Supplementary notes to the flora of Cyprus VI.

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Abstract

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Continuing a series of miscellaneous contributions by various authors, the sixth instalment includes information about 126 taxa focussing on the chorology and ecology of the Cyprus flora. One taxon is new to science, *Lythrum hyssopifolia* var. *cyprium,* 16 taxa are new to the island, e.g., *Campanula fastigiata, Ferula tingitana, Lactuca undulata, Minuartia montana* subsp. *montana, Rochelia disperma, Sedum aetnense* and *Veronica bozakmanii*. Chromosome numbers of *Carrichtera annua, Euphorbia hierosolymitana, E. veneris, Lactuca tetrantha, Lythrum hyssopifolia, Peucedanum kyriakae, Ranunculus creticus* and *Solenopsis antiphonitis* have been confirmed or are reported for the first time. The phylogenetic position of the recently described endemic *Cynara makrisii* is elucidated with ITS sequences.

Additional key words: vascular plants, distribution, taxonomy, chromosome numbers, ITS

Introduction

2007 saw the publication of the first Red Data Book (RDB) treating the vascular plants of Cyprus (Tsintides & al. 2007). It was a milestone not only concerning nature conservation in Cyprus but also for the floristic research on the island. Geographical distributions of many taxa have been mapped for the first time. An additional result of this long term project was the fact that many species seem to be much rarer than thought before.

Starting with this instalment some modifications regarding the presented data will be adopted.

(1) IUCN Red List Categories are given after the taxon names (for details see Tsintides & al. 2007). They are as follows:

RE	Regionally Extinct
CR	Critically Endangered
EN	Endangered
VU	Vulnerable
DD	Data Deficient
NT	Near Threatened
LC	Least Concern

(2) Criteria for the inclusion of data in the supplementary notes are modified. Specimens are cited if they represent
(a) a first, second or third record for Cyprus
(b) a first record for one of the eight phytogeographical divisions (sensu Meikle 1977, 1985; abbreviation: "Div.", marked with "+")
(c) for special reasons given in the text, or
(d) important additions to the knowledge published in the RDB, mostly concerning taxa of the category DD.

Explanations about nomenclature and sequence of taxa have been published in instalment I (Hand 2000), regarding chromosome counts in instalment II (Hand 2001) and status categories of alien taxa in instalment IV (Hand 2004). It should be stressed that apart from Meikle's (1977, 1985) detailed standard flora and floristic treatments on Cyprus published since, all known papers widely scattered in the taxonomic literature have been considered when accepting specimen based records as supplementary. A database containing such records is being updated continuously. The index to the taxa treated

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in this series is available on request from the editor. Taxonomy and nomenclature of taxa mentioned in the contributions follow Meikle (1977, 1985) or amendments discussed in this series.

Instalment VII will be published in the near future; contributions are welcome and should be sent to the editor.

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If not stated otherwise, specimens are kept in the private herbaria of the contributors. The collections of the Russian contributors are preserved at MW, those of the editor at B.

Spermatophyta

Cupressaceae

Tetraclinis articulata (Vahl) Mast.

Recorded as alien for Cyprus from divisions 1, 3, 5 and 6 (Georgiadis 1994). Currently it should be classified as "naturalized non-invasive".

+ Div. 8: Kairos between Komi and Davlos, among *Pinus brutia* and *Cupressus sempervirens,* c. 300 m, 12.8.2006, *Hadjikyriakou 6927*.
G. Hadjikyriakou

Ranunculaceae

Ranunculus creticus L.

Chromosome number: $2n = 16$ (see Fig. 1A). The same number has been counted in plants from outside Cyprus several times (see Goldblatt & Johnson 1979+).

Div. 2: Pano Panagia, cliffs below NE Panagia summit, N exposed, shady banks, c. 950 m, 28.4.2007 (living plant and specimen), *Hand 5278 & Hadjikyriakou;* cultivated at the Botanic Garden Berlin (acc. no. 250-06-06-20). (ed.)

Ranunculus bulbosus L. subsp. ***bulbosus***

First record for Cyprus but certainly introduced with grass seeds together with an undetermined *Taraxacum* growing at the same site. Fully established alien at the collection site but further spread is rather improbable. The plants belong to the nominal subspecies (see Tutin & Akeroyd 1993), which is replaced by other subspecies in the Mediterranean and nearby Turkey. Subsp. *aleae* is given for Cyprus by Greuter & al. (1989) but this report is based on a different taxonomic concept including *R. neapolitanus* Ten.

+ Div. 2: Panagia tou Kykkou, close to monastery entrance, irrigated lawn, c. 1200 m, 14.5.2009, *Hand 5505 & Christodoulou* (B, herb. Hadjikyriakou 7068). C. S. Christodoulou & R. Hand

Ranunculus marginatus var. ***trachycarpus*** (Fisch. & C. A. Mey.) Azn.

Some authors recommend to lump *Ranunculus sardous* Crantz with *R. marginatus* d'Urv. (see recently Strid 2002). As long as no modern systematic revision of the whole group exists, it seems wiser to err on the traditional side of the splitters.

+ Div. 3: Asomatos, E edge of marsh at Fasouri reed beds c. 700 m N Poly Nero, wet ground, 0 m, 27.3.2005, *Hand 4446*. (ed.)

Nigella nigellastrum (L.) Willk.

+ Div. 6: Kato Koutrafas, c. 1 km SW, at the main road, limestone rocks, open phrygana, c. 220 m, 27.4. 2007, *Hand 5254;* mentioned without cited specimens for this division by Alziar (1985). (ed.)

Papaveraceae

Papaver argemone subsp. ***meiklei*** Kadereit [Syn.: *P. minus* sensu Meikle]

Kadereit (1986) prefers a wide species concept of *Papaver argemone*. The plants from Cyprus are treated as an endemic subspecies (incorrectly spelled "*meiklii*"). Though "some specimens of subsp. *minus* [lacking in Cyprus] with bristles only in the apical portion of the capsule which, morphologically, cannot be distinguished from the Cyprus plants […] the evaluation of this material as a subspecies on its own is justified in view of the exclusive occurrence of plants with this type of capsule in Cyprus.". For the time being the separation of this weakly defined, somewhat disputable taxon is followed here. It is also questionable if the lumping of the caryologically clearly separated taxa *argemone* and *minus* is appropriate.

+ Div. 6: Nikitari, Asinou church, at the trail to Agios Theodoros, c. 500 m from church, margin of a field, c. 500 m, 27.4.2007, *Hand 5259*. (ed.)

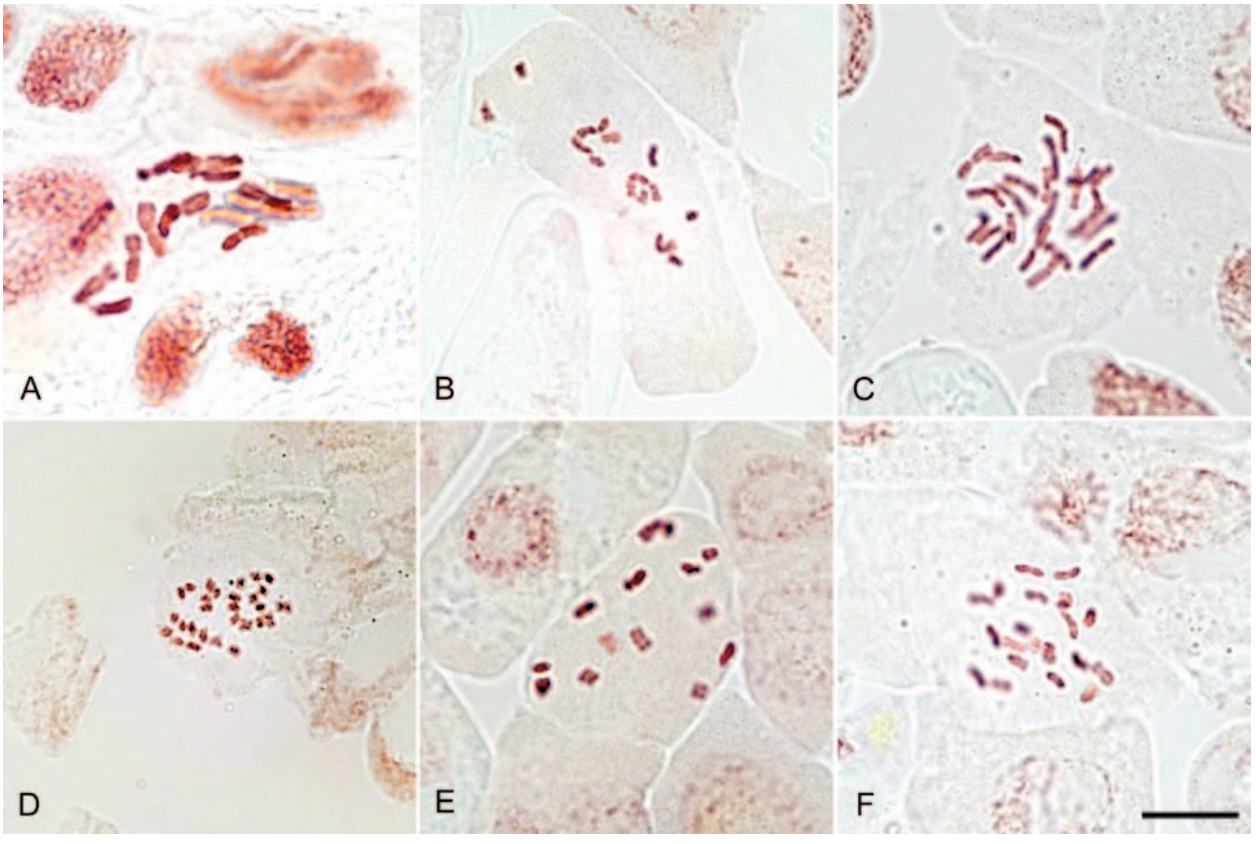

Fig. 1. Metaphases of root tip mitoses – A: *Ranunculus creticus,* 2*n* = 16 chromosomes; B: *Carrichtera annua,* 2*n* = 16 chromosomes; C: *Peucedanum kyriakae,* 2*n* = 22 chromosomes; D: *Solenopsis antiphonitis,* 2*n* = 28 chromosomes; E: *Euphorbia hierosolymitana,* 2*n* = 14 chromosomes; F: *E. veneris,* 2*n* = 20 chromosomes. – Scale bar = 10 µm, photographs by M. Lüchow.

Cruciferae

Carrichtera annua (L.) DC.

Chromosome number: 2*n* = 16 (see Fig. 1B). The same number has been counted in plants from outside Cyprus several times (see Goldblatt & Johnson 1979+). Numbers were counted in root tips of germinating seeds on a petri dish; no additional vouchers exist.

Div. 3: Agios Theodoros, c. 3 km SSE, beginning of the Pentaschoinos gorge, in valley coming down from the W, c. 75 m, 24.4.2007 (specimen and seeds), *Hand 5224*. (ed.)

Aethionema arabicum (L.) DC. – RDB: VU

+ Div. 1: Ammogia Pafos forest E of Lyso, pillow lava, c. 410 m, 6.4.2007, *Christodoulou in Hadjikyrakou 7108*. C. S. Christodoulou

Descurainia sophia (L.) Prantl

First record for Cyprus. Very probably a recent introduction in this well researched area. To be classified as casual alien. The next occurrences are known from Turkey and the Palestine area (see, e.g., Hedge 1965).

+ Div. 2: Troodos square, *Pinus nigra* subsp. *pallasiana* forest [below], c. 1650 m, 6.2006, *Christofides in Hadjikyriakou 7000;* 7.2006, *Christofides* (B) [label inscription differing slightly but referring to the same place] Y. Christofides

Sisymbrium orientale L.

+ Div. 4: Larnaka (W part), between hospital and Foinos, road margin, 20 m, 18.4.2006, *Seregin A-657 & Privalova*. A. Seregin & I. Seregina

Chorispora tenella DC.

First record for Cyprus. Certainly not indigenous to the collection site and brought to the collection site with soil. To be classified as casual alien for the time being. The next occurrences of *Chorispora tenella* are to be found in neighbouring Turkey (Cullen 1965).

+ Div. 2: Amiandos, [planned] botanical garden, c. 1400 m, 23.4.2009, *Papachristophorou in Hadjikyriakou 7088;* recollected at the same site: Pano Amiantos, mine area, NE part, planned botanical garden, c. 1.2 km ESE Armyrolivado, on earth brought from outside, c. 1500 m, 14.5.2009, *Christodoulou in Hand 5496*. T. Papachristophorou

Cistaceae

Helianthemum ledifolium subsp. ***lasiocarpum*** (Jacq. & Hérincq) Nyman – RDB: EN

+ Div. 1: Lysos, SW of village, where European trail is crossing the road to Meladeia, c. 520 m, 16.5.2009, *Christodoulou in Hand 5517*.
C. S. Christodoulou

Caryophyllaceae

Dianthus tripunctatus Sm. – RDB: DD
Div. 1: NW of Akamas lighthouse, openings in *Juniperus phoenicea* forest, c. 150 m, 30.4.2007, *Christodoulou in Hadjikyriakou 7113*.
C. S. Christodoulou

Cerastium semidecandrum L. – RDB: DD
The following record is only the third for Cyprus; two other specimens are cited by Meikle (1977) and Kalheber (in Hand 2001).
Div. 2: Alona, NW, at the road to Polystipos, open ground and walls in pine forest and phrygana, c. 1100 m, 26.4.2007, *Hand 5241*. (ed.)

Petrorhagia kennedyae (A. K. Jacks. & Turrill) Meikle
Another example for disjunct occurrences of a Troodos endemic in the serpentine areas of the Akamas peninsula. Similar distribution patterns are to be found in, e.g., *Arenaria rhodia* subsp. *cypria* (Holmboe) McNeill and *Sedum cyprium* A. K. Jacks. & Turrill.
+ Div. 1: Faros, Akamas, 150 m, 7.7.2005, *Christodoulou* (CYP 5041); Akamas peninsula, Argaki ton Kavourotipon, openings of *Juniperus phoenicea* maquis, on pillow lava, 150 m, *Christodoulou* (CYP 5175). C. S. Christodoulou

Agrostemma githago L.
It is mentioned by Georgiadis (1987) without cited specimen. Probably a casual alien for Cyprus.
+ Div. 2: Amiantos mine, waste ground, 1550 m, 25.6. 1998, *Christodoulou* (CYP 3859).
C. S. Christodoulou

Gypsophila linearifolia (Fisch. & C. A. Mey.) Boiss. – RDB: CR
+ Div. 7: Ypsarovounos forest Mandres Ammochostou, nearly bare gypsum, c. 270 m, 11.5.2009, *Hadjikyriakou 7059*. G. Hadjikyriakou

Minuartia montana L. subsp. ***montana***
First record for Cyprus. Surprisingly, an annual species of *Minuartia* sect. *Minuartia* subsect. *Minuartia* (sensu McNeill 1962, 1963) that although locally common in divisions 1 and 2 escaped the attention of all botanists working in Cyprus. It has been misidentified as *M. globulosa* (Labill.) Schinz & Thell. or *M. sintenisii* (H. Lindb.) Rech. f. in the past. Nearly simultaneously, the two Cypriot contributors realized that and identified the plant as *M. montana*. A comparison of material to the *M. montana* specimens preserved in the herbaria B and JE confirmed the identity. According to McNeill (1963) the species comprises two subspecies, which are distinguishable by the characters presented in Table 1.

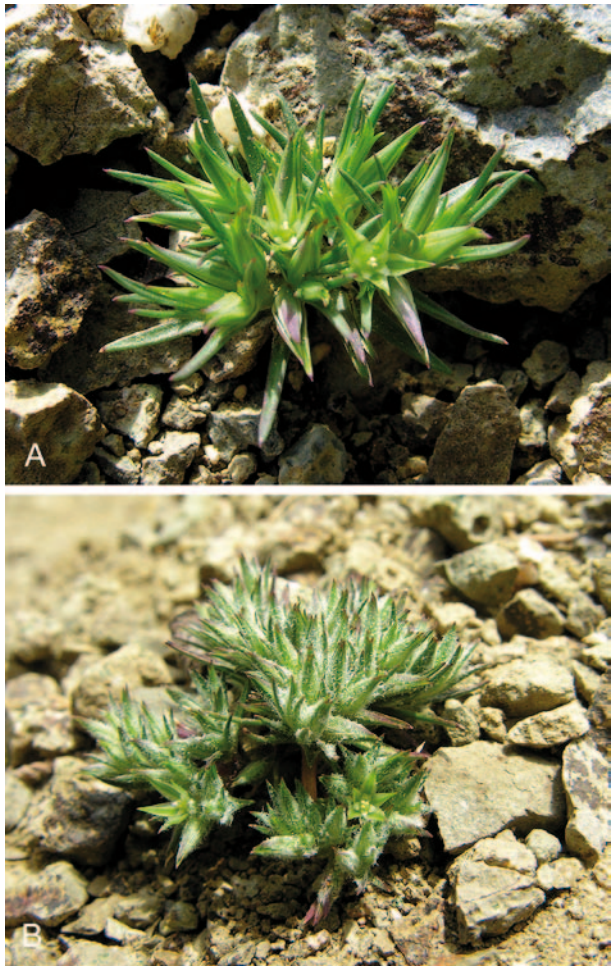

Fig. 2. *Minuartia montana* subsp. *montana* – A: glabrous form; B: form with dense indumentum; Cyprus, Akamas peninsula, Argakin ton Kavourotipon, 13.4.2006, photographs by C. S. Christodoulou.

Obviously, there has never been a thorough revision of material from the total distribution area of the species but only a focus on western or eastern populations. The treatment of subsp. *montana* for the Iberian peninsula (Favarger & Montserrat 1990) is somewhat contradictory to McNeill's (1963) description by saying, e.g., that petals can be absent or having a length of 0.3 mm at the maximum (compare Table 1). Plants from Cyprus do have clearly developed petals. Indumentum characters speak in favour for attributing them to the nominal taxon. This is chorologically quite surprising. Generally, Cypriot populations are extremely variable being glabrous to very densely hairy (see Fig. 2A-B). The easternmost occurrences of subsp. *montana* are known from Libya, whereas subsp. *wiesneri* was found as close as E Anatolia (see McNeill 1963). On the other hand it is a well known fact that some Mediterranean taxa have their easternmost

Table 1. Selected characters of *Minuartia montana* according to McNeill (1963) and cited specimens.

	subsp. *montana*	**Cypriot plants**	**subsp. *wiesneri***
Geographical distribution	W Mediterranean		Bulgaria to W Asia
Petal length [mm]	0.7–0.9	0.3–0.9	0
Stem indumentum	sparse	sparse to dense	dense
Stem hair diameter at base [µm]	usually < 50	20–40(–45)	about 100

isolated outposts in Cyprus (e.g., *Bellium minutum, Narduroides salzmannii*). This note may help to focus further research outside Cyprus.

+ Div. 1: SW slopes of Akamas, in open maquis, 110 m, 7.4.1995, *Christodoulou* (B, CYP 3100, herb. Hadjikyriakou 3699); Akamas peninsula, Argakin ton Kavourotipon, in openings of *Juniperus phoenicea* maquis, on pillow lava, dry slopes or almost level ground, 140 m, 13.4.2006, *Christodoulou* (B [4 separate collections, duplicates of 2: CYP 5154, 5179]); Gefyri Skarfou – Filousa, phrygana on pillow lava with *Paronychia echinulata*, c. 230 m, 8.4. 2008, *Christodoulou in Hadjikyriakou 7109* (duplicate CYP); 30.3.2008, *Christodoulou* (CYP); Tremithas Lysos edge of Pafos forest, igneous mountain peak, c. 630 m, *Christodoulou* (CYP).
+ Div. 2: Platres, Mesa Potamos, Pera Pedi, 700–1200 m, 5.2006, *Christofides in Hadjikyriakou 7002;* Platres, road to Foini, 950 m, 15.5.2006, *Christofides* (B, CYP 5194); 22.4.2007, *Christofides* (B); Pano Platres, at new road to Foini connecting P. P. and the Foini – Kato P. road, between road bifurcation and small chapel, debris on waste place S of the road, c. 1050 m, 20.5.2009, *Hand 5536 & Christofides;* Kato Platres, 24.4.2009, *Christofides* (B), 27.4.2009, *Christofides* (B); Pera Pedi – Platres, igneous rocks, c. 800 m, 15.6.2009, *Christofides* (CYP 5194); above Saittas, igneous roadside in burnt area, 720 m, 3.4.2009, *Christodoulou* (CYP); Lysos, towards Stavros tis Psokas, 24.3.2009, *Christofides* (B); Vrysi – Alonoudi junction, igneous roadside, c. 940 m, 15.3.2008, *Christodoulou* (CYP); Stavroulia – Xerargaka, igneous roadside, 800 m, 29.4.1993, *Christodoulou* (B, CYP 1544, herb. Hadjikyriakou 7082); Kato Pyrgos, above high school, sandy soil, c. 30 m, 10.4.1997, *Christodoulou* (CYP 4527, herb. Hadjikyriakou 7102); above Agia Eirini of Pitsyllia, open pine forest, c. 980 m, 8.4.2005, *Christodoulou in Hadjikyriakou 6239*.
  C. S. Christodoulou, Y. Christofides & R. Hand

Illecebraceae

Paronychia echinulata Chater – RDB: CR

Third locality for Cyprus (see Christodoulou in Tsintides & al. 2007).

Div. 1: Gefyri Skarfou-Filousa, phrygana on pillow lava slopes, c. 230 m, 8.4.2007, *Christodoulou in Hadjikyriakou 7110*. C. S. Christodoulou

Herniaria hemistemon J. Gay – RDB: VU

+ Div. 3: Maroni, SSW of Psematismenos, c. 600 m SW road junction between the two villages, track on ridge above former quarry, open gypsum by track, c. 100 m, 11.5.2009, *Hand 5484;* Skylloua Akrotiri, bare ground, c. 20 m, 17.5.2002, *Hadjikyriakou 5400*.
+ Div. 7: [Ypsarovounos forest] Agios Iakovos, c. 1.5 km WSW of village, top of the prominent cliff, open gypsum rocks, c. 270 m, 11.5.2009, *Hand 5477, Christodoulou & Hadjikyriakou* and *Hadjikyriakou 7058*.
  C. S. Christodoulou, G. Hadjikyriakou & R. Hand

Pteranthus dichotomus Forssk.

+ Div. 6: Agia Marina bridge on Peristerona River, slope with annual vegetation, c. 400 m, 7.4.2005, *Hadjikyriakou 6214*. G. Alziar & G. Hadjikyriakou

Elatinaceae

Elatine macropoda Guss.

+ Div. 3: E of Agios Tychonas towards Parekklisia, vernal pool on kafkalla, c. 200 m, 19.2.1999, *Makris in Hadjikyriakou 3985*. C. Makris

Malvaceae

Abutilon theophrasti Medik.

+ Div. 4: Achna dam, roadside, c. 50 m, 1.11.2004, *Kefalas in Hadjikyriakou 6171*. K. Kefalas

Malvella sherardiana (L.) Jaub. & Spach – RDB: EN

+ Div. 2: Lefka, field outside Lefka, 91 m, 7.2006, *Christofides* (B) and *Christofides in Hadjikyriakou 7006*. Y. Christofides

Geraniaceae

Geranium purpureum (L.) Vill.

+ Div. 4: Ayia Napa (E part), tourist area, lawn, shady place, 15–20 m, 19.4.2006, *Seregin A-785 & Privalova*. A. Seregin & I. Seregin

Rutaceae

Haplophyllum buxbaumii (Poir.) G. Don – RDB: CR

+ Div. 2: Kato Drys, 600 m NE of Moni Agiou Mina, at track N of road, exactly at border between limestone and igneous rocks, c. 380 m, 15.5.2009, *Hand 5510*.

Div. 4: Frenaros–Vrysoules, Monachos, field margins, c. 50 m, 20.5.2008, *Kefalas* (CYP, herb. Hadjikyriakou 7117). R. Hand & K. Kefalas

Sapindaceae

Dodonaea viscosa (L.) Jacq.

+ Div. 7: Agia Eirini 3 km W of Mandres Ammochostou, pine forest, c. 350 m, 11.9.2009, *Hadjikyriakou 7125;* very dense population, well established in an area of about 5 hectares. G. Hadjikyriakou

Leguminosae

Trifolium cherleri L.

+ Div. 6: S of Agia Eirini, sand dunes, c. 30 m, 1.4.2006, *Hadjikyriakou 6855*. G. Hadjikyriakou

Astragalus sinaicus Boiss.

+ Div. 6: Agia Marina, c. 1 km NW, N of road to Vyzakia, below the last houses of the village, on a track, c. 450 m, 27.4.2007, *Hand 5273*. (ed.)

Hippocrepis emerus subsp. ***emeroides*** (Boiss. & Spruner) Lassen [Syn.: *Coronilla emerus* subsp. *emeroides* (Boiss. & Spruner) Holmboe] – RDB: CR

This is the easternmost population recorded so far from Div. 7, and it is about 27 km E of Kremmos tis Keryneias, the easternmost locality known so far. Taxonomy follows Lassen (1989).

Div. 7: Styllarka SE of Akanthou, rock crevices and cliffs, c. 450 m, 1.5.2009, *Hadjikyriakou 7053*. G. Hadjikyriakou

Vicia monantha Retz. subsp. ***monantha***

+ Div. 1: Lakki (near Polis), track towards Agia Marina ruins from coastal road, 60 m, 20.3.2006, *Christofides* (B). Y. Christofides

Vicia cypria Kotschy

+ Div. 1: Drouseia, roadside, c. 400 m, 25.3.2006, *Christofides in Hadjikyriakou 6995;* Drouseia, rocks below, 525 m, 15.3.2007, *Christofides* (B). Y. Christofides

Ceratonia siliqua L.

Very common on the island up to 600 m altitude. The following record of a single individual is from 1150 m altitude, almost twice the normal altitudinal range. According to H. E. Knopf (Hann. Münden/Germany, pers. comm.) it is perhaps the highest occurrence in Europe.

Div. 2: Agros – Chandria road, above Agridia, roadside, c.1150 m, 25.5.2007, *Hadjikyriakou 6970*.

+ Div. 4: 4.75 km to E from Ayia Napa, along seashore highway to Cape Greco, among *Juniperus* scrub, 50 m, 21.4.2006, *Seregin A-812 & Privalova;* mentioned for division 4 without cited specimens by Coulot (2000) and Alziar & Guittoneau (2004). G. Hadjikyriakou, A. Seregin & I. Seregin

Rosaceae

Aphanes arvensis L.

+ Div. 1: Kritou Tera, by the road down to Polis main road, 500 m from village edge, at conspicuous bend crossing brook, open patches on grassy slope, burnt down in c. 2006, c. 450 m, 1.5.2007, *Hand 5321*. (ed.)

Crassulaceae

Crassula alata (Viv.) Berger

+ Div. 2: Kourvoula Xeros valley, moist roadside, c. 300 m, 16.3.1998, *Hadjikyriakou 2992*.

+ Div. 5: Athalassa forest, vernal pool, c. 170 m, 29.3. 2002, *Hadjikyriakou 5327, 5328 & Delipetrou;* Aglangia, moist place in house yard, c. 150 m, 7.4.2005, *Hadjikyriakou 6215 & Alziar;* mentioned without cited specimen for Div. 5 by Perring (1999). G. Alziar, G. Hadjikyriakou & P. Delipetrou

Crassula vaillantii DC. – RDB: VU

+ Div. 4: Potamos Liopetriou, vernal pools, c. 2 m, 3.4. 2009, *Christodoulou in Hadjikyriakou 7067;* Agia Napa Forest (Kavo Gkreko NFP), in temporary ponds on kafkalla along with *Limosella aquatica,* 9.3.2007, *Christodoulou in Hadjikyriakou 7111*. C. S. Christodoulou

Sedum aetnense Tineo

New species for Cyprus. The delicate plants are easily overlooked; *Sedum aetnense* seems to be indigenous to Cyprus. It is known to occur in, e.g., neighbouring Turkey (Chamberlain 1973).

+ Div. 3: Alampra–Mosfiloti, on pillow lava slopes, c. 300 m, 11.3.2006, *Makris* (CYP 5113).

+ Div. 5: Near Lythrodontas, on pillow lava slopes, c. 400 m, 5.3.2006, *Makris* (CYP 5110). C. Makris

Lythraceae

Lythrum hyssopifolia L.

The species is characterized in the literature as an annual plant, except by a few authors such as, e.g., Zo-

hary (1972) and Borja Carbonell (1965) who state it to be rarely perennial. Generally, no morphological details about the perennial plants are given. In 2005 a small population of a perennial *Lythrum* taxon was located in the vicinity of Apostolos Philippos church NW of Omodos village (Fig. 3A-B). Plants raised at the Botanic Garden Berlin-Dahlem kept the perennating habit and were morphologically identical to individuals growing at the type locality. The taxon is closely related to *L. hyssopifolia* as regards the leaves and flower details. However, it defers from the typical plant by its perennial habit, the rhizomatous rootstock and the decumbent or prostrate stems. Its cultivation suggests that these characters are genetically fixed and are no expression of an ecologically induced variability. This in our opinion justifies its distinction at varietal level.

A revision of the rich *Lythrum hyssopifolia* collections preserved in the herbaria B and JE revealed that in a few cases plants with rhizomes similar to the ones of the Cypriot plants have been collected. There are specimens from Greece, Italy, Spain, Tunisia and Turkey but also very rarely from temperate region, e.g., Germany and E Canada. Some of them may be decumbent individuals in which the primary root system is augmented by adventitious roots produced from the lower nodes of the stem (Callaghan 1998). Without observations in the field or of cultivated plants it is difficult to decide whether these plants are true perennials, winter annuals or overwintering individuals. It is expected that perennial populations are to be discovered in other Mediterranean countries and in other parts of its nearly cosmopolitan area.

Lythrum hyssopifolia var. ***cyprium*** Hadjik. & Hand, **var. nov.**

Holotype: Cyprus, division 2 (sensu Meikle 1977, 1985), Apostolos Philippos, c. 1 km northwest of Omodos village, moist place till the beginning of summer, 930 m, 18.6.2005, *Hadjikyriakou 6590* (B; isotypes: B, CYP, JE, MPU, herb. Hadjikyriakou).

A *Lythro hyssopifolia* var. *hyssopifolia* habito perenni, caudici rhizomatoso et caule decumbenti vel prostrato differt.

Description. — *Glabrous perennial* herb branching from the base and with branched stems. *Stems* few to numerous, growing from a rhizomatous rootstock, interrupted or irregularly 4-angled, narrowly winged, tinged red to purple, constantly decumbent or prostrate, 6–30 cm long, exceptionally up to 60 cm long when growing among other tall herbs. *Leaves* alternate, glabrous, sessile, acute, subacute or obtuse, usually papillose, tinged red to purple, longer than the internodes; those of the lower parts of the stems, oblong, lanceolate or oblanceolate, 5–16.5 × 1.3–7.5 mm, progressively smaller upwards; those of the uppermost parts linear, narrowly oblong or oblanceolate, 4–8 × 0.8–1.3(–2) mm. *Flowers* solitary, subsessile, in the axils of the leaves, homostylous. *Hypanthium* funnel-shaped, 2.8–4.3 × 0.7–1.2 mm, becoming oblong-cylindrical or slightly wider at base in fruit, green, tinged purple; hypanthium nerves purplish, as many as the total number of epicalyx lobes and sepals. *Bracteoles* 2, subulate, 0.5–1.1 mm. *Epicalyx lobes* deltoid, 5–6, 0.3–0.75 × 0.3–0.5 mm, thickish, purple, erect to patent. *Sepals* very broadly deltoid, 5–6, much shorter than the epicalyx lobes, 0.25–0.4 × 0.3–0.65 mm, membranous, with the hypanthium nerve extending to a mucro, bending outwards at right angle to the external sepals surface. *Petals* pink to purplish, 1.8–2.25 × 0.7–1 mm. *Stamens* in 2 levels, (2–5)6–8(9–10), occasionally absent or in few cases sterile or rudimentary; filaments 1–1.5 mm, creamy; anthers 0.2–0.3 × 0.25 mm, oblong to ellipsoid, creamy. *Style* 0.8–1.5 mm, creamy; stigma capitate, papillose; ovary cylindrical to oblong-ellipsoid, 1–2 × 0.3–0.4 mm. *Fruit* about as long as hypanthium, cylindrical or oblong-cylindrical, 3.5–4 × 1–1.25 mm, brown. *Seeds* ovoid or somewhat rhomboid, 0.5–1 × 0.6–0.8 mm, shortly winged at the distal end, testa brown to dark brown, closely, minutely rugulose, sometimes with a prominent faint or darker median vein towards the side of attachment. – Flowering May to July.

Chromosome number. — $2n = 20$ (2 different plants counted). The same number is widely reported in plants of *L. hyssopifolia* s.l. from outside Cyprus (see Goldblatt & Johnson 1979+). Div. 2: plants raised from seeds collected at the type locality, 7.2007, *Hadjikyriakou;* cultivated at the Botanic Garden Berlin-Dahlem until 28.5.2008 and 22.7.2009, *Cubr 45510, 45510a* (acc. no. 003-05-08-10, garden herbarium B), until 4.3.2009, *Hand 5445*.

Distribution and ecology. — The habitat of the type locality, which is restricted to about 25 m^2, is characterized by being moist till the beginning of summer. *Lythrum hyssopifolia* var. *cyprium* is accompanied by species such as *Anthemis cotula, Bromus lanceolatus, Convolvulus arvensis, Cynodon dactylon, Epilobium tetragonum, Lolium perenne, Medicago falcata, Plantago lanceolata* and *Rumex cristatus*. The geological substrate belongs to the Pachna formation (chalks, marls, marly chalks, chalky marls and calcarenites). Similar situations in the vicinity have been investigated, as well as three sites W of Mandria towards Agios Nikolaos, E of Platres, and two sites at Trikoukia near Prodromos, without results.

Even cultivated in relatively dry substrate at the Botanic Garden Berlin-Dahlem, the plants grew quite well. The perennial life span seems to enable persistence in dryer environments than those preferred by the more hygrophilous typical variety.

Specimens from *Cyprus* examined:

Lythrum hyssopifolia var. *cyprium*

+ Div. 2: Apostolos Philippos Omodos, moist place until the beginning of summer by roadside and vine-

Fig. 3. *Lythrum hyssopifolia* var. *cyprium* – A: habit; B: lower and subterranean parts showing rhizomatous growth. – Plants from the type locality, 22.10.2009, photographs by G. Hadjikyriakou.

yard, c. 900 m, 18.6.2005, *Hadjikyriakou 6590** [GPS coordinates: E481561 N3857961 UTM in metres; 930 m]; further specimens collected at the same place, p.p. with slightly differing label inscriptions, * = duplicates at B: 14.6.2006, *Hadjikyriakou 6897*, 6898**; 20.6.2006, *Hadjikyriakou 6899*, 6900*, 6901*, 6902**; 4.11.2006, *Hadjikyriakou 6944 & 6945*.

Lythrum hyssopifolia var. *hyssopifolia*

Div. 1: NW of Pegeia, dried vernal pool on rocky place, c. 300 m, 24.4.1991, *Hadjikyriakou 1150;* Erimides Akamas, vernal pool on kafkalla, c. 40 m, 13.4.2003, *Hadjikyriakou 5615;* Drouseia, vernal pools in rocks at the coastal track c. 2.5 km NNW of Panagia tou Flou, c. 20 m, 2.5.1997, *Hand 1228*.

Table 2. Selected discriminating characters of *Lythrum hyssopifolia* taxa.

Characters (measurements in mm)	***Lythrum hyssopifolia* var. *cyprium***	***Lythrum hyssopifolia* var. *hyssopifolia***	***Lythrum hyssopifolia* s.l.**
	Sources: Cypriot specimens cited (bold = lower/higher values than by Meikle 1977)		Sources: Muraveva 1949, Callaghan 1998, Velayos 1997
Life span	perennial	annual	spring annual, occasionally overwintering
Root system	rhizomatous rootstock	fibrous roots	taproot, augmented by fine, secondary laterals; decumbent stems sometimes rooting
Stems	constantly decumbent or prostrate	erect or ascending	erect, sometimes prostrate or decumbent
Hypanthium	2.8 – 4.3 × 0.7 – 1.2	**2.5** – 4.5 × **0.6** – 2	3 – 6 × 0.75 – 1.5
Bracteole length	0.5 – 1.1	**0.6** – 2.5	1
Epicalyx lobes	0.3 – 0.75 × 0.3 – 0.5	**0.5** – 0.7 × 0.4	0.5 – 1.5
Sepals	0.25 – 0.4 × 0.3 – 0.65	**0.25** – 0.4 × 0.7	0.2 – 0.75
Petals	1.8 – 2.25 × 0.7 – 1	**2** – 3 × **0.6** – 1	2 – 3 × 1
Anthers	0.25 – 0.3 × 0.25	0.3 – 0.5 × 0.2 – 0-4	?
Style	0.8 – 1.5	0.8	1.5 – 2
Ovary	1 – 2 × 0.3 – 0.4	**1.3** – 2 × 0.5	?
Fruit	3.5 – 4 × 1 – 1.25	**3.2** – 4.5 × 0.7 – **1.2**	4 – 10 × 1 – 1.5
Seeds	0.5 – 1 × 0.6 – 0.8	**0.7** – 0.8 × 0.6	0.6 – 0.75

Div. 2: Pomos, Livadi valley, from the middle part of the dam to picnic site above, open *Pinus brutia* forest, wet ground on track, c. 150–200 m, 18.5.1999, *Hand 3300;* Vavatsinia, at the track to Moni Profiti Ilia, NNW of Kambia tis Teratsias *Pinus-Quercus alnifolia* forest with rocks and screes, along track, at crossing brook, c. 540 m, 8.5.2005, *Hand 4870*.

Div. 3: Zakaki–Alyki Akrotiriou, marshy place, 19.4. 1999, *Hadjikyriakou 4277**; Foinikaria, E part of the dam opposite the village, humid ground near water, c. 90 m, 23.4.2005, *Hand 4671;* Mazotos, below Petountas church, brackish marsh, parts close to the sea, 0 m, 6.5.2005, *Hand 4831*.

Div. 4: Potamos Liopetriou, small depressions on kafkalla, 11.3.1999, *Hadjikyriakou 4115*.

Div. 7: Argaki tous Maronites east of Kalograia, streambed, c. 250 m, 28.6.2005, *Hadjikyriakou 6680**.

G. Hadjikyriakou & R. Hand

Aizoaceae

Aizoon hispanicum L. – RDB: EN

+ Div. 3: Mazotos, near the coast, c. 5 m, 10.4.2009, *Hadjikyriakou f. in Hadjikyriakou 7051*.

+ Div. 6: 1 km E of Mammari, open spaces among phrygana, c. 200 m, 18.3.2009, *Papachristophorou in Hadjikyriakou 7084;* 31.3.2009, *Christodoulou in Hadjikyriakou 7063*.

+ Div. 7: Kythrea, slopes with annual vegetation, c. 240 m, 5.4.2009, *Christodoulou & Kefalas in Hadjikyriakou 7064*.

C. S. Christodoulou, T. Hadjikyriakou, K. Kefalas & T. Papachristophorou

Umbelliferae

Eryngium campestre L. – RDB: VU

+ Div. 4: Ormideia, waste land, c. 30 m, 15.7.2006, *Kefalas in Hadjikyriakou 6923*; this rare species has been recently recorded from three locations between Ormeidia and Dekeleia (Kefalas 2006b) without cited specimens. K. Kefalas

Scandix australis L.

+ Div. 5: Between Tseri and Analiontas, grassy slopes with sparse phrygana, c. 310 m, 25.3.2009, *Christodoulou in Hadjikyriakou 7119*.

C. S. Christodoulou

Scandix grandiflora L. – RDB: EN

Meikle (1977) cites a specimen from Sina Oros near Kantara (Div. 7). The following record, the second for Cyprus, is from a new locality in the same division.

Div. 7: Argaki tous Maronites E of Kalograia, rocky slope, c. 230 m, 4.6.2005, *Hadjikyriakou 6514;* 12.4.2006, *Hadjikyriakou 6877 & Christodoulou*.

C. S. Christodoulou & G. Hadjikyriakou

Torilis webbii Jury [Syn.: *T. nodosa* (L.) Gaertn. f. *nodosa*]

+ Div. 6: Nicosia, Old Town (Palaia Polis), lawn in park near liberty monument, 150 m, 20.4.2006, *Seregin A-801 & Privalova*. A. Seregin & I. Seregin

Daucus durieua Lange – RDB: DD

A very rare indigenous species collected only twice from division 7 (Meikle 1977), considered to be restricted only to the Kythrea area.

+ Div. 4: Oroklini, Gerakomoutti, chalk slopes with herbaceous vegetation, c. 40 m, 25.3.2009, *Kefalas in Hadjikyriakou 7120*. K. Kefalas

Bupleurum sintenisii Huter

+ Div. 6: S of Agia Eirini, near Aloupos river, rock crevices among phrygana, 20 m, 15.5.2009, *Christofides* (B).

+ Div. 7: [Ypsarovounos forest] Agios Iakovos, c. 1.5 km WSW of village on slopes N of the cliffs, open gypsum rocks, c. 270 m, 11.5.2009, *Hand 5479, Christodoulou & G. Hadjikyriakou*.

C. S. Christodoulou, Y. Christofides, G. Hadjikyriakou & R. Hand

Helosciadium nodiflorum (L.) W. D. J. Koch [Syn.: *Apium nodiflorum* (L.) Lag.]

Apium in its traditional circumscription seems to be an artificial construct. Consequently, the resurrection of *Helosciadium* proposed by, e.g., Hardway & al. (2004) and Reduron (2007) is followed here.

+ Div. 1: Kritou Tera, c. 1.1 km ENE of village, valley above waterfall, in brook, c. 350 m, 1.5.2007, *Hand 5319*. (ed.)

Peucedanum kyriakae Hadjik. & Alziar

Chromosome number: $2n = 22$ (see Fig. 1C). The recently described endemic species (Hadjikyriakou & Alziar 2006) has never been counted before but the same number is well known in *Peucedaneae* (Pimenov & al. 2007). Numbers were counted in root tips of seeds germinating in a petri dish; no additional vouchers exist; material was collected at the type locality. Cultivation of the species has not been successful so far.

Div. 3: Fountanoudi, above Parekklishia, Lemesos Forest, 530 m, 12.8.2005, *Hadjikyriakou,* 20.10.2003 (seeds). (ed.)

Ferula tingitana L.

First record for Cyprus. The species is known to occur in several neighbouring countries, e.g., Turkey, Syria and Israel (Peşmen 1972; Zohary 1972). Obviously, the conspicuous plant escaped the attention in Cyprus because of its very restricted occurrence. Certainly indigenous in Cyprus.

+ Div. 3: N of Erimi, rocky and stony place, c. 110 m, 11.3.2007, *Makris in Hadjikyriakou 6951;* same

place but different labelling: Kantou, c. 2 km SSW Kouris dam wall, E side of valley at base of prominent cliffs, screes and rocks, c. 120 m, 13.5.2009, *Hand 5495 & Makris*. C. Makris

Araliaceae

Hedera pastuchovii subsp. ***cypria*** (McAllister) Hand [Syn.: *H. helix* subsp. *helix* sensu Meikle, non L.]

+ Div. 3: Apsiou, at track from Amirou church to Akrounta c. 1 km from church, at second crossing brook [Argaki tis Kalochis] with constant water flow, c. 300 m above track, c. 400 m, 4.5.2007, *Hand 5352 & Hadjikyriakou,* and with slightly differing label inscription, *Hadjikyriakou 6963 & Hand*. G. Hadjikyriakou & R. Hand

Caprifoliaceae

Viburnum tinus L. subsp. ***tinus*** – RDB: VU

Collected from Kantara forest (Div. 7) by Christodoulou & Hadjikyriakou (in Hand 2006). The specimen below is from a new locality.

Div. 7: Platanos valley W of Agios Amvrosios Keryneias, stream with *Cupressus sempervirens*, c. 150 m, 5.8.2006, *Hadjikyriakou 6924*.
G. Hadjikyriakou

Valerianaceae

Valerianella triceras Bornm. – RDB: VU

This species is known to occur only at two places in Cyprus (see Meikle 1985, Hand 2001). Additional data on the populations are summarized in the Red Data Book (Tsintides & Christodoulou in Tsintides & al. 2007). Third record.

Div. 2: Odou, W side of pass to Farmakas, c. 100 m WNW turn-off of track, banks and neighbouring vineyards, c. 1180 m, 18.5.2009, *Hand 5524*.
(ed.)

Dipsacaceae

Lomelosia brachiata (Sm.) Greuter & Burdet [Syn.: *Scabiosa brachiata* Sm.] – RDB: DD

Div. 7: Ypsarovounos forest Mandres Ammochostou, herbaceous vegetation under *Pinus brutia,* 200–250 m, 10.4.2009, *Hadjikyriakou 7050;* recollected there (slightly different labelling) 11.5.2009, *Hand 5476, Christodoulou & Hadjikyriakou*.
G. Hadjikyriakou

Compositae

Filago pygmaea L. [Syn.: *Evax pygmaea* (L.) Brot.]

+ Div. 4: Aradippou, SW of village, eastern side of motorway S of Kalo Chorio/Aradippou exit, open gypsum slopes, c. 100 m, 7.5.2009, *Hand 5455 & Christodoulou;* mentioned without cited specimens for this division by Coulot (2000) and Alziar & Guittoneau (2004).
C. S. Christodoulou & R. Hand

Ifloga spicata (Forssk.) Sch. Bip. – RDB: EN

Div. 3: Zakaki, at the stadium towards Lady's Mile, 0 m, 24.3.2009, *Christofides* (B). Y. Christofides

Phagnalon rupestre (L.) DC.

From the specimens cited in Meikle (1985), the map prepared by Chrtek & Slavík (1993) and a collection and observations from Karpasia peninsula, it appears that the two subspecies of *Phagnalon rupestre* s.l., which occur in Cyprus, are distributed in two separate regions. *P. rupestre* subsp. *rupestre* is restricted in the northern and eastern part of the island (Div. 4, 5, 6, 7 & 8), whereas *P. rupestre* subsp. *graecum* is restricted in the southern and western part (Div. 1, 2 & 3). This distribution is questioned by new collections from divisions 3 and 4. Alziar (2000) cites gatherings of subsp. *graecum* from Meneou and Larnaka salt lake (Div. 4), whereas Kalheber (in Hand 2001) cites a collection of *P. rupestre* subsp. *rupestre* from N of Ankleisides (Div. 3). For the latter case Hand (2001) notes that the plants show intermediate characters that need further investigation. Another transitional population between the two subspecies has been found recently in division 2 in the expected contact zone: Agioi Vavatsinias, c. 200 m above, towards Machairas, rocky slope and bank of the track, c. 700 m, 28.4.1999, *Hand 2949*.

From recent collections and fieldwork carried out at Akrotiri peninsula, which falls in division 3, it has been found that both taxa occur in the area. As regards *Phagnalon rupestre* subsp. *rupestre,* it is very common in the southern elevated part of the peninsula, but it also extends to the north growing in slightly elevated gravelly and sandy areas and areas covered by low sand dunes. Concerning *P. rupestre* subsp. *graecum* two collections are cited by Meikle (1985) from places that are not far from the boundaries of the Akrotiri peninsula: (a) from Kolossi (*Lindberg f.,* 1939) and (b) from Lemesos (*Haradjian 560,* 1913). Additionally, during this investigation it has been located further south. The contact areas of the two taxa are restricted to two locations, one in the NW part, Episkopi bay, and one in the NE part of the peninsula, Lemesos bay (see Fig. 4). Though they grow together, there were no indications of interbreeding or intermediacy in this part of the island.

The new localities of *Phagnalon rupestre* subsp. *rupestre* are far away from those of the main area in the NE half of Cyprus. Two other taxa growing chiefly in other areas and divisions, are also quite isolated in the southernmost part of the peninsula: (a) *Lavandula stoechas,* which grows chiefly on igneous rocks at the S and E foothills of Troodos mountain range; and (b) *Pterocephalus*

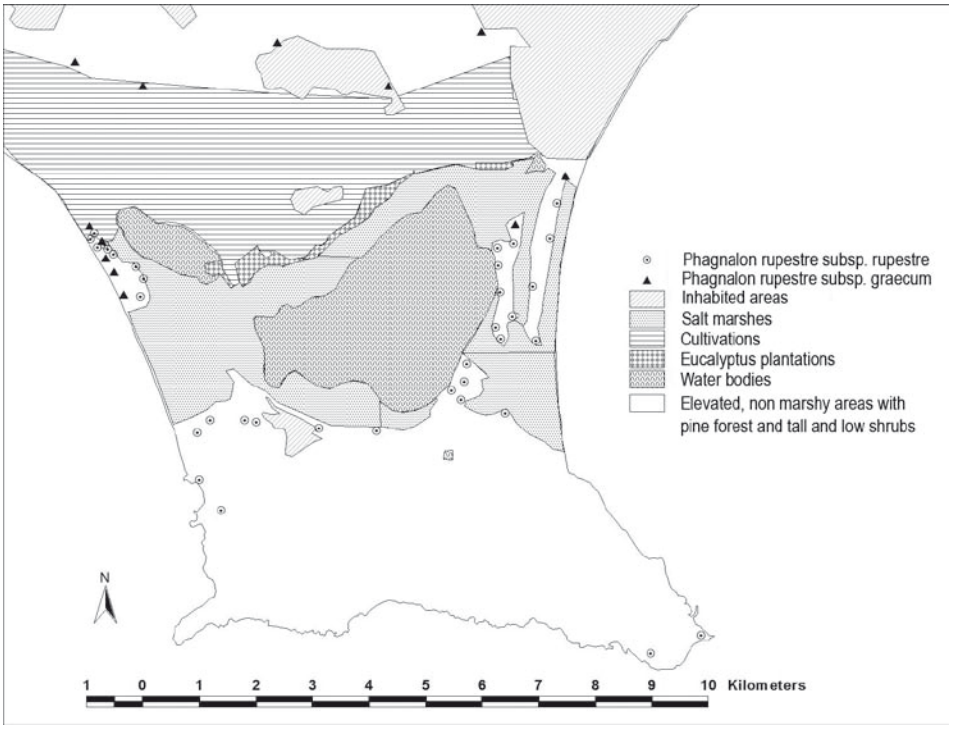

Fig. 4. Distribution of *Phagnalon rupestre* subsp. *rupestre* and *P. rupestre* subsp. *graecum* in the Akrotiri peninsula.

multiflorus subsp. *obtusifolius,* which grows chiefly on Pentadaktylos mountain range (Meikle 1985). An apparent explanation to this is that the S elevated part of the peninsula was once a small island, but the deposition of material in the W by Kouris river and in the E by Garyllis river has created two fairly narrow ridges. They have connected the mainland with the islet, whereas the large depression in between is occupied by the salt lake and marshes. Geologically the old islet is composed of sedimentary rocks, which belong to the Pleistocene (biocalcarenites, sandstones, sandy marls and conglomerate), whereas the alluvial sediments belong to the Holocene (sands, silts, clays and gravels).

The following list of specimens is restricted to new divisional records; additional material will be published in the catalogue to the herbarium Hadjikyriakou (last instalment: Hadjikyriakou 2009).

Phagnalon rupestre (L.) DC. subsp. *rupestre*

+ Div. 3: lighthouse at Akrotiri, among phrygana, c. 50 m, 15.5.2002, *Hadjikyriakou 5383;* Kavo Gata at Akrotiri, low shrubs, c. 5 m, 28.3.2006, *Hadjikyriakou* f. *in Hadjikyriakou 6839;* W of Akrotiri village, among phrygana, c. 10 m, 29.3.2006, *Hadjikyriakou* f. *in Hadjikyriakou 6840;* Ladies Mile Lemesos bay, sandy place with phrygana and low shrubs, c. 1 m, 7.4.2006, *Hadjikyriakou 6867;* E of Agios Nikolaos church at Akrotiri, roadside with phrygana vegetation, c. 1 m, 7.4.2006, *Hadjikyriakou 6868;* 500 m N of Agios Nikolaos church at Akrotiri, low sand dunes with *Pistacia lentiscus,* c. 1 m, 7.4.2006, *Hadjikyriakou 6869*.

+ Div. 8: Kairos between Komi and Davlos, among low shrubs, c. 300 m, 29.8.2009, *Hadjikyriakou 7101*.
G. Hadjikyriakou & T. Hadjikyriakou

Helichrysum stoechas subsp. ***barrelieri*** (Ten.) Nyman [Syn.: *H. conglobatum* (Viv.) Steud. subsp. *conglobatum*]
It usually grows up to 600 m altitude but a small group of plants has been located above that maximum. Differing nomenclature of the taxon is according to Greuter & Raab-Straube (2008).

Div. 2: Profytis Ilias Agridia, rocky place, c. 1000 m, 19.4. 2008, *Hadjikyriakou 7028*. G. Hadjikyriakou

Flaveria trinervia (Spreng.) C. Mohr
First recorded from division 4 by Papachristophorou (in Hand 2006). Probably still a casual alien.

+ Div. 2: E of Kykkos monastery, roadside, c. 1000 m, 16.10.1998, *Hadjikyriakou 3790*.
G. Hadjikyriakou

Eclipta prostrata (L.) L.
First collected by Papachristophorou (Della & Iatrou 1995) from division 4 (confirmed there in 2009: *Hand 5554*). Obviously, spreading slowly and to be classified as “naturalized non-invasive”.

+ Div. 2: Esso Galata, irrigation channels, c. 700 m, 28.6.2006, *Tsintides in Hadjikyriakou 7103*.

+ Div. 3: Trachoni – Ypsonas, cultivated land, c. 25 m, 1.8.2007, *Hadjikyriakou 6978*.
G. Hadjikyriakou & T. Tsintides

Bidens bipinnata L.
First record for Cyprus. Originally from South America but known to occur in several Mediterranean countries (see, e.g., Tutin 1976). To be classified as casual alien in Cyprus.
+ Div. 2: Pelentri, abandoned land, c. 1000 m, 21.10. 2007, *Christodoulou in Hadjikyriakou 7114*.
C. S. Christodoulou

Bidens subalternans DC.
First record for Cyprus. Originally from South America but known to occur in several Mediterranean countries (see, e.g., Tutin 1976). To be classified as casual alien in Cyprus.
+ Div. 2: Potamos Kargotis, riverside, c. 500 m, 12.10. 2006, *Christodoulou in Hadjikyriakou 7106*.
C. S. Christodoulou

Achillea santolinoides subsp. ***wilhelmsii*** (K. Koch) Greuter [Syn.: *Achillea santolina* sensu Meikle, non L.] – RDB: CR
It is a plant of the plains, recorded by Meikle (1985) from divisions 4 and 5. This is the first time that is has been found at such an altitude. Perhaps it has been planted long ago in the garden of the Amiantos hospital (abandoned), and now is naturalised in the vicinity. Problems concerning the complicated taxonomy and nomenclature of the taxon are summarized by Valant-Vetschera & Kästner (1998).
+ Div. 2: abandoned hospital of Pano Amiantos, waste ground, c. 1350 m, 23.5.2006, *Kefalas in Hadjikyriakou 6908* (duplicate CYP 5191).
K. Kefalas

Cota austriaca (Jacq.) Sch. Bip. [Syn.: *Anthemis austriaca* Jacq.]
First record for Cyprus. To be classified as casual alien; it is rather improbable that this distinctive species escaped the attention in the well researched area around Troodos square. The taxon is known to occur widespread in nearby Turkey (Grierson & Yavin 1975).
+ Div. 2: Troodos, behind the Troodos environmental centre, 1709 m, 7.2006, *Christofides*, det. Vogt (B) and, with slightly differing label inscription, *Christofides in Hadjikyriakou 7005*.
Y. Christofides & R. Vogt

Anthemis tomentosa L. – RDB: EN
+ Div. 6: Akrotirio Kormakiti, flat rocky coast, c. 2 m, 2.5.2007, *Hadjikyriakou 6957 & Hand*.
G. Hadjikyriakou & R. Hand

Calendula officinalis L.
It is grown in Cyprus as culinary, medicinal and ornamental (Hadjikyriakou 2007) but also to be found as casual escape (see already Meikle 1985, Della 1994). Further records can be added.
+ Div. 2: near Kyperounta hospital, roadside, c. 1200 m, 14.10.2007, *Hadjikyriakou 7021*.
Div. 3: Agios Amvrosios – Kivides, margins of agricultural road, c. 400 m, 10.4.1999, *Hadjikyriakou 4304*.
G. Hadjikyriakou

Cynara makrisii Hand & Hadjik.
Morphologically, the recently described Cypriot endemic *Cynara makrisii* seems to be close to *C. cyrenaica* Maire & Weiller, which is known to occur in Libya and Crete. There are superficial similarities to the W Mediterranean *C. algarbiensis* Mariz and the E Mediterranean *C. cornigera* Lindl. A few characters shared with *C. syriaca* Boiss. led to confusion before *C. makrisii* has been described as new to science (for further details see Hand & Hadjikyriakou 2009). Infrageneric phylogeny of *Cynara*, an economical important genus, is reasonably well understood (Robba & al. 2005). The following note aims at a clarification of the phylogenetic position of the new taxon.

Material and methods. — (1) Sampling: Two sequences of the Internal Transcribed Spacer region (ITS) of the new species and one accession of *Cynara cyrenaica* were generated and compared to a selection of 29 *Cynara* sequences belonging to ten different species and three outgroup taxa extracted from GenBank (see Fig. 5). The vouchers of the new sequences are as follows: *C. makrisii* GU 166388: (Cyprus, Vretsia, Potamos ton Vretsion, ca. 1 km SSW of the village in valley, c. 400 m, 28.4.2007, *Hand 5277 & Hadjikyriakou 6955* (B), *C. cyrenaica* GU 166387: Greece, Crete, Eparchía Ierapétras, Shinavria Ko [label cut] (Mesa Kefala), 520 m, 25.6.1994, *Jahn* (B).

(2) DNA sequencing and alignment: Total genomic DNA was isolated from leaf material of dried herbarium specimens, the samples were crushed and DNA was then extracted using the Nucleospinn Plant II kit (Machery & Nagel) following the standard procedure. For amplification of the ITS1 region the primers pap18itlf and pap58it1 (Käss & Wink 1997) and for the ITS2 region the primer combination pap58its2 and ITS2SR (Käss & Wink 1997) were used. The Polymerase Chain Reaction (PCR) was carried out with a reaction volume of 46µl core mix plus 4 µl DNA (40 ng). The reaction mix was composed of 1x Taq buffer S (PeqLab), 0.25 mM dNTPs (PeqLab), 0.5 M Betain (Fluka), 0.4 pmol/µl of each primer and 0.03 u/µl Taq-Polymerase (PeqLab). The protocol of the PCR for ITS was as follows: initial denaturation 2 min at 95 °C, denaturation 1 min at 95 °C, annealing 1 min at 53 °C, elongation 1 min 30 sec at 72 °C (35 cycles), and final extension 7 min at 72 °C. The PCR products were purified with Milipore DNA purification Kit (Roth). For cycle sequencing reaction primers pap18itlf and pap58its2 (Käss & Wink 1997) were applied. Sequences were analysed by MacroGene (Seoul, Korea), edited in ChromasLite2000 (Technelysium Pty Ltd) and aligned by hand using BioEdit (Hall 1999). The alignment was unambiguous.

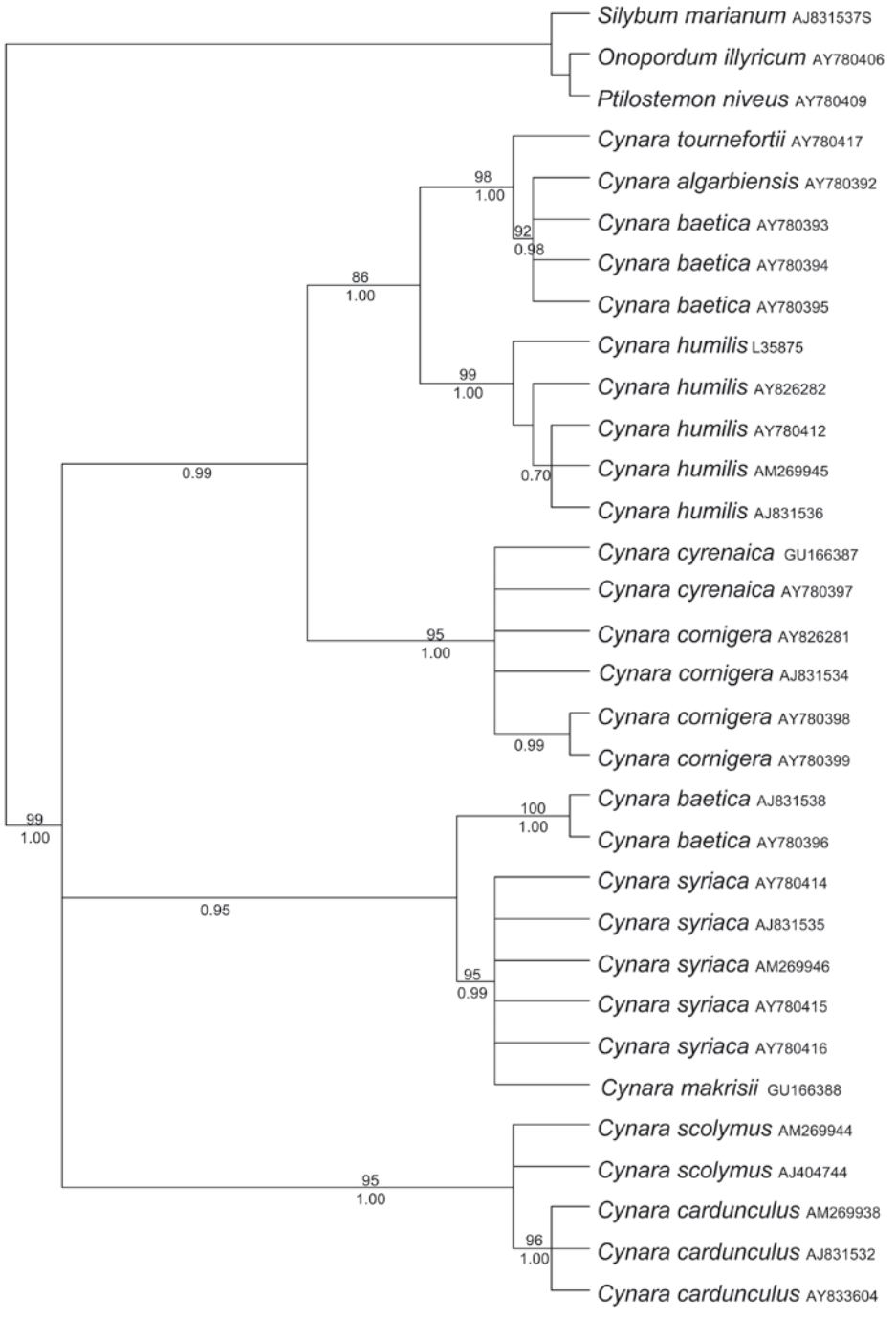

Fig. 5. Majority rule consensus tree of the Maximum Parsimony analysis with bootstrap values above 75 % statistical support presented above the branches and posterior probabilities of the Bayesian analysis of or above 0.70 below the branches. – The GenBank accession numbers follow the species names.

(3) Phylogenetic Analyses: Maximum Parsimony (MP) and Bayesian Inference (BI) were used to analyse the data set. All heuristic searches were conducted in Paup 4.0b10 (Swofford 2002) with equal weights, 1000 closest sequence additions and tree bisection-reconnection (TBR) branch swapping, permitting 10 trees to be held at each step. An evaluation of the trees was performed by using bootstrap analysis with 1000 replicates, equal weights, TBR swapping, MulTrees option in effect and 10 trees held at each step. BA (MrBayes 3.1.2; Ronquist & Huelsenbeck 2003) was performed using gamma distribution rate variation among sites and 10 million generations of the MCMC chains in two independent runs, trees saved every 100 generations using GRID technology. The data set was partitioned in ITS1 and ITS2 to optimise posterior probability estimates of clade support (Brandley & al. 2005) and to receive a more precise (less variable) estimate of posterior probabilities

across generations (Castoe & al 2004). For each likelihood reconstruction, the first 30 000 trees were discarded as burn-in until analysis reached stationarity. All other trees sampled were used to calculate a strict consensus tree. The strict consensus tree of the BI was compared to the bootstrap 75 % majority rule consensus trees. Trees were drawn using TreeView (Page 1996) and Adobe Illustrator (Adobe Systems). For the MP as well as the BI the 5.8S rDNA region was deleted as in some GenBank files this region is not available and in all other taxa it is without variation. An insertion within *Ptilostemon niveus* in the ITS1 at bp 10–11 was coded as single mutation as well as a gap of 4 base pairs within *C. cornigera* and *C. cyrenaica* in the ITS 2 (bp 469–473).

Results. — The data set comprised 458 characters, of which 313 characters were constant; 81 variable characters were parsimony-uninformative, 64 parsimony-informative. MP analysis of the ITS data of all taxa yielded 286 most parsimonious trees of 195 steps (CI=0.836, RI=0.871). MP and BI yielded congruent results (Fig. 5) for all aspects of relationship that were supported by bootstrap values >70 % or posterior probabilities ≥ 0.70 %. Our results support the monophyly of *Cynara* as already stated by Robba & al. (2005). *C. makrisii* appears in a polytomy with *C. syriaca* in the MP as well as the BI. This clade has high statistical support (95 bootstrap support, 0.99 posterior probability) and is sister to *C. baetica*.

Discussion. — The results confirm that *Cynara makrisii* and *C. cyrenaica* are not conspecific. Surprisingly, they seem not to be the closest relatives to each other as was assumed for morphological reasons. *C. cyrenaica* is found in an unresolved clade with *C. cornigera* being the sister group to several W Mediterranean taxa. The closest relatives of *C. makrisii* seem to be *C. syriaca,* a species occurring in the Near East, and *C. baetica*. The reason for morphological similarity could either be due to convergent evolution or former hybridization events. Further analyses, for example to detect possible chloroplast capture, which would indicate reticulate evolution in earlier stages of species formation, could be revealed by additional sequencing of highly variable chloroplast fragments.

B. Gemeinholzer & R. Hand

Hirtellina lobelii (DC.) Dittrich [Syn.: *Staehelina lobelii* DC.] – RDB: DD

Mentioned for the following area by Meikle (1985) and Viney (1994). No other occurrence could be confirmed so far. Taxonomy follows Dittrich (1996).

Div. 7: W of Agios Ilarion castle, disturbed cliffs, c. 600 m, 2.8.2009, *Christodoulou, Kefalas & Makris in Hadjikyriakou 7099*.

C. S. Christodoulou, K. Kefalas & C. Makris

Picris cyprica Lack

+ Div. 4: Aradippou, Rizoelia [National Forest] Park, on hill top, afforested gypsum slopes, c. 110 m, 7.5.2009, *Hand 5458 & Christodoulou.*

+ Div. 5: Mathiatis, NW, S of the Gialias bridge, pillow lava rocks, c. 350 m, 21.3.2005, *Hand 4388*.

C. S. Christodoulou & R. Hand

Crepis foetida L. subsp. ***foetida***

+ Div. 3: Kouklia, coastal slopes c. 4 km SE, phrygana, limestone, c. 20 m, 25.3.1999, *Hand 2650*. (ed.)

Crepis pusilla (Sommier) Merxm. – RDB: VU

+ Div. 1: Loutra tis Afroditis [or Akamas peninsula resp.], fenced area at the Arnaoutis lighthouse, trodden, rocky ground, c. 180 m, 30.4.2007, *Hand 5310 & Christodoulou* and *Christodoulou in Hadjikyriakou 7112;* Akamas, Moutti tou Athou, 170 m, 25.2.2007, *Christofides* (B); all specimens were collected at the same site but differ in labelling.

Div. 4: Potamos Liopetriou, roadside on compacted soil, 3.4.2009, *Christodoulou in Hadjikyriakou 7066;* [but slightly differing labelling], 7.5.2009, *Hand 5461 & Chistodoulou*.

C. S. Christodoulou, Y. Christofides & R. Hand

Crepis zacintha (L.) Babc.

+ Div. 1: Kritou Tera, by the road down to Polis main road, 500 m from village edge, at conspicuous bend crossing brook, open patches on grassy slope, burnt down in c. 2006, c. 450 m, 1.5.2007, *Hand 5323*. (ed.)

Lactuca undulata Ledeb.

First record for Cyprus. *Lactuca undulata* is distributed from the E Mediterranean (Turkey, Sinai, Israel, Palestine, Jordan, Syria) and the Caucasus across Iraq, Iran and Afghanistan to W Pakistan and across middle Asia to western China and western Siberia. It spans an altitudinal range from a few hundred to c. 2500 m and a wide range of open habitats, such as desert wadis, semi-deserts, steppes, rocky or stony mountain slopes, on a variety of substrates including even saline soils. Its occurrence on Cyprus is less surprising than its late discovery and very localized distribution. The species is unmistakable by the two rod-like, pendent basal appendages at the achene apex of its white, filiform beak, which is 3–4× longer than the pale brown, compressed, on either side one-ribbed achene body. Vegetatively it is fairly variable on the mainland (see, e.g., Kirpicznikov 1964) but rather uniform on Cyprus, being small (< 14 cm) and conspicuously glaucous. Colour photographs of Cypriot plants have been published in the *Cichorieae* Portal of the International *Cichorieae* Network (Christodoulou in ICN 2009+) under that species. Nazarova (1990) considered the species to represent a genus of its own, named *Lactucella*. Molecular systematic analyses (Kilian in prep.),

however, have confirmed that the species belongs to the core of *Lactuca*.

+ Div. 5: Arediou – Episkopeio, hills with sparse herbaceous vegetation, c. 350 m, 18.3.2009, *Kefalas in Hadjikyriakou 7086;* 13.4.2009, *Christodoulou,* det. Kilian (B) and *Christodoulou in Hadjikyriakou 7121*. K. Kefalas & N. Kilian

Lactuca saligna L.

+ Div. 8: Kastroulli 1 km E of Bogazi, fallow land, c. 2 m, 17.7.2005, *Hadjikyriakou 6771;* Galateia depression, by the road and the marsh, c. 95 m, 20.8.2005, *Hadjikyriakou 6806, 6809, 6810*. G. Hadjikyriakou

Lactuca tetrantha B. L. Burtt & P. H. Davis [Syn.: *Scariola tetrantha* (B. L. Burtt & P. H. Davis) Soják]

Chromosome number: 2*n* = 18 (two different plants counted). The endemic species has never been counted before but the number is common in *Lactuca*, e.g., in the closely related *L. viminea* (L.) J. Presl & C. Presl (see Goldblatt & Johnson 1979+).

The segregate genus *Scariola,* accepted by Meikle (1985), has to be included in *Lactuca* s.l. (see, e.g., Lebeda & al. 2004, who neglected *L. tetrantha* in their synopsis).

Div. 2: Troodos, at the road to Prodromos, E of the Olympos summit, open rocky ground, c. 1780 m, 20.10. 2003 (seeds and specimen), *Hand 3993 & Hadjikyriakou;* cultivated at the Botanic Garden Berlin-Dahlem until 23.4.2004 (acc. no. 265-07-03-10, B). (ed.)

Campanulaceae

Campanula fastigiata Dufour ex A. DC. – Fig. 6A

First record for Cyprus. The species was first found by the first author at Aradippou on 23 May 2009. A closer inspection of gypsum sites in Cyprus revealed additional records. The often extremely tiny plants (mostly less than 2 cm tall) are not easily to be detected. *Campanula fastigiata* certainly is indigenous to Cyprus and has been overlooked in the past. Such a late flowering (May) annual has not been suspected in the extremely dry gypsum lowland sites. It is a remarkable addition to the gypsum flora of Cyprus, which includes two further taxa that have been discovered quite late on the island, *Gypsophila linearifolia* and *Herniaria hemistemon*.

Campanula fastigiata is known to occur in parts of Spain and Morocco (Sáez & Aldosoro 2001). This W Mediterranean area is very disjunct to a SW Asian area comprising more or less isolated occurrences in Azerbaijan, Iran, Turkey, Syria and Uzbekistan (Aghabeigi & Assadi 2008; Damboldt 1978; Fedorov 1957; Sáez & Aldosoro 2001 and specimens cited). An uncompleted distribution map showing the W Mediterranean occurrences was published by Bolòs & Vigo (1995). Damboldt's (1978) remark, that it has been "possibly introduced as a weed" in Turkey seems to be questionable. Its status in Azerbaijan has been discussed by Fedorov (1957) but since the discovery of occurrences in W Iran (Aghabeigi & Assadi 2008) the locality in the Transcaucasus is not that isolated as it then seemed. The somewhat strange distribution patterns is interpreted by Fedorov (1957) as an "indication of the ancient Mediterranean floristic influence on the flora of Central Asia and Transcaucasia".

Plants of the Cypriot population were first thought to be different from the Iberian and Asian plants; the few detailed descriptions published so far did not fit perfectly. A revision of herbarium material showed that some characters have been misinterpreted or not clearly described, respectively. One example is the flower size. At anthesis the corolla is most often significantly longer (up to 1 mm) than the calyx lobes; but later the calyx enlarges up to 200 % as the lobes do, and are in fruiting stage often much longer than the withering corolla. Obviously, this has been misinterpreted by many authors in the past who did not have fresh material at hand. Corolla length in Spanish material is said to be 1–2 mm (Sáez & Aldosoro 2001). Measurements in specimens from Spain (see below) revealed that it is quite often at about 2.5 mm, sometimes up to 3.3 mm. It may even be longer since no fresh material could be measured. This compares with 3.5 and 4.3 mm in fresh material from Cyprus. Damboldt (1978) gives 1.5–4 mm. Plants display a wider array of habitual variation than described in the literature. Already Candolle (1830) depicted several types. Stems with fastigiate branches from base are more commonly to be found in Spain; more or less intensive branching restricted to the upper half or third is to be found in the whole area, even one- or single-flowered depauperate plants, sometimes wiry specimens with very long branches. The W Mediterranean populations seem to have somewhat smaller seeds but there is no clear-cut difference between W and E populations. However, no infraspecifical, geographically defined taxa seem to exist (see Table 3).

The systematic position of *Campanula fastigiata* within the *Campanulaceae* has been discussed by several authors. Currently, most authors prefer to treat it as member of the monotypic subgenus *Brachycodonia* (Fed.) Damboldt (see Damboldt 1976 for summary on nomenclature). Fedorov (1957) advocates genus rank, because of its intermediate position between *Campanula* and *Legousia,* an observation already mentioned in the original description by Candolle (1830). For first results of molecular studies regarding its phylogenetic position see Roquet & al. (2008); further studies to elucidate its phylogenetic relationships are needed.

Specimens seen (* = digital images)

Cyprus: + Div. 3: Maroni, SSW of Psematismenos, c. 600 m SW road junction between the two villages, slope facing SE, below track on ridge, semi-

Fig. 6. A: *Campanula fastigiata* – Cyprus, Aradippou, Rizoelia National Forest Park, 24.4.2009; B: *Campanula veneris* – Cyprus, Argaki tou Pissokremmou, 21.4.2009. – Photographs by C. S. Christodoulou.

open gypsum phrygana, c. 100 m, 11.5.2009, *Hand 5485*.

+ Div. 4: W of National Forest Park of Rizoelia, on gypsum, c. 80 m, 24.4.2009, *Christodoulou in Hadjikyriakou 7089;* 7.5.2009, *Christodoulou & Hand in Hadjikyriakou 7090;* but different labelling: Aradippou, SW of village, eastern side of motorway S of Kalo Chorio/Aradippou exit, open gypsum slopes, c. 100 m, 7.5.2009, *Hand 5450 & Christodoulou;* Aradippou, near the eastern entrance to Rizoelia Park, not far from motorway to Larnaka, afforested gypsum slopes, c. 70 m, 7.5.2009, *Hand 5457 & Christodoulou*.

+ Div. 7: [Ypsarovounos forest] Agios Iakovos, c. 1.5 km WSW of village on slopes N of the cliffs, small gullies in open gypsum rocks, c. 270 m, 11.5.2009, *Hand 5480, Christodoulou & Hadjikyriakou* and *Christodoulou in Hadjikyriakou 7060*.

Spain (selected specimens): Valencia: Segorbia, 5.1890, ex herb. *W. Lambert;* Ségorbe (Clotes de Cañadas), 350 m, 5.1892, *E. Reverchon* (B [4]); in locis aridis, 1892, *Reverchon* (B); à los clotes de Cañadas, lieux arides, surle gypse, 350 m, 5.1892, *E. Reverchon*, Pl. Esp. 747 (B); in collibus gypsaceis circa Segobricam, 15.5.1890, *C. Pau* in F. Schultz, Herb. Norm., Nov. Ser. Cent. 28, 2761 (B). – Navarra: Obanos, Unatermin, 450 m, 1.6.1992, *I. Aizpuru*, Soc. Échange Pl. Vasc. Eur. Occid. Bassin Médit. 16479 (B). – Zaragoza: […] La Retuerta de Pina, junto al Hotel del Ciervo, 380 m, 12.6.1968, *P. Montserrat*, Fl. Pyren. Herb. Jaca 70 (B). – Madrid: Aranjuez, in gypsaceis […], 580 m, 13.6.1975, *A. Segura Zubizarreta* 11008 (M). – La Rioja: Leza de Río Leza, 500 m, 28.6.1985, *Amich y Sánchez Rodriguez* (M).

Turkey: Environs de Béréketly (Cappadoce), vers 1300 m, 15.6.1856, *Balansa 617* (G-BOIS 00150326*)

Armenia/Turkey: Armenia, 1839, *Pareyss* (G-BOIS 00150327*).

Azerbaijan: Prope Elisabethpol in cultis, s.d., *Hohenacker* (B); in agris incultis prope Helenendorf [= Khanlar] et Elisabethpol, 1838, *R. F. Hohenacker* (G-BOIS 00150325*, M); p[rope] Helenendorf, "Georg. Com [m.]" (JE*); Iberia caucasica, s. d., *Hohenacker* (M); note: all specimens from Azerbaijan probably refer to a single collection of Hohenacker from 1838 (see Fedorov 1957).

Syria: Rochers gypseux au dessus de Lac Khattounié, 14.5.1955, *P. Mouterde* P 400 (G 00161523); Sud du Lac de Khattouniyé (E. de Hassetche) sur gypses, 14.5.1955, *H. Pabot* (G 00161522); S. du Lac Khattouniyé (Ht. Jeziri), 14.5.1955, *H. Pabot* (G 00161521).

Locus ignotus: probably from Asia, s.d., *de Hahn* (G 00161524). C. S. Christodoulou & R. Hand

Campanula veneris Carlström [Syn.: *C. drabifolia* sensu Meikle, non Sm.]

Meikle (1985) treated bellflowers of the *Campanula drabifolia* complex with patent deltoid calyx lobes and corolla much exceeding calyx as *C. drabifolia*. Carlström (1986) segregated the Cypriot plants naming them *C. veneris*. Obviously, her treatment was based on a single gathering, the type specimen, which is also cited by Meikle. Measurements given in both sources differ somewhat (Meikle/Carlström; mm): corolla length 7–9/8–10.5, co-

Table 3. – Selected characters of *Campanula fastigiata* populations.

	Spain	Cyprus	SW Asia
Habit	often fastigiate branching of stem from base, but also many plants with branching in upper $^1/_2$ or $^1/_3$	stems mostly branched in upper $^1/_2$ or $^1/_3$	stems mostly branched in upper $^1/_2$ or $^1/_3$, rarely fastigiate from base
Relation corolla/calyx lobes at anthesis	equal to longer	longer	longer, rarely equal
Seed length [mm]	0.32–0.41(–0.44)	(0.38–)0.40–0.48	(0.37–)0.40–0.48(–0.52)

rolla lobes length 2–3/3–3.5. Measurements taken from the specimens cited below confirm most of Carlström's results; only regarding the calyx lobes measurements differ slightly (own specimens/Carlström; mm): calyx lobes in fruit 4–5.4 × 2–3/4.2–5.5 × 2.2–3. In flowering state the corresponding values are 3.2–3.8 × 1.1–2, but we guess that Carlström's measurements refer to fruiting plants.

The most significant difference to *Campanula drabifolia* s.str. is the relatively longer corolla tube in *C. veneris*. Carlström's measurements are confirmed (see a typical plant in Fig. 6B) and our results support the recognition of an endemic taxon in Cyprus.

+ Div. 1: Tremithas, near Lyso (Pafos Forest), igneous road banks, c. 560 m, 18.4.1998, *Christodoulou* (CYP 3812).

Div. 2: Argaki tou Pissokremmou, Xeros Valley, rocky slope, c. 450 m, 10.4.1998, *Hadjikyriakou 3114;* 27.4.2005, *Christodoulou* (B, CYP 4809, herb. Hadjikyriakou 6280); Kremmos tou Astraka, Platys valley, rocky place, c. 1000 m, 6.5.1998, *Hadjikyriakou 3338;* 980 m, 27.4.2005, *Christodoulou* (B, CYP 4810, herb. Hadjikyriakou 6281); near Komitiki picnic site [Platys valley], rocky igneous slopes, c. 600 m, 23.4.1999, *Christodoulou* (CYP 4040); 620 m, 22.5.2009, *Christodoulou* (B).

C. S. Christodoulou, G. Hadjikyriakou & R. Hand

Campanula delicatula Boiss. – RDB: CR

+ Div. 8: Giouti Eptakomi, limestone rocks, c. 250 m, 11.5.2009, *Christodoulou & Hand in Hadjikyriakou 7092*. C. S. Christodoulou & R. Hand

Solenopsis antiphonitis Hadjik. & Hand

Chromosome number: $2n = 28$ (two different plants counted; see Fig. 1D). The endemic species has never been counted before. Counts of other *Solenopsis* species revealed $2n = 28$ and $n = 11$, respectively (see Crespo & al. 1998).

Div. 7: Argakin tou Gerospilou, Melounta forest, 20.6. 2007 (seeds), *Hadjikyriakou*; cultivated at the Botanic Garden Berlin-Dahlem until 11.6.2008, *Cubr 45569* (acc. no. 003-06-08-10, garden herbarium B). (ed.)

Plumbaginaceae

Limonium mucronulatum (H. Lindb.) Greuter & Burdet [Syn.: *L. narbonense* sensu Meikle, non Mill.] – RDB: CR

Obviously, the micro-endemic taxon has never been recollected since its discovery by Lindberg (1946). Details on population size are summarized by Christodoulou & Tsintides (in Tsintides & al. 2007).

Div. 4: Larnaka salt lake (near Spyros beach), margins of lake, about sea level, 12.6.1990, *Tsintides* (CYP 953); Spyros beach near Alyki Larnakas, margins of marshy place, 29.7.2006, *Christodoulou in Hadjikyriakou 6925*.

C. S. Christodoulou & T. Tsintides

Limonium echioides (L.) Mill. s.str. [Syn.: *L. echioides* (L.) Mill. subsp. *echioides*]

The two subspecies of *Limonium echioides* s.l. (see Meikle 1985) are morphologically and caryologically clearly distinct (Brullo 1988), a view followed here. However, their distribution areas are not so clearly separated as illustrated by the latter author. Both taxa coexist in Cyprus.

+ Div. 8: Moni Apostolou Andrea, at the coast S of Kastros, S of the small bay, open rocky ground, c. 10 m, 24.5.2005, *Hand 5082 & Hadjikyriakou*.

G. Hadjikyriakou & R. Hand

Primulaceae

Anagallis foemina Mill. [Syn.: *A. arvensis* subsp. *foemina* (Mill.) Schinz & Thell.]

+ Div. 3: Kidasi, Diarizos valley, 50–300 m above bridge towards Kedares, wet ground at the river, c. 300 m, 18.10.2003, *Hand 3975*.

+ Div. 4: Larnaka Salt Lake, NE sandy shore, Acacia scrub, 0–2 m, 17.4.2006, *Seregin A-596 & Privalova;* mentioned without cited specimens for divisions 3 and 4 by Coulot (2000), for division 4 also by Alziar & Guittoneau (2004).

R. Hand, A. Seregin & I. Seregina

Boraginaceae

Heliotropium europaeum L.

+ Div. 5/6: W of Palouriotissa, roadside in industrial and residential area, c. 160 m, 2.10.2007, *Hadjikyriakou 7012*. G. Hadjikyriakou

Rochelia disperma (L. f.) K. Koch

First record for Cyprus. Probably indigenous because the tiny annual can easily be overlooked. Material from Cyprus cannot be attributed clearly to one of the two varieties, var. *disperma* and var. *microcalycina* (Bornm.) J. R. Edm., mentioned for Turkey (Edmondson 1978). Pedicels are more or less deflexed in fruit and calyx is accrescent less than 5 mm but its setules are straight, curved and distinctly hooked speaking in favour of intermediates.

+ Div. 2: Troodos, below the police station, 1710 m, 5.2005, *Christofides* (B) and, with slightly differing label inscription, *Christofides in Hadjikyriakou 6991*. Y. Christofides

Convolvulaceae

Cressa cretica L.

+ Div. 7: Alakati area, coast E of Taoutis, at the westernmost of the sandy bays, field margin close to coast, 2 m, 22.5.2009, *Hand 5547 & Hadjikyriakou*. G. Hadjikyriakou & R. Hand

Solanaceae

Lycium schweinfurthii U. Dammer

This species is supposed to occur on sandy seashores and sand dunes, occasionally on sandy ground inland, up to 30 m altitude (Meikle 1985). However, the two populations recorded below are far from the coast and grow on rocky places and clay. The population at Agia Paraskevi is about 2 km from the sea whereas the population at Trypimeni is about 5 km from coastal areas, both found in either side of the eastern part of Pentadaktylos mountain range.

Div. 7: Agia Paraskevi W of Akanthou, northern foothills of the eastern part of Pentadaktylos mountain range, slope with tall shrubs, c. 200 m, 28.6.2005, *Hadjikyriakou 6672 & Christodoulou*; NW of Trypimeni southern foothills of the eastern part of Pentadaktylos mountain range, field margins and roadside, c. 250 m, 15.10.2005, *Hadjikyriakou 6821*. C. S. Christodoulou & G. Hadjikyriakou

Scrophulariaceae

Linaria pelisseriana (L.) Mill. – RDB: VU

+ Div. 1: above Latsi, among phrygana, c. 30 m, 3.2006, *Christofides in Hadjikyriakou 6997*. Y. Christofides

Chaenorhinum rubrifolium (DC.) Fourr. – RDB: EN

+ Div. 3: Tochni, distinctive slope SSE of village, W of road to Choirokoitia, open gypsum rocks, c. 100 m, *Hand 5466*.

Div. 7: Ypsarovounos forest Mandres Ammochostou, nearly bare gypsum, c. 270 m, 11.5.2009, *Hadjikyriakou 7062*. G. Hadjikyriakou & R. Hand

Scrophularia peregrina L.

+ Div. 1: Drouseia, rocks below, 525 m, 15.3.2007, *Christofides* (B). Y. Christofides

Limosella aquatica L. – RDB: VU

+ Div. 4: Potamos Liopetriou, vernal pools, c. 2 m, 3.4.2009, *Christodoulou in Hadjikyriakou 7065*. C. S. Christodoulou

Veronica bozakmanii M. A. Fisch.

First record for Cyprus. The species is known to occur as close as S Turkey (see Fischer 1978). Habitat in Cyprus seems to be similar to the situation in Turkey. Obviously, the annual species has been overlooked. It is most probably indigenous to Cyprus.

+ Div. 2: Troodos, *Pinus nigra* subsp. *pallasiana* forest, c. 1700 m, 21.5.2005, *Christofides in Hadjikyriakou 6429;* 6.2006, *Christofides in Hadjikyriakou 7001;* same locality, but slightly differing label data: Troodos, below the police station, 1710 m, 6.2006, *Christofides & Makris* (B); same locality, but somewhat differing label inscription: Troodos village, SE edge of village near start of Persefone trail, open *Pinus nigra* forest, semi-shaded, somewhat eutrophicated ground, c. 1700 m, 6.5.2007, *Hand 5359 & Christofides*. Y. Chistofides

Verbenaceae

Verbena supina L. – RDB: VU

+ Div. 3: Dam N of Gypsou, margins of the dam, c. 50 m, 12.4.2006, *Hadjikyriakou 6880 & Christodoulou* [f. *supina*] C. S. Christodoulou & G. Hadjikyriakou

Lamiaceae

Mentha spicata subsp. ***condensata*** (Briq.) Greuter & Burdet [Syn.: *M. spicata* subsp. *tomentosa* (Briq.) Harley, nom. illeg.]

+ Div. 3/4:Kiti dam, dam margins, c. 30 m, 14.7.2006, *Kefalas in Hadjikyriakou 6919*. K. Kefalas

Acinos exiguus (Sm.) Meikle

Meikle (1985) cites the specimen *Sintenis & Rigo 570,* labelled "In mont. supra Melanissiko 26/5 [1880]", which "appears to be fruiting material of *Acinos exiguus*", but he failed to find the locality in any gazetteer or atlas. Melanissiko [Melanisyko] is an abandoned village 1 km S of Chartzeia, division 7. The specimens cited below are again in fruiting condition. The new record confirms that this endemic species is not restricted to the Troodos range.

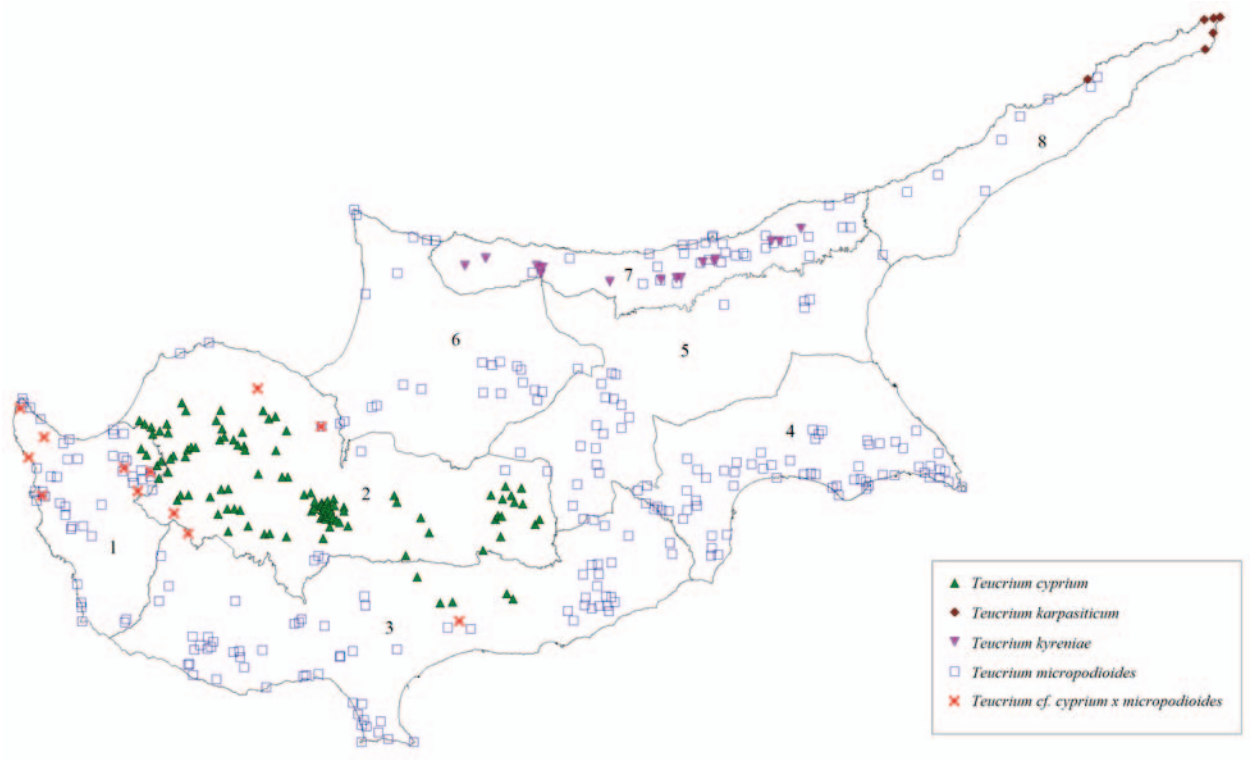

Fig. 7. *Teucrium* sect. *Polium* – distribution of its taxa in Cyprus and the phytogeographical divisions sensu Meikle (1977, 1985).

+ Div. 7: Agios Ilarion, stony limestone slope, 700 m, 9.4.2006, *Kefalas* (CYP 5139); 2 km SW of Agios Ilarion, limestone slopes, sparse phrygana, 770 m, 14.6.2009, *Christodoulou in Hadjikyriakou 7096*. C. S. Christodoulou & K. Kefalas

Teucrium sect. ***Polium*** Schreb.

Taxonomy of the Cypriot members of this section has been discussed in detail by Hadjikyriakou & Hand (2008). Surprisingly, another new taxon has been found in the same year (Hadjikyriakou & Hand, in prep.). The distribution of the four described taxa occurring in Cyprus (plus a possible hybrid) has, however, never been mapped in detail. A research project entitled "Adequacy and effectiveness of the Natura 2000 network in Cyprus" aims for the establishment of a database on the geographical distribution of Cypriot endemic and threatened taxa. Possible gaps in the existing conservation network in Cyprus should be identified and mitigation measures suggested (Christodoulou, in prep.). The database includes information on the distribution of endemic and threatened taxa (coordinates of locations) as well as habitat, altitude, date of record and quantitative data on their populations. Currently, the information in the database is chiefly derived from extensive field surveys throughout the island over the last few years; it will also be supplemented with published records from literature and will be continuously updated with new data. The distribution map presented (Fig. 7) is preliminary, based on more than 600 field records of all four species and one possible hybrid. Yet, the map demonstrates clearly the distribution pattern of these taxa.

Teucrium cyprium is confined to the igneous rocks of the Troodos range, chiefly in division 2 and slightly penetrating into divisions 1, in the vicinity of Lyso (in the west) and 3, from Kakomalis Forest Station to Vasa village (in the south). Generally, it occurs above 400 m to the highest peak of Troodos (Chionistra) at 1950 m; however, it has been recorded as low as 150 m, along Kyparissia river (Lemesos Forest) and 280 m near Kafizides dam and above Argaka village. *T. micropodioides* is widespread in divisions 1 and 3–8 and enters marginally into division 2. It is usually found on calcareous formations but it has been recorded on igneous rocks, mainly on pillow lava, especially to the east, north and northwest foothills of the Troodos range. Its vertical distribution ranges from sea level to 1135 m on the summit of Afamis (in Div. 2); in fact, the area of Afamis-Perapedi is the only place where *T. micropodioides* has been recorded above 900 m. *T. kyreniae* is restricted to the Pentadaktylos range, from Larnakas tis Lapithou (in the west), to Akantou (in the east). It is a chasmophyte, inhabiting fissures of shaded and semi-shaded limestone cliffs and rocks, from 240 to almost 900 m. *T. karpasiticum* is a recently described micro-endemic (Hadjikyriakou & Hand 2008) apparently confined to the eastern part of the Karpasia peninsula, from Ronnas bay to Cape Apostolos Andreas, along the coastal zone.

Teucrium cyprium and *T. kyreniae* are a typical example of closely related taxa replacing one another in

the two mountain ranges, which have different geology and are separated by the low-laying, semi-arid Mesaoria plain. Conversely, the igneous foothill of the Troodos mountain range is the contact zone of *T. micropodioides* and *T. cyprium* where the first one is replaced by the latter. On the Pentadactylos mountain range (Div. 7) *T. micropodioides* and *T. kyreniae* occur sympatrically but colonise different habitats. *T. karpasiticum* seems to be confined to the easternmost tip of the island meeting with *T. micropodioides* near Ronnas bay.

The possibility of hybridization and introgression among *Teucrium* sect. *Polium* in Cyprus has been discussed by Hadjikyriakou & Hand (2008). The plants under consideration exhibit intermediate characters of leaf and indumentum between the two putative parent species, *T. cyprium* and *T. micropodioides*. Such plants have been found mainly along the contact line, that is the transition zone of the igneous rocks of the Troodos mountain range (Troodos Terrane) to Mamonia Terrane and the Circum Troodos Sedimentary Succession; so far there are records from the southwest, south and northwest flanks of the Troodos range. Moreover, plants with intermediate characters have been found in the geologically diverse Akamas peninsula, where *T. micropodioides* is widespread but *T. cyprium* has not been recorded hitherto. These plants have been classified provisionally as *Teucrium* cf. *cyprium* × *micropodioides* (Hadjikyriakou & Hand 2008). C. S. Christodoulou

Plantaginaceae

Plantago ovata Forssk.

+ Div. 8: Giouti Eptakomi, roadside, c. 70 m, 11.5.2009, *Hadjikyriakou 7055*. G. Hadjikyriakou

Plantago bellardii All.

+ Div 4: Aradippou, Rizoelia [National Forest] Park, S slopes below hill top, phrygana on open gypsum slopes, c. 80 m, 7.5.2009, *Hand 5459 & Christodoulou*. C. S. Christodoulou & R. Hand

Amaranthaceae

Amaranthus quitensis Kunth

First record for Cyprus. Its degree of naturalization is still uncertain. Further studies are required. Taxonomy follows Akeroyd (1993a) and Raus (1997).

+ Div. 1: Neo Chorio, Küste c. 1 km SE Loutra tis Aphroditis, Ttakas beach, Wegrand/Kulturland zwischen Hauptstraße und Häusern, 10 m, 5.10.1998, *Buttler 32475 & Diguet*, rev. Raus (B).

K. P. Buttler & T. Raus

Chenopodiaceae

Chenopodium multifidum L.

First record for Cyprus. The originally South American species is known to occur naturalized in several Mediterranean countries (Akeroyd 1993b) but in Cyprus it seems to be only a casual.

+ Div. 3/4: Kiti dam, moist ground in the dam, flooded in winter, c. 30 m, 14.7.2006, *Kefalas in Hadjikyriakou 6922,* det. Hand (B, herb. Hadjikyriakou).

R. Hand & K. Kefalas

Sarcocornia perennis (Mill.) A. J. Scott

+ Div. 5: Trikazi Trikomou, seasonally inundated marsh, 24.5.2005, *Hadjikyriakou 6443 & Hand;* 1 km NW of Salamis, seasonally inundated marsh, c. 2 m, 27.8.2006, *Hadjikyriakou 6930*.
+ Div. 8: Vokolida beach, margins of a small lagoon, about sea level, 18.10.2003, *Hadjikyriakou 5781*.

G. Hadjikyriakou & R. Hand

Polygonaceae

Persicaria lanigera (R. Br.) Soják

+ Div. 4: Achna dam, margins of the dam, c. 30 m, 1.7. 2006, *Kefalas in Hadjikyriakou 6911*.

K. Kefalas

Persicaria maculosa Gray

First record for Cyprus. Though known from several E Mediterranean countries (see Snogerup & Snogerup 1997) very probably a recent introduction in Cyprus and to be classified as "naturalized non-invasive".

+ Div. 2: Prodromos, fruit tree garden, c. 1400 m, 1.8. 1998, *Hadjikyriakou 3665*; Chartzi Prodromos, among cherry trees, c. 1350 m, 4.7.2005, *Christodoulou in Hadjikyriakou 7123;* 6.7. 2005, *Hadjikyriakou 6725*.

C. S. Christodoulou & G. Hadjikyriakou

Persicaria lapathifolia (L.) Delarbre subsp. ***lapathifolia*** [Syn.: *Polygonum lapathifolium* subsp. *maculatum* (Gray) Dyer & Trimen]

+ Div. 4: Achna dam, margins of the dam, c. 30 m, 1.7. 2006, *Kefalas in Hadjikyriakou 6910*.

K. Kefalas

Polygonum arenarium Waldst. & Kit.

First record for Cyprus. As in many other species restricted to dams that have been constructed in the last decades, probably introduced and to be classified as a casual. *Polygonum arenarium* is known to occur in several neighbouring countries (for its taxonomy see also Snogerup & Snogerup 1997).

+ Div. 6: Magglis dam Lefkosia, margins of the dam, c. 200 m, 9.6.1999, *Christodoulou in Hadjikyriakou 4628* (duplicate CYP 4128).

C. S. Christodoulou

Fallopia convolvulus (L.) Á. Löve [Syn.: *Polygonum convolvulus* L.]
Polygonum sensu latissimo (as in Meikle 1985) should be split into several segregate genera and *Fallopia* is one of the least disputed segregates (see, e.g., Webb 1993).
+ Div. 6: Agia Marina, c. 300 m below bridge of main road crossing Peristerona, gravel along river, c. 370 m, 27.4.2007, *Hand 5264*. (ed.)

Thymelaeaceae

Thymelaea passerina subsp. ***pubescens*** (Guss.) Meikle
+ Div. 1: Lysos, above the village, openings of maquis, 600 m, 25.6.1995, *Christodoulou* (CYP 1945); E of Lysos, openings of phrygana dominated by *Coridothymus capitatus,* 600 m, 11.7.1998, *Christodoulou* (CYP 3860); Lysos, SW of village, where European trail is crossing the road to Meladeia, c. 520 m, 16.5.2009, *Christodoulou in Hand 5516*. C. S. Christodoulou

Euphorbiaceae

Euphorbia peplis L.
+ Div. 8: 3 km SE of Rizokarpaso, sandy coast, 12.10. 2008, *Hadjikyriakou 7039;* mentioned without cited specimens for this division by Kefalas (2006a). G. Hadjikyriakou

Euphorbia hierosolymitana Boiss.
Chromosome number: 2*n* = 14 (see Fig. 1E). Obviously, the species has never been counted before but the number is known from several other taxa of the genus (see Goldblatt & Johnson 1979+). Numbers were counted in root tips of germinating seeds in a petri dish; no additional vouchers exists.
Div. 3: Sanida, at the forest track c. 500 m WNW Epilas, terraced young *Pinus* forest with much open rocky ground, c. 300 m, 12.5.2005 (specimen and seeds), *Hand 4937 & Hadjikyriakou*. (ed.)

Euphorbia veneris M. S. Khan
Chromosome number: 2*n* = 20 (see Fig. 1F). The endemic species has never been counted before but some probably related taxa such as *Euphorbia myrsinites* have the same number (see Goldblatt & Johnson 1979+). Numbers were counted in root tips of germinating seeds in a petri dish; no additional vouchers exists.
Div. 2: Prodromos, dry rivulet crossing track NNW West Shoulder, rocky slope, screes, c. 1500 m, 17.5. 2005 (specimen and seeds), *Hand 4999*. (ed.)

Agavaceae

Agave americana L.
+ Div. 8: 3 km NE of Rizokarpaso, sandy seashore, 20.8. 2005, *Hadjikyriakou 6811*. G. Hadjikyriakou

Liliaceae

Allium cupani subsp. ***cyprium*** Meikle
+ Div. 4: Aradippou, SW of village, eastern side of motorway S of Kalo Chorio/Aradippou exit, open gypsum slopes, c. 100 m, 7.5.2009, *Hand 5456 & Christodoulou;* mentioned without cited specimens for this division by Tsintides (1998). C. S. Christodoulou & R. Hand

Allium lefkarense Brullo & al.
An endemic taxon described recently by Brullo & al. (1993). It is not clear whether the type locality "colline presso Lefkara" belongs to division 2 or 3.
+ Div. 3: Tochni, distinctive slope SSE of village, W of road to Choirokoitia, open gypsum rocks, c. 100 m, 19.5.2009, *Hand 5532*. (ed.)

Allium rubrovittatum Boiss. & Heldr.
+ Div. 3: Kalavasos, SSW/below Drapeia, at pool between Drapeia and Vasilikos River, pillow lava slopes, c. 100 m, 25.5.2005, *Hand 5094*. (ed.)

Allium guttatum Steven subsp. ***guttatum*** [Syn.: *A. margaritaceum* var. *guttatum* (Steven) Gay] – RDB: DD
Taxonomy and nomenclature follow Mathew (1996).
Div. 2: Mantra tou Kampiou – Profitis Elias, open pine forest on igneous mountainsides, 640 m, 7.1.2008, *Christodoulou in Hadjikyriakou 7118;* E of Kakopetria, igneous mountainsides with pine forest, 730 m, 22.7.2008, *Christodoulou in Hadjikyriakou 7126*; Selladi tou Mantiliou, igneous mountainside, 650 m, 9.9.2009, *Christodoulou in Hadjikyriakou 7127*. C. S. Christodoulou

Bellevalia trifoliata (Ten.) Kunth
According to Meikle (1985) the species occurs from "sea-level to 1,900 ft."; the following records constitute new maxima in the altitudinal range.
+ Div. 2: Pano Panagia, slope below Moni Panagia Chrysorrogiatissa, under old *Quercus veneris* trees, c. 850 m, 24.3.1998, *Hand 2011;* 22.3.1999, *Hand 2623*. (ed.)

Araceae

Arum sintenisii (Engl.) P. C. Boyce – RDB: VU
+ Div. 3: Agia Aikaterini Kolossi, under Citrus sp., c. 20 m, 20.3.2008, *Hadjikyriakou 7025*. G. Hadjikyriakou

Alismataceae

Damasonium bourgaei Coss.
Obviously, only one taxon of the segregates separated by Rich & Nicholls-Vuille (2001) seems to occur in Cyprus, which confirms the summarizing chorological data in the cited publication.

Div. 1: Drouseia, vernal pools in rocks at the coastal track c. 2.5 km NNW of Panagia tou Flou, c. 20 m, 2.5. 1997, *Hand 1227* (already published in Hand 2000).
Div. 8: Galateia, SE part of dried up lake SE of village, dry bottom of shallow lake, 94 m, 11.5.2009, *Hand 5483, Christodoulou & Hadjikyriakou*.
(ed.)

Zannichelliaceae

Zannichellia palustris L.
+ Div. 3: Drapeia, halfway to Vasilikos river in the pool SW of Drapeia, c. 130 m, 24.4.2007, *Hand 5231*.
(ed.)

Cyperaceae

Cyperus cyprius Post – RDB: VU
A plant of high altitudes, the following gatherings are exceptions. They have been compared with specimens from Prodromos area (c. 1400 m) and Troodidissa (c. 1200 m), no differences have, however, been observed. The isolated occurrence in Lemesos Forest (Div. 3) is paralleled by hygrophilous taxa such as *Epipactis veratrifolia* Boiss. & Hohen. and *Pinguicula crystallina* Sm.
Div. 2: Above Pachyammos village, 160 m, 21.9.2003, *Christodoulou* (CYP 4434).
+ Div. 3: Kyparissia gorge, river margin, c. 240 m, 24.6. 2009, *Christodoulou in Hadjikyriakou 7097*.
C. S. Christodoulou

Cyperus glaber L.
+ Div. 4: Achna dam, margins of the dam, c. 30 m, 10.7. 2006, *Kefalas in Hadjikyriakou 6915*. G. Kefalas

Gramineae

Vulpia brevis Boiss. & Kotschy – RDB: CR
Much rarer in Cyprus than thought before (see summary by T. Hadjikyriakou in Tsintides & al. 2007).
Div. 3: Akrotiri forest, among phrygana, c. 50 m, 16.3. 2007, *Hadjikyriakou 6953*. G. Hadjikyriakou

Avena ventricosa Coss.
+ Div. 3: Akrotiri forest, among phrygana, c. 50 m, 16.3. 2007, *Hadjikyriakou 6952*; mentioned by Alziar (2000) for the border region between divisions 2 and 3. G. Hadjikyriakou

Phalaris aquatica L. – RDB: LC
+ Div. 3: Kivides to Alassa, among shrubs and herbaceous vegetation, c. 300 m, 14.6.2006, *Hadjikyriakou 6896*. G. Hadjikyriakou

Phleum subulatum (Savi) Asch. & Graebn. – RDB: VU
Second recent record of this rare species (see Christodoulou in Tsintides & al. 2007 for summary).
Div. 1: Kritou Tera, by the road down to Polis main road, 500 m from village edge, at conspicuous bend crossing brook, open patches on grassy slope, burnt down c. 2006, c. 450 m, 1.5.2007, *Hand 5320*.
(ed.)

Stipa bromoides (L.) Doerfl.
+ Div. 1: Pegeia forest, pine forest, c. 300 m, 30.5.2001, *Hadjikyriakou 5290*.
+ Div. 5: Gypsou, field boundaries, c. 50 m, 20.8.2005, *Hadjikyriakou 6804*. G. Hadjikyriakou

Aeluropus littoralis (Gouan) Parl.
+ Div. 3: Mazotos, marsh at the river mouth below Petountas church, open brackish ground, 1 m, 18.4.2005, *Hand 4637,* det. Scholz.
+ Div. 8: Galateia, W part of the dry lake SW of the village, open dry mud and reeds, 94 m, 24.5.2005, *Hand 5092 & Hadjikyriakou,* det. Scholz.
G. Hadjikyriakou, R. Hand & H. Scholz

Crypsis aculeata (L.) Ait. – RDB: VU
Third recent location of this vulnerable species in Cyprus (for summary see Papachristophorou in Tsintides & al. 2007).
Div. 4: Voroklini marsh, marshy place, c. 5 m, 31.7.2009, *Christodoulou in Hadjikyriakou 7098*.
C. S. Christodoulou

Dennstaedtiaceae

Pteridium aquilinum (L.) Kuhn
Future studies are required to clarify the infraspecific identity of the Cypriot plants (see, e.g., Thomson 2008).
+ Div. 7: Platanos gorge W of Agios Amvrosios Keryneias, among *Rubus sanctus* and *Cupressus sempervirens,* c. 70 m, 27.5.2006, *Hadjikyriakou 6895;* mentioned by Viney (1996) from the SE side of Agios Amvrosios without cited specimen.
G. Hadjikyriakou

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