<sup>1</sup> image).

*Remarks*: Further records for Uttarakhand fide GMBA (2012–2016).

**Zea** L., Sp. Pl. 2: 971 (1753).

**Zea mays** L., Sp. Pl. 2: 971 (1753).

*Mays zea* Gaertn.

NEP: Makai (मकै).

ENG: Corn, Maize. HIN: Makkā, Bhuttā (मक्का, भुट्टा). SAN: Makāya, Mahākāya (मकाय, महाकाय).

Annual herbs, 1–3 m tall; culms stout, erect.

*Habitat*: Cultivated.

*Distribution*: Originating in Mexico, widely cultivated in all warm countries.

NEPAL: W, C & E; 100–2400 m.

KSL: Cultivated in all four districts (Baitadi, Bajhang, Darchula and Humla) of KSL Nepal; 600–2400 m.

*Representative specimen*. **DARCHULA**: Lattenath – Makarigad, 800–1500 m (SK Ghimire, LR Joshi & B Awasthi ANCA-A61, 21 Oct 2013; TUCH<sup>1</sup>).

## PAPAVERACEAE

**Corydalis** DC. in Lam. & DC., Fl. Franç., ed. 3. 4: 637 (1805).

**Corydalis calycina** Lidén, Bull. Brit. Mus. (Nat. His.), Bot. 18 (6): 532 (1989). Lidén in Watson *et al.*, Fl. Nepal 3: 60 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 361 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 290 (2018).

Short-lived perennial herbs, 15–40 cm tall; stems few, suberect or diffuse, branched; flowers yellow.

*Habitat*: Pastures, besides rock on grassland, moist grassy slopes.

*Distribution:* Endemic to Nepal, W & C; 2800–5500 m.

KSL: Bajhang and Humla in KSL Nepal; 2800–3950 m.

*Representative specimens.* **BAJHANG:** Manane Lekh, 3932 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915124, 14 Jul 2009; E00623886<sup>i</sup> image, KATH<sup>i</sup>). **HUMLA:** Dozam, 2812 m (TR Pandey & DR Kandel 2016931, 11 Sep 2016; KATH<sup>i</sup>).

**Corydalis cashmeriana** Royle, Ill. Bot. Himal. Mts. 69, t. 16, f. 1 (1833). Lidén in Watson *et al.*, Fl. Nepal 3: 73 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 361 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 290 (2018). **PL. 19.**

NEP-L: Nīlo gokul-dhūp (नीलो गोकुल-धूप).

ENG: Himalayan blue corydalis. TIB: gabur zilnön (གཡུར་ཟེལ་གནོན་), rékön ngön po (རི་སྐོན་ལྷོན་པོ་).

Delicate perennial herbs, 5–25 cm tall; rhizome short, with a cluster of fleshy roots; stems erect, simple; flowers pale blue to blue or mauve.

*Habitat:* Shrubberies, alpine meadows, open slopes, screes.

*Distribution:* W & C Himalaya (Pakistan to Nepal), Tibetan Plateau.

NEPAL: W & C; 2400–5500 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Doti and Mugu; 2950–4200 m [Bageshwar and Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Dhahidunga Kharka to Manane Lekh, 3412 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915094, 13 Jul 2009; E00509876<sup>i</sup> image, KATH<sup>i</sup>); Surmasarovar, 3600 m (JF Dobremez 2138, 8 May 1973; E00726927<sup>i</sup> image); Kalagad – Dubai Pass, 3900 m (PR Shakya, MK Adhikari & MN Subedi 8125, 24 Jul 1984; KATH<sup>i</sup>). **DARCHULA:** Upper Chameliya, above Dhauliodar, 3600 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1161, 19 Jul 2015; TUCH<sup>i</sup>); upper Chameliya, Pilkanda, 4200 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1876, 22 Jul 2016; TUCH<sup>i</sup>). **DOTI:** Khaptad, 2950 m (PR Shakya, LR Sharma & KR Amatya 6305, 3 Jun 1981; KATH<sup>i</sup>). **HUMLA:** Above Phwaso, Changla Khola, Dozam, 3650 m (SK Ghimire, RP Chaudhary & team P10905, 22 May 2010; TUCH<sup>i</sup>). **UTTARAKHAND (INDIA):** Kumaon, Bageser to Munshari via Kathi & Namik, 1525–2375 m (Schlagintweit 9820, 24–31 May 1855; P02336923<sup>i</sup> image); Kumaon, Byans, *c.* 3960 m (JF Duthie [interpreted] s.n., 21 Jul 1886; E00676018<sup>i</sup> image).

*Local abund.:* Occasional to frequent in Darchula and Humla; not known for other regions.

*Ethnobot. use:* The whole plant is used in folk medicine to treat fever; and occasionally as incense.

*Conserv. status:* LOC., Near Threatened. It is threatened due to small population size, livestock grazing and occasional harvesting of the whole plant.

**Corydalis casimiriana** Duthie & Prain, J. Asiat. Soc. Bengal, Pl. 2, Nat. Hist. 65(1): 27 (1896). Lidén in Watson *et al.*, Fl. Nepal 3: 61 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 361 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 291 (2018). **PL. 19.**

Annual or short-lived perennial herbs, 20–70 cm tall; roots fascicled; stems slender, branched from base, leafy; flowers yellow.

*Habitat:* Open grassy slopes, thickets, forests.

*Distribution:* Himalaya (N India, Nepal), Tibetan Plateau.

NEPAL: W, C & E; 2300–4200 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura; 2600–3900 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Nilkatti, 3640 m (PR Shakya, MK Adhikari & MN Subedi 8247, 26 Jul 1984; KATH<sup>1</sup>). **BAJURA:** Khaptad, 3000 m (NK Bhattarai 90/1052, 23 Aug 1990; KATH<sup>1</sup>). **DARCHULA:** Above Dhauliodar, 3450 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1178A; TUCH<sup>1</sup>); Nampa Gadh, 3660–3960 m (JF Duthie 5312, 26 Jul 1886; isosyntype BM000521712<sup>1</sup> image). **HUMLA:** Salli-Chungsa, 2600 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1666, Sept 2012; TUCH<sup>1</sup>); above Singjungma, way to Nyalu La, 3950 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1769, 29 Aug 2012; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA):** Palang Garh, Byas, c. 2740 m (JF Duthie s.n., 19 Jul 1886; E00676299<sup>1</sup> image).

*Local abund.:* Occasional to frequent.

**Corydalis chaerophylla** DC., Prodr. 1: 128 (1824). Lidén in Watson *et al.*, Fl. Nepal 3: 71 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 362 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 291 (2018). **PI. 19.**

NEP: Okhare-jhār (ओखरे-झार).

Perennial herbs, 50–150 cm tall; rootstocks thick, woody; stems erect, leafy, branched; flowers yellow.

*Habitat:* Open wet places, open forests, forest margins, streamsides, trailsides.

*Distribution:* Himalaya (N India, Nepal, Bhutan), Tibetan Plateau.

NEPAL: W, C & E; 1800–4200(–5500) m.

KSL: Baitadi, Bajhang and Darchula in KSL Nepal, and neighboring Bajura, Dadeldhura and Doti; 1800–3500 m [also in Almora District, Uttarakhand, India].

*Representative specimens.* **BAITADI:** Shrivabhar, 2200–2300 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0058, 10 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJHANG:** Tele Lekh, 2000 m (MS Bista & DP Joshi 98, 28 Jul 1972; KATH<sup>1</sup>); Dhalaun – Rasa 1980–2880 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160825, 20 Aug 1991; E00152729<sup>1</sup> image, KATH<sup>1</sup>, TI). **BAJURA/BAJHANG:** Pategaon – Ghodi Lekh Deurali – Badigaon, 2190–3350 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160703, 16 Aug 1991; E00104098<sup>1</sup> image, KATH<sup>1</sup>, TI). **DARCHULA:** Upper Chameliya Valley, Dhauliodar, way to Lolu, 3400 m (SK Ghimire, B Awasthi, S Budha Magar, B Jnawali, S Nepal, MR Paudeyal & DJ Chapagain ANCA-3299B, 4 Sept 2017; TUCH). **DOTI:** Trail from Silgadi to Khaptad National Park, 2110 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913011, 30 Jun 2009; E00623929<sup>1</sup> image). **UTTARAKHAND (INDIA):** Binsar, Kumaon, 2130 m (R Strachey & JE Winterbottom 1; P02336912<sup>1</sup> image).

*Local abund.:* Occasional to frequent.

**Corydalis cornuta** Royle, Ill. Bot. Himal., Mts.: 69 (1834). Lidén in Watson *et al.*, Fl. Nepal 3: 62 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 362 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 291 (2018). **PI. 20.**

*Corydalis debilis* Edgew.; *Corydalis thalictrifolia* Jameson ex Regel

Annual or biennial herbs, 15–50 cm tall; stems erect or ascending, leafy, much branched; flowers yellow.

*Habitat:* Forests, forest margins, open slopes.

*Distribution:* E Africa, Afghanistan, W & C Himalaya (Pakistan to Nepal), Tibetan Plateau.

NEPAL: W & C; 1900–3600 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura and Doti; 2000–3300 m [Bageshwar and Pithoragarh in KSL India, and neighboring Almora].

*Representative specimens.* **BAJHANG:** Dhalaun – Rasa, 1980–2880 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160799, 20 Aug 1991; E00477091<sup>1</sup> image,

KATH<sup>1</sup>, TI); trial from Budkhor to Dhahidunga Kharka, 3253 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913103, 12 Jul 2009; E00509649<sup>1</sup> image, KATH<sup>1</sup>). **BAJURA**: Porakya – Serigaon, 1620–2540 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160570, 13 Aug 1991; KATH<sup>1</sup>, TI). **DARCHULA**: Ngali, way to Sithi, Ghusa VDC, 2400 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1042, 17 Jul 2015; TUCH<sup>1</sup>); near Chhety, 2590 m (TB Shrestha 4221, 19 Jun 1965; KATH<sup>1</sup>). **DOTI**: Khaptad, 3180 m (LR Sharma & PP Kurmi 5710, 12 Sept 1983; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kati, W Almora Division, Kumaon (Bis Ram 2327, 8 Jun 1933; E00124751<sup>1</sup> image); Near Joh, Darma, c. 3048 m (JF Duthie [interpreted] s.n., 4 Aug 1886; E00124737<sup>1</sup> image).

*Local abund.*: Occasional in Darchula; not known for other districts.

**Corydalis diphylla** Wall., Tent. Fl. Nepal.: 54 (1826). Lidén in Watson *et al.*, Fl. Nepal 3: 57 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 363 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 291 (2018).

*Corydalis hamiltoniana* G. Don; *Corydalis hamiltonii* G. Don; *Corydalis modesta* Prain; *Corydalis pauciflora* Edgew.

Perennial tuberous herbs to 15 cm tall; stems slender, erect, simple; cauline leaves 2, opposite or sub-opposite, 2–3-ternate, with unequal lobes; flowers purple, orange or white with purple tips.

*Habitat*: Moist slopes in forests.

*Distribution*: W & C Himalaya (Pakistan to Nepal).

NEPAL: W; 2500–3000 m.

KSL: Known from neighboring Mugu District, Nepal [also in Kumaon, Uttarakhand, India]. It is likely also to be present within the KSL area of Nepal.

*Representative specimens*. **MUGU**: Kawa Kater Dara, 3030 m (O Polunin, WR Sykes & LHJ Williams 846, 16 Apr 1952; BM) fide RBGE (2014). **UTTARAKHAND (INDIA)**: Kumaon (R Blinkworth 1430; K001113088<sup>1</sup> image).

**Corydalis elegans** Wall. ex Hook. f. & Thomson, Fl. Ind. 1: 265 (1855). Lidén in Watson *et al.*, Fl. Nepal 3: 63 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 363 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 292 (2018). **PI. 20.**

Perennial herbs, 10–40 cm tall; stems 2–4, simple or branched; leaves fleshy; flowers yellow with dark tip.

*Habitat*: Open moist slopes, rock shelter.

*Distribution*: W & C Himalaya (NW India, Nepal), Tibetan Plateau (SW Xizang).

NEPAL: W; 3800–4200 m.

KSL: Bajhang and Darchula in KSL Nepal; 3900–4200 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Kalagad – Dubai Pass, 3950 m (PR Shakya, MK Adhikari & MN Subedi 8107, 24 Jul 1984; KATH<sup>1</sup>); Surmasarowar, 4150 m (MS Bista & DP Joshi 652, 26 Aug 1972; KATH<sup>1</sup>). **DARCHULA**: Mechhra – Kalagad, 3900 m (PR Shakya, MK Adhikari & MN Subedi 8076, 23 Jul 1984; KATH<sup>1</sup>); upper Chameliya, Pilkanda, Baisand, 4150 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA 1868B, 21 Jul 2016; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon, Barji Kang Pass, 3960 m (R Strachey & JE Winterbottom 6; K000653607<sup>1</sup> image); Kumaon, Lebong Pass, 4875–5180 m (JF Duthie 5322, 2 Aug 1886; K000653606<sup>1</sup> image).

*Local abund.*: Occasional to frequent.

**Corydalis filiformis** Royle, Ill. Bot. Himal. Mts. 1: 68 (1834). Lidén in Watson *et al.*, Fl. Nepal 3: 60 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 364 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 292 (2018). **PI. 20.**

Annual or perennial herbs, 20–50 cm tall; stems ascending to subscandent; flowers yellow.

*Habitat*: Fir forests, thickets, alpine meadows.

*Distribution:* W & C Himalaya (NW India, Nepal).

NEPAL: W & C; 2500–4100 m.

KSL: Darchula and Bajhang in KSL Nepal, and neighboring Achham, Bajura and Doti; 2800–4100 m.

*Representative specimens.* **BAJHANG:** Manane lekh above Dhahidunga Kharka, 3528 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913128, 14 Jul 2009; E00509642' image, KATH'); Ghodi Lekh, 4000 m (MS Bista & DP Joshi 513, 17 Aug 1972; KATH'); Bajhang, 4100 m (MS Bista & DP Joshi 631, 26 Aug 1972; KATH'). **DARCHULA:** Upper Chameliya Valley, way to Gaulaye Gad, below Ringde, Lolu, 3850 m (SK Ghimire, B Awasthi, S Budha Magar, B Jnawali, S Nepal, MR Paudeyal & DJ Chapagain ANCA 3304, 6 Sept 2017; TUCH'). **DOTI:** Solimgada, Choyakatne Odar, 2850 m (MS Bista & DP Joshi 174, 2 Aug 1972; KATH'); Khaptad National Park, trail from Bichpani to Ghodadaune, 3073 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913031, 2 Jul 2009; E00623944' image).

*Local abund.:* Occasional in Darchula; not known for other districts.

**Corydalis gowaniana** Wall., Tent. Fl. Nepal [Fasc. 2]: 55 (1826). Lidén in Watson *et al.*, Fl. Nepal 3: 63 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 365 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 292 (2018). **PI. 20.**

NEP-L: Gokul-dhūp (गोकुल-धूप). NEP: Bhutkesh, Bhutkeshi (भूतकेश, भूतकेशी).

ENG: Govan's corydalis. TIB: trazang zilpa (བླ་བཟང་ཟེལ་པ་), tongzil (ཐོང་ཟེལ་).

Perennial caespitose herbs, 20–40 cm tall, with few erect stems; flowers yellow.

*Habitat:* Forests, forest margins, moist open slopes, alpine meadows, thickets.

*Distribution:* W & C Himalaya (Pakistan to Nepal), Tibetan Plateau.

NEPAL: W, C & E; 1900–5000 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura and Mugu; 3300–4900 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Haute vallee de la Seti Khola, 3300 m (A Maire AMA 976, 16 May 1973; E00726943' image); nord de Dhuli, 3400 m (JF Dobermez 2324, 18 May 1973; E00726945' image, KATH'); north of Chainpur, 3475 m (TB Shrestha 4129, 20 May 1965; KATH'); Ramkot, 3500 m (JF Dobermez 2200, 13 May 1973; E00726933' image); Surmasarowar, 3500 m (JF Dobermez 2074, 5 May 1973; E00726944' image). **DARCHULA:** Ghusa VDC, Pilkanda, 3800 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain 1481, 27 Jul 2015; TUCH'). **HUMLA:** Above Seliman Tsho towards north-east, 4880 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1799, Sept 2012; TUCH'). **MUGU:** Just south of Chankheli Lagna, 3570 m (CA Pendry, S Baral, S Noshiro, PP Kurmi, B Dell & B Adhikari, JRS B105, 12 Jun 2008; E00397268' image).

*Local abund.:* Frequent.

*Ethnobot. use:* The whole plant is used to treat fever and wounds.

**Corydalis longipes** DC., Prodr. 1: 128 (1824). Lidén in Watson *et al.*, Fl. Nepal 3: 58 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 366 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 292 (2018).

Short-lived perennial herbs, 20–75 cm tall, ascending to subscandent; stems slender, branched.

*Habitat:* Streamside rocks, forests, field margins, roadsides.

*Distribution:* W & C Himalaya (Pakistan to Nepal), Tibetan Plateau.

NEPAL: W, C & E; 2000–4500(–5300) m.

KSL: Known from neighboring Doti District, Nepal; 2000–2600 m.

*Representative specimen.* **DOTI:** Jhing Danda, 2000 m (LP Kattel 1128, 8 Sept 1982; KATH').

**Corydalis magni** Pusalkar, Kew Bull. 66(4): 548 (2011). Lidén in Watson *et al.*, Fl. Nepal 3: 68 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 367 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 293 (2018).

Perennial herbs, 4–15 cm tall with long, slender rootstock; stems few or solitary, simple or branched; leaves bi- or tri-pinnate, leaflets deeply divided, lobes oblanceolate; flowers greyish-blue or white with darker apex (Lidén 2011; Pusalkar 2011).

*Habitat:* Boulder, scree.

*Distribution:* W & C Himalaya (NW India, Nepal), Tibetan Plateau.

NEPAL: W & C; 4400–6100 m.

KSL: Bajhang and Darchula in KSL Nepal.

*Remarks:* Presence of this species in Bajhang and Darchula has been indicated in Lidén (2011). In the 'Flora of Nepal' website (<http://www.floraofnepal.org/data/specimens>), following specimens have been listed with interpolated locality; JEM Arnold 164, BM (Bajhang), and JB Tyson 69, BM (Darchula). The later collection was made from Tinkar Khola (c. 4875 m), but was recorded as *C. nana* (Telenius & Shah 2020).

**Corydalis meifolia** Wall., Tent. Fl. Nepal [Fasc. 2]: 52, t. 41 (1826). Lidén in Watson *et al.*, Fl. Nepal 3: 68 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 367 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 294 (2018). **PI. 20.**

*Corydalis meifolia* var. *sikkimensis* Prain

NEP-L: Gokul-dhūp, Supghāns (गोकुल-धूप, सुप-घाँस).

TIB: tongri zilpa (ཐོང་རི་ཟེལ་པ་). tongzil (ཐོང་ཟེལ་).

Erect or spreading perennial herbs, 20–50 cm tall, glaucous; stems several, simple or branched above; leaves bi- to tri-pinnate, with linear ultimate lobes; flowers yellow to orange, purplish brown at base.

*Habitat:* Open grassy slopes, moist rocky slopes, scree slopes.

*Distribution:* Himalaya (NW India to Bhutan), Tibetan Plateau.

NEPAL: W, C & E; 3900–5200 m.

KSL: Bajhang and Darchula in KSL Nepal, 3900–4800 m [also in Kumaon, Uttarakhand, India].

*Representative specimens.* **BAJHANG:** Kalagad – Dubai Pass, 4150 m (PR Shakya, MK Adhikari & MN Subedi 8129, 24 Jul 1984; KATH'); Surmasarowar, 4400 m (MS Bista & DP Joshi 669, 26 Aug 1972; KATH'); Nilkatti, Kalagad – Dubai Pass, 4740 m (PR Shakya, MK Adhikari & MN Subedi 8223, 26 Jul 1984; KATH').

**DARCHULA:** Thadapani, Pilkanda, Ghusa VDC, 3900 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1808, 19 Jul 2016; TUCH); Baisand, towards east of Pilkanda, 4150 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1868A, 21 Jul 2016; TUCH); Kalidhunga Tal, 4800 m (KM Ghimire & M Adhikari 1240, 20 Jul 2016; TUCH').

**UTTARAKHAND (INDIA):** Kumaon (R Blinkworth Cat no 1427; K001113084' image).

*Local abund.:* Frequent in Darchula at higher elevations (>4100 m).

*Ethnobot. use:* In Darchula, the whole plant is used to treat fever and wounds.

**Corydalis nana** Royle, Ill. Bot. Himal. Mts.: 68 (1834). **PI. 21.**

*Corydalis ramosa* Hook. f. & Thomson var. *nana* (Royle) Hook. f. & Thomson

Dwarf, rosulate perennial herbs, 5–10 cm tall; stems erect to ascending, simple or branched above;

leaves greyish-green, tri-pinnate, with narrowly elliptic ultimate lobes; flowers yellow.

*Habitat*: Moist rocky slopes, scree slopes.

*Distribution*: W & C Himalaya (NW India, Nepal).

NEPAL: W & C; 4200–5700 m.

KSL: Humla in KSL Nepal; 4700–5500 m [Pithoragarh, Uttarakhand in KSL India]. It is likely also to be present in upper Mahakali Valley in Darchula District, Nepal.

*Representative specimens*. **HUMLA**: Upper Chungsa Valley, Nyalu La, 5010 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1224, 6 Sept 2012; TUCH<sup>†</sup>). **UTTARAKHAND (INDIA)**: Kumaon, Barji Kang Pass, 4420 m (R Strachey & JE Winterbottom 17; K000653623<sup>†</sup> image).

*Local abund.*: Occasional to frequent in Humla at higher elevations.

**Corydalis pseudojuncea** Ludlow in Ludlow & Stearn, Bull. Brit. Mus. (Nat. Hist.), Bot. 5: 62 (1975). Lidén in Watson *et al.*, Fl. Nepal 3: 72 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 368 (2017). **PI. 20.**

Weak perennial herbs, 10–25 cm tall; stem simple, with 1 leaf; flowers yellow.

*Habitat*: Grassy slopes, meadows.

*Distribution*: Himalaya (NW India, Nepal), Tibetan Plateau.

NEPAL: W & C; 3700–5500 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal; 3800–5450 m.

*Representative specimens*. **BAJHANG**: Surmasarowar Lekh, 3800 m (PR Shakya, LR Sharma & KR Amatya 6371, 9 Jul 1981; KATH<sup>†</sup>); Manane Lekh, 3895 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915126, 14 Jul 2009; E00623777<sup>†</sup> image). **DARCHULA**: Upper Chameliya Valley, Pilkanda, below Kalidhunga Tal, 4100 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain 1339, 25 Jul 2015; TUCH<sup>†</sup>); Thadapani, Pilkanda, 4200 m (KM Ghimire & M Adhikari 1086, 19 Jul 2016; TUCH<sup>†</sup>). **HUMLA**: Margor Lagna, 5450 m (O Polunin, WR Sykes & LHJ Williams 4319; BM) fide RBGE (2014).

*Local abund.*: Frequent in Darchula; not known for other districts.

**Corydalis shakya** Lidén, Bull. Brit. Mus. (Nat. Hist.), Bot. 18(6): 519 (1989). Lidén in Watson *et al.*, Fl. Nepal 3: 64 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 368 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 294 (2018).

Perennial herbs; stems leafy, branched, *ca.* 40 cm; flowers yellow with dark tip.

*Habitat*: Open steep slopes, rock crevices.

*Distribution*: W & C Himalaya (NW India, Nepal).

NEPAL: W; 3200–3900 m.

KSL: Darchula in KSL Nepal; 3200–3900 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **DARCHULA**: Near Mechhra, 3600 m (PR Shakya, MK Adhikari & MN Subedi 8022, 22 Jul 1984; paratype KATH<sup>†</sup>). **UTTARAKHAND (INDIA)**: Above Budhi, Byans, 3200 m (JF Duthie [interpreted] s.n., 22 Jul 1886; E00676213<sup>†</sup> image).

**Corydalis stipulata** Lidén, Bull. Brit. Mus. (Nat. Hist.), Bot. 18(6): 522 (1989). Lidén in Watson *et al.*, Fl. Nepal 3: 71 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 369 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 295 (2018).

Perennial herbs to 1.2 m tall, puberulent; stems erect to ascending, leafy, branched.

*Habitat*: Oak forests, marshy places, near streams.



*Distribution:* Endemic to Nepal, W & C; (2500–)2800–4000 m.

KSL: Bajhang in KSL Nepal; 2500–3200 m.

*Representative specimens.* **BAJHANG:** Between Dhalun & Panselegi, NE of Dhalun, 2300–2700 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0512, 16 Sept 2017, KATH<sup>1</sup>, PE<sup>1</sup>); on the way to Deurali from Dhalun, 2500–3200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0424, 15 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>).

*Local abund.:* Rare.

**Corydalis stracheyi** Duthie ex Prain, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 65: 37 (1896). Lidén in Watson *et al.*, Fl. Nepal 3: 68 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 369 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 295 (2018). **PI. 21.**

*Corydalis nana* Royle var. *jaquemontii* Fedde

Perennial glaucous herbs, 20–50 cm tall; stems erect or suberect, branched, leafy, tufted; leaves bi- or tri-pinnate, ultimate segments lanceolate to linear; flowers yellow with purplish brown and green lines.

*Habitat:* Rocky slopes, among boulders, streamsides.

*Distribution:* Himalaya (NW India to Bhutan), Tibetan Plateau, Myanmar.

NEPAL: W, C & E; 3600–5200 m.

KSL: Humla in KSL Nepal, and neighboring Bajura and Mugu; 4200–4570 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJURA:** Baudi Khola, cave below Budhinanda Nijar, 4189 m (BSH B105, 16 Aug 2017) fide RBGE (2014). **HUMLA:** Upper Chungsa Valley, Dharmashala, 4300 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1072, 30 Aug 2012; TUCH<sup>1</sup>). **MUGU:** Khaptang, Mugu Khola, 4570 m (O Polunin, WR Sykes & LHJ Williams 5365, 21 Aug 1952; BM) fide Rajbhandari & Rai (2017). **UTTARAKHAND (INDIA):** Kumaon, Pindari, 3655 m (R Strachey & JE Winterbottom 9; K000653622<sup>1</sup> image).

*Local abund.:* Occasional to frequent.

**Corydalis terracina** Lidén, Bull. Brit. Mus. (Nat. Hist.), Bot. 18(6): 522 (1989). Lidén in Watson *et al.*, Fl. Nepal 3: 70 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 370 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 295 (2018).

Perennial herbs, 30–100 cm tall; stem erect, simple, leafy in upper half; flowers dirty yellow, with brown lines; upper petal crested with cylindric, slightly curved spur; lower petal with distinct pouch at base.

*Habitat:* Forest margins, abandoned fields, terrace banks, track-sides.

*Distribution:* Endemic to Nepal, W & C; 1300–2700 m.

KSL: Bajhang in KSL Nepal; c. 2380 m.

*Representative specimen.* **BAJHANG:** Trail from Pasela to Banjh, 2383 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915144, 16 Jul 2009; E00623902<sup>1</sup> image, KATH<sup>1</sup>).

**Corydalis uncinata** Lidén, Bull. Brit. Mus. (Nat. Hist.), Bot. 18(6): 520 (1989). Lidén in Watson *et al.*, Fl. Nepal 3: 69 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 370 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 295 (2018).

Perennial herbs, up to 20 cm tall; stems erect or ascending, branched, leafy; leaves pinnate or bi-pinnate, glaucous; leaflet lobes obovate, obtuse to mucronate; bracts to 1 cm broad, entire; flowers dull yellow.

*Habitat:* Open stony slopes, among *Caragana* bushes on gentle slopes.

*Distribution:* Endemic to Nepal, W & C; 3500–5500 m.

KSL: Humla in KSL Nepal; 4300–4500 m.

*Representative specimen.* **HUMLA:** Talung Valley, near campsite, 4300 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama; CHH-1347, 13 Sept 2012; TUCH<sup>3</sup>).

*Local abund.:* Occasional.

**Corydalis vaginans** Royle, Ill. Bot. Himal. Mts.: 68 (1834). Lidén in Watson *et al.*, Fl. Nepal 3: 62 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 370 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 296 (2018).

*Corydalis ramosa* Wall. ex Hook. f. & Thomson; *Corydalis ramosa* var. *glauca* Hook. f.; *Corydalis ramosa* var. *vaginans* (Royle) Hook. f. & Thomson

Perennial herbs, 10–60 cm tall; stem slender, erect or ascending, simple or branched, leafy; leaves bi- or tri-pinnate, glaucous; flowers yellow flushed brown, outer petals with dentate dorsal crest.

*Habitat:* Open stony slopes.

*Distribution:* Pakistan, W & C Himalaya (NW India, Nepal).

NEPAL: W; 3000–3200 m.

KSL: Known from Pithoragarh District, Uttarakhand in KSL India; and neighboring Mugu District, Nepal; 3000–3700 m. It is likely also to be present in Darchula and Humla districts in KSL Nepal.

*Representative specimens.* **MUGU:** Mugu Khola, between Daura & Mugu, 3045 m (O Polunin, WR Sykes & LHJ Williams 5274, 17 Aug 1952; KATH<sup>3</sup>). **UTTARAKHAND (INDIA):** W Rama, Darma, 3045 m (JF Duthie [interpreted] s.n., 4 Aug 1886; E00676238<sup>1</sup> image); Kumaon, Milam, 3655 m (R Strachey & JE Winterbottom 11; P02338088<sup>8</sup> image).

**Dactylicapnos** Wall., Tent. Fl. Nepal. 2: 51 (1826).

**Dactylicapnos macrocapnos** (Prain) Hutch., Kew Bull. 1921: 105 (1921). Lidén in Watson *et al.*, Fl. Nepal 3: 53 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 371 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 296 (2018).

*Dicentra macrocapnos* Prain, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 65: 12 (1896).

Climbing perennial herbs with stout rootstock; stems thin, leafy, branched; flowers yellow in 5–15-flowered racemes; sepals slightly dentate, not fringed.

*Habitat:* Moist ground, forest understory.

*Distribution:* W & C Himalaya (NW India, Nepal).

NEPAL: W, C & E; 900–3200 m.

KSL: Humla in KSL Nepal; 2880 m.

*Representative specimen.* **HUMLA:** Dozam, 2882 m (TR Pandey & DR Kandel 2016940, 12 Sep 2016, KATH<sup>3</sup>).

*Local abund.:* Rare.

**Dactylicapnos roylei** (Hook. f. & Thomson) Hutch., Bull. Misc. Inform. Kew 1921: 104 (1921). Lidén in Watson *et al.*, Fl. Nepal 3: 50 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 372 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 296 (2018). **Pl. 21.**

*Dicentra roylei* Hook. f. & Thomson, Fl. Ind. 1: 273 (1855).

Climbing summer annual herbs; stems weak, leafy, branched; flowers yellow, usually in 2-flowered racemes; sepals fringed.

*Habitat:* Forests, forest margins.

*Distribution:* Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 2000–3000 m.

KSL: Humla in KSL Nepal; 2800–3000 m.

*Representative specimen.* **HUMLA:** Salli-Chungsa, 2900 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa and S Lama CHH-1665, 14 Sept 2012; TUCH<sup>1</sup>).

*Local abund.:* Rare.

## **Dicranostigma** Hook. f. & Thomson, Fl. Ind. 1: 255 (1855).

**Dicranostigma lactuoides** Hook. f. & Thomson, Fl. Ind. 1: 255 (1855). Pendry in Watson *et al.*, Fl. Nepal 3: 95 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 372 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 297 (2018).

*Chelidonium lactuoides* (Hook. f. & Thomson) Prain; *Glaucium lactuoides* (Hook. f. & Thomson) Benth. & Hook. f.; *Stylophorum lactuoides* (Hook. f. & Thomson) Baill.

NEP: Dude-sāg, Kogle-sāg (दूधे-साग, कोग्ले-साग).

ENG: Himalayan horn-poppy. TIB: tsatak (ཅ་ཐག་).

Short-lived perennial herbs, with yellow lactiferous juice; stems ascending to spreading, pubescent.

*Habitat:* Among shrubs, dry rocky slopes, screes, gravel banks by riversides.

*Distribution:* W & C Himalaya (NW India, Nepal), Tibetan Plateau, SC China.

NEPAL: W & C; 2400–4500 m.

KSL: Darchula in KSL Nepal; 3000–3600 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **DARCHULA:** Tinkar Khola, 3350 m (JB Tyson 57, 22 Jun 1953; BM000071546<sup>1</sup> image); Chhetri-Mechhra, 3600 m (PR Shakya, MK Adhikari & MN Subedi 8017, 22 Jul 1984; KATH<sup>1</sup>).

**UTTARAKHAND (INDIA):** Kali Valley, near Chalele, 3000–3500 m (JF Duthie 532, 23 Jul 1886; CAL).

## **Hypocoum** L., Sp. Pl. 1: 124 (1753).

**Hypocoum leptocarpum** Hook. f. & Thomson, Fl. Ind. 1: 276 (1855). Lidén in Watson *et al.*, Fl. Nepal 3: 49 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 373 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 297 (2018).

*Hypocoum alpinum* Z.X. An, *Hypocoum chinense* Franch., *Hypocoum leptocarpum* var. *chinense* (Franch.) Kanitz

TIB: parpata (པར་པ་ཏ་).

Annual herbs; stems procumbent to erect, 10–30 cm long, branched at the base.

*Habitat:* Cultivated ground, grasslands, gravel slopes, river sands.

*Distribution:* Tajikistan, Afghanistan, W Pakistan to E Himalaya, Tibetan Plateau, N & SC China, Mongolia.

NEPAL: W & C; 2700–4800 m.

KSL: Known from Pithoragarh, Uttarakhand in KSL India; and Pulan Xian, SW Xizang in KSL China. It is likely also to be present in upper Darchula and Humla in KSL Nepal.

*Representative specimens.* **UTTARAKHAND (INDIA):** Kali Valley, 3050–3355 m (JF Duthie 5324, 28 Jul 1886; CAL); near ?Kangira in Kali Valley, 3350–3655 m (JF Duthie 2700, 12 Sept 1884; K000653354<sup>1</sup> image).

**XIZANG (CHINA):** Pulan Xian, 30.29° N 81.17° E (Qinghai-Tibet team vegetation group 6623917, 1976; PE) fide Kong & Yang (2019).

**Meconopsis** Viguiér, Hist. Nat. Pavots Argémone. 48 (1814).

**Meconopsis chankheliensis** Grey-Wilson, Curt's Bot. Mag. 23(2): 203 (2006). Egan & Shrestha in Watson *et al.*, Fl. Nepal 3: 84 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 374 (2017).

*Papaver chankheliense* (Grey-Wilson) Christenh. & Byng, Global Fl. 1(4): 70 (2018).

Monocarpic herbs, 40–150 cm tall, covered with golden brown or yellowish barbellete hairs; leaves pinnatisect of bipinnatisect; flowers purple to dark red (Egan & Shrestha 2011).

*Habitat*: Forests, among shrubs, rocky outcrops, beside stream in shade of shrubs, open grasslands.

*Distribution*: Endemic to Nepal, W; 3100–4600 m.

KSL: Bajhang and Humla in KSL Nepal, and neighboring Mugu; 3100–3700 m.

*Representative specimens*. **BAJHANG**: Khaptad, 3715 m (K Itoh & SB Rajbhandari 1273, 9 Sept 1963; KATH<sup>1</sup>). **HUMLA**: Chankheli Lekh 3230 m (JDA Stainton 6333, 20 Jun 1968; BM000884122<sup>1</sup> image).

**HUMLA/MUGU**: Chanke Lekh (FM Bailey 181, 6 Jun 1936; E00060529<sup>1</sup> image); Chankheli Lagna, 3200 m (O Polunin, WR Sykes & LHJ Williams 4324, 19 Jun 1952; E00060528<sup>1</sup> image, KATH<sup>1</sup>).

**Meconopsis grandis** Prain subsp. **jumlaensis** C. Grey-Wilson, Sibbaldia 8: 82 (2011). Egan & Shrestha in Watson *et al.*, Fl. Nepal 3: 92 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 375 (2017).

NEP: Nilo kheldār (नीलो खेलदार).

ENG: Himalayan blue poppy. TIB: utpel ngönpo (ུཔལ་ངོན་པོ་).

Polycarpic herbs, usually <35 cm tall, covered with yellow to orange barbellete bristles; basal leaves simple, narrow; flowers purple to blue (Egan & Shrestha 2011).

*Habitat*: Open grassy slopes, among grasses on rocky slopes, forest margins.

*Distribution*: Endemic to Nepal, W; 3300–4400 m.

KSL: Known from neighboring Mugu District, Nepal; 3500–3600 m.

*Representative specimens*. **MUGU**: Ghurchi Lagna, 3505 m (O Polunin, WR Sykes & LHJ Williams 4371, 22 Jun 1952; holotype BM000001567<sup>1</sup> image, isotype E00045322<sup>1</sup> image); Chuchamara Danda, 3600 m (KR Rajbhandari & B Roy 3538, 19 Jul 1979; KATH).

**Meconopsis horridula** Hook. f. & Thomson, Fl. Ind. 1: 252 (1855). Egan & Shrestha in Watson *et al.*, Fl. Nepal 3: 93 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 375 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 298 (2018). **PI. 21**.

*Papaver horridulum* (Hook. f. & Thomson) Christenh. & Byng, Global Fl. 1(4): 71 (2018).

NEP-L: Kānde-phūl (काँडे-फूल).

ENG: Prickly blue-poppy. TIB: ajak tserngön (ཨ་ཇལ་ཙེར་གོན་).

Monocarpic herbs, up to 35 cm tall; covered with yellow-orange bristly spines with blackish or purplish base; flowers blue.

*Habitat*: Alpine slopes, rocky slopes, screes, rock crevices, cliffs.

*Distribution*: C & E Himalaya (Nepal to Bhutan), Tibetan Plateau, Myanmar, C China.

NEPAL: W, C & E; 3700–5800 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Mugu; 3800–5500 m.

*Representative specimens*. **BAJHANG**: Dubai Pass – Sunigad, 4100 m (PR Shakya, MK Adhikari & MN Subedi 8144, 24 Jul 1984; KATH<sup>1</sup>); Urai Lagna, below Saipal, 4265 m (JB Tyson 94, 10 Jul 1953; KATH<sup>1</sup>).

**DARCHULA**: Upper Chameliya Valley, Channi-Api Base, 4200 m (SK Ghimire, B Awasthi, S Thapa, S Budha

Magar, MR Paudeyal & DJ Chapagain ANCA-1430, 24 Jul 2015; TUCH<sup>1</sup>); Kalidhunga, 4600 m (KM Ghimire & M Adhikari 1253, 21 Jul 2016; TUCH<sup>1</sup>). **HUMLA**: Marghor Lagna, 3800 m (KR Rajbhandari & B Roy 4126, 29 Jul 1979; KATH<sup>1</sup>); Chungsa, Dharmashala, 4300 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1025, 1 Sept 2012; TUCH<sup>1</sup>), Nyalu La, 5010 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1229, 6 Sept 2012; TUCH<sup>1</sup>).

*Local abund.*: Rare to occasional in Bajhang and Darchula, frequent to common in upper Humla.

*Ethnobot. use*: The plant is used to treat wounds. Roasted seeds are occasionally eaten by shephard.

**Meconopsis robusta** Hook. f. & Thomson, Fl. Ind. 1: 253 (1855). Egan & Shrestha in Watson *et al.*, Fl. Nepal 3: 86 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 377 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 299 (2018). **Pl. 21**.

*Papaver robustum* (Hook. f. & Thomson) Christenh. & Byng, Global Fl. 1(4): 72 (2018).

Monocarpic herbs, 60–120 cm tall; plant covered with yellowish-brown bristles; flowers yellow.

*Habitat*: Open areas in birch forests, alpine slopes, meadows, rocky cliffs.

*Distribution*: Himalaya (NW India, Nepal).

NEPAL: W; 2400–4200 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura and Doti; 2800–4200 m [Pithoragarh District, Uttarakhand and neighboring areas in KSL India].

*Representative specimens*. **BAJHANG**: Surma Sarovar Lekh, north of Chainpur, 3533 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20917053, 8 Jul 2009; E, KATH<sup>1</sup>); Manane Lekh above Dhahidunga Kharka, 3580 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913119, 13 Jul 2009; E, KATH<sup>1</sup>). **DARCHULA**: Above Domul, way to Pilkanda, 2850 m (SK Ghimire, B Awasthi, S Budha Magar, B Jnawali, S Nepal, MR Paudeyal & DJ Chapagain ANCA-3288, 3 Sept 2017; TUCH<sup>1</sup>); upper Chameliya, Gauchhalighol, Pilkanda, 4150 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-2043, 31 Jul 2016; TUCH<sup>1</sup>). **HUMLA**: Marghor Lagna, 3650 m (KR Rajbhandari & B Roy 4112, 29 Jul 1979; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon, 2400 m (Wallich 8124; isolectotype CAL) fide Samaddar (1991); Dwali, Pindari River, West Almora Div., Kumaon (Bis Ram 2331, 23 Jun 1933; E00500985<sup>1</sup> image); Jimba, Kumaon 3045 m (RC Thakur 836, 3 Jul 1948; MICH 1500886<sup>1</sup> image).

*Local abund.*: Occasional to frequent.

*Ethnobot. use*: Ripe seeds are eaten by shephard.

**Meconopsis simikotensis** Grey-Wilson, Alpine Gardener 74(2): 220 (2006). Egan & Shrestha in Watson *et al.*, Fl. Nepal 3: 91 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 377 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 299 (2018). **Pl. 21**.

*Papaver simikotense* (Grey-Wilson) Christenh. & Byng, Global Fl., 1(4): 72 (2018).

Monocarpic herbs, up to 1 m tall; covered with pale-yellow to orange barbellate bristles; flowers blue.

*Habitat*: Rocky slopes, streamsides.

*Distribution*: Endemic to Nepal, W; 3300–4000 m.

KSL: Bajhang and Humla in KSL Nepal; 3300–4000 m.

*Representative specimens*. **BAJHANG**: Bajhang, 3700 m (PR Shakya, MK Adhikari & MN Subedi 8196, 26 Jul 1984; KATH<sup>1</sup>). **HUMLA**: Dojam Khola, near Simikot, 3505 m (O Polunin, WR Sykes & LHJ Williams 4270, 4 Jun 1952; holotype BM000001559) fide Rajbhandari & Rai (2017); above Tugling, Changla Khola, Dozam, 3600 m (SK Ghimire, RP Chaudhary & team P10751, 21 May 2010; TUCH<sup>1</sup>); Marghor Lagna, 3800 m (KR Rajbhandari & B Roy 4124, 29 Jul 1979; KATH<sup>1</sup>); Marghore Lekh, 3900 m (SB Malla 14224, 13 Jul 1968; BM000001458, KATH<sup>1</sup>); Simikot Lagna, above Simikot, 3900 m (CA Pendry, SR Baral, S Noshiro, S

Rajbhandary, PP Kurmi, B Dell & B Adhikari, JRS A195, 20 Jun 2008; E00607532<sup>1</sup> image, KATH<sup>3</sup>); Margor Lagna, 3962 m (O Polunin, WR Sykes & LHJ Williams 4317, 16 Jun 1952; BM000001561, KATH<sup>3</sup>).

*Local abund.*: Rare to occasional.

**Meconopsis staintonii** Grey-Wilson, Curtis's Bot. Mag. 23(2): 190 (2006). Egan & Shrestha in Watson *et al.*, Fl. Nepal 3: 87 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 377 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 300 (2018).

*Papaver staintonii* (Grey-Wilson) Christenh. & Byng, Global Fl. 1(4): 72. (2018).

Monocarpic herbs, to 1.5 m tall; covered with yellow hairs; flowers reddish mauve, pink or white.

*Habitat*: Open slopes, among shrubs, grassy places, rocky slopes.

*Distribution*: Endemic to Nepal, W & C; 2500–4300 m.

KSL: Bajhang in KSL Nepal; 4100 m.

*Representative specimen*. **BAJHANG**: Surmasarobar, 4100 m (MS Bista & DP Joshi 7126, 24 ?Oct 1972; KATH<sup>3</sup>)

**Papaver** L., Sp. Pl. 1: 506 (1753).

**Papaver dubium** L. subsp. **glabrum** (Royle) J.W. Kadereit, Notes Roy. Bot. Gard. Edinburgh, 45(2): 247 (1989). Pendry in Watson *et al.*, Fl. Nepal 3: 79 (2011). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 378 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 300 (2018).

*Papaver glabrum* Royle, Intr. Bot. Himalaya. 67 (1834).

Annual herbs, 20–40 cm tall.

*Habitat*: Agriculture weed in moist places.

*Distribution*: SE Europe, W Asia, W & C Himalaya, introduced into N America.

NEPAL: W & C; 1900–3000 m.

KSL: Baitadi in KSL Nepal, and neighboring Mugu; *c.* 2800–2900 m.

*Representative specimens*. **BAITADI**: Ganger, 2896 m (TB Shrestha 4229, 20 Jun 1965; KATH<sup>3</sup>). **MUGU**: Rara, 2850 m (KR Rajbhandari & B Roy 3714, 21 Jul 1979; KATH<sup>3</sup>).

## LARDIZABALACEAE

**Stauntonia** DC., Syst. Nat. 1: 511, 513 (1817).

**Stauntonia angustifolia** (Wall.) Wall. ex Christenh., Curtis's Bot. Mag. 29: 264 (2012).

*Holboellia angustifolia* Wall., Tent. Fl. Nepal 1: 25 (1824); *Holboellia acuminata* Lindl.; *Holboellia latifolia* var. *angustifolia* (Wall.) Hook. f. & Thomson; *Stauntonia angustifolia* Wall., nom. nud.

NEP: Guphalā, Guphlā (गुफला, गुफ्ला).

ENG: Sausage vine. HIN: Gomphal, Gukhniāl (गोम्फल, गुक्नियाल).

Evergreen, monoecious, twining vines; leaves palmate, with linear-lanceolate leaflets.

*Habitat*: Mixed forests, forest margins.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, Myanmar, C & SE China.

NEPAL: W, C & E; 1600–3000 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; 2700–2800 m.

*Representative specimens*. **BAJHANG**: Majime – Kalauni, 2740 m (TB Shrestha 4098, 10 May 1965; KATH<sup>3</sup>).

**BAJURA:** Baudi Khola, 2810 m (BSH B144, 19 Aug 2017) fide RBGE (2014).

**Stauntonia latifolia** (Wall.) Wall. ex Christenh., Curtis's Bot. Mag. 29: 269 (2012). **PI. 22.**

*Holboellia latifolia* Wall., Tent. Fl. Nep. 1: 24 (1824); *Holboellia ovatifoliolata* Y.C. Wu & T. Chen; *Stauntonia latifolia* Wall., nom. nud.

NEP: Guphalā, Guphlā (गुफला, गुप्ला).

ENG: Sausage vine. HIN: Gomphal, Gukhniāl (गोम्फल, गुक्नियाल).

Evergreen, monoecious, twining vines; leaves palmate, with oblong-ovate leaflets.

*Habitat:* Mixed forests, forest margins, shrublands, streamsides.

*Distribution:* NW Pakistan to E Himalaya, Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; (800–)1500–4000 m.

KSL: Baitadi, Bajhang and Darchula in KSL Nepal, and neighboring Mugu; 1900–2700 m [also in Kumaon, Uttarakhand, India].

*Representative specimens.* **BAITADI:** Shribhawar, 2440 m (TR Pandey & GD Bhatt 2016693, 6 Jun 2016, KATH<sup>1</sup>). **BAJHANG:** Along the Ghat Khola, near Kanda, 2270 m (H Tabata, KR Rajbhandari & K Tsuchiya 1561, 24 Jul 1976; KATH<sup>1</sup>); between Dhalun & Panselegi, NE of Dhalun, 2300–2700 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0538, 16 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **DARCHULA:** Khar-2, 1960 m (BB Shrestha, M Pandey & R Chhetri 254, 30 Sept 2015; TUCH<sup>1</sup>); Paripatal Community Forest, Khar, 2214 m (CK Subedi, J Gurung & M Pandey 9, 5 Jun 2015; TUCH<sup>1</sup>); Khandeshowari, 2621 m (CK Subedi, J Gurung & S Thapa 7, 16 Jun 2014; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon (R Blinkworth Wall. Cat. no. 4950; isotype BM000541244<sup>1</sup> image, K001104285<sup>1</sup> image).

*Local abund.:* Occasional to frequent.

*Ethnobot. use:* Ripe fruits are edible.

## MENISPERMACEAE

**Cissampelos** L., Sp. Pl. 2: 1031 (1753).

**Cissampelos pareira** L. Sp. Pl. 2: 1031 (1753). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 380 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 302 (2018). **PI. 22.**

*Cissampelos hirsuta* Buch.-Ham. ex DC.; *Cissampelos nepalensis* Rhodes; *Cissampelos pareira* var. *hirsuta* (Buch.-Ham. ex DC.) Forman

NEP-L: Gajregān, Musbelo (गज्रेगान, मुसबेलो). NEP-L: Bātulpāte, Gudergāno (बाटुल्पाते, गुदेर्गानो).

ENG: False pareira, Velvetleaf. HIN-L/HIN: Bhātvel, Karjeurī, Pādh, Pādhā (भाट्वेल, कर्जेउरी, पाढ, पाढा). SAN: Amvasthā, Pāthā (अम्बष्ठा, पाठा).

Climbing shrubs; usually densely pubescent, with orbicular to broadly ovate, peltate leaves.

*Habitat:* Forests, forest margins, thickets.

*Distribution:* Tropical and subtropical regions of the World.

NEPAL: W, C & E; 150–2500 m.

KSL: Baitadi, Bajhang and Darchula in KSL Nepal, and neighboring Bajura and Doti; 800–2300 m.

*Representative specimens.* **BAITADI:** Patan, 1150 m (LP Kattel 158, 30 Dec 1980; KATH<sup>1</sup>). **BAJHANG:** Majhi Gaon, 1100 m (NK Bhattarai 90/1283, 4 Sept 1990; KATH<sup>1</sup>); Jiauli Gad, 1400 m (JF Dobremez 2025, 3 May

1973; E00214655<sup>1</sup> image). **DARCHULA:** Okhal, way to Makari Gad, 1230 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1662, 2 Aug 2015; TUCH<sup>1</sup>); Khar VDC-4, 1930 m (BB Shrestha, M Pandey & R Chhetri 213, 29 Sept 2015; TUCH<sup>1</sup>); near Ghusa, 2100 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-2111, 2 Aug 2016; TUCH<sup>1</sup>). **DOTI:** Nahapani, 1400 m (JF Dobremez 1873, 18 Apr 1973; E00214654<sup>1</sup> image).

*Local abund.:* Frequent.

*Ethnobot. use:* Roots are used to treat cough, indigestion, diarrhoea, dysentery and piles.

## **Cocculus** DC., Syst. Nat. 1: 515 (1817).

**Cocculus laurifolius** DC., Syst. Nat. 1: 530 (1817). Whitmore in Hara & Williams, Eum. Fl. Pl. Nepal 2: 28 (1979). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 380 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 302 (2018). **PI. 22.**

*Cocculus angustifolius* Hassk., *Holopeira laurifolia* (DC.) Miers; *Menispermum laurifolium* (DC.) Roxb.

NEP-L: Tilphorā (तिल्फोरा).

ENG: Laurel-leaved snailtree, Laurel-leaved snailseed.

Shrubs or small trees, 2–6 m tall; leaves elliptic to lanceolate, palmately 3-veined.

*Habitat:* Open forests, shrubland, riversides.

*Distribution:* Tropical and subtropical regions in S Asia, S China, Japan, mainland SE Asia to Indonesia.

NEPAL: W & C; 800–2000 m.

KSL: Baitadi, Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 800–1600 m [Pithoragarh, and neighboring Almora District, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Chainpur – Surma, 1335 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20912042, 6 Jul 2009; KATH<sup>1</sup>); Chainpur, 1370 m (TB Shrestha 4113, 14 May 1965; KATH<sup>1</sup>). **DARCHULA:** Darchula – Huti, 900 m (KR Rajbhandari & KJ Malla 5518, 24 Aug 1980; KATH<sup>1</sup>); Dharmaghar, way to Makarigad, 1150 m (SK Ghimire, LR Joshi, B Awasthi & CK Subedi ANCA 210, 21 Oct 2013, TUCH<sup>1</sup>). **UTTARAKHAND (INDIA):** Almora, Kumaon, 1675 m (R Strachey & JE Winterbottom 1, Wall. Cat. 4965, 1843; P00323510<sup>1</sup> image).

*Local abund.:* Occasional to frequent.

*Ethnobot. use:* Roots and stems are used to treat headache and joint pain, and leaf juice to heal wounds.

## **Stephania** Lour., Fl. Cochinch. 2: 598 (1790).

**Stephania elegans** Hook. f. & Thomson, Fl. Ind.: 195 (1855). Whitmore in Hara & Williams, Eum. Fl. Pl. Nepal 2: 28 (1979). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 381 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 303 (2018).

*Stephania japonica* (Thunb.) Miers var. *elegans* Kuntze

NEP: Nimî-laharā (निमी-लहरा).

ENG: Elegant tape vine.

Climbing herbs; leaves triangular or ovate-triangular, peltate.

*Habitat:* Light forests, forest margins.

*Distribution:* Himalaya (N India, Nepal, Bhutan), SC China, mainland SE Asia.

NEPAL: W, C & E; 500–2450 m.

KSL: Known from Pithoragarh, Uttarakhand in KSL India, and neighboring Doti and Dadeldhura



districts, Nepal; 1700–2100 m. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimens.* **DOTI:** Trail from Silgadi to Khaptad National Park, 2130 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913008, 30 Jun 2009; E00509868<sup>1</sup> image). **DADEL DHURA:** Dadeldhura, 1730 m (I Sharma, R Joshi, RK Upreti & I Pandey 524, 17 Sept 1981; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, Pithoragarh, 2000 m (CM Arora 38420, 4 Aug 1969; L.1746839<sup>1</sup> image).

**Stephania gracilenta** Miers, Contr. Bot. 3: 219 (1871). Whitmore in Hara & Williams, Eum. Fl. Pl. Nepal 2: 28 (1979). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 382 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 304 (2018). **PI. 22.**

NEP-L: Musbelo (मुस्बेलो).

ENG: Slender tape vine.

Slender herbaceous vines; leaves orbicular or subtriangular, peltate; flowers pink-purple.

*Habitat:* Forests, shrubland.

*Distribution:* W & C Himalaya (NW India, Nepal), Tibetan Plateau, Myanmar.

NEPAL: W, C & E; (600–)1800–2600 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura; 1900–2600 m.

*Representative specimens.* **BAJHANG:** Dhalaun – Rasa, 1990 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9193355, 20 Aug 1991; TI) fide SHB (2013–2020); Launi, 2450 m (JF Dobremez 2114, 7 May 1973; E00214680<sup>1</sup> image). **DARCHULA:** Makarigad – Khandeswori, 2090 m (PR Shakya, MK Adhikari & MN Subedi 7905, 18 Jul 1984; KATH<sup>1</sup>); Nahli Deurali, between Ghusa and Sithi, 2300 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain; ANCA-1030, 17 Jul 2015; TUCH<sup>1</sup>). **HUMLA:** Dozam, near Simikot, 2590 m (O Polumin, WR Sykes and LHJ Williams 4197, 28 May 1952; E00140350<sup>1</sup> image).

*Local abund.:* Occasional to frequent.

*Ethnobot. use:* As a folk medicine in Darchula, root or leaf juice is applied to treat wounds.

**Stephania rotunda** Lour., Fl. Cochinch.: 608 (1790). Hul *et al.*, Phytotaxa 298(2): 110 (2017). **PI. 22.**

*Cissampelos glabra* Roxb., Fl. Ind., ed. 1820, 3: 840 (1832); *Stephania glabra* (Roxb.) Miers, Ann. Mag. Nat. Hist. sér. 3, 18: 14 (1866).

NEP-L: Gajregān (गज्जेगान). NEP-L: Barkulī-laharā, Nimī-laharā (बर्कुली-लहरा, निमी-लहरा).

HIN-L: Gindaru, Purhā (गिन्दरु, पुरहा).

Climbing herbs; leaves broadly triangular-ovate or orbicular, narrowly peltate.

*Habitat:* Forests, forest margins, thickets.

*Distribution:* S Asia, Himalaya, Tibetan Plateau, mainland SE Asia.

NEPAL: W, C & E; 300–2600 m.

KSL: Bajhang and Darchula in KSL Nepal; 1000–2600 m [also in Almora, Uttarakhand, India].

*Representative specimens.* **BAJHANG:** Between Panalta to Kuwa, 1900–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0294, 13 Sept 2017; *Stephania glabra* KATH<sup>1</sup>, PE<sup>1</sup>). **DARCHULA:** Above Makari Gad, Khandeshori VDC, 1800 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-557, 15 Oct 2014; *Stephania glabra* TUCH<sup>1</sup>). **UTTARAKHAND (INDIA):** Ramganga River, East Almora Div., Kumaon (BisRam 2300, 2 Jun 1933; *Stephania glabra* E00140361<sup>1</sup> image).

*Local abund.:* Occasional.

*Ethnobot. use:* In Darchula, roots are given to cattle to treat cough, and as an anthelmintic medicine.

## BERBERIDACEAE

**Berberis** L., Sp. Pl. 1: 330 (1753).

**Berberis aristata** DC., Syst. Nat. 2: 8 (1821). Tebbs in Hara & Williams, Enum. Fl. Pl. Nepal 2: 29 (1979). Adhikari *et al.*, Edinburgh J. Bot., 69(3): 479 (2012). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 383 (2017). **PI. 23.**

*Berberis ceratophylla* G. Don; *Berberis chitria* Buch.-Ham. ex Ker Gawl.; *Berberis sikkimensis* (C.K. Schneid.) Ahrendt  
NEP-L: Chotto (चोत्तो). NEP: Chutro (चुत्रो).

ENG: Nepal barberry, Tree turmeric. HIN: Chitrā, Dārhalđi (चित्रा, दारहल्दी). SAN: Dāruharidra, Rasānjana (दारुहरिद्र, रसाञ्जन). TIB: kyerpa (མེར་པ་).

Spiny shrubs, 1.5–5 m tall, with arching branches; leaves obovate to elliptic, spinose dentate or entire; flowers many in stalked sub-paniculate racemes; berries blue-purple or black when ripe, oblong.

*Habitat*: Open forests, forest clearings, forest margins, shrubberies, open slopes, moist slopes.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Peninsular India, Myanmar.

NEPAL: W, C & E; 1200–3500(–4000) m.

KSL: Baitadi, Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura, Doti and Mugu; 1700–3200 m [Pithoragarh, Uttarakhand and neighboring areas in KSL India].

*Representative specimens*. **BAITADI**: Shribhawa, 2476 m (TR Pandey & GD Bhatt 2016619, 5 Jun 2016, KATH<sup>1</sup>). **BAJHANG**: Launi, 2400 m (JF Dobremez 2088, 6 May 1973; E00214645<sup>1</sup> image). **BAJURA**: Majpali – Pategaon, 2100 m (KR Rajbhandari 15092, 15 Aug 1991; KATH<sup>1</sup>). **DARCHULA**: Khar VDC-2, 2175 m (BB Shrestha, M Pandey & R Chhetri 190, 28 Sept 2015; TUCH<sup>1</sup>); Paripatal Community Forest, Khar, 2270 m (CK Subedi, J Gurung & M Pandey 19, 6 Jun 2015; TUCH<sup>1</sup>); above Sithi, way to Ghusa, 2300 m (SK Ghimire, B Awasthi, S Budha Magar, B Jnawali, S Nepal, MR Paudeyal & DJ Chapagain ANCA-3485, 10 Sept 2017; TUCH<sup>1</sup>). **DOTI**: Trail from Silgadi to Khaptad National Park, 2134 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915007, 30 Jun 2009; E00623905<sup>1</sup> image, KATH<sup>1</sup>); **HUMLA/MUGU**: Below Chankheli Lagna, 3048 m (O Polunin, WR Sykes & LHJ Williams 4110, 19 May 1952; BM000896977). **UTTARAKHAND (INDIA)**: Kumaon (R Blinkworth Cat. no. 1474; K001113178<sup>1</sup> image); Kumaon, near Budhi, Byans (JF Duthie 5309, 17 Jul 1986; CAL) fide BSI (2021).

*Local abund.*: Frequent to common.

*Ethnobot. use*: Ripe fruits are eaten raw. Bark is used in folk medicine to treat fever, diarrhoea, liver diseases and eye affections. Inner bark is also used as a source of yellow dye.

*Conserv. status*: GLB., Least Concern (BGCI & IUCN 2019b). LOC., Least Concern.

**Berberis asiatica** Roxb. ex DC., Syst. Nat. 2: 13 (1821). Tebbs in Hara & Williams, Enum. Fl. Pl. Nepal 2: 29 (1979). Adhikari *et al.*, Edinburgh J. Bot., 69(3): 505 (2012). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 384 (2017). **PI. 23.**

DOZ: Kyerbā, Kyervā (केर्बा, केर्वा). NEP-L: Kilmodā, Kirmadā, Kirmado, Tilmudho, Tilkhudo, Tilkhuo (किलमोडा, किरमडा, किरमडो, तिलमुडो, तिलखुडो, तिलखुरो). NEP: Chutro (चुत्रो).

ENG: Asian barberry, Common barberry. HIN-L: Dārhalđ, Dāruhalđi, Kilmodā, Kilmoru (दारहल्द, दारहल्दी, किलमोडा, किल्मोरु). SAN: Dāruharidra, Rasānjana (दारुहरिद्र, रसाञ्जन). TIB: kyerpā (མེར་པ་).

Spiny evergreen shrubs, 1–4 m tall, branched; leaves leathery, obovate to elliptic, margins spinose or entire; flowers many in short racemes; berries glaucous, dark purple when ripe, ovoid or globose.

*Habitat*: Disturbed slopes, open degraded forests, secondary vegetation, shrubberies, dry hill slopes, rocky slopes, beside roads and trails, margins of agriculture.

*Distribution:* Himalaya (N India, Nepal, Bhutan), Bangladesh, Tibetan Plateau, Myanmar.

NEPAL: W, C & E; 600–2700(–3150) m.

KSL: Baitadi, Darchula and Humla in KSL Nepal, and neighboring Dadeldhura, Doti and Mugu; 1200–2500 m.

*Representative specimens.* **BAITADI:** Dyola, 2300 m (P Pradhan, RK Uprety, N Pradhan & N Dabadi 1339, 16 Apr 1984; KATH<sup>1</sup>). **DARCHULA:** Near Rabade, between Paribagar & Makarigad, 1240 m (SK Ghimire, B Awasthi, S Budha Magar, B Jnawali, S Nepal, MR Paudeyal & DJ Chapagain ANCA 3058, 30 Aug 2017; TUCH<sup>1</sup>); Khar VDC-2, 2300 m (BB Shrestha, M Pandey & R Chhetri 101P, 27 Sept 2015; TUCH<sup>1</sup>); Paripatal Community Forest, Khar, 2301 m (CK Subedi, J Gurung & M Pandey 49, 6 Jun 2015; TUCH<sup>1</sup>). **DOTI:** Paltune [Phaltunde], 1450 m (JF Dobremez 1806, 15 Apr 1973; E00214634<sup>1</sup> image); trail from Silgadi to Khaptad National Park, 2085 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915008, 30 Jun 2009; E00509915<sup>1</sup> image, KATH<sup>1</sup>). **HUMLA:** Ghyaru, Thehe VDC, 2300 m (SK Ghimire, RP Chaudhary & team P12510, 26 May 2010; TUCH<sup>1</sup>); way to Syamne, near Simikot, 2400–2500 m (SK Ghimire, RP Chaudhary & team P10050, 18 May 2010; TUCH<sup>1</sup>).

*Local abund.:* Frequent to common.

*Ethnobot. use:* Ripe fruits are eaten raw. Bark is used in folk medicine to treat fever, diarrhoea, liver diseases and eye affections. Inner bark is also used as a source of yellow dye.

**Berberis glaucocarpa** Stapf, Bot. Mag. 151: sub t. 9102 (1926). Tebbs in Hara & Williams, Enum. Fl. Pl. Nepal 2: 30 (1979). Adhikari *et al.*, Edinburgh J. Bot., 69(3): 508 (2012). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 385 (2017). **PI. 23.**

DOZ/KER: Kyerbā, Kyervā (केर्बा, केर्वा). NEP-L: Kilmodā, Kirmadā, Kirmado, Tilkhudo, Tilkhuro (किलमोडा, किरमडा, किरमडो, तिलखुडो, तिलखुरो). NEP: Chutro (चुत्रो).

Spiny evergreen shrubs, 1.5–4 m tall, much branched; leaves obovate-oblongate, shining, coriaceous, margin usually entire; flowers many in stiff stalked racemes; berries glaucous, dark purple when ripe.

*Habitat:* Open slopes, riverside open broad-leaved evergreen forests, forest margins.

*Distribution:* W & C Himalaya (NW India, Nepal).

NEPAL: W & C; 2000–3900 m.

KSL: Bajhang and Humla in KSL Nepal, and neighboring Bajura, Doti and Mugu; 2000–3500 m.

*Representative specimens.* **BAJHANG:** Panalta, 2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0227, 12 Sept 2017; KATH<sup>1</sup>); Naya Odar – Topu, 3090 m (PR Shakya, MK Adhikari & MN Subedi 8278, 28 Jul 1984; KATH<sup>1</sup>). **BAJURA & BAJHANG:** Pategaon – Badigaon, 2320 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9194208, 16 Aug 1991; E00236353<sup>1</sup> image, TI<sup>1</sup> image). **BAJURA:** Khaptad National Park to Kaudegaon, 2900 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9171012, 28 Aug 1991; TI<sup>1</sup> image). **DOTI:** On the trail between Jhigrana & Bichpani, 2892 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20918011, 1 Jul 2009; E00625025<sup>1</sup> image). **HUMLA:** Above Dozam, Changla Khola, 2600 m (SK Ghimire, RP Chaudhary & team P10380, 20 May 2010; TUCH<sup>1</sup>); below Saatthapla towards Rimi, 2640 m (CA Pendry, S Baral, S Noshiro, S Rajbhandary, PP Kurmi, B Dell & B Adhikari JRS A134, 13 Jun 2008; E00667717<sup>1</sup> image); Salli-Chungsa, 3000 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama 1793, Sept 2012; TUCH<sup>1</sup>). **MUGU:** Below Ghurchi Lagna, 3400 m (CA Pendry, S Baral, S Noshiro, S Rajbhandary, PP Kurmi, B Dell & B Adhikari JRS A80, 7 Jun 2008; E00667772<sup>1</sup> image).

*Local abund.:* Frequent to common.

*Ethnobot. use:* Fruits are eaten raw; bark is used to treat diarrhoea and eye affections.

**Berberis hamiltoniana** Ahrendt, Gard. Ill. 64: 426 (1944). Tebbs in Hara & Williams, Enum. Fl. Pl. Nepal 2: 30 (1979). Adhikari *et al.*, Edinburgh J. Bot., 69(3): 491 (2012). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 385 (2017). **PI. 23.**

NEP-L: Chotto (चोत्तो). NEP: Chutro (चुत्रो).

Spiny deciduous shrubs, 2–4 m tall; stem profusely branched; leaves obovate to elliptic, thinly coriaceous, margin spinose dentate or entire; flowers few in sub-umbellate racemes.

*Habitat*: Disturbed forests, open hillsides, shrubberies.

*Distribution*: W & C Himalaya (NW India, Nepal).

NEPAL: W & C; 2700–4300 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Mugu; 3400–3700 m.

*Representative specimens*. **BAJHANG**: Dhahidunga Kharka to Manane Lekh, 3412 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915095, 13 Jul 2009; E00509877<sup>1</sup> image, KATH<sup>1</sup>). **DARCHULA**: Above Dhaulio Odar, 3480–3550 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1185, 19 Jul 2015; TUCH<sup>1</sup>). **HUMLA**: Norkeni, above Simikot, 3660 m (CA Pendry, S Baral, S Noshiro, S Rajbhandary, PP Kurmi, B Dell & B Adhikari JRS B165, 21 Jun 2008; E00667726<sup>1</sup> image).

*Local abund.*: Occasional in Darchula; not known for other districts.

**Berberis jaeschkeana** C.K. Schneid. var. **usteriana** C.K. Schneid., Bull. Herbs. Boissier, sér. 2, 5: 399 (1905). Tebbs in Hara & Williams, Enum. Fl. Pl. Nepal 2: 30 (1979). Adhikari *et al.*, Edinburgh J. Bot., 69(3): 497 (2012). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 386 (2017).

*Berberis usteriana* (C.K. Schneid.) Parker

Low growing spiny deciduous shrubs, 0.2–1 m or more in height; stems profusely branched.

*Habitat*: Dry exposed slopes, dry vertical cliffs, among scattered shrubs.

*Distribution*: W & C Himalaya (Pakistan to Nepal).

NEPAL: W & C; 2600–4000 m.

KSL: Known from Pithoragarh District, Uttarakhand in KSL India; 3650–3950 m. It is likely also to be present in upper Darchula and Humla in KSL Nepal (one specimen from Humla has been identified in the herbarium label as a probable hybrid of *B. jaeschkeana* var. *usteriana*).

*Representative specimens*. **HUMLA**: Dojam, near Simikot, 2591 m (O Polunin, WR Sykes & LHJ Williams 4196, 28 May 1952; regarded as a possible hybrid of *Berberis jaeschkeana* var. *usteriana* E00663619<sup>1</sup> image).

**UTTARAKHAND (INDIA)**: Kumaon, Chalek, Byans, 3660–3960 m (JF Duthie 5307, 23 Jul 1986; unknown type K000644942<sup>1</sup> image).

**Berberis karnaliensis** Bh. Adhikari, Edinburgh J. Bot. 69(3): 500 (2012). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 386 (2017). **PI. 24.**

DOZ/KER/LIM: Kyerbā, Kyervā (केर्बा, केर्वा). NEP-L: Chotto (चोत्तो). NEP: Chutro (चुत्रो).

Spiny deciduous shrubs, 1–3 m tall; stem much branched, with pubescent, drooping branches.

*Habitat*: Forest margins, dry hill slopes, roadsides.

*Distribution*: Endemic to Nepal, W; 1800–3600 m.

KSL: Darchula and Humla in KSL Nepal, and neighboring Mugu; 1800–3600 m.

*Representative specimens*. **HUMLA**: Humla Karnali, between Unapani & Limne 1820 m (CA Pendry, S Baral, S Noshiro, S Rajbhandary, PP Kurmi, B Dell & B Adhikari JRS A146, 15 Jun 2008; E00667716<sup>1</sup> image); Humla Karnali, way to Syamne, 2500 m (SK Ghimire, RP Chaudhary & team P10151, 18 May 2010; TUCH<sup>1</sup>);

Humla Karnali, near Simikot, 2600 m (SK Ghimire, RP Chaudhary & team P12810, 30 May 2010; TUCH<sup>1</sup>); below Saathapla, 2900 m (CA Pendry, S Baral, S Noshiro, S Rajbhandary, PP Kurmi, B Dell & B Adhikari JRS A132, 13 Jun 2008; E00667783<sup>1</sup> image).

*Local abund.*: Frequent.

*Ethnobot. use*: Fruits are eaten raw; bark is used to treat diarrhoea and eye affections.

**Berberis koehneana** C.K. Schneid., Bull. Herbs. Boiss. sér. 2, 5: 814 (1905). Tebbs in Hara & Williams, Enum. Fl. Pl. Nepal 2: 30 (1979). Adhikari *et al.*, Edinburgh J. Bot., 69(3): 486 (2012). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 386 (2017). **PI. 24.**

*Berberis koehneana* var. *auramea* Ahrendt

DOZ/KER/LIM: Kyerbā, Kyervā (केर्बा, केर्वा). NEP: Chutro (चुत्रो).

Spiny deciduous shrubs, 1–4 m tall, with long, paniculate inflorescence.

*Habitat*: Forest margins, around settlements, agricultural fields.

*Distribution*: W & C Himalaya (NW India, Nepal).

NEPAL: W & C; 2400–4000 m.

KSL: Humla District in KSL Nepal, and neighboring Mugu; 2600–3000 m [Pithoragarh District, Uttarakhand in KSL India]. It is likely also to be present in upper Darchula, Nepal.

*Representative specimens*. **HUMLA**: Humla Karnali, below Kermi, 2400 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1392, 15 Sept 2012; TUCH<sup>1</sup>); Dozam, near Simikot, 2590 m (O Polunin, WR Sykes & LHJ Williams 4272, 4 Jun 1952; E00663674<sup>1</sup> image). **MUGU**: Rara, 2990 m (GD Bhatta & DR Kandel 2016016, 23 Jan 2016; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon, near Budhi in Byans, 2435–2740 m (JF Duthie 5309, 17 Jul 1886; holotype WU 0040033<sup>1</sup> image, K000644937<sup>1</sup> image).

*Local abund.*: Occasional to frequent in Humla.

*Ethnobot. use*: Fruits are eaten raw; bark is used to treat diarrhoea and eye affections.

**Berberis kumaonensis** C.K. Schneid., Bull. Herbs. Boissier, sér. 2, 5: 397 (1905). Tebbs in Hara & Williams, Enum. Fl. Pl. Nepal 2: 30 (1979). Adhikari *et al.*, Edinburgh J. Bot., 69(3): 467 (2012). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 386 (2017). **PI. 23.**

NEP-L: Chotto (चोत्तो). NEP: Chutro (चुत्रो).

Spiny semi-evergreen shrubs, 10–30 cm tall; stem prostrate or suberect, mat-forming; leaves obovate, mucronate, margin subentire with 2–6 spinose teeth, subcoriaceous; flowers solitary.

*Habitat*: Margins of conifer forests, dry rocky slopes, exposed grassy slopes, heavily grazed pastures.

*Distribution*: Himalaya (NW India, Nepal).

NEPAL: W; 2900–4200 m.

KSL: Darchula and Humla in KSL Nepal, and neighboring Doti and Mugu; 2900–4000 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **DARCHULA**: Near Nwagidanda, Pilkanda, GLORIA Summit SMA, 3850 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-756, 22 Oct 2014; TUCH<sup>1</sup>); near Chameliya mool, Ringde, W of Lolu-Pilkanda, 3950 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1513, 28 Jul 2015; TUCH<sup>1</sup>). **DOTI**: Khaptad National Park, on trail from Bichpani to Ghodadaune, 2967 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915029, 2 Jul 2009; E00509934, KATH<sup>1</sup>). **HUMLA**: Above Simikot, 3320 m (CA Pendry, S Baral, S Noshiro, S Rajbhandary, PP Kurmi, B Dell & B Adhikari JRS A172, 19 Jun 2008; E00667795<sup>1</sup> image); Norkeni, above Simikot, 3650 m (CA Pendry, S Baral, S Noshiro, S Rajbhandary, PP Kurmi, B Dell & B Adhikari JRS B163, 21 Jun 2008; E00667715<sup>1</sup> image). **UTTARAKHAND**

(INDIA): Palang Garh, Byans, 3045 m (JF Duthie s.n., 19 Jul 1886; E00623155<sup>1</sup> image); Kumaon, near Garbyang, Kali Valley, 3960 m (JF Duthie 2697; holotype G, isotype K) fide Adhikari *et al.* (2012).

*Local abund.*: Occasional in Darchula; not known for other regions.

*Ethnobot. use*: Fruits are eaten raw; bark is used to treat diarrhoea and eye affections.

**Berberis mucrifolia** Ahrendt, J. Roy. Hort. Soc. 81: 135 (1956). Tebbs in Hara & Williams, Enum. Fl. Pl. Nepal 2: 31 (1979). Adhikari *et al.*, Edinburgh J. Bot., 69(3): 472 (2012). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 387 (2017).

NEP: Chutro, Muse chutro (चुत्रो, मुसे चुत्रो).

TIB: kyerpa (ལྷུང་པ་), kyer nak (ལྷུང་ནག་).

Dwarf, deciduous spiny shrubs, 20–100 cm tall.

*Habitat*: Dry south facing slopes, rocky slopes, among boulders, shrubland.

*Distribution*: Endemic to Nepal, W & C; 2000–4500 m.

KSL: Bajhang and Humla in KSL Nepal; 2300–3000 m.

*Representative specimens*. **BAJHANG**: Kali Gad, 2286 m (JDA Stainton 4847, 10 May 1965; BM000897101, E00663646<sup>1</sup> image); Launi, 2450 m (JF Dobremez 2110, 7 May 1973; E00214628<sup>1</sup> image, KATH). **HUMLA**: Salli-Chungsa, 3000 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa and S Lama CHH-1794, Sept 2012, TUCH<sup>1</sup>).

*Local abund.*: Rare.

*Ethnobot. use*: Fruits are eaten raw, inner bark is used in fever, liver disorders, and eye affections.

**Berberis petiolaris** Wall. ex G. Don, Gen. Hist. 1: 116 (1831). Tebbs in Hara & Williams, Enum. Fl. Pl. Nepal 2: 31 (1979). Adhikari *et al.*, Edinburgh J. Bot., 69(3): 492, 496 (2012). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 388 (2017).

Semi-evergreen shrubs or small trees, 1–6 m tall; spines absent or few solitary; racemes 8–25-flowered.

*Habitat*: Moist temperate forests.

*Distribution*: W & C Himalaya (NW India, Nepal).

NEPAL: W & C; 2600–3600 m.

KSL: Known from neighboring Mugu District, Nepal; 3250 m. It is likely to be present in Humla District in KSL Nepal.

*Representative specimen*. **MUGU**: North of Chankheli Lagna, 3250 m (CA Pendry, S Baral, S Noshiro, S Rajbhandari, PP Kurmi, B Dell & B Adhikari JRS A122, 12 Jun 2008; E00667719<sup>1</sup> image).

**Berberis petiolaris** Wall. ex G. Don var. **garhwalana** Ahrendt, J. Bot. 79 (Suppl.): 82 (1942). Adhikari *et al.*, Edinburgh J. Bot., 69(3): 497 (2012). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 388 (2017).

Differs from above in its short, 3–9-flowered sub-umbellate racemes.

*Habitat*: Moist temperate forests.

*Distribution*: W & C Himalaya (NW India, Nepal).

NEPAL: W; 2700–3350 m.

KSL: Humla in KSL Nepal, and neighboring Doti and Mugu; 2700–3350 m.

*Representative specimens*. **DOTI**: Kaptar [Khaptad], 2700 m (JF Dobremez 1967, 24 Apr 1973; BM000897061, E00214627<sup>1</sup> image). **HUMLA/MUGU**: Chankheli Lagna, 3350 m (Polunin, Sykes & Williams 4123, 19 May 1952; E00663613<sup>1</sup> image).

**Berberis thomsoniana** C.K. Schneid., Bull. Herbs. Boissier, sér. 2, 5: 454 (1905). Adhikari *et al.*, Edinburgh J. Bot., 69(3): 484 (2012). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 388 (2017).

Spiny shrubs, 1–4 m tall, deciduous; stem grooved, branched.

*Habitat*: Forests, forest margins, open slopes, thickets, rocky banks by river.

*Distribution*: C & E Himalaya (Nepal to Bhutan), Myanmar.

NEPAL: W, C & E; 2800–3600 m.

KSL: Darchula in KSL Nepal; 2850–3550 m.

*Representative specimens*. **DARCHULA**: Tipulchyaakti, 2850 m (KR Rajbhandari & KJ Malla 5855, 9 Sept 1980; KATH<sup>1</sup>); Chhangru – Tinkar, 3300 m (KR Rajbhandari & KJ Malla 5790, 1 Sept 1980; KATH<sup>1</sup>).

**Mahonia** Nutt., Gen. N. Amer. Pl. 1: 211(1818).

**Mahonia napaulensis** DC., Syst. Nat. 2: 21 (1821). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 308 (2018).

*Berberis acanthifolia* (Wall. ex G. Don) Wall. ex Walp.; *Berberis napaulensis* (DC.) Laferr.; *Berberis nepalensis* Spreng.; *Mahonia acanthifolia* Wall. ex G. Don; *Mahonia sikkimensis* Takeda

NEP: Jamane māndro (जमाने मान्द्रो).

Large evergreen shrubs, *c.* 1–4 m tall, profusely branched, unarmed; leaves unevently 1-pinnate.

*Habitat*: Forests, forest margins, thickets.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, S China, mainland SE Asia.

NEPAL: W, C & E; 1200–3570 m.

KSL: Baitadi District in KSL Nepal; *c.* 2440 m [also in Kumaon, Uttarakhand, India].

*Representative specimens*. **BAITADI**: Shribhawar, 2443 m (TR Pandey & GD Bhatt 2016661, 6 Jun 2016, KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon (R Blinkworth s.n.; *Mahonia acanthifolia* BM00105003<sup>1</sup> image).

**Podophyllum** L., Sp. Pl. 1: 505 (1753).

**Podophyllum hexandrum** Royle, Ill. Bot. Himal. Mts. 1: 64 (1834). Tebbs in Hara & Williams, Enum. Fl. Pl. Nepal 2: 31 (1979). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 308 (2018). **Pl. 24.**

*Podophyllum emodi* Wall. ex Hook. f. & Thomson; *Podophyllum emodi* var. *hexandrum* (Royle) R. Chatterjee & Mukerjee; *Podophyllum hexandrum* var. *emodi* (Hook. f. & Thomson) Selivan.; *Sinopodophyllum hexandrum* (Royle) T.S. Ying

NEP-L: Deuphal, Tîte kānkro, Tîte kānkṛī (देउफल, तीते काँक्रो, तीते काँक्री). NEP: Laghupatra (लगुपत्र).

ENG: Himalayan mayapple. HIN-L: Van kākrī (वन काक्री). TIB: olmosé (འོ་མོ་སེ་ཤེ་).

Perennial rhizomatous herbs to 40 cm tall; stem erect, unbranched; leaves 2, deeply 3-lobed, often purple spotted, long-stalked; flowers solitary, cup-shaped, pinkish; berry large, terminal, reddish.

*Habitat*: Shady places in forests, forest margins, meadows, thickets, grassy slopes between boulders.

*Distribution*: NE Afghanistan through W Pakistan to E Himalaya, Tibetan Plateau, C China.

NEPAL: W, C & E; 2300–4600 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Mugu; 2800–4000 m [Pithoragarh District, Uttarakhand and neighboring area in KSL India].

*Representative specimens*. **BAJHANG**: Budkhorī Lekh, 2865 m (TB Shrestha 4071, 7 May 1965; US

00599811<sup>1</sup> image). **DARCHULA**: Simar, 2833 m (CK Subedi, J Gurung & S Thapa 50, 20 Jun 2014; TUCH<sup>1</sup>); Domul, 2970 m (SK Ghimire, LR Joshi & B Awasthi P13148, 25 Oct 2013; TUCH<sup>1</sup>); Thadapani, 4000 m (KM Ghimire & M Adhikari 1283, 22 Jul 2016; TUCH<sup>1</sup>). **HUMLA**: Seding, Changla Khola, Dozam, 3700 m (SK Ghimire, RP Chaudhary & team P11402, 23 May 2010; TUCH<sup>1</sup>); Chungsa Valley, above Singjungma, 3950 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama 1569, 13 Sept 2012; TUCH<sup>1</sup>). **MUGU**: Ghurchi Lekh, 3180 m (PR Shakya & B Roy 5432, 28 May 1980; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Near Pindari, Kumaon, 3500 m (R Strachey & JE Winterbottom s.n.; P02327776<sup>1</sup> image).

*Local abund.*: Rare to occasional.

*Ethnobot. use*: Ripe fruits are edible; fruits and rhizome are used to treat cold, and menstrual disorders.

*Conserv. status*: NAT., Vulnerable (Tandon *et al.* 2001). LOC., Data Deficient.

## RANUNCULACEAE

**Aconitum** L., Sp. Pl. 1: 532 (1753).

**Aconitum ferox** Wall. ex Ser., Mus. Helv. Bot. 1: 160 (1823). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 9 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 12 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 391 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 310 (2018). **Pl. 24.**

*Aconitum virosum* D. Don

NEP-L/NEP: Bikh, Vish (बिख, विष).

Biennial tuberous herbs; stem erect, to 1.5 m high, simple, densely white pubescent above; leaves scattered, glabrous or sparingly hairy; lamina orbicular-cordate to reniform, 5-pedati-partite to the base; lobes acuminate, deeply incised with acute, divaricate ultimate segments; racemes laxly many-flowered, simple or branched below; sepals blue, hairy.

*Habitat*: Alpine grassy slopes, among boulders on moist slopes.

*Distribution*: C & E Himalaya (Nepal, Bhutan).

NEPAL: W, C & E; 2100–4700 m.

KSL: Darchula in KSL Nepal; 3900–4700 m.

*Representative specimen*. **DARCHULA**: Thadapani ridge, NW of Dhauliodar, 4575 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1917, 27 Jul 2016, TUCH<sup>1</sup>).

*Local abund.*: Rare.

*Ethnobot. use*: Tubers are poisonous (once used as a source of arrow poison), and are occasionally traded.

**Aconitum heterophylloides** (Brühl) Stapf, Ann. Roy. Bot. Gard. (Calcutta) 10: 171 (1905). Rau in Sharma *et al.* (eds.), Fl. India 1: 14 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 391 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 310 (2018). **Pl. 24.**

*Aconitum ferox* Wall. ex Sér. var. *heterophylloides* Brühl, Ann. Roy. Bot. Gard. (Calcutta) 5: 110 (1896); *Aconitum heterophylloides* var. *leucanthum* (Brühl) Lauener; *Aconitum leucanthum* (Brühl) Stapf

NEP-L: Atis (अतिस). NEP: Atis, Nirvishî (अतिस, निर्विषी)

Biennial tuberous herbs; stem erect, stout or slender, 30–50 cm, simple, angular, sometimes bent, hairy; leaves scattered, finely pubescent; lamina ovate to reniform, 3-partite, lobes subacuminate, ultimate segments roundly toothed; inflorescence a raceme or panicle, few- to many-flowered; sepals variable in colour, blue to bluish-white or white, pubescent.



*Habitat*: Forest margins, alpine slopes.

*Distribution*: W & C Himalaya (NW India to Bhutan), Tibetan Plateau.

NEPAL: W, C & E; 2800–4500 m.

KSL: Darchula in KSL Nepal, and neighboring Mugu; 2800–4300 m.

*Representative specimens*. **DARCHULA**: Baisand, towards the E of Pilkand on right ridge from Kalidhunga, 4100 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1860, 21 Jul 2016; TUCH<sup>1</sup>). **MUGU**: Mugu, 2800 m (PK Shaky & MK Adhikari 9172, 18 Aug 1984; KATH<sup>1</sup>).

*Local abund.*: Frequent at higher elevations.

*Ethnobot. use*: Tubers are used to treat fever and are also occasionally traded.

**Aconitum hookeri** Stapf, Ann. Roy. Bot. Gard. (Calcutta) 10: 147 (1905). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 10 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 16 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 392 (2017).

Biennial tuberous herbs; stem erect, 10–15 cm, simple; leaves few; lamina orbicular, deeply lobed, with narrow blunt ultimate segments; flowers deep blue or violet in few-flowered racemes or solitary.

*Habitat*: Open grassy slopes, rock ledges.

*Distribution*: C & E Himalaya (Nepal to Bhutan), SC China.

NEPAL: W, C & E; 3800–4900 m.

KSL: Known from neighboring Mugu District, Nepal; 3800 m.

*Representative specimen*. **MUGU**: Chankheli, 3800 m (PR Shaky *et al.* 9092, 16 Aug 1984; KATH<sup>1</sup>).

**Aconitum laeve** Royle, Ill. Bot. Him. Mts. 1: 56 (1834). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 10 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 17 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 392 (2017).

*Aconitum lycocotum* sensu Hook. f. & Thomson (1872), non L. (1753); *Aconitum vitifolium* Royle ex Stapf

Perennial herbs with elongate root; stem erect, to 1.5 m, simple or branched, hairy on the upper part; leaves scattered on stem; lamina orbicular or reniform, 5–9-partite, lobes incised or coarsely dentate; inflorescence paniced, elongated, many-flowered, leafy, pubescent; sepals white to purplish, hairy.

*Habitat*: Forests, forest margins, among shrubs, open meadows.

*Distribution*: NW Pakistan to Nepal.

NEPAL: W; 2700–3500 m.

KSL: Darchula in KSL Nepal; c. 2900 m [also in Almora, Uttarakhand, India].

*Representative specimens*. **DARCHULA**: Chirkiti Lekh, near Marma, 2895 m (TB Shrestha 4207, 15 Jun 1965; KATH<sup>1</sup>); Thulogaon (Marma), 2895 m (JDA Stainton 4926, 15 Jun 1965; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Madhari Pass, Kumaon, 2895 m (R Strachey & JE Winterbottom 4; P00201750<sup>1</sup> image); Kumaon, 3045 m (T Anderson 1016, May 1857; P00201765<sup>1</sup> image).

**Aconitum poluninii** Lauener, Notes Roy. Bot. Gard. Edinburgh 26: 7 (1964). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 10 (1979). ). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 393 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 312 (2018).

Biennial tuberous herbs; stem erect, 30–70 cm, simple or branched, pilose above; stem-leaves scattered; lamina suborbicular-cordate, 3-partite, segments further 2–3-partite, ultimate segments coarsely dentate or lacinate; inflorescence a raceme or panicle, laxly few- to many-flowered; sepals blue, minutely hairy.

*Habitat*: Open places in coniferous forests, open slopes near streams.

*Distribution*: Endemic to Nepal, W & E; 2600–3900 m.

KSL: Darchula in KSL Nepal, and neighboring Mugu; 3800–3900 m.

*Representative specimens.* **DARCHULA:** Mechhra – Kalagad, 3900 m (PR Shakya, MK Adhikari & MN Subedi 8070, 23 Jul 1984; KATH<sup>1</sup>). **MUGU:** Between Mugu and Purana Mugu, 3810 m (O Polunin, WR Sykes & LHJ Williams 5338, 20 Aug 1952; holotype BM, isotype A 00038091<sup>1</sup> image, isotype E00438626<sup>1</sup> image).

**Aconitum spicatum** (Brühl) Stapf, Ann. Roy. Bot. Gard. (Calcutta) 10: 165 (1905). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 11 (1979). J. Rau in Sharma *et al.* (eds.), Fl. India 1: 22 (1993). Kadota, J. Jap. Bot. 85(1): 14 (2010). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 394 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 312 (2018). **PI. 24.**

*Aconitum ferox* Wall. ex Sér. var. *spicata* Brühl, Ann. Bot. Gard. (Calcutta) 5: 110 (1895); *Aconitum atrox* (Brühl) Mukerjee; *Aconitum ferox* Wall. ex Seringe var. *atrox* Brühl; *Aconitum balfourii* Stapf

DOZ: Duk (दुक). NEP-L: Vish-jarā, Gobare vish, Gobarī (विष-जरा, गोबारे विष, गोबरी). NEP: Ativish, Vish (अतिविष, विष).

ENG: Nepal aconite. HIN-L: Gobriyā (गोब्रिया). TIB: bongnak (བོང་ནག་), tsenduk (ཅེན་དུག་).

Biennial tuberous herbs; stem robust, erect, 1–2 m, usually simple, pubescent above; stem-leaves few to many, scattered; lamina orbicular-cordate or reniform or broadly ovate, 3-partite to the base, segments further 2–3-partite, ultimate segments inciso-dentate or laciniate; inflorescence a raceme or panicle, usually densely many-flowered, pubescent; sepals deep blue, purple or greenish white, pubescent.

*Habitat:* Moist and shady places in forests, forest margins, shrubberies, moist grasslands, grassy slopes, among boulders on moist grassy slopes, streamsides.

*Distribution:* Himalaya (N India, Nepal to Bhutan), Tibetan Plateau.

NEPAL: W, C & E; (1800–)2600–4400 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura and Mugu; 2600–4100 m [Pithoragarh District of Uttarakhand and neighboring area in KSL India].

*Representative specimens.* **BAJHANG:** Mahadeosera, 3950 m (PR Shakya, MK Adhikari & MN Subedi 8147, 24 Jul 1984; KATH<sup>1</sup>); Khaptad, 3715 m (K Itoh & SB Rajbhandari 1264, 9 Sept 1963; KATH<sup>1</sup>); Dhansera – Nilkatti, 4090 m (PR Shakya, MK Adhikari & MN Subedi 8212, 26 Jul 1984; KATH<sup>1</sup>). **BAJURA:** Khaptad National Park to Kaudegaon, 2950 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9192632, 28 Aug 1991; KATH<sup>1</sup>, TI). **DARCHULA:** Khandeshowari, on the way Shiyela to Nete, 2600–3000 m (CK Subedi, J Gurung & S Thapa 23, 16 Jun 2014; TUCH<sup>1</sup>); above Dhauliodar, 3400 m (SK Ghimire, B Awasthi, S Budha Magar, B Jnawali, S Nepal, MR Paudeyal & DJ Chapagain ANCA-3236, 4 Sept 2017; TUCH<sup>1</sup>); Shiyela–Nete, 3600 m (CK Subedi & KM Ghimire 1601, 22 Aug 2014; TUCH<sup>1</sup>); Chheti, 3971 m (TR Pandey & S Panthi, 2014904, 27 Sept 2014, KATH<sup>1</sup>). **MUGU:** Mugu, 2700 m (PR Shakya & MK Adhikari 9191 II, 18 Aug 1984; KATH<sup>1</sup>); Mugu, 3500 m (PR Shakya *et al.* 9058, 16 Aug 1984; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon (Wallich 4721C; isosyntype of *Aconitum balfourii* BM013399493<sup>1</sup> image); Kumaon, Pindari, 3962 m (R Strachey & JE Winterbottom 3; syntype of *Aconitum balfourii* BM013399494<sup>1</sup> image).

*Local abund.:* Frequent.

*Remarks:* Several specimens from KSL India and one from Nepal (Duthie 5274, collected in Nampa Gadh at 3658–3962 m) have been identified as *A. balfourii* by Staff (1905) in his monograph ‘*The aconites of India*’.

*Local abund.:* Frequent in upper Chameliya Valley, Darchula.

*Ethnobot. use:* Tubers are poisonous (once used as a source of arrow poison), and are occasionally traded. Tubers are medicinally used after proper detoxification by learned healers.

*Conserv. status:* NAT., Vulnerable (Tandon *et al.* 2001). LOC., Near Threatened. It is threatened mainly due to unsustainable collection of tubers for trade.

**Aconitum violaceum** Jacquem. ex Stapf, Ann. Roy. Bot. Gard. (Calcutta) 10: 144 (1905). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 11 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 22 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 395 (2017).

*Aconitum multifidum* Royle (1834), nom illeg., non Koch ex Rchb. (1827); *Aconitum napellus* L. var. *multifidum* (Royle) Hook. f. & Thomson

NEP-L: Chīle vish (चीले विष). NEP: Madhu vish (मधु विष).

Biennial tuberous herbs; stem erect, 10–30 cm, simple, glabrous; leaves few, mostly clustered near base; lamina orbicular, 5-partite to the base, primary segments deeply lobed and lacinate with narrow linear ultimate segments; flowers few in lax racemes or corymbs, or solitary; sepals blue or violet, pubescent.

*Habitat*: Glacial riverine beds, moist rocky places, dry scrub, open grassy slopes, forest edges.

*Distribution*: NW Pakistan to Nepal.

NEPAL: W & C; 3900–4500 m.

KSL: Bajhang and Darchula in KSL Nepal; 3900–4400 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Surmasarovar, 4400 m (MS Bista & DP Joshi 665, 26 Aug 1972; KATH<sup>1</sup>).

**DARCHULA**: Kalidhunga, 3900 m (KM Ghimire & M Adhikari 1076, 19 Jul 2016; TUCH<sup>1</sup>). **UTTARAKHAND**

(**INDIA**): Kumaon, Milum Glacier, 3810 m (R Strachey & JE Winterbottom 2, 1843; BM, P00201847<sup>1</sup> image); Kumaon, Barji Kang Pass, 4115 m (R Strachey & JE Winterbottom 5, 1843; K, P00201848<sup>1</sup> image).

*Local abund.*: Rare in Darchula.

*Conserv. status*: GLB., Vulnerable A2cd (Ved *et al.* 2015). *LOC.*, Data Deficient. A decline of >40% of the wild populations over the past few decades has been reported from NW India (Ved *et al.* 2015). The threat is mainly due to unsustainable collection of tubers for trade.

**Actaea** L., Sp. Pl. 1: 504 (1753).

**Actaea acuminata** Wall. ex Royle, Ill. Bot. Himal. Mts.: 57 (1834). Rau in Sharma *et al.* (eds.), Fl. India 1: 24 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 395 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 313 (2018). **PI. 25**.

*Actaea spicata* L. var. *acuminata* (Wall. ex Royle) H. Hara

NEP-L: Vish-phal (विष-फल).

ENG: Himalayan baneberry.

Perennial rhizomatous herbs, 30–100 cm tall, glandular pubescent; stems erect; leaves 2 or rarely 3 pinnate; leaflets lanceolate, acuminate.

*Habitat*: Coniferous and mixed forest understory, forest margins, open slopes.

*Distribution*: Afghanistan to E Himalaya, Tibetan Plateau.

NEPAL: W; 2400–3900 m.

KSL: Darchula and Humla in KSL Nepal; 2700–3600 m.

*Representative specimens*. **DARCHULA**: Between Khayakot & Simar, 2800 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1076, 19 Jul 2015; TUCH<sup>1</sup>); Simar, 2832 m (CK Subedi, J Gurung & S Thapa 56a, 20 Jun 2014; TUCH<sup>1</sup>). **HUMLA**: Manal, above Dozam, 2700 m (SK Ghimire, RP Chaudhary & team P10302, 20 May 2010; TUCH<sup>1</sup>); above Jabkung, Changla Valley, Dozam, 3200–3350 m (SK Ghimire, RP Chaudhary & team P10635, 21 May 2010; TUCH<sup>1</sup>); Chungsa Valley, below Singjungma, 3300 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1685, 14 Sept 2012; TUCH<sup>1</sup>); Dozam Khola near Simikot, 3505 m (O Polunin, WR Sykes & LHJ Williams 4240, 31 May 1952; KATH<sup>1</sup>).

*Local abund.*: Occasional in Darchula, frequent to common in Humla.

*Ethnobot. use:* Rhizomes are used as insect poison.

**Actaea frigida** (Royle) Prantl, Bot. Jahrb. Syst. 9: 246 (1888). Compton *et al.*, Taxon 47: 621 (1998). Rajbhandari & Rai, Handbk. Fl. Pl. Nep. 1: 395 (2017).

*Cimicifuga frigida* Royle Ill. Bot. Himal. Mts. 2: t. 14 (1833); *Actinospora frigida* (Royle) Fisch. & C.A. Mey.;

*Cimicifuga foetida* var. *bifida* W.T. Wang & Hsiao

Perennial rhizomatous herbs, 1–4 m tall; stem erect, branched, pubescent; leaves ternately pinnate.

*Habitat:* Edges of birch and fir forests, shrubberies, grassy slopes, river banks.

*Distribution:* Himalaya (NW India to Bhutan), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 2400–4000 m.

KSL: Bajhang in KSL Nepal; 3300–3500 m.

*Representative specimen.* **BAJHANG:** Nilkatti – Naya Odar, 3450 m (PR Shakya, MK Adhikari & MN Subedi 8256, 27 Jul 1984; KATH<sup>1</sup>).

**Adonis** L., Sp. Pl. 1: 547 (1753).

**Adonis aestivalis** L., Sp. Pl. ed. 2, 1: 771 (1762). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 11 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 26 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 396 (2017).

*Adonis inermis* Stapf; *Adonis inglisii* Royle

ENG: Pheasant's eye, Summer pheasant's eye.

Annual herbs, 10–40 cm tall; stem erect, leafy, simple or branched above; leaves pinnate with filiform segments; flowers terminal, solitary; petals scarlet, blight orange or yellow with dark purple centre.

*Habitat:* Open grassy places, edges of cultivated fields.

*Distribution:* Temperate Eurasia, Afghanistan to Nepal.

NEPAL: W; (2000–)2800–3300 m.

KSL: Humla in KSL Nepal; c. 3050 m.

*Representative specimen.* **HUMLA:** Between Khangalgaon & Pahung, Humla Karnali Valley near Simikot, 3048 m (O Polunin, WR Sykes & LHJ Williams 4304, 10 Jun 1952; KATH<sup>1</sup>).

**Adonis chrysocyathus** Hook. f. & Thomson in Hook. f., Fl. Br. India 1: 15 (1872). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 11 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 26 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 396 (2017). **PI. 25.**

*Adonis pyrenaica* Hook. f. & Thomson (1855), nom. illeg., non DC. (1815); *Chrysocyathus falconeri* Chrtek & Slavikova

Perennial rhizomatous herbs, 10–40 cm tall; stems several, leafy, erect, simple or branched above; leaves pinnate with linear segments; flowers terminal, solitary, golden-yellow without dark purple centre.

*Habitat:* Forest margins, juniper woodlands, grassy slopes, alpine meadows.

*Distribution:* C Asia, NW China (Xinjiang), Himalaya (Pakistan to Nepal), Tibetan Plateau.

NEPAL: W, C & E; 3000–4600 m.

KSL: Humla in KSL Nepal; c. 3650–4000 m.

*Representative specimens.* **HUMLA:** Dozam Khola, near Simikot, 3658 m (O Polunin, WR Sykes & LHJ Williams 4231, 31 May 1952; E, KATH<sup>1</sup>); Chhudalunbo, Changla Khola, Dozam, 3900–4000 m (SK Ghimire, RP Chaudhary & team P11651, 23 May 2010; TUCH<sup>1</sup>).

*Local abund.:* Occasional.

**Anemonastrum** Holub, Folia Geobot. Phytotax. 8: 158 (1973).

**Anemonastrum demissum** (Hook. f. & Thomson) Holub, Folia Geobot. Phytotax. 8: 165 (1973).

*Anemone demissa* Hook. f. & Thomson, Fl. Ind. 1: 23 (1855).

Perennial pubescent herbs with woody rootstock, scape erect or ascending, 5–30 cm high.

*Habitat*: Forests, forest margins, scrubs, grassy slopes, alpine meadows, streamsides.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, Myanmar, C China.

NEPAL: W, C & E; 2700–5700 m.

KSL: Darchula in KSL Nepal; 3850–4350 m.

*Representative specimen*. **DARCHULA**: Shiyela, 3839 m (CK Subedi, J Gurung & S Thapa 88, 22 Jun 2014; TUCH<sup>1</sup>). upper Chameliya, below Thadapani Ridge, Pilkanda, 4100–4350 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1404, 23 Jul 2015; TUCH<sup>1</sup>).

*Local abund.*: Rare to occasional.

**Anemonastrum elongatum** (D. Don) Holub, Folia Geobot. Phytotax. 8: 165 (1973). **Pl. 25.**

*Anemone elongata* D. Don, Prodr. Fl. Nepal.: 194 (1825); *Anemone rivularis* Wall. (1831), nom. nud., non Buch.-Ham. ex DC. (1817).

NEP: Ratanjot (रतनजोत).

Perennial puberulent or subglabrous herbs; scape erect, elongated, 30–100 cm, slender.

*Habitat*: Moist places in sparse forests, meadows, open grassy slopes.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, N Myanmar.

NEPAL: W, C & E; (1800–)2300–4600 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura and Doti; 2300–3700 m.

*Representative specimens*. **BAJHANG**: Thogundanda – Kaligad, 2895 m (TB Shrestha 4183, 10 Jun 1965; KATH<sup>1</sup>); **BAJHANG** & **BAJURA**: Pategaon – Ghodi Lehk Deorali – Badigaon (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160652, 16 Aug 1991; TI) fide SHB (2013–2020). **DARCHULA**: Upper Chameliya Valley, Dhauliodar, 3400 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1159B, 19 Jul 2015; TUCH<sup>1</sup>). **DOTI**: Khaptad Lekh, 2800 m (PR Shakya, LR Sharma & KR Amatya 6243, 1 Jul 1981; KATH); between Rhikula & Chuyadhara, 2850 m (H Tabata, KR Rajbhandari & K Tsuchiya 1033, 8 Jul 1976; KATH<sup>1</sup>).

*Local abund.*: Occasional in Darchula.

**Anemonastrum geum** (H. Lév.) Mosyakin, Phytoneuron 2018-55: 7 (2018).

*Anemone geum* H. Lév., Bull. Acad. Int. Géogr. Bot. 24: 25 (1915); *Anemone bonatiana* var. *geum* (H. Lév.) H. Lév.; *Anemone geum* subsp. *ovalifolia* (Brühl) R.P. Chaudhary; *Anemone geum* subsp. *potentilloides* (Cambess. ex Lauener) R.P. Chaudhary; *Anemone obtusiloba* D. Don var. *orthocaula* Brühl; *Anemone obtusiloba* var. *potentilloides* Cambess. ex Lauener; *Anemone obtusiloba* subsp. *ovalifolia* Brühl; *Anemone ovalifolia* (Brühl) Hand.-Mazz.; *Anemone rupestris* Hook.f. var. *pilosa* Marquand & Shaw; *Anemone wardii* C. Marquand & Airy Shaw

Perennial pubescent herbs; scape erect, 5–15 cm high.

*Habitat*: Open grassy slopes, meadows.

*Distribution*: Himalaya (N India, Nepal), Tibetan Plateau, N & C China.

NEPAL: W & C; (1900–)2400–5100 m.

KSL: Upper Mahakali Valley in KSL India and Nepal, and neighboring Doti District, Nepal; c. 3000–4570 m [also in Pulan Xian, SW Xizang in KSL China]. It is likely also to be present in upper Humla, Nepal.

*Representative specimens.* **DOTI:** Khaptad, 2980 m (H Tabata, KR Rajbhandari & K Tsuchiya 1129, 9 Jul 1976; *Anemone obtusiloba* var. *potentilloides* KYO) fide Tamura (1986). **UTTARAKHAND (INDIA):** Kumaon near the Lebung pass, 4265–4570 m (Duthie 5272, 1 Aug 1886; holotype of *Anemone obtusiloba* var. *orthocaula* BM) fide Ziman *et al.* (2007). **XIZANG (CHINA):** Pulan Xian, 30.29°N 81.17°E (Qinghai-Tibet team vegetation group 6626699, 1976; PE) fide Kong & Yang (2019).

**Anemonastrum obtusilobum** (D. Don) Mosyakin, Phytoneuron 2018-55: 7 (2018). **PI. 25.**

*Anemone obtusiloba* D. Don, Prodr. Fl. Nep.: 194 (1825); *Anemone discolor* Royle; *Anemone govaniana* Wall., nom. nud.; *Anemone micrantha* Klotzsch; *Anemone mollis* Wall., nom. nud.; *Anemone obtusiloba* var. *leiocarpa* Tamura; *Anemone rupestris* Hook. f. var. *villosa* Marquand & Shaw; *Anemonidium obtusilobum* (D. Don) Christenh. & Byng.

**NEP:** Kāngre-jhār, Ratanjot (काङ्ग्रे-झार, रतनजोत).

**ENG:** Blue buttercup, Himalayan thimbleweed, Blue Himalayan anemone.

Perennial densely villous herbs; scape erect, 10–20 cm.

*Habitat:* Forests, forest margins, among thickets, alpine meadows, grassy slopes, trailsides.

*Distribution:* C & SW Asia, Pakistan, India, Nepal, Bhutan, Tibetan Plateau, Myanmar, SC China, Mongolia.

**NEPAL:** W, C & E; 1800–4800 m.

**KSL:** Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura, Doti and Mugu; 2300–4100 m [Bageshwar and Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Between Dhalun & Panselegi, NE of Dhalun, 2300–2700 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0547, 16 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **DARCHULA:** Upper Chameliya, Lolu, Pilkanda, 3600–3700 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Pauveyal & DJ Chapagain ANCA-1159, 19 Jul 2015; TUCH<sup>1</sup>); Api Khola, 3648 m (JB Tyson 3, 6 Jun 1953; KATH<sup>1</sup>). **DOTI:** Khaptad National Park, trail from Bichpani to Ghoda daune, 2972 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913039, 2 Jul 2009; E00623937, KATH<sup>1</sup>). **HUMLA:** Ridge above Simikot, 3760 m (CA Pendry, SR Baral, S Noshiro, S Rajbhandari, PP Kurmi, B Dell & B Adhikari A223, 21 Jun 2008; E00392126, KATH<sup>1</sup>). **MUGU:** Pipling, 2650 m (PR Shakya & B Roy 5518, 6 Jun 1980; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kamaon, Bageser to Munshiari via Kathi and Namik, 1525–2375 m (Schlagintweit 9776, 24–31 May 1855; P00158130<sup>1</sup> image).

*Local abund.:* Frequent.

*Ethnobot. use:* Root juice is used to treat coughs and colds; and root paste is applied on wounds.

**Anemonastrum polyanthes** (D. Don) Holub, Folia Geobot. Phytotax. 8: 165 (1973). **PI. 25.**

*Anemone polyanthes* D. Don, Prodr. Fl. Nepal.: 194 (1825); *Anemone govaniana* Lindl.; *Anemone longiscapa* Wall., nom. nud.; *Anemone narcissiflora* L. var. *polyanthes* (D. Don) Finet & Gagnep.; *Anemone scaposa* Edgew.; *Anemone villosa* Royle

Perennial herbs, densely silky hairy; scape 20–60 cm high.

*Habitat:* Open pastures, grassy slopes, moist places, rocky slopes, rock cliffs.

*Distribution:* NE Pakistan, N India, Nepal, Bhutan.

**NEPAL:** W, C & E; (2300–)2700–4800 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal; 2700–4200 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Khaptad, 2740 m (TB Shrestha 4072, 7 May 1965; KATH); Gurel Lekh, 3400 m (NK Bhattarai 90/1196, 1 Sept 1990; KATH<sup>1</sup>); Surmasarovar, 3800 m (PR Shaky, LR Sharma, KR Amatya 6368, 9 Jul 1981; KATH<sup>1</sup>). between Chaurapani & Dahachaur, 3696 m (H Tabata, KR Rajbhandari & K Tsuchiya 2007, 1 Aug 1976; KATH<sup>1</sup>). **DARCHULA:** Upper Chameliya, between Dhauliodar & Pilkanda, 3550 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1195, 19 Jul 2015; TUCH<sup>1</sup>); Nampa Khola, 3566 m (JB Tyson 42, 16 Jun 1953; BM, KATH). **HUMLA:** Above Phwaso, Changla Khola Valley, 3650–3700 m (SK Ghimire, RP Chaudhary & team P10951, 22 May 2010; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, Sumdum Pass on Jimba side, 3655 m (RC Thakur 842, 4 Jul 1948; MICH 1498688<sup>1</sup> image).

*Local abund.:* Frequent.

*Ethnobot. use:* Root paste is applied on wounds.

**Anemonastrum rockii** (Ulbr.) Mosyakin, Phytoneuron 2018-55: 7 (2018).

*Anemone rockii* Ulbr., Notizbl. Bot. Gart. Berlin-Dahlem. 10: 876 (1929); *Anemone obtusiloba* D. Don subsp. *rockii* (Ulbr.) Lauener

Perennial herbs, sparsely puberulent or glabrescent; scapes to 15 cm high.

*Habitat:* Grassy slopes.

*Distribution:* Nepal, Tibetan Plateau, C China.

NEPAL: W & C; 2100–4000 m.

KSL: Humla in KSL Nepal, and neighboring Mugu.

*Representative specimen.* **HUMLA/MUGU:** Chankheli Lagna (O Polunin, WR Sykes & LHJ Williams 4345, 30 Apr 1952; E) fide Ziman *et al.* (2007).

**Anemonastrum tetrasepalum** (Royle) Holub, Folia Geobot. Phytotax. 8: 165 (1973). **PI. 25.**

*Anemone tetrasepala* Royle; *Anemonidium tetrasepalum* (Royle) Christenh. & Byng

Perennial herbs, densely hairy when young, glabrescent at maturity; scapes 30–50 cm high.

*Habitat:* Margins of broadleaved forests, open grassy slopes, wet grasslands, meadows.

*Distribution:* Pakistan to Nepal.

NEPAL: W; 2500–4200 m.

KSL: Darchula in KSL Nepal; 2500–4200 m.

*Representative specimens.* **DARCHULA:** Khandeshowari, 2500 m (CK Subedi, J Gurung & S Thapa 1, 16 Jun 2014; TUCH<sup>1</sup>); Kalidhunga, 4100–4200 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1319, 25 Jul 2015; TUCH<sup>1</sup>)

*Local abund.:* Frequent at higher altitudes.

**Aquilegia** L., Sp. Pl. 1: 533 (1753).

**Aquilegia pubiflora** Wall. ex Royle, Ill. Bot. Him. Mts.: 55 (1834). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 13 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 43 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 403 (2017). **PI. 26.**

*Aquilegia vulgaris* L. subsp. *pubiflora* (Wall.) Hook. f. & Thomson

ENG: Himalayan columbine, Hairy-flowered columbine.

Perennial herbs, with woody rootstock; stems tufted, 15–70 cm, pubescent; flowers purple.

*Habitat*: Confer forests, grassy slopes, meadows, amongst shrubs.

*Distribution*: E Afghanistan, Pakistan to Nepal.

NEPAL: W; 2400–3200 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura and Mugu; 2400–3200 m (Pithoragarh and neighboring areas in KSL India).

*Representative specimens*. **BAJHANG**: Kali Gad, 2438 m (JDA Stainton 4925, 14 Jun 1965; BM, KATH<sup>1</sup>).

**BAJURA**: Berseni to Porakya, 2530 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170514, 12 Aug 1991; TI<sup>1</sup> image); Porakya Lagna, 2743 m (JDA Stainton 4887, 24 May 1965; BM, KATH<sup>1</sup>). **DARCHULA**: Kachali – Jaban, 2590 m (TB Shrestha 4202, 14 Jun 1965; KATH<sup>1</sup>); Chheti (Marma), 2743 m (JDA Stainton 4941, 20 Jun 1965; KATH<sup>1</sup>). **HUMLA**: Chankheli Lagna, 2743 m (O Polunin, WR Sykes & LHJ Williams 4333, 19 Jun 1952; BM001217383). **MUGU**: South of Jhyari, 2620 m (CA Pendry, S Baral, S Noshiro, S Rajbhandary, PP Kurmi, B Dell & B Adhikari JRS A85, 7 Jun 2008; E00397527, KATH<sup>1</sup>); Ghurchi – Sukha Daha, 2800 m (PR Shakya, MN Subedi & R Uprety 8550, 7 Aug 1985; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon (R Blinkworth s.n.; L.1736047<sup>1</sup> image); Kumaon, above Bona, 2740 m (RC Thakur 834, 1 Jul 1948; L.1736046<sup>1</sup> image).

**Callianthemum** C.A. Mey. in Ledeb., Fl. Altaic. 2: 336 (1830).

**Callianthemum pimpinelloides** (D. Don) Hook. f. & Thomson, Fl. Ind. 1: 26 (1855). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 13 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 46 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 403 (2017).

*Ranunculus pimpinelloides* D. Don in Royle, Ill. Bot. Himal. Mts.: 45, 53, t. 1, f. 4 (1834); *Callianthemum cachemirianum* Cambess.; *Callianthemum imbricatum* Hand.-Mazz.; *Callianthemum tibeticum* Witasek

Perennial rhizomatous herbs; stems several, slender, up to 10 cm long; leaves basal or subbasal, glaucous, pinnate or bipinnate, long petiolate; flowers solitary, white or pink.

*Habitat*: Meadows, rocky or scree slopes.

*Distribution*: Afghanistan to Bhutan, Tibetan Plateau, SC China.

NEPAL: W, C & E; 2600–4100 m.

KSL: Bajhang in KSL Nepal; 3000–3650 m.

*Representative specimen*. **BAJHANG**: Thar [interpreted] (JF Dobremez 2237, 15 May 1973; E00701580) fide RBGE (2018); Laune – Laingaon, 3658 m (TB Shrestha 4102, 13 May 1965; KATH<sup>1</sup>).

**Caltha** L., Sp. Pl. 1: 558 (1753).

**Caltha palustris** L., Sp. Pl. 1: 588 (1753). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 13 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 47 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 404 (2017). **Pl. 26.**

*Caltha asarifolia* DC.; *Caltha govaniana* Wall. ex Royle; *Caltha himalayanus* Royle; *Caltha himalensis* D. Don; *Caltha palustris* var. *himalensis* (D. Don) Mukerjee; *Caltha palustris* var. *normalis* Hook. f. & Thomson

NEP: Ek-ānkhle-phul (एक-आँखले-फूल).

ENG: Marsh marigold, Cowflock, Cowslip.

Perennial glabrous herbs with thick creeping rootstock; stems 15–60 cm high, ascending to erect; basal leaves long-petiolate; blade orbicular-reniform or suborbicular or sometimes deltoid, deeply



cordate at base, margins crenate-dentate, obtuse at apex; upper cauline leaves smaller, shortly petiolate or sessile; flowers bright yellow, solitary or few in corymbs; pedicel much elongate in fruit.

*Habitat*: Wet places along forest margins, wet grasslands, marshes, streamsides.

*Distribution*: Temperate and subarctic regions of N Hemisphere.

NEPAL: W, C & E; 2400–4600 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura, Doti and Mugu; 2900–4500 m [Pithoragarh, Uttarakhand and neighboring areas in KSL India].

*Representative specimens*. **BAJHANG**: Khaptad, 2900 m (NK Bhattarai 91/896, 22 Jun 1991; KATH<sup>1</sup>); Surmasarovar, 3800 m (PR Shakya, LR Sharma & KR Amatya 6361, 9 Jul 1981; KATH<sup>1</sup>); Surmasarowar, 4150 m (MS Bista & DP Joshi 675, 26 Aug 1972; KATH). **DARCHULA**: Above Domule, 2927 m (CK Subedi, J Gurung & S Thapa 112, 24 Jun 2014; TUCH<sup>1</sup>); Lolu, above Dhauliodar, 3600–3700 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1158, 19 Jul 2015; TUCH<sup>1</sup>). **DOTI**: Khaptad National Park, Trail from Bichpani to Ghoda daune, 2956 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913036, 2 Jul 2009; E, KATH<sup>1</sup>). **MUGU**: Edge of Rara Lake, 2920 m (CA Pendry, S Baral, S Noshiro, S Rajbhandari, PP Kurmi, B Del & B Adhikari JRS A97, 8 Jun 2008; E00397498<sup>1</sup> image, KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon, Madhari Pass, 2925 m (R Strachey & JE Winterbottom 1, 1843; P00194056<sup>1</sup> image); Kumaon, Sumto Rahlam [Ralam] Pass, 4570 m (RC Thakur 752, 17 Jun 1948; L.1723092, MICH 1498733<sup>1</sup> image).

*Local abund.*: Frequent to common.

*Conserv. status*: GLB., Least Concern (Akhani 2014b).

## **Clematis** L., Sp. Pl. 1: 543 (1753).

**Clematis barbellata** Edgew., Trans. Linn. Soc. London 20: 25 (1851). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 14 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 59 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 405 (2017). **Pl. 26.**

*Clematis nepalensis* Royle

NEP-L: Dāntkhuso (दाँतखुसो). NEP: Junge-laharā (जुँगे-लहरा).

Woody climbers; stem often reddish, terete; leaves fascicled, 3-foliate; flowers in axillary fascicles; sepals brown-purple, hairy.

*Habitat*: Open coniferous forests, forest margins, scrubs, along streams.

*Distribution*: W Pakistan to Nepal, Tibetan Plateau.

NEPAL: W, C & E; 2100–3600(–4000) m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Mugu; 2300–3500 m [Bageshwar and Pithoragarh districts of Uttarakhand and neighboring areas in KSL India].

*Representative specimens*. **BAJHANG**: Surmasarovar, 2500 m (JF Dobremez 2072, 5 May 1973; KATH<sup>1</sup>); Thar, 2900 m (JF Dobremez 2247, 15 May 1973; BM, KATH<sup>1</sup>); Thogan Danda, 3300 m (MS Bista & DP Joshi 699, 27 Aug 1969; KATH<sup>1</sup>). **DARCHULA**: Naupata, 2300 m (KM Ghimire & M Adhikari 347, 20 Jul 2016; TUCH<sup>1</sup>); Chameliya Valley, Domul, above Khayakot, 2800 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-666, 18 Oct 2014; TUCH<sup>1</sup>); Chheti, 2895 m (TB Shrestha 4227, 20 Jun 1965; KATH<sup>1</sup>). **HUMLA/MUGU**: Chankheli Lagna, 3505 m (O Polunin, WR Sykes & LHJ Williams 4349, 20 Jun 1952; BM) fide RBGE (2014). **MUGU**: Above Wangri, 3200 m (PR Shakya & B Roy 5660, 14 Jun 1980; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kanta [Kanda], Kumaon, 2435 m (RC Thakur 765, 23 Jun 1948; L.1723713<sup>1</sup> image, MICH 1498807<sup>1</sup> image); Himalaya boréal occidental, Kumaon, 3045 m (T Anderson s.n., May 1857; P00125380<sup>1</sup> image); W Dwali, Kumaon, 3045 m (R Strachey & JE Winterbottom 5; P00125384<sup>1</sup> image).

*Local abund.*: Occasional in Darchula; not known for other regions.

*Ethnobot. use*: Leaf juice is used to treat stomach disorders.

**Clematis buchananiana** DC., Syst. Nat. 1: 140 (1817). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 14 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 60 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 406 (2017). **PI. 27.**

*Clematis bucamara* Buch.-Ham. ex DC.; *Clematis buchananiana* var. *rugosa* Hook. f. & Thomson; *Clematis buchananiana* var. *sericea* S.K. Agarwal; *Clematis buchananiana* var. *tortuosa* Hook. f. & Thomson; *Clematis buchananiana* var. *vitifolia* Hook. f. & Thomson; *Clematis buchananii* D. Don; *Clematis lasifolia* D. Don (1825), nom. illeg., non DC. (1817); *Clematis tortuosa* Wall., nom. nud.; *Clematis vitifolia* Wall., nom. nud.

NEP-L: Dahile-belo, Dāntkhuso (दहिले-बेलो, दाँतखुसो). NEP: Junge-laharā, Pināse-laharā (जुंगे-लहरा, पिनासे-लहरा).

Woody climbers, usually densely pubescent; stem and branches grooved; leaves opposite, ternate to 1-pinnate, 3–7-foliate; flowers axillary in leafy panicles; sepals cream or greenish-yellow, densely hairy.

*Habitat*: Forests, forest margins, scrubberies, along streams.

*Distribution*: Himalaya (Pakistan to NE India), Tibetan Plateau, SC China, mainland SE Asia.

NEPAL: W, C & E; 900–3900 (–4170) m.

KSL: Baitadi, Bajhang and Darchula in KSL Nepal, and neighboring Dadeldhura, Doti and Mugu; 1500–3200 m [also in Kumaon, Uttarakhand, India].

*Representative specimens*. **BAJHANG**: Dhanhadhi (?) lekh, 3300 m (MS Bista & DP Joshi 466, 16 Aug 1972; KATH<sup>1</sup>); Khaptad, near Kuti, 3745 m (K Itoh & SB Rajbhandari 1261, 9 Sept 1963; KATH<sup>1</sup>). **DARCHULA**: Khar VDC-4, 1850 m (BB Shrestha, M Pandey & R Chhetri 169, 28 Sept 2015; TUCH<sup>1</sup>); between Ngali & Sithi, 2300 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-586, 16 Oct 2014; TUCH<sup>1</sup>); Chheti – Mechchra, 3120 m (PR Shakya, MK Adhikari & MN Subedi 8005, 22 Jul 1984; KATH<sup>1</sup>). **DOTI**: Khaptad, 2850 m (MS Bista & DP Joshi 243, 3 Aug 1972; KATH<sup>1</sup>). **MUGU**: Pina, 2000 m (PP Kurmi & N Thapa 7481, 27 Nov 1995; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon (R Blinkworth 4677; K001039669<sup>1</sup> image); Kumaon, 1525–1825 m (R Strachey & JE Winterbottom 11; P00125451<sup>1</sup> image).

*Local abund.*: Frequent in Darchula; not known for other districts.

*Ethnobot. use*: Roots, stems and leaves are used in folk medicine to treat toothache, sinusitis, indigestion, cuts and wounds.

**Clematis confusa** Grey-Wilson, Kew Mag. 8(4): 161 (1991). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 406 (2017). **PI. 27.**

*Clematis connata* DC. var. *confusa* (Grey-Wilson) W.T. Wang

NEP-L: Dāntkhuso (दाँतखुसो).

Woody climbers similar to *C. connata* (see below) but differs in having leaflets which are shallowly 3-lobed, with smaller reddish brown flowers, and hairy anther-connective.

*Habitat*: Forest margins, thickets, streamsides, trailsides.

*Distribution*: C & E Himalaya (Nepal to Bhutan).

NEPAL: W, C & E; 2300–3600 m.

KSL: Darchula in KSL Nepal; 2300–2500 m.

*Representative specimen*. **DARCHULA**: Between Ngali & Sithi, 2350 m (SK Ghimire & B Awasthi P140180, 16 Oct 2014, TUCH<sup>1</sup>).

*Local abund.*: Rare.

*Ethnobot. use*: Roots, stems and leaves are used to treat toothache and indigestion.

**Clematis connata** DC., Prodr. 1: 4 (1824). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 14 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 61 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 407 (2017). **PI. 27.**

*Clematis amplexicaulis* Edgew.; *Clematis buchananiana* DC. subsp. *connata* (DC.) Kuntze; *Clematis connata* var. *lanceolata* S.N. Biswas; *Clematis gracilis* Edgew.; *Clematis velutina* Edgew.; *Clematis venosa* Royle

NEP-L: Dāntkhuso (दाँतखुसो). NEP: Junge-laharā, Bhainse-laharo (जुँगे-लहरा, भैँसे-लहरो).

Large woody climbers, sparsely hairy in younger parts; branches shallowly grooved; leaves pinnate; leaflets 3–5, simple, serrate, acute to acuminate at apex; petiole bases strongly dilated and connate, forming a broad collar; flowers yellowish or creamy or white; anther-connective glabrous.

*Habitat*: Forests, forest margins, thickets, streamsides, trailsides.

*Distribution*: Himalaya (Pakistan to NE India), Tibetan Plateau, SC China.

NEPAL: W, C & E; 1300–3600 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Doti and Mugu; 2000–3200 m.

*Representative specimens*. **BAJHANG**: Agara to Dhalun, near Dalun village, 2000–2100 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0374, 14 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **DARCHULA**: Near Domul, way to Pilkanda, 3000 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-666, 18 Oct 2014; TUCH<sup>1</sup>). **DOTI**: Khaptad, 3100 m (H Tabata, KR Rajbhandari & K Tsuchiya 1134, 10 Jul 1976; KATH<sup>1</sup>). **HUMLA**: Dozam, 2700 m (TR Pandey & DR Kandel 2016922, 11 Sep 2016, KATH<sup>1</sup>); Salli Khola, 3200 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama 1689, 14 Sept 2012; TUCH<sup>1</sup>). **MUGU**: Rara Lake, 2909 m (H Tabata, KR Rajbhandari & K Tsuchiya 3087, 27 Aug 1976; KATH<sup>1</sup>).

*Local abund.*: Frequent.

*Ethnobot. use*: Roots, stems and leaves are used to treat toothache and indigestion.

**Clematis gouriana** Roxb. ex DC., Syst. Nat. 1: 138 (1817). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 14 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 64 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 407 (2017).

*Clematis indica* B. Heyne ex Roth; *Clematis martinii* H. Lév.; *Clematis vitalba* subsp. *gouriana* (Roxb. ex DC.) Kuntze

NEP: Junge-laharā (जुँगे-लहरा).

HIN: Bel kangu, Churanhar, Mūrva (बेल कंगू, चुरनहार, मूर्वा). SAN: Morata (मोरट).

Large woody climbers; sparsely pubescent when young; branches grooved; leaves 1–2-pinnate; leaflets simple, acute to acuminate, entire or with a few teeth; flowers yellowish to greenish-white.

*Habitat*: Open forests, edge of broad-leaved forests, scrubs, shrublands, along streams or rivers.

*Distribution*: Tropical and subtropical regions in S Asia, Himalaya, C & SE China, mainland SE Asia to New Guinea.

NEPAL: W, C & E; 120–2100 m.

KSL: Baitadi, Bajhang and Darchula in KSL Nepal, and nearby Dadeldhura; 700–2000 m.

*Representative specimens*. **BAITADI**: Patan, 1215 m (LP Kattel 157, 30 Dec 1980; KATH<sup>1</sup>). **BAJHANG**: Between Panalta & Kuwa, 1900–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0276, 13 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **DARCHULA**: Api-13, Khalanga, 1020 m (BB Shrestha, M Pandey & R Chhetri 492, 9 Oct 2015; TUCH<sup>1</sup>).

**Clematis grata** Wall., Pl. Asiat. Rar. 1: 83, t. 98 (1830). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 14 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 65 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 407 (2017). **PI. 27.**

*Clematis cordata* Royle; *Clematis vitalba* L. subsp. *grata* (Wall.) Kuntze

NEP: Junge-laharā (जुंगे-लहरा).

Woody climbers; stem and branches grooved, pubescent; leaves usually 1-pinnate with 5 leaflets, each irregularly sharply toothed or further lobed; flowers creamy-white, scented.

*Habitat*: Forests, forest margins, shrubland, roadside.

*Distribution*: E Afghanistan, Pakistan, W & C Himalaya, Tibetan Plateau.

NEPAL: W & C; 1300–3300(–3850) m.

KSL: Baitadi, Bajhang, Darchula and Humla in KSL Nepal, and neighboring Doti and Mugu; 1300–3000 m [Bageshwar and Pithoragarh districts of Uttarakhand and neighboring areas in KSL India].

*Representative specimens*. **BAITADI**: Khated – Patan, 1880–1200 m (I Sharma, R Joshi, R Uprety & J Pandey 587, 20 Sept 1981; KATH<sup>1</sup>). **BAJHANG**: Between Dhalun & Panselegi, 2300–2700 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0550, 16 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **DARCHULA**: Makarigad–Thumti, 1330–2060 m (MM Amatya & PM Regmi W690/82, 3 Sept 1982; KATH<sup>1</sup>); Khandeshwari – Kautel Gad, 2200 m (PR Shakya, MK Adhikari & MN Subedi 7925, 19 Jul 1984; KATH<sup>1</sup>). **DOTI**: Gayer, 1430 m (I Sharma, R Joshi, R Uprety & I Pandey 507, 16 Sep 1981; KATH<sup>1</sup>). **HUMLA**: Humla-Karnali, Kudilla, below Simikot, 2130 m (CA Pendry, SR Baral, S Noshiro, S Rajbhandary, PP Kurmi, B Dell, & B Adhikari B157, 18 Jun 2008; E, KATH<sup>1</sup>); between Simikot & Dharapori, 2500 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1690, 27 Aug 2012; TUCH<sup>1</sup>); Melchham, 2700 m (SB Malla 14207, 10 Jul 1968; KATH<sup>1</sup>). **MUGU**: Near Pina, 2190 m (PR Shakya, MN Subedi & R Uprety 8774, 22 Aug 1985; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon (R Blinkworth 4668; K001039645<sup>1</sup> image); Almora, Sama to Kapkot (JG Shree & party 53980, 19 Nov 1958; L.1724562<sup>1</sup> image).

*Local abund.*: Frequent.

**Clematis grewii** DC., Syst. Nat. 1: 140 (1817). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 15 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 66 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 408 (2017).

*Clematis buchananiana* DC. subsp. *grewii* (DC.) Kuntze; *Clematis loasifolia* DC.

Woody climbers, similar to *C. buchananiana* but plant more densely brownish tomentose; sepals broader, densely silky hairy outside.

*Habitat*: Forest margins, shrubberies.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, Bangladesh, Myanmar.

NEPAL: W, C & E; 900–2800(–3100) m.

KSL: Known from Pithoragarh District of Uttarakhand and neighboring areas in KSL India; and nearby Kalikot District, north-west Nepal. It is likely also to be present in KSL area of Nepal.

*Representative specimens*. **KALIKOT (NEPAL)**: Dillikot, 2220 m (NP Manandhar & NK Bhattarai 9120, 20 Sep 1982; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon (R Blinkworth s.n.; L.1724577<sup>1</sup> image); Thul [Thal], Kumaon, 1370 m (R Strachey & JE Winterbottom 10; P00114623<sup>1</sup> image).

**Clematis montana** Buch.-Ham. ex DC., Syst. Nat. 1: 164 (1817). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 15 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 69 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 408 (2017). **Pl. 27.**

*Clematis anemoniflora* D. Don; *Clematis montana* var. *grandiflora* Hook.; *Clematis punduana* Wall., nom. nud.; *Clematis wallichii* W.T. Wang

NEP-L: Bakryāulo, Chhitko-laharā, Junge-belo, Junge-laharo (बक्र्याउलो, छिट्को-लहरा, जुंगे-बेलो, जुंगे-लहरो). NEP: Junge-laharā, Junge-laharo (जुंगे-लहरा, जुंगे-लहरो).

ENG: Mountain clematis, Himalayan clematis. TIB: yimong karpo (ཡིམོང་ཀར་པོ་).

Woody climbers; branches terete, glabrescent; leaves ternate, fascicled; leaflets ovate-lanceolate, acute, dentate or lobed; flowers solitary or 2–3 in axillary fascicles, usually white on long naked pedicels.

*Habitat*: Open forests, forest margins, scrubs, along streams.

*Distribution*: NE Afghanistan to E Himalaya, Tibetan Plateau, Myanmar, C & SE China.

NEPAL: W, C & E; 1300–4000(–4900) m.

KSL: Baitadi, Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura, Dadeldhura, Doti and Mugu; 1300–3500 m [also in Kumaon, Uttarakhand, India].

*Representative specimens*. **BAJHANG**: Agara, way to Dhalun, 1700–2100 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0596, 17 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>); On trail from Surma Village to Thalara, 2335 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20911093, 10 Jul 2009; E, KATH<sup>1</sup>). **BAJURA & BAJHANG**: Pategaon – Ghodi Lehk Deorali – Badigaon, 2200 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9192408, 16 Aug 1991; TT<sup>1</sup> image). **DARCHULA**: Khandeshowari VDC, Paripatal, Khar, 2245 m (CK Subedi, J Gurung & S Thapa 8, 16 Jun 2014; TUCH<sup>1</sup>); Chameliya River, between Simar & Domul, 2500 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1716; 19 Jul 2016; TUCH<sup>1</sup>); Chameliya River, Simar, 2700 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1053, 19 Jul 2015; TUCH<sup>1</sup>). **DOTI**: Between Ritha & Rauttukatte, 1390 m (H Tabata, KR Rajbhandari & K Tsuchiya 657, 25 Jun 1976; KATH<sup>1</sup>). **HUMLA**: Above Syamane, below Simikot, 2440 m (CA Pendry, S Baral, S Noshiro, S Rajbhandari, PP Kurmi, B Del & B Adhikari JRS B161, 18 Jun 2008; E, KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon (R Blinkworth Cat. no. 4681; K001039679<sup>1</sup> image); Kumaon, 2740 m (R Strachey & JE Winterbottom 7 1/2, 1843; P00140291<sup>1</sup> image).

*Local abund.*: Frequent to common.

*Ethnobot. use*: Roots and stems are used to treat toothache, sinusitis, indigestion, cuts and wounds.

**Clematis roylei** Rehder, J. Arnold Arbor. 22: 575 (1941). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 15 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 74 (1993). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 321 (2018).

*Clematis nutans* Royle

ENG: Royle's clematis.

Woody climbers; branches angled, densely or sparsely villous; leaves pinnately 3–5-foliate; leaflets entire or irregularly toothed or lobed; flowers cream-white or yellow in axillary panicles, pubescent.

*Habitat*: Forests, river or stream banks.

*Distribution*: India, Nepal, Bangladesh, Myanmar.

NEPAL: W & C; 450–2200 m.

KSL: Bajhang in KSL Nepal; 1500–2000 m [also in Kumaon, Uttarakhand, India].

*Representative specimens*. **BAJHANG**: Rupatola, 1500–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0081, 11 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **UTTARAKHAND (INDIA)**: The outer hills of Kumaon, 900–1200 m (R Strachey & JE Winterbottom 13, 1843; P00140411<sup>1</sup> image).

**Clematis tibetana** Kuntze, Verh. Bot. Vereins Prov. Brandenburg 26: 172 (1885). Rau in Sharma *et al.* (eds.), Fl. India 1: 78 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 410 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 322 (2018).

Climbing shrubs; stem pubescent; leaves pinnately 5–9-foliate; leaflets linear to lanceolate, acute, entire or deeply 2–5-fid; flowers yellow spotted with brown, nodding, long pedicellate.

*Habitat*: Amongst bushes, cultivated areas, riversides.

*Distribution:* NW China (Xinjiang), W & C Himalaya (NW India, Nepal), Tibetan Plateau.

NEPAL: W & C; 1500–4000 m.

KSL: Known from Pithoragarh District, Uttarakhand in KSL India; and from upper Karnali in adjoining Pulan County, SW Xizang in KSL China. It is likely also to be present in upper Darchula and Humla in KSL Nepal.

*Representative specimens.* **UTTARAKHAND (INDIA):** Milam, Kumaon, 3500 m (R Strachey & JE Winterbottom 3; syntype BM 000541175<sup>1</sup> image). **XIZANG (CHINA):** Pulan Xian, 30.29°N 81.17°E (Qinghai-Tibet Team 6148440, 1976; PE) fide Kong & Yang (2019).

*Remarks:* Further records for upper Karnali fide GMBA (2012–2016).

## **Delphinium** L., Sp. Pl. 1: 530 (1753).

**Delphinium brunonianum** Royle, Ill. Bot. Himal. Mts. 1: 56 (1834). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 16 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 86 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 411 (2017). **Pl. 27.**

*Delphinium brunonianum* var. *aitchisoni* Huth; *Delphinium brunonianum* var. *jacquemontianum* (Cambess.) Huth; *Delphinium brunonianum* var. *schlagintweitii* Huth; *Delphinium foetidum* Lomakin; *Delphinium jacquemontianum* Cambess.; *Delphinium moschatum* Munro ex Hook. f. & Thomson

NEP-L/NEP: Bikh, Kasturī-phûl, Mangro-mûlo, Mauro-mûlo (बिख, कस्तुरी-फूल, मङ्गरो-मूलो, मौरो-मूलो).

ENG: Musk larkspur. HIN-L: Kasturī, Laskar, Makhotī (कस्तुरी, लस्कर, मखोटी). TIB: jagoepoe (ཇུ་རྒྱལ་པེེ).

Perennial herbs, up to 50 cm tall; stem erect, leafy, glandular pubescent above; leaf blade 5-fid to the middle; flowers few in racemes or corymbs; sepals inflated, blue to light blue, papery, veined, densely hairy.

*Habitat:* Rocky slopes, gravelly places, screes, morainic deposits.

*Distribution:* W & C Asia (South Caucasus to Tajikistan), Karakoram, W & C Himalaya (Pakistan to Nepal), Tibetan Plateau.

NEPAL: W & C; 3500–5300(–6000) m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Mugu; 3800–5300 m [Pithoragarh District, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Kalagad – Dubai Pass, 4100 m (PR Shakya, MK Adhikari & MN Subedi 8127, 24 Jul 1984; KATH); Mechhra – Kalagad, 4180 m (PR Shakya, MK Adhikari & MN Subedi 8090, 23 Jul 1984; KATH); Surmasarovar, 4400 m (MS Bista & DP Joshi 588, 26 Aug 1972; KATH). **DARCHULA:** Upper Chameliya, Thadapani, 3800–3900 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal 712, 18 Oct 2014; TUCH<sup>1</sup>); Pilkanda, 4100–4200 m (SK Ghimire, B Awasthi, S Budha Magar, B Jnawali, S Nepal, MR Paudeyal & DJ Chapagain 3377, 6 Sept 2017; TUCH<sup>1</sup>). **HUMLA:** Above Seding, Changla Khola, Dozam, 4300 m (SK Ghimire P11551, 23 May 2010; TUCH<sup>1</sup>); Chungsa, above Seliman, 4500 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1095, 5 Sept 2012, TUCH<sup>1</sup>); Chungsa, above Seliman Tsho towards NE, 4880–5300 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1236, 5 Sept 2012; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA):** Bedang Pass [Sin La], Kumaon, 4875 m (RC Thakur 887, 13 Jul 1948; MICH 1498842<sup>1</sup> image).

*Local abund.:* Frequent in Darchula and Humla above 4300 m, rare below 4100 m.

*Ethnobot. use:* Whole plant extract is applied to treat infestation of lice and ticks both in the case of human and livestock. Aerial parts of the plant is used to treat fungal growth in household fabrics.

*Conserv. status:* LOC., Near Threatened. Threat is due to occasional harvesting for trade.

**Delphinium caeruleum** Jacquem. ex Cambess. in Jacquem., Voy. Inde 4 (Bot.): 7, t. 6 (1835). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 16 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 88 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 411 (2017). **Pl. 28.**

*Delphinium grandiflorum* L. var. *kunawarensis* Brühl

NEP-L: Mudaulo (मुडौलो).

TIB: jakang (ཇཀང་).

Perennial herbs, 5–40 cm tall; stem erect, branched from the base, pubescent; basal leaves with long petiole; lamina divided to the base into linear segments; flowers blue, solitary or few in racemes.

*Habitat*: Alpine meadows, gravelly slopes, rocky slopes, cliff-ledges.

*Distribution*: Himalaya (NW India to Bhutan), Tibetan Plateau, Myanmar, C China.

NEPAL: W, C & E; 3000–5000(–5800) m.

KSL: Bajhang and Humla in KSL Nepal; 4000–4500 m (Pulan Xian, SW Xizang in KSL China).

*Representative specimens*. **BAJHANG**: Chainpur (JDA Stainton 4856, 17 May 1965; KATH); Allechaur, 4330 m (H Tabata, KR Rajbhandari & K Tsuchiya 1767, 29 Jul 1976; KYO) fide Rajbhandari & Rai (2017).

**HUMLA**: Chungsa Valley, Dharmashala, 4300 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1039, 2 Sept 2012; TUCH<sup>1</sup>). **XIZANG (CHINA)**: Pulan Xian, 30.29°N 81.17°E (Qinghai-Tibet Team 6230361, 1976; PE) fide Kong & Yang (2019).

*Local abund.*: Rare in Humla.

*Ethnobot. use*: Leaves and tubers are used as an insecticide.

**Delphinium cashmerianum** Royle, Ill. Bot. Himal. Mts.: 55 (1834). Rau in Sharma *et al.* (eds.), Fl. India 1: 89 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 411 (2017). **Pl. 28.**

*Delphinium aitchisonii* Huth

NEP-L: Mauro-mûlo, Nîlo bikh (मौरो-मूलो, नीलो बिष).

Perennial herbs similar to *D. brunonianum* but stem slender, eglandular hairy or strigose, and flowers smaller, bluish-purple, less inflated.

*Habitat*: Alpine meadows, grassy slopes, streamsides.

*Distribution*: Afghanistan, W Pakistan, Karakoram, W & C Himalaya, Tibetan Plateau.

NEPAL: W & C; 3000–4500 m.

KSL: Darchula in KSL Nepal; 3700–4000 m.

*Representative specimen*. **DARCHULA**: Upper Chameliya, Lolu, below Kalidhunga Tal, 3750–3950 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1344, 22 Jul 2015; TUCH<sup>1</sup>).

*Local abund.*: Frequent.

*Ethnobot. use*: Leaves and tubers are used as an insecticide.

**Delphinium densiflorum** Duthie ex Huth, Bot. Jahrb. Syst. 20(3): 393 (1895). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 16 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 90 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 412 (2017). **Pl. 28.**

*Delphinium brunonianum* Royle var. *densum* Maxim.; *Delphinium densiflorum* var. *platycentrum* Brühl

TIB: bongmar (བོང་མར་).

Perennial herbs, 30–60 cm tall; stem simple, leafy, reddish, pubescent; leaf blade mostly 5-fid to the base; flowers crowded in subcapitate to elongate raceme, pubescent; sepals grey-blue to reddish; spur

much shorter than the upper sepal.

*Habitat*: Rocky slopes, among boulders, scrub, alluvial fans.

*Distribution*: W & C Himalaya (NW India, Nepal), Tibetan Plateau, NC China.

NEPAL: W & C; 4000–6000 m.

KSL: Bajhang and Humla in KSL Nepal; 4400–5500 m [Pithoragarh, Uttarakhand in KSL India]. It is likely also to be present in upper Mahakali Valley, Darchula, Nepal.

*Representative specimens*. **BAJHANG**: Surmasarovar, 4400 m (MS Bista & DP Joshi 587, 26 Aug 1972; KATH<sup>1</sup>). **HUMLA**: Upper Chungsa, above Seliman Tsho, 5015 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1092, 4 Sept 2012, TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon, Lebong Pass, west side, 4265–4570 m (JF Duthie 5303, 2 Aug 1886; unknown type BM000565805<sup>1</sup> image); Kumaon, Bedang Pass [Sin La], 4875 m (RC Thakur 881, 13 Jul 1948; MICH 1498830<sup>1</sup> image); Kumaon, rocks on either side of the Ralam Pass, 4570–5180 m (JF Duthie 2677, 29 Aug 1884; isotype BM000926583<sup>1</sup> image, K000076980<sup>1</sup> image).

*Local abund.*: Rare.

*Ethnobot. use*: Detoxified leaves and tubers are used to treat stomach disorders and wounds.

**Delphinium denudatum** Wall. ex. Hook. f. & Thomson, Fl. Ind. 1: 49 (1855). Rau in Sharma *et al.* (eds.), Fl. India 1: 90 (1993). **Pl. 28.**

*Delphinium pauciflorum* Royle (1834), nom. illeg., non D. Don (1825).

NEP-L: Mudaulo, Nîlo bikh (मुडौलो, नीलो बिष). NEP: Nirvishî (निर्विषी).

HIN: Jadawār, Nirvishî (जदवार, निर्विषी). SAN: Apavishā, Nirvishā (अपविषा, निर्विषा).

Much branched perennial herbs, 40–80 cm tall, strigose above; lower leaves long-stalked, blades sub-orbicular, 3–5-parted; segments obovate, further lobed or toothed; inflorescence open panicle, widely branched, few-flowered but flowers more than one per branch; sepals grey-blue to violet, pubescent; follicles subglabrous.

*Habitat*: Shrubland, forest margins, dry hill slopes.

*Distribution*: E Afghanistan, W & C Himalaya (Pakistan to Nepal).

NEPAL: W & C; 1500–2500 m.

KSL: Bajhang and Humla in KSL Nepal, and neighboring Mugu; 1500–2500 m [also in Kumaon, Uttarakhand, India]. It is likely to be present in Darchula, Nepal.

*Representative specimens*. **BAJHANG**: Thogun Danda 1524 m (TB Shrestha 4111, 14 May 1965; US 03565001<sup>1</sup> image). **HUMLA**: Way to Syamne, near Simikot, 2400 m (SK Ghimire, RP Chaudhary & team P10150; 18 May 2010; TUCH<sup>1</sup>). **MUGU**: South of Jhyari, 2470 m (CA Pendry, S Baral, S Noshiro, S Rajbhandary, PP Kurmi, B Dell & B Adhikari JRS A90, 7 Jun 2008; E00397493<sup>1</sup> image, KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Kumaon (R Blinkworth Cat. no. 4719; K001039756<sup>1</sup> image).

*Local abund.*: Rare.

*Ethnobot. use*: Leaves and tubers are used in toothache and skin diseases.

**Delphinium himalayae** Munz, J. Arnold Arbor. 49: 145, t. 17H (1968). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 17 (1979). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 412 (2017). **Pl. 28.**

*Delphinium himalayense* Chowdhury ex Mukerjee, nom. nud.

DOZ: Alusî (अलुसी). NEP-L: Atis, Jaunde-mûlo (अतिस, जौडे-मूलो). NEP: Atis, Nirvishî (अतिस, निर्विषी).



Perennial herbs, 40–100 cm tall, sparsely retrorse-strigulose throughout; stem erect, simple; leaves few, ovate; lamina deeply 5-fid; segments broad, cuneate-obovate, further lobed and toothed; flowers many in a long one-sided raceme; sepals purplish blue, strigose; spur suberect; petals black, the upper bidentate, bristly at the apex; follicles hairy.

*Habitat*: Open hillsides, partial shady places, meadows, amongst juniper scrubs.

*Distribution*: Endemic to Nepal, W & C; 2000–4600 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura and Mugu; 2100–4600 m.

*Representative specimens*. **BAJHANG**: Manane Lekh, 3490 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915113, 14 Jul 2009; E00623892<sup>1</sup> image); Thogun Danda, 3800 m (MS Bista & DP Joshi 730, 27 Aug 1972; KATH<sup>1</sup>); Saipal, 4570 m (JEM Arnold 66, 19 Aug 1954; BM000894727<sup>1</sup> image). **BAJURA**: Berseni – Porakya, 2600 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9192302, 12 Aug 1991; TI) fide SHB (2013–2020); Khaptad National Park – Kaudegaon, 3000 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9192575, 28 Aug 1991; TI) fide SHB (2013–2020). **DARCHULA**: Kasoti – Chheti, 2620 m (PR Shakya, MK Adhikari & MN Subedi, 7977 II, 20 Jul 1984; KATH<sup>1</sup>); Chheti – Dethami Lekh, 2640–3350 m (MM Amatya & PM Regmi W793/82B, 8 Sept 1982; KATH<sup>1</sup>). **DARCHULA & BAJHANG**: Oathi – Chiltha, 1690–2120 m (MM Amatya & PM Regmi W 849/82; 12 Sept 1982; KATH<sup>1</sup>). **HUMLA**: Manal, above Dozam, 2700 m (SK Ghimire, RP Chaudhary & team P10500, 20 May 2010; TUCH<sup>1</sup>); between Kermi & Sallidanda, 2900 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1377, 14 Sept 2012; TUCH<sup>1</sup>); Talung Valley, 4300 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1354, 12 Sept 2012; TUCH<sup>1</sup>). **MUGU**: Ghurchi Lekh, between Lumsa & Nurma, 3048 m (O Polunin, WR Sykes & LHJ Williams 5128, 11 Aug 1952; KATH<sup>1</sup>).

*Local abund.*: Occasional to frequent in Darchula and Humla.

*Ethnobot. use*: Tubers are mostly collected for trade. Tubers are also locally used to treat cough and cold, fever, headache, vomiting, wounds and poisonings.

*Conserv. status*: NAT., Vulnerable (Tandon *et al.* 2001). LOC., Near Threatened. Threat is due to over-harvesting of tubers for trade. In trade, 'atis' represents several species, including *Delphinium himalayae*. Atis has been subjected to heavy commercial harvesting since past many years, with an annual quantity of tubers traded to be 1,800 kg in 1997/1998 from Darchula District alone (Pyakurel 2018). No information is available for the amount traded in recent years.

**Delphinium incisum** (Hook. f. & Thomson) Wall. ex Munz, J. Arnold Arbor. 48: 520 (1967). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 17 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 93 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 413 (2017).

*Delphinium ranunculifolium* Wall. ex Hook. f. & Thomson var. *incisum* Hook. f. & Thomson, Fl. Ind. 1: 51 (1855); *Delphinium elatum* L. var. *incisum* (Hook. f. & Thomson) Hook. f. & Thomson

NEP-L: Atis, Jaunde-mûlo, Nîlo bikh (अतिस, जौँडे-मूलो, नीलो बिष).

Like *D. himalayae* but leaf-lamina pentagonal, segments with narrower incised lobules; inflorescence racemose or few branched, each branch few flowered; flowers smaller; upper petals glabrous and entire.

*Habitat*: Open slope, meadows, open fields.

*Distribution*: W & C Himalaya (NW India, Nepal).

KSL: Bajhang and Humla in KSL Nepal, and neighboring Mugu; 2100–4600 m [also in Kumaon, Uttarakhand, India].

*Representative specimens.* **BAJHANG:** Nilkatti – Naya Odar, 3580 m (PR Shakya, MK Adhikari & MN Subedi 8250, 27 Jul 1984; KATH<sup>1</sup>). **HUMLA:** Daha Kharka, 3450 m (PR Shakya, MN Subedi & R Uprety 8742, 19 Aug 1985; KATH<sup>1</sup>). **MUGU:** Rara, 2880 m (PR Shakya, MN Subedi & R Uprety 8572, 8 Aug 1985; KATH<sup>1</sup>); Chankheli Lekh, 3400 m (PR Shakya, MN Subedi & R Uprety 8633, 14 Aug 1985; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon (N Wallich 4717; isotype BM000570581<sup>1</sup> image, isotype P00198623<sup>1</sup> image, K000692503<sup>1</sup> image); Kumaon (R Blinkworth 4717; K001039753<sup>1</sup> image).

**Delphinium kamaonense** Huth, Bull. Herbs. Boissier 1: 333 (1893). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 17 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 93 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 413 (2017). **Pl. 28.**

*Delphinium grandiflorum* L. var. *kamaonense* Huth ex Brühl & King

NEP-L: Mudaulo, Nīlo bikh (मुडौलो, नीलो बिष).

Perennial herbs, 20–60 cm tall; stem branched, subglabrous; leaf blade 5-parted, then 5-fid, the segments cuneate or narrower, laciniate; inflorescence open, widely-branched; flowers mostly 1 at the end of branches; sepals deep blue, spur straight or slightly curved; upper petals bluish to whitish, not darker than the sepals; follicles densely pilose.

*Habitat:* Forest margins, shrubberies, open slopes, moist grassy slopes.

*Distribution:* W & C Himalaya (NW India: Kumaon, Nepal), Tibetan Plateau, N & C China.

NEPAL: W & C; 2900–4500 m.

KSL: Humla in KSL Nepal; 2900–3500 m [Pithoragarh, Uttarakhand in KSL India]. It is likely also to be present in Darchula, Nepal.

*Representative specimens.* **HUMLA:** , Khagalgaun 2400–3600 m (Madhu KC M2; KATH<sup>1</sup>); near Salli Pass, 2950 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1408, 14 Sept 2012; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaun, Darma, Mulasia Ladh, 3350–3655 m (JF Duthie 5299, 5 Aug 1886; unknown type K000076966<sup>1</sup> image); Kumaun, Nipchang Valley in Darma, 3960–4265 m (JF Duthie 2675, 31 Aug 1884; isotype E00438682<sup>1</sup> image, unknown type K000076965<sup>1</sup> image).

*Local abund.:* Rare.

*Ethnobot. use:* Leaves and tubers are used in toothache and skin infections.

**Delphinium pyramidale** Royle, Ill. Bot. Him. Mts: 56 (1834). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 17 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 98 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 414 (2017).

*Delphinium elatum* L. var. *ranunculifolium* (Wall. ex Hook. f. & Thomson) Hook. f. & Thomson; *Delphinium hoffmeisteri* Klotzsch; *Delphinium pulchellum* Chaudhury ex Mukerjee, nom. nud.; *Delphinium ranunculifolium* Wall. ex Hook. f. & Thomson; *Delphinium speciosum* M. Bieb var. *pyramidale* (Royle) Mukerjee; *Delphinium speciosum* subsp. *ranunculifolium* (Wall. ex Hook. f. & Thomson) Brühl & King

NEP-L: Atis, Jaunde-mūlo (अतिस, जाँडे-मूलो).

Similar to *D. himalayae* but plant taller up to 1.5 m or more; stem glabrous or spreading-villous, usually more leafy; leaves larger; inflorescence branched, many-flowered; flowers somewhat smaller; sepals pubescent on both sides or on outer surface only; upper petal glabrous, lower ones bearded.

*Habitat:* Open slopes.

*Distribution:* Afghanistan, W & C Himalaya (Pakistan to Nepal), Tibetan Plateau.

NEPAL: W & C; 1600–3500 m.

KSL: Bajhang and Humla in KSL Nepal, and neighboring Doti and Mugu; 1700–3500 m. It is likely also to be present in Darchula, Nepal.

*Representative specimens.* **BAJHANG:** Talkot – Nayaodhar, 1680–3270 m (H Tabata, KR Rajbhandari & K Tsuchiya 9157, 22–23 Jul 1976; KYO) fide Rajbhandari & Rai (2017). **DOTI:** Khaptad, 3300 m (MS Bista & DP Joshi 240, 3 Aug 1972; KATH<sup>1</sup>). **HUMLA:** Between Kermi & Sallidanda, 2900 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1377B, 14 Sept 2012; TUCH<sup>1</sup>); **MUGU:** Ghurchi Lekh, between Lumsa & Nurma, 3350 m (O Polunin, WR Sykes & LHJ Williams 5120, 11 Aug 1952; A 01093193<sup>1</sup> image, BM).

*Local abund.:* Occasional to frequent.

**Delphinium vestitum** Wall. ex Royle, Ill. Bot. Himal. Mts. 55 (1834). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 17 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 101 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 415 (2017). **PI. 28.**

*Delphinium rectivenium* Royle; *Delphinium vestitum* var. *stenolobum* Brühl ex Huth

NEP-L: Kālo atis (कालो अतिस). NEP-N/NEP: Mauro-mūlo, Maure-mūlo (मौरो-मूलो, मौरे-मूलो).

ENG: Hairy delphinium, Himalayan clothed delphinium. HIN-L: Juhā, Juhī (जुहा, जुही).

Perennial herbs, 40–100 cm tall, with long spreading or retrorse hairs throughout; stem erect, simple or branched; leaf-blade suborbicular, stiff-hairy, shallowly 3–7-lobed; the lobes broadly cuneate-ovate to rounded, coarsely incised-dentate; uppermost leaves smaller; flowers in long dense racemes; sepals purplish blue to dull-purple, hairy; petals black, lower ones bearded; follicles hairy.

*Habitat:* Forest margins, open slopes, open grassland, thickets.

*Distribution:* W & C Himalaya (N Pakistan to Nepal), Tibetan Plateau.

NEPAL: W, C & E; 2400–4700 m.

KSL: Darchula and Humla in KSL Nepal; 3200–4300 m [Bageshwar and Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **DARCHULA:** Above Dhauliodar, 3450 m (SK Ghimire, B Awasthi, S Budha Magar, B Jnawali, S Nepal, MR Paudeyal & DJ Chapagain ANCA-3237, 4 Sept 2017, TUCH<sup>1</sup>); Lolu, Thadapani, 3700 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-722, 18 Oct 2014; TUCH<sup>1</sup>). **HUMLA:** Chungsa Valley, Sengjungma, 3600 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1310, 14 Sept 2012; TUCH<sup>1</sup>); Kyermi [Kermi], 3655 m (FM Bailey 100, 6 Aug 1936; E00900566<sup>1</sup> image); above Juma Kharka, 3850 m (PR Shakya, MN Subedi & R Uprety 8738, 18 Aug 1985; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon (N Wallich 4715B; isoelectotype E00438691<sup>1</sup> image, BM000565807<sup>1</sup> image); Kumaon, Pindari, 3655 m (R Strachey & JE Winterbottom 1; P00201235<sup>1</sup> image).

*Local abund.:* Frequent.

*Ethnobot. use:* The plant is considered as poisonous. Tubers are used to treat wounds.

**Delphinium williamsii** Munz, J. Arnold Arbor. 48: 541, t. 11, l (1967). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 18 (1979). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 415 (2017).

Perennial herbs close to *D. kamaonense*, but differs in having variegated leaves, centre portion being whitish; and with dull white flowers with greenish tips to outside (flowers sometimes pale pink or very dull purple), and a longer spur.

*Habitat:* Open slopes, dry banks of cultivated fields.

*Distribution:* Endemic to Nepal, W; 1500–2600 m.

KSL: Bajhang, 1500–2000 m.

*Representative specimens.* **BAJHANG:** Environs de Chainpur, 1500 m (JF Dobremez 1988, 27 Apr 1973; E00701601<sup>1</sup> image); Bauli Gad, 2000 m (JF Dobremez 2041, 4 May 1973; E00701600<sup>1</sup> image).

**Eriocapitella** Nakai, J. Jap. Bot. 17: 267 (1941).

**Eriocapitella rivularis** (Buch.-Ham. ex DC.) Christenh. & Byng, Global Fl. 4: 75 (2018). **Pl. 26.**

*Anemone rivularis* Buch.-Ham. ex DC., Syst. Nat. 1: 211 (1817); *Anemone dubia* Wall. ex Wight & Arn.; *Anemone geraniifolia* Wall., nom. nud.; *Anemone hispida* Wall., nom. nud.; *Anemone leveillei* Ulbr.; *Anemone longipes* Tamura; *Anemone saniculifolia* H. Lév.; *Anemone wightiana* Wall. ex Wight & Arn.; *Anemonidium rivulare* (Buch.-Ham. ex DC.) Starod.

NEP-L: Kaude-phûl (कउडे-फूल). NEP: Bāgh-pāile, Kangrāte (बाघ-पाइले, कङ्ग्राते).

ENG: River anemone. HIN: Agelī, Charbini, Maruiri (अगेली, चर्बिनि, मारुरी). TIB: supka (ལུབ་ཀ་པ་པ་), supka karmo (ལུབ་ཀ་པ་པ་པ་).

Perennial herbs; stem 30–100 cm; basal leaves sub-orbicular, ternate to the base, segments further lobed and toothed, silky-haired; flowers white in lax umbellate cyme, few to many-flowered.

*Habitat*: Forest margins, grassy slopes, moist meadows, marshy land, streamsides.

*Distribution*: Himalaya (India, Nepal Bhutan), Tibetan Plateau, Peninsular India, Sri Lanka, C China, mainland SE Asia to Indonesia.

NEPAL: W, C & E; 1600–4300 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura and Doti; 1900–4100 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Between Panalta & Kuwa, 1900–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0318, 13 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>); Khaptad, 2900 m (NK Bhattarai 91/913, 22 Jun 1991; KATH<sup>1</sup>). **BAJURA**: Tolebhir – Berma (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160435, 9 Aug 1991; TI) fide SHB (2013–2020). **DARCHULA**: Dhauliodar, way to Pilkanda, 3400 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-2073, 1 Aug 2016; TUCH<sup>1</sup>). **DOTI**: Khaptad National Park, trail between Jhigrana & Bichpani, 2876 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20913020, 1 Jul 2009; E, KATH<sup>1</sup>); between Rhikula & Chuyadhara, 2850 m (H Tabata, KR Rajbhandari & K Tsuchiya 1034, 8 Jul 1976; KATH<sup>1</sup>). **HUMLA**: Salli-Chungsa, below Singjungma, 3200 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1687, 14 Sept 2012; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Namik, Kuamon, 2285 m (R Strachey & JE Winterbottom 7; P00158379<sup>1</sup> image).

*Local abund.*: Frequent.

*Ethnobot. use*: Root juice or paste is applied to treat wounds.

**Eriocapitella rupicola** (Cambess.) Christenh. & Byng, Global Fl. 4: 75 (2018). **Pl. 26.**

*Anemone rupicola* Cambess. in Jacquem., Voy. Inde 4 (Bot.): 5, t. 2 (1838).

ENG: Cliff anemone, Rock anemone. TIB: supka karmo (ལུབ་ཀ་པ་པ་པ་).

Perennial herbs; stem to 30 cm, silky hairy; basal leaves ternate, long-hairy; leaflets broadly ovate to obovate, 3-lobed, segments sharply toothed; flowers solitary or rarely 2, white, light purple on the back.

*Habitat*: Wet forest floors, open places, moist stony cliffs, gravelly slopes, streamsides.

*Distribution*: E Afghanistan, Pakistan, Himalaya (Kashmir to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 2700–4800(–5300) m.

KSL: Bajhang, Darchula and Humla in KSL Nepal; 2800–4300 m [Pithoragarh District, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Between Chaurapani & Dahachaur, 3696 m (H Tabata, KR Rajbhandari & K Tsuchiya 2036, 1 Aug 1976; KATH<sup>1</sup>); Saipal, 3880 m (H Tabata, KR Rajbhandari & K Tsuchiya 1626, 25 Jul 1976; KATH). **DARCHULA:** Chheti, 2896 m (TB Shrestha 4226, 20 Jun 1965; KATH<sup>1</sup>, US 03673980<sup>1</sup> image); Chheti (Marma), 3048 m (JDA Stainton 4944, 20 Jun 1965; KATH<sup>1</sup>). **HUMLA:** Dozam Khola near Simikot, 3658 m (O Polunin, WR Sykes & LHJ Williams 4234, 31 May 1952; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Martoli, Kumaon, 2743 m (RC Thakur 714, 14 Jun 1948; MICH 1498650<sup>1</sup> image); Kumaon, 3048–4267 m (T Anderson s.n., May 1857; P00158519<sup>1</sup> image).

**Eriocapitella vitifolia** (Buch.-Ham. ex DC.) Nakai, J. Jap. Bot. 17: 269 (1941). **Pl. 26.**

*Anemone vitifolia* Buch.-Ham. ex DC., Syst. Nat. 1: 210 (1817); *Anemone elegans* Decne.; *Eriocapitella elegans* (Decne.) Nakai

NEP-L/NEP: Kapāse (कपासे).

Perennial herbs; stem erect, stout, up to 100 cm, often branched above, white hairy; basal leaves long-petiolate; lamina orbicular-cordate, shallowly 3–7-lobed, segments sharply toothed, white-wooly beneath; involucre leaves much smaller; flowers white, many in lax umbellate cyme.

*Habitat:* Forests, forest margins, shrubland, streamsides, open rocky slopes, roadsides.

*Distribution:* Pakistan, Himalaya (Kashmir to NE India), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 1200–3300 m.

KSL: Baitadi, Bajhang and Darchula in KSL Nepal, and neighboring Bajura and Doti; 1200–2600 m [Pithoragarh District, Uttarakhand in KSL India].

*Representative specimens.* **BAITADI:** Satbanj, 1900 m (I Sharma, R Joshi, R Uprety & I Pandey 607, 21 Sept 1981; KATH); Shribhwar, 2000 m (LP Kattel 1232, 14 Sept 1982; KATH<sup>1</sup>); Shribhwar, 2440 m (TR Pandey & GD Bhatt 2016684, 6 Jun 2016, KATH<sup>1</sup>). **BAJHANG:** Kaphalseri – Gareko Lekh, 1180 m (MM Amatya & PM Regmi W 860/82, 16 Sept 1982; KATH<sup>1</sup>); Bajhang, 1500 m (RK Uprety & NK Bhusal 229, 8 Aug 1983; KATH<sup>1</sup>); between Panalta & Kuwa, 1900–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0278, 13 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **DARCHULA:** Rapla to Tangbang, 1800 m (KR Rajbhandari & KJ Malla 5589, 26 Aug 1980; KATH<sup>1</sup>); Khar-4, 2070 m (BB Shrestha, M Pandey & R Chhetri 137, 27 Sept 2015; TUCH<sup>1</sup>); Chameliya River, between Ngali & Sithi, 2300 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal 606, 16 Oct 2014; TUCH<sup>1</sup>); Khandeshowari, 2600 m (CK Subedi, J Gurung & S Thapa 3003, 16 Jun 2014; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA):** Budi, Kumaon, 2438 m (RC Thakur 910, 22 Jul 1948; L.1736277<sup>1</sup> image, MICH 1498644<sup>1</sup> image).

*Local abund.:* Occasional to frequent.

*Ethnobot. use:* Root juice or paste is applied to treat wounds and eye infection.

**Halerpestes** E.L. Greene, Pittonia. 4: 207 (1900).

**Halerpestes tricusps** (Maxim.) Hand.-Mazz., Acta Horti Gothob. 13: 135 (1939). Rau in Sharma *et al.* (eds.), Fl. India 1: 103 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 416 (2017).

*Ranunculus tricusps* Maxim., Fl. Tangut.: 12 (1889); *Halerpestes tricusps* var. *variifolia* (Tamura) W.T. Wang; *Halerpestes variifolia* (Tamura) Tamura; *Ranunculus tricusps* var. *variifolia* (M. Tamura) H.B. Naithani & S. Biswas

TIB: churuk bellak (ཆུ་རུག་ཕྱེལ་ལག་).

Small perennial herbs, with slender creeping stolons producing rosettes of leaves; plant glabrous; leaves all basal, petiolate; lamina broadly ovate or pentagonal, shallowly to deeply 3-lobed or 3-partite; scapes up to 3 cm, shorter than leaves; flowers solitary; sepals green; petals 5–8, yellow.

*Habitat:* Damp places by rivers or lakes, swamps, wet meadows.

*Distribution:* Himalaya (NW India to Bhutan), Tibetan Plateau, N & C China, Mongolia.

NEPAL: W, C & E; 2600–4700 m.

KSL: Known from Pulan Xian in KSL China and neighboring Mugu District, Nepal. It is likely also to be present in upper Humla, Nepal.

*Representative specimens.* MUGU: Mugu, 3400 m (PR Shakya & B Roy 5574, 8 Jun 1980; KATH<sup>1</sup>). XIZANG (CHINA): Pulan Xian, 30.29° N 81.17° E (Qinghai-Tibet team vegetation group 6627265, 1975; PE) fide Kong & Yang (2019).

## **Oxygraphis** Bunge, Verz. Altai Pfl. 46 (1836).

**Oxygraphis endlicheri** (Walp.) Bennet & Sum. Chandra, Ind. For. 108: 374 (1982). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 416 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 188 (2018). **Pl. 28.**

*Callianthemum endlicheri* Walp., Repert. Bot. Syst. 1: 33 (1842); *Oxygraphis polypetala* (Royle) Hook. f. & Thomson, nom. illeg.; *Ranunculus polypetalus* Royle (1834), nom. illeg., non Raf. (1817); *Ranunculus royleanus* Qureshi & Chaudhri

Dwarf stemless perennial herbs; plant glabrous; roots fibrous; leaves all basal, petiolate; lamina ovate to orbicular or reniform, entire, crenate or shallowly lobed; scapes several or solitary, 2–7 cm, 1-flowered; sepals 5, pale green, enlarged and becoming reddish after flowering; petals 10–15, yellow.

*Habitat:* Moist meadows, forest margins, damp places.

*Distribution:* Himalaya (N Pakistan to Bhutan), Tibetan Plateau.

NEPAL: W, C & E; 2200–5000 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura and Doti; 2700–5000 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Khaptad, 2743–3048 m (TB Shrestha 4044, 31 Apr 1965; US 03679048<sup>1</sup> image); Surmasarowar, 4100 m (PR Shakya, LR Sharma & KR Amatya 6377A, Jul 1981; KATH<sup>1</sup>). **DARCHULA:** Upper Chameliya, Thadapani, 4250 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1421, 23 Jul 2015; TUCH<sup>1</sup>). **DOTI:** Khaptar, 3000 m (JF Dobremez 1941, 23 Apr 1973; E, KATH). **HUMLA:** Chungsa Valley, Seliman, 4650 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1173, 5 Sept 2012; TUCH<sup>1</sup>); Chungsa Valley, Nyalu-La 5010 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama 1288, 10 Sept 2012; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA):** Martoli, Kumaon, 3353 m (WN Koelz 20215, 4 May 1948; MICH 1498888<sup>1</sup> image).

*Local abund.:* Frequent at higher elevations.

## **Paraquilegia** J.R. Drumm. & Hutch., Bull. Misc. Inform. Kew : 156 (1920).

**Paraquilegia microphylla** (Royle) J.R. Drumm. & Hutch., Bull. Misc. Inform. Kew 1920: 157 (1920). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 18 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 111 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 417 (2017). **Pl. 29.**

*Isopyrum microphyllum* Royle, Ill. Bot. Himal. Mts. 54, t. 11, f. 4 (1834).

TIB: yumo deujin (ཡུམོ་ཐདུའི་རྩིན་པ་).

Densely tufted perennial herbs, woody at base; rootstock stout, covered with bases of old petioles; leaves many, basal, glabrous, 2-ternate, long petiolate; scapes erect, as long as or little longer than

leaves; flowers solitary, terminal, cup-shaped; sepals 5, white to lilac; petals 5, yellow, shorter than sepals.

*Habitat*: Cliffs, open gravelly slopes, rock ledges, rock crevices.

*Distribution*: C & N Asia, Himalaya (NW India to Bhutan), Tibetan Plateau, N & C China, Japan.

NEPAL: W & C; 3400–4900 m.

KSL: Darchula and Humla in KSL Nepal, and neighboring Mugu; 3500–4900 m.

*Representative specimens*. **DARCHULA**: East of Chhety, 3505 m (TB Shrestha 4249, 22 Jun 1965; US 03559891<sup>1</sup> image); Mechhra, 3640 m (PR Shakya, MK Adhikari & MN Subedi 8041, 23 Jul 1984; KATH<sup>1</sup>). **HUMLA**: Above Seding, Changla Khola, Dozam, 4000 m (SK Ghimire P11550, 23 May 2010; TUCH<sup>1</sup>); Taktse, Talung Valley, 4300 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1688, 11 Sept 2012; TUCH<sup>1</sup>). **MUGU**: Above Wangri, 3500 m (PR Shakya & B Roy 5696, 14 Jun 1980; KATH<sup>1</sup>).

*Local abund.*: Frequent at higher elevations.

*Ethnobot. use*: Plant juice is applied to treat wounds and warts.

## **Ranunculus** L., Sp. Pl. 1: 548 (1753).

**Ranunculus adoxifolius** Hand.-Mazz., Acta H. Gotob. 13: 152 (1939). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 18 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 115 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 418 (2017). **PI. 29.**

*Ranunculus caespitosus* Wall. ex Hook. f. & Thomson (1855), nom illeg., non Thuill. (1799).

Perennial herbs; roots fibrous; stems many, suberect or ascending, 5–20 cm, branched from base.

*Habitat*: Meadows, damp turf by streams, gravelly river bed, shrubland.

*Distribution*: Himalaya (Pakistan to Bhutan), Tibetan Plateau.

NEPAL: W, C & E; 3100–4400 m.

KSL: Bajhang in KSL Nepal; 4100–4400 m.

*Representative specimens*. **BAJHANG**: Kalagad – Dubai Pass, 4100 m (PR Shakya, MK Adhikari & MN Subedi 8122, 24 Jul 1984; KATH<sup>1</sup>). **HUMLA**: Chungsa Valley, Dharmashala, 4300–4400 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1032, 3 Sept 2012; TUCH<sup>1</sup>).

*Local abund.*: Occasional to frequent.

**Ranunculus arvensis** L., Sp. Pl. 1: 555 (1753). Rau in Sharma *et al.* (eds.), Fl. India 1: 115 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 418 (2017).

ENG: Corn buttercup.

Annual herbs; stem erect, 10–50 cm high, branched, sparsely hairy above.

*Habitat*: Sandy places along roads, moist places.

*Distribution*: Europe, N Africa, W & C Asia, Afghanistan, W Himalaya; naturalized elsewhere.

NEPAL: W; 1300–1600 m (naturalized).

KSL: Bajhang in KSL Nepal, and nearby Dadeldhura; 1300–1500 m. It is likely also to be present in Baitadi, Nepal.

*Representative specimens*. **BAJHANG**: Chir, 1300 m (P Pradhan, RK Uprety, N Pradhan & N Dabadi 1314, 14 Apr 1984; KATH<sup>1</sup>). **DADEL DHURA**: Dotikhola, 1510 m (P Pradhan, RK Uprety, N Pradhan & N Dabadi 1104, 1 Apr 1984; KATH<sup>1</sup>).

**Ranunculus brotherusii** Freyn, Bull. Herbs. Boiss. 6: 885 (1898). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 19 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 116 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 418 (2017). **PI. 29.**

TIB: chetsa (ཇེ་སྐ་), gatsa (གཏ་སྐ་).

Perennial herbs; roots fibrous; stem solitary or tufted, suberect or ascending, 5–25 cm; sparsely branched.

*Habitat*: Open place in forests, grassy slopes, moist meadows, streamsides.

*Distribution*: C Asia, Himalaya (India, Nepal, Bhutan), Tibetan Plateau, N & C China.

NEPAL: W, C & E; 2600–5000 m.

KSL: Darchula and Humla in KSL Nepal, and neighboring Mugu; 3200–4700 m.

*Representative specimens*. **DARCHULA**: Dhauliodar, way to Pilkanda, 3400 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain 2074, 1 Aug 2016; TUCH<sup>1</sup>). **HUMLA**: Ridge above Simikot, 3760 m (CA Pendry, SR Baral, S Noshiro, S Rajbhandary, PP Kurmi, B Dell and B Adhikari JRS A222, 21 Jun 2008; E, KATH<sup>1</sup>); Chungsa Valley, Khyunkar La, 4650 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH 1287, 9 Sept 2012; TUCH). **MUGU**: Mugu, 3400 m (PR Shakya & B Roy 5577, 8 Jun 1980; KATH<sup>1</sup>).

*Local abund.*: Occasional to frequent.

**Ranunculus diffusus** DC., Prodr. 1: 38 (1824). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 19 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 119 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 419 (2017). **PI. 29.**

*Ranunculus hydrocotylodes* Wall., nom. nud.; *Ranunculus mollis* Wall. ex D. Don; *Ranunculus nepalensis* Spreng.; *Ranunculus obiectus* Wall., nom. nud.; *Ranunculus vitifolius* Royle ex D. Don

NEP: Mardi-jhār (मर्दि-झार).

ENG: Spreading buttercup.

Perennial herbs; roots fibrous; stems prostrate or decumbent, branched, pubescent.

*Habitat*: Grassy slopes, rocks, streamsides.

*Distribution*: Afghanistan, Pakistan, Himalaya (Kashmir to Bhutan), Tibetan Plateau, SC China, mainland SE Asia.

NEPAL: W, C & E; 1200–4200 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura and Doti; 1800–4050 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: near Army Camp, 1750 m (P Pradhan, RK Uprety, N Pradhan & N Dubadi 1248, 4 Sept 1984; KATH<sup>1</sup>). **BAJURA**: Berseni to Porakya (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9191324, 12 Aug 1991; TI) fide SHB (2013–2020). **DARCHULA**: Khar VDC-5, 1840 m (BB Shrestha, M Pandey & R Chhetri 110, 27 Sept 2015; TUCH<sup>1</sup>); Paripatal Community Forest, Khar, 2211 m (CK Subedi, J Gurung & M Pandey 30, 4 Jun 2015; KATH<sup>1</sup>); upper Chameliya, Lolu, below Kalidhunga Tal, 4050 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-776, 23 Oct 2014; TUCH<sup>1</sup>). **DOTI**: Napani, 2330 m (H Tabata, KR Rajbhandari & K Tsuchiya 897, 1 Jul 1976; KATH). **UTTARAKHAND (INDIA)**: Kalimundi [Kalamuni], Kumaon, 2710 m (R Strachey & JE Winterbottom 11; 1843; P00186277<sup>1</sup> image).

*Local abund.*: Frequent.

**Ranunculus distans** Royle, Ill. Bot. Himal. Mts. : 53 (1834).

*Ranunculus laetus* Wall. ex Royle (1834), nom. illeg., non Salisb. (1796); *Ranunculus pseudolaetus* Tamura

Perennial herbs, with creeping rhizomes bearing fibrous roots; stems up to 1.5 m, pubescent.



*Habitat*: Open grassy slopes, forests, marshy places.

*Distribution*: C Asia, Afghanistan, Pakistan, Himalaya (Kashmir to Bhutan), Tibetan Plateau, Myanmar, SC China.

NEPAL: W; 1100–3000(–3800) m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura and Dadeldhura; 1500–3000 m.

*Representative specimens*. **BAJHANG**: Jimkot – Khaptad National Park, 1480–2980 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9161029, 26 Aug 1991; E, KATH<sup>1</sup>, TI<sup>1</sup> image); between Panalta & Kuwa, 1900–2000 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0319, 13 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJURA**: Tolebhir – Berma (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9191274, 9 Aug 1991; TI) fide SHB (2013–2020). **DADEL DHURA**: Gairadori, 1750 m (LP Kattel 128, 31 Dec 1980; KATH<sup>1</sup>). **DARCHULA**: Chamaliya Nadi, below Ghunsa, 1969 m (H Ikeda, S Noshiro, K Yonekura, K Akai, O Yano, N Yamamoto, CA Pendry, A Elliott, M Pathak & GD Bhatt 1217013, 11 Jul 2012; KATH<sup>1</sup>).

*Local abund.*: Occasional to frequent.

**Ranunculus himalaicus** Tamura, J. Geobot. 26(3): 68, 9 (1978). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 420 (2020). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 328 (2018). **PI. 29**.

Perennial aquatic herbs; stems spreading, branched; submerged leaves divided into capillary segments; floating leaves deeply or shallowly lobed with broad segments; flowers white; base of petals yellow.

*Habitat*: Shallow peaty lakes, glacial lake.

*Distribution*: Endemic to Nepal, W; 4300–5650 m.

KSL: Bajhang and Humla in KSL Nepal; 4300–5650 m.

*Representative specimens*. **BAJHANG**: Saipal, 5.5 miles NE of Saipal, 5630 m (JEM Arnold 282, 26 Aug 1954; paratype BM) fide Rajbhandari *et al.* (2019). **HUMLA**: Talung Valley, near Ning Tsho, 4300 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1341; 12 Sept 2012, TUCH<sup>1</sup>); Sisne Himal, 4570 m (O Polunin, WR Sykes & LHJ Williams 257, 23 Jul 1952; holotype BM000521594<sup>1</sup> image).

*Local abund.*: Frequent in Talung Valley, Humla; not known for other regions.

*Note*: This taxon has remained under doubtful status as Kadota in 1991 used the same epithet (*Ranunculus himalaicus*) to describe another species from Eastern Nepal (Kadota 1991), the later name automatically becomes illegitimate. The available online resources (e.g., Catalogue of Life and Plants of the World Online, but GBIF regarded Tamura's species as 'doubtful'), however, recognize only Kadota's species and do not even mention the species described by Tamura. However, in a recent paper, Wiegand *et al.* (2017) treated *Ranunculus himalaicus* Tamura (with a question mark) as a synonym under *Ranunculus mongolicus* (Krylov) Serg. Both of these taxa are morphologically close, but are geographically far apart. Even *R. mongolicus* has been placed under the synonymy of *R. aquatilis* L. (Catalogue of Life 2021). Recent Nepalese publications (Rajbhandari & Rai 2017; Shrestha *et al.* 2018; Rajbhandari *et al.* 2019), however, accepted *R. himalaicus* Tamura as a distinct species endemic to Nepal. Therefore, we follow the Nepalese works to accept Tamura's circumscription of this taxon.

**Ranunculus hirtellus** Royle, Ill. Bot. Himal. Mts.: 53 (1834). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 19 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 121 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 420 (2017). **PI. 29**.

*Ranunculus attenuatus* Royle; *Ranunculus glabratus* Hook. f. & Thomson

NEP-L: Tite-phul (तीते-फूल).

Perennial herbs; roots fibrous; stems erect or decumbent, 5–25 cm, simple or branched, puberulent.

*Habitat:* Moist places, open pastures, shady floors, open fields, weedy places.

*Distribution:* E Afghanistan, Pakistan, Himalaya (Kashmir to NE India: Sikkim), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; (2200–)2800–5000(–5500) m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Doti and Mugu; 2200–3900 m [Pithoragarh, Uttarakhand and neighboring area in KSL India].

*Representative specimens.* **BAJHANG:** Thogudanda – Kaligad, 3658 m (TB Shrestha 4186, 10 Jun 1965; KATH<sup>1</sup>); Surmasarovar, 3800 m (PR Shakya, LR Sharma & KR Amatya 6363; KATH). **DARCHULA:** Khandeswori – Kautel Gad, 2200 m (PR Shakya, MK Adhikari & MN Subedi 7927, 19 Jul 1984; KATH<sup>1</sup>); Chameliya River, between Simar & Domule, 2800 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1086, 18 Jul 2015; TUCH<sup>1</sup>); Thadapani, 3824 m (KM Ghimire & M Adhikari 1023, 17 Jul 2016; TUCH<sup>1</sup>). **DOTI:** ? Khaptad (JF Dobremez 1917; 22 Apr 1973; E00904306) fide RBGE (2018); Khaptar forest (Bis Ram 512, 2 Jun 1929; BM). **MUGU:** Pina – Ghurchi, 3200 m (PR Shakya, MN Subedi & RK Uprety 8793, 23 Aug 1985; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** District de Kumaon, Himalaya boreali-occidental (T Anderson s.n.; P00186450<sup>1</sup> image); Kumaon, above Lahor [Lohar], 2895 m (R Strachey & JE Winterbottom 6; P00186470<sup>1</sup> image); Kumaon, Milum Glacier, 3658 m (R Strachey & JE Winterbottom 7; P00186471<sup>1</sup> image).

*Local abund.:* Frequent to common in Darchula.

**Ranunculus hirtellus** var. **leiocarpus** Tamura in Kitamura, Fl. Afghanistan: 130 (1960). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 420 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 328 (2018).

Perennial herbs; roots fibrous.

*Habitat:* Open moist places, screes.

*Distribution:* Afghanistan, Nepal.

NEPAL: W, C & E; 3100–4200 m.

KSL: Bajhang in KSL Nepal; 4150 m.

*Representative specimen.* **BAJHANG:** Kariganga – Allechaur, 4150 m (H Tabata, KR Rajbhandari & K Tsuchiya 1867, 31 Jul 1976; KYO) fide Tamura (1986).

**Ranunculus longicaulis** Ledeb. ex A. Spreng., Tent. Suppl.: 15 (1828). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 421 (2017). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 328 (2018). **PI. 29.**

*Ranunculus longicaulis* C.A. Mey. (1830), nom. illeg.; *Ranunculus nephelogenes* Edgew. var. *longicaulis* (Trautv.) W.T. Wang; *Ranunculus pulchellus* C.A. Mey. var. *longicaulis* Trautv.

Perennial herbs; roots fibrous; stems elongated, up to 30 cm, branched, mostly glabrous; leaves ovate or linear-lanceolate, entire; flowers solitary, terminal; petals as long as or little longer than sepals.

*Habitat:* Moist meadows, swamps, streamsides.

*Distribution:* C & N Asia, Afghanistan, W & C Himalaya (N Pakistan to Nepal), Tibetan Plateau, N China, Mongolia.

NEPAL: W & C; 3000–4500 m.

KSL: Humla in KSL Nepal; 3500–3700 m.

*Representative specimens.* **HUMLA:** Tugling, Changla Khola Valley, Dozam, 3520 m (SK Ghimire, RP Chaudhary & team P10681, 21 May 2010; TUCH); Dozam Khola, near Simikot, 3650 m (O Polunin, WR Sykes & LHJ Williams 4238, 31 May 1952; KATH<sup>1</sup>).

*Local abund.:* Frequent in Changla Khola Valley, Humla.

**Ranunculus membranaceus** Royle, Ill. Bot. Himal. Mts. 53 (1834). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 328 (2018).

*Ranunculus pulchellus* C.A. Mey. var. *membranaceus* (Royle) Mukerjee; *Ranunculus pulchellus* var. *sericeus* Hook. f. & Thomson

Perennial herbs, densely silky pubescent; roots fibrous; stems 5–10 cm, simple; radical leaves lanceolate, entire or crenate or shallowly 2–3 lobed near apex; cauline leaves deeply divided (Yonekura 2008).

*Habitat*: Alpine meadows, gravelly places, dry boulder slopes, damp turf by stream.

*Distribution*: Pakistan, Himalaya (Kashmir to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 3900–5600 m.

KSL: Darchula and Bajhang in KSL Nepal [Pithoragarh, Uttarakhand in KSL India]; 3950–4600 m.

*Representative specimen*. **BAJHANG**: Kaliganga, 3940 m (H Tabata, KR Rajbhandari & K Tsuchiya 1851, 31 Jul 1976; KYO) fide Tamura (1986). **UTTARAKHAND (INDIA)**: Kumaon, Byans, 4267–4572 m (JF Duthie 5292, 1 Aug 1886; K000692693<sup>1</sup> image).

**Ranunculus membranaceus** Royle var. **stracheyanus** (Maxim.) Yonek. in H. Ohba, Y. Iokawa & L.R. Sharma, Fl. Mustang [Nepal]: 89 (2008). Shrestha *et al.*, Handbk. Fl. Pl. Nepal 1: 328 (2018).

*Ranunculus affinis* R. Br. var. *stracheyanus* Maxim., Fl. Tangut.: 14 (1889); *Ranunculus popovii* Ovcz. var. *stracheyanus* (Maxim.) W.T. Wang; *Ranunculus pulchellus* C.A. Mey. var. *stracheyanus* (Maxim.) Hand.-Mazz.

Perennial herbs; roots fibrous; stems 5–15 cm, simple or branched, white puberulent; radical leaves elliptic, 3–5-lobed; cauline leaves more finally dissected into narrow linear segments (Yonekura 2008).

*Habitat*: Alpine meadows, grassy slopes, among rocks, streamsides.

*Distribution*: C & E Himalaya (Nepal to Bhutan), Tibetan Plateau, NW & C China.

NEPAL: W, C & E; 3000–5600 m.

KSL: Bajhang in KSL Nepal; 4100–4200 m.

*Representative specimen*. **BAJHANG**: Kaliganga to Allechaur, 4150 m (H Tabata, KR Rajbhandari & K Tsuchiya 1867-bis, 31 Jul 1976; KYO) fide Tamura (1986).

**Ranunculus microphyllus** Hand.-Mazz., Symb. Sin. 7: 299 (1931). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 421 (2017).

*Ranunculus bonatianus* Ulbr.; *Ranunculus ficariifolius* H. Lévl. & Vaniot; *Ranunculus flaccidus* Hook. f. & Thomson (1855), nom illeg., non Pers. (1795).

Prostrate or decumbent perennial herbs, forming dense patches, sparsely puberulent or subglabrous.

*Habitat*: Moist stony places in forests, forest margins, damp grassland, moist meadows, streamsides.

*Distribution*: Himalaya (N India [Kumaon, Sikkim], Nepal), S China, SE Asia (Thailand).

NEPAL: W, C & E; 2500–4200 m.

KSL: Known from Pithoragarh District, Uttarakhand in KSL India, and neighboring Doti District, Nepal; c. 3000 m. It is likely also to be present in KSL Nepal.

*Representative specimens*. **DOTI**: Khaptad, 3000 m (H Tabata, KR Rajbhandari & K Tsuchiya 1112, 9 Jul 1976; KYO) fide Tamura (1986). **UTTARAKHAND (INDIA)**: Kumaon, Madhari pass (R Strachey & JE Winterbottom s.n.; 11 May 1848; *Ranunculus flaccidus* CAL) fide BSI (2021); Kumaon, above Lohar, 3048 m (R Strachey & JE Winterbottom 2; BM000564412<sup>1</sup> Image, isoelectotype K000357850<sup>1</sup> image, P00186410<sup>1</sup> image).

**Ranunculus munroanus** J.R. Drumm. ex Dunn, Bull. Misc. Inform. Kew 1925(6): 279 (1925). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 19 (1979). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 422 (2017).

*Ranunculus munroanus* var. *minor* Tamura

Perennial herbs; roots fibrous; stem 5–20 cm, simple or branched.

*Habitat*: Alpine slopes, meadows, damp crevices, moist stony places.

*Distribution*: N Pakistan, W & C Himalaya (Kashmir to Nepal), Tibetan Plateau.

NEPAL: W & C; 3500–4300 m.

KSL: Bajhang in KSL Nepal; 4200 m.

*Representative specimen*. **BAJHANG**: Between Saipal & Aletsoura, 4210 m (H Tabata, KR Rajbhandari & K Tsuchiya 1764, 26 Jul 1976; KYO) fide Tamura (1986).

**Ranunculus natans** C.A. Mey. in Ledeb., Fl. Altaic. 2: 315 (1830). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 19 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 124 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 422 (2017).

*Ranunculus hyperboreus* Rottb. var. *natans* (C.A. Mey.) Regal

Perennial subaquatic herbs; roots fibrous; stems 10–40 cm, almost glabrous, branched.

*Habitat*: Wet banks, marshes, shallow water of small streams.

*Distribution*: C & N Asia, Afghanistan, Pakistan, W & C Himalaya (Kashmir to Nepal), Tibetan Plateau, N China.

NEPAL: W & C; 2600–3800 m.

KSL: Humla in KSL Nepal; c. 3800 m.

*Representative specimen*. **HUMLA**: Dozam Khola, near Simikot, 3810 m (O Polunin, WR Sykes & LHJ Williams 4249, 1 Jun 1952; BM).

**Ranunculus pulchellus** C.A. Mey. in Ledeb., Fl. Altaic. 2: 333 (1830). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 20 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 125 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 422 (2017).

Perennial herbs; roots fibrous; stems erect, 5–20 cm, simple or branched, glabrous or nearly puberulent.

*Habitat*: Moist meadows, river beds.

*Distribution*: C & N Asia, Afghanistan, Pakistan, Himalaya (Kashmir to Bhutan), Tibetan Plateau, N & C China, Mongolia.

NEPAL: W, C & E; 2700–4900 m.

KSL: Darchula and Bajhang in KSL Nepal; 4000–4200 m.

*Representative specimen*. **BAJHANG**: Saipal – Allechaur, 4210 m (H Tabata, KR Rajbhandari & K Tsuchiya 1763-bis, 26 Jul 1976; KYO) fide Tamura (1986).

**Ranunculus trichophyllus** Chaix, Pl. Vapicens.: 31 (1785). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 20 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 130 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 425 (2017).

*Ranunculus flaccidus* Pers.; *Batrachium trichophyllum* (Chaix) Bosch; *Ranunculus aquatilis* L. var. *trichophyllus* (Chaix) A. Gray

ENG: Thread-leaved water-crowfoot.

Perennial aquatic herbs, similar to *R. himalaicus* but leaves submerged, divided into filiform segments; floating leaves absent.

*Habitat*: Swamps, drainage ditches, ponds, lakes, streams, slow-flowing rivers.

*Distribution*: Temperate Eurasia, N Africa, Afghanistan to E Himalaya, China, Australia, S, C & N America.

NEPAL: W, C & E; 3000–4800 m.

KSL: Known from neighboring Mugu District, Nepal; 3400–3500 m. It is likely also to be present in KSL area of Far West Nepal.

*Representative specimen.* MUGU: Mugu, 3400 m (PR Shakyā & B Roy 5543, 8 Jun 1980; KATH<sup>1</sup>).

*Cons. status:* GLB., Least Concern (Lansdown 2013f).

## **Thalictrum** L., Sp. Pl. 1: 545 (1753).

**Thalictrum alpinum** L., Sp. Pl. 1: 545 (1753). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 21 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 133 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 425 (2017). **PI. 30.**

*Thalictrum alpinum* var. *microphyllum* (Royle) Hand.-Mazz.; *Thalictrum microphyllum* Royle

ENG: Alpine meadow-rue, Arctic meadow-rue.

Perennial glabrous herbs; stem absent; leaves all basal, rosulate, pinnate or bipinnate; leaflets small, orbicular-ovate, 3-lobed or 3-partite, crenate, glabrous, veins prominent beneath; scape solitary, erect, up to 15 cm, simple, with 1 scale-like leaf; flowers greenish, in simple raceme; sepals 4, elliptic.

*Habitat:* Oak forests, short turf amongst shrubs in semi-shade, grassy slopes, moist meadows.

*Distribution:* Arctic-alpine regions in Europe, Asia and N America.

NEPAL: W, C & E; 2700–5000 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Doti; 2700–5000 m [Pithoragarh, Uttarakhand in KSL India, and Pulan Xian, SW Xizang in KSL China].

*Representative specimens.* **BAJHANG:** Chimnya, way to Kalapani, NE of Dhalun, 2700–3200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0545, 16 Sept 2017; KATH<sup>1</sup>, PE); **DARCHULA:** Thadapani ridge, Pilkanda, 4575 m (SK Ghimire, B Awasthi, A Paudel, S Thapa, S Budha Magar, MR Paudyal & DJ Chapagain ANCA-1932, 27 Jul 2016; TUCH<sup>1</sup>). **DOTI:** Khaptad, 2940 m (H Tabata, KR Rajbhandari & K Tsuchiya 1260 & 1273, 14 Jul 1976; KYO) fide Tamura (1986). **HUMLA:** Sisne base Camp, 4000 m (PR Shakyā & B Roy 5745, 17 Jun 1980; KATH<sup>1</sup>); Chungsa Valley, above Seliman Tsho, 4880 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1160, 5 Sept 2012; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, Barji Kang Pass, 4420 m (R Strachey & JE Winterbottom 1, 1843; P00145597<sup>1</sup> image); Sum to Rah Lam [Ralam] Pass, Kumaon, 4570 m (RC Thakur 750, 17 Jun 1948; MICH 1500122<sup>1</sup> image). **XIZANG (CHINA):** Pulan Xian, 30.29° N 81.17° E (Qinghai-Tibet team vegetation group 6627001, 1976; PE) fide Kong & Yang (2019).

*Local abund.:* Frequent to common.

**Thalictrum chelidonii** DC., Prodr. 1: 11 (1824). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 21 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 134 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 426 (2017).

*Thalictrum chelidonii* var. *cysticarpum* (Wall.) Hook. f. & Thomson; *Thalictrum cysticarpum* Wall.

NEP: Dāmpāte (दाम्पाते).

Perennial glabrous herbs; stems 50–200 cm or more, much branched; leaves 2–3-pinnate; leaflets broadly ovate or suborbicular, 15–35 × 10–30 mm, coarsely crenate or lobed, minutely pubescent; flowers 15–25 mm across, many in rigid panicles; sepals usually 4, conspicuous, ovate, pink or lilac.

*Habitat:* Forests, forest margins, grassy slopes, open places.

*Distribution:* Himalaya (N India, Nepal, Bhutan), Tibetan Plateau.

NEPAL: W, C & E; (500–)1300–3800 m.

KSL: Bajhang and Darchula in KSL Nepal, and neighboring Bajura; 2100–3300 m.

*Representative specimens.* **BAJHANG:** Between Dhalun & Pansalegi, NE of Dhalun, 2800 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0549, 16 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **BAJHANG & BAJURA:** Pategaon – Ghodi Lek Deorali – Badigaon, 2160–3300 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160663, 16 Aug 1991; TI) fide SHB (2013–2020). **DARCHULA:** Chheti – Lukhani, 2640–2810 m (MM Amatya & PM Regmi W771/82, 6 Sept 1982; KATH).

*Local abund.:* Occasional.

**Thalictrum cultratum** Wall., Pl. Asiat. Rar. 2: 26 (1831). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 21 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 134 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 426 (2017). **PI. 30.**

*Thalictrum chelidonii* DC. var. *cultratum* (Wall.) Hook. f. & Thomson

TIB: ngotrin (ལྷོ་ལྷོ་རྩ་ལྷོ་).

Perennial glabrous herbs; stems erect, to 1.5 m, branched; leaves shortly petiolate or sessile, 2–3-pinnate; leaflets ovate or obovate, 3–10 × 2–9 mm, incised-lobed or crenate or dentate, glabrous or hairy beneath; flowers in lax panicles; sepals reduced, 2–4 mm long, greenish, tinged purple, deciduous.

*Habitat:* Open slopes, damp rock ledges, wet meadows, scrubs, moist forest floor.

*Distribution:* Pakistan, N India, Nepal, Bhutan, China, Myanmar.

NEPAL: W, C & E; 1500–4500 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal; 3500–4100 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** On trail between Dhahidunga Kharka & Manane Lek, 3496 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20919049, 13 Jul 2009; E00625021) fide RBGE (2018); Dhansera–Nilkatti, 3770 m (PR Shakya, MK Adhikari & MN Subedi 8200, 26 Jul 1984; KATH<sup>1</sup>). **DARCHULA:** Above Dhauliodar, 3500 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1174, 19 Jul 2015; TUCH<sup>1</sup>); Pilkanda, GLORIA Summit S5m, SMA, 3950 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1295, 21 Jul 2015; TUCH<sup>1</sup>). **HUMLA:** Abobe Juma Kharka, 3840 m (PR Shakya, MN Subedi & RK Uprety 8731, 18 Aug 1985; KATH<sup>1</sup>). **UTTARAKHAND (INDIA):** Kumaon, Milum, 3350 m (R Strachey & JE Winterbottom 4, 1843; P00145906<sup>1</sup> image).

**Thalictrum elegans** Wall. ex Royle, Ill. Bot. Himal. Mts. 1: 51 (1834). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 21 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 135 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 427 (2017).

*Thalictrum samariferum* B. Boivin

Perennial herbs; stems slender, 15–40 cm, simple or branched above; leaves shortly petiolate or sessile, blade 2–3-pinnate; leaflets many, small, 2–5 × 1–2 mm, shallowly 3-lobed; flowers in short few-flowered panicle; sepals purplish-green.

*Habitat:* Stony slopes, gravelly places, moraines.

*Distribution:* Himalaya (N Pakistan to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 3100–4600 m.

KSL: Bajhang in KSL Nepal; 3800–3900 m [also in Kumaon, India].

*Representative specimens.* **BAJHANG:** Saipal, 3878 m (H Tabata, KR Rajbhandari & K Tsuchiya 1828, 31 Jul 1976; KATH<sup>1</sup>); Saipal, 3900 m (H Tabata, KR Rajbhandari & K Tsuchiya 1975, 30 Jul 1976; KYO) fide Tamura (1986). **UTTARAKHAND (INDIA):** Kumaon (R Blinkworth 4728; K001039775<sup>1</sup> image).

**Thalictrum foetidum** L., Sp. Pl. 1: 545 (1753). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 21 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 135 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 427 (2017).

*Thalictrum minus* L. var. *foetidum* (L.) Hook. f. & Thomson; *Thalictrum vaginatum* Royle

NEP: Dāmpāte, Ganāune dāmpāte, Masino dāmpāte (दाम्पाते, गनाउने दाम्पाते, मसिनो दाम्पाते).

ENG: Foetid meadow-rue, Lesser meadow-rue. TIB: ngotrin (ཇོ་མཚོ་རྒྱུ་).

Perennial herbs; stems erect or ascending, 50–80 cm, widely branched; leaves ternately compound, glandular-pubescent beneath; leaflets obovate, 3–15 × 2–10 mm, irregularly lobed or toothed; inflorescence lax, few-flowered; sepals small, greenish-yellow, sometimes tinged purple.

*Habitat*: Forest margins, open grassy slopes, meadows, damp rock ledges.

*Distribution*: Temperate Eurasia, Himalaya (Pakistan to Bhutan).

NEPAL: W, C & E; 2000–4700 m.

KSL: Bajhang and Humla in KSL Nepal; 2500–3900 m.

*Representative specimens*. **BAJHANG**: Above Surma Village, north of Chainpur, 3890 m (H Ikeda, S Noshiro, M Amano, T Tanaka, N Yamamoto, CA Pendry, B Dell, Y Wang, GD Bhatta & AP Bhattarai 20915069, 8 Jul 2009; E, KATH<sup>1</sup>). **HUMLA**: Between Syamane & Simikot, 2580 m (CA Pendry, S Baral, S Noshiro, S Rajbhandari, PP Kurmi, B Dell & B Adhikari JRS A170, 18 Jun 2008; E, KATH<sup>1</sup>).

**Thalictrum foliolosum** DC., Syst. Nat. 1: 175 (1817). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 21 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 136 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 427 (2017). **Pl. 30.**

*Thalictrum dalingo* Buch.-Ham. ex DC.

NEP-L: Juke-jhār (जुके-झार). NEP: Bansulī, Dāmpāte (बन्सुली, दाम्पाते).

ENG: Asian meadow-rue. HIN: Mamira, Piljarī (ममिरा, पिल्जरी). TIB: ngotrin (ཇོ་མཚོ་རྒྱུ་).

Perennial robust herbs, 0.3–2.5 m tall, glabrous; stem diffuse, much branched, leafy; leaves ternately decompound, with petioles sheathing and auriculate at base, glabrous; leaflets ovate, 10–30 × 5–20 mm, crenate-dentate or lobed; inflorescence paniculate, large, many flowered; sepals small, greenish-white to purple, early deciduous; stamens much longer.

*Habitat*: Forests, forest margins, open thickets, open moist slopes.

*Distribution*: Tropical and subtropical S Asia, Himalaya (Pakistan to Bhutan), Tibetan Plateau, SC China, mainland SE Asia.

NEPAL: W, C & E; 1300–3400 m.

KSL: Baitadi, Bajhang, Darchula and Humla in KSL Nepal, and neighboring Bajura, Doti and Mugu; 1300–3400 m.

*Representative specimens*. **BAITADI**: Shribhwar, 2480 m (TR Pandey & GD Bhatt 2016642, 6 Jun 2016; KATH<sup>1</sup>). **BAJHANG**: Between Dhargaon & Dilbagar, 1575 m (H Tabata, KR Rajbhandari & K Tsuchiya 1336, 17 Jul 1976; KATH<sup>1</sup>); Rasa – Roshidanda, 1980–2540 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160873, 21 Aug 1991; TI) fide SHB (2013–2020). **DARCHULA**: Makarigad – Thumti, 1330–2060 m (MM Amatya & PM Regmi W681/82, 3 Sept 1982; KATH<sup>1</sup>); Khar VDC-4, 1930 m (BB Shrestha, M Pandey & R Chhetri 165P, 28 Sept 2015; TUCH<sup>1</sup>); Chameliya River, between Nali & Thapaligad, 2390 m (SK Ghimire, B Awasthi, S Budha Magar, B Jnawali, S Nepal, MR Paudeyal & DJ Chapagain ANCA-3169, 1 Sept 2017; TUCH<sup>1</sup>); Khandeshwari, 2631 m (CK Subedi, J Gurung & S Thapa 2, 16 Jun 2014; TUCH<sup>1</sup>). **HUMLA**: Salli-Chungsa, Nabalhang, 3400 m (SK Ghimire, LR Joshi, A Paudel, S Lo, P Subedi, C Thapa & S Lama CHH-1764, 29 Aug 2012; TUCH<sup>1</sup>).

*Local abund.*: Common.

**Thalictrum javanicum** Blume, Bijdr.: 2 (1825). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 21 (1979). Rau in Sharma et al. (eds.), Fl. India 1: 136 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 428 (2017).

*Thalictrum glyphocarpum* Wight & Arn.

Differs from *T. foliolosum* in having shorter anthers which are hardly exerted, and achenes with persistent hooked style (style deciduous and achene unhooked in *T. foliolosum*).

*Habitat*: Open moist slopes.

*Distribution*: Tropical and subtropical S Asia, Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, C & SE China, SE Asia (Indonesia: Jawa, Lesser Sunda Is.).

NEPAL: W, C & E; 1500–3200 m.

KSL: Known from neighboring Mugu District, Nepal; 2900 m.

*Representative specimen*. MUGU: Rara, 2900 m (NP Manandhar & DP Joshi 8029, 10 Aug 1981; KATH<sup>1</sup>).

**Thalictrum platycarpum** Hook. f. & Thomson, Fl. Ind. 1: 13 (1855). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 22 (1979). Rau in Sharma et al. (eds.), Fl. India 1: 139 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 428 (2017).

*Thalictrum cultratum* Wall. subsp. *platycarpum* (Hook. f. & Thomson) Brühl

Perennial herbs; stems erect, 30–60 cm, simple or branched; cauline leaves petiolate or subsessile, blade 2–3-pinnate; leaflets many, ovate or obovate, 2–6 × 1–5 mm, acutely 3–5-lobed or deeply incised-dentate all around, glandular pubescent beneath; flowers small, greenish, in loose terminal panicles.

*Habitat*: Open moist slopes.

*Distribution*: Himalaya (NE Pakistan to Sikkim), Tibetan Plateau.

NEPAL: W, C & E; 2800–4700 m.

KSL: Known from Pithoragarh District, Uttarakhand, India; 3500 m. It is likely also to be present in KSL Nepal.

*Representative specimen*. UTTARAKHAND (INDIA): Milum, Kumaon, 3505 m (R Strachey & JE Winterbottom 4, 1843; GH 00038628<sup>1</sup> image).

**Thalictrum punduanum** Wall., Pl. Asiat. Rar. 2: 26 (1831). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 22 (1979). Rau in Sharma et al. (eds.), Fl. India 1: 139 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 428 (2017). **Pl. 30.**

*Thalictrum punduanum* var. *glaucum* Hook. f. & Thomson

Perennial herbs, 15–50 cm tall; stems erect, branched; leaves simply ternate or biternate, petiolate; upper leaves smaller, 3-foliate or rarely simple; leaflets broadly ovate, obovate or suborbicular, 6–25 × 7–30 mm, simple or shallowly 3–5-lobed, apex obtuse, base cordate, margins coarsely crenate, glabrous or pubescent beneath; flowers in loose corymbose panicles; sepals 4–6, white, pale pink or pinkish-purple.

*Habitat*: Forests, rocky slopes along forest margins, mossy rocks on shady slopes.

*Distribution*: Himalaya (NW India to Bhutan), E India (W Bengal), mainland SE Asia (N Thailand).

NEPAL: W, C & E; 1200–2800 m.

KSL: ?Bajhang and Darchula in KSL Nepal; 1200–2400 m.

*Representative specimens*. BAJHANG: ? (NK Bhattarai 90/1238; KATH). DARCHULA: Between Okhal & Makarigad, Guljar VDC, 1260 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1663, 2 Aug 2015; TUCH<sup>1</sup>); Chameliya Valley, below Ghusa, 2100 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-542, 15 Oct 2014; TUCH<sup>1</sup>); Ghusa, between Ngali



& Sithi, 2350 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1046, 17 Jul 2015; TUCH<sup>1</sup>).

*Local abund.*: Frequent in Chameliya Valley, Darchula.

**Thalictrum reniforme** Wall., Pl. Asiat. Rar. 2: 26 (1831). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 22 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 140 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 429 (2017).

*Thalictrum chelidonii* DC. var. *reniforme* (Wall.) Hook. f. & Thomson; *Thalictrum neurocarpum* Royle

Perennial herbs similar to *T. chelidonii*, but differs in having larger flowers in lax weak panicles, and glandular hairy leaflets and pedicel.

*Habitat*: Forests, scrub, open slopes, damp humus-rich banks.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau.

NEPAL: W, C & E; 2000–3800 m.

KSL: Bajhang in KSL Nepal; 2350–2650 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. BAJURA & BAJHANG: Pategaon – Ghodi Lehk Deorali – Badigaon, 2630 m (M Suzuki, H Hattr, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9170711, 16 Aug 1991; KATH<sup>1</sup>, TI). UTTARAKHAND (INDIA): Kumaon, Madkot, Gori Valley (Inayat 24211, 25 Aug 1900; U.1547393<sup>1</sup> image).

*Local abund.*: Occasional.

**Thalictrum rostellatum** Hook. f. & Thomson, Fl. Ind. 1: 15 (1855). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 22 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 140 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 429 (2017).

Perennial glabrous herbs; stems slender, 40–100 cm, branched; leaves ternately decompose; leaflets broadly ovate or suborbicular, shallowly lobed at apex, toothed, glabrous or minutely puberulent beneath; inflorescence monochasial, few-flowered; sepals small, 2–3 mm, white.

*Habitat*: Forests, damp rocky ledges, open slopes.

*Distribution*: Himalaya (NW India to Bhutan), Tibetan Plateau, SC China.

NEPAL: W, C & E; 2000–3800(–4100) m.

KSL: Humla in KSL Nepal; 3200 m.

*Representative specimen*. HUMLA: Chankheli Lekh, 3200 m (PR Shakya, MN Subedi & R Upreti 8661, 14 Aug 1985; KATH<sup>1</sup>).

**Thalictrum saniculiforme** DC., Prodr. 1: 12 (1824). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 22 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 141 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 429 (2017).

*Thalictrum radiatum* Royle

Perennial herbs, 12–30 cm tall; stems erect, branched; radical and lower stem leaves long-petioled, 5–15 cm across, upper ones smaller; leaf blade 3–4-ternate; leaflets broadly ovate or obovate, 11–25 × 9–21 mm, glabrous, base cuneate, rounded or subcordate, shallowly 3-lobed at apex; lobes crenate; inflorescence terminal or axillary, monochasial, few flowered; sepals early deciduous, greenish white.

*Habitat*: Mossy rocks, tree trunk, open places in forests, open grassland.

*Distribution*: Himalaya (N India, Nepal), Peninsular India (W Ghats), Tibetan Plateau, SC China.

NEPAL: W, C & E; 1600–2900 m.

KSL: Bajhang in KSL Nepal, and neighboring Bajura; 2200–2500 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens.* **BAJHANG:** Between Dhuli & Kanda, 2272 m (H Tabata, KR Rajbhandari & K Tsuchiya 2550, 5 Aug 1976; KATH005302); Dhuli – Inuldar, 2450 m (H Tabata, KR Rajbhandari & K Tsuchiya 1648, 26 Jul 1976; KYO) fide Tamura (1986). **BAJURA:** Porakya – Serigaon, 1660–2500 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160577, 13 Aug 1991; TI) fide SHB (2013–2020). **UTTARAKHAND (INDIA):** Kumaon, Dwali, 2438 m (R Strachey & JE Winterbottom 8, 1843; P00147891<sup>1</sup> image).

**Thalictrum secundum** Edgew., Trans. Linn. Soc. London 20: 26 (1846). Rau in Sharma *et al.* (eds.), Fl. India 1: 141 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 430 (2017).

*Thalictrum macrostigma* Edgew.; *Thalictrum pauciflorum* Royle; *Thalictrum secundum* var. *hazaricum* H. Riedl  
Perennial glabrous herbs, 25–50 cm tall; stems erect, simple or branched; leaves cauline, subsessile, 2-ternate; leaflets broadly ovate or obovate, 5–17 × 4–20 mm, base cuneate, rounded or subcordate, mostly 3-lobed or incised, lobes crenate; flowers purplish, small, 4–8 mm across, solitary at the end of lateral branches and in terminal leafy racemes; sepals 4.

*Habitat:* Forests, forest margins.

*Distribution:* Afghanistan, W & C Himalaya (Pakistan to Nepal).

NEPAL: W & C; 3000–3300 m.

KSL: Known from Pithoragarh District, Uttarakhand, India; c. 2300 m. It is likely also to be present in KSL Nepal.

*Representative specimen.* **UTTARAKHAND (INDIA):** Pilti River, Kumaon, 2286 m (R Strachey & JE Winterbottom 5, 1843; P00147742<sup>1</sup> image).

**Thalictrum squamiferum** Lecoy., Bull. Soc. Roy. Bot. Belgique 16: 227 (1880). Rau in Sharma *et al.* (eds.), Fl. India 1: 143 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 430 (2017).

*Thalictrum cultratum* Wall. var. *tsangense* Brühl; *Thalictrum glareosum* Hand.-Mazz.

Perennial glabrous herbs, 10–15 cm tall; stems ascending or erect, divaricately branched, surrounded by scales at base; leaves cauline, shortly petiolate or subsessile, 3- or 4-pinnate; leaflets sessile, ovate or triangular-ovate, small, 1–3 mm long, glaucous; flowers 1–3, axillary; sepals 4, purplish, deciduous.

*Habitat:* Open slopes, moist grassy, rocky meadows.

*Distribution:* C & E Himalaya (Nepal to Bhutan), Tibetan Plateau, SC China.

NEPAL: W & C; 3500–5600 m.

KSL: Bajhang in KSL Nepal; 3800–3900 m.

*Representative specimen.* **BAJHANG:** Saipal, 3880 m (H Tabata, KR Rajbhandari & K Tsuchiya 1828-bis, 31 Jul 1976; KYO) fide Tamura (1986).

**Trollius** L., Sp. Pl. 1: 556 (1753).

**Trollius acaulis** Lindl., Bot. Reg. 28(Misc.): 56 (1842). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 22 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 144 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 430 (2017). **Pl. 30.**

Perennial glabrous herbs, with stout rootstock; flowering stems simple, 5–15 cm, elongating in fruit, enclosed with fibrous remains of the previous year's petioles at the base; basal leaves long-petioled, blade

rounded, deeply 5-lobed, lobes deeply incised; cauline leaves few, similar but smaller, alternate; flowers solitary, 4–6 cm across; sepals 5–15, broadly ovate, obtuse, orange-yellow; petals (nectaries) irregular in number, yellow, linear, short-clawed, rounded at the apex, shorter than numerous stamens.

*Habitat*: Moist alpine meadows, moist ground.

*Distribution*: E Afghanistan, W & C Himalaya (Pakistan to Nepal).

NEPAL: W; 3600–3900 m.

KSL: Bajhang and Darchula in KSL Nepal; 3600–3900 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: ? (A Maire AMA1024, 14 Jun 1973; E00821769) fide RBGE (2018). **DARCHULA**: Chameliya Valley, Pilkandaha, 3841 m (CK Subedi, J Gurung & S Thapa 3018, 25 Jun 2014; TUCH). **UTTARAKHAND (INDIA)**: Tola, Kumaon, 3658 m (RC Thakur 727, 15 Jun 1948; L.1740507<sup>1</sup> image, MICH 1500089<sup>1</sup> image); Pindari, Kumaon, 3810 m (R Strachey & JE Winterbottom 1, 1843; P00194272<sup>1</sup> image).

*Local abund.*: Rare in KSL Nepal.

**Trollius pumilus** D. Don, Prodr. Fl. Nepal.: 195 (1825). Hara in Hara & Williams, Enum. Fl. Pl. Nepal 2: 22 (1979). Rau in Sharma *et al.* (eds.), Fl. India 1: 145 (1993). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 431 (2017).

*Trollius gammieanus* Stapf; *Trollius geraniifolius* (Brühl) Mukerjee; *Trollius pumilus* subsp. *geraniifolius* Brühl

Perennial herbs similar to *T. acaulis*, but differs in having smaller flowers which are 2–3.5 cm across, with shallowly notched sepals and long-clawed petals (nectaries).

*Habitat*: Moist grassy slopes, peaty marshes, moist grasslands, moist alpine meadows.

*Distribution*: Himalaya (NW India to Bhutan), Tibetan Plateau, Myanmar, SC China.

NEPAL: W, C & E; 3500–5700 m.

KSL: Bajhang in KSL Nepal; 3700–3800 m [Pithoragarh, Uttarakhand in KSL India].

*Representative specimens*. **BAJHANG**: Saipal, 3700 m (JF Dobremez 2296, 16 May 1973; KATH<sup>1</sup>); Chaurapani, 3790 m (H Tabata, KR Rajbhandari & K Tsuchiya 8946, 1 Aug 1976; KYO) fide Tamura (1986). **UTTARAKHAND (INDIA)**: Ralam Valley, Kumaon (Inayat 24136, 16 Aug 1900; U.1534358<sup>1</sup>); Kumaon, Barji Kang Pass, 3962 m (R Strachey & JE Winterbottom 2; BM000946091<sup>1</sup> image).

## SABIACEAE

**Meliosma** Blume, Catalogus. 10 (1823).

**Meliosma dilleniifolia** (Wall. ex Wight & Arn.) Walp., Repert. Bot. Syst. 1: 423 (1842). Sutton in Hara & Williams, Enum. Fl. Pl. Nepal 2: 99 (1979). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 431 (2017).

*Millingtonia dilleniifolia* Wall. ex Wight & Arn., Edinburgh New Philos. J. 15: 179 (1833).

Deciduous trees, 6–10 m tall; leaves simple, serrate at margins.

*Habitat*: Broad-leaved forests.

*Distribution*: Himalaya (N India, Nepal, Bhutan), Tibetan Plateau, N Myanmar, SC China.

NEPAL: W, C & E; 1600–3400 m.

KSL: Bajhang and Darchula in KSL Nepal; 2300–2900 m.

*Representative specimens*. **BAJHANG**: Dhalaun – Rasa, 2400 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9192486, 20 Aug 1991; KATH<sup>1</sup>, TI); between Dhalun

& Kakarkot, below Deurali, 2900–2200 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0563, 16 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>). **DARCHULA**: Palaa – Kuntisau, 2300 m (KR Rajbhandari & KJ Malla 5700, 29 Aug 1980; KATH<sup>1</sup>); Chameliya River, between Khayakot & Bayeli, 2300 m (SK Ghimire, B Awasthi, S Thapa, S Budha Magar, MR Paudeyal & DJ Chapagain ANCA-1073B, 18 Jul 2015; TUCH<sup>1</sup>).

*Local abund.*: Rare to occasional.

## BUXACEAE

**Buxus** L., Sp. Pl. 2: 983 (1753).

**Buxus wallichiana** Baill., Monogr. Buxac.: 63 (1859). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 3: 199 (1982). Rajbhandari & Rai, Handbk. Fl. Pl. Nepal 1: 434 (2017). **Pl. 30.**

NEP-L: Pāpdo (पाप्डो).

ENG: Himalayan boxwood. HIN-L: Pāprī (पाप्री).

Evergreen shrubs or small trees, 2–6 m tall; young shoots puberulous; leaves opposite, short-petioled, glabrous; blade lanceolate to elliptic-oblong, entire, coriaceous, shining above, veins conspicuous; flowers unisexual, greenish-yellow, in globular clusters; fruits ovoid capsules, 3-beaked.

*Habitat*: Forests, forest margins.

*Distribution*: E Afghanistan, Himalaya (Pakistan to Bhutan), mainland SE Asia.

NEPAL: W & C; 2000–2900 m.

KSL: Bajhang, Darchula and Humla in KSL Nepal, and neighboring Mugu; 2000–2700 m [Bageshwar and Pithoragarh Districts of Uttarakhand in KSL India and also neighboring Almora].

*Representative specimens*. **BAJHANG**: (A Maire AMA855, 3 May 1973; E00877838) fide RBGE (2018); ?Bauli Gad (JF Dobremez NEP 2049, 4 April 1973; E00877839) fide RBGE (2018). **DARCHULA**: Makari Gad – Khandeswori, 2050 m (PR Shaky, MK Adhikari & MN Subedi 7908, 18 Jul 1984; KATH<sup>1</sup>); between Ngali & Sithi, 2300 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-565, 15 Oct 2014; TUCH<sup>1</sup>); Dhaulo Community Forest, Khandeshwori, 2643 m (CK Subedi, J Gurung & S Thapa 18, 16 June 2014; TUCH<sup>1</sup>). **HUMLA**: Melcham Khola – Lepra, 2500 m (PR Shaky, MN Subedi & R Uprety 8754, 20 Aug 1985; KATH<sup>1</sup>). **MUGU**: Karwa, Khater Dara, 2134 m (O Polunin, WR Sykes & LHJ Williams 828, 24 Apr 1952; P02789008<sup>1</sup> image); Dhunde Dhara – Phalko Odar, 2220 m (PR Shaky & B Roy 5492, 5 Jun 1980; KATH<sup>1</sup>). **UTTARAKHAND (INDIA)**: Bagdwar, Kumaon, 2438 m (R Strachey & JE Winterbottom s.n.; isosyntype K000768245<sup>1</sup> image, P02333484<sup>1</sup> image).

*Local abund.*: Occasional in KSL Nepal.

*Ethnobot. use*: Wood is cut for firewood; leaves, stems and bark are used in traditional medicine.

**Sarcococca** Lindl., Edwards's Bot. Reg. 1012 (1826).

**Sarcococca hookeriana** Baill., Monogr. Buxac.: 53 (1859). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 3: 200 (1982).

*Sarcococca pruniformis* Lindl. var. *hookeriana* (Baill.) Hook. f.

NEP-L: Telpār, Telpāuro (तेल्पार, तेल्पाउरो).

Evergreen shrubs, 0.5–1 m tall; stems branched, young branches pubescent; leaves alternate, petiole 4–7 mm; leaf blade lanceolate or narrowly elliptic, 30–92 × 5–20 mm, obscurely pinnate-veined, puberulent beneath, acute to acuminate at apex; flowers unisexual, fragrant, white or greenish white, in axillary

racemes or clusters with male flowers borne apically and female ones inserted basally or female flowers solitary in separate axils; fruits globose berries with 3 persistent styles, blue-black when ripe.

*Habitat*: Moist and shady places, evergreen forests.

*Distribution*: Himalaya (N India, Nepal, Bhutan), E India (West Bengal), Tibetan Plateau.

NEPAL: W, C & E; 1550–3500 m.

KSL: Darchula and Bajhang in KSL Nepal, and neighboring Bajura, Doti and Mugu; 1550–2000 m.

*Representative specimens*. **BAITADI**: Shrivabhar – Dhole, 2330 m (PR Shakya, MK Adhikari & MN Subedi 8331, 8 Aug 1984; KATH<sup>1</sup>). **BAJHANG**: Military Chhana, 1650 m (P Pradhan, RK Uprety, N Pradhan & N Dabadi 1256, 9 Apr 1984, KATH<sup>1</sup>); Khaptad – Lokhanda, 2000 m (NK Bhattarai 90/1076, 24 Aug 1990; KATH<sup>1</sup>). **BAJURA**: E of Martadi, 1555 m (BSH D12, 8 Aug 2017; E) fide RBGE (2014). **DARCHULA**: Darchula – Dalilekh, 840 – 1810 m (MM Amatya & PM Regmi W529/82, 28 Aug 1982; KATH<sup>1</sup>). **DOTI**: Gadchhera – Sawarigad, 1700 m (PR Shakya, LR Sharma & KR Amatya 6191, 26 Jun 1981; KATH<sup>1</sup>). **MUGU**: Pina, 2000 m (PP Kurmi & N Thapa 7479, 27 Nov 1995; KATH<sup>1</sup>).

**Sarcococca saligna** (D. Don) Müll. Arg. in DC., Prodr. 16(1): 11 (1869). Hara in Hara *et al.*, Enum. Fl. Pl. Nepal 3: 200 (1982). **Pl. 30**.

*Buxus saligna* D. Don, Prodr. Fl. Nepal. 63 (1825); *Sarcococca laurifolius* Kunth; *Sarcococca nepalensis* Royle; *Sarcococca prunifolmis* Lindl. var. *angustifolia* Lindl.; *Sarcococca salicifolia* Baill.

NEP-L: Telpār, Telpāuro (तेल्पार, तेलपाउरो).

ENG: Willow-leaf sweet-box. HIN-L: Geru, Pirulī, Tiliārā (गेरु, पिरुली, तिलिआरा).

Evergreen shrubs similar to *S. hookeriana* but young branches glabrous; petiole 5–15 mm; leaf blade lanceolate, much longer, 55–110 mm, with long acuminate apex.

*Habitat*: Shady places, evergreen forests, field margins.

*Distribution*: Afghanistan, W & C Himalaya (Pakistan to Nepal), Tibetan Plateau, Taiwan, mainland SE Asia to Indonesia.

NEPAL: W & C; 800–2900 m.

KSL: Baitadi, Bajhang and Darchula in KSL Nepal; 1900–2500 m [also in Kumaon, Uttarakhand, India].

*Representative specimens*. **BAITADI**: Shrivabhar, 2200–2300 m (HN Qin, P Bhandari, TR Pandey, BR Subedee, YC Yang & SR Zhang 0056, 10 Sept 2017; KATH<sup>1</sup>, PE<sup>1</sup>); Shribhawar, 2443 m (TR Pandey & GD Bhatt 2016658, 6 Jun 2016; KATH<sup>1</sup>). **BAJHANG**: Agar–Kinara, 1390–2180 m (M Suzuki, H Hatta, N Kurosaki, M Mikage, F Miyamoto, KR Rajbhandari, H Takayama & K Terada 9160975, 23 Aug 1991; KATH<sup>1</sup>, TI<sup>1</sup> image); Thar, 2500 m, (JF Dobremez 2269, 15 May 1973; BM000949682<sup>1</sup> image). **DARCHULA**: Chameliya Valley, Patu, near Ghusa Village, 2100 m (SK Ghimire, B Awasthi, S Thapa, S Lo, C Thapa & MR Paudeyal ANCA-511, 15 Oct 2014; TUCH<sup>1</sup>); above Janjari, way to Ghusa, 2130 m (SK Ghimire, LR Joshi & B Awasthi ANCA-P13070; 22 Oct 2013, TUCH<sup>1</sup>); Paripatal Community Forest, Khar, 2245 m (CK Subedi, J Gurung & M Pandey 17, 7 Jun 2015; TUCH<sup>1</sup>). **UTTARAKHAND (INDIA)**: E Kumaon (R Blinkworth 7979, 1836; K000768280<sup>1</sup> image).

*Local abund.*: Occasional to frequent in KSL Nepal.

*Ethnobot. use*: The whole plant is used for shamanic healing.

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# Appendix 1

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# Colour Plates







*Ephedra gerardiana* [Somlatā] Lolu, Darchula



*Abies pindrow* [Gobre, Kānpar] Jabkung, Humla



*Cedrus deodara* [Devadār] Satbanjh, Baitadi  
Photo: T.R. Pandey

**[Plate 1]**

*Abies spectabilis* [Gobre sallā, Human] Dozam, Humla Photo: R.P. Chaudhary



*Picea smithiana* [Jhule sallā, Jhulo, Thingo] Dozam, Humla



*Pinus roxburghii* [Khote sallā] Patan, Baitadi Photo: T.R. Pandey



*Pinus wallichiana* [Rani sallā] Photo: R.P. Chaudhary







*Tsuga dumosa* [Thinge sallā, Thingre sallā] Dhalaun, Bajhang Photo: T.R. Pandey



*Tsuga dumosa* Dhalaun, Bajhang Photo: T.R. Pandey

**[Plate 2]**

*Juniperus indica* [Dhūpi] Phwaso, Dozam, Humla



*Juniperus squamata* [Bhuin dhūpi] Talung, Humla



*Taxus contorta* [Launtho, Lauth sallā] Simikot, Humla Photo: T.R. Pandey



*Schisandra grandiflora* [Singate-laharā] Gyaldorje, Dozam, Humla







*Aristolochia punjabensis* [Bhāngkhopade, Bhainsī-laharā] Shribhavar, Baitadi Photo: T.R. Pandey  
Inset: *A. punjabensis* from Khar, Dharchula (photo: C.K. Subedi)



*Cinnamomum tamala* [Tejpāt] Darchula

**[Plate 3]**

*Lindera pulcherrima* [Van kāulo, Phusre] Darchula Photo: C.K. Subedi



*Neolitsea pallens* [Kitkite kāulo, Khapate] Khayekot, Darchula



*Arisaema concinnum* [Bānko, Sarpako-makai] Darchula



*Arisaema flavum* [Bhāle bānko] Gyaldorje, Dozam, Humla







*Arisaema consanguineum* [Raksyā bānko] Dozam, Humla



*Arisaema propinquum* [Bānko, Sarpako-makai] Bayeli - Simar, Darchula



*Arisaema tortuosum* [Vir bānko, Gau bānkoi] Ghusa - Sithi, Darchula

#### [Plate 4]

*Arisaema tortuosum* Khayekot, Darchula

*Arisaema jacquemontii* [Chari bānko, Male bānko] Pilkanda, Darchula



*Remusatia vivipara* Lattenath, Darchula

*Sauromatum diversifolium* [Lāpchikpā, Talu] Makarigad, Darchula







*Aletris pauciflora* Pilkanda, Darchula



*Dioscorea bulbifera* [Van taud, Van tarul] Lattenath, Darchula

[Plate 5]

*Dioscorea deltoidea* [Bhyäkür, Kukur tarul] Changla Khola, Dozam, Humla



*Dioscorea deltoidea* [Bhyäkür, Kukur tarul] Ghusa, Darchula



*Dioscorea hamiltonii* [Van taud, Van tarul] Lattenath, Darchula



*Dioscorea hamiltonii* [Van taud, Van tarul]







*Paris polyphylla* [Satuwā] Changla Khola, Dozam, Humla



*Paris polyphylla* [Satuwā] Sithi, Darchula

**[Plate 6]**

*Smilax aspera* [Kukurdäino] Okhal, Darchula



*Smilax elegans* [Kukurdäino] Ngali, Darchula



*Cardiocrinum giganteum* Photo: C.K. Subedi



*Disporum cantoniense* [Khiraunle] Khayakot, Darchula



*Trillium govanianum* [Lek satuwā] Dhauliodar, Darchula







*Cardiocrinum giganteum* Dhalaun, Bajhang Photo: T.R. Pandey



*Gagea lutea* Tugling, Dozam, Humla

[Plate 7]

*Lilium nepalense* [Pindarā] Patu, Darchula



*Lilium nanum* [Nān podyā] Thadeule, Darchula



*Clintonia udensis* Domul, Darchula



*Fritillaria cirrhosa* [Ghāndevish, Kākoli, Podyā] Pilkanda, Darchula Photo: C.K. Subedi



*Lilium oxypetalum* [Kākoli, Podyā] Lolu, Darchula Photo: C.K. Subedi







*Gagea serotina* [Nān kākolī] Gauchhalighol, Pilkanda, Darchula



*Lloydia longiscapa* [Nān kākolī] Lolu, Darchula Photo: C.K. Subedi

**[Plate 8]**

*Streptopus simplex* [Khiraunlo] Domool, Darchula Photo: B. Awasthi



*Streptopus simplex* [Khiraunlo] Domul, Darchula



*Aerides multiflora* [Sunākharī] Darchula Photo: C.K. Subedi



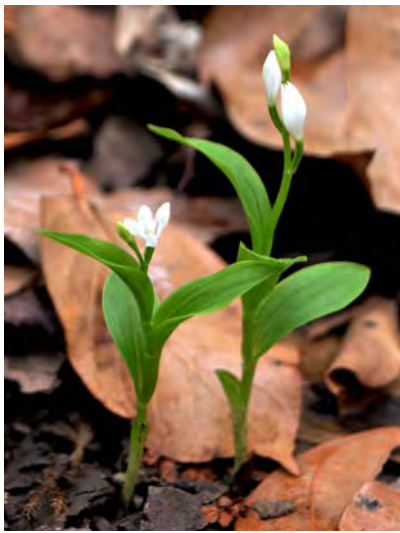
*Calanthe tricarinata* Darchula Photo: C.K. Subedi







*Calanthe mannii* Darchula Photo: C.K. Subedi



*Cephalanthera erecta* Darchula Photo: P. Bhandari



*Cephalanthera longifolia* Darchula

**[Plate 9]**

*Corallorhiza trifida* Tugling, Dozam, Humla



*Crepidium acuminatum* Makarigad, Darchula



*Cypripedium cordigerum* [Jibre] W. Nepal



*Cypripedium himalaicum* [Kaunphale, Lek jibre] Pilkanda, Darchula







*Cypripedium elegans* Dhauliodar, Darchula



*Dactylorhiza hatagirea* [Hattājadi, Pānchaun-le] Dozam, Humla Photo: R.P. Chaudhary



*Dendrobium amoenum* Mallikarjun, Darchula Photo: T.R. Pandey

**[Plate 10]**

*Epipactis helleborine* Simar, Darchula



*Goodyera repens* Dozam, Humla



*Gymnadenia orchidis* Dhauliodar, Darchula



*Goodyera biflora* [Nakkali jīvanti]



*Habenaria intermedia* [Junge tītmirido] Ghusa, Darchula







*Herminium edgeworthii* Ghusa, Darchula



*Herminium monorchis* Piikanda, Darchula



*Herminium monophyllum* Ngali, Darchula

**[Plate 11]**

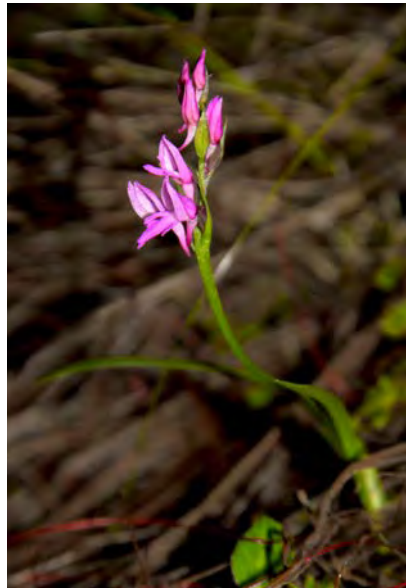
*Pholidota articulata* [Bhāḷkelā, Bhālu-kelā]  
Mallikarjun, Darchula Photo: T.R. Pandey



*Platanthera japonica* Domul, Darchula



*Ponerorchis cucullata* var. *calicicola* Darchula



*Phalaenopsis taenialis* Darchula Photo: P. Bhandari



*Pinalia spicata* [Bhāḷkelā, Bhālu-kelā] Makarigad, Darchula







*Ponerorchis chusua* [Kaunphalo] Darchula



*Rhynchosstylis retusa* Darchula  
Photo: P. Bhandari



*Satyrium nepalense* [Kaunphalo] Ngali, Darchula

**[Plate 12]**

*Spiranthes australis* Ngali, Darchula



*Hypoxis aurea* [Karshûl] Darchula



*Iris decora* [Piperi, Padmapuskar] Dozam, Humla



*Iris kemaonensis* [Piperi] Dozam, Humla Photo: R.P. Chaudhary



*Crinum latifolium* [Hâde-phûl] Lattenath, Darchula







*Allium prattii* [Jangali lasun] Pilkanda, Darchula



*Allium stracheyi* [Danu, Jimbu] Ngali, Darchula



*Allium wallichii* [Danu, Jimbu] Pilkanda, Darchula

[Plate 13]

*Asparagus filicinus* [Van kurilo] Dozam, Humla



*Chlorophytum nepalense* Ngali, Darchula



*Dipcadi serotinum* Makarigad, Darchula



*Maianthemum purpureum* [Tite kaunphalo] Darchula Photo: C.K. Subedi



*Ophiopogon clarkei* [Dhachade] Simar, Darchula







*Ophiopogon intermedius* [Dhachade]



*Polygonatum curvistylum* [Khiraunlo] Humla



*Polygonatum verticillatum* [Khiraunlo]  
Dozam, Humla

**[Plate 14]**

*Polygonatum graminifolium* [Nān khiraunlo] Pilkanda, Darchula



*Polygonatum singalilense* [Khiraunlo] Dhauliodar, Darchula



*Polygonatum verticillatum* Darchula Photo: C.K. Subedi



*Polygonatum singalilense* Darchula Photo: C.K. Subedi







*Theropogon pallidus* [Dhachade] Khandeswari, Darchula



*Theropogon pallidus* Darchula Photo: B. Awasthi

**[Plate 15]**

*Phoenix loureiroi* var. *pedunculata* [Thākal]  
Betale, Darchula



*Commelina maculata* [Kanjado, Vishkāpado] Khandeswari, Darchula



*Murdannia divergens* [Vishkāpado] Khandeswari, Darchula



*Cyanotis vaga* [Kaukhutte] Khandeswari, Darchula







*Cautleya gracilis* [Van haldo, Gagletto, Hardi-jhâr] Bhattar - Khayakot, Darchula

**[Plate 16]**

*Cautleya spicata* [Van haldo, Gagletto, Hardi-jhâr] Khayakot - Bayeli, Darchula



*Streptolirion volubile* [Thũlo kãnejhâr]  
Dharapori - Kermi, Humla

*Cautleya spicata* Khayakot - Bayeli, Darchula



*Hedychium ellipticum* [Van haldo, Sarro] Paribagar - Makarigad, Darchula



*Hedychium spicatum* [Van haldo, Sarro] Darchula







*Roscoeae purpurea* [Bhuin sarro, Katare, Rāsgarī]  
Ngali - Sithi, Darchula



*Roscoeae alpina* [Nān katare] Khayakot - Dhauliodar, Darchula

[Plate 17]

*Juncus allioides* Pilkanda, Darchula



*Juncus benghalensis* Pilkanda, Darchula



*Juncus concinnus* Pilkanda, Darchula



*Juncus himalensis* Dhauliodar, Darchula



*Juncus sphacelatus* Nyaula La, Humla



*Juncus thomsonii* Chungsa Valley, Humla







*Carex atrata* Seliman Tsho, Humla



*Carex microglochin* Pilkanda, Darchula

**[Plate 18]**

*Carex condensata* [Kathero, Pärtay-ghāns] Makarigad, Darchula



*Carex atrofusca* subsp. *minor* Seliman Tsho, Humla



*Carex ovoidispica* Nyalu La, Humla



*Erioscirpus comosus* [Phurke-jhār, Rānī bābiyo] Ghusa, Darchula







*Dactylis glomerata* Ngali, Darchula



*Panicum miliaceum* [Chino] Simikot, Humla

**[Plate 19]**

*Setaria italica* [Kāguno, Kāun, Kāunī] Kermi, Humla



*Corydalis cashmeriana* [Nīlo gokul-dhūp] Darchula



*Corydalis casimiriana* Pilkanda, Darchula



*Corydalis chaerophylla* [Okhare-jhār] Dhauliodar, Darchula







*Corydalis cornuta* Ngali, Darchula



*Corydalis elegans* Pilkanda, Darchula

**[Plate 20]**

*Corydalis filiformis* Ngali, Darchula



*Corydalis pseudojuncea* Lolu, Darchula



*Corydalis govaniana* [Gokul-dhüp] Lolu, Darchula



*Corydalis meifolia* [Gokul-dhüp, Supghāns] Bainsadh, Lolu-Pilkanda, Darchula





*Corydalis stracheyi* Nyalu La, Humla



*Corydalis nana* Seliman Tsho, Humla

**[Plate 21]**

*Dactylicapnos roylei* Salli-Chungsa, Humla



*Meconopsis simikotensis* Dozam, Humla



*Meconopsis robusta* Lolu-Pilkanda, Darchula

*Meconopsis horridula* Seliman Tsho, Humla







*Stauntonia latifolia* [Guphalā] Darchula Photo: C.K. Subedi



*Cissampelos pareira* [Gajregān, Musbelo] Okhal, Darchula

**[Plate 22]**

*Stephania gracilenta* [Musbelo] Sithi, Darchula



*Cocculus laurifolius* [Tilphorā] Makarigad, Darchula



*Stephania rotunda* [Gajregān, Barkulī-laharā] Kasoli, Darchula



*Stephania rotunda* [Gajregān, Barkulī-laharā] Kasoli, Darchula







*Berberis asiatica* [Kirmadā, Tilkhudo, Chutro] Darchula Photo: C.K. Subedi



*Berberis asiatica* [Kirmadā, Tilkhudo, Chutro] Thehe, Humla

**[Plate 23]**

*Berberis aristata* [Chotto, Chutro] Dhauli Odar, Darchula



*Berberis hamiltoniana* [Chotto, Chutro] Lolu, Darchula



*Berberis glaucocarpa* [Kirmadā, Tilkhudo, Chutro] Simikot, Humla



*Berberis kumaonensis* [Chotto, Chutro] Lolu, Darchula







*Berberis koehneana* [Chotto, Chutro] Kermi, Humla



*Berberis karnaliensis* [Chotto, Chutro] Simikot, Humla

**[Plate 24]**

*Podophyllum hexandrum* [Deuphal, Laghupatra] Khayakot - Simar, Darchula



*Aconitum ferox* [Bikh, Vish] Lolu, Darchula

*Aconitum heterophyloides* Lolu, Darchula

*Aconitum spicatum* [Gobare vish] Lolu, Darchula







*Actaea acuminata* [Vish-phal] Simar, Darchula



*Actaea acuminata* [Vish-phal] Chhungsa Valley, Humla

[Plate 25]

*Anemonastrum obtusilobum* [Kāngre-jhār, Ratanjot] Lolu-Pilkanda, Darchula



*Adonis chrysocyathus* Seding, Dozam, Humla



*Anemonastrum elongatum* Lolu, Darchula

*Anemonastrum polyanthes* Lolu, Darchula

*Anemonastrum tetrasepalum* Lolu, Darchula







*Eriocapitella rivularis* [Kaude-phül, Bāgh-pāile] Singjungma, Humla



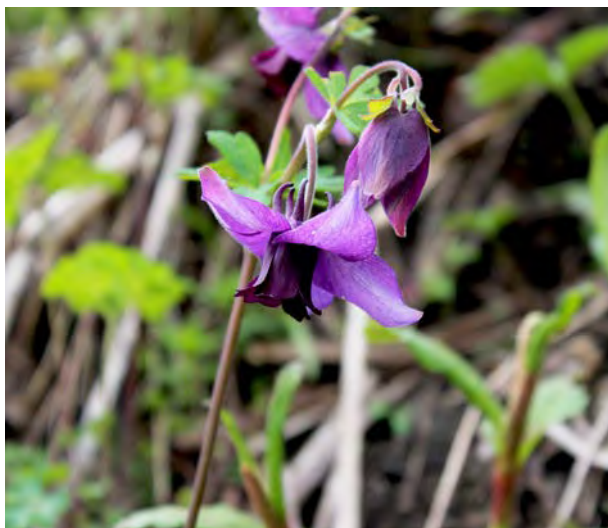
*Eriocapitella rupicola* Dozam, Humla

**[Plate 26]**

*Eriocapitella vitifolia* [Kapāse] Sithi, Darchula



*Aquilegia pubiflora* Darchula Photo: C.K. Subedi



*Caltha palustris* Dhauli Odar, Darchula



*Clematis barbellata* [Dāntkhuso, Junge-laharā] Domul, Darchula







*Clematis b Buchananiana* [Dahile-belo, Däntkhuso] Ngali - Sithi, Darchula



*Clematis confusa* [Däntkhuso] Ngali - Sithi, Darchula

**[Plate 27]**

*Clematis connata* [Däntkhuso] Ghusa, Darchula



*Clematis grata* [Junge-laharä] Simikot - Dharapori, Humla



*Clematis montana* [Bakryäulo, Junge-belo] Simar, Darchula



*Delphinium brunonianum* [Bakryäulo, Junge-belo] Thadapani - Lolu, Darchula







*Delphinium caeruleum* [Mudaulo] Humla

*Delphinium cashmerianum* [Mauro-mûlo, Nîlo bikh] Kalidhunga, Darchula

*Delphinium densiflorum* [Bongmar] Seliman Tsho, Humla

**[Plate 28]**

*Delphinium denudatum* [Mudaulo, Nirvishi] Syamne, Humla

*Delphinium kamaonense* [Mudaulo] Salli Danda, Humla



*Delphinium himalayae* [Atis] Kermi, Humla

*Delphinium vestitum* [Kâlo Atis] Kermi, Humla

*Oxygraphis endlicheri* Jogi Tal, Darchula







*Paraquilegia microphylla* [Yumo deujin] Changla Khola, Dozam, Humla



*Ranunculus adoxifolius* Chungsa Valley, Dharmashala, Humla

**[Plate 29]**

*Ranunculus brotherusii* Chungsa Valley, Seliman Tsho, Humla



*Ranunculus himalaicus* Talung Valley, Ning Tsho, Humla



*Ranunculus diffusus* Ngali, Darchula

*Ranunculus hirtellus* Dhauli Odar, Darchula

*Ranunculus longicaulis* Changla Khola, Humla







*Thalictrum alpinum* Thadapani, Darchula



*Thalictrum cultratum* Dhauli Odar, Darchula



*Thalictrum foliolosum* Khayakot, Darchula

[Plate 30]

*Thalictrum punduanum* Ngali, Darchula Photo: B. Awasthi



*Trollius acaulis* Darchula Photo: C.K. Subedi



*Buxus wallichiana* [Päpdo] Ngali, Darchula



*Sarcococca hookeriana* [Telpäuro] Sithi, Darchula



# Index to Scientific Names

Accepted names and corresponding page numbers that appear as main citations in the checklist are given in bold type; names that appear in the introductory part or secondary mentions in the checklist are given in roman type; and synonyms are in *italics*. Colour plates are indicated by Pl.

- Abies**, 2  
*brunoniana*, 6  
*deodara*, 4  
*dumosa*, 6  
**pindrow**, xvi, xix, xx, xlii, 2,  
 pl. 1  
*smithiana*, 4  
**spectabilis**, xviii, xix, xx, xlii, 3,  
 pl. 1  
     var. *langtangensis*, 3  
*webbiana*, 3  
     var. *pindrow*, 2
- Acer**, xviii, xix  
*acuminatum*, xx  
*caesium*, xix, xx  
*cappadocicum*, xix  
*pectinatum*, xx  
*sterculiaceum*, xix
- Achnatherum**, 142  
**brandisii**, 142  
**staintonii**, xli, 142
- Aconitum**, xxiii, xl, 234  
*atrox*, 236  
*balfourii*, 236  
**ferox**, 234, Pl. 24  
     var. *atrox*, 236  
     var. *heterophylloides*, 234  
     var. *spicata*, 236  
**heterophylloides**, 234, Pl. 24  
     var. *leucanthum*, 234  
**hookeri**, 235  
**laeve**, 235  
*leucanthum*, 234  
*lycoctonum*, 235  
*multifidum*, 237  
*napellus* var. *multifidum*, 237  
**poluninii**, xxvi, xli, 235  
**spicatum**, xlii, 236, Pl. 24
- violaceum**, xlii, 237  
*viosum*, 234  
*vitifolium*, 235
- ACORACEAE**, xxxvii, xxxviii,  
 20  
 Acorales, xxxviii  
**Acorus**, 20  
     **calamus**, 20  
*Acratherum miliaceum*, 148  
*Acronema tenerum*, xxx
- Actaea**, 237  
     **acuminata**, 237, Pl. 25  
     **frigida**, 238  
         *spicata* var. *acuminata*, 237  
*Actinospora frigida*, 238  
*Adina cordifolia*, xvii
- Adonis**, 238  
     **aestivalis**, 238  
     **chrysocyathus**, 238, Pl. 25  
     *inermis*, 238  
     *inglisii*, 238  
     *pyrenaica*, 238
- Aerides**, 46  
     *affinis*, 46  
     *cristata*, 81  
     *lasiopetala*, 56  
     **multiflora**, 46, pl. 8  
     *spicatum*, 78  
     *taenialis*, 73
- Aesculus**, xix  
     *indica*, xviii, xix
- Agave**, 87  
     **americana**, 87
- Agropyron**, 142  
     *antiquum*, 170  
     *canaliculatum*, 170  
     *flexuosissimum*, 170  
     *longearistatum*, 170
- microlepis*, 170  
*nepalense*, 171  
*pinnatum*, 151  
*schrenkianum*, 171  
*semicostatum*, 172  
*sikkimense*, 172  
*striatum*, 172  
**thomsonii**, 142
- Agrostis**, xl, 143  
     *clarkei*, 143  
     *diandra*, 205  
     *divaricata*, 143  
     *fertilis*, 205  
     *himalayana*, 143  
     *japonica*, 206  
     *maxima*, 210  
     **micrantha**, 143  
     **munroana**, 143  
     *myriantha*, 143  
     **nervosa**, 143  
     **pendryi**, 144  
     *petelotii*, 154  
     **pilosula**, xx, 144  
         var. *alpestris*, 144  
         var. *wallichiana*, 144  
     *royleana*, 144  
     *sikkimensis*, 143  
     *wallichiana*, 144
- Aira cespitosa*, 164  
     *cristata*, 181  
     *gracilis*, 181  
     *indica*, 201  
     *macrantha*, 181
- Albizia chinensis*, xvii  
     *julibrissin*, xvii
- Alectoridia quartiniana*, 147
- Aletris**, 30  
     *mairei*, 30

- nepalensis* var. *delavayi*, 30  
**pauciflora**, xxi, 30, pl. 5  
**ALISMATACEAE**, xxxviii, 27  
 Alismatales, xxxviii  
*Alismorkis alpina*, 47  
   *mannii*, 48  
   *puberula*, 49  
   *tricarinata*, 49  
**Allium**, xl, 83  
   *aitchisonii*, 83  
   *blandum*, 83  
   *caeruleum*, 85  
   *cannifolium*, 83  
   **carolinianum**, 83  
   *clarkei*, 85  
   *ellipticum*, 83  
   *jacquemontii*, 84  
   *junceum*, 84  
   *lancifolium*, 85  
   *longistaminum*, 84  
   *obtusifolium*, 83  
   *polyphyllum*, 83  
   **prattii**, xxi, xlii, 83, pl. 13  
     var. *ellipticum*, 83  
   **przewalskianum**, 84  
   *roxburghii*, 85  
   **spicatum**, 84  
   *stenophyllum*, 84  
   *stoliczkii*, 84  
   **stracheyi**, xlii, 84, pl. 13  
   *sulvia*, 85  
   *thomsonii*, 83  
   **tuberosum**, 85  
   *victoralis* var. *angustifolium*, 83  
   *violaceum*, 85  
   *wallichianum*, 85  
   **wallichii**, xlii, 85, pl. 13  
*Alnus nepalensis*, xviii, xix  
**AMARYLLIDACEAE**, xxxvii,  
   xxxviii, xl, xlii, 83  
*Amesia latifolia*, 57  
*Amphilophis pertusa*, 151  
*Anaphalis*, xxi  
*Anatherum parviflorum*, 157  
*Androcorys josephi*, 66  
   *monophylla*, 67  
**Andropogon**, 145  
   *aciculatus*, 159  
   *alternans*, 157  
   *annulatus*, 164  
   *assimilis*, 157  
   *binatus*, 176  
   *bladhi*, 150  
   *coeruleus*, 160  
   *contortus*, 180  
   *crinitus*, 197  
   *distans*, 160  
   *echinulatus*, 159  
   *glaber*, 150  
   *glabratus*, 159  
   *glaucopsis*, 157  
   *gryllus*, 159  
     subsp. *echinulatus*, 159  
   *hexastachyus*, 175  
   *himalayensis*, 161  
   *hookeri*, 145  
   *intermedius*, 150  
   *ischaemum*, 150  
   *jwarancusa*, 161  
   *lancifolius*, 147  
   *micans*, 147  
   *micranthus*, 157  
   *monandrus*, 197  
   *monticola* var. *trinii*, 160  
   **munroi**, xx, 145  
   *nardus* var. *stracheyi*, 161  
   *notopogon*, 176  
   *pendulus*, 161  
   *pertusus*, 151  
   *pospischilii*, 161  
   *prionodes*, 147  
   *punctatus*, 150  
   *royleanus*, 159  
   *scandens*, 164  
   *schoenanthus*, 162  
   *serrulatus*, 147  
   *speciosus*, 189  
   *subrepens*, 157  
   *trinii*, 160  
   *trispicatus*, 175  
   *tristachyos*, 175  
   *tristis*, 145  
*Androscepi* *anathera*, 208  
   *gigantea* var. *armata*, 209  
*Aneilema divergens*, 98  
   *herbaceum* var. *divergens*, 98  
   *nudiflorum*, 98  
   *radicans*, 98  
   *spiratum*, 99  
**Anemonastrum**, xl, 239  
   *demissum*, 239  
   *elongatum*, 239, Pl. 25  
   **geum**, 239  
   *obtusilobum*, 240, Pl. 25  
   *polyanthes*, xxi, 240, Pl. 25  
   *rockii*, 241  
   **tetrasepalum**, 241, Pl. 25  
*Anemone bonatiana* var. *geum*, 239  
   *demissa*, 239  
   *discolor*, 240  
   *dubia*, 254  
   *elegans*, 255  
   *elongata*, 239  
   *geraniifolia*, 254  
   *geum*, 239  
     subsp. *ovalifolia*, 239  
     subsp. *potentilloides*, 239  
   *govaniana*, 240  
   *hispida*, 254  
   *leveillei*, 254  
   *longipes*, 254  
   *longiscapa*, 240  
   *micrantha*, 240  
   *mollis*, 240  
   *narcissiflora* var. *polyanthes*, 240  
   *obtusiloba*, 240  
     subsp. *ovalifolia*, 239  
     subsp. *rockii*, 241  
     var. *leiocarpa*, 240  
     var. *orthocaula*, 239  
     var. *potentilloides*, 239  
   *ovalifolia*, 239  
   *polyanthes*, 240  
   *rivularis*, 239, 254  
   *rockii*, 241  
   *rupestris* var. *pilosa*, 239  
     var. *villosa*, 240  
   *rupicola*, 254  
   *saniculifolia*, 254  
   *scaposa*, 240  
   *tetrasepala*, 241  
   *villosa*, 240  
   *vitifolia*, 255  
   *wardii*, 239  
   *wightiana*, 254  
*Anemonidium obtusilobum*, 240  
   *rivulare*, 254  
   *tetrasepalum*, 241

ANGIOSPERMS, xxxii, xxxv,  
xxxvi, xxxvii, xxxviii, xxxix,  
11

*Anguillaria indica*, 37

*Annona hexapetala*, 14  
*uncinata*, 14

ANNONACEAE, xxxviii, 14

*Anogeissus latifolia*, xvii

*Anthericum nepalense*, 89

*Anthistiria anathera*, 208

*australis*, 209

*caudata*, 209

*hookeri*, 209

*imberbis*, 209

*Anthoxanthum*, 145

*hookeri*, 145

*laxum*, xxi, 145

*Aorchis roborovskii*, 58

*spatulata*, 58

*Apluda*, 146

*aristata*, 146

*mutica*, xx, 146

subsp. *aristata*, 146

*varia*, 146

var. *aristata*, 146

*Aquilegia*, 241

*pubiflora*, 241, Pl. 26

*vulgaris* subsp. *pubiflora*, 241

ARACEAE, xxix, xxxvii, xxxviii,  
xxxix, 20

Arecales, xxxix

ARECACEAE, 95

*Arenaria*, xxii

*Argentina anserina*, xxii

*Arisaema*, xxxvii, xl, 20

*affine*, 20

*alienatum*, 20

*biflagellatum*, 22

*concinnum*, 20, pl. 3

var. *alienatum*, 20

*consanguineum*, 21, pl. 4

*cornutum*, 22

*curvatum*, 24

*erubescens*, 21

var. *consanguineum*, 21

*exile*, 22

*flavum*, 22, pl. 3

subsp. *abbreviatum*, 22

*helleborifolium*, 24

*intermedium*, 22

f. *biflagellatum*, 22

*jacquemontii*, 22, pl. 4

*propinquum*, 23, 25, pl. 4

*sikkimense*, 23

*speciosum*, 23

*stracheyanum*, 22

*tortuosum*, 24, pl. 4

*utile*, 24

*verrucosum* var. *utile*, 24

*wallichianum*, 23

*wightii*, 22

*Aristida*, 146

*adscensionis*, 146

*arundinacea*, 185

*bromoides*, 146

*depressa*, 146

*maritima*, 146

*vulgaris*, 146

*Aristolochia*, 13

*punjabensis*, 13, pl. 3

ARISTOLOCHIACEAE, xxxviii,  
13

*Artabotrys*, 14

*hexapetalus*, 14

*uncinatus*, 14

*Artemisia*, xxi, xxii

*hedinii*, xxii

*rutifolia*, xxii

*vestita*, xxii

*Arthraxon*, 147

*ciliaris*, 147

*hispidus*, 147

*lancifolius*, 147

*micans*, 147

*prionodes*, 147

*quartinianus*, 147

*Arum erubescens*, 21

*flavum*, 22

*speciosum*, 23

*tortuosum*, 24

*viviparum*, 26

*Arundinaria aristata*, 208

*falcata*, 167

*intermedia*, 167

*interrupta*, 167

*spathiflora*, 208

*Arundinella*, 148

*bidentata*, 148

*capillaris*, 148

*glabra*, 148

*miliacea*, 148

*mutica*, 148

*nepalensis*, 148

*rigida*, 148

*setosa*, xx, 148

var. *esetosa*, 148

*virgata*, 148

*Arundo*, 149

*bambusifolia*, 149

*bengalensis*, 149

*bifaria*, 149

*donax*, 149

*madagascariensis*, 185

*pseudophragmites*, 156

ASPARAGACEAE, xxxvii, xxxix,  
xl, xlii, 87

*Asparagales*, xxxix

*Asparagus*, 87

*curillus*, 87

*filicinus*, 87, pl. 13

var. *brevipes*, 87

var. *lycopodineus*, 88

var. *microclada*, 87

*lycopodineus*, 88

*nepalensis*, 87

*racemosus*, 88

var. *subacerosus*, 88

*Aster diplostaphioides*, xxi

*Astragalus*, xxi

*rhizanthus*, xxi

*Ataxia hookeri*, 145

*Aulacolepis petelotii*, 154

*Austrobaileales*, xxxviii

*Avena*, 149

*fatua*, 149

var. *glabrata*, 149

var. *pilosa*, 149

*flaccida*, 182

*flavescens* var. *virescens*, 182

*japonica*, 149

*roylei*, 211

*sativa* var. *sericea*, 149

*Axonopus*, 150

*Axonopus compressus*, 150

*Baimo cirrhosa*, 41

*Bambusa aristata*, 208

Basal Angiosperms, xxxviii

*Batrachium trichophyllum*, 262

*Batrachium micans*, 147

*Benzoin nacusua*, 16  
**BERBERIDACEAE**, xxxvii,  
 xxxix, xli, xlii, 228  
**Berberis**, xxxvii, xl, 228  
*acanthifolia*, 233  
*aristata*, 228, Pl. 23  
*asiatica*, 228, Pl. 23  
*ceratophylla*, 228  
*chitria*, 228  
*glaucocharpa*, 229, Pl. 23  
*hamiltoniana*, 230, Pl. 23  
*jaeschkeana*, xxi  
 var. *usteriana*, 230  
*karnaliensis*, xli, 230, Pl. 24  
*koehneana*, xxv, 231, Pl. 24  
 var. *auramea*, 231  
*kumaonensis*, xxi, xxv, 231,  
 Pl. 23  
*mucrifolia*, xxi, xli, 232  
*napaulensis*, 233  
*nepalensis*, 233  
*petiolaris*, 232  
 var. *garhwalana*, 232  
*sikkimensis*, 228  
*thomsoniana*, xxi, 233  
*usteriana*, 230  
*Bergenia*, xxiii  
*Betula alnoides*, xix  
 utilis, xix, xx  
*Biermannia taenialis*, 73  
*Bistorta affinis*, xxi  
*macrophylla*, xxi  
*perpusilla*, xxii  
*vacciniifolia*, xxii  
*vivipara*, xxi  
*Blismocarex macrantha*, 123  
 subsp. *nudicarpa*, 123  
*nudicarpa*, 123  
**Blasmus**, 111  
 compressus, xxii, 111  
*Boehmeria*, xviii  
*Bombax ceiba*, xviii  
**Bothriochloa**, 150  
*bladhii*, 150  
*glabra*, 150  
*intermedia*, 150  
 var. *punctata*, 150  
*ischaemum*, 150  
*parviflora*, 157  
*pertusa*, 151

*Brachiaria villosa*, 212  
 var. *barbata*, 212  
**Brachycorythis**, 46  
 obcordata, xxiii, xlii, 46  
**Brachypodium**, 151  
*longearistatum*, 170  
*pinnatum*, 151  
*sylvaticum*, 151  
 var.  *khasianum*, 151  
 var. *longe-aristatum*, 151  
 var. *luzoniense*, 151  
 var. *pseudodistachyon*, 151  
**Briza**, 152  
 media, 152  
*Bromopsis himalaica*, 152  
**Bromus**, xl, 152  
*australis*, 154  
*dubius*, 172  
*giganteus*, 182  
*glomeratus*, 163  
*grandis*, 153  
*himalaicus*, 152  
 var. *grandis*, 153  
*japonicus*, 153  
*patulus*, 153  
*pinnatus*, 151  
*porphyranthos*, xxi, 153  
*staintonii*, 153  
*staintonii* var. *pilosiusculus*, 153  
*tectorum*, 154  
*Buddleja crispa*, xx  
*Bulbocodium serotinum*, 42  
**Bulbophyllum**, 47  
*alopecurus*, 47  
*mackeeanum*, 47  
*micranthum*, 47  
*triste*, 47  
**Bulbostylis**, 112  
*barbata*, 112  
*capillaris* var. *trifida*, 112  
*densa*, 112  
*Bupleurum*, xxi  
**BUXACEAE**, xxxv, xxxix, 270  
 Buxales, xxxix  
**Buxus**, 270  
*saligna*, 271  
*wallichiana*, xx, 270, Pl. 30  
*Caladium pumilum*, 25  
*viviparum*, 26

**Calamagrostis**, xl, 154  
*abnormis*, 154  
*compacta*, 155  
*emodensis*, 154  
*garhwalensis*, 154  
*holciformis*, 155  
*jacquemontii*, 144  
*lahulensis*, 155  
*littorea* var. *tartarica*, 156  
*munroana*, 143  
 var. *stricta* Hook. f., 143  
*nepalensis*, 156  
*nivicola*, 155  
*petelotii*, 154  
*pilosula*, 144  
 var. *alpestris*, 144  
*pseudophragmites*, 156  
 subsp. *tartarica*, 156  
*pulchella*, 155  
*scabrescens*, 156  
 var. *humilis*, 156  
**Calanthe**, xl, 47  
*alpina*, 47  
*amoena*, 49  
*australis*, 79  
*brachychila*, 48  
*fimbriata*, 47  
*himalaicum*, xl, xli, 48  
*mannii*, 48, pl. 9  
*occidentalis*, 49  
*pantlingii*, 49  
*plantaginea*, 48  
*puberula*, 49  
*pusilla*, 48  
*similis*, 49  
*tricarinata*, 49, pl. 8  
**Callianthemum**, 242  
*cachemirianum*, 242  
*endlicheri*, 256  
*imbricatum*, 242  
*pimpinelloides*, 242  
*tibeticum*, 242  
*Callicarpa macrophylla*, xvii, xviii  
*Callista amoena*, 54  
*denudans*, 55  
*eriiflora*, 55  
*fimbriata*, 55  
*primulina*, 56  
**Caltha**, 242  
*asarifolia*, 242



- govaniiana*, 242  
*himalayanus*, 242  
*himalensis*, 242  
**palustris**, xxii, 242, Pl. 26  
     var. *himalensis*, 242  
     var. *normalis*, 242  
*Camphora glandulifera*, 15  
**Capillipedium**, 157  
     *assimile*, 157  
     *glaucopsis*, 157  
     *parviflorum*, 157  
     *subrepens*, 157  
 Caragana, xxi  
     *versicolor*, xxi  
**Cardiocrinum**, 40  
     *giganteum*, 40, pl. 6, 7  
**Carex**, xxii, xxxvii, xxxix, 112  
     *alpina* var. *gracilentia*, 117  
     *angustifructus*, 113  
     *atrata*, xxii, 112, Pl. 18  
         subsp. *pullata*, 113  
         var. *glacialis*, 113  
         var. *pullata*, 113  
         var. *subglacilentia*, 113  
     *atrofusca* subsp. *minor*, 113, Pl. 18  
         var. *angustifructus*, 113  
         var. *minor*, 113  
     *bengalensis*, 115  
     *bhutanica*, 118  
     *breviculmis*, 113  
         subsp. *royleana*, 113  
     *cardiolepis*, 114  
     *caricina*, 116  
     *celsa*, 125  
     *clavispica*, 114  
     *condensata*, 114, Pl. 18  
     *cruciata*, 115  
         var. *argocarpus*, 115  
     *cruenta*, 115  
     *deasyi*, 115  
     *diffusa*, 128  
     *duthiei*, 117  
         var. *glacialis*, 113  
     *echinochloiformis*, 128  
     *esbirajbhandarii*, xli, 116  
     *esenbeckii*, 116  
     *filicina*, 116  
     *fissiglumis*, 117  
     *foliosa*, 128  
     *fusiformis*, 117  
     *gracilentia*, xxi, xxii, 117  
     *griersonii*, 126  
     *griffithii*, 122  
     *haematostoma*, xxi, 118  
     *heterolepis*, 115  
     *inanis*, 118  
     *infuscata* var. *gracilentia*, 117  
     *kokanica*, 118  
     *kumaonensis*, 119  
     *lebrunii*, 128  
     *lehmannii*, 119  
     *linearis*, 127  
         var. *elachista*, 127  
     *longicuris*, 119  
     *longipes*, 120  
         var. *nepalensis*, 120  
     *melanantha* var. *moorcroftii*, 121  
     *microglochis*, xxii, 120, Pl. 18  
     *monopleura*, 125  
     *montis-everestii*, 120  
     *moorcroftii*, 121  
     *muricata* var. *foliosa*, 128  
     *mutans*, 116  
     *myosurus*, 121  
         subsp. *spiculata*, 121  
         var. *praestans*, 121  
     *neesii*, 127  
     *nepalensis*, 120  
     *nivalis*, 122  
         var. *griffithii*, 122  
     *notha*, 122  
     *notoleia*, 128  
     *nubigena*, 122  
     *nudicarpa*, 123  
     *obscura*, 123  
         var. *brachycarpa*, 123  
     *ovoidispica*, 123, Pl. 18  
     *pachyrrhiza*, 126  
     *parvula*, 124  
     *praestans*, 121  
     *pseudofilicina*, 116  
     *pseudolaxa*, 124  
     *psychrophila*, 125  
     *rara*, 125  
     *remota* subsp. *rochebrunei*, 125  
         subsp. *stewartii*, 125  
         var. *rochebrunei*, 125  
     *rochebrunei*, 125  
     *royleana*, 113  
     *rufulistolon*, 126  
     *schlagintweitiana*, 126  
         subsp. *deformis*, 126  
     *setigera* var. *fasciculata*, 128  
         var. *schlagintweitiana*, 126  
     *setosa*, 126  
     *speciosa*, 126  
     *spiculata*, 121  
     *stracheyi*, 127  
     *supina*, 127  
     *trinervis*, 116  
     *unciniiformis*, xxii, 127  
     *ustulata* var. *minor*, 113  
     *vesiculosa*, 128  
     *wallichiana*, 128  
     *winterbottomii*, 128  
 Carpinus *faginea*, xix  
     *viminea*, xix  
 Cassiope *fastigiata*, xxi  
*Catabrosa himalaica*, 157  
     *wallichii*, 188  
*Catabrosella*, 157  
     *himalaica*, 157  
**Cautleya**, 100  
     *gracilis*, 100, 101, pl. 16  
     *lutea*, 100  
     *petiolata*, 101  
     *robusta*, 101  
     *spicata*, 101, Pl. 16  
**Cedrus**, 4  
     *deodara*, xvi, xvii, xix, 4, pl. 1  
     *indica*, 4  
     *libani* subsp. *deodara*, 4  
         var. *deodara*, 4  
 Celtis *australis*, xix  
**Cenchrus**, 158  
     *americanus*, 158  
     *flaccidus*, xx, 158  
     *granularis*, 179  
     *orientalis*, 159  
     *parviflorus*, 203  
**Cephalanthera**, 49  
     *acuminata*, 50  
     *erecta*, 49, pl. 9  
         var. *oblanceolata*, 49  
     *longifolia*, 50, pl. 9  
*Chaetochloa parviflora*, 203  
     *verticillata*, 204  
*Chelidonium lactucoides*, 221

- Chimonobambusa intermedia*, 167  
*Chlorocyperus rotundus*, 134  
**Chlorophytum**, 89  
*flaccidum*, 89  
*khasianum*, 89  
*nepalense*, 89, pl. 13  
*undulatum*, 89  
*Chrysocyathus falconeri*, 238  
**Chrysopogon**, 159  
*aciculatus*, 159  
*echinulatus*, 159  
*fulvus* var. *serrulatus*, 160  
*glabratus*, 159  
*gryllus*, xx, 159  
*royleanus*, 159  
*serrulatus*, 160  
*Chusua donii*, 76  
*nana*, 76  
*pauciflora*, 76  
*roborovskii*, 58  
*Cimicifuga foetida* var. *bifida*, 238  
*frigida*, 238  
**Cinnamomum**, 15  
*albiflorum*, 15  
*glanduliferum*, 15  
*tamala*, xxiii, xlii, 15, pl. 3  
**Cissampelos**, 225  
*glabra*, 227  
*hirsuta*, 225  
*nepalensis*, 225  
*pareira*, 225, Pl. 22  
var. *hirsuta*, 225  
**Clematis**, xxxvii, xl, 243  
*amplexicaulis*, 245  
*anemoniflora*, 246  
*barbellata*, 243, Pl. 26  
*bucamara*, 244  
*buchananiana*, 244, 246, Pl. 27  
subsp. *connata*, 245  
subsp. *grewiiflora*, 246  
var. *rugosa*, 244  
var. *sericea*, 244  
var. *tortuosa*, 244  
var. *vitifolia*, 244  
*buchananii*, 244  
*confusa*, 244, Pl. 27  
*connata*, 244, 245, Pl. 27  
var. *confusa*, 244  
var. *lanceolata*, 245  
*cordata*, 245  
*gouriana*, 245  
*gracilis*, 245  
*grata*, 245, Pl. 27  
*grewiiflora*, 246  
*indica*, 245  
*loasifolia*, 244, 246  
*martinii*, 245  
*montana*, 246, Pl. 27  
var. *grandiflora*, 246  
*nepalensis*, 243  
*nutans*, 247  
*punduana*, 246  
*roylei*, 247  
*tibetana*, 247  
*tortuosa*, 244  
*velutina*, 245  
*venosa*, 245  
*vitalba* subsp. *gouriana*, 245  
subsp. *grata*, 245  
*vitifolia*, 244  
*wallichii*, 246  
*Clinelymus dahuricus*, 170  
*nutans*, 171  
*sibiricus*, 172  
*tangutorum*, 170  
**Clintonia**, 41  
*alpina*, 41  
*udensis* subsp. *alpina*, 41  
var. *alpina*, 41, pl. 7  
**Cocculus**, 226  
*angustifolius*, 226  
*laurifolius*, xx, 226, Pl. 22  
**Coelogyne**, 50  
*articulata*, 74  
*corymbosa*, 50  
*cristata*, 51  
*humilis*, 76  
*imbricata*, 74  
**COLCHICACEAE**, xxxvii, xxxviii, 36  
*Coleus barbatus*, xx  
*Colocasia pumila*, 25  
*Colpodium himalaicum*, 157  
subsp. *scutatum*, 157  
*wallichii*, 188  
*Colquhounia coccinea*, xx  
**Commelina**, 96  
*agraria*, 96  
*benghalensis*, 96  
*caespitosa*, 96  
*cavaleriei*, 96  
*cristata*, 97  
*cucullata*, 96  
*diffusa*, 96  
*donii*, 97  
*gracilis*, 96  
*maculata*, 96, Pl. 15  
*mollis*, 96  
*nana*, 99  
*nervosa*, 96  
*nudiflora*, 98  
*obliqua*, 97  
var. *viscida*, 96  
*obtusifolia*, 96  
*paludosa*, 97  
var. *viscida*, 96  
*spirata*, 99  
**COMMELINACEAE**, xxxvii, xxxix, 96  
Commelinales, xxxix  
*Convallaria cirrhifolia*, 92  
*cirrhus*, 92  
*leptophylla*, 94  
*verticillata*, 94  
**Corallorhiza**, 51  
*anandae*, 51  
*foliosa*, 71  
*jacquemontii*, 51  
*trifida*, 51, pl. 9  
*innata*, 51  
*Cornus macrophylla*, xix  
**Corydalis**, xxviii, xxxvii, xxxix, 212  
*calycina*, xli, 212  
*cashmeriana*, xlii, 213, Pl. 19  
*casimiriana*, 213, Pl. 19  
*chaerophylla*, 214, Pl. 19  
*cornuta*, 214, Pl. 20  
*debilis*, 214  
*diphylla*, 215  
*elegans*, 215, Pl. 20  
*filiformis*, 215, Pl. 20  
*govianiana*, 216, Pl. 20  
*hamiltoniana*, 215  
*hamiltonii*, 215  
*longipes*, 216  
*magni*, 217  
*meifolia*, 217, Pl. 20  
var. *sikkimensis*, 217

- modesta*, 215  
**nana**, 217, Pl. 21  
 var. *jaquemontii*, 219  
*pauciflora*, 215  
**pseudojunca**, 218, Pl. 20  
*ramosa*, 220  
 var. *glauca*, 220  
 var. *nana*, 217  
 var. *vaginans*, 220  
**shakya**, xxviii, 218  
**stipulata**, xli, 218  
**stracheyi**, 219, Pl. 21  
**terraccina**, xli, 219  
*thalictrifolia*, 214  
**uncinata**, xli, 219  
**vaginans**, 220  
*Corylus jacquemontii*, xviii, xix  
*Cotinus coggygria*, xix  
*Cotoneaster acuminatus*, xxv  
*bisramianus*, xxv  
*ignotus*, xxv  
*microphyllus*, xxi  
*Courtoisia cyperoides*, 133  
*Courtoisia cyperoides*, 133  
*Cremanthodium nepalense*, xxii  
*oblongatum*, xxii  
**Crepidium**, 51  
*acuminatum*, 51, pl. 9  
**Crinum**, 86  
*latifolium*, 86, pl. 12  
*Crotalaria*, xx  
**CUPRESSACEAE**, xxxvii,  
 xxxviii, xlii, 7  
**Cupressus**, 7  
*doniana*, 7  
*karnaliensis*, 7  
 subsp. *mustangensis*, 7  
 var. *mustangensis*, 7  
*lusitanica* subsp. *torulosa*, 7  
*nepalensis*, 7  
*pakistanensis*, 7  
*torulosa*, xvi, xvii, xix, 7, 8  
 subsp. *karnaliensis*, 7  
*Curculigo graminifolia*, 81  
**Cyanotis**, 97  
*barbata*, 98  
*cristata*, 97  
*vaga*, 97, pl. 15  
*Cymbidium imbricatum*, 74  
*speciosissimum*, 51  
**Cymbopogon**, xl, 160  
*distans*, xx, 160  
*hookeri*, 145  
*jwarancusa*, 161  
*munroi*, 145  
*pendulus*, 161  
*pospischilii*, 161  
*schoenanthus*, 162  
*stracheyi*, 161  
*tibeticus*, 145  
**Cynodon**, 162  
*dactylon*, 162  
*ternatus*, 166  
*Cynosurus aegyptius*, 163  
*coracanus*, 169  
*indicus*, 169  
**CYPERACEAE**, xxxvii, xxxix, xl,  
 xli, 111  
**Cyperus**, xxxvii, xxxix, 129  
*albescens*, 129  
*alulatus*, 129  
*angustifolius*, 130  
*aristatus*, 135  
*atratus*, 135  
*breviculmis*, 134  
*brevifolius*, 129  
*caricinus*, 116  
*commutatus*, 134  
*compressus*, 130  
*cuspidatus*, 130  
*cyperinus*, 130  
*cyperoides*, 131  
*delicatulus*, 135  
*difformis*, 131  
*donianus*, 133  
*flavidus*, 132  
*iria*, 132  
*kleinianus*, 133  
*metzii*, 132  
*nitens*, 134  
*niveus*, 133  
*obliquus*, 133  
*paniculatus*, 133  
*pauciflorus*, 133  
*pectinatus*, 130  
*pilosus*, 133  
 var. *obliquus*, 133  
*pseudokyllingoides*, 133  
*pumilus*, 134  
*punctatus*, 134  
*rotundus*, 134  
*sanguinolentus*, 135  
*setifolius*, 130  
*squarrosus*, 135  
*strictus*, 132  
*tenuispica*, 135  
*tuberosus*, 134  
**Cypripedium**, 52  
*cordigerum*, xlii, 52, pl. 9  
*elegans*, xlii, 52, pl. 10  
*himalaicum*, xlii, 53, pl. 9  
*macranthos* var. *himalaicum*, 53  
**Cyrtococcum**, 162  
*patens*, 162  
**Dactylicapnos**, 220  
*macrocapnos*, 220  
*roylei*, 220, Pl. 21  
**Dactylis**, 163  
*glomerata*, 163, Pl. 19  
 subsp. *himalayensis*, 163  
**Dactyloctenium**, 163  
*aegyptium*, 163  
*mucronatum*, 163  
**Dactylorhiza**, 54  
*hatagirea*, xxii, xxiii, xlii, 54,  
 pl. 10  
*Daiswa polyphylla*, 35  
*Dalbergia sericea*, xvii  
*Danthonia cachemyriana*, 207  
 var. *minor*, 207  
*cumminsii*, 207  
*exilis*, 207  
*jacquemontii*, 207  
*minor*, 207  
*schneideri*, 207  
**Daphne**, xxiii  
*Daphnidium pulcherrimum*, 16  
*Dasiphora arbuscula*, xxi  
**Debregeasia**, xviii  
*longifolia*, xviii  
*saeneb*, xviii  
**Delphinium**, xxxvii, xl, 248  
*aitchisonii*, 249  
*brunonianum*, xlii, 248, 249,  
 Pl. 27  
 var. *aitchisoni*, 248  
 var. *densum*, 249  
 var. *jacquemontianum*, 248  
 var. *schlagintweitii*, 248

**caeruleum**, 249, Pl. 28  
**cashmerianum**, 249, Pl. 28  
**densiflorum**, xxv, 249, Pl. 28  
     var. *platycentrum*, 249  
**denudatum**, 250, Pl. 28  
*elatum* var. *incisum*, 251  
     var. *ranunculifolium*, 252  
*foetidum*, 248  
*grandiflorum* var. *kumaonense*, 252  
     var. *kunawarensis*, 249  
**himalayae**, xli, xlii, 250, 251, 252, Pl. 28  
*himalayense*, 250  
*hoffmeisteri*, 252  
**incisum**, 251  
*jacquemontianum*, 248  
**kamaonense**, xxv, 252, 253, Pl. 28  
*moschatum*, 248  
*pauciflorum*, 250  
*pulchellum*, 252  
**pyramidale**, 252  
*ranunculifolium*, 252  
     var. *incisum*, 251  
*rectivenium*, 253  
*speciosum* var. *pyramidale*, 252  
     subsp. *ranunculifolium*, 252  
**vestitum**, 253, Pl. 28  
     var. *stenolobum*, 253  
**williamsii**, xl, xli, 253  
**Dendrobium**, xl, 54  
*amoenum*, 54, pl. 10  
*cretaceum*, 56  
*denudans*, 55  
*egertoniae*, 54  
*eriiflorum*, 55  
**fimbriatum**, 55  
     var. *oculatum*, 55  
*mesochlorum*, 54  
*normale*, 55  
**polanthum**, 56  
*primulinum*, 56  
**Dendrolirium**, 56  
*lasiopetalum*, 56  
**Deschampsia**, 164  
*cespitosa*, xxii, 164  
*Deutzia compacta*, xix  
*Deyeuxia abnormis*, 154  
*compacta*, 155

*holciformis*, 155  
*nivicola*, 155  
*petelotii*, 154  
*pulchella*, 155  
     var. *laxa*, 155  
*scabrescens*, 156  
     var. *humilis*, 156  
*Diandranthus nepalensis*, 184  
*Dicentra macrocapnos*, 220  
     *roylei*, 220  
**Dichanthium**, 164  
*annulatum*, 164  
*assimile*, 157  
*ischaemum*, 150  
**Dicranostigma**, 221  
*lactuoides*, 221  
**Dienia**, 56  
*cylandrostachya*, 56  
*muscifera*, 69  
**Digitaria**, xl, 165  
*abludens*, 165  
*adscendens*, 165  
*chinensis*, 166  
*ciliaris*, 165  
*cruciata*, 165  
*fusca*, 166  
*granularis*, 165  
*longiflora*, 166  
*pedicellaris*, 165  
*ternata*, 166  
*violascens*, 166  
*Dillenia pentagyna*, xvii  
**Dioscorea**, xl, 31  
*alata*, 31  
*belophylla*, 31  
*bulbifera*, 31, pl. 5  
*deltoidea*, xlii, 32, pl. 5  
*glabra*, 33  
*hamiltonii*, xlii, 33, pl. 5  
*jacquemontii*, 34  
*kamoonensis*, 33  
     var. *vera*, 33  
*melanophyma*, 34  
*nepalensis*, 32  
*nummularia* var. *belophylla*, 31  
**pentaphylla**, 34  
     var. *jacquemontii*, 34  
     var. *suli*, 34  
*spinosa*, 34  
*tenii*, 34

*triphylla*, 34  
**DIOSCOREACEAE**, xxxvii, xxxviii, xl, xlii, 31  
 Dioscoreales, xxxviii  
**Dipcadi**, 89  
*hysudricum*, 89  
**reidii**, 89  
*serotinum*, 89, pl. 13  
**Disporum**, 36  
*cantoniense*, 36, pl. 6  
     var. *parviflorum*, 37  
*parviflorum*, 37  
**Dodecadenia**, 16  
*grandiflora*, xviii, 16  
     var. *griffithii*, 16  
*griffithii*, 16  
*Donax arundinaceus*, 149  
*Doritis braceana*, 73  
*taenialis*, 73  
*Draba amoena*, xxv  
     *poluniniana*, xxvi, xl  
*Dracocephalum heterophyllum*, xxii  
**Drapanostachyum**, 167  
*falcatum*, 167  
*intermedium*, 167  
*Duhaldea cappa*, xviii  
**Echinochloa**, 168  
*colona*, 168  
*crus-galli*, 168  
     subsp. *colona*, 168  
**Eleocharis**, xl, 136  
*affinis*, 137  
*atropurpurea*, 136  
*congesta*, 136  
*obscura*, 137  
*palustris*, 136  
*pauciflora*, 137  
*purpurascens*, 136  
*quinqueflora*, xxii, 137  
*uniglumis*, xxii, 137  
     var. *affinis*, 137  
**Eleusine**, 169  
*aegyptia*, 163  
*coracana*, 169  
*indica*, 169  
**Elymus**, xl, 170  
*antiquus*, 170  
*canaliculatus*, 170

- dahuricus**, 170  
**longearistatus**, 170  
     subsp. *canaliculatus*, 170  
     subsp. *flexuosissimus*, 170  
*microlepis*, 170  
*nayarii*, 142  
**nepalensis**, xli, 171  
**nutans**, 171  
*pamiricus*, 171  
**schrenkianus**, 171  
**semicostatus**, 172  
**sibiricus**, 172  
**sikkimensis**, 172  
*tangutorum*, 170  
*thomsonii*, 142  
*Elyna kokanica*, 118  
     *laxa*, 124  
     *schoenoides*, 115  
     *stenocarpa*, 118  
**Engelhardia**, xvii  
     *spicata*, xvii  
**Ephedra**, xxi, 1  
     *gerardiana*, xxi, xlii, 1, pl. 1  
     *gerardiana* var. *saxatilis*, 2  
     *pachyclada*, 1  
     *saxatilis*, 2  
**EPHEDRACEAE**, xxxvii, xxxviii,  
     xlii, 1  
**Ephedrales**, xxxviii  
*Epidendrum geniculatum*, 46  
     *hippium*, 78  
     *humile*, 76  
     *retusum*, 78  
     *triste*, 69  
**Epipactis**, 57  
     *amoena*, 57  
     *consimilis*, 57  
     *corallorhiza*, 51  
     *erecta*, 49  
     *helleborine*, 57, pl. 10  
     *latifolia*, 57  
     *longifolia*, 50  
     *macrostachya*, 57  
     *veratrifolia*, 57  
     *wallichii*, 57  
**Equisetum debile**, xxii  
**Eragrostis**, xl, 173  
     *amabilis*, 174  
     *atropurpurea*, 173  
     *degenensis*, 173  
     *indica*, 173  
     *minor*, 173  
     *nigra*, 173  
     *pilosa*, 173  
     *plumosa*, 174  
     *rubens*, 174  
     *tenella*, 174  
     *tenella* var. *plumosa*, 174  
     *tenuiflora*, 173  
     *unioloides*, 174  
*Eria alba*, 74  
     *convallarioides*, 75  
     *flava*, 56  
     *lasiopetala*, 56  
     *pubescens*, 56  
     *spicata*, 75  
*Erianthus filifolius*, 199  
     *fulvus*, 200  
     *hexastachyus*, 175  
     *hookeri*, 199  
     *longesetosus*, 199  
     *longisetosus* var. *hookeri*, 199  
     *mollis*, 175  
     *nepalensis*, 184  
     *pallens*, 200  
     *rufipilus*, 200  
     *tristachyus*, 175  
**Erigeron multiradiatus**, xxi  
**Eriocapitella**, 254  
     *elegans*, 255  
     *rivularis*, xxii, 254, Pl. 26  
     *rupicola*, 254, Pl. 26  
     *vitifolia*, 255, Pl. 26  
**ERIOCAULACEAE**, xxxix, 104  
**Eriocaulon**, 104  
     *cinereum*, 104  
     *nepalense*, 104  
     *sieboldianum*, 104  
     *viride*, 104  
*Eriophorum comosum*, 137  
     *microstachyum*, 138  
**Erioscirus**, 137  
     *comosus*, xx, 137, Pl. 18  
     *microstachyus*, 138  
*Eskemukerjea*, xxvii  
     *megacarpum*, xxvii  
     *nepalensis*, xxvii  
**Eudicots**, xxxix  
**Eulalia**, 175  
     *mollis*, xx, 175  
     *nepalensis*, 184  
     *staintonii*, 175  
     *trispicata*, 175  
     *tristachya*, 175  
**Eulaliopsis**, 176  
     *angustifolia*, 176  
     *binata*, 176  
     *duthiei*, 176  
*Euonymus frigidus*, xx  
*Euphorbia royleana*, xix  
     *stracheyi*, xxi  
*Evansia nepalensis*, 82  
  
**Fagopyrum**, xxvii  
**Festuca**, xxii, xl, 176  
     *gigantea*, 182  
     *glomerata*, 163  
     *leptopogon*, 176  
     *modesta*, 176  
     *nitidula*, 177  
     *ovina*, 177  
         subsp. *polycolea*, 178  
     *parvigluma*, 177  
     *polycolea*, 178  
         var. *brevis*, 178  
     *subulata* var. *leptopogon*, 176  
     *sylvatica*, 151  
     *tectorum*, 154  
     *tibetica*, 178  
     *valesiaca* var. *tibetica*, 178  
*Ficus palmata*, xix  
**Fimbristylis**, xl, 138  
     *bisumbellata*, 138  
     *chaetorrhiza*, 139  
     *complanata*, 139  
     *dichotoma*, 139  
     *falcata*, 139  
     *junciformis*, 139  
     *pallescens*, 138  
     *rigidula*, 140  
     *schoenoides*, 140  
*Flueggea intermedia*, 91  
     *jacquemontiana*, 91  
     *wallichiana*, 91  
**Fritillaria**, 41  
     *cantoniensis*, 37  
     *cirrrosa*, xxiii, xlii, 41, pl. 7  
         subsp. *roylei*, 41  
     *gardneriana*, 43  
     *macrophylla*, 45

- oxypetala*, 44  
*roylei*, 41  
*stracheyi*, 43
- Gagea**, 42  
*elegans*, 42  
*lutea*, 42, pl. 7  
*pulchella*, 45  
*serotina*, 42, 45, pl. 8
- Galearis**, 58  
*roborovskii*, 58  
*spathulata*, 58  
*stracheyi*, 58
- Galeorchis spathulata*, 58
- Galium saipalense*, xxvi, xl
- Gastrochilus**, 58  
*distichus*, 58
- Georchis biflora*, 59  
*foliosa*, 59
- Geum elatum*, xxi
- Glaucium lactuoides*, 221
- Globba**, 101  
*macroclada*, 101
- Gloriosa**, 37  
*doniana*, 37  
*nepalensis*, 37  
*superba*, 37
- Glyceria**, 178  
*kashmiriensis*, 178  
*ovatiflora*, 178  
*rivularis*, 178  
*tonglensis*, 178
- Gnetidae**, xxxviii
- Gonatanthus pumilus*, 25  
*sarmentosus*, 25
- Goodyera**, 59  
*biflora*, xlii, 59, pl. 10  
*foliosa*, 59  
*marginata*, 59  
*repens*, 59, pl. 10  
*secundiflora*, 59
- Gymnadenia**, 60  
*calicicola*, 77  
*cucullata*, 77  
*cylindrostachya*, 60  
*himalayica*, 60  
*obcordata*, 47  
*orchidis*, 60, pl. 10  
*pauciflora*, 76  
*secundiflora*, 78
- spathulata*, 58  
*violacea*, 60
- GYMNOSPERMS**, xxxii, xxxiv, xxxv, xxxvi, xxxvii, xxxviii, 1
- Gynura*, xx
- Habenaria**, xl, 60  
*aitchisonii*, 60  
*amanoana*, 63  
*arcuata*, 75  
*arietina*, 61, 62  
*aurantiaca*, 62  
*bakeriana*, 75  
*chusua*, 76  
*clavigera*, 64  
*commelinifolia*, 61  
*constricta*, 72  
*densa*, 64  
*diceris*, 60  
*edgeworthii*, 64  
*elisabethae*, 65  
*fallax*, 65  
*flavescens*, 62  
*fusifera*, 62  
*gigantea*, 71  
*goodyeroides*, 73  
   var. *affinis*, 73  
*intermedia*, xlii, 61, 63, pl. 10  
   var. *arietina*, 61  
*japonica*, 75  
*latilabris*, 66  
*marginata*, 62  
*nepalensis*, 63  
*obcordata*, 47  
*omeiensis*, 75  
*orchidis*, 60  
*pectinata*, xlii, 62, 63  
   var. *arietina*, 61  
*plantaginea*, 63  
   var. *nepalensis*, xli, 63  
*prainii*, 73  
*promensis*, 62  
*secundiflora*, 78  
*stenantha*, 76  
*stenopetala*, 63  
*sutepensis*, 63  
*triflora*, 72  
*uniflora*, 72
- Habenella latilabris*, 66
- Hackelochloa**, 179
- granularis*, 179
- Halerpestes**, 255  
*tricuspis*, 255  
   var. *variifolia*, 255  
*variifolia*, 255
- Hedychium**, 102  
*acuminatum*, 102  
*album*, 102  
*ellipticum*, 102, Pl. 16  
*fastigiatum*, 102  
*spicatum*, 102, Pl. 16  
   var. *acuminatum*, 102  
*trilobum*, 102
- Helictotrichon virescens*, 211  
*roylei*, 211
- Helleborine consimilis*, 57
- Hemarthria**, 179  
*compressa*, 179  
*glabra*, 179  
*laxa*, 179
- Hemicarex laxa*, 124  
*linearis*, 127  
*pygmaea*, 124
- Hemihabenaria stenantha*, 76
- Hemipilia**, 64  
*bulleyi*, 64  
*cordifolia*, 64  
*cruciata*, 64
- Herminium**, xxxvii, xl, 64  
*angustifolium*, 66  
*clavigerum*, 64  
*congestum*, 67  
*constrictum*, 72  
*duthiei*, 66  
*edgeworthii*, 64, pl. 11  
*elisabethae*, 65  
*fallax*, 65  
*forrestii*, 66  
*gramineum*, 67  
*josephi*, 66  
*lanceum*, 66  
*latilabre*, 66  
*macrophyllum*, 67  
*monophyllum*, 67, pl. 11  
*monorchis*, 68, pl. 11
- Heteropogon**, 179  
*contortus*, 179
- Hierochloa elongata*, 145  
*hookeri*, 145  
*laxa*, 145

- Hippophae tibetana, xxi  
Hippuris vulgaris, xxii  
*Holboellia acuminata*, 224  
*angustifolia*, 224  
*latifolia*, 225  
var. *angustifolia*, 224  
*ovatifoliolata*, 225  
*Holcus parviflorus*, 157  
*pertusus*, 151  
*Holopeira laurifolia*, 226  
**Hordeum**, 180  
*sibiricum*, 172  
**vulgare**, 180  
**Houttuynia**, 12  
**cordata**, 12  
*Hyacinthus serotinus*, 89  
Hydrangea, xix  
**Hypocoum**, 221  
*alpinum*, 221  
*chinense*, 221  
**leptocarpum**, 221  
var. *chinense*, 221  
*Hypolytrum argenteum*, 129  
HYPOXIDACEAE, xxxviii, 81  
*Hypoxidopsis pumila*, 37  
**Hypoxis**, 81  
**aurea**, 81, pl. 12  
**minor**, 81  
  
Ilex dipyrrena, xviii  
Impatiens, xxv  
*bajurensis*, xxxi  
*scullyi*, xxv  
**Imperata**, 180  
*arundinacea*, 180  
**cylindrica**, 180  
Incarvillea diffusa, xx  
*Indocourtoisia cyperoides*, 133  
Indoschulzia garhwalica, xxx  
**Iphigenia**, 37  
**indica**, 37  
IRIDACEAE, xxxviii, 82  
*Iridorkis falconeri*, 70  
*pachyrachis*, 71  
**Iris**, 82  
**decora**, 82, pl. 12  
**duthiei**, 82  
**kemaonensis**, 82, pl. 12  
**kingiana**, 82  
**nepalensis**, 82  
var. *khasiana*, 82  
*tigrina*, 82  
**Isachne**, 181  
**albans**, 181  
*Ischaemum angustifolium*, 176  
*crinitum*, 197  
*robustum*, 189  
*speciosum*, 189  
Isodon rugosus, xx  
**Isolepis**, 140  
*atropurpurea*, 136  
**densa**, 112  
*oryzatorum*, 141  
**setacea**, xxii, 140  
*tenuissima*, 112  
*Isopyrum microphyllum*, 256  
*Isotrema punjabense*, 13  
Juglans regia, xviii, xix  
JUNCACEAE, xxxvii, xxxix, 105  
JUNCAGINACEAE, xxxvii, xxxviii, 28  
**Juncus**, xxxvii, xxxix, 105  
**allioides**, xxii, 105, Pl. 17  
**articulatus**, 105  
**benghalensis**, xxii, 105, Pl.  
*bhutanensis*, 108  
*bracteatus*, 105  
*campestris* var. *multiflorus*, 110  
**clarkei**, 106  
**concinus**, xxii, 106, Pl. 17  
**duthiei**, 106  
**effusus**, 107  
*elegans*, 106  
*glaucus*, 108  
var. *leptocarpus*, 108  
**himalensis**, xxii, 107, Pl. 17  
var. *schlagintweitii*, 107  
*hoffmeisteri*, 109  
*indicus*, 110  
**inflexus**, 108  
*lampocarpus*, 105  
*leschenaultii*, 109  
**leucanthus**, 108  
var. *alpinus*, 108  
**leucomelas**, 108  
var. *thomsonii*, 110  
*luteocarpus*, 106  
**membranaceus**, xxii, 109  
*monticola*, 110  
**prismatocarpus** subsp.  
**leschenaultii**, 109  
var. *leschenaultii*, 109  
*schlagintweitii*, 107  
*sinensis*, 109  
**sphacelatus**, xxii, 109, Pl. 17  
var. *himalensis*, 107  
*sphenostemon*, 105, 106  
*tanguticus*, 108  
**thomsonii**, xxii, 110, Pl. 17  
**wallichianus**, 110  
**Juniperus**, 8  
**excelsa**, 9  
**indica**, xxi, xlii, 8, pl. 2  
*jarkendensis*, 9  
*recurva* var. *squamata*, 9  
**semiglobosa**, 9  
*squamata*, xxi, 9, pl. 2  
*tianschanica*, 9  
*wallichiana*, 8  
*Junopsis decora*, 82  
  
*Kadsura grandiflora*, 11  
*propinqua*, 11, 115  
*Kingidium taeniale*, 73  
*Kitigorhis foliosa*, 71  
*Kobresia*, xxii  
*deasyi*, 115  
*duthiei*, 114  
*esbirajbhandarii*, 116  
*esenbeckii*, 116  
var. *fissiglumis*, 117  
*fissiglumis*, 117  
*foliosa*, 116  
*laxa*, 124  
*macrantha*, 123  
var. *nudicarpa*, 123  
*microglochin*, 120  
*nepalensis*, 127  
var. *elachista*, 127  
*nitens*, 123  
*nudicarpa*, 123  
*pamiroalaica*, 115  
*pseudolaxa*, 124  
*pygmaea*, 124  
var. *filiculmis*, 124  
*royleana*, 118  
*schoenoides*, 115  
*seticulmis*, 116  
*stenocarpa*, 118

var. *royleana*, 118  
**Koeleria**, 181  
*cristata*, 181  
*gracilis*, 181  
*macrantha*, 181  
**pyramidata**, 181  
*spicata* subsp. *himalaica*, 182  
*spicata* subsp. *virescens*, 182  
**Koenigia**, xxi  
*tortuosa*, xxi  
**Krascheninnikovia**, xxi  
*ceratoides*, xxi  
*Kryptostoma intermedium*, 61  
*pectinatum*, 62  
*Kyllinga albescens*, 129  
*brevifolia*, 129  
*cristata*, 132  
*cyperina*, 130  
*cyperoides*, 133  
*metzii*, 132  
*squamulata*, 132  
*sumatrensis*, 131  
  
**Lagerstroemia parviflora**, xvii  
**Lagotis nepalensis**, xxvi, xl  
*Lagurus cylindricus*, 180  
*Lancea tibetica*, xxii  
**LARDIZABALACEAE**, xxxvii,  
xxxviii, xxxix, 224  
*Larix deodara*, 4  
**LAURACEAE**, xxxvii, xxxviii,  
xlii, 15  
**Laurales**, xxxviii  
*Laurus glandulifera*, 15  
*lanceolaria*, 19  
*macrophylla*, 16  
*nacusua*, 16  
*odoratissima*, 18  
*salicifolia*, 19  
*sericea*, 18  
*tamala*, 15  
*umbellata*, 16  
*Lepidium capitatum*, xxii  
*Leptatherum nudum*, 183  
*royleanum*, 183  
*Leptodermis lanceolata*, xx  
*Leptorkis campylostalix*, 68  
*glossula*, 68  
*Leucocephala spathacea*, 104  
*Leycesteria formosa*, xix  
330

**LILIACEAE**, xxxvii, xxxviii, xlii,  
40  
**Liliales**, xxxviii  
**Lilium**, xx, 43  
*cordifolium* subsp. *giganteum*,  
40  
*giganteum*, 40  
*macrophyllum*, 45  
*nanum*, xlii, 43, pl. 7  
*nepalense*, 43, pl. 7  
*ochroleucum*, 43  
*oxypetalum*, 44, pl. 7  
*oxypetalum* var. *insigne*, 44  
*triceps*, 44  
**Lindera**, 16  
*nacusua*, 16  
*pulcherrima*, xviii, 16, pl. 3  
**Liparis**, 68  
*campylostalix*, 68  
*glossula*, 68  
*Lipocarpa argentea*, 129  
*chinensis*, 129  
*Listera lindleyana*, 70  
*longicaulis*, 70  
*Litsea consimilis*, 19  
*grandiflora*, 16  
**Lloydia**, 45  
*longiscapa*, 45, pl. 8  
*serotina*, 42  
f. *parva*, 42  
var. *parva*, 42  
**Lolium**, 182  
*giganteum*, 182  
**Lonicera**, xxi  
*hispida*, xxi  
*myrtillus*, xxi  
*obovata*, xxi  
*spinosa*, xxi  
**Luisia**, 69  
*alpina*, 80  
*striata*, 81  
*tristis*, 69  
*zeylanica*, 69  
**Luzula**, 110  
*multiflora*, 110  
*oligantha*, 111  
**Lyonia ovalifolia**, xvii, xviii  
  
**Macaranga denticulata**, xviii  
**Machilus**, xviii, 17

*bombycina*, 18  
*duthiei*, xviii, 17  
*gamblei*, 18  
*indica*, 18  
*odoratissima*, xxiii, xlii, 18  
*sericea*, 18  
**Magnolia**, 14  
*kisopa*, 14  
**MAGNOLIACEAE**, xxxviii, 14  
**Magnoliales**, xxxviii  
**Magnoliids**, xxxviii  
**Mahonia**, 233  
*acanthifolia*, 233  
*napaulensis*, 233  
*sikkimensis*, 233  
**Maianthemum**, 90  
*fuscum*, 90  
*purpureum*, 90, pl. 13  
**Malaxis**, 69  
*acuminata*, 51  
*cylindrostachya*, 56  
*muscifera*, 69, xlii, 70  
*Mallotus philippensis*, xvii, xviii  
*Manisuris granularis*, 179  
*speciosa*, 189  
*Mariscus aristatus*, 135  
*cyperinus*, 130  
*cyperoides*, 133, 134  
*setaceus*, 140  
*squarrosus*, 135  
*sumatrensis*, 131  
*Mays zea*, 212  
**Meconopsis**, xl, 222  
*chankheliensis*, xli, 222  
*grandis* subsp. *jumlaensis*,  
xxvi, xli, 222  
*horridula*, 222, Pl. 21  
*robusta*, 223, Pl. 21  
*simikotensis*, xxvi, xl, xli, 223,  
Pl. 21  
*staintonii*, xli, 224  
**MELANTHIACEAE**, xxxviii,  
xlii, 35  
*Melanthium indicum*, 37  
**Melica**, 183  
*jacquemontii*, 183  
*latifolia*, 210  
*onoei*, 183  
*persica*, 183  
*scaberrima* var. *micrantha*, 183



- Meliosma**, 269  
**dilleniifolia**, 269  
**MENISPERMACEAE**, xxxix, 225  
*Menispermum laurifolium*, 226  
*Michelia kisopa*, 14  
*Microschoenus duthiei*, 106  
**Microstegium**, 183  
**nudum**, 183  
*Microstylis biloba*, 51  
*cylindrostachya*, 56  
*muscifera*, 69  
*wallichii*, 51  
*Milium compressum*, 150  
*laterale*, 191  
*panicum*, 188  
*Milletia nepalensis*, xxv, xl  
*Millingtonia dilleniifolia*, 269  
*Milula spicata*, 84  
**Miscanthus**, 184  
**nepalensis**, 184  
*Mnesithea granularis*, 179  
*Mondo dracaenoides* var. *clarkei*, 91  
*intermedium*, 91  
*wallichianum*, 91  
**Monochoria**, 100  
**vaginalis**, 100  
Monocots, xxxviii  
*Monorchis duthiei*, 66  
*fallax*, 65  
*forrestii*, 66  
*herminium*, 68  
*josephi*, 66  
*monophylla*, 67  
*Monstera decursiva*, 26  
*glauca*, 26  
*Morus serrata*, xix  
**Muhlenbergia**, 184  
*duthieana*, 184  
*geniculata*, 185  
*himalayensis*, 185  
*huegelii*, 185  
*viridissima*, 185  
**Murdannia**, 98  
*divergens*, 98, pl. 15  
*nudiflora*, 98  
*spirata*, 99  
*Murrraya koenigii*, xvii  
*Myrica esculenta*, xviii  
*Myricaria*, xxi  
*wardii*, xxi  
**Narcissus**, 86  
**tazetta**, 86  
*Nardostachys jatamansi*, xxiii  
**NARTHECIACEAE**, xxxviii, 30  
**Neolitsea**, 19  
**pallens**, xviii, 19, pl. 3  
*umbrosa*, 19  
*Neopicrorhiza scrophulariiflora*, xxiii  
**Neottia**, 70  
*amoena*, 79  
*australis*, 79  
*corallorhiza*, 51  
*lindleyana*, 70  
**listeroides**, 70  
**longicaulis**, 70  
*macrophylla*, 67  
*monophylla*, 67  
*Neottianthe calcicola*, 77  
*cucullata*, 77  
var. *calcicola*, 77  
*mairei*, 78  
*secundiflora*, 78  
*Neubeckia decora*, 82  
*sucala*, 82  
**Neyraudia**, 185  
**arundinacea**, 185  
*madagascariensis*, 185  
*Nocca nepalensis*, xxvi  
*Nomocharis nana*, 43  
*oxypetala*, 44  
**Notholirion**, 45  
**macrophyllum**, 45  
*Nothoscordum sulvia*, 85  
**Oberonia**, 70  
*calcicola*, 70  
*falconeri*, 70  
**pachyrachis**, 71  
*siamensis*, 70  
*umbraticola*, 71  
*Ochyrorchis arietina*, 61  
*intermedia*, 61  
*pectinata*, 62  
*Ocotea lanceolata*, 19  
*Octomeria alba*, 74  
*spicata*, 75  
*Olea*, xix  
*Olea europaea* subsp. *cuspidata*, xix  
*Ophiocordyceps sinensis*, xxiii  
**Ophiopogon**, 91  
**clarkei**, 91, pl. 13  
**intermedius**, 91, pl. 14  
*pallidus*, 95  
*parviflorus*, 91  
*wallichianus*, 91  
*Ophrys corallorhiza*, 51  
*lancea*, 66  
*monorchis*, 68  
**Oplismenus**, 186  
**burmanni**, 186  
**compositus**, 186  
*decompositus*, 186  
*hirtellus* subsp. *undulatifolius*, 186  
*lanceolatus*, 186  
**undulatifolius**, 186  
**ORCHIDACEAE**, xxxvii, xxxviii, xxxix, xl, xli, xlii, 46  
*Orchis chusua*, 76  
*clavata*, 62  
*commelinifolia*, 61  
*cucullata*, 77  
*cylindrostachya*, 60  
*diantha*, 58  
*gigantea*, 71  
*habenarioides*, 60  
*hatagirea*, 54  
*japonica*, 75  
*latifolia* var. *indica*, 54  
*roborovskii*, 58  
*spathulata*, 58  
*stracheyi*, 58  
*stylosanthes*, 61  
**Ororchis**, 71  
**foliosa**, 71  
*Origanum vulgare*, xx  
*Orinus thoroldii*, xxii  
*Ornithogalum luteum*, 42  
*reidii*, 89  
*serotinum*, 42  
**Orthoraphium**, 187  
**roylei**, 187  
**Oryza**, 187  
**sativa**, 187

*Oryzopsis aequiglumis*, 190  
*brachyclada*, 191  
*fasciculata*, 190  
*gracilis*, 191  
*lateralis*, 191  
*munroi*, 191  
*stewartiana*, 191  
**Oxygraphis**, 256  
*endlicheri*, 256, Pl. 28  
*polypetala*, 256

Palmae, 95

**Panicum**, 188

*abludens*, 165  
*adhaerens*, 204  
*adscendens*, 165  
*albens*, 181  
*americanum*, 158  
*burmanni*, 186  
*ciliare*, 165  
*colonum*, 168  
*compositum*, 186  
*cruciatum*, 165  
*crus-galli*, 168  
*dactylon*, 162  
*densepilosum*, 188  
*excurrens*, 203  
*flavidum*, 201  
*forbesianum*, 201  
*geniculatum*, 203  
*glaucum*, 158  
*grossarium*, 212  
*homonymum*, 202  
*hookerianum*, 202  
*indicum*, 201  
*intermedium*, 202  
*italicum*, 202  
*longiflorum*, 166  
*miliaceum*, 188, Pl. 19  
*nanum*, 212  
*neuodes* var. *blepharoneuron*, 203  
*orientale*, 159  
*pallide-fuscum*, 204  
*palmifolium*, 203  
*patens*, 162  
*plicatum*, 203  
*psilopodium*, 188  
*pumilum*, 204  
*sanguinale* var. *ciliare*, 165

*sumatrense*, 188  
 subsp. *psilopodium*, 188  
*ternatum*, 166  
*tomentosum*, 202  
*undulatifolium*, 186  
*verticillatum*, 204  
*villosum*, 212  
*violascens*, 166  
*viride*, 205

**Papaver**, 224

*chankbeliense*, 222  
*dubium* subsp. *glabrum*, 224  
*glabrum*, 224  
*horridulum*, 222  
*robustum*, 223  
*simikotense*, 223  
*staintonii*, 224

**PAPAVERACEAE**, xxxvii, xxxix,  
 xl, xli, xlii, 212

**Paracolpodium**, 188

*wallichii*, 188

**Paraquilegia**, 256

*microphylla*, 256, Pl. 29

**Paris**, 35

*daisiws*, 35  
*polyphylla*, xxiii, xlii, 35, pl. 6  
 var. *wallichii*, 35

*Paspalidium flavidum*, 201

**Paspalum**, 189

*cartilagineum*, 189  
*commersonii*, 189  
*compressum*, 150  
*depressum*, 150  
*fuscum*, 166  
*granulare*, 165  
*longiflorum*, 166  
*macropodium*, 150  
*notatum*, 189  
*orbiculare*, 189  
*pedicellare*, 165  
*pedicellatum*, 165  
*sanguinale* var. *cruciatum*, 165  
*scrobiculatum*, 189  
*ternatum*, 166

**Pecteilis**, 71

*candida*, 72  
*gigantea*, 71  
*triflora*, 72

*Pedicularis longiflora* var.  
*tubiformis*, xxii

*odontoloma*, xxii  
*roylei* var. *speciosa*, xxvii  
*saipalensis*, xxvii

**Pennisetum americanum**, 158

*flaccidum*, 158  
*geniculatum*, 203  
*glaucum*, 158  
*italicum*, 202  
*orientale*, 159  
*parviflorum*, 203  
*spicatum*, 158  
*triflorum*, 159  
*verticillatum*, 204  
*viride*, 205

**Peperomia**, 12

*duclouxii*, 12  
*heyneana*, 12  
*pellucida*, 12  
*tetraphylla*, 13

**Peristylus**, 72

*constrictus*, 72  
*duthiei*, 66  
 var. *inayatii*, 67  
*elisabethae*, 65  
*fallax*, 65  
*goodyeroides*, 72  
*macrophyllus*, 67  
*prainii*, 73  
*secundiflorus*, 78  
*Persea bombycina*, 18  
*duthiei*, 17  
*gamblei*, 18  
*odoratissima*, 18  
*wallichii*, 18

**Phacelurus**, 189

*speciosus*, 189

*Phaeneilema divergens*, 98

*Phaius albus*, 80

**Phalaenopsis**, 73

*taenialis*, 73, pl. 11  
*Phalangium nepalense*, 89  
*Phalaris hispida*, 147  
*Philadelphus tomentosus*, xix  
*Phippisia himalaica*, 157

**Phleum**, 190

*alpinum*, 190  
*commutatum*, 190

**Phoebe**, 19

*lanceolata*, 19  
*sericea*, 18

- Phoenix**, 95  
*humilis* var. *pedunculata*, 95  
**loureiroi** var. *pedunculata*, 95,  
 Pl. 15  
 var. *humilis*, 95  
*pedunculata*, 95
- Pholidota**, 74  
*articulata*, 74, pl. 11  
*bracteata*, 74  
*griffithii*, 74  
*imbricata*, 74  
*obovata*, 74
- Phyllomphax obcordata*, 47  
*Phyllorkis alopecurus*, 47  
*tristis*, 47
- Picea**, 4  
*khutrow*, 4  
*morinda*, 4  
*pindrow*, 2  
*smithiana*, xvi, xvii, xix, xx,  
 xlii, 4  
 var. *nepalensis*, 4
- Picrasma** quassioides, xix
- Pimpinella** kawalekhensis, xxx, xl
- PINACEAE**, xxxvii, xxxviii, xlii, 2
- Pinales**, xxxviii
- Pinalia**, 74  
*leucantha*, 74  
*spicata*, 75, pl. 11
- Pinidae**, xxxviii
- Pinus**, 5  
*brunoniana*, 6  
*deodara*, 4  
*dumosa*, 6  
*exceksa*, 6  
*griffithii*, 6  
*khutrow*, 4  
*longifolia*, 5  
*nepalensis*, 6  
*pendula*, 4  
*pindrow*, 2  
*roxburghii*, xviii, xlii, 5, pl. 1  
*smithiana*, 4  
*spectabilis*, 3  
*wallichiana*, xvi, xix, xx, xlii, 6,  
 pl. 1  
*webbiana*, 3
- Piper pellucidum*, 12  
*reflexum*, 13  
*saxatile*, 13
- tetraphyllum*, 13
- PIPERACEAE**, xxxviii, 12
- Piperales**, xxxviii
- Piptatherum**, 190  
*aequilume*, 190  
 var. *fasciculatum*, 190  
*brachycladum*, 191  
*fasciculatum*, 190  
*gracile*, 191  
*laterale*, 191  
*munroi*, 191
- Pistacia chinensis* subsp.  
*integerrima*, xix
- Plantaginorchis plantaginea*, 63
- Platanthera**, 75  
*acuminata*, 66  
*angustifolia*, 66  
*arcuata*, 75  
*bakeriana*, 75  
*candida*, 72  
*clavigera*, 64  
*commelinifolia*, 61  
*constricta*, 72  
*edgeworthii*, 64  
*fallax*, 65  
*gigantea*, 71  
*japonica*, 75, pl. 11  
*latilabris*, 66  
*marginata*, 62  
*obcordata*, 47  
*orchidis*, 60  
*stenantha*, 76  
*triflora*, 72  
*uniflora*, 72
- Platantheroides clavigera*, 64  
*densa*, 64  
*latilabris*, 66
- Pleione**, 76  
*corymbosa*, 50  
*humilis*, 76  
*speciosissima*, 51
- Poa**, xxxvii, xxxix, 192  
*alberti* subsp. *arnoldii*, 192  
 subsp. *poophagorum*, 195  
 subsp. *kunlunensis*, 193  
 subsp. *lahulensis*, 194
- alpina**, 192  
*amabilis*, 174  
*angustifolia*, 196  
*annua*, 192
- var. *nepalensis*, 194  
 var. *sikkimensis*, 196
- arnoldii**, xxvii, 192
- calliopsis**, 193
- chalarantha*, 195
- eragrostis*, 173
- hylobates**, 193
- indica*, 173
- jaunsarensis*, xxv, 194
- koelzii**, 193
- lahulensis**, 194
- lhasaensis**, xxv, 194
- lithophila*, 195
- media*, 152
- nepalensis**, 194
- nitida*, 181
- pagophila**, 194
- phariana*, 193
- pilosa*, 173
- plumosa*, 174
- polycolia**, 195
- poophagorum**, 195
- pratensis**, 195  
 subsp. *angustifolia*, 196
- pyramidata*, 181
- rajbhandarii**, 196
- rubens*, 174
- sikkimensis**, 196
- stapfiana**, 197  
 var. *micrathera*, 197
- tenella*, 174
- tremula*, 197  
 var. *micranthera*, 197
- triglumis*, 195
- trivialis**, 197
- unioloides*, 174
- POACEAE**, xxxvii, xxxix, xl, xli,  
 142
- Poales**, xxxix
- Podophyllum**, 233  
*emodi*, 233  
 var. *hexandrum*, 233
- hexandrum**, xlii, 233, Pl. 24  
 var. *emodi*, 233
- Pogonatherum**, 197  
*crinitum*, 197  
*molle*, 175
- Pollinia mollis*, 175
- monandra*, 197
- nuda*, 183

- Pollinidium angustifolium*, 176  
*binatum*, 176
- Polygonatum**, xl, 92  
*cirrhifolium*, xlii, 92  
*curvistylum*, 93, pl. 14  
*geminiflorum*, 94  
*graminifolium*, 93, pl. 14  
*jacquemontianum*, 94  
*kansuense*, 94  
*leptophyllum*, 94  
*singalilense*, 93, Pl. 14  
*verticillatum*, xlii, 94, Pl. 14
- Polypogon**, 198  
*fugax*, 198  
*bigegaweri*, 198  
*littoralis* var. *bigegaweri*, 198
- Ponerorchis**, 76  
*chusua*, 76, pl. 12  
*cucullata*, 77, 78  
var. *calicicola*, 77, pl. 11  
*secundiflora*, 78
- Pontederia pauciflora*, 100  
*plantaginea*, 100  
*vaginalis*, 100
- PONTEDERIACEAE**, xxxix, 100
- Populus ciliata*, xix
- Potamogeton**, 29  
*asiaticus*, 29  
*indicus*, 29  
*leschenaultii*, 29  
*morongii*, 29  
*natans*, 29  
*nodosus*, 29  
*octandrus*, 29  
*panormitanus*, 30  
*parvifolius*, 29  
*pusillus*, 30  
*roxburghianus*, 29
- POTAMOGETONACEAE**, xxxviii, 29
- Potentilla*, xxxii  
*argyrophylla*, xxii  
*multifida*, xxii
- Pothos**, 25  
*cathartii*, 25  
*chinensis*, 25  
*decursivus*, 26  
*glaucus*, 26  
*wallichii*, 26
- yunnanensis*, 25
- Pouzolzia rugulosa*, xviii
- Primula tibetica*, xxii
- Prinsepia utilis*, xx
- Protasparagus curillus*, 87  
*filicinus*, 87  
*racemosus*, 88
- Proteales, xxxix
- Prunus cornuta*, xviii, xix, xx  
*rufa*, xx
- Pseudocaryopteris foetida*, xviii
- Pseudopogonatherum trispicatum*, 175
- Ptilagrostis**, 198  
*concinna*, xxii, 198  
*dichotoma*, 199  
*macrospicula*, 199  
*milleri*, 199  
*yadongensis*, 199
- Ptilocnema bracteata*, 74
- Pycnus flavidus*, 132  
*nitens*, 134  
*pumilus*, 134  
*sanguinolentus*, 135
- Pyracantha crenulata*, xx
- Quercus*, xviii  
*dilatata*, xviii  
*floribunda*, xviii  
*incana*, xviii  
*lanata*, xviii  
*lanuginosa*, xviii  
*leucotrichophora*, xviii  
*oblongata*, xviii  
*semecarpifolia*, xviii, xix, xx
- RANUNCULACEAE**, xxxvii, xxxix, xl, xli, xlii, 234
- Ranunculales, xxxix
- Ranunculus**, xxii, xxxvii, xxxix, 257  
*adoxifolius*, 257, Pl. 29  
*affinis* var. *stracheyanus*, 261  
*aquatilis*, 259  
var. *trichophyllus*, 262  
*arvensis*, 257  
*attenuatus*, 259  
*bonatianus*, 261  
*brotherusii*, 258, Pl. 29  
*caespitosus*, 257
- diffusus*, 258, Pl. 29
- distans**, 258
- ficariifolius*, 261
- flaccidus*, 261, 262
- glabratus*, 259
- himalaicus** xxii, xxvi, xl, xli, 259, Pl. 29
- hirtellus**, 259, Pl. 29  
var. **leiocarpus**, 260
- hydrocotyloides*, 258
- hyperboreus* var. *natans*, 262
- laetus*, 258
- longicaulis**, 260, Pl. 29
- membranaceus**, 261  
var. *stracheyanus*, 261
- microphyllus**, 261
- mollis*, 258
- mongolicus*, 259
- munroanus**, 261  
var. *minor*, 262
- natans**, 262
- nepalensis*, 258
- nephelogenes* var. *longicaulis*, 260
- obtectus*, 258
- pimpinelloides*, 242
- polypetalus*, 256
- popovii* var. *stracheyanus*, 261
- pseudolaetus*, 258
- pulchellus**, 262  
var. *longicaulis*, 260  
var. *membranaceus*, 261  
var. *sericeus*, 261  
var. *stracheyanus*, 261
- royleanus*, 256
- trichophyllus**, 262
- tricuspis*, 255  
var. *variifolia*, 255
- vitifolius*, 258
- Remusatia**, 25  
*garrettii*, 25  
*pumila*, 25  
*vivipara*, 26, pl. 4
- Rhaphidophora**, 26  
*affinis*, 26  
*decursiva*, 26  
*eximia*, 26  
*glauca*, 26  
*grandis*, 26  
*insignis*, 26

- Rheum australe, xxiii  
Rhodiola, xxii  
    himalensis subsp. bouvieri, xxv  
Rhododendron, xxi  
    anthopogon, xxi  
    arboreum, xviii, xix, xx  
    barbatum, xx  
    campanulatum, xx  
    lepidotum, xxi  
    nivale, xxi  
Rhus, xix  
Rhynchostylis, 78  
    retusa, 78, pl. 12  
Rosa sericea, xxi  
Roscoea, 103  
    alpina, 103, Pl. 17  
        var. minor, 103  
    gracilis, 100  
    intermedia, 103  
    longifolia, 103  
    lutea, 100  
    procera, 103  
    purpurea, 103, Pl. 17  
        var. gigantea, 103  
        var. minor, 103  
        var. procera, 103  
    spicata, 101  
Rosularia alpestris subsp.  
    marnieri, xxii  
Rottboellia compressa, 179  
    glabra, 179  
    speciosa, 189  
Rubus, xxi  
Rumex, xx
- SABIACEAE, xxxix, 269**  
Sabina indica, 8  
    semiglobosa, 9  
    squamata, 9  
    wallichiana, 8  
Saccharum, 199  
    canaliculatum, 200  
    chinense, 200  
    cylindricum, 180  
    filifolium, 199  
    hookeri, 199  
    insulare, 200  
    longesetosum, 199  
    propinquum, 200  
    rufipilum, 200  
        semidecumbens, 200  
        spontaneum, 200  
Sacciolepis, 201  
    indica, 201  
Saccolabium distichum, 58  
Sagittaria, 27  
    sagittifolia var. diversifolia, 27  
    trifolia, 27  
Salix, xxi  
    denticulata, xxi  
    lindleyana, xxi  
    sclerophylla, xxi  
    serpyllum, xxi  
Sampacca kisopa, 14  
Sapindus mukorossi, xxxiii  
Sapium insigne, xviii  
Sarcococca, 270  
    hookeriana, 270, 271  
    laurifolius, 271  
    nepalensis, 271  
    pruniformis var. angustifolia,  
        271  
        var. hookeriana, 270  
    salicifolia, 271  
    saligna, 271, Pl. 30  
Satyrium, 79  
    albiflorum, 79  
    ciliatum, 79  
    monorchis, 68  
    nepalense, 79, pl. 12  
        var. ciliatum, 79  
    repens, 59  
Sauromatum, 27  
    diversifolium, 27, pl. 4  
SAURURACEAE, xxxvii, xxxviii,  
    12  
Saussurea, xxxi  
    ramchaudharyi, xxxi, xl  
    talungensis, xxxi, xl  
Saxifraga alpigena, xxii  
    hypostoma, xxii  
Schedonorus tectorum, 154  
Schisandra, 11  
    grandiflora, 11, pl. 2  
    propinqua, 11  
SCHISANDRACEAE, xxxv,  
    xxxvii, xxxviii, 11  
Schoefnoplectiella, 141  
    fuscorubens, 141  
    juncoides, 141  
        lateriflora, 141  
Schoenoplectus fuscorubens, 141  
    juncoides, 141  
    lateriflorus, 141  
    setaceus, 140  
    supinus subsp. lateriflorus, 141  
Schoenoxiphium laxum, 124  
Schoenus compressus, 111  
    duthiei, 106  
Scindapsus decursivus, 26  
    glaucus, 26  
Scirpus atropurpureus, 136  
    barbatus, 112  
    bisumbellatus, 138  
    chinensis, 129  
    comosus, 137  
    complanatus, 139  
    compressus, 111  
    cyperoides, 131  
    densus, 112  
    dichotomus, 139  
    donianus, 141  
    falcatus, 139  
    fuscorubens, 141  
    junciformis, 141  
    juncoides, 141  
    lateriflorus, 141  
    microstachyus, 138  
    oryzatorum, 141  
    pallens, 138  
    palustris, 136  
    pauciflorus, 137  
    quadrangulus, 141  
    quinqueflorus, 137  
    schoenoides, 140  
    setaceus, 140  
    supinus var. lateriflorus, 141  
    uniglumis, 137  
Scrophularia laportifolia, xxvii, xl  
Searsia parviflora, xx  
Sedum bouvieri, xxv  
Sehima notata, xxxiii  
Semecarpus anacardium, xvii  
Senecio, xx  
Serapias erecta, 49  
    helleborine, 57  
        var. latifolia, 57  
        var. longifolia, 50  
Setaria, xx, xxxvii, xl, 201  
    excurrens, 203

- flavida*, 201  
*forbesiana*, 201  
*geniculata*, 203  
*glauca*, 158  
*homonyma*, 202  
*intermedia*, 202  
*italica*, 202, Pl. 19  
     subsp. *viridis*, 205  
*pallide-fusca*, 204  
*palmifolia*, 203  
     var. *blepharoneuron*, 203  
*parviflora*, 203  
*plicata*, 203  
*pumila*, 204  
     var. *pallide-fusca*, 204  
*tomentosa*, 202  
*verticillata*, 204  
*viridis*, 204  
     *weinmannii*, 205  
*Shorea robusta*, xvii  
*Sibbaldianthe bifurca*, xxii  
*Silene*, xxii  
*Sinarundinaria falcata*, 167  
     *intermedia*, 167  
*Sinopodophyllum hexandrum*, 233  
**SMILACACEAE**, xxxviii, 38  
*Smilacina fusca*, 90  
     var. *pilosa*, 90  
**Smilax**, 38  
     *aspera*, 38, pl. 6  
     *capitata*, 38  
     *elegans*, 39, pl. 6  
         subsp. *glaucophylla*, 39  
     *ferox*, 39  
     *glaucophylla*, 39  
     *luteocaulis*, 39  
     *maculata*, 38  
     *menispermoides*, 39  
     *rubriflora*, 39  
*Sorbus cuspidata*, xviii, xx  
     *foliolosa*, xx  
     *microphylla*, xx  
*Spermadictyon suaveolens*, xviii  
*Sphaerostema grandiflorum*, 11  
     *propinquum*, 11  
**Spiranthes**, 79  
     *amoena*, 79  
     *australis*, 79, 12  
     *lancea*, 66  
     *macrophylla*, 67  
     *monophylla*, 67  
     *sinensis* subsp. *australis*, 79  
         var. *amoena*, 79  
         var. *australis*, 79  
*Spirillus natans*, 29  
     *pusillus*, 30  
*Spodiopogon angustifolius*, 176  
**Sporobolus**, 205  
     *ciliatus*, 206  
     *diandrus*, 205  
         var. *major*, 205  
         var. *nanus*, 205  
     *fertilis*, 205  
     *indicus* var. *diandrus*, 205  
         var. *fertilis*, 205  
         var. *flaccidus*, 205  
         var. *major*, 205  
     *japonicus*, 206  
     *pilifer*, 206  
     *stachyanthus*, 206  
     *villosus*, 206  
*Stachyopogon pauciflorus*, 30  
*Staphylea emodi*, xix  
**Stauntonia**, 224  
     *angustifolia*, 224  
     *latifolia*, 225, Pl. 22  
*Stauroopsis alpina*, 80  
**Stephania**, 226  
     *elegans*, 226  
     *glabra*, 227  
     *gracilentia*, 227, Pl. 22  
     *japonica* var. *elegans*, 226  
     *rotunda*, 227, Pl. 22  
**Stipa**, xxii, 206  
     *aliciae*, 206  
     *brandisii*, 142  
     *breviflora*, 206  
     *capillacea*, xxii, 206  
     *concinna*, 198  
     *koelzii*, 206  
     *krylovii*, xxii, 207  
     *milleri*, 199  
     *orthoraphium*, 187  
     *roborowskyi*, xxxiii  
     *roylei*, 187  
     *sareptana* var. *krylovii*, 207  
     *staintonii*, 142  
*Stipella staintonii*, 142  
*Stipellula staintonii*, 142  
*Stranvaesia nussia*, xvii  
**Streptolirion**, 99  
     *cordifolium*, 99  
     *volubile*, 99, Pl. 16  
**Streptopus**, 46  
     *simplex*, 46, pl. 8  
*Stylophorum lactucoides*, 221  
*Swertia*, xx, xxiii  
*Symplocos paniculata*, xviii  
*Syringa emodi*, xix  
  
*Tamarix dioica*, xvii  
*Tamus nepalensis*, 32  
*Tapanava chinensis*, 25  
*Taraxacum nepalense*, xxv  
**TAXACEAE**, xxxvii, xxxviii, xlii, 10  
**Taxus**, 10  
     *contorta*, xx, xxiii, xlii, 10, pl. 2  
     *fuana*, 10  
     *wallichiana* subsp. *contorta*, 10  
**Tenaxia**, 207  
     *cachemyriana*, xxii, 207  
     *cumminsii*, xxii, 207  
*Terminalia alata*, xvii  
     *anogeissiana*, xvii  
     *elliptica*, xvii, xviii  
*Tetradenia consimilis*, 19  
     *umbrosa*, 19  
*Tetranthera grandiflora*, 16  
     *pallens*, 19  
**Thalictrum**, xxxvii, xxxix, 263  
     *alpinum*, 263, Pl. 30  
         var. *microphyllum*, 263  
     *chelidonii*, 263  
         var. *cultratum*, 264  
         var. *cysticarpum*, 263  
         var. *reniforme*, 267  
     *cultratum*, 264, Pl. 30  
         subsp. *platycarpum*, 266  
         var. *tsangense*, 268  
     *cysticarpum*, 263  
     *dalingo*, 265  
     *elegans*, 264  
     *foetidum*, 265  
     *foliolosum*, 265, 266, Pl. 30  
     *glareosum*, 268  
     *glyphocarpum*, 266  
     *javanicum*, 266  
     *macrostigma*, 268

- microphyllum*, 263  
*minus* var. *foetidum*, 265  
*neurocarpum*, 267  
*pauciflorum*, 268  
*platycarpum*, 266  
*punduanum*, 266, Pl. 30  
     var. *glaucum*, 266  
*radiatum*, 267  
*reniforme*, 267  
*rostellatum*, 267  
*samariferum*, 264  
*saniculiforme*, 267  
*secundum*, 268  
     var. *hazaricum*, 268  
*squamiferum*, 268  
*vaginatum*, 265  
**Thamnocalamus**, 208  
     *aristatus*, 208  
     *nepalensis*, 208  
     *occidentalis*, 208  
     *spathiflorus*, 208  
         subsp. *nepalensis*, 208  
         subsp. *occidentalis*, 208  
**Themeda**, 208  
     *anathera*, xx, 208  
     *australis*, 209  
     *caudata*, 209  
     *gigantea* subsp. *caudata*, 209  
         var. *longispatha*, 209  
     *hookeri*, 209  
     *imberbis*, 209  
     *triandra*, 209  
**Theropogon**, 95  
     *pallidus*, 95, Pl. 15  
**Thunia**, 80  
     *alba*, 80  
*Thylacospermum caespitosum*,  
     xxii  
**Thysanolaena**, 210  
     *latifolia*, 210  
     *maxima*, 210  
  
**Toona**, xvii  
     *ciliata*, xvii  
     *sinensis*, xix  
*Tovaria fusca*, 90  
*Tradescantia cordifolia*, 99  
     *vaga*, 98  
*Trichelostylis chaetorrhiza*, 139  
     *junciformis*, 139  
**Triglochin**, xxii, 28  
     *himalensis*, 28  
     *maritima*, 28  
     *palustris*, 28  
*Trilepis royleana*, 118  
*Trillidium govanianum*, 36  
**Trillium**, 36  
     *govanianum*, xxiii, xlii, 36,  
     pl. 6  
**Tripogon**, 210  
     *filiformis*, 210  
     var. *tenuispicus*, 210  
**Trisetopsis**, 211  
     *virescens*, 211  
*Trisetum flaccidum*, 182  
     *spicatum* subsp. *himalaicum*,  
     182  
         subsp. *virescens*, 182  
     *subspicatum*, 182  
     *virescens*, 182, 211  
**Triticum**, 211  
     *aestivum*, 211  
     *schrenkianum*, 171  
     *semicostatum*, 172  
     *striatum*, 172  
     *vulgare*, 211  
**Trollius**, 268  
     *acaulis*, 268, Pl. 30  
     *gammieanus*, 269  
     *geranifolius*, 269  
     *pumilus*, xxii, 269  
         subsp. *geranifolius*, 269  
*Trudelia alpina*, 80  
  
     *cristata*, 81  
**Tsuga**, 6  
     *brunoniana*, 6  
     *dumosa*, xvi, xviii, xix, xx, xlii,  
     6, pl. 2  
     *dura*, 6  
     *wardii*, 6  
*Typhonium alpinum*, 27  
     *diversifolium*, 27  
  
*Ulmus wallichiana*, xix  
*Uncinia microglochin*, 120  
     *nepalensis*, 127  
**Urochloa**, 212  
     *villosa*, 212  
         var. *barbata*, 212  
*Uropetalon hysudricum*, 89  
*Uvaria uncata*, 14  
*Uvularia parviflora*, 37  
     *umbellata*, 37  
  
**Vanda**, 80  
     *alpina*, 80  
     *cristata*, 81  
     *striata*, 81  
*Viburnum mullaha*, xix  
*Vicatia nepalensis*, xxvii, xl  
*Vignea wallichiana*, 128  
*Vilfa pilifera*, 206  
  
*Woodfordia fruticosa*, xviii, xx  
  
*Youngia gracilipes*, xxii  
  
**Zea**, 212  
     *mays*, 212  
*Zerna himalaica*, 152  
**ZINGIBERACEAE**, xxxix, 100  
*Zingiberales*, xxxix

# Index to Vernacular Names

## A. English

- Acorn peperomia, 13  
Adder's mouth orchid, 69  
Aerial yam, 31  
African miller, 169  
Air yam, 31  
Alpine bluegrass, 192  
    cat's-tail, 190  
    meadow-grass, 192  
    meadow-rue, 263  
    timothy, 190  
American aloe, 87  
Annual bluegrass, 192  
    bristle grass, 146  
    meadow-grass, 192  
    three-awn, 146  
    wintergrass, 192  
Arctic meadow-rue, 263  
Ashy pipewort, 104  
Asia minor bluegrass, 198  
Asian barberry, 228  
    broomgrass, 210  
    meadow-rue, 265  
    rice, 187  
    spikesedge, 132  
Asiatic dewflower, 99  
Austral ladies tresses, 79  
Australian bluestem, 150  
Awned flatsedge, 135  
Awnless barnyard grass, 168  
  
Baby pondweed, 30  
Bahagrass, 189  
Bamboo reed, 149  
Barefoot panicgrass, 188  
Barley, 180  
Barundi dropseed, 206  
Basketgrass, 186  
Bearded flatsedge, 135  
Bedding grass, 180  
Benghal commelina, 96  
  
Bermuda grass, 162  
Bird's grass, 168  
Bitter turpentine grass, 161  
    yam, 31  
Black alpine sedge, 112  
    juniper, 8  
    spear-grass, 180  
Blackseed crabgrass, 166  
Bloomsbury grass, 205  
Blue pine, 6  
Bluestem, 164  
Bread wheat, 211  
Bristle clubrush, 140  
Bristleleaf bulrush, 140  
Bristly foxtail, 204  
Broad-leaved bristlegrass, 203  
    carpet grass, 150  
    helleborine, 57  
    pondweed, 29  
Broomcorn millet, 188  
Broomgrass, 210  
Bug's egg grass, 174  
Bunchflower daffodil, 86  
Bunch-flowered narcissus, 86  
Bur bristlegrass, 204  
Burmann's basketgrass, 186  
  
Calamus, 20  
Camel grass, 162  
Cat grass, 163  
Cat's tail orchid, 46  
Caucasian bluestem, 150  
Century plant, 87  
Chameleon, 12  
Chase's glenwoodgrass, 201  
Cliff anemone, 254  
Chinese chives, 85  
    lovegrass, 174  
    millet, 188  
    sacred lily, 86  
  
Chir pine, 5  
Climbing dayflower, 96  
    lily, 37  
Coastal plain flatsedge, 130  
Cobra lily, 24  
Cocksfoot, 163  
Cogon grass, 180  
Coiled-leaf solomon seal, 92  
Common alplily, 42  
    bahia, 189  
    barberry, 228  
    crowfoot grass, 163  
    fringe-rush, 139  
    meadow-grass, 195  
    quick grass, 162  
    rattlesnake orchid, 74  
    rush, 107  
    smilax, 38  
    spikerush, 136  
    wheat, 211  
    woodrush, 110, 111  
Corn, 212  
Corn buttercup, 257  
Couch grass, 162  
Cowflock, 242  
Cowslip, 242  
Creeping lady's-tresses, 59  
    paspalum, 189  
Crowfoot, 163  
Crowsfoots grass, 169  
  
Daffodil, 86  
Dahurian wildrye, 170  
Day flower, 96  
Deccan grass, 168  
Deltoid yam, 32  
Diaz bluestem, 164  
Dirty-Dora, 131  
Ditch fimbry, 140  
    grass, 189



- Dorrington grass, 150  
 Doveweed, 99  
 Drooping brome, 154  
     wildrye, 172  
 Dwarf hitchhiker arum, 25  
     rattlesnake plantain, 59  
     taro, 25  
  
 Early coralroot, 51  
 East Himalayan fir, 3  
 Eastern marsh helleborine, 57  
 Egyptian finger grass, 163  
 Elegant cyripedium, 53  
     slipper orchid, 53  
     tape vine, 226  
 English meadow-grass, 195  
  
 False brome, 151  
     bromegrass, 151  
     couchgrass, 166  
     wood brome, 151  
 Fan-leaved bristlegrass, 202  
 Fern asparagus, 87  
 Few-flower spikerush, 137  
 Fewseeded bog sedge, 120  
 Finger millet, 169  
 Fish mint, 12  
 Fiveleaf yam, 34  
 Flaccidgrass, 158  
 Flaky juniper, 9  
 Flatsedge, 130  
 Fly-bearing Malaxis, 69  
 Fodder cane, 200  
 Foetid meadow-rue, 265  
 Forked fimbry, 139  
 Four-leaf peperomia, 13  
 Fox brush orchid, 46  
 Foxtail orchid, 46  
     bristlegrass, 202  
     millet, 202  
 Fuzzy flatsedge, 133  
  
 Gerard jointfir, 1  
 Giant fescue, 182  
     Himalayan lily, 40  
     parramatta grass, 205  
     ryegrass, 182  
     -reed, 149  
 Ginger lily, 102  
 Glenwoodgrass, 201  
  
 Golden false beardgrass, 159  
     stargrass, 81  
     yellow habenaria, 62  
     -beard, 157  
 Goosegrass, 192  
 Govan's corydalis, 216  
 Graceful Himalayan iris, 82  
 Grand cobra lily, 24  
 Grasshopper's cyperus, 132  
 Greater yam, 31  
 Green bristlegrass, 205  
     foxtail, 205  
 Guyana arrowroot, 31  
  
 Hairy cottongrass, 138  
     crabgrass, 165  
     delphinium, 253  
     jointgrass, 147  
     lovegrass, 173  
     -flowered columbine, 242  
 Hard rush, 108  
 Heart-shaped lip cyripedium, 52  
 Heath falsebrome, 151  
 Highland pitpit, 203  
 Himalayan bamboo, 167, 208  
     baneberry, 237  
     blue corydalis, 213  
     blue pine, 6  
     blue poppy, 222  
     boxwood, 270  
     brome, 152  
     cedar, 4  
     clematis, 246  
     clothed delphinium, 253  
     columbine, 242  
     cypress, 7  
     cyripedium, 53  
     fairy grass, 184  
     fountain grass, 158  
     fritillary, 41  
     hemlock, 6  
     horn-poppy, 221  
     lily turf, 91  
     marsh orchid, 54  
     mayapple, 233  
     mondo grass, 91  
     pencil cedar, 9  
     pencil juniper, 9  
     silver fir, 3  
     slipper orchid, 53  
     weeping bamboo, 167  
     white pine, 6  
 Hitchhiker elephant ear, 26  
 Hog millet, 188  
 Hooked bristlegrass, 204  
  
 India lovegrass, 173  
 Indian bay leaf, 15  
     couch grass, 151  
     crabgrass, 166  
     cupscale-grass, 201  
     dropseed, 205  
     goosegrass, 169  
     grass lily, 37  
     paspalum, 189  
 Intermediate cane bamboo, 167  
  
 Jacquemont's cobra-lily, 23  
 Japanese brome, 153  
 Jointed rush, 105  
 Jointhead, 147  
 Joint-leaf rush, 105  
 Jove grass, 179  
 Jungle-rice, 168  
  
 Kangaroo grass, 210  
 Kans grass, 200  
 Karnkusa grass, 161  
 Kentucky bluegrass, 195  
 Kleberg's bluestem, 164  
 Knotroot bristlegrass, 203  
 Kodomillet, 189  
 Kumaon iris, 82  
  
 Ladies tresses, 79  
 Laurel-leaved snailseed, 226  
     snailtree, 226  
 Lesser love grass, 173  
     meadow-rue, 265  
     pondweed, 30  
     rattlesnake plantain, 59  
 Little lovegrass, 173  
     millet, 188  
 Loddon pondweed, 29  
 Lovegrass, 159, 174  
 Low flatsedge, 134  
  
 Mackie's pest, 159  
 Maize, 212

- Marsh arrowgrass, 28  
 bristlegrass, 203  
 grass, 168  
 marigold, 242  
 Mauritian grass, 146  
 Mountain clematis, 246  
 timothy, 190  
 yam, 33  
 Musk larkspur, 248  
 orchid, 68
- Nakedstem dewflower, 99  
 Narrow-leaved helleborine, 50  
 meadow-grass, 196  
 Necklace orchid, 74  
 Nepal aconite, 236  
 barberry, 228  
 cinnamon, 15  
 iris, 82  
 lily, 43  
 yam, 32  
 Nepalese broomgrass, 210  
 juniper, 9  
 Nutgrass, 134  
 Nutsedge, 134
- Old World flatsedge, 130  
 Onescale spikerush, 137  
 Orchardgrass, 163  
 Oriental fountain grass, 159  
 Oxypetalum lily, 44
- Pacific island flatsedge, 131  
 Palmgrass, 203  
 Pearl millet, 158  
 Pencil cedar, 9  
 Perennial quaking grass, 152  
 Pheasant's eye, 238  
 Pickerel weed, 100  
 Pigeon grass, 204  
 millet, 168  
 Pindrow fir, 2  
 Pink-striped trumpet lily, 86  
 Pipewort, 104  
 Pitscale grass, 179  
 Pitted beardgrass, 151  
 bluestem, 151  
 Pondweed, 29  
 Poorland flatsedge, 130  
 Potato yam, 31
- Prairie crested hair grass, 181  
 June grass, 181  
 Prickly blue-poppy, 222  
 ivy, 38  
 Proso millet, 188  
 Puerto Rico fimbry, 139  
 Purple crabgrass, 166  
 nutsedge, 134  
 sikesedge, 136  
 spikerush, 136  
 yam, 31  
 -glume flatsedge, 135  
 Pygmy elephant ear, 25
- Red Himalayan bamboo, 208  
 Reed grass, 148  
 Rice, 187  
 Ricefield flatsedge, 132  
 Ricegrass, 189  
 Ringed dichanthium, 164  
 River anemone, 254  
 Rock anemone, 254  
 butterfly lily, 102  
 Rough bindweed, 38  
 bluegrass, 197  
 bristlegrass, 204  
 -stalked meadow grass, 197  
 Royle's clematis, 247  
 Running mountaingrass, 186
- Sabaigrass, 176  
 Sarsaparilla, 38  
 Sausage vine, 224, 225  
 Scaly-leaved Nepal juniper, 9  
 Scented top, 157  
 Sea arrowgrass, 28  
 Seaside arrowgrass, 28  
 Shaggy eria, 56  
 Shaving brush ginger, 102  
 Sheep fescue, 177  
 Shining bush, 12  
 Shiny bush, 12  
 Shortleaf spikesedge, 127, 129  
 Siberian wildrye, 172  
 Silver bush, 12  
 Six-rowed barley, 180  
 Slender false brome, 151  
 pondweed, 30  
 spikerush, 137  
 spikesedge, 135
- tape vine, 227  
 Small carpetgrass, 147  
 pondweed, 30  
 -flower umbrella sedge, 131  
 Smooth meadow-grass, 195  
 Smutgrass, 205  
 Snow white sedge, 133  
 Snowdon alplily, 42  
 Soft lovegrass, 173  
 rush, 107  
 Southern crabgrass, 165  
 Spanish-reed, 149  
 Spear-grass, 180  
 -leaved yam, 31  
 Spiked ginger lily, 102  
 Spikerush, 136  
 Spreading buttercup, 258  
 Spring wild-oat, 149  
 Stick-grass, 180  
 Sticky bristlegrass, 204  
 Summer pheasant's eye, 238  
 Sweet flag, 20  
 Sword grass, 180  
 -leaved helleborine, 50
- Tail grape, 14  
 Tall fringe-rush, 139  
 Tanglehead, 180  
 Thatch grass, 180, 200  
 Thread-leaved water-crowfoot, 262  
 Threelaf arrowhead, 27  
 Tiger grass, 200  
 Tor-grass, 151  
 Tree turmeric, 228  
 Tropical fingergrass, 165  
 spiderwort, 96  
 Tufted hair grass, 164  
 Tussock dropseed, 205
- Umbrella sedge, 132
- Velvet orchid, 69  
 Velvetleaf, 225  
 Violet crabgrass, 166
- Wallich's juniper, 8  
 Wandering jew, 96  
 Water yam, 31  
 Watergrass, 112

|                              |                            |                       |
|------------------------------|----------------------------|-----------------------|
| Wavyleaf basketgrass, 186    | pinalia, 74                | Yellow bluestem, 150  |
| Webb fir, 3                  | Whorled Solomon's-seal, 94 | bristlegrass, 204     |
| West Himalayan fir, 2        | Wild asparagus, 88         | cobra-lily, 22        |
| spruce, 5                    | cane, 200                  | coralroot, 51         |
| yew, 10                      | sugarcane, 200             | foxtail, 204          |
| West Indian lemon grass, 162 | -oat, 149                  | Himalayan lily, 44    |
| Wheat, 211                   | Wildrye, 170               | star of bethlehem, 42 |
| Whip grass, 179              | Willow-leaf sweet-box, 271 | Ylang ylang vine, 14  |
| White eria, 74               | Wire crabgrass, 166        |                       |
| mondo grass, 91              | Woolly orchid, 56          |                       |

## B.1. Nepali, Hindi and Sanskrit (Transliteration)

|                               |                      |                                 |                      |
|-------------------------------|----------------------|---------------------------------|----------------------|
| Ageli, 254                    | Bhāngkhopade, 13     | Chitrā, 228                     | Dhol, 22, 24         |
| Agnimukhī, 37                 | Bhārbhūsi, 174       | Chitre banso, 165               | Dhūpi, 7, 8, 9       |
| Akchhata, 180                 | Bhātvel, 225         | -ghāns, 147                     | Diu nigālo, 167      |
| Alusi, 250                    | Bel kangu, 245       | Chid, 5                         | Diyār, 4             |
| Amvasthā, 225                 | Bhābar-ghāns, 176    | Chir, 5                         | Dhurāsālā, 6         |
| Amriso, 210                   | Bhainse-laharo, 245  | Chobchini, 38                   | Duk, 236             |
| Apavishā, 250                 | Bhainsi-laharā, 13   | Chotto, 228, 230, 231           | Dude-sāg, 221        |
| Arthunge, 180                 | Bhuin dhūpi, 9       | Chunero, 208                    | Dūb, 162             |
| Atis, 234, 250, 251, 252      | khajūr, 81           | Churanhar, 245                  | Dūbo, 162            |
| Ativish, 236                  | sarro, 103           | Chutro, 228, 229, 230, 231, 232 | Dūrvā, 162           |
| Aule sallā, 5                 | Bhurī-ghāns, 104     |                                 | Dvipāntaravachā, 38  |
| Āggar, 7                      | Bhuse khari, 197     |                                 |                      |
|                               | Bhutkesh, 216        | Dahile-belo, 244                | Ek-ānkhle-phul, 242  |
| Badā nal, 149                 | Bhutkeshi, 216       | Danu, 83, 84, 85                |                      |
| Bakryāulo, 246                | Bhuttā, 212          | Datyāune-jhār, 163              | Gagletto, 100, 101   |
| Bandhan-jhār, 205             | Bhyāgutephul, 81     | Dālchini kāulo, 16              | Gahun, 211           |
| Banso, 165, 174, 189          | Bhyākur, 32          | Dāmpāte, 263, 265               | Gāi sarro, 102       |
| Bansūli, 265                  | Biār, 6              | Dānkle khar, 146                | Gajregān, 225, 227   |
| Barkuli-laharā, 227           | Bikh, 234, 248       | Dāntkhuso, 243, 244, 245        | Ganāune dāmpāte, 265 |
| Bābiyo, 176                   | Biralchhe, 158       |                                 | Gane, 12             |
| Bāgh-mungri, 24               | Bojho, 20            | Dāpsu khar, 180                 | Gau bānko, 24        |
| Bāgh-pāile, 254               |                      | Dārhal, 228                     | Gājyo, 144, 148, 159 |
| Bājrā, 158                    | Chapare-jhār, 150    | Dārhal, 228                     | Gāmdol, 47, 79       |
| Bākhrelaharo, 38, 39          | Charbini, 254        | Dāruhal, 228                    | Gāngdol, 47          |
| Bālā banso, 204               | Chare bānko, 22      | Dāruharidra, 228                | Gehūn, 211           |
| Bānko, 20, 21, 22, 23, 24, 27 | Charī bānko, 23      | Deuphal, 233                    | Genthi, 34           |
|                               | Charindā, 174        | Devadār, 4                      | Geru, 271            |
| Bāns keorā, 87                | Chāndephul, 80       | Devadāru, 4                     | Ghāndevish, 41       |
| Bātulpāte, 225                | Chāndi gābhā, 50, 51 | Devār, 4                        | Ghar tarul, 31       |
| Bhālkela, 74, 75              | Chhitko-laharā, 246  | Dhachade, 91, 95                | Ghiupāt, 40          |
| Bhāle bānko, 22               | Chirāito, xxiii      | Dhādadi, 145                    | Ghode dūbo, 179      |
| banso, 158                    | Chile vish, 237      | Dhaddi, 208                     | banso, 204           |
| Bhālu-kelā, 74, 75            | Chilla, 6            | Dhalke khar, 146                | gābhā, 78            |
| -kerā, 74                     | Chino, 188           | Dhān, 187                       | Ghore nigālo, 167    |
|                               | Chiple kāulo, 18     | Dhāple-ghāns, 159               | Gindaru, 227         |

Githā, 31  
 tarul, 31  
 Githe tarul, 31  
 Gobare vish, 234, 236  
 Gobarī, 236  
 Gobre, 2, 3  
 sallā, 2, 3, 6  
 sallo, 2, 3  
 Gobriyā, 236  
 Godhūm, 211  
 Gokpā, 85  
 Gokul-dhūp, 216, 217  
 Gomphal, 224, 225  
 Gudergāno, 225  
 Gukhniāl, 224, 225  
 Gunakesarī, 86  
 Guphalā, 224, 225  
 Guphlā, 224, 225  
  
 Hardī-jhār, 100  
 Harichampā, 14  
 Hastajodī, 54  
 Hattājādī, 54, 60  
 Hāde kukurdāino, 39  
 -phūl, 86  
 Hātejadī, 54, 60  
 Hāth-kelā, 74  
 Hātī-khurkī, 157  
 Human, 3  
  
 Jadawār, 250  
 Jalukā, 25, 26  
 Jamane māndro, 233  
 Jambu, 84  
 Janai-ghāns, 189  
 Jangalī jau, 149  
 lasun, 83  
 marwā, 169  
 pyāj, 95  
 tarul, 34  
 Jarkhare-ghāns, 205  
 Jau, 180  
 Jaunde-mūlo, 250,  
 251, 252  
 Jām, 4  
 Jatāmasī, xxiii  
 Jīngārī, 169  
 Jhānkri-kāth, 19  
 Jhijhelkānd, 88  
 Jhijhelkāndī, 88

Jhule sallā, 4  
 Jhulo, 4  
 Jhuse kāgune-ghāns,  
 204  
 mothe, 135  
 -jhār, 112  
 Jhyānte-ghāns, 147  
 Jhyāple-ghāns, 198  
 Jibre, 52  
 Jimbu, 84  
 -ghāns, 85  
 Juhā, 253  
 Juhī, 253  
 Juke-jhār, 265  
 Junge, 61  
 Junge banso, 174  
 -belo, 246  
 -laharā, 243, 244,  
 245, 246  
 -laharo, 246  
 titmirido, 61  
 Jwāne-ghāns, 107  
  
 Kachal, 5  
 Kail, 6  
 Kanakchampā, 14  
 Kangrāte, 254  
 Kanike kāguno, 203,  
 204  
 Kanjadā, 96  
 Kanjado, 96  
 Kapāse, 255  
 Karaunte, 131  
 Kalihārī, 37  
 Karjeurī, 225  
 Karajodī, 54  
 Karshūl, 81  
 Kasthadāru, 4  
 Kastha devadāru, 4  
 Kasturī, 248  
 -phūl, 248  
 Katare, 103  
 Kathero, 114, 115  
 Kathelā, 5  
 Kaude-phūl, 254  
 Kaukhutte, 98  
 Kaunphale, 53  
 Kaunphalo, 50, 51, 52,  
 53, 57, 61, 62, 69,  
 76, 77, 78, 79

Kāgatī-ghāns, 161  
 Kāgchāro, 1  
 Kāgune-ghāns, 201,  
 205  
 -jhār, 203, 204  
 Kāguno, 202  
 Kākoli, 41, 44  
 Kālo atis, 253  
 bānko, 22  
 pindālu, 26  
 musli, 103  
 Kānde-phūl, 222  
 Kānejhār, 96, 97, 99  
 Kāngre-jhār, 240  
 Kānpar, 2  
 Kānpāte, 27  
 Kāns, 200  
 Kāthe kāulo, 17  
 Kāule, 16, 17, 18  
 Kāulo, 18  
 Kāun, 202  
 Kāune banso, 201  
 Kāunī, 202  
 Ketukī, 87  
 Kewarī, 37  
 Khapate, 19  
 Khar, 180  
 Kharāne, 16  
 Kharāyo-pāile, 198  
 Kharukī, 197  
 Khilaudō, 94  
 Khiraunlā, 92, 93, 94  
 Khiraunle, 37, 42, 43  
 Khiraunlo, 37, 46, 90,  
 92, 93, 94  
 Khote sallā, 5  
 Khude-ghāns, 205  
 Kilmodā, 228, 229  
 Kilmoru, 228  
 Kirmadā, 228, 229  
 Kirmado, 228, 229  
 Kitkāulo, 17  
 Kitkite kāulo, 19  
 Kode banso, 189  
 -ghāns, 169, 189  
 -jhār, 169  
 Kodī-ghāns, 189  
 Kodo, 169  
 Kogle-sāg, 221  
 Kukryāulo, 38, 39

Kukudeulo, 38, 39  
 Kukurjarī, 38  
 Kukur tarul, 32  
 Kukurdāino, 38, 39  
 Kurre-ghāns, 159  
 Kutkī, xxiii  
 Kyerbā, 228, 229, 230,  
 231  
 Kyervā, 228, 229, 230,  
 231  
  
 Laghupatra, 233  
 Lasan, 83, 84, 85  
 Laskar, 248  
 Lasunesāg, 83  
 Latpate, 12  
 Launtho, 10  
 Lauth sallā, 10  
 Lāngalī, 37  
 Lāpchikpā, 27  
 Lek jibre, 53  
 -ānkhle, 1  
 satuwā, xxiii, 36  
 Loktā, xxiii  
 Luinth, 10  
  
 Madhusnuhī, 38  
 Madhu vish, 237  
 Mahājarī, 37  
 Mahākāya, 212  
 Mahāmedā, 92  
 Makai, 212  
 Makaiya-ghāns, 179  
 Makāya, 212  
 Makhotī, 248  
 Makkā, 212  
 Mamira, 265  
 Manduā, 169  
 Manduwā, 169  
 Mandwā, 169  
 Mangro-mūlo, 248  
 Mardi-jhār, 258  
 Maruiri, 254  
 Maruwā, 169  
 Masino dāmpāte, 265  
 Maure-mūlo, 253  
 Mauro-mūlo, 248, 249,  
 253  
 Mālāgiri, 15  
 Māle bānko, 23

|                        |                     |                        |                    |
|------------------------|---------------------|------------------------|--------------------|
| Māne, 25               | Okhare-jhār, 214    | Rāgi, 169              | Sunākharī, 46      |
| Medā, 92               |                     | Rāghā, 2, 3, 5         | Sup-ghāns, 217     |
| Mithe githo, 34        | Padamchāl, xxiii    | Rai, 5                 |                    |
| Morata, 245            | Padmapuskar, 82     | Raisallā, 2, 3, 7      | Talu, 27           |
| Morindā, 2, 3, 5       | Pahenlo khapate, 16 | Rājsallo, 7            | Tamālapatra, 15    |
| Mothe, 131, 132, 134,  | sarvajā, 37         | Rānī bābiyo, 137       | Tarul, 31          |
| 139, 140               | singate, 11         | bhyākur, 33            | Taud, 31           |
| -jhār, 130, 132        | Pankhā-phūl, 102    | khar, 148              | Tālisam, 3         |
| Mudaulo, 249, 250,     | Patapate khar, 159  | sallā, 6               | Tālisapatra, 3     |
| 252                    | Paterī-ghāns, 117   | Rāsgarī, 103           | Tālisapatram, 3    |
| Mukhālu, 31            | Patthar-kerā, 74    | Rāto jibre, 53         | Tālispatrī, 3      |
| Munjātaka, 54          | Pādh, 225           | nigālo, 208            | Tāuke-ghāns, 190   |
| Musbelo, 225, 227      | Pādhā, 225          | Riār, 5                | Tejpāt, xxiii, 15  |
| Muse chutro, 232       | Pākhanved, xxiii    | Rithā, xxiii           | Tejpattā, 15       |
| -jhār, 197             | Pāmā, 8             | Rukh pindālu, 26       | Telpār, 270, 271   |
| khar, 157              | -dhūp, 8            |                        | Telpāuro, 270, 271 |
| kharukī, 157           | Pāmo, 8             | Salāmpanjā, 54         | Thākal, 95         |
| Mustā, 134             | Pānchaunle, 54      | Sallā, 5               | Thāling, 90        |
| Mustakā, 134           | Pānī mothe, 139     | Sallisāg, 90           | Thesing, 6         |
| Mūrva, 245             | sarro, 101          | Sarala, 5              | Thinge, 6          |
|                        | Pānu tarul, 31      | Sarpa-makai, 21        | sallā, 6           |
| Nakālī satuwā, 36      | Pāpdo, 270          | Sarpako-makai, 20, 22, | Thingo, 4          |
| bhringraj, 59          | Pāphe sallo, 6      | 23, 24                 | Thingre sallā, 6   |
| harchūr, 81            | Pāprī, 270          | Sarro, 102             | Thūlo kāgun, 188   |
| jīvantī, 59            | Pārtay-ghāns, 114   | Sato, 35               | kākolī, 52         |
| pānchaunle, 60         | Pātālī tarul, 33    | Satuwā, 35             | kānejhār, 99       |
| Naldurā, 149           | Pāthā, 225          | Satwā, xxiii, 35       | mothe, 132         |
| Nāgdantī, 38           | Phulero, 146        | Sāmā, 168              | narkat, 149        |
| Nāgarmothā, 134        | Phurke-jhār, 137    | -ghāns, 168            | phyūncho, 118      |
| Nāgarmothe, 134        | khar, 148, 173      | Sāngāshing, 10         | Thuner, 10         |
| Nān kākolī, 42, 45     | Phusre, 16          | Sāno kānejhār, 97      | Thuno, 10          |
| khiraunlo, 93          | Piljarī, 265        | kāns, 200              | Tikhria, 165       |
| podyā, 42, 43, 45      | Pinarā, 43          | kukurdāino, 37         | Tikpā, 87          |
| katāre, 103            | Pināse-laharā, 244  | phyūncho, 127, 207     | Tiliārā, 271       |
| Nepāle keorā, 37       | Pindarā, 43         | Sānp-kī-makki, 24      | Tilke-jhār, 174    |
| Nepālī dālchinī, 16    | Pindrau, 2          | Setakchinī, 94         | Tilkhudo, 228, 229 |
| Nigālī-sāg, 92, 93, 94 | Piperī, 82          | Seto kāulo, 18         | Tilkhuro, 228, 229 |
| Nigālo, 167, 208       | Pirre-ghāns, 161    | khapde, 16             | Tilmudho, 228      |
| bāns, 167              | khar, 161           | mothe, 133             | Tilphorā, 226      |
| Nīlo bikh, 249, 250,   | Pirulī, 271         | muslī, 89              | Tinchu, 21, 22     |
| 251, 252               | Pode-ghāns, 192     | Shatāvar, 88           | Tīnpāte bānko, 24  |
| gokul-dhūp, 213        | Podyā, 41, 43, 44   | Shatāvarī, 88          | Tīntale bānko, 35  |
| jalukey, 100           | Purhā, 227          | Shyukpā, 8             | Tīte kānkri, 233   |
| jalukey, 100           | Pyākse, 25          | Singate, 11            | kānkro, 233        |
| kheldār, 222           |                     | -laharā, 11            | kaunphalo, 90      |
| Nimī-laharā, 226, 227  | Ragate mothe, 135   | Sinkaulī, 15           | nigālo, 167        |
| Nirmasī, xxiii         | Raksyā bānko, 21    | Sirū, 180              | -phūl, 259         |
| Nirvishā, 250          | Rasānjana, 228      | Snigdhadāru, 4         | Titmirido, 61, 62  |
| Nirvishī, 234, 250     | Rasmalo, 92         | Somlatā, 1             | Tokle kāulo, 17    |
|                        | Ratanjot, 239, 240  | Sotī-ghāns, 161        | Tosh, 2, 5         |

|                     |                      |                   |                     |
|---------------------|----------------------|-------------------|---------------------|
| Tunde sāmā, 168     | chānp, 14            | pindālu, 26       | -jarā, 236          |
| Turar, 31           | haldī, 102           | pyāj, 89          | -phal, 237          |
| Twākpūl, 37         | haldo, 100, 101, 102 | siru, 81          | Vishkāpado, 96      |
|                     | kākri, 233           | tarul, 31, 33, 34 |                     |
| Ugragandhā, 20      | kasur, 91            | taud, 31, 32, 33  | Yava, 180           |
| Uwā, 180            | kāulo, 16            | Varāhakanda, 34   | Yārtsā gūmbu, xxiii |
| Vach, 20            | kode, 169            | Varāhi, 34        |                     |
| Vachā, 20           | kurilo, 87, 88       | Vir bānko, 21, 24 | Zimikand, 31        |
| Van besār, 100, 101 | lasun, 41, 43, 85    | Vish, 234, 236    |                     |

## B.2. Nepali, Hindi and Sanskrit (Devanāgarī)

|                          |                       |                             |                       |
|--------------------------|-----------------------|-----------------------------|-----------------------|
| अक्षत, 180               | कर्शूल, 81            | किल्मोर, 228                | खोटे सल्ला, 5         |
| अगेली, 254               | करौते, 131            | कुकुडेउलो, 38, 39           |                       |
| अग्निमुखी, 37            | कलिहारी, 37           | कुकुर तरुल, 32              | गग्लेटो, 100, 101     |
| अतिविष, 236              | कस्तुरी, 248          | कुकुरजरी, 38                | गज्जगान, 225, 227     |
| अतिस, 234, 250, 251, 252 | -फूल, 248             | कुकुरडाइनो, 38, 39          | गनाउने दाम्पाते, 265  |
| अर्पविषा, 250            | काँडे-फूल, 222        | कुर्क्याउलो, 38, 39         | गने, 12               |
| अम्रिसो, 210             | काँपर, 2              | कुर्र-घाँस, 159             | गहुँ, 211             |
| अम्बुष्ठा, 225           | काँस, 200             | केतुकी, 87                  | गाई सर्रो, 102        |
| अर्थुङ्गे, 180           | काउन, 202             | केर्वा, 228, 229, 230, 231  | गाड्डोल, 47           |
| अलुसी, 250               | काउनी, 202            | केर्वा, 228, 229, 230, 231  | गाज्यो, 144, 148, 159 |
|                          | काउने बन्सो, 201      | केवरी, 37                   | गामडोल, 47, 79        |
| आगगर, 7                  | काउले, 16, 17, 18     | कैल, 6                      | गिद्धा, 31            |
|                          | काउलो, 18             | कोग्ले-साग, 221             | तरुल, 31              |
| उग्रगन्धा, 20            | काकोली, 41, 44        | कोदी-घाँस, 189              | गिट्टे तरुल, 31       |
| उवा, 180                 | कागचारो, 1            | कोदे-घाँस, 169, 189         | गिन्दरु, 227          |
|                          | कागती-घाँस, 161       | -भार, 169                   | गुक्नियाल, 224, 225   |
| एक-आँखले-फूल, 242        | कागुने-घाँस, 201, 205 | बन्सो, 189                  | गुदेरगानो, 225        |
|                          | -भार, 203, 204        | कोदो, 169                   | गुनकेसरी, 86          |
| ओखरे-भार, 214            | कागुनो, 202           | कौफले, 53                   | गुफला, 224, 225       |
|                          | काङ्ग्रे-भार, 240     | कौफलो, 50, 51, 52, 53,      | गुफला, 224, 225       |
| औले सल्ला, 5             | काठे काउलो, 17        | 57, 61, 62, 69, 76, 77,     | गेठी, 34              |
|                          | कान्पाते, 27          | 78, 79                      | गेरु, 271             |
| कउडे-फूल, 254            | कानेभार, 96, 97, 99   | कौखुटे, 98                  | गेहुँ, 211            |
| कङ्ग्राते, 254           | कालो अतिस, 253        |                             | गोकुल-धूप, 216, 217   |
| कछल, 5                   | पिँडालु, 26           | खपटे, 19                    | गोक्पा, 85            |
| कञ्जडा, 96               | बाँको, 22             | खर, 180                     | गोधूम, 211            |
| कञ्जडो, 96               | मुस्ली, 103           | खराने, 16                   | गोबरी, 236            |
| कटरे, 103                | काष्ठ देवदारु, 4      | खरायो-पाइले, 198            | गोबरे विष, 236        |
| कठेरो, 114, 115          | काष्ठदारु, 4          | खरुकी, 197                  | गोत्रिया, 236         |
| कथेला, 5                 | किल्काउलो, 17         | खिरौला, 92, 93, 94          | गोत्रे, 2, 3          |
| कनकचम्पा, 14             | किल्किते काउलो, 19    | खिरौले, 37, 42, 43          | सल्ला, 2, 3, 6        |
| कनिके कागुनो, 203, 204   | किरमडा, 228, 229      | खिरौलो, 37, 46, 90, 92, 93, | सल्लो, 2, 3           |
| कपासे, 255               | किरमडो, 228, 229      | 94                          | गोम्फल, 224, 225      |
| कर्जेउरी, 225            | किलमोडा, 228, 229     | खिलौडो, 94                  | गौ बाँको, 24          |
| करजोडी, 54               |                       | खुदे-घाँस, 205              |                       |

|                             |                          |                          |                        |
|-----------------------------|--------------------------|--------------------------|------------------------|
| घर तरुल, 31                 | जीङ्गारी, 169            | तलु, 27                  | दूधे-साग, 221          |
| घाँडेविष, 41                | जुँगे, 61                | तालिसपत्रं, 3            | दूब, 162               |
| घिउपात, 40                  | बन्सो, 174               | तालीसं, 3                | दूबो, 162              |
| घोगे गाभा, 78               | -बेलो, 246               | तालीसपत्र, 3             | दूर्वा, 162            |
| बन्सो, 204                  | -लहरा, 243, 244, 245,    | तालीसपत्री, 3            | देउफल, 233             |
| घोडे दूबो, 179              | 246                      | तिक्पा, 87               | देवदार, 4              |
| घोरे निगालो, 167            | -लहरो, 246               | तिन्नु, 21, 22           | देवदारु, 4             |
|                             | तीतुमिरिडो, 61           | तिलखुडो, 228, 229        | देवार, 4               |
| चपरे-भार, 150               | जुके-भार, 265            | तिलखुरो, 228, 229        | द्वीपान्तरवचा, 38      |
| चरिन्दा, 174                | जुहा, 253                | तिलमुडो, 228             |                        |
| चरी बाँको, 23               | जुही, 253                | तिलआरा, 271              | धचडे, 91, 95           |
| चरे बाँको, 22               | जौ, 180                  | तिल्के-भार, 174          | धादडी, 145             |
| चर्बिनि, 254                | जौडे-मूलो, 250, 251, 252 | तिल्फोरा, 226            | धान, 187               |
| चाँदी गाभा, 50, 51          | ज्वाने-घाँस, 107         | तीते काँक्री, 233        | धाप्ले-घाँस, 159       |
| चाँदफूल, 80                 |                          | काँक्रो, 233             | धूपी, 7, 8, 9          |
| चित्रा, 228                 | भाँक्री-काठ, 19          | काँफलो, 90               |                        |
| चित्रे-घाँस, 147            | भिक्षेलकाँड, 88          | -फूल, 259                | नक्कली जीवन्ती, 59     |
| बन्सो, 165                  | भिक्षेलकाँडी, 88         | निगालो, 167              | पाँचऔले, 60            |
| चिनो, 188                   | भुले सल्ला, 4            | तीतुमिरिडो, 61, 62       | भृङ्गराज, 59           |
| चिप्ले काउलो, 18            | भुलो, 4                  | तीनतले बाँको, 35         | सतुवा, 36              |
| चिल्ला, 6                   | भुसे कागुने-घाँस, 204    | तीनपाते बाँको, 24        | हरचूर, 81              |
| चीड, 5                      | मोथे, 135                | तुरर, 31                 | नलदुरा, 149            |
| चीर, 5                      | -भार, 112                | तेजपत्ता, 15             | नागदन्ती, 38           |
| चीले विष, 237               | भ्याप्ले-घाँस, 198       | तेजपात, 15               | नागरमोथा, 134          |
| चुत्रो, 228, 229, 230, 231, | भ्याम्टे-घाँस, 147       | तेल्पाउरो, 270, 271      | नागरमोथे, 134          |
| 232                         |                          | तेल्पार, 270, 271        | नान खिरौलो, 93         |
| चुनेरो, 208                 | टाउके-घाँस, 190          | तोश, 2, 5                | कटेरे, 103             |
| चुरनहार, 245                | टुँडे सामा, 168          | तौड, 31                  | काकोली, 42, 45         |
| चोत्तो, 228, 230, 231       | टोक्ले काउलो, 17         |                          | पोड्या, 42, 43, 45     |
| चोर्वाचिनी, 38              | ट्वाक्फूल, 37            | थाकल, 95                 | निगाली-साग, 92, 93, 94 |
|                             |                          | थालिङ्ग, 90              | निगालो, 167, 208       |
| छिट्को-लहरा, 246            | ठिङ्गे, 6                | थुनेर, 10                | वाँस, 167              |
|                             | सल्ला, 6                 | थुनो, 10                 | निमी-लहरा, 226, 227    |
| जङ्गली जौ, 149              | ठिङ्गो, 4                |                          | निर्विषा, 250          |
| तरुल, 34                    | ठिङ्गे सल्ला, 6          | दत्याउने-भार, 163        | निर्विषी, 234, 250     |
| प्याज, 95                   | ठूलो काकोली, 52          | दनु, 83, 84, 85          | नीलो खेलदार, 222       |
| मरवा, 169                   | कागुन, 188               | दहिले-बेलो, 244          | गोकुल-धूप, 213         |
| लसुन, 83                    | कानेभार, 99              | दाँतुखुसो, 243, 244, 245 | जलुके, 100             |
| जदवार, 250                  | नरकट, 149                | दाप्सु खर, 180           | जलुको, 100             |
| जनै-घाँस, 189               | फ्यूँचो, 118             | दाम्पाते, 263, 265       | विष, 249, 250, 251,    |
| जमाने मान्द्रो, 233         | मोथे, 132                | दारहल्द, 228             | 252                    |
| जम्बु, 84                   |                          | दारहल्दी, 228            | नेपाली दालचिनी, 16     |
| जरखरे-घाँस, 205             | डाँक्ले खर, 146          | दारुहरिद, 228            | नेपाले केवरा, 37       |
| जलुका, 25, 26               |                          | दालचिनी काउलो, 16        |                        |
| जाम, 4                      | ढडी, 208                 | दिउ निगालो, 167          | पङ्खा-फूल, 102         |
| जिन्ने, 52                  | ढल्के खर, 146            | दियार, 4                 | पटपटे खर, 159          |
| जिमीकंद, 31                 |                          | दुक, 236                 | पतेरी-घाँस, 117        |
| जिम्बु, 84                  | तमालपत्र, 15             | दुरासला, 6               | पत्थर-केरा, 74         |
| -घाँस, 85                   | तरुल, 31                 |                          | पञ्चपुष्कर, 82         |

पहेंलो खपटे, 16  
 सर्वजा, 37  
 सिंगटे, 11  
 पाँचऔंले, 54  
 पाठा, 225  
 पाढ, 225  
 पाढा, 225  
 पातली तरुल, 33  
 पानी मोथे, 139  
 सरो, 101  
 पानु तरुल, 31  
 पापडो, 270  
 पाप्री, 270  
 पाफे सल्लो, 6  
 पामा, 8  
 -धूप, 8  
 पामो, 8  
 पार्ते-घाँस, 114  
 पिंडरा, 43  
 पिनरा, 43  
 पिनासे-लहरा, 244  
 पिन्ड्रौ, 2  
 पिपेरी, 82  
 पिरुली, 271  
 पिरें खर, 161  
 -घाँस, 161  
 पिलजरी, 265  
 पुर्हा, 227  
 पोडे-घाँस, 192  
 पोड्या, 41, 43, 44  
 प्याक्से, 25  
 फुकेँ खर, 148, 173  
 -भार, 137  
 फुलेरो, 146  
 फुस्रे, 16  
 बक्रयाउलो, 246  
 बन्धन-भार, 205  
 बन्सो, 165, 174, 189  
 बर्कुली-लहरा, 227  
 बाँको, 20, 21, 22, 23, 24, 27  
 बाँस केवरा, 87  
 बाखेलहरो, 38, 39  
 बाघ-पाइले, 254  
 -मुड्ग्री, 24  
 बाटुलपाते, 225  
 बडा नल, 149  
 346

बाजरा, 158  
 बाबियो, 176  
 बाला बन्सो, 204  
 बिख, 234, 248  
 बियार, 6  
 बिरल्ले, 158  
 बेल कंगु, 245  
 बोभो, 20  
 भाडखोपडे, 13  
 भावर-घाँस, 176  
 भाटवेल, 225  
 भारभूसी, 174  
 भाल्केला, 74, 75  
 भालू-केरा, 74  
 -केला, 74, 75  
 भाले बाँको, 22  
 बन्सो, 158  
 भुईं खजूर, 81  
 धूपी, 9  
 सरो, 103  
 भुट्टा, 212  
 भुरी-घाँस, 104  
 भुसे खरी, 197  
 भूतकेश, 216  
 भूतकेशी, 216  
 भैंसी-लहरा, 13  
 भैंसे-लहरो, 245  
 भ्याकुर, 32  
 भ्यागुतेफूल, 81  
 मंडवा, 169  
 मंडुआ, 169  
 मकाय, 212  
 मकै, 212  
 मकैया-घाँस, 179  
 मक्का, 212  
 मखोटी, 248  
 मड्ग्री-मूलो, 248  
 मडुआ, 169  
 मधु विष, 237  
 मधुस्तुही, 38  
 ममिरा, 265  
 मरुवा, 169  
 मर्दि-भार, 258  
 मसिनो दाम्पाते, 265  
 महाकाय, 212  
 महाजरी, 37

महामेदा, 92  
 माने, 25  
 मारुरी, 254  
 मालागिरि, 15  
 माले बाँको, 23  
 मीठे गिट्टो, 34  
 मुखालु, 31  
 मुञ्जातक, 54  
 मुडौलो, 249, 250, 252  
 मुसे खर, 157  
 खरुकी, 157  
 चुत्रो, 232  
 -भार, 197  
 मुस्तका, 134  
 मुस्ता, 134  
 मुसुवेलो, 225, 227  
 मूर्वा, 245  
 मेदा, 92  
 मोथे, 131, 132, 134, 139, 140  
 -भार, 130, 132  
 मोरट, 245  
 मोरिण्डा, 2, 3, 5  
 मोरे-मूलो, 253  
 -मूलो, 248, 249, 253  
 यव, 180  
 रक्स्या बाँको, 21  
 रगते मोथे, 135  
 रतनजोत, 239, 240  
 रसमलो, 92  
 रसाञ्जन, 228  
 रागी, 169  
 राघा, 2, 3, 5  
 राजसल्लो, 7  
 रातो जिब्रे, 53  
 निगालो, 208  
 खर, 148  
 बाबियो, 137  
 भ्याकुर, 33  
 सल्ला, 6  
 रासगरी, 103  
 रियार, 5  
 रूख पिंडालु, 26  
 रै, 5  
 रैसल्ला, 2, 3, 7  
 लघुपत्र, 233

लतपते, 12  
 लसन, 83, 84, 85  
 लसुनेसाग, 83  
 लस्कर, 248  
 लाङ्गली, 37  
 लाप्चिम्पा, 27  
 लुईठ, 10  
 लेक-आँखे, 1  
 जिब्रे, 53  
 सतुवा, 36  
 लौठो, 10  
 लौठ सल्ला, 10  
 वच, 20  
 वचा, 20  
 वन कसुर, 91  
 काउलो, 16  
 काक्री, 233  
 कूरिलो, 87, 88  
 कोदे, 169  
 चाँप, 14  
 तरुल, 31, 33, 34  
 वन तौड, 31, 32, 33  
 पिंडालु, 26  
 प्याज, 89  
 वेसार, 100, 101  
 लसुन, 41, 43, 85  
 सिरु, 81  
 हल्दी, 102  
 हल्दो, 100, 101, 102  
 बन्सूली, 265  
 वराहकन्द, 34  
 वराही, 34  
 विष, 234, 236  
 -जरा, 236  
 -फल, 237  
 विष्कापडो, 96  
 वीर बाँको, 21, 24  
 शतावर, 88  
 शतावरी, 88  
 सतवा, 35  
 सतुवा, 35  
 सतो, 35  
 सरल, 5  
 सर्प-मकै, 21  
 सर्पको-मकै, 20, 22, 23, 24



सर्रो, 102  
 सलामपञ्जा, 54  
 सल्ला, 5  
 सल्लिसाग, 90  
 साँप-की-मक्की, 24  
 साङ्गासिङ्ग, 10  
 सानो काँस, 200  
   कानेभार, 97  
   कुकुरडाइनो, 37  
   फ्यूँचो, 127, 207

सामा, 168  
   -घाँस, 168  
 सिँगटे, 11  
   -लहरा, 11  
 सिन्कौली, 15  
 सिरु, 180  
 सुनाखरी, 46  
 सुप-घाँस, 217  
 सेतकचिनी, 94  
 सेतो काउलो, 18

खप्डे, 16  
 मुस्ली, 89  
 मोथे, 133  
 सोती-घाँस, 161  
 सोमलता, 1  
 स्निग्धदारु, 4  
 स्युम्पा, 8  
 हत्ताजडी, 54, 60  
 हरिचम्पा, 14

हर्दी-भार, 100  
 हस्तजोडी, 54  
 हाडे कुकुरडाइनो, 39  
   फूल, 86  
 हाती-खुर्की, 157  
 हातेजडी, 54, 60  
 हाथ-केला, 74  
 हुमन, 3

## C. Tibetan

| Transcription     | Transliteration       | Tibetan script     |          |
|-------------------|-----------------------|--------------------|----------|
| abisha            | a bi sha              | ཨ་བི་ཤ་            | 41       |
| ajak tserngön     | a byag tsher sngon    | ཨ་བྱག་ཅེར་སྒོན་    | 222      |
| bongmar           | bong dmar             | བོང་དམར་           | 249      |
| bongnak           | bong nag              | བོང་ནག་            | 236      |
| chetsa            | lce tsha              | ལེ་ཅ་              | 258      |
| churuk bellak     | chu rug sbal lag      | ཆུ་རུག་སྒུལ་ལག་    | 255      |
| dagoe             | dwa rgod              | དྭ་རྟོད་           | 24       |
| dawa              | dwa ba                | དྭ་བ་              | 22, 23   |
| drema             | gres ma               | གྲེས་མ་            | 82       |
| drema po          | gres ma pho           | གྲེས་མ་ཕོ་         | 82       |
| drönshing         | sgron shing           | སྒོན་ཤིང་          | 5, 6     |
| gabur zilnön      | ga bur zil gnön       | ག་བུར་ཇིལ་གྲོན་    | 213      |
| gatsa             | sga tsha              | སྒ་ཅ་              | 258      |
| gyagok            | rgya sgog             | རྒ་སྒོག་           | 83       |
| gyashuk           | rgya shug             | རྒ་ཤུག་            | 7        |
| jagoepoe          | bya rgod spos         | བྱ་རྟོད་སྒོས་      | 248      |
| jakang            | bya rkang             | བྱ་རྟང་            | 249      |
| khujukpa          | khu byug pa           | ཁུ་བྱུག་པ་         | 53       |
| kyer nak          | skyer nag             | སྐེར་ནག་           | 232      |
| kyerpa            | skyer pa              | སྐེར་པ་            | 228, 232 |
| lhashuk           | lha shug              | ལྷ་ཤུག་            | 8        |
| loma dünchen dawa | lo ma bdun can dwa ba | ལོ་མ་བདུན་ཅན་དྭ་བ་ | 35       |
| naram             | na ram                | ན་རམ་              | 28       |
| né                | nas                   | ནས་                | 180      |
| ngotrin           | sngo sprin            | སྒོ་སྒྲིན་         | 264, 265 |
| nyeshing          | nye shing             | ཉེ་ཤིང་            | 87, 88   |
| olmosé            | 'ol mo se             | འོལ་མོ་སེ་         | 233      |
| parpata           | par pa ta             | པར་པ་ཏ་            | 221      |
| ramnyé            | ra mnye               | ར་མཉེ་             | 92, 94   |
| rékön ngön po     | re skon sngon po      | རེ་སྒོན་སྒོན་པོ་   | 213      |
| rigok             | ri sgog               | རི་སྒོག་           | 83       |
| ruk gok           | rug sgog              | རུག་སྒོག་          | 83       |

| Transcription | Transliteration   | Tibetan script     |          |
|---------------|-------------------|--------------------|----------|
| sangshing     | bsang shing       | སང་ཤིང་            | 10       |
| shingtsa      | shing tsha        | ཤིང་ཙ་             | 15       |
| shudak        | shu dag           | ཤུ་དག་             | 20       |
| shuktser      | shug tsher        | ཤུག་ཚེར་           | 9        |
| supka         | sru ba            | སྤུབ་ཀ་            | 254      |
| supka karmo   | sru ba dkar po    | སྤུབ་ཀ་དཀར་པོ་     | 254      |
| tangnak       | thang nag         | ཐང་ནག་             | 3        |
| tangshing     | thang shing       | ཐང་ཤིང་            | 3        |
| tongri zilpa  | stong ri zil pa   | སྟོང་རི་ཟེལ་པ་     | 217      |
| tongzil       | stong zil         | སྟོང་ཟེལ་          | 216, 217 |
| trazang zilpa | skra bzang zil pa | སྐ་བཟང་ཟེལ་པ་      | 216      |
| tsatak        | rtsa thag         | རྩ་ཐག་             | 221      |
| tsedum        | mtshe ldum        | མཚེ་ལུམ་           | 1        |
| tsenduk       | btsan dug         | བཙན་དུག་           | 236      |
| utpelngönpo   | ut+pala sngon po  | ཡུའཕལ་སྟོན་པོ་     | 222      |
| wangpo lakpa  | dbang po lag pa   | དབང་པོ་ལག་པ་       | 54       |
| yimong karmo  | dbyi mong dkar po | དབྱི་མོང་དཀར་པོ་   | 246      |
| yumo deujin   | yu mo mde'u 'byin | ཡུ་མོ་མདེའུ་འབྱིན་ | 256      |
| zimnak        | 'dzim nag         | འཛིམ་ནག་           | 84, 85   |

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## FLORA OF KAILASH SACRED LANDSCAPE NEPAL AN ANNOTATED CHECKLIST – VOLUME 1

The Kailash Sacred Landscape (KSL) is a transboundary landscape, which spreads across an area of over 31,000 km<sup>2</sup> and includes southwestern part of Tibet Autonomous Region (TAR) of China, northwestern part of Nepal, and northeastern part of Uttarakhand State in India. The Nepalese part of the KSL (known as KSL Nepal) includes three districts (Baitadi, Bajhang and Darchula) of Sudurpashchim Province and Humla District of Karnali Province. The landscape comprises rich natural resources, and cultural heritage including ethnic diversity. The diverse habitat types in the landscape extending from tropical forests to alpine pastures in the monsoon-dominated slopes and dry alpine meadows and scrubs in the trans-Himalayan valleys support high plant diversity.

The present work is an attempt to document all the known gymnosperm and angiosperm flora of KSL Nepal in the form of a comprehensive checklist. The entire checklist will form three volumes, of which the present book represents the first. It is primarily based on the study of herbarium specimens, investigation of the relevant floristic literature, online catalogue and databases, and direct field surveys.

The first part of this volume introduces KSL Nepal, its biodiversity and vegetation pattern, trade and conservation status of plant biodiversity, and provides a brief account of the botanical explorations carried out in the landscape. The second part provides a comprehensive checklist featuring 661 accepted taxa, belonging to 231 genera in 42 families, each with information about nomenclature, vernacular name(s), growth characteristics, habitat, distribution, ethnobotanical uses and threat status. All gymnosperms recorded from KSL Nepal are included, comprising 15 species belonging to 9 genera in 4 families. Angiosperms covered in this volume represent 627 species, 8 subspecies and 11 varieties belonging to 222 genera in 38 families (Schisandraceae – Buxaceae). The checklist further features 1515 botanical synonyms of the taxa covered in this volume, and lists about 935 vernacular plant names with more than 300 names from the KSL region. It also documents ethnobotanical uses of 133 taxa.

*Copies of this book may be obtained from:*

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