



TOSKAR NEWSLETTER

A Quarterly Newsletter of the Orchid Society of Karnataka (TOSKAR)
Vol. No. 4; Issue: iii; 2017



THE ORCHID SOCIETY OF KARNATAKA
www.toskar.org • toskar2008@gmail.com

TOSKAR NEWSLETTER

EDITORIAL BOARD

(Vide Circular No. TOSKAR/2016
Dated 20th May 2016)

Chairman

Dr. Sadananda Hegde

Members

Mr. S. G. Ramakumar

Mr. Sriram Kumar

Editor

Dr. K. S. Shashidhar

Associate Editor

Mr. Ravee Bhat

Front cover –

Bulbophyllum guttulatum (Hook.f.)

N.P.Balacr.

by Dr K. S. Shashidhar

From the Editor's Desk

21st September 2017

These passages I am penning from US as I am on a visit here for couple of months. But trying to catch up and keep track of what is happening in the world of orchids at Bengaluru. I am given to understand that the months of August and part of September, Bengaluru saw incessant rains and at times heavy! rains are always welcome and good for orchids in a way. Only word of caution is, orchids grown in pots may have too much of wetness, please check and take appropriate action to prevent the plants getting diseases and you may lose the plant. Having said this, it is also the growing period for most of the orchids and also blooming time for many of the interesting terrestrials. Also, another issue which all of us have to be aware in this period of wetness is the incidence of slugs and snails. If unchecked, these can devastate your collection.

It is heartening to see that many of our members have developed expertise in growing cross section of different genera of orchids, which is not easy at all considering their varying needs. We all have great appreciation for these growers as it is only passion can achieve this. Having said that, I would once again earnestly appeal to the members to contribute and share their growing experiences through this News Letter, we are here to help you and trust me no body is expert, we are all learners may be at different levels. The interview content which is being introduced is mainly to encourage most of you to come out and share your proficiency in growing wonderful orchids, do not feel shy.

An important upcoming event for TOSKAR is the Orchid Show 2017 scheduled to be held on October 27 & 28, 2017 at Lalbagh, Bengaluru. I am sure everybody will be eagerly looking forward for the show and so also the hobbyists, beginners and others who are interested in Orchids. It will be feast of orchids and I am going to miss it!!!

This issue has some interesting articles and notes. Dr. Nageshwara Rao, who was with Dr. Hegde in Itanagar and at present he is heading the Orchid Research & Development Centre at Manipur has highlighted the activities of the Centre in his article. Potentials and various developmental activities in relation to commercial production of orchids in Karnataka is brought out by Dr. Hegde in his article. A brief note on mounting of orchids and her experience is shared by Ms. Nalini. On the eve of the orchid show and with the increased response from the members for display in our BMM and also in the previous show, Mr. Kalyanpur has given a list as to how to go about with regard to preparing the plants for the display and exhibits. I am of late fascinated by *Bulbophyllum*s which is the largest genus in Orchidaceae. I have tried to put few important aspects in the article penned by me. In addition, many of our members have been successfully growing one

of the fascinating terrestrial orchid Habenarias, I thought it would be more appropriate to mention few cultural aspects as we have to take care of the tubers/corms during winter. A write up on the activities of the previous Bi Monthly Meeting highlights the activities of TOSKAR.

Once again hoping that this issue will be well received by the readers and expect you to post the comments on our web site

“If I see an orchid that's fantastically expensive, I'll buy it. It's worth it, for no other reason than it gives me pleasure.” - Lee Radziwill

Dr. K. S. Shashidhar
editor.nl@toskar.org

This issue contains...

Articles:

Orchid Research & Development Centre, Hingbung, Manipur – Dr. A. N. Rao	1
Commercial Potential and Development of Orchids in Karnataka – Dr. S. N. Hegde	8
Genus <i>Bulbophyllum</i> – Dr. K S Shashidhar	19
Tips for <i>Habenaria</i> culture – Dr. K. S. Shashidhar	26

Interview

H R Sreenath Rao – An Electrical bulb engineer becomes keen orchid hobbyist	29
---	----

News & Notes

Guide lines to Prepare your Orchid plants for exhibiting them at Orchid Show 2017 – S S Kalyanpur	33
Note on Mounting orchids – Nalini Kottolli	35
Report on BMM August 2017	37

ORCHID RESEARCH AND DEVELOPMENT CENTRE, HENGBUNG, MANIPUR

Nageshwara Rao

The Orchid Research and Development Centre (Formerly known as *Centre for Orchid Gene Conservation of Eastern Himalayan Region*) is located at Hengbung in Senapati district of Manipur at a distance of about 65 km from the Imphal Airport. It has been established in the year 2010 (June) by the Science and Engineering Research Board (SERB) of Department of Science and Technology, Government of India, New Delhi under the programme of Intensification of Research in High Priority Area (IRHPA). Local NGO called Foundation for Environment & Economic Development Services (FEEDS) has been acting as the host Institute for this mega project. Late Prof. S.P.Vij acted as its Principal Investigator till his sad demise on 20.10.2013. In August 2012, Dr. A. N. Rao, former orchidologist from State Forest Research Institute, Itanagar of Arunachal Pradesh has been appointed as the Director for the Centre.



View of ORDC

Some of the main objectives of the Centre are as follows:

- ✓ Survey and Identification of areas / plots in eastern Himalayan region for *in situ* conservation.
- ✓ Studies on orchid species diversity using conventional & Molecular approaches.
- ✓ Conservation through *in vitro* approaches & methods of Cryopreservation.
- ✓ Experiments on breeding trials involving ornamental indigenous species and exotic hybrids to develop new hybrids of commercial potential.
- ✓ Studies on Pollination biology of various native orchids of NE region.
- ✓ Studies on Pests & Diseases of various species of orchids and control measures.
- ✓ Micropropagation (Seed & Tissue culture works to Standardise suitable protocols for mass multiplication of selected RET species of NE region for rehabilitation programmes and selected commercially important hybrids and species for production of disease-free quality planting material with suitable fungal symbiont to distribute to potential growers / farmers under extension programme.
- ✓ Conducting regular training in Orchid Farming and providing required long term infrastructural support to the identified potential growers of the region with special reference to the poor local tribal women and unemployed youth.

The Orchid Centre has completed 7 years by June 2017 with a remarkable accomplishment of planned objectives and has become the Centre of Excellence for orchid conservation and research in India within this short period. So far, 7 new species of orchids viz. ***Ione kipgenii*, *Dendrobium tamenglongense*, *Oberonia manipurensis*, *Cymbidium hengbungense*, *Sarcoglyphis manipurensis*, *Thrixspermum indicum*, *Oberonia acaulis var. latipetala*** ; 8 new additions to India and more than 80 new distributional records to N.E. and Manipur state are reported from the Centre. It is now gearing towards the Centre of Relevance by imparting training to local unemployed youth and members of various Women Self Help Groups in Orchid Hybrid seedlings production through seed & Tissue culture in the ORDC lab; and promoting orchid cultivation in clusters at the farmers' site in various villages by providing infrastructure facilities and quality planting material of cut-flower quality suitable for the climate of concerned areas as one of the important goal of the Centre i.e. socio-economic upliftment of poor tribal people.

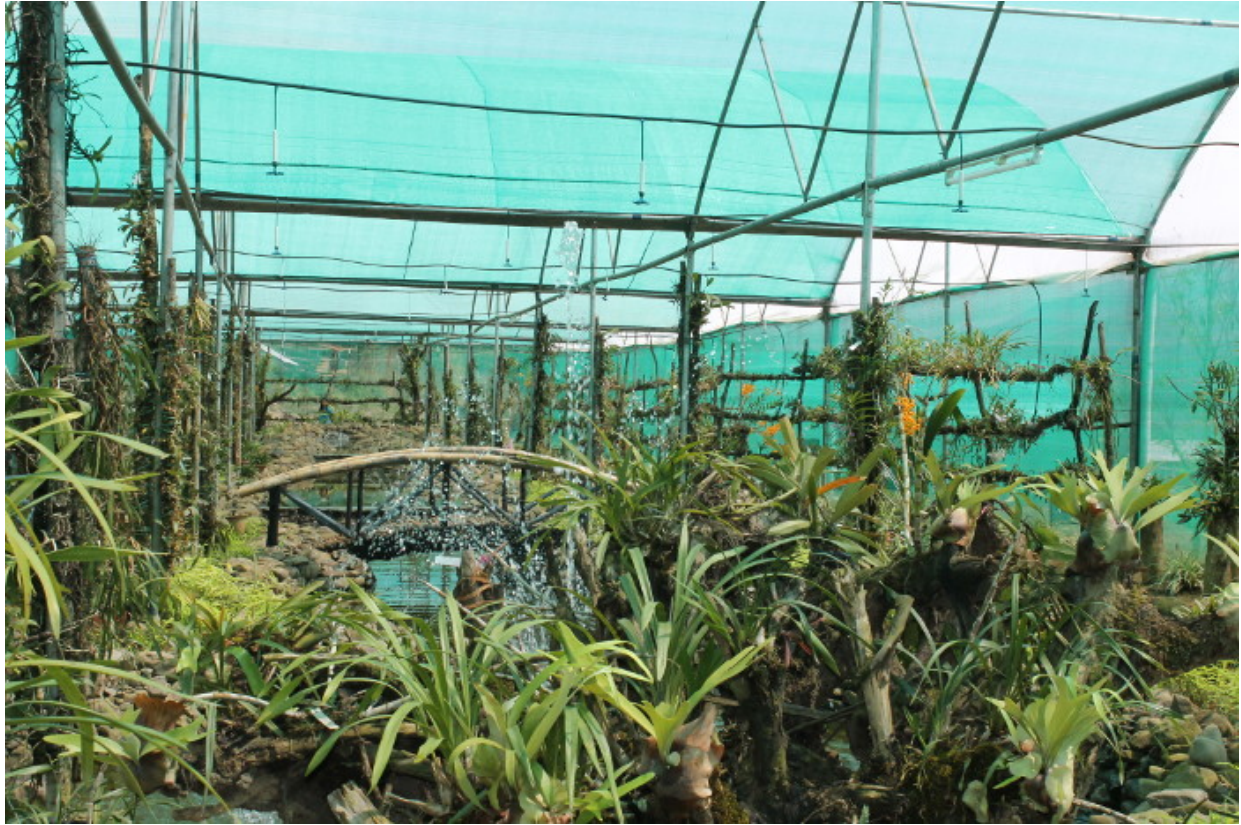
The Centre is visited by over 2000 people annually including Students, Researchers, Professors from various Universities, tourists from various states of the country as well as from other countries, political leaders, Administrators, Hobbyists, plant growers etc.

Assets of Tourists' attraction at ORDC, Hengbung :

Orchidaria :

There are two large Agro-shade houses harboring about 300 orchid species of about 70 genera representing the orchid flora of N.E. India. Live collections of new species viz. *Ione kipgenii*, *Dendrobium tamenlongensis*, *Oberonia manipurensis*, *Thrixspermum indicum*, *Sarcoglyphis manipuresis* ; 2 endemic species viz. *Bulbophyllum manipurensis*, *Schoenorchis fragrans (manipurensis Pradhan)* and many rare and endangered species like *Renanthera imschootiana*, *Vanda coerulea*, *Bulbophyllum rothschildianum*, *Cirrhopetalum ornatissimum*, *Holcoglossum amesianum*, *Ascocentrum himalaicum*, *Dendrobium parcum*,

D.brymerianum, *D.bellatulum*, *Paphiopedilum hirsutissimu*, *Bulbophyllum putidum* , *Thelasis bifolia*, *Oberonia integerrima*, *Dendrobium sinominutiflorum*, *Dendrobium hesperis*, *Cleisomeria pilosulum* etc.



View of ORDC Manipur Orchidarium

Besides natural species, visitors can see many hybrid orchids plants developed and cultured from the ORDC laboratory as well as hybrids of cut-flower quality procured from outside.

Field Gene Bank :

About 250 hectares of land in the Feeds-KVK campus has been developed into an Orchid Field Gene Bank. The area has several hundreds of trees belonging to various species of *Quercus*, *Mangifera*, *Bauhinia*, *Alnus*, *Cedrela*, *Castanopsis*, *Pinus*, *Cupresses*, *Schima* etc. which have been utilized as phorophytes to rehabilitatethe orchids rescued from degraded forest areas. Besides introduced orchids, the field gene bank has also several naturally occurring orchid species including rare species like *Tainia angustifolia*, *Zeuxine affinis*, *Malaxis callophyllum*, *Bulbophyllum rufinum*, *Taeniophyllum glandulosum* etc. which are found only in this place in Manipur.

Herbarium :

This is the latest Mobile Herbarium Storage system and temporarily acronymed as COGCEHR Herbarium, Hengbung which is to be registered with concerned world authority in coming years after accumulating sufficient number of accessions. So far, about 600 accessions representing about 220 species in about 60 genera of N.E. India are deposited in the herbarium and displayed in the order of latest phylogenetic classification based on molecular studies.

Seed bank :

Seeds of many rare and ornamental orchid species are collected from mature capsules, weighed and counted the number of seeds per capsules. Later seeds are placed in different test tubes and lyophilized with every 1 hr gap until the water content is removed and subsequently transferred to different cryovials with specific accession numbers and they are preserved in -20° deep freezer. Seed viability tests at one month intervals under in vitro conditions, are in progress to assess the longevity of every species.

Central Laboratory :

The Centre has a large state-of-art laboratory with latest equipment to carry out the experiments in various disciplines of Orchidology viz. morphological, anatomical and molecular studies of different orchid phylogenetic groups, micropropagation of new, rare and ornamental orchids through seed and tissue culture. Visitors can have a glimpse of thousands of tissue culture flasks arranged in steel racks under artificial illumination from glass-walled chambers.

Hardening Unit :

The Orchid Centre has a large Hardening Unit for the orchid seedlings produced from the laboratory through seed and tissue culture. It has an auto controlled system to regulate periodic water spray, mist, light and temperature conditions inside the house. This house can accommodate nearly 1 lakh seedlings at a time hardening for 3 to 4 months.

Finally, it may be mentioned that the Orchid Centre at Hengbung is flourishing well year by year because of the keen interest, constant supervision and help in various ways including financial support of two persons namely Mr. Haokhlet Kipgen, Chairman, FEEDS, Hengbung and Dr. S.P.Singh, Scientist, SERB, Department of Science and Technology, Govt. of India, N. Delhi.

A. Nageswara Rao



Photos: **A.& B.** Orchidarium1 from outside and inside **C.&D.** Orchidarium 2 from outside and inside **E.& F.** Field Gene Bank **G.& H.** Seedlings Hardening Unit from outside and inside.

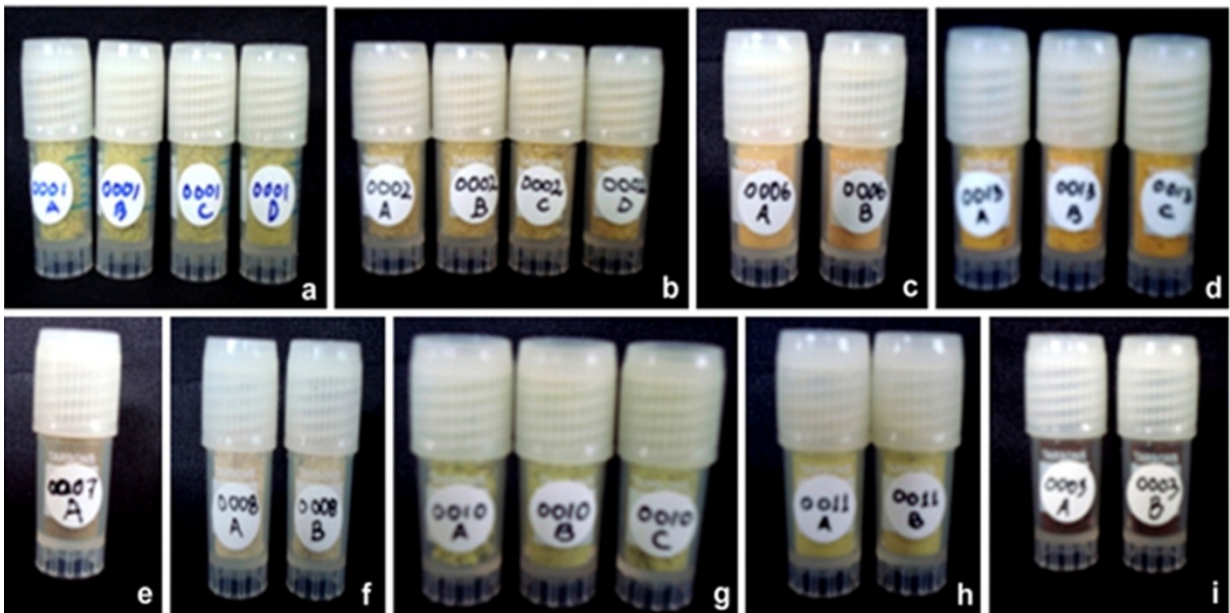


COGCEHR Herbarium



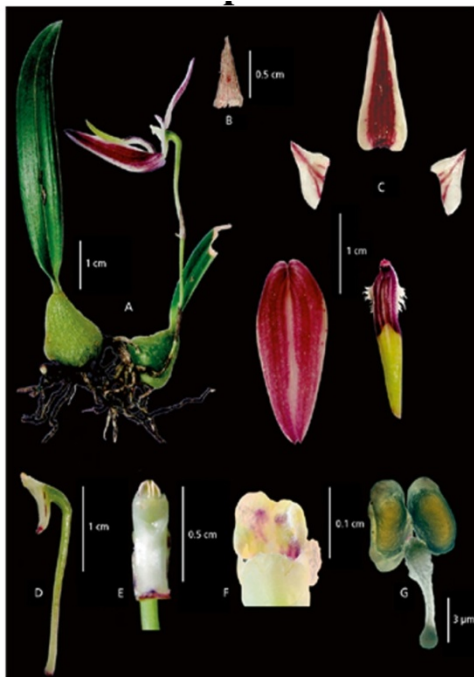
COGCEHR Orchid pickled material storage

Plate. Seeds of various orchid species stored in vials at -20° in deep freezer

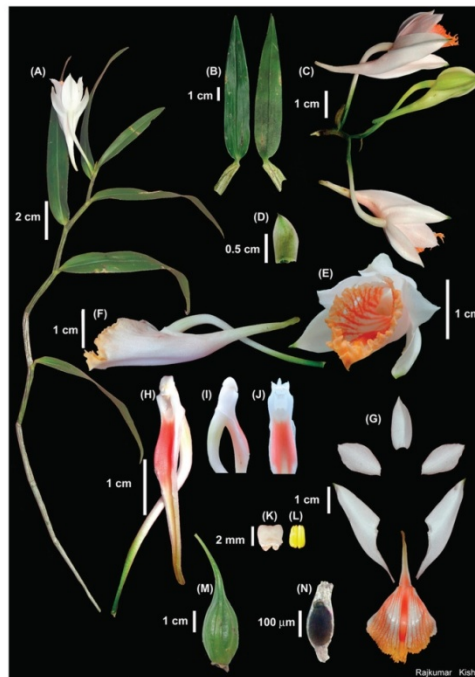


Figs. a. *Dendrobium chrysotoxum*, **b.** *Cymbidium iridioides*, **c.** *Bulbophyllum affine*, **d.** *Dendrobium primullinum*, **e.** *Rhynchostylis retusa*, **f.** *Thunia alba*, **g.** *Dendrobium crepidatum*, **h.** *Dendrobium falconeri* and **i.** *Vanda coerulea*

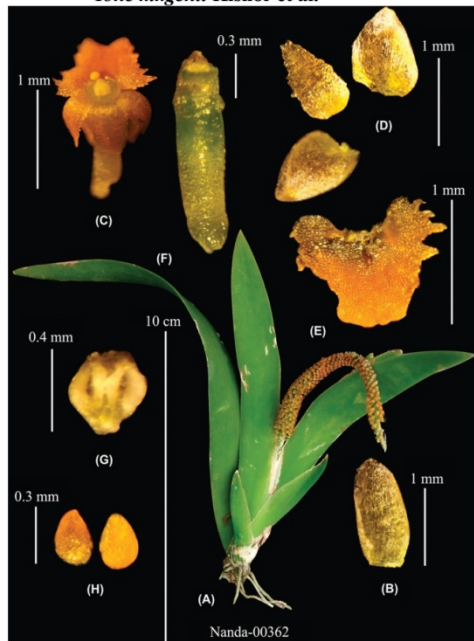
Some new species of orchids discovered from ORDC, Hengbung



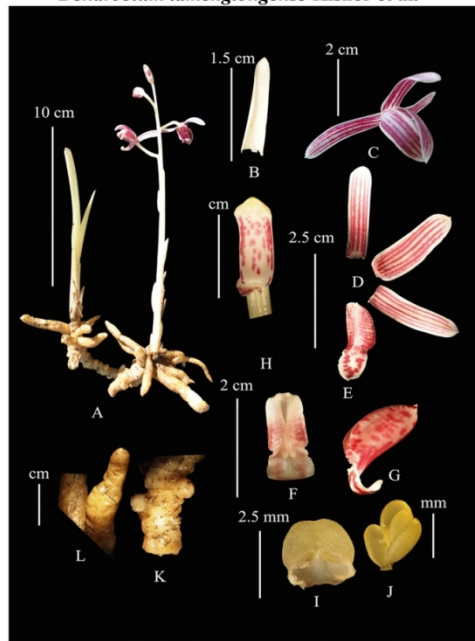
Ione kikgenii Kishor et al.



Dendrobium tamenglongense Kishor et al.



Oberonia manipurens Chowlu et al.



Cymbidium hengbungense Rao et al.

Commercial Potential and Development of Orchids in Karnataka

Sadananda Hegde

#27/28, Arunodaya, 3rd Cross, Venkateshwara Farm Layout,
Rajiv Gandhi Nagar, Sunkadakatte, Bangalore 560 091.

sadanandnhegde@gmail.com

Karnataka region of the Western Ghats is unique in having both the northern and southern elements with unique orchid flora with about 176 species in 49 genera found in the Western Ghats as reported by various workers (Hegde 1997, 2016, Sathish Kumar 1993, T. A. Rao 1998, T. A. Rao & Shridhar 2007). The Scientists of Botanical Survey of India have also reported on the occurrence and new distributional records of number of orchids of this region (Manilal & Sathish Kumar 1993, 2004).

Hegde (2006), writing on the prospects of Orchid trade industry in Karnataka, has reviewed the past works done on various aspects of Orchidology and suggests conservation and sustainable development of this unique group of plants. In a series of publications, Hegde (2006, 2007a, b, c, d, 2008), has highlighted the Orchid rich areas of the State for conservation and development of Orchid Sanctuaries and Orchidaria (Rao, TA & Hegde 2008). Recently, an illustrated hand-book in kannada with photographic illustrations of 99 species of orchids has also been published by M. R. Gurudeva (2015).

Physiography & climate: The State of Karnataka lying between 11° 36' and 18° 25' N latitude and 74 ° 10' and 78 ° 35' longitude is spread over an area of 1, 92,000 Sq. Km. in India. Physiographically, the State can be divided into two distinct regions viz. "Malnad" (Hills of Western Ghats) and "Maidan" (plains). The Malnad region is essentially hilly forested region of the Western Ghats or Sahyadri Hill ranges with a stretch of 300 Km long and 10-50 Km wide warm-humid coastal belt. The Sahyadri hills rise from sea coast to a height of about 1925.4 m MSL and gradually slope down towards east forming plains or Deccan plateau. The Coastal and Western Ghats areas receive heavy rain fall and the plain area falls under rain shadow regions with less rains. The Western Ghats hills have given rise to number of rivers such as Kali, Gangavali, Aghanashini, Sharavati, Chakra, Sitanadi, Netravati, Gurupur, etc that flow westwards to meet Arabian Sea and rivers like Krishna, Bhima, Tungabhadra, Ghataprabha, Malaprabha, Kabini, Kaveri etc flow eastwards to meet Bay of Bengal flowing from Karnataka plateau through Andhra and Tamil Nadu. The State experiences tropical climate with temperature ranging from 22-33° C in Coastal regions, 15-34° C in Hills and 15 to 36 ° C in plateau regions. Relative humidity is high

in the coastal and hill regions with lesser and dry conditions towards east. Such a climatic situation has given rise to diverse vegetation types such as: 1. Evergreen vegetation: (a) Moist Evergreen (b) Mixed evergreen 2. Deciduous vegetation 3. Dry Deciduous Scrub Vegetation. Along the West Coast, there are patches of Mangrove forests. All these vegetation/Forest types harbor rich orchid flora and therefore provides ideal agro-climate for growing varieties of orchids.

Distribution pattern: In Karnataka, out of 176 species of orchids known to occur, as many as 67 species are terrestrials, two saprophytes and about 108 species are epiphytes. *Dendrobium* is the largest genus with 19 species, followed by *Habenaria* 17 and *Peristylus* 10 species. An analysis of distribution pattern of species reveals that districts in Western Ghats region have maximum concentration of orchids and Uttara Kannada district with 114 species has the maximum number of orchids distributed (Hegde 2007), followed by Hassan with 89, Mysore 86, Kodagu 75, Chikkamagaluru (Davanagere) 65, Shimoga 27 and Belgaum 26 respectively. It is interesting to note, as many as 120 species found as endemics in Western Ghats, as many as 67 species are represented in Karnataka.

Commercial Potential: In Karnataka, out of about 176 species of orchids occurring naturally, only about 38 species belonging to 21 genera are ornamental that can be utilized for breeding & improvement for commercial exploitation. Others are mostly botanical curiosities contributing to bio-diversity of the region and item of collection by the hobbyists (Sharma, *et al* 1984). These orchid species have great commercial potential and therefore it is necessary to develop a package of improved cultivation and propagation adopting tissue culture and green house technologies. Some of the epiphytic species belonging to the genera *Aerides*, *Dendrobium*, *Taprobanea*, *Vanda* etc. found in Karnataka have great potentials in cut-flower production and trade through intensive breeding, selection and improvement. Similarly, the terrestrial species belonging to *Calanthe*, *Habenaria* & *Pecteilis* have potentials as pot plants.

Photos of important orchids given below:



Aerides maculosa



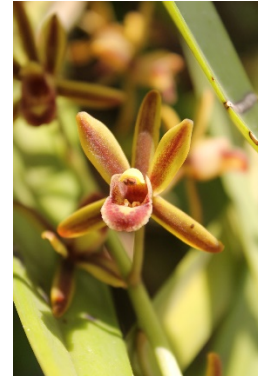
Cottonia peduncularis



R. retusa



Cymbidium aloifolium



C. bicolor



Habenaria plantagenea



Pecteilis gigantea



Acanthephippium bicolor

(Photos in this article are by Sadanand Hegde & K. S. Shashidhar)



D. barbatulam



D. nanum



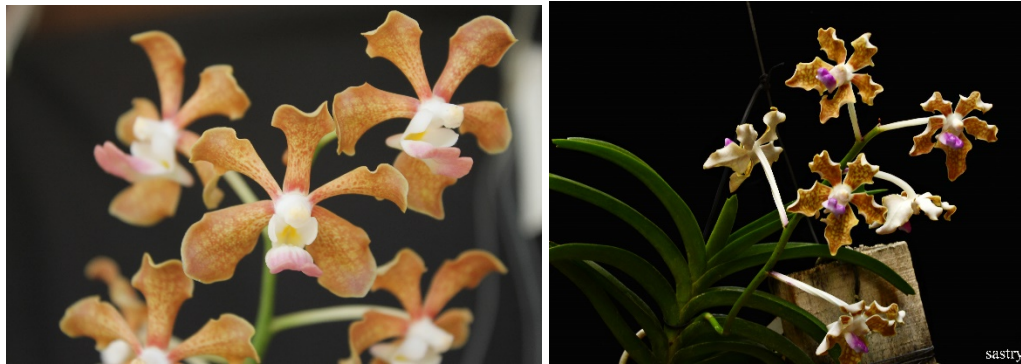
D. aqueum

Some important **ornamental species** found in the State have been listed in Table below.

S.No	Name of species	S.No	Name of species
1.	<i>Acanthephippium bicolor</i>	20.	<i>Dendrobium haemoglossum</i>
2.	<i>Aerides crispa</i>	21.	<i>Dendrobium jerdonianum</i>
3.	<i>Aerides maculosa</i>	22.	<i>Dendrobium microbulbon</i>
4.	<i>Aerides ringens</i>	23.	<i>Dendrobium ovatum</i>
5.	<i>Bulbophyllum fimbriatum</i>	24.	<i>Eria mysorensis</i>
6.	<i>B. mysorensis</i>	25.	<i>Eulophia zollingeri</i>
7.	<i>Calanthe purpurea</i>	26.	<i>Geodorum densiflorum</i>
8.	<i>Calanthe sylvatica</i>	27.	<i>Luisia macrnatha</i>
9.	<i>Chiloschista galandulosa</i>	28.	<i>Papilionanthe cylindrica</i>
10.	<i>Coelogyne breviscapa</i>	29.	<i>Pecteilis gigantea</i>
11.	<i>Coelogyne nervosa</i>	30.	<i>Rhynchostylis retusa</i>
12.	<i>Cottonia peduncularis</i>	31.	<i>Satyrium nepalense</i>
13.	<i>Cymbidium bicolor</i>	32.	<i>Taprobanea spathulata</i>
14.	<i>Cymbidium aloifolium</i>	33.	<i>Thunia bracteata</i>
15.	<i>Dendrobium aphyllum</i>	34.	<i>Tropida angulosa</i>
16.	<i>Dendrobium aqueum</i>	35.	<i>Vanda thwaitesii</i>
17.	<i>Dendrobium barbatulum</i>	36.	<i>Vanda testacea</i>

18.	<i>Dendrobium crepidatum</i>	37	<i>Vanda tessellata</i>
19.	<i>Dendrobium heterocarpum</i>	38.	<i>Xenikophyton smeeanum</i>

It is worthy to note that many of these species are rare and endangered in the wild and therefore are considered as Protected under Wildlife Protection Act of GOI. Hence, trade of wild orchids is prohibited under Law and any trade requires CITES clearance and trade is regulated only when artificially propagated.



Vanda tessellata



Research & Developmental Activities:

In 1960s & 1970s, in the Department of Botany, Karnataka University Dharwar, orchid collections from the Western Ghats region were made and Orchidarium was developed by the team of researchers viz. Chennaveeraiah, Jorapur & Nataraj and their students viz. Hegde, Gayatri, Kulkarni, Bopaiah, Divakar, etc. who worked on various aspects of Orchids. In the same period, Boraiah & Hegde working on Cyto-taxonomical aspects of Orchids of Western Ghats made extensive explorations and developed an Orchidarium in UAS, Hebbal.

Further, in the same period, ICAR research complex at Hesarghatta, Bangalore also initiated Orchid R & D works under the leadership of Dr. Foja Singh which created awareness in the potentials of Orchids in floriculture. Recognizing the floricultural potentials of orchids, Companies like Indo-American Hybrids also introduced orchids as a commercial enterprise besides other horticultural crops in Karnataka.

Attempts have been made to conserve and cultivate many of these species decades ago in three regional Orchidaria, namely Cauvery Nisargadhama, Kushalnagar (Kodagu Dist.), Bhagavathi Nature Camp (Chikmagalur Dist.) and Dandeli Wildlife Sanctuary (Uttar Kannada Dist.) and at state level in Lalbagh Botanical Garden, Bangalore. However, these Centers could not come up to the expectations in developing these natural resources into a commercial enterprise.

The *ex-situ* cultivation of blooming orchids creates awareness about their aesthetic beauty and promotes sustainable utilization of this natural resource through intensive breeding, selection of improved varieties and clones, tissue culture propagation and mass production adopting modern greenhouse technology. It is important to note that breeding must be a continuous endeavor applying modern biotechnological tools coupled with micro propagation of selected clones to finally meet market demand, which is ever changing with occasions and trend (Hegde 2006). **Green house technology** is the latest trend and is most desired for export production with the required quality, quantity and regularity.

In Karnataka, attempts have been made to promote orchid growing adopting green-house technology in the rural and urban areas through the efforts of Kanflora Society in Sirsi from 2003 and The Orchid Society of Karnataka (TOSKAR) from 2005. About 65 farmers in Sirsi & Siddapur taluka took up cultivation of tropical Dendrobium varieties on a cluster mode under Kanflora Society, Sirsi. Good progress was achieved in the production of quality cut-flowers and marketing them in Goa, Mangalore &

Bangalore (Hegde & Hegde 2006). However, presently farmers are facing the problem of market for their produce due to lack of market support system. Some farmers like Asha Sheshadri from Shimoga district and entrepreneurs from Udapi and Mangalore also started commercial cultivation of tropical Dendrobiums & Vanda and express difficulty in marketing their products.

In Bangalore urban area, TOSKAR has been involved in promoting orchid growing mainly as hobby and because of it, some entrepreneurs and nursery men have undertaken commercial activities in supporting orchid growing in Karnataka catering various needs like orchid plants & seedlings, accessories, potting media and fertilizers. Large number of exotic orchid hybrids and species from various parts of the world have been introduced under cultivation in Bangalore belonging to *Aranda*, *Arachnis*, *Aranthera*, *Ascocenda*, *Brassia*, *Brasso-Laelio-Cattleya*, *Cattleya*, *Bulbophyllum*, *Coelogyne*, *Cymbidium*, *Dendrobium species & hybrids*, *Eunanche sanderana*, *Gangora*, *Grammatophyllum*, *Laelia*, *Laelio-cattleya*, *Mokara*, *Oncidium*, *Paphiopedilum*, *Phalaenopsis*, *Potinara*, *Renanthera*, *Rhynchostylis gigantea*, *Spathoglottis*, *Vanda*, *Zygopetalum*, etc. and added to the germplasm collection for breeding and improvement of our orchids in India (Hegde 2014). Over the last ten years, TOSKAR has been promoting growing these orchids in Bangalore Environment providing adequate humidity, maintaining temperature and providing nutrition on regular basis to obtain round the year bloom (Nageshwar, Shashidhar & Hegde 2017). In another study by Hegde (2016), commercial potential of orchids has been discussed in detail and the approach to be adopted for the benefits of the growers through the modern biotechnological means with the backup of R & D programs by various Research, Government & Non-government organizations of the State.

Development Strategies: Karnataka is blessed with varying agro-climatic conditions and rich in orchid diversity. Hence, various hybrids and species listed above could be grown as per their climatic needs either in warm humid climate of the coastal belt and cooler humid areas of the Western Ghats and rain shadow regions of plateau, suitably modifying the growing conditions. To achieve quality production, it is essential to identify suitable agro climatic areas to establish “**Flori-tech village**” clusters for small farmers and climate controlled green houses for large export houses. In the Flori- tech Village Concept, cluster of villages will have a Cooperative with central model farm to cater to the needs of planting materials, impart training to the farmers, set up low cost small farm/poly houses and to organise marketing of the produces.

In an export oriented venture **where quality, quantity and regularity of production and supply are to be ensured**, green-house technology must be adopted. It requires investment and intensive management by trained managers devoted to the profession. Clockwise timely action right from planting, watering, fertilizing, controlling humidity, temperature, ventilation, light, pest & disease management, training of flower spikes, harvesting and post-harvest handling, transporting quickly & freshly up to the markets are of paramount importance for the success of Orchid Industry (Hegde 2001).

Medicinal & Aromatic Orchids: About 55 species have been reported to be used in various systems of medicines in India for treating various disorders and diseases (Koushik 1983, Paul & Hegde 2001). In Karnataka, there are as many as 21 species of orchids (eg. *Cymbidium aloifolium*, *Bulbophyllum neilgherrense*, *Epimerantha macrae*, *Malaxis rheedei*, etc.) of this State used in various traditional systems of medicines (Rao & Sridhar 2007, Gayatri & Ananya 2007). Systematic study, drug evaluation and medicinal usage are to be taken up for sustainable utilization of these resources.

Photos of Medicinal orchids



Malaxis rheedei



Bulbophyllum neilgherrense

CONCLUSION

In fact, orchid industry is highly competitive and sophisticated. There are ever changing taste and trend in the market with respect to colour of flowers, shape, size, etc. Similarly, there is always a demand for newer planting materials. Hence, there is a need for a strong and focused R & D program in developing new hybrid strains involving native species and exotics suiting to various agro climatic conditions of our Karnataka. A coordinated effort in these programs involving various Institutions of excellence in developing climate specific strains (e.g. temperate tropical Dendrobiums and Vandas and intermediate Cattleyas & Phalaenopsis for both cut flowers and pot plants) and their cultivation practices and packages are need of the hour. Production of native hybrids and rare species through tissue culture would be an attraction to hobbyists world over.

Selected Universities, Agricultural colleges and Research Institutes should be encouraged to take up research activities in breeding and evolving newer hybrids and strains adopting modern biotechnological approaches to compete in the world market. Adequate research support and extension works are needed in this regard. Technical Man-power in floriculture at various levels is another important aspects requiring attention. Accordingly, training in various aspects of orchid farming and in various crops, in addition to macro and micro propagation are to be organised at selected centers.

There is a need to create awareness amongst farmers, educated unemployed youths and women to take up Orchid farming. Horticultural societies and Self-Help Groups should be encouraged to take up awareness campaign providing adequate financial assistance. Allied support industries like orchid fertilizers, specific organic or inorganic pesticides & fungicides, planting materials in flasks and tubes, pots and potting media (coco pith, perlite mix etc.), encased seeds, value added cut flowers/bouquets, orchid dry flowers and embedded articles, jewelries, etc. should also be promoted simultaneously.

Concept of Village and Urban clusters involving the communities in promoting cultivation and production of the commercial orchids with a market driven approach - one for domestic market and the other for export purpose would help boost the development of a vibrant Orchid industry in Karnataka. Involvement of corporate sector to produce quality planting materials in large quantities, distribution to the growers/farmers in village and urban clusters and marketing of their products has been emphasized to boost Orchid industry benefiting the communities and the State.

RERERENCES

- Gayatri M.C. & A. Sarkar. 2007. A General Report on Medicinal Orchids. *Orchid Newsletter*, 2 (4): 1 – 7.
- Gurudeva, M. R. 2015. **Karnatakada Orchid (Seethale) Sasyagala Sachitra Kaipidi**, Divyachandra Prkashana, Bangalore.
- Hegde, S. N. 1997. Orchid Wealth of India. *Proc. Indian natnl. Sci. Acad. B63. No.3*
pp229-244.
- _____. 2001. **ORCHIDS: Conservation, Cultivation, Farming and Trade**. OSA, Himalayan Publishers, Itanagar.
- _____. 2006. Prospects of Orchid Trade Industry in Karnataka. *Orchid Newsletter*, 1.1:10-16.
- _____ & Hegde, M.R. 2006. Prospects of Commercial Cultivation of Tropical Dendrobiums In Karnataka. *Orchid Newsletter*, 1(2): 29-36.
- _____. 2007a. Technique of Orchid Breeding, Culture & Commercialization. *Orchid Newsletter*, 2(2):8 – 17.
- _____. 2007b. Orchids of Uttara Kannada District, Karnataka and their conservation, *Orchid Newsletter* 2(3): 9 – 22.
- _____. 2007c. An interesting Orchid – *Gastrochilus dalzennianus*(Sant.) Sant. & Kapadia from Uttara Kannada District, Karnataka, *Orchid Newsletter* 2(3): 23 – 14.
- _____. 2001. *Orchids: conservation, culture, farming and trade*. OSA, Itanagar. Himalayan Publishers, Itanagar/New Delhi
- _____. 2005. Orchid Diversity in the Eastern Himalayas. *Journal of Hill Research*, 18(2): 43-54.
- _____. 2006. Prospects of Orchid Trade Industry in Karnataka. *Orchid Newsletter*, 1.1:10-16.
- _____. 2007 a. Technique of Growing Orchids. *Orchid Newsletter*, 2(1): 8-19.
- _____. 2007 b. Technique of Orchid Breeding, Culture and Commercialization. *Orchid Newsletter*, 2(2): 8-17.
- _____. 2007c. Orchids of Uttara Kannada District, Karnataka and Their Conservation. *Orchid Newsletter*: 2(3): 9 – 22.
- _____. 2008. Orchids – Our Natural Heritage, *Orchid Newsletter*, 3(I & II): 12 - 19
- _____. 2009. Cultivation and Farming of Selected Orchids for Trade. In: *Proc. National Conference on Orchid Genetic Diversity: Conservation and Commercialization*. 52-61.

- _____. 2014. Status of Exotic Orchid Hybrids and Species in India: Its Impact on Indian Orchid Industry. *J. Orchid Soc, India*, 28: 23-29.
- _____. 2016. Commercial Potential of Orchids in India and Societal Benefits. *J. Orchid Soc. India*, 30: 43 – 49.
- _____. 2016. Status of conservation in India, Part – I; *TOSKAR Orchid Newsletter*, 3 (iii & iv): 14 – 18.
- _____ & Hegde, M. R. 2006. Prospects of Commercial Cultivation of Tropical Dendrobiums in Western Ghats of Karnataka. *Orchid Newsletter*, 1(2): 29-36.
- Manilal K.S. and Sathish Kumar C. 1993. **Field Key for identification of The Native Orchids of Kerala**. Mentor Books. Calicut.
- Manilal K.S. and Sathish Kumar C. 2004. **Orchid Memories-Attribute to Gunnar Seidenfaden**. Mentor Books, Calicut for IAAT, Calicut.
- Nageshwar, M., Shashidhar, K. S., Hegde, S. N. 2017. Flowering Calendar of Orchid Hybrids & Species in Bengaluru. In: *Proc. National Conference on Orchids*, Dehra Dun. March 2017.
- Paul, S. & Hegde S. N. 2001. Some Orchids of Ethnobotanical Importance. In Hegde S.N.(Ed): *Orchids: Conservation, Culture, Farming & Trade*. OSA, Himalayana Publishers, New Delhi/Itanagar. Pp. 48-51.
- Rao, T.A. 1998. **Conservation of Wild Orchids of Kodagu in the Western Ghats**, KAAS, Bangalore-01.
- Rao, T.A. & Hegde, S. N. 2006. Biodiversity of Orchids in the Western Ghats: Its *in situ* and *ex situ* Conservation for Sustainable Development. *Proc. National Seminar on Plant Resources of Western Ghats: Ecology, Economics and Conservation*. Karnataka Biodiversity Board, Bangalore.
- Rao, T.A. & Sridhar, S. 2007. *Wild Orchids of Karnataka – A Pictorial Compendium*. INCERT, Bangalore.
- Sharma B.D., Singh N.P. Raghavan R.S. and Deshpande V.R. 1984. *Flora of Karnataka-An Analysis*, BSI, Howrah.

Note on Genus *Bulbophyllum*

K. S. Shashidhar

Introduction: *Bulbophyllum* or horticulturally known as 'Bulbo' is the largest genus in the family Orchidaceae with more than 2000 species. It also ranks as one of the biggest genera amongst the flowering plants. The diversity in the genera is so wide that it makes not only an interesting one to observe, but also from collector's angle resulting in many of them becoming big time *Bulbophyllum* collectors, dedicating to its collection. The diversity of the genus spreads to size of the plant to flower size and the bizarre shapes and smell. Let us have a look at the features which makes this genus so different from others. To begin with the plant size itself, some of them have large pseudobulbs as in case of *Bulbophyllum phalaenopsis*, to miniature species like *Bulbophyllum minutissimum*. *Bulbophyllum echinolabium* is another wonderful species with its largest flower in the genus with a moving warty lip and emitting foul smell. Next comes its bizarre shaped flowers, orchids on the whole are known for their intriguing flowers and Bulbos is a class apart. The diversity ranges in the color and shape of these flowers. Next it features the most interesting aspect which is smell or scent, when we refer smell or scent it is always a good fragrance the orchid flower emits, but in case of Bulbo, it is not always pleasant and often foul-smelling ones. It is also known as Carrion or cadaver orchids because of its foul smell. Flowers have an interesting with parts (lip Or Labellum) which move with the wind to ensure pollination when the insects visits them. All these makes the genus very interesting both biologically and aesthetically.

The genus *Bulbophyllum* was first described by Louis Thours when he described about 17 species of *Bulbophyllum*. The earlier name for the genus has been *Phyllorkis*. There are about 2800 listed names which includes accepted names and synonyms in the genus. The name Bulbo comes from 'Bulbus' - meaning bulb like and 'phyllon' refers to leaf like referring to the leaf on top of the pseudobulb.

Distribution: The genus has its center of origin from the mountain forests of Papua New Guinea where about 600 species occur. However, the genus distribution is wide and starts from Madagascar, Africa, Sri Lanka, India and entire SE Asia, PNG, Australia and South America. Philippines has as many as 130 species, with *Bulbophyllum transilucidum* and *Bulbophyllum aeolium* are few of the large flowered ones. In nature, they are flourishing epiphytes forming large colonies in wild. There are about 100 species from India and the distribution is predominantly in NE India and Western Ghats. NE India has as many as 63 species and state of Meghalaya reports of 28 species of *Bulbophyllums*.

Plant diversity and Habit: Considering the genus being one of the largest in Orchidaceae, the diversity is very wide both In terms of plant habit and also flowers. Many species have small compressed discoid like pseudobulbs as seen in few Indian species such as *Bulbophyllum sarcophylloides* and *Bulbophyllum cherrapunjeensis* (Recently reported from the state of Meghalaya) to huge leaved species such as the well-known and much sought after *Bulbophyllum phalaenopsis* with its giant leaves often reaching 3 feet and gets its name after the gigantic leaves of *Phalaenopsis gigantea*. *Bulbophyllum fletcherianum* from New Guinea also has huge leaves up to 6 feet in length and have tonue like flowers hence the name

'Tongue Orchid'. *Bulbophyllum rothschildianum* with its huge pink flowers is a very attractive species from NE India. The shape and size of the pseudobulbs vary a great deal and makes them an attractive plant to collect. *Bulbophyllum medusae* has beautiful white inflorescence. The pseudobulbs produce one or two or even three leaves and sometimes leaf less

Bulbophyllum beccarii is another endemic species to lowland areas of Sarawak, Borneo. It's growth pattern is so unique that instead of normal clump forming sympodial growth habit, it grows upwards wrapping around the tree trunk or branches. At intervals while growing it forms egg shaped pseudobulbs and then bearing large cup shaped leaf. The leaves are the important part for its successful culture and growth. They are serving the purpose of trapping the falling leaves from the top and then allowing it to decompose to nourish the plant through the decomposed organic matter. As if this special feature is not enough, the flowers are another unique, plant produces number of small crimson colored flowers smelling of rotting fish to attract the Carrion flies who are the pollinators and the flowers also resemble the color of the flies.

The Plant: Generally, Bulbos have a pseudobulb often angled with a single node and an inflorescence arising from the basal portion. The flower has a moving lip. Plants are of sympodial growing habit with a creeping or climbing rhizomatous stem. Bulbos are known to have single leaf on its pseudobulb but the most interesting ones are the two leaved Bulbos from Madagascar and other parts of Africa and some of them are from Asia. Many of the Asian multi leaved ones are often deciduous at some point of time due to various environmental conditions. The double leaved Bulbos from Asia are large flowered and attractive. As explained above, the vegetative forms vary a great deal and from cane like pseudobulbs to creeping roots. The erect or pendant inflorescence which arises from the base of the pseudobulb. Although the flower is typical of the genus, the variation in flower forms is also diverse. Often solitary, at times numerous arranged on the rachis. Many species form cluster of flowers arranged in a semicircular pattern making them unique among the orchidaceae. As a rule, this genus is not wind pollinated, there is a need for a pollinator such as a carrion fly or some other fly. The lip which is moving and is hinged and when the fly lands on the hinged lip which tilts and the fly falls back into the sticky pollinia enabling pollination. Flowers are usually short lived for about 6-8 days. The Presence of a claw at the base is a feature. Fruits are in the form of capsules.

Culture: Bulbo are not easy to grow and one cannot grow them like house plants, they are somewhat specific in certain requirements. One of the basic things one has to understand about growing Bulbos is that in natural condition they all come from wet conditions such as wet rainforests with ample humidity. But at the same time if the moisture is too much it may set in rot, here you have a peculiar situation that if you reduce the moisture it will retard the growth of the plant and if you give excess then rot may set in. The tradeoff would be to provide high humidity with good aeration. If you are growing them in green house conditions provide fans in the area. Thus, humidity and aeration are the important aspects one has to keep in mind for its successful culture. They require moderate light levels and intermediate to warm conditions. If these are provided they grow throughout the year without any dormancy. But they need to keep moist all the time and can withstand dry period for a short spell only, the finer roots need

to be moist throughout. For Bulbos the saying about watering is 'when in doubt water again". They do not like cold temperatures and night temperatures less than 18 Celsius is not preferred unless it is for a short spell. Some of the species from temperate regions may do well if the temperatures are few degrees less.

Plant does well with bright light of 2000-3000 fc and even with higher light levels with proper humidity and aeration they will produce good and frequent blooms throughout the year.

Small and miniatures can be potted in shallow pans or pots with good amount of fine bark, CHC and moss to enable the spread of the plant. In most of the cases, they are mounted on wooden plaques or tree fern blocks to enable the spreading types to grow well. When mounted wad of moss provides adequate moisture and they need to be watered on a daily basis. The plants generally do not like to be disturbed and the recommended potting media is sphagnum moss, fine bark, CHC. As mentioned above, the choice of potting or mounting can be decided on the size and nature of growth of the plant.

Some of the double leaved Bulbo from SE Asia including India are

Bulbophyllum blepharistes from Myanmar, Thailand, Laos & Vietnam.

Bulbophyllum comosum, with terete pseudobulbs from Myanmar, Thailand & India.

Bulbophyllum falcatum from Western Africa

Bulbophyllum fimbriatum which is endemic to Southern India

Bulbophyllum hirtum from India, Thailand, Myanmar & Vietnam

Bulbophyllum kanburiense from Myanmar, Thailand & Vietnam

Bulbophyllum lemniscatoides from Java, Sumatra, Thailand & Vietnam

Bulbophyllum proudlockii from India

Bulbophyllum gracile from India

Bulbophyllum viridiflorum from India (Assam, Sikkim)

Some of the single leaved Bulbos are

Bulbophyllum affine from India, China & Taiwan

Bulbophyllum arfakianum from Arfak mountains of New Guinea

Bulbophyllum barbigerum from Africa

Bulbophyllum beccarii from Borneo

Bulbophyllum burfordiense from Papua New Guinea

Bulbophyllum dayanum from India, Thailand, Myanmar & Cambodia, Vietnam

Bulbophyllum echinolabium from Borneo & Sulawesi

Bulbophyllum grandiflorum from Sumatra & PNG

Bulbophyllum klabatense from Sulawesi & India

Bulbophyllum leopardinum from India, Bhutan, Nepal, Myanmar & Thailand

Bulbophyllum lobbii from Thailand, Malaya, Philippines & Borneo

Bulbophyllum macranthum from Thailand, Malaysia, Singapore, Vietnam, Sumatra, India, Philippines & New Guinea.

Bulbophyllum phalaenopsis

Bulbophyllum rothschildianum from India & Thailand

Bulbophyllum guttatum and *Bulbophyllum mysorensis* from India. There are many other species but only few of them have been mentioned here.

There are several beautiful hybrids developed with the first hybrid registered way back in 1936. From then some of the wonderful and easy to grow hybrids such as *Bulbophyllum* Elizabeth Ann which is a cross between *B. longissimum* x *B. rothschildianum*. *Cirrhopetalum* Kalimpong was registered by G. Pradhan with parents being *Bulbophyllum guttatum* x *Mastigion ornatissimum*. *Bulbophyllum* Bechinolina which is an interesting cross between *B. beccarii* x *echinolabium*. *Bulbophyllum* Wilmar Galaxy star is a cross between *lobbii* 'Kathy's Gold' AM/AOS x *dearei* 'Elizabeth

Conservation status in India: With almost 100 species in the country, several of them are in IUCN red list categories. Some of them are as follows

- ✓ *Bulbophyllum cauliflorum*: distributed in Khasi hills in Meghalaya, Sikkim, Darjeeling, Arunachal Pradesh and Assam. Deforestation of primary forests and anthropogenic pressures is the main cause.
- ✓ *Bulbophyllum macranthum*: From Nicobar Islands. Habitat degradation and loss are the main reasons for decline in population
- ✓ *Bulbophyllum restrepia*: From great Nicobar Islands. Habitat loss and change in land use of primary forests is the reason for population decline
- ✓ *Bulbophyllum leopardianum*: from Sikkim and Arunachal Pradesh. Over collection of the species is a major concern.
- ✓ *Bulbophyllum rothschildianum*: Distributed in NE India in parts of state of Nagaland.

References:

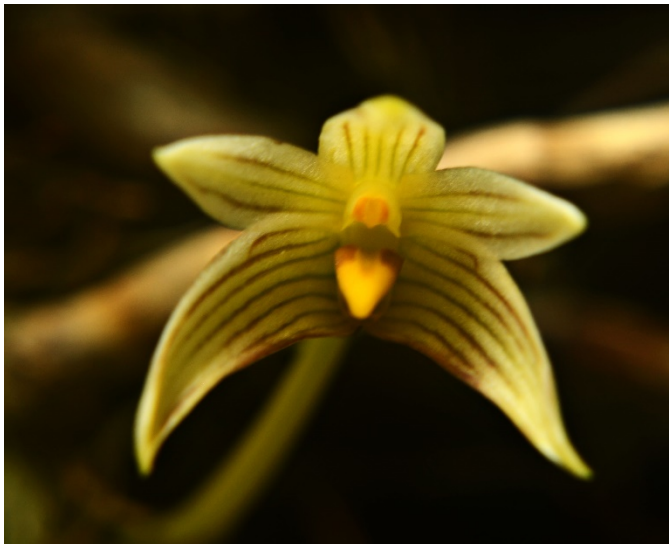
- Andy's Orchids - www.lookingafterorchids.com,
- Anon. American Orchid Society - *Bulbophyllum*
- Emily S Siegerist, 2008. *Bulbophyllums* and their allies
- In defense of Plants: A litter trapping orchid from Borneo. Feb 2016.
www.indefenseofplants.com/blog/2016/2/26/a-litter-trapping-orchid-from-borneo
- *Bulbophyllum cherrapunjeensis*, (Orchidaceae) a new species from Meghalaya, India.
[https://www.researchgate.net/.../263086860_Bulbophyllum_cherrapunjeensis_Orchidace...Jul 11, 2017](https://www.researchgate.net/.../263086860_Bulbophyllum_cherrapunjeensis_Orchidace...)
- Cootes, Jim and Boos Ronny, 2017. Some large flowered *Bulbophyllum* species. Manila Bulletin, April, <https://www.pressreader.com/philippines/manila-bulletin/>



Bulbophyllum mastersianum



Bulbophyllum flabellum veneris



Bulbophyllum affine



Bulbophyllum acutiflorum



Bulbophyllum guttatum



Bulbophyllum crassipes



Bulbophyllum medusa



Bulbophyllum lepidum



Bulbophyllum fascinator x longissimum



Bulbophyllum Elizabeth Ann

Some tips about growing Habenarias

K. S. Shashidhar

Habenarias grow in nature with a defined dry and wet period cycle and thus needs dry winter dormant period and a moist growing period. Every year as the plant grows they put out several growths vegetative and also in the form of corms. The current year's growth is the one which produces blooms and eventually will wither and die. From each of these multiple corms (developed during the growing period) one plant grows in the coming year.

Growth phase. As the plant puts out new growth in spring and eventually reaching flowering stage, it puts out blooms and in some years it may skip (reasons not known!), after this, they start losing leaves and this is the indication that the plant is entering into phase of dormancy. Once they lose their leaves stop watering and keep the media more towards dry with occasional spraying of water to ensure the corms will not shrivel. At the stage when the plant has lost its leaves, the tubers /corms have stored all the energy for the future growth.

Potting & Care: The newly sprouted tubers which have completed their dormancy needs to be potted in a fresh media. Select a pot which is relatively has more depth and clay pots may be more suited. Potting these tubers/corms in a relatively deeper pot enables a good amount of space for development of roots as well as formation of new corms.

An ideal potting mixture for these plants can be some leaf mold, one portion of soil and then some sand and perlite and add some grit and bark. Ensure good drainage at all times and the media should not become soggy at any point of time. While planting the tuber or corm it is to be placed in the mixture about 1 cm from the surface and just cover the tuber with some loose mixture and then water sparingly till the new sprout and growth occurs which in Bangalore conditions is round April - May.

Start regular watering once the vegetative growth appears and at this stage as it is highly susceptible for rot, watering has to be done carefully. Try to avoid water accumulation in the whorl of leaves and nearer the corm or stem. Once new set of leaves occur and then watering can be regular and media should not be allowed to go dry for long periods. Once the flowering is completed, the leaves start turning brown and yellow when the nutrients starts to get stored in the corms or tubers.

Care during dormancy: Once all the leaves are shed, you can check how the tubers have formed, if there are no new ones, then things have not been good in your culture and there is scope to improve your care and culture. If there are small new ones, then yes, your culture is improving but still you can do better. If there are bigger tubers found, then alas! your care is good, carry on.

These tubers can be stored either in a pot with some loose mix or with some moss and made slightly moist and keep spraying sparingly so that the corms do not shrivel. Alternatively, the tubers /corms can be cleaned and then treated with a mild fungicide and then air dried and placed in a freezer bag with some slightly damp moss and store it in the refrigerator. Occasionally check for dampness which needs to be retained and for overall health of the tuber and to see whether any new growth occurring and if there are any of the corms have been infected, remove them so that it does not affect others. Avoid freezing them.

Following are few pictures of *Habenaria* and *Pecteilis* from my collection



Habenaria rodocheila



Habenaria crinifera



Habenaria roxburghii



Habenaria crinifera



Pecteilis sagarikii

H. R. Sreenatha Rao – An Electrical Bulb Engineer becomes a keen Orchid Hobbyist

In one of the Bimonthly Meetings of TOSKAR in 2016, an elderly gentleman introduced himself as a new member of our Society and showed keen interest to know more about orchids and growing them. I was happy to welcome him and had lively discussion for a while. He became one of the regular attendees of the Bimonthly meetings actively involved and interacting with other members. A couple of months ago, he invited me to visit his place and see his orchid collections. I was impressed with the orchid photos he posted in google groups and Facebook. I sent him a mail couple of days ago seeking his availability on Sunday the 10th September to visit his place. He readily confirmed and sent land mark details to reach his place in ISRO Layout near Dr. Abdul Kalam Park.

Mr. Sreenatha Rao is an electrical engineer with a degree - B.E.(Elec), PG Dip.in SQC from ISI, F.I.S.L.E. He worked in the lighting industry for nearly four decades in various capacities as an employee, Consultant and as a comaker for most of the leading lighting companies of the country including Phillips, G.E., Bajaj, Wipro, Osram etc. His wife Gayatri Rao is a graduate in Arts and has been an A - grade artist of AIR and Doordarshan in music.

Presently, the couple enjoy retired life with a pet and hobbies which are organic gardening, growing orchids, finance management, numismatics and participating in the activities of ISLE-Karnataka.



Sreenatha Rao's House - Orchids hung in the balcony

Sreenatha Rao with his wife

As I reached his place, he was standing right at the gate along with his family members and of course his pet. There were several Orchids hung above in the balcony – some in bloom, others in buds and various stages of growth. All of them welcomed me with a smile and exchanging niceties.

Following is excerpts of the interactions we had, as we went around various locations of the ground floors, first floor and rooftop where orchids have been grown as per their environmental requirements.

Q: What prompted you to take up orchid growing?

A: As my children are settled in their life, I was looking for some engagement for myself which would keep aesthetics of my house and create a pleasant environment. So, I happened to meet some members

of TOSKAR who prompted me to grow orchids. To start with, Mr. Nagesh helped me in growing techniques.

Q: How many species & hybrids you have?

A: I have about 70 species and about 600 hybrids at present.

Q: When did you become TOSKAR member?

A: I became a life member about 6 months back.

Q: In what way TOSKAR activities helped you increasing your knowledge in growing and sustaining your interest in orchids?

A: I am interacting with various members of TOSKR to enhance and fine tune my knowledge of growing orchids.

Q: What technique you adopt for growing orchids? Like terrestrial & epiphyte?

A: I adopt different methods for orchids of different types.

Q: What medium you use for potting?

A: Medium depends on the type of orchids. At present, it is mainly pine bark, virgin charcoal, broken tile pieces, high temperature fired clay balls, lava rocks, perlite, sphagnum moss and Coco chips in various proportions depending on the orchid. I prefer using moss and chips for top mulching most of the orchids in summer months only. Rest of the months I remove them since they are likely to cause dampness and disease.

Q: How do you maintain humidity & temperature?

A: At present, I have two garden areas with parabolas for dappled sun light surrounded with greenery for humidity, a covered east facing patio and a shaded roof garden for different types of orchids.

Q: How frequently you water and feed them with fertilizers and nutrition - what fertilizers & pesticides?

A: My orchids are watered by spraying on all non-rainy days once in the morning, once in the early afternoon on warm days. Roof floor is sprayed in the late evening to increase humidity and reduce night temperature. Nutrition is provided once in a week.

Q: How do you control pests & diseases?

A: In the ground floor garden area slug traps are kept. General hygiene and cleanliness keeps most of the pests away. Once in a couple of months I do spray a mixture of H₂O₂, Iso-propyl alcohol and Listerine in water for controlling bacterial and fungal infections. All my spray cans will always have couple of Cinnamon sticks as well. whenever a physical injury takes place for my plants I apply a paste of *Aloe vera* and cinnamon powder.

Q: How do you propagate?

A: Have not started propagation yet.

Q: How much time you spend with your orchids?

A: I spend about 4 hrs per day in the gardens and about 2 hours per day gaining knowledge on orchids.

Q: Do you find orchids (hybrids & species) costly in the market?

A: Appear to be costly. I feel there is quite a lot of scope in developing the market for orchids.

Q: How many visitors you get & how often?

A: We have about 15 to 20 visitors per month.

Q: Are you satisfied and happy with orchid hobby?

A: Gardening as such is the greatest hobby one can have since it fulfills and satiates mind, body and soul!

Q: What is your message to Orchid growers/hobbyists?

A: Growing orchids in a proper way can make you achieve physical, mental, emotional, social and financial wealth!

THANK YOU. WISH YOU HAPPY ORCHID GROWING.

PHOTOS OF SOME ORCHIDS GROWN BY MR. SREENATHA RAO



Paph. Villosum



Shaded roof garden



Mr. Rao with his Phals in hanging baskets



Phalaenopsis clone in bloom.



Rooftop orchid garden.



Dendrobium hybrid clone



Bulbophyllum hybrid.



Vanda tessellata fragrant var.



Phal. orchid grown on fern block



Phalaenopsis hybrid clones grown in shaded roof area (1 – 3).

Spathoglottis hybrid var.

- Dr. Sadananda Hegde.

Guide lines to Prepare your Orchid plants for exhibiting them at Orchid Show 2017

Suresh S Kalyanpur

At most international shows and established Orchid Clubs, entries are judged on the following criteria:

- ✓ Bloom form: The entry is judged on individual parts of the flower/s like sepal, petals, lip, etc;
- ✓ Bloom size;
- ✓ Bloom colour; Overall and individual parts of the flower/s;
- ✓ Bloom arrangement;
- ✓ Flori-ferousness: The number of flowers the specimen has produced.

Getting your plant ready for a show starts long before the show, probably a couple of months in advance. Here are a few areas that you may like to think about:

- If there are too many growths in your pot, maybe you need to think of dividing and repotting your plant so that it has taken root and is secure in the new pot;
- A pleated leaf on an Oncidium plant or an ugly black/brown stain on a cattleya leaf will certainly be noticeable and go against your entry while being judged;
- Be careful if your plant has too many aerial root it will most certainly pose a problem when being displayed or even being transported to the show;
- Sometimes pests and fungus leave traces on the plant which will damage th appearance of the entry and probably draw negative comments;
- If your plants are grown in too much of sun or too little light or in extreme humid conditions or without adequate ventilation, it will develop ungainly foliage which will detract from the flowers on display;
- Select the plant you want to enter for the show a couple of days before the show, a plant which is at its blooming prime and start preparing it – not leaving it for the last minute;
- Examine the leaves/foliage for pests and scales, especially under the leaves which an average grower fails to check;
- Ensure that the inflorescence is firmly staked either upright or arching depending on the genera you are going to display. Actually staking should be pretty early when the inflorescence emerges as the new growth will be soft and be trained to grow in the direction you want. A mature can or inflorescence would be stiff and could snap or break if you try to stake it later;
- Be careful of bud drop, especially with dendrobiums and Phalaenopsis, which can be caused by any sharp change in the temperature or humidity;
- Be aware of the pot/container which could add or distract from the beauty of your entry. Plastic pots with calcium deposit showing on the exterior, chipped or discoloured mud pots don't present a pretty picture. Here is what you can do.. clean the exterior of the pot and colour it with red oxide, alternatively cover it with neat silver foil or get one of those colourful pretty plastic containers to place the pot. You could also use glass / china containers to place the flowering pots;

- Cover the surface of the potting material with clean moss or colourful chips or pebbles, it improves the appearance and presentation of your entry;
- Ensure there are no weeds growing out of your pot; make sure your plant is not infected by pests. Clean the leaves with alcohol using a Q tip or a cotton ear bud to remove any traces of infestation;
- If any old roots are poking out of the pot please clip them neatly;
- Clean the leaves carefully with a cotton swab to remove calcium residue or ugly stains if any on the leaves. You could use vinegar, diluted lemon juice, sprite or seven-up or even very diluted mild to get the leaves into their spanking clean green original shape;
- Clip any old / yellow leaves;
- If the plant has several pseudo bulbs clean them by removing the dry covering called cataphyll. Sometimes you will see infestations under these covers which would otherwise go unnoticed;
- Your plant/entry must have a label displaying the complete name of the genera and possibly your/the owners name for easy identification;
- Remove and wire hangers, hooks from the pot/container;
- Ensure that you transport the pots to the show venue safely. If the plants are in light plastic containers to ensure stability place them in heavier clay pots to ensure they do not fall or topple. Place the pots in a solid strong cardboard box and put a lot of paper packing around each pot to ensure it does not move;
- Ensure that your cardboard box has been taped strongly on the sides and at the base so that it does not give way during transit;

Wishing you the very best in your effort to win the show ribbon!

Note on Mounting Orchids

Nalini Kottoli.

Mesmerizing hobby of growing Orchids is a very fascinating one. One can grow these beautiful orchids at home either in pots (both clay and plastic) or by mimicking its growing in nature by mounting them on suitable material like branch of wood or a wooden plaque or slab of tree fern. Although it is common to grow them in pots with media suitable for the orchids, at times there are some pendulous orchids which by habit is hanging type and these orchids needs to be either tied to a branch or tree or by using a material to mount them. Thus, one can decide the type of growing orchids depending on type of orchid, availability of space and other considerations.

The popular method of growing most of the orchids probably exception of Paphiopedilums and the terrestrial orchids is by the method of hanging them, on fern bark, drift wood and wooden slabs, which can be hung in balcony, window sill or against the wall. One can make a green balcony wall by growing the orchids mounted.

I have overheard some of the visitors to the TOSKAR Orchid show, were lamenting, " Oh I don't have place to grow these orchids, as I am living in an apartment." We can grow them in almost all available places where light is there, either in balcony, window sill or on the wall by hanging them. Orchids needs light, fresh air to grow. They also dislike wet feet. When it is hung it will get air, light and water will drain to keep it dry. The problem of over watering is not there in case of mounted orchids. However, mounted orchids need to be taken care while watering and may need to be watered regularly when compared to the potted ones.

To start with take a small Dendrobium keiki, tie it on a wooden slab with little sphagnum moss. hit a nail at the top & hang it, Spray water twice a day and fertillize once a week of weak strength. Within 3-4 weeks new roots will form and starts sticking to wood and you will reward with beautiful blooms in about 6 months' time. Few pictures of mounted orchids are given below

Few orchid mounting illustrated below.



BIMONTHLY MEETING OF TOSKAR AND DISPLAY OF ORCHIDS BY MEMBERS ON 19TH AUGUST 2017 - A REPORT

Bimonthly meeting of TOSKAR held on 19th August 2017 at Dr. Marigwoda Hall, Lalbagh, went off very well with about 45 members attending the meeting. While all the members gathered at the meeting Hall at 02.00 p.m. with their lovely orchids grown by them in bloom and arranged them on the Show table for judging, other activities of sale of orchids and accessories was conducted on the sidelines. At 0. 3 p.m. members lined up for judging orchid hybrids & species displayed on the show table, marked the best of the orchids for the award. Literature and registration/Entry forms for orchid stalls and Display competition and inserting advertisement of the Orchid Show Souvenir, etc. were distributed.

After judging, monthly meeting began with reading of minutes of last BMM held in July 2017. This was followed by interactive session conducted by Kalyanpur by way of posing questions on the technique of orchid group grown by them and sharing the experience with members present. To begin with, Mr. Kalyanpur, a senior EC member of TOSKAR introduced Mr. Sanjeev Darwal who has been growing Vandas. Through lively discussions – questions & answers, habit, habitat, growing technique, environmental requirement, watering pest & disease management for better growth & blooms were brought out. After that, Kalyanpur introduced Ms. Sandhya Mahesh who has vast experience of growing Phalaenopsis. The questions were posed in such a way that members could understand the habit & habitat and technique of growing, fertilizing, frequency of watering and after care, etc.

This was followed by interview of Ms. Lakshmi Jagdish who shared her experience of growing *Paphiopedilum* with live demonstration of growing Paphs. Members could freely interact and understand many aspects of growing these two groups of orchids.

Subsequently, Kalyanpur spoke of Growing Orchids for Display & Competition in the forthcoming Orchid Show in October 2017. Dr. Sadananda Hegde, President in his Presidential address appealed the members to come together to work for the cause of Orchid conservation, cultivation and propagation of this unique group of plants – Orchids. Ramkumar explained about the Advt tariffs for inserting Ads. in the Souvenir of Orchid Show.

This was followed by announcement of winners in Attendance and Orchid Display competition in both Orchid Hybrids and Species groups. Following is the result:

Attendance: First Prize – Mr. V. T. Balanarasinha - Angraecum “Crestwood Tomorrow Star”.

Second Prize – Mr. Ravikumar - Rhynchovanda Azure FF.

Third prize – Ms. Rajalakshmi - Cattleya Moonwalk FF.

Display Competition:

Species winners:

First Prize: Lakshmi Jagdish for *Paphiopedilum parishii*

Second Prize: Lakshmi Jagdish for *Habenaria regineri*

Third prize: Nagesh Mahadev for *Habenaria crinifera*

Third Prize: Shakuntala Manay for *Cattleya Skinneri*.

Hybrid winners:

First Prize: Nagesh Mahadev for *Cycnoches cooperi hybrid*

Second Prize: Nagesh Mahadev for *Trichocentrum Bai Pai*

At the end, all the winners were felicitated. Meeting ended with happy interaction over a cup of Coffee.

Photos of BMM and Orchids in the Display Competition at BMM



Kalyanpur interviewing Lakshmi Jagdish.



General view of orchids on Display

Species winners:

Lakshmi Jagdish - I prize



Paph. Parishii

Lakshmi Jagdish - II prize



Habenaria regineri

Nagesh Mahadev - iii prize



Habenaria crinifera

Shakuntala Mane - iii prize



Cattleya skinneri

Hybrid winners:

Nagesh Mahadev - I prize



Cycnodes Jumbo Puff

Nagesh Mahadev - II prize



Trichocentrum Baipai

By Dr. Sadananda Hegde.

Orchid Show - 2017

The Orchid society of Karnataka (TOSKAR) is one of the vibrant orchid societies in India with more than 500 members.

An **Orchid show** is planned for 28-29 **October 2017 in Bangalore.**

An orchid souvenir is planned to be released during the show. We are planning to list Orchid nurseries in India and their specialties and contact details.

There is an opportunity to advertise in the souvenir as well with ad space is available in various sizes and are affordable.

Please mail **orchidshow@toskar.org** if you are commercial seller willing to be listed in the Indian Orchid Vendors list and/or to advertise in the Orchid show souvenir 2017

