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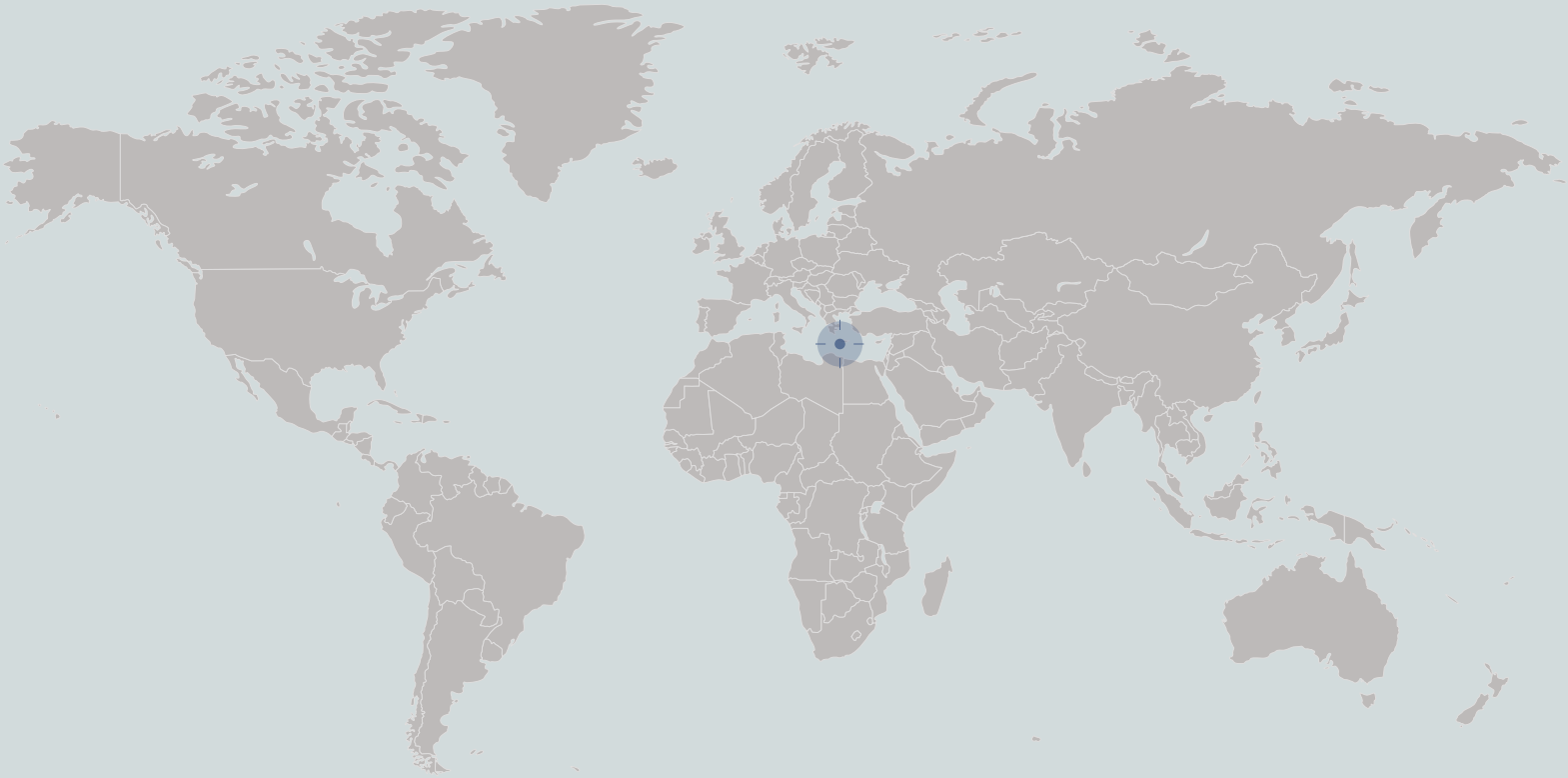
Botanical tour in Crete: new species, new records and high-rank syntaxonomy update

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Résumé :
Ce compte-rendu présente le résultat de plusieurs missions botaniques ayant eu lieu sur l'île de Crète à différente périodes de l'année. Il fait suite à un précédent rapport (BOUCHET, 2016) traitant de la même région. Les espèces sont présentées par site géographique en mettant en avant les espèces endémiques et patrimoniales. Ces voyages ont permis notamment de découvrir une nouvelle espèce pour la Crète, *Viola kitaibeliana* Schult, et de nouvelles stations d'espèces peu répandues. Une mise à jour des principaux syntaxons a été réalisée et fait l'objet d'un paragraphe. Enfin, une analyse des endémiques et espèces patrimoniales est présentée en fin de rapport.

Abstract :
This account presents the results of several botanical trips which took place on the island of Crete at different periods of the year. It follows a former report of this region (BOUCHET, 2016). Species are presented for each location and with special emphasis on endemic species and species of conservation concern. Thus during these trips a new species for Crete is discovered, *Viola kitaibeliana* Schult, as well as new locations of uncommon species. A high-rank syntaxonomy update is also presented. Then an analysis of endemic species and species of conservation concern is made.



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• Introduction

This account presents the results of several botanical trips which took place on the island of Crete at two different periods of the year: 8 to 13 April and 14 to 22 October 2018. It follows a former report of this region (BOUCHET, 2016) involving the same team and thus gives additional information as well as a phytosociological review. Only the western part of the island was visited in spring to complete the former report. Then a visit in autumn on the whole island was an opportunity to observe different species or species at a different stage of their annual cycle. The aim of these trips was to discover the Aegean flora and vegetation, in particular endemic species of the island as well as species of conservation concern. The identification of the species was possible thanks to the Atlas of the Aegean Flora (STRID, 2016a & 2016b) and Flora Europaea (TUTIN *et al.*, 1964-1980). Syntaxa nomenclature follows MUCINA *et al.* (2016) or WAGENSOMMER (2017) as far as thermophilous rocky plant communities are concerned.

Most of the island is made of limestone and dolomite. The climate is considered as mild and Mediterranean with four distinct seasons. Winter is rainy and mild while summer is warm and dry. However, due to its extraordinary geographical and ecological diversity, the island which is extremely mountainous presents a great variety of climates depending on the region and location. Annual rainfall never exceeds 620 mm on the shore while it can reach 1,000 mm and more in the mountains (BARBERO & QUEZEL, 1980). According to EMBERGER (1930), the climate can be considered as varying from arid to humid with intermediate situations, i.e. semi-arid and sub-humid.

The nomenclature of taxa follows that of the Atlas of the Aegean Flora (STRID, 2016a).

Species recorded are presented site by site hereafter.



Rocky area on Korokos peninsula (verbasco arcturi-Campanulion creticae)


Mt Onichas plateau
Korikos peninsula
Afrata, Rodopos
Akrotiri peninsula
Falassarna
W Chania
Kalami
Therisiano Gorges
Mavri
Omalos
Xyloskalo
Lefka Ori
Gious Kambos
Zeus cave
Lissos
Plakias
Karavos
Island of Crete
Elounda
Zakros Gorges

• **Detail report**

Falassarna

Our first stop was at the westernmost part of the island, in Φαλάσαρνα (Falassarna). This area is rocky with sparse vegetation called phrygana dominated by evergreen Mediterranean shrubs.


Falassarna

- *Anthemis rigida;*
- *Ballota pseudodictamnus;*
- *Bupleurum gracile;*
- *Calicotome villosa;*
- *Carlina corymbosa;*
- *Cheilanthes acrostica;*
- *Cichorium spinosum;*
- *Convolvulus oleifolius;*
- *Crepis neglecta;*
- *Daucus guttatus;*
- *Drimia maritima;*
- *Ebenus creticus* (endemic to Crete);
- *Erica manipuliflora;*
- *Galactites tomentosus;*
- *Genista acanthoclada;*
- *Hyoseris scabra;*
- *Inula candida;*
- *Lagurus ovatus;*
- *Lamyropsis cynaroides;*
- *Malcolmia flexuosa;*
- *Malva parviflora;*
- *Medicago disciformis;*
- *Muscari spreitzenhoferi* (endemic to Crete);
- *Notobasis syriaca;*


Ballota pseudodictamnus

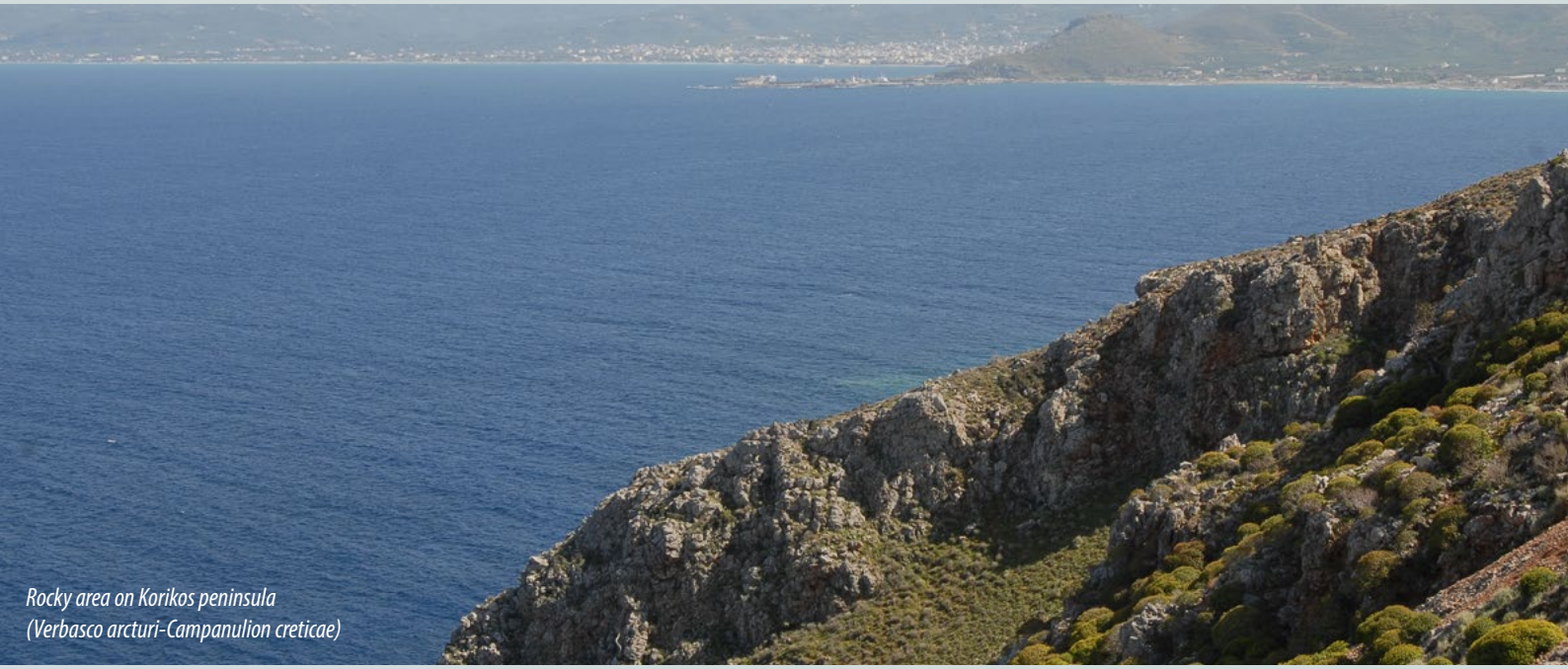

Parietaria cretica

- *Onopordum bracteatum;*
- *Ornithogalum collinum;*
- *Parietaria cretica;*
- *Phagnalon rupestre subsp. graecum;*
- *Phlomis fruticosa;*
- *Picris pauciflora;*
- *Pistacia lentiscus;*
- *Plantago coronopus;*
- *Rhamnus lycioides subsp. oleoides;*
- *Sarcopoterium spinosum;*
- *Satureja thymbra;*
- *Scrophularia heterophylla;*
- *Sedum litoreum;*
- *Smilax aspera;*
- *Thymbra capitata;*
- *Tordylium apulum;*
- *Trifolium nigrescens;*
- *Urospermum picroides;*
- *Valantia hispida;*
- *Valantia muralis.*


Sedum litoreum

Falassama

Further north, in Χερσόνησος Κώρυκος (Korikos peninsula), we discovered a typical example of the *Verbasco arcturi-Campanulion creticae* community, an endemic rocky alliance, including the following species:


Rocky area on Korikos peninsula (Verbasco arcturi-Campanulion creticae)

- *Arabis verna;*
- *Ballota pseudodictamnus;*
- *Delphinium staphysagria;*
- *Euphorbia dendroides;*
- *Origanum dictamnus* (endemic to Crete)*;*
- *Orobanche pubescens;*
- *Petromarula pinnata* (endemic to Crete)*;*
- *Scrophularia peregrina;*
- *Stachys spinulosa.*


Stachys spinulosa

The plateau is covered with a phrygana dominated by *Genista acanthoclada* and *Ballota pseudodictamnus* but also by open swards mainly composed of annual species:

- *Biscutella didyma;*
- *Campanula erinus;*
- *Knautia integrifolia subsp. mimica;*
- *Linum pubescens subsp. sibthorpianum;*
- *Moraea mediterranea;*
- *Nigella damascena.*


Thermomediterranean phrygana on Korikos peninsula (Hyperico - Genistetalia acanthocladae)

Omalos Viannou

We then headed to Ομαλός Βιάννου (Omalos Viannou), a Natura 2000 site and an area bounded by the Omalos Viannou mountain plain and the Erganos stream to the north, and the southern peaks of Dikti to the south. This is where we found Mediterranean ponds at an elevation of 1,060 m. The most characteristic vegetation community was the *Isoetion* surrounded by other accompanying species:


Mediterranean pond in Omalos Viannou (Isoetion)

- *Berberis cretica;*
- *Eleocharis palustris;*
- *Isoetes hystrix;*
- *Ranunculus lateriflorus;*
- *Ranunculus peltatus;*
- *Romulea bulbocodium;*
- *Scilla nana* (endemic to Crete).


Isoetes hystrix


Ranunculus peltatus

Xyloskalo

Further south-east, on the way to the Samaria Gorge, we toured around the Ξυλόσκαλο resort (Xyloskalo). This was the perfect place to discover the open mountainous woodland dominated by the Mediterranean Cypress (*Cupressus sempervirens*) and the Cretan Maple (*Acer sempervirens*) belonging to the *Berberido creticae-Juniperion foetidissimae* community. It was also one of the rare locations where *Zelkova abelicea* was to be found: this is the only endemic tree species of the island.



Here are the few species we were able to discover:

- *Acer sempervirens;*
- *Astragalus depressus;*
- *Cupressus sempervirens;*
- *Cynosurus effusus;*
- *Orchis pauciflora;*
- *Saxifraga rotundifolia;*
- *Zelkova abelicea* (endemic to Crete).

In rocky ground some species relying to the xeric oromediterranean calcicolous cushion-tragacanthic scrub of western Crete (*Verbascion spinosi*) also occurred:

- *Aethionema saxatile subsp. graecum;*
- *Aubrieta deltoidea;*
- *Verbascum spinosum* (endemic to Crete).



Zelkova abelicea



Acer sempervirens


Verbascum spinosum

Another conspicuous species was to be found on the Omalos mountain plain in spring: *Tulipa bakeri,* an endemic species, though possibly a stabilised hybrid.


Tulipa bakeri


Aubrieta deltoidea

Akrotiri peninsula

Back on the lowland, we crossed the Χερσόνησος Ακρωτήρι (Akrotiri peninsula), north east of Χανιά (Chania) to the Ιερά Μονή Καθολικού (Katholiko monastery). Going down the trail to the beach, we crossed amazing gorges with a high diversity of rocky plant species belonging to the *Verbasco arcturi-Campanulion creticae*, the typical low-elevation rocky community of western Crete:


Katholiko monestary


Scutellaria sieberi


Verbascum arcturus

- *Achillea cretica;*
- *Anchusella variegata;*
- *Anogramma leptophylla;*
- *Bellium minutum;*
- *Brassica cretica subsp. cretica* (endemic to Crete);
- *Crupina crupinastrum;*
- *Ebenus cretica* (endemic to Crete);
- *Enarthrocarpus arcuatus;*
- *Ephedra foemina;*
- *Helichrysum orientale;*
- *Inula candica* (endemic to Greece)
- *Lactuca acanthifolia;*
- *Lamyropsis cynaroides;*
- *Matthiola incana;*
- *Petromerula cretica* (endemic to Crete);
- *Rosularia serrata;*
- *Scutellaria sieberi* (endemic to Crete);
- *Silene sedoides;*
- *Symphytum creticum* (endemic to Greece);
- *Valerianella echinata;*
- *Verbascum arcturus* (endemic to Crete).

Kalami


Galium fruticosum


Nepeta scordotis

On the northern coast, west of Καλάμι (Kalami), at the bottom of a cliff, several species drew our attention:

- *Achillea cretica;*
- *Ferulago nodosa;*
- *Galium fruticosum* (most probably endemic to Crete);
- *Hypericum empetrifolium;*
- *Lathyrus annuus;*
- *Nepeta scordotis* (endemic to Crete);
- *Teucrium divaricatum.*

Rodopos peninsula

Our next destination was Χερσόνισος Ροδοπού (Rodopos peninsula).


Rodopos peninsula

This is where we found *Solenopsis minuta* subsp. *annua*: this plant is mostly found on western Crete (endemic) (CRESPO *et al*., 1998). It is one of the species that could be associated to the *Adiantetea* community.


Solenopsis minuta subsp. annua

Further north, along Όνυχας Όρος (Mount Onichas), we crossed lowland phrygana.
Here are some more species occurring in the peninsula:

- *Adonis cretica* (endemic to the S Aegean area);
- *Arenaria muralis;*
- *Arum concinnatum;*
- *Calicotome villosa;*
- *Centaurea argentea* (endemic to Crete and Kithira);
- *Coronopus squamatus;*
- *Crepis pusilla;*
- *Crepis tybakensis* (endemic to Aegean Islands);
- *Cynara cornigera;*
- *Daucus guttatus;*
- *Ferulago thyrsiflora* (endemic to Crete);
- *Genista acanthoclada;*
- *Mentha pulegium;*
- *Nepeta melissifolia* (endemic to Crete);
- *Ptilostemon chamaepeuce;*
- *Sagina apetala;*
- *Thymbra capitata;*
- *Trifolium resupinatum;*
- *Trifolium tomentosum;*
- *Valeriana asarifolia* (endemic to the S Aegean area);
- *Verbascum macrurum.*


Adonis cretica - Photo J.-P. Brizard


Ferulago thyrsiflora - Photo L. Teulade

Chania beach



Sandy coast in Chania - Photo L. Teulade

Sandy coasts have a very specific flora. Actually, the psammophytic vegetation in Crete is patchy and fragmentary. It belongs to the *Ammophilion* Br.-Bl. 1921 community: the *Agropyron-Diotis* group was the name provisionally proposed by ZOHARY & HORSHAN (1965). Here is the composition of this community on Chania beach:

- *Allium commutatum;*
- *Centaurea spinosa;*
- *Cutandia maritima;*
- *Cyperus capitatus;*
- *Eryngium maritimum;*
- *Medicago marina;*
- *Otanthus maritimus;*
- *Pancratium maritimum;*
- *Pseudorlaya pumila;*
- *Silene colorata;*
- *Thymelaea hirsuta.*



Cyperus capitatus

Mavri

Our next destination was a mountainous area inland south of Chania called Μαύρη (Mavri).



Surroundings of Mavri

Here we found upper level communities of the *Rhamno lycioidis–Quercetum cocciferae* community as mentioned by TSIOURLIS *et al*. (2009). More interestingly this is the place where we discovered *Viola kitaibeliana*: this is the first record of the species on the island as confirmed by STRID (pers. comm.). *Viola kitaibeliana* is widespread on mainland Greece and also found on a few other islands including Lesvos but had never been recorded in Crete before.

- *Acer sempervirens;*
- *Acinos alpinus;*
- *Arabis auriculata;*
- *Aristolochia sempervirens;*
- *Arum creticum;*
- *Asphodelina lutea;*
- *Cardamine graeca;*
- *Cupressus sempervirens;*
- *Dryopteris pallida;*
- *Erica arborea;*
- *Gagea amblyopetala;*
- *Lamium garganicum subsp. striatum;*
- *Orchis pauciflora;*
- *Orchis quadripunctata;*
- *Orchis tridentata;*
- *Paeonia clusii* (endemic to the Dodecanese and Crete);
- *Saxifraga rotundifolia subsp. chrysospleniifolia;*
- *Scilla nana* (endemic to Crete);
- *Viola kitaibeliana* (new for Crete).


Berberis cretica


Cardamine graeca


Viola kitaibeliana

Gorge Therisiano

Back to the north we stopped in the Θερισιανό Φαράγγι (Gorge Therisiano) where chasmophytic species occur, including many endemic species. It is also one of the rare locations where the Holm Oak (*Quercus ilex*) is to be found on the island:

- *Arenaria muralis;*
- *Brassica cretica subsp. cretica* (endemic to Crete);
- *Centaurea argentea* (endemic to Crete and Kithira);
- *Centaurea redempta* (endemic to Crete);
- *Ceratonia siliqua;*
- *Cionura erecta;*
- *Crepis tybakensis* (endemic to Aegean Islands);
- *Ferulago thyrsiflora* (endemic to Crete);
- *Galium fruticosum* (most probably endemic to Crete);
- *Lactuca acanthifolia;*
- *Legousia pentagonia;*
- *Melica uniflora;*
- *Origanum dictamnus* (endemic to Crete);
- *Petromarula pinnata* (endemic to Crete);
- *Quercus ilex;*
- *Salvia fruticosa;*
- *Scutellaria sieberi* (endemic to Crete);
- *Securigera globosa* (endemic to Crete);
- *Staehelina petiolata* (endemic to Crete);
- *Teucrium divaricatum.*


Securigera globosa


Staehelina petiolata

Sougia harbour and Lissos

Then we headed to the south coast between Λιμάνι Σούγιας (Sougia harbour) and Λίσσος (Lissos). We first went up a canyon to a plateau before going down to a small beach.

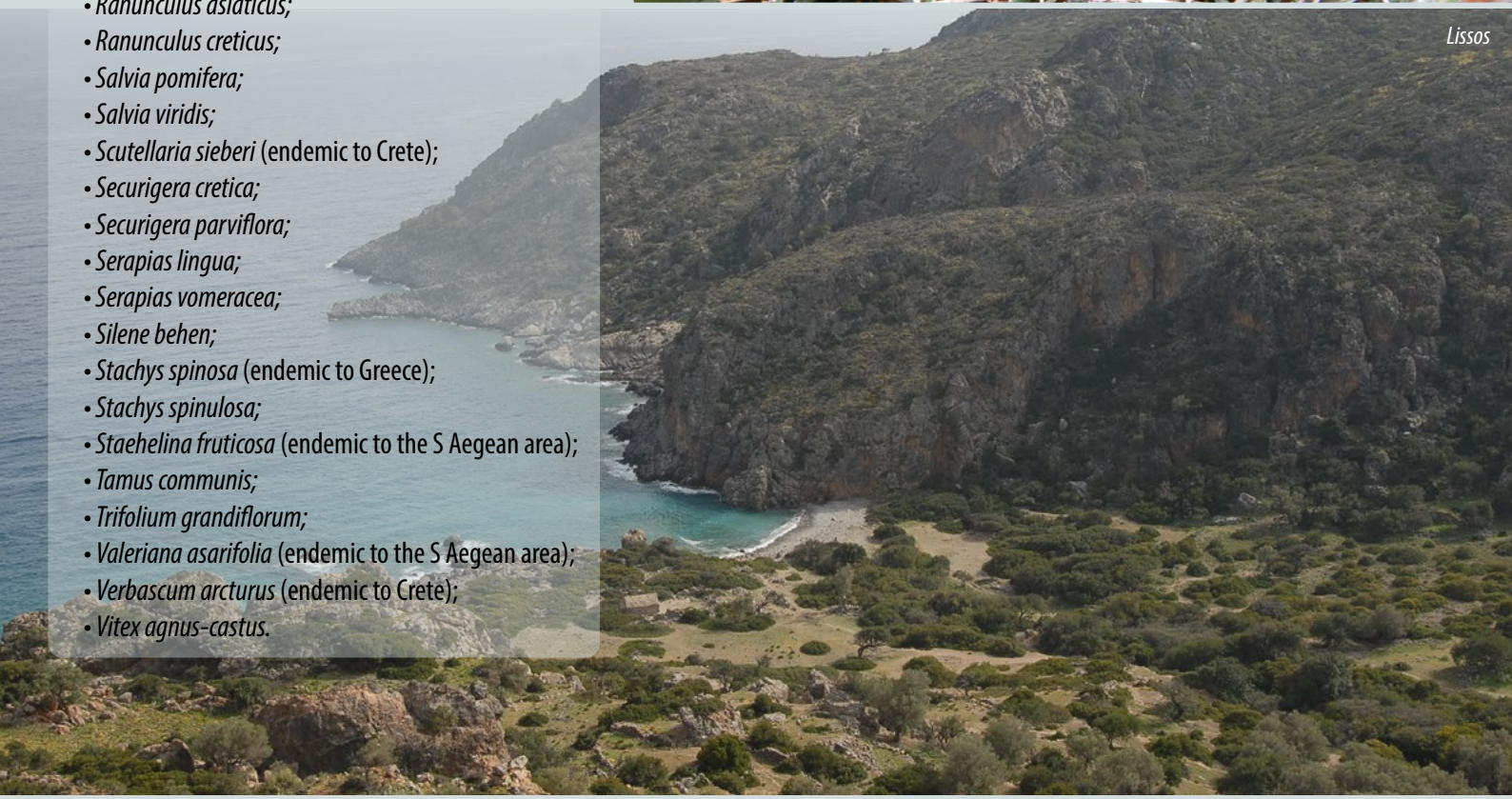

Lissos

The rocky low-altitude vegetation belongs to the *Verbasco arcturi-Campanulion creticae* community:

- *Anthyllis hermanniae;*
- *Ballota pseudodictamnus;*
- *Capparis spinosa;*
- *Caucalis platycarpos;*
- *Centaurea argentea* (endemic to Crete and Kithira);
- *Convolvulus althaeoides;*
- *Dracunculus vulgaris;*
- *Ebenus creticus* (endemic to Crete);
- *Euphorbia dendroides;*
- *Ferulago thyrsiflora* (endemic to Crete);
- *Galium fruticosum* (most probably endemic to Crete);
- *Gagea graeca;*
- *Inula candida* (endemic to Greece);
- *Lamyropsis cynaroides;*
- *Lithodora hispidula subsp. hispidula* (endemic to the S. Aegean area);
- *Ophrys sphegodes;*
- *Origanum dictamnus* (endemic to Crete);
- *Petromarula pinnata* (endemic to Crete);
- *Phlomis fruticosa;*
- *Pinus brutia;*
- *Prasium majus;*
- *Ranunculus asiaticus;*
- *Ranunculus creticus;*
- *Salvia pomifera;*
- *Salvia viridis;*
- *Scutellaria sieberi* (endemic to Crete);
- *Securigera cretica;*
- *Securigera parviflora;*
- *Serapias lingua;*
- *Serapias vomeracea;*
- *Silene behen;*
- *Stachys spinosa* (endemic to Greece);
- *Stachys spinulosa;*
- *Staehelina fruticosa* (endemic to the S Aegean area);
- *Tamus communis;*
- *Trifolium grandiflorum;*
- *Valeriana asarifolia* (endemic to the S Aegean area);
- *Verbascum arcturus* (endemic to Crete);
- *Vitex agnus-castus.*


Staehelina fruticosa


Stachys spinosa


Lissos

Lefka Ori

The next destination took us to one of the highest mountains of the island: the Λευκά Όρη (Lefka Ori meaning «White Mountain»), the highest point reaching 2,454 m. Above 1,400 m of elevation, vegetation communities are dominated by the Saturejo *spinosae-Scutellarietalia hirtae* community which is an order endemic to Crete. Many species were recorded on this picturesque site:



Lefka Ori

- *Acantholimon androsaceum* (endemic to Crete);
- *Anchusa cespitosa* (endemic to Lefka Ori);
- *Anthemis rigida;*
- *Asplenium aegeum;*
- *Astragalus angustifolius;*
- *Bufonia stricta* (endemic to Greece);
- *Centaurea idaea* (endemic to Crete);
- *Colchicum cretense* (at high altitude) (endemic to Cretan mountains);
- *Colchicum pusillum* (at low altitude);
- *Crepis sibthorpiana* (endemic to Crete);
- *Crocus laevigatus* (endemic to Greece);
- *Dianthus sphacioticus* (endemic to Lefka Ori);
- *Draba cretica* (endemic to Cretan mountains);
- *Erica manipuliflora;*
- *Euphorbia herniariifolia;*
- *Helianthemum hymettium* (endemic to Greece);
- *Helichrysum italicum;*
- *Hypericum empetrifolium subsp. tortuosum* (endemic to Crete);
- *Lomelosia sphaciotica subsp. sphaciotica* (endemic to Lefka Ori);
- *Ormosolenia alpina;*
- *Paronychia macrosepala;*



Crocus laevigatus



Colchicum cretense

- *Petrorhagia illyrica subsp. taygetea* (endemic to Greece);
- *Ranunculus bullatus;*
- *Satureja thymbra;*
- *Scilla autumnalis;*
- *Scutellaria hirta* (endemic to Crete);
- *Sternbergia lutea subsp. greuteriana;*
- *Taraxacum megalorhizon;*
- *Thesium bergeri;*
- *Thymbra capitata;*
- *Verbascum spinosum* (endemic to Crete);
- *Veronica thymifolia* (endemic to Greece).


Anchusa cespitosum


Acantholimon androsaceum


Scutellaria hirta


Lomelosia sphaciotica subsp. sphaciotica


Lefka Ori

Karavos and Plakias

On the southern coast, autumn is the right time to discover species of the *Cichorio spinosi-Limonion roridi* (BRULLO *et al*., 2017) community growing on rocky coasts. This is what we recorded in Κάραβος (Karavos):


Karavos

- *Capparis spinosa;*
- *Dianthus fruticosus subsp. creticus* (endemic to Crete);
- *Limonium roridum.*

Further west and south of Πλακιάς (Plakias) extends a small peninsula covered with phrygana:

- *Biarum davisii* (endemic to Crete);
- *Carlina gummifera;*
- *Convolvulus dorycnium subsp. dorycnium;*
- *Daphne gnidioides;*
- *Euphorbia acanthothamnos;*
- *Euphorbia characias;*
- *Euphorbia dendroides;*
- *Inula crithmoides;*
- *Lamyropsis cynaroides;*
- *Phlomis cretica;*
- *Phlomis fruticosa;*
- *Prasium majus;*
- *Sarcopoterium spinosum.*


Dianthus fruticosus subsp. creticus


Limonium roridum


Daphne gnidioides


Biarum davisii

Gious Kampos

On our way to Ψηλορείτης (the Mount Ida), we stopped in Γιους Κάμπος (Gious Kampos) to discover another endemic crocus: *Crocus oreocreticus.*


Gious Kampos


Crocus oreocreticus

Psiloritis mountain

The Psiloritis mountain (Mount Ida) in central Crete includes the highest point of the island reaching 2,456 m high.


Psiloritis mountain

This is where we discovered the *Astragalion cretici* community which extends from central to eastern Crete at high altitude:

- *Acantholimon androsaceum* (endemic to Crete);
- *Acinos sp.;*
- *Anthemis abrotanifolia* (endemic to Crete);
- *Asparagus aphyllus;*
- *Asplenium scolopendrium subsp. antri-jovis;*
- *Astragalus angustifolius;*
- *Astragalus creticus subsp. creticus;*
- *Astragalus depressus;*
- *Atriplex patula;*
- *Berberis cretica;*
- *Bolanthus creutzburgii subsp. creutzburgii* (endemic to Crete);
- *Centaurea idaea* (endemic to Crete);
- *Colchicum cretense* (endemic to Cretan mountains);
- *Crocus laevigatus* (endemic to Greece);
- *Crocus oreocreticus* (endemic to Crete);
- *Cystopteris fragilis;*
- *Phlomis lanata* (endemic to Crete);
- *Pimpinella tragium;*
- *Polygonum idaeum* (endemic to Crete);
- *Silene antri-jovis* (endemic to Crete);
- *Sternbergia lutea;*
- *Teucrium alpestre* (probably endemic to Crete);
- *Viola alba subsp. cretica* (endemic to Crete).


Astragalus creticus and *Astragalus angustifolius*


Centaurea idea


Anthemis abrotanifolia


Bolanthus creutzburgii


Idaean Cave

Elounda saltmarshes



Elounda shore

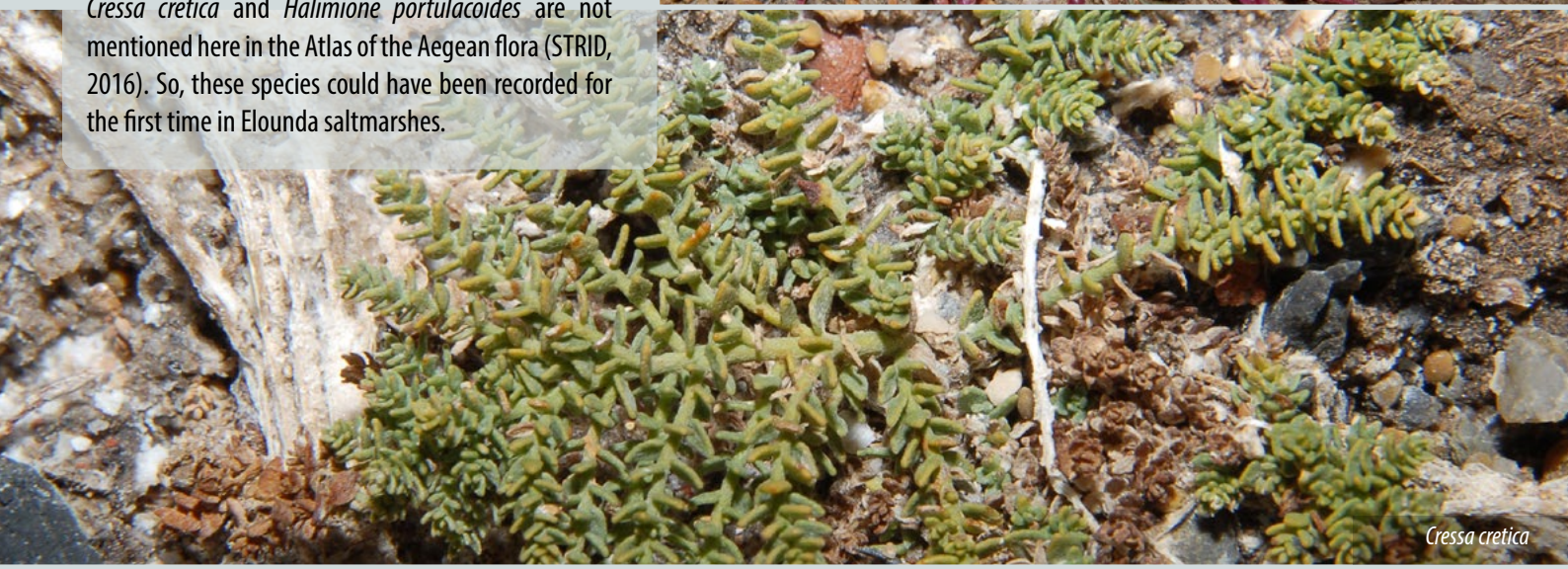
Back to the northern coast, we stopped in Σχίσμα Ελούντας (Elounda) saltmarshes. This is a place where the *Salicornietea* community is to be found, even if this class is poorly represented:

- *Beta vulgaris subsp. adanensis;*
- *Cressa cretica;*
- *Halimione portulacoides;*
- *Mesembryanthemum nodiflorum;*
- *Salicornia europaea.*

Cressa cretica and *Halimione portulacoides* are not mentioned here in the Atlas of the Aegean flora (STRID, 2016). So, these species could have been recorded for the first time in Elounda saltmarshes.



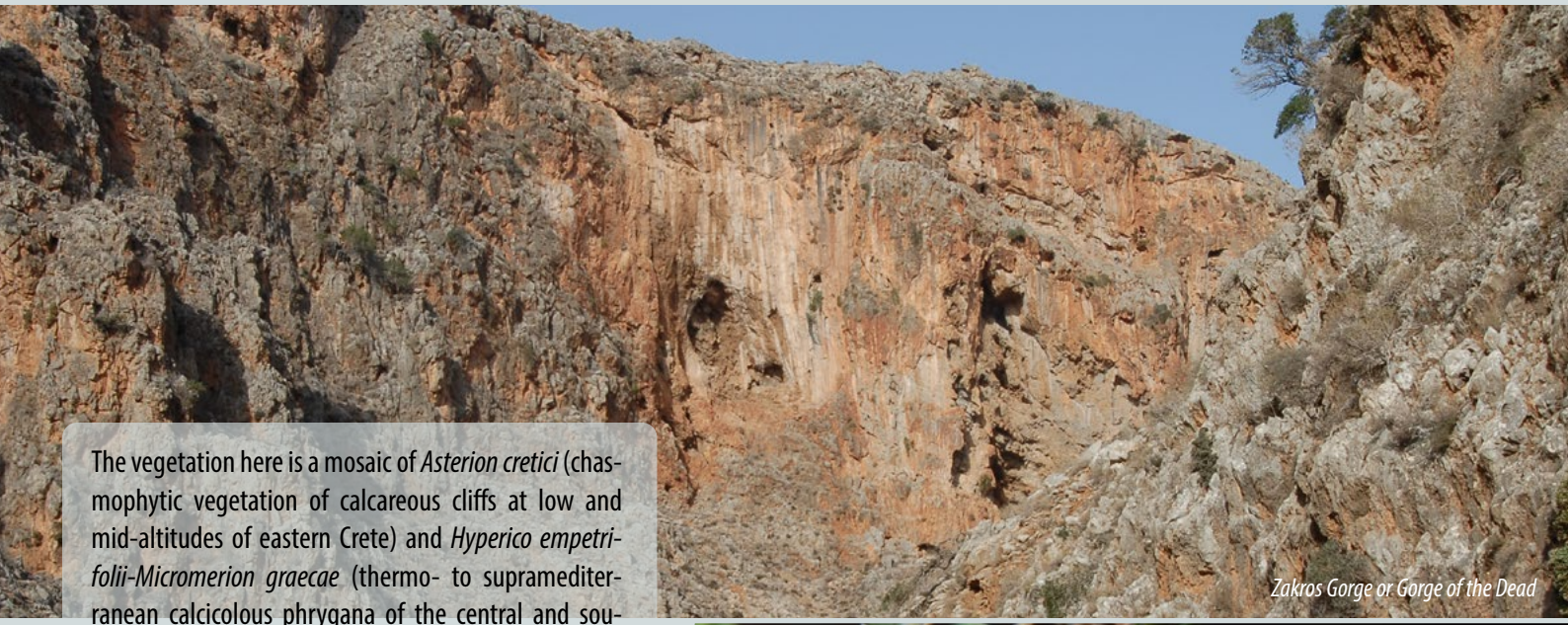
Salicornia europaea



Cressa cretica

Kato Zakros

Our final destination was Κάτω Ζάκρος (Kato Zakros) on the eastern part of the island. This site is a rocky and narrow valley passing through hills.



Zakros Gorge or Gorge of the Dead

The vegetation here is a mosaic of *Asterion cretici* (chasmophytic vegetation of calcareous cliffs at low and mid-altitudes of eastern Crete) and *Hyperico empetrifolii-Micromerion graecae* (thermo- to supramediterranean calcicolous phrygana of the central and southern regions of Hellas, the Aegean region and Crete). Here are some of the species recorded:

- *Capparis spinosa;*
- *Cynara cornigera;*
- *Delphinium staphysagria;*
- *Dianthus fruticosus subsp. sitiacus* (endemic to Crete);
- *Euphorbia characias;*
- *Euphorbia dendroides;*
- *Helichrysum orientale;*
- *Hypericum empetrifolium;*
- *Linum arboreum;*
- *Origanum onites;*
- *Phillyrea media;*
- *Phlomis sp.;*
- *Ruta chalepensis;*
- *Satureja thymbra;*
- *Scorzonera sp.;*
- *Stachys spinosa* (endemic to Greece);
- *Staehelina fruticosa* (endemic to the S Aegean area);
- *Thymbra capitata.*

In the gravelly bed of the watercourse, it is interesting to notice the abundance of *Nerium oleander* and *Vitex agnus-castus.*



Satureja thymbra



Staehelina fruticosa



Riverbanks with Vitex agnus-castus

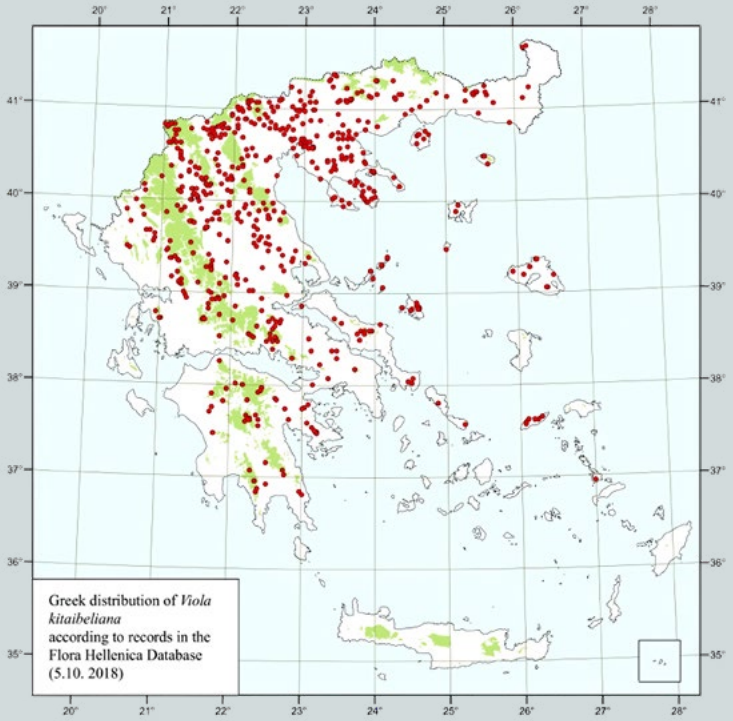
• Synthesis and Analysis

New species and new records for the island

During these trips one species new for the island was discovered as confirmed by A. STRID (pers. comm.):

• *Viola kitaibeliana* Schult

This South Eurasian species was known from most of Greece including Thasos, Agios Evstratios, Samothraki, Alonnisos, Kira Panagia, Gioura, Skanzoura, Skiros, Lesvos, Evvia, Andros, Tinos, Ikaria and Kalimnos. So, this species is new for the whole South Aegean area even if species widespread in Peloponnisos could usually extend to western Crete. Furthermore, it must be pointed out that this is the southernmost location this species has yet been recorded in the Aegean islands.



The following map shows the distribution of the species across the Aegean area according to the Flora Hellenica Database dated 5.10.2018 and provided by STRID.

Historically, only *Viola rauliniana*, a close-related taxon was recorded in Crete (ERBEN, 1985). This latter species is clearly different, having even smaller flowers, entire leaves and reduced stipules. *V. rauliniana* is mainly a species of thorncushion communities in the Cretan mountains, whereas *V. kitaibeliana* occurs in a variety of semi-natural habitats at lower altitude (STRID, pers. comm.)



This population was discovered in the *Rhamno lycioidis–Quercetum cocciferae* community in semishaded conditions at an elevation of 1,180 m in Mount Mavri.

Consequently, the species has been added to the Flora Hellenica database.

Two more species were recorded in Elounda saltmarshes for the first time:

• *Cressa cretica* L. ;
• *Halimione portulacoides* (L.) Aellen

These two species grow in saltmarshes and are scattered on the island.
Cressa cretica has only been recorded on the eastern half of Crete along the shore while *Halimione portulacoides* grows on the northern and the eastern coast of the island.

• The high-rank syntaxa of Crete

This report is an opportunity to update the high-rank syntaxa classification on the island taking into account the last papers and syntheses available:

MOLINIO-ARRHENATHERETEA Tx. 1937
- *HOLOSCHOENETALIA* Br.-Bl. *ex* Tchou 1948
- *Brachypodio sylvatici-Holoschoenion romani* Gradstein *et* Smittenberg 1977

JUNIPERO-PINETEA SYLVESTRIS Rivas-Mart. 1965 *nom. invers. propos.*
- *BERBERIDO CRETICAE-JUNIPERETALIA EXCELSAE* Mucina *ordo nov. hoc loco*
- *Berberido creticae-Juniperion foetidissimae* S. Brullo *et al.* 2001

QUERCETEA ILICIS Br.-Bl. *ex* A. Bolòs *et* O. de Bolòs *in* A. Bolòs y Vayreda 1950
- *QUERCETALIA CALLIPRINI* Zohary 1955
- *Aceri sempervirentis-Cupression sempervirentis* Barbero *et* Quézel *ex* Quézel *et al.* 1993
- *PINETALIA HALEPENSIS* Biondi, Blasi, Galdenzi, Pesaresi *et* Vagge *in* Biondi *et al.* 2014
- *Salvio fruticosae-Pinion brutiae* Konstantinidis, Mucina *et* Bergmeier *ined.* (KONSTANTIDINIS *et al.*, 2012)
- *PISTACIO LENTISCI-RHAMNETALIA ALATERNI* Rivas-Mart. 1975
- *Ceratonio-Pistacion lentisci* Zohary *et* Orshan 1959 (TSIOURLIS *et al*, 2016)
- *Phlomido fruticosae-Euphorbion dendroidis* Mucina *et* Dimopoulos *all. nov. hoc loco*

ONONIDO-ROSMARINETEA Br.-Bl. *in* A. Bolòs y Vayreda 1950
- *HYPERICO EMPETRIFOLII-GENISTETALIA ACANTHOCLADAE* Mucina *ordo nov. hoc loco*
- *Hyperico empetrifolii-Micromerion graecae* Barbero *et* Quézel 1989

CISTO-LAVANDULETEA STOECHADIS Br.-Bl. *in* Br.-Bl. *et al.* 1940
- *LAVANDULO STOECHADIS-HYPERICETALIA OLYMPICI* Mucina *ordo nov. hoc loco*
- *Helichryso barrelieri-Phagnalion graeci* (Barbero *et* Quézel 1989) R. Jahn *in* Mucina *et al.* 2009

LYGEO SPARTI-STIPETEA TENACISSIMAE Rivas-Mart. 1978 *nom. conserv. propos.*
- *LYGEO-STIPETALIA TENACISSIMAE* Br.-Bl. *et* O. de Bolòs 1958
- *Scorzonero creticae-Lygeion sparti* BRULLO *et al.*, 2002

HELIANTHEMETEA GUTTATI Rivas Goday *et* Rivas-Mart. 1963
- *VULPIETALIA* Pignatti 1953
- *Medicagini-Triplachnion nitentis* Mayer 1995

DAPHNO-FESTUCETEA Quézel 1964
- *SATUREJO SPINOSAE-SCUTELLARIETALIA HIRTAE* Dimopoulos *et al. ex* Bergmeier 2002 (apparently endemic to Crete)
- *Astragalion cretici* Bergmeier 2002
- *Verbascion spinosi* Zaffran *ex* Bergmeier 2002
- *Colchico cretensis-Cirsion morinifolii* Bergmeier 2002

ALNO GLUTINOSAE-POPULETEA ALBAE P. Fukarek *et* Fabijanić 1968 (GRADSTEIN & SMITTENBERG, 1977)

SAGINETEA MARITIMAE Westhoff *et al*. 1962
- *SAGINETALIA MARITIMAE* Westhoff *et al.* 1962 (GEHU *et al.*, 1987)
- *Sileno sedoidis-Catapodion loliacei* de Foucault *et* Bioret 2010

CRITHMO MARITIMI-LIMONIETEA Br.-Bl. *in* Br.-Bl., Roussine & Nègre 1952
CRITHMO MARITIMI-LIMONIETALIA Molinier 1934
Cichorio spinosi-Limonion roridi Brullo & Guarino 2000

AMMOPHILETEA ARENARIAE Br.-Bl. *et* Tx. *ex* Westhoff *et al*.1946
AMMOPHILETALIA Br.-Bl. *et* Tx. *ex* Westhoff *et al*. 1946
Ammophilion Br.-Bl. 1921

ADIANTETEA Br.-Bl. *et al*. 1952

ASPLENIETEA TRICHOMANIS (Br.-Bl. *in* Meier *et* Br.-Bl. 1934) Oberd. 1977
ONOSMETALIA FRUTESCENTIS Quézel 1964
Verbasco arcturi-Campanulion creticae all. nov. prov. (endemic to Crete)
Asterion cretici Zaffran *ex* Bergmeier *et al*. 2011 (endemic to Crete)
Campanulion jacquinii Zaffran *all. nov. prov.* (endemic to Crete) (DIMOPOULOS *et al*., 1997; WAGENSOMMER, 2017)

DRYPIDETEA SPINOSAE Quézel 1964
Drypidetalia spinosae Quézel 1964
Alysso sphaciotici-Valantion apricae Bergmeier 2002 (endemic to Crete)

JUNCETEA MARITIMI Br.-Bl. *in* Br.-Bl. *et al.* 1952

SALICORNIETEA FRUTICOSAE Br.-Bl. *et* Tx. *ex* A. Bolòs y Vayreda *et* O. de Bolòs *in* A. Bolòs y Vayreda 1950 (almost extinct according to GEHU *et al.* (1987))
SALICORNIETALIA FRUTICOSAE Br.-Bl. 1933
Salicornion fruticosae Br.-Bl. 1933

POTAMOGETONETEA Klika *in* Klika *et* Novák 1941

ISOETO-NANOJUNCETEA Br.-Bl. *et* Tx. *in* Br.-Bl. *et al.* 1952

PHRAGMITO-MAGNOCARICETEA Klika *in* Klika *et* Novák 1941

ARTEMISIETEA VULGARIS Lohmeyer *et al. in* Tx. *ex* von Rochow 1951
ELYTRIGIO REPENTIS-DITTRICHIETALIA VISCOSAE Mucina ined.
Arundion collinae S. Brullo, Giusso, Guarino *et* Sciandello *in* S. Brullo *et al.* 2010

In order to have a general overview of the island here is a map of the vegetation (from KYPRIATOKIS *et al*., 1996):



• Endemism

Here is an interesting table (modified and enhanced from JAHN, 2003) giving an interesting analysis of the Cretan vascular flora and also highlighting the endemic species and subspecies (updated from JAHN & SCHÖNFELDER, 1995).

	All taxa		Endemic taxa		Endemic subspecies of non endemic species	
	Number	Percentage	Number	Percentage	Number	Percentage
Species	1,890	94.5	165	8.2		
Subspecies	111	5.5	9	0.5		
Total	2,001	100	174	8.7	33	1.6

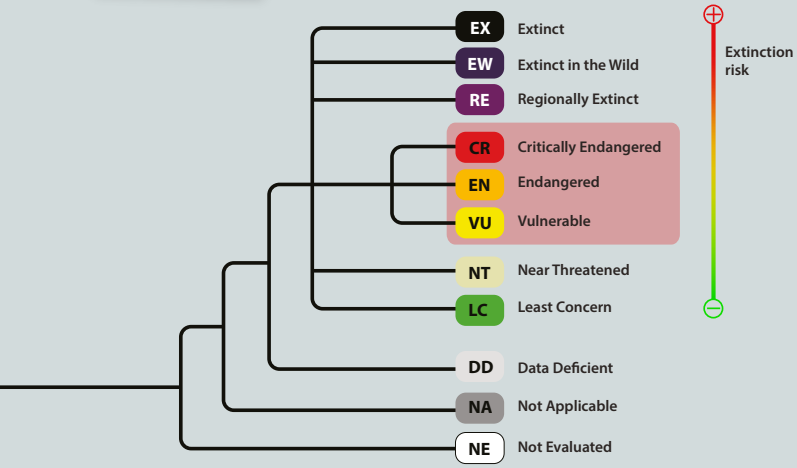
The number of endemic species of Crete increases in the mountains, above 1,400 m, due to high geodiversity and more or less constant long-term climatic conditions that enhance their role as refuges for relict taxa (JAHN, 2003). At this level, endemism may reach 25% to 31% of the total flora. Species numbers of mountain endemics decline from west to east due to a decrease in area and altitude of the mountain ranges. They remain low on elevations of 1,000 to 1,200 m, where the natural timberline is not reached. Numbers of lowland endemics are highest in the well isolated Sitia peninsula, on the eastem part of Crete.
A more recent paper (MENTELI *et al*., 2019, updatep from FIELDING *et al*., 2005) assesses the total amount of endemic species and subspecies to 223 but the proportions given in the table are most probably still valid.
The total number of endemic taxa recorded during those trips was 48. Additionally, few more species endemic to the Southern Aegean area, to Crete and Cyprus or to Greece were recorded (see appendix 1).

As for vegetation communities, few of them are also endemic to the island:

- *Verbasco arcturi-Campanulion creticae all. nov. prov.*
- *Saturejo spinosae-Scutellarietalia hirtae* Dimopoulos *et al. ex* Bergmeier 2002 (including three alliances).

• Species and natural habitats of conservation concern

Red lists are inventories of the conservation status of plant and animal species throughout the world, as directed and compiled by scientists and conservationists. The IUCN Red List of Threatened Species is the world's most comprehensive inventory of the global conservation status of species. It uses a set of quantitative criteria to evaluate the extinction risk of thousands of species. These criteria are relevant to most species and all regions of the world. With its strong scientific base, The IUCN Red List is recognised as the most authoritative guide to the status of biological diversity. There are eight IUCN Red List Categories based on criteria linked to population trend, size and structure, and geographic range. Species listed as Critically Endangered (CR), Endangered (EN) or Vulnerable (VU) are collectively described as threatened. Two red lists were checked in this report with respect to the geographic area studied: the IUCN European Red List (BLITZ *et al.*, 2011) and the Red Data Book of rare and threatened plants of Greece (PHITOS *et al*., 2009).



IUCN RED LIST©

Taxon	Family	European IUCN status	Greek IUCN status and main causes of decline	Range	Comments
Bolanthus creutzburgii	*Caryophyllaceae*	–	Main threat is overgrazing, particularly in summer. VU	Endemic to Cretean mountains: Lefka Ori and Psiloritis	Occurs between 1,550 m and 2,100 m high At least 8 sub-populations
Phoenix theophrasti	*Palmaceae*	–	As far as the tourism is respectful, it could survive. Recent changes in land management could also damage the population. VU	Endemic to Crete	The largest known Greek population stands in Vai, a touristic area. It has been declared an «Aesthetic Forest Preserve» in the late 1970s, and its core area was effectively protected by fencing in spring 1983. The preserve area covers 20 ha
Zelkova abelicea	*Ulmaceae*	EN	Overgrazing and browsing by goats and sheep. Livestock destroy seedlings and saplings hindering the species' development to fruiting and they also cause soil erosion by trampling. Fires are also a major threat to the Zelkova trees.	Endemic to Crete	There may be thousands of dwarf individuals found on the island of Crete but only very few stands of mature trees have survived and these are severely fragmented.

Endemic taxa are highlighted in the table featured in the appendix 1. Among them two are of conservation concern as «vulnerable» according to the Red Data Book of Greece and one is of conservation concern as «endangered» according to the European Red List.
The total amount of taxa recorded is 394. Among them 48 are endemic to Crete and 21 more are near-endemic or endemic to Greece (see appendix 1). Two endemic syntaxa were also recorded.
Furthermore, the Phoenix Palm tree grove is a priority habitat of the Habitats Directive 92/43/EEC. This site located in Vai (Eastern Crete) was featured in the former report (BOUCHET, 2016).

• Acknowledgements

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FONDATION biotope POUR LA BIODIVERSITÉ

Appendix 1: checklist of plant species recorded during the sessions

Species	Red Data Book of Greece	European Red Data Book (Bilz *et al.*)	Endemism
Acantholimon androsaceum	LC	-	Crete
Acanthus spinosus	LC	-	
Acer sempervirens	LC	-	
Achillea cretica	LC	-	
Acinos alpinus	LC	-	
Acinos nanus	LC	-	Aegean Islands
Adianthum capillus-veneris	LC	-	
Adonis cretica	LC	-	
Aeluropus lagopoides	LC	-	
Aethionema saxatile subsp. *graecum*	LC	-	
Ageratina adenophora	LC	-	Alien species
Alkanna sieberi	LC	-	Crete
Allium callimischon subsp. *haemostictum*	LC	DD	Crete
Allium chamaespathum	LC	DD	
Allium commutatum	LC	DD	
Amaranthus albus	LC	-	
Alyssoides cretica	LC	-	South Aegean
Amaranthus blitoides	LC	-	
Amaranthus viridis	LC	-	
Anacamptis laxiflora	LC	-	
Anchusa cespitosa	LC	-	Lefka Ori
Anchusa undulata	LC	-	
Anchusella variegata	LC	-	
Andrachne telephioides	LC	-	
Anemone coronaria	LC	-	
Anogramma leptophylla	LC	-	
Anthemis abrotanifolia	LC	-	Crete
Anthemis rigida	LC	-	
Anthyllis hermanniae	LC	-	
Arabis auriculata	LC	-	
Arabis verna	LC	-	
Arenaria muralis	LC	-	
Arenaria saponarioides subsp. *boissieri*	LC	-	Crete & Cyprus
Arisarum vulgare	LC	-	
Aristolochia sempervirens	LC	-	
Arum concinnatum	LC	-	
Arum creticum	LC	-	
Arum idaeum	LC	-	Crete
Asparagus aphyllus subsp. *orientale*	LC	LC	
Asparagus horridus	LC	LC	

Appendix 1: checklist of plant species recorded during the sessions

Species	Red Data Book of Greece	European Red Data Book (Bilz *et al.*)	Endemism
Asphodelina lutea	LC	-	
Asplenium aegeum	LC	-	
Asplenium scolopendrium subsp. *antri-jovis*	LC	-	
Astragalus angustifolius	LC	-	
Astragalus creticus subsp. *creticus*	LC	-	
Astragalus depressus	LC	-	
Atractylis cancellata	LC	-	
Atriplex patula	LC	-	
Atriplex prostrata	LC	-	
Aubrieta deltoidea	LC	-	
Ballota pseudodictamnus	LC	-	
Bellis longifolia	LC	-	Crete & Amorgos
Bellium minutum	LC	-	
Berberis cretica	LC	-	
Beta vulgaris subsp. *adanensis*	LC	LC	
Biarum davisii	LC	NT	Crete
Biarum tenuifolium subsp. *idomenaeum*	LC	-	Crete
Biscutella didyma	LC	-	
Bituminaria bituminaria	LC	-	
Bolanthus creutzburgii* subsp. *creutzburgii	**VU**	-	**Crete**
Brassica cretica subsp. cretica	LC	LC	Crete
Bufonia stricta	LC	-	Greece
Bunias erucago	LC	-	
Bupleurum gracile	LC	-	
Bupleurum lancifolium	LC	-	
Calicotome villosa	LC	-	
Campanula erinus	LC	-	
Campanula saxatilis* subsp. *saxatilis	**VU**		**Crete**
Campanula spatulata subsp. *filicaulis*	LC	-	Crete
Capparis spinosa	LC	-	
Cardamine graeca	LC	-	
Carex pendula	LC	-	
Carlina corymbosa subsp. *graeca*	LC	-	
Carlina gummifera	LC	-	
Castanea sativa	LC	-	
Caucalis platycarpos	LC	-	
Centaurea aegialophila	LC	-	
Centaurea argentea	LC	-	Crete and Kithira

Appendix 1: checklist of plant species recorded during the sessions

Species	Red Data Book of Greece	European Red Data Book (Bilz *et al.*)	Endemism
Centaurea idaea	LC	-	Crete
Centaurea raphanina subsp. *raphanina*	LC		S & C Aegean area
Centaurea redempta	LC	-	Crete
Centaurea spinosa	LC	-	
Centaurium pulchellum	LC	-	
Cerastium scaposum subsp. *scaposum*	LC	-	Crete
Ceratonia siliqua	LC	-	
Cheilanthes acrostica	LC	-	
Chenopodium murale	LC	-	
Chrozophora tinctoria	LC	-	
Cichorium spinosum	LC	DD	
Cionura erecta	LC	-	
Cistus creticus	LC	-	
Cistus salviifolius	LC	-	
Clematis cirrhosa	LC	-	
Colchicum cretense	LC	-	Cretan mountains
Colchicum macrophyllum	LC	-	
Colchicum pusillum	LC	-	
Colocasia esculenta	LC	-	Alien species
Convolvulus althaeoides	LC	-	
Convolvulus dorycnium subsp. *dorycnium*	LC	-	
Convolvulus oleifolius	LC	-	
Coronopus squamatus	LC	-	
Corydalis uniflora	LC		Crete
Crepis dioscoridis	LC	-	
Crepis neglecta	LC	-	
Crepis pusilla	LC	DD	
Crepis sibthorpiana	LC	-	Crete
Crepis tybakensis	LC	-	Aegean Islands
Crepis vesicaria	LC	-	
Cressa cretica	LC	-	
Crocus laevigatus	LC	-	Greece
Crocus oreocreticus	LC	-	Crete
Crupina crupinastrum	LC	-	
Cupressus sempervirens	LC	-	
Cutandia maritima	LC	-	
Cyclamen graecum	LC	-	

Appendix 1: checklist of plant species recorded during the sessions

Species	Red Data Book of Greece	European Red Data Book (Bilz *et al.*)	Endemism
Cymbalaria microcalyx	LC	-	
Cynara cornigera	LC	-	
Cynoglossum sphacioticum	**VU**		**Crete**
Cynosurus effusus	LC	-	
Cyperus capitatus	LC	-	
Cystopteris fragilis	LC	-	
Daphne gnidioides	LC	-	
Daphne sericea	LC	-	
Dasypyrum villosum	LC	-	
Datura inoxia	LC	-	Alien species
Daucus guttatus	LC	DD	
Delphinium staphysagria	LC	-	
Dianthus fruticosus subsp. *creticus*	LC	-	Crete
Dianthus fruticosus subsp. *sitiacus*	LC	-	Crete
Dianthus sphacioticus	LC	-	Lefka Ori
Dittrichia viscosa	LC	-	
Draba cretica	LC	-	Cretan mountains
Dracunculus vulgaris	LC	-	
Drimia maritima	LC	-	
Dryopteris pallida	LC	-	
Dryopteris villarii	LC	-	
Ebenus cretica subsp. *cretica* (endemic to Crete)	LC	-	
Ecballium elaterium	LC	-	
Echinophora tenuifolia	LC	-	
Echium angustifolium	LC	-	
Eleocharis palustris	LC	LC	
Elytrigia juncea	LC	-	
Enarthrocarpus arcuatus	LC	-	
Ephedra foemina	LC	-	
Erica arborea	LC	-	
Erica manipuliflora	LC	-	
Eryngium maritimum	LC	-	
Euphorbia acanthothamnos	LC	-	
Euphorbia chamaesyce	LC	-	
Euphorbia characias	LC	-	
Euphorbia dendroides	LC	-	
Euphorbia dimorphocaulon	LC	-	
Euphorbia herniariifolia	LC	-	

Appendix 1: checklist of plant species recorded during the sessions

Species	Red Data Book of Greece	European Red Data Book (Bilz *et al.*)	Endemism
Euphorbia hirsuta	LC	-	
Euphorbia nutans	LC	-	
Euphorbia oblongata	LC	-	
Euphorbia paralias	LC	-	
Euphorbia peplis	LC	-	
Evax. sp.	NA	NA	
Ferulago nodosa	LC	-	
Ferulago thyrsiflora	LC	-	Crete
Fumana arabica	LC	-	
Gagea amblyopetala	LC	-	
Gagea graeca	LC	-	
Galactites tomentosus	LC	-	
Galium fruticosum	LC	-	Crete (probably)
Garidella nigellastrum	LC	-	
Genista acanthoclada	LC	-	
Geranium lucidum	LC	-	
Glaucium flavum	LC	-	
Glycyrrhiza glabra	LC	-	
Gomphocarpus fruticosus	LC	-	Alien species
Halimione portulacoides	LC	-	
Helianthemum hymettium	LC	-	Greece
Helichrysum italicum	LC	-	
Helichrysum orientale	LC	-	
Heliotropium hirsutissimum	LC	-	
Helosciadium nodiflorum	LC	-	
Hyoseris scabra	LC	-	
Hyparrhenia hirta	LC	-	
Hypericum empetrifolium	LC	-	
Hypericum empetrifolium subsp. *tortuosum*	LC	-	Crete
Hypericum hircinum	LC	-	
Hypericum perfoliatum	LC	-	
Hypochaeris achyrophorus	LC	-	
Inula candida	LC	-	Greece
Inula crithmoides	LC	-	
Ipomoea imperati	LC	-	
Iris unguicularis subsp. *cretensis*	LC	-	S Aegean area
Isoetes durieui	LC	-	
Isoetes hystrix	LC	-	

Appendix 1: checklist of plant species recorded during the sessions

Species	Red Data Book of Greece	European Red Data Book (Bilz *et al.*)	Endemism
Juncus heldreichianus	LC	-	
Juniperus phoenicea	LC	-	
Knautia integrifolia subsp. *mimica*	LC	-	
Kundmannia sicula	LC	-	
Lactuca acanthifolia	LC	DD	
Lactuca tuberosa	LC	LC	
Lagurus ovatus	LC	-	
Lamium garganicum subsp. *striatum*	LC	-	
Lamyropsis cynaroides	LC	-	
Lathyrus annuus	LC	LC	
Lavandula stoechas	LC	-	
Lavatera bryoniifolia	LC	-	
Lecokia cretica	LC	-	
Legousia pentagonia	LC	-	
Limonium cordatum	LC	-	
Limonium roridum	LC	-	
Linaria pelisseriana	LC	-	
Linum arboreum	LC	-	
Linum pubescens subsp. *sibthorpianum*	LC	-	
Linum strictum	LC	-	
Lithodora hispidula subsp. *hispidula*	LC	-	S Aegean area
Lomelosia sphaciotica subsp. *sphaciotica*	LC	-	Lefka Ori
Lotus conimbricensis	LC	-	
Lotus ornithopodioides	LC	-	
Lupinus pilosus	LC	-	
Lycium schweinfurthii	LC	-	
Malcolmia flexuosa	LC	-	
Malva parviflora	LC	-	
Matthiola incana	LC	-	
Medicago disciformis	LC	LC	
Medicago marina	LC	LC	
Medicago truncatula	LC	LC	
Melica uniflora	LC	-	
Mentha pulegium	LC	LC	
Mesembryanthemum crystallinum	LC	-	
Mesembryanthemum nodiflorum	LC	-	
Moraea mediterranea	LC	-	
Moraea sisyrinchium	LC	-	
Muscari spreitzenhoferi (endémique)	LC	-	

Appendix 1: checklist of plant species recorded during the sessions

Species	Red Data Book of Greece	European Red Data Book (Bilz *et al.*)	Endemism
Myrtus communis	LC	-	
Narcissus obsoletus	LC	-	
Narcissus tazetta	LC	-	
Neatostema apula	LC	-	
Nepeta melissifolia	LC	-	Crete
Nepeta scordotis	LC	-	Crete
Nerium oleander	LC	-	
Nigella damascena	LC	-	
Notobasis syriaca	LC	-	
Oenanthe pimpinelloides subsp. *incrassans*	LC	-	Greece & Albania
Onobrychis caput-galli	LC	-	
Onopordum bracteatum	LC	-	
Onosma erecta	LC	-	
Ophrys cretica	LC	-	
Ophrys sphegodes	LC	LC	
Orchis italica	LC	LC	
Orchis pauciflora	LC	LC	
Orchis quadripunctata	LC	LC	
Orchis simia	LC	LC	
Orchis tridentata	LC	-	
Origanum dictamnus	LC	NT	Crete
Origanum onites	LC	-	
Ormosolenia alpina	LC	-	
Ornithogalum collinum	LC	-	
Ornithopus compressus	LC	-	
Orobanche pubescens	LC	-	
Otanthus maritimus	LC	-	
Paeonia clusii	LC	-	Dodecanese and Crete
Pancratium maritimum	LC	-	
Panicum repens	LC	LC	
Parietaria cretica	LC	-	
Paronychia macrosepala	LC	-	
Petromarula pinnata	LC	-	Crete
Petrorhagia candica	LC	-	
Petrorhagia dubia	LC	-	
Petrorhagia illyrica subsp. *taygetea*	LC	-	Greece
Phagnalon rupestre subsp. *graecum*	LC	-	
Phillyrea media	LC	-	

Appendix 1: checklist of plant species recorded during the sessions

Species	Red Data Book of Greece	European Red Data Book (Bilz *et al.*)	Endemism
Phleum subulatum	LC	-	
Phlomis cretica	LC	-	
Phlomis fruticosa	LC	-	
Phlomis lanata	LC	-	Crete
Phoenix theophrasti	**VU**	-	**Crete**
Phragmites frutescens	LC	-	
Phyla nodiflora	LC	-	
Picnomon acarna	LC	-	
Picris pauciflora	LC	-	
Picris rhagadioloides	LC	-	
Pimpinella tragium	LC	-	
Pinus brutia	LC	-	
Pistacia lentiscus	LC	-	
Plantago coronopus	LC	-	
Polygonum idaeum	LC	-	Crete
Polypodium cambricum	LC	-	
Prasium majus	LC	-	
Primula vulgaris	LC	-	
Prunus dulcis	LC	-	
Pseudorlaya pumila	LC	-	
Pteris vittata	LC	-	
Ptilostemon chamaepeuce	LC	-	
Quercus coccifera	LC	-	
Quercus ilex	LC	-	
Quercus ithaburensis subsp. *macrolepis*	LC	-	
Ranunculus asiaticus	LC	-	
Ranunculus bullatus	LC	-	
Ranunculus creticus	LC	-	
Ranunculus lateriflorus	LC	LC	
Ranunculus muricatus	LC	-	
Ranunculus peltatus	LC	LC	
Rapistrum rugosum	LC	-	
Rhamnus lycioides subsp. *oleoides*	LC	-	
Romulea bulbocodium	LC	-	
Rosularia serrata	LC	-	
Rumex bucephalophorus	LC	-	
Ruta chalepensis	LC	-	
Sagina apetala	LC	-	
Salicornia europaea	LC	-	

Appendix 1: checklist of plant species recorded during the sessions

Species	Red Data Book of Greece	European Red Data Book (Bilz *et al.*)	Endemism
Salsola kali	LC	-	
Salvia fruticosa	LC	-	
Salvia pomifera	LC	-	
Salvia viridis	LC	-	
Samolus valerandi	LC	LC	
Sarcopoterium spinosum	LC	-	
Satureja thymbra	LC	-	
Saxifraga rotundifolia subsp. *chrysospleniifolia*	LC	-	
Scaligeria napiformis	LC	-	
Scilla autumnalis	LC	-	
Scilla nana	LC	LC	Crete
Scirpoides holoschoenus	LC	-	
Scorzonera sp.	NA	NA	
Scrophularia heterophylla	LC	-	
Scrophularia lucida	LC	-	
Scrophularia peregrina	LC	-	
Scutellaria hirta	LC	-	Crete
Scutellaria sieberi	LC	-	Crete
Securigera cretica	LC	-	
Securigera globosa	LC	-	Crete
Securigera parviflora	LC	-	
Securigera securidaca	LC	-	
Sedum litoreum	LC	-	
Selaginella denticulata	LC	-	
Serapias cordigera	LC	LC	
Serapias lingua	LC	LC	
Serapias parviflora	LC	LC	
Serapias vomeracea	LC	LC	
Silene antri-jovis	LC	-	Crete
Silene behen	LC	-	
Silene colorata	LC	-	
Silene cretica	LC	-	
Silene dichotoma	LC	-	
Silene sedoides	LC	-	
Sisymbrium officinale	LC	-	
Smilax aspera	LC	-	
Smyrnium perfoliatum subsp. *rotundifolium*	LC	-	
Solanum elaeagnifolium	LC	-	

Appendix 1: checklist of plant species recorded during the sessions

Species	Red Data Book of Greece	European Red Data Book (Bilz *et al.*)	Endemism
Solenopsis minuta subsp. *annua*	LC	-	Crete
Spiranthes spiralis	LC	LC	
Stachys spinosa	LC	-	Greece
Stachys spinulosa	LC	-	
Staehelina fruticosa	LC	-	S Aegean area
Staehelina petiolata	LC	-	Crete
Sternbergia lutea subsp. *greuteriana*	LC	LC	
Sternbergia lutea subsp. *lutea*	LC	LC	
Sternbergia sicula	LC	-	
Stipa capensis	LC	-	
Symphytum creticum	LC	-	Greece
Tamus communis	LC	-	
Taraxacum megalorhizon	LC	-	
Tetragonolobus purpureus	LC	-	
Teucrium alpestre	LC	-	Crete (probably)
Teucrium divaricatum	LC	-	
Teucrium cf. *polium*	LC	-	
Thesium bergeri	LC	-	
Thymbra capitata	LC	-	
Thymelaea hirsuta	LC	-	
Tordylium apulum	LC	-	
Tragopogon porrifolius	LC	-	
Tribulus terrestris	LC	-	
Trifolium grandiflorum	LC	-	
Trifolium nigrescens	LC	LC	
Trifolium resupinatum	LC	LC	
Trifolium tomentosum	LC	-	
Tuberaria guttata	LC	-	
Tulipa bakeri	LC	-	Crete
Tulipa doerfleri	**VU**	-	**Crete**
Tulipa saxatilis	LC	-	
Urospermum picroides	LC	-	
Valantia hispida	LC	-	
Valantia muralis	LC	-	
Valeriana asarifolia	LC	-	S Aegean area
Valerianella echinata	LC	-	
Verbascum arcturus	LC	-	Crete
Verbascum macrurum	LC	-	

Appendix 1: checklist of plant species recorded during the sessions

Species	Red Data Book of Greece	European Red Data Book (Bilz *et al.*)	Endemism
Verbascum spinosum	LC	-	Crete
Verbena officinalis	LC	-	
Veronica thymifolia	LC	-	Greece
Vicia villosa subsp. *varia*	LC	-	
Viola alba subsp. *cretica*	LC	-	
Viola fragrans	LC	-	Crete
Viola kitaibeliana **(new for Crete)**	LC	-	
Vitex agnus-castus	LC	-	
Zelkova abelicea	**LC**	**EN**	
Zostera marina	LC	LC	

Appendix 2: geographic coordinates of the locations

Location	X geographic coordinate	Y geographic coordinate	Dominant vegetation types
	WGS84 coordinate system		
Akrotiri peninsula	24.139916	35.584883	Rocky vegetation
Afrata, Rodopos	23.773730	35.564404	Lowland phrygana
Mt Onichas plateau	23.730977	35.613864	Lowland phrygana
Mavri	24.040573	35.378645	Mountainous communities
Therisiano Gorges	23.990146	35.431908	Chasmophytic vegetation
Lissos	23.787327	35.240389	Rocky vegetation and phrygana
W Chania	23.998550	35.507604	Coastal dunes
Korikos peninsula	23.599569	35.599332	Rocky vegetation and phrygana
Omalos	23.891425	35.325028	Temporary ponds
Xyloskalo	23.923532	35.316996	Cypress woodland
Falassarna	23.570138	35.511977	Coastal phrygana
Kalami	24.143243	35.469880	Lowland phrygana
Lefka Ori	24.077252	35.285493	Subalpine and alpine communities
Plakias	24.395625	35.177558	Coastal phrygana
Karavos	24.400723	35.172584	Chasmophytic vegetation
Gious Kambos	24.568509	35.209547	Mountainous communities
Zeus cave	24.829511	35.208331	Subalpine and alpine communities
Elounda	25.734296	35.256235	Saltmarshes
Zakros Gorges	26.250291	35.099904	Chasmophytic vegetation