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The Flora of Mount Menikion in North East Greece

By

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With 2 figures

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Summary

KARAGIANNAKIDOU V. & KOKKINI S. 1987. The Flora of Mount Menikion in North East Greece. – *Phyton (Austria)* 27 (2): 267–283, 2 figures. – English with German summary.

Mount Menikion is situated in the east of Serres city; its highest peak reaches 1963 m. A total of 552 taxa (species and subspecies) belonging to 69 families and 266 genera is listed. 339 of these taxa are reported for the first time to occur in the Menikion area. Some ecological data as well as remarks on vegetation are given.

Zusammenfassung

KARAGIANNAKIDOU V. & KOKKINI S. 1987. Die Flora des Menikion-Gebirges in Nordost-Griechenland. – *Phyton (Austria)*: 27 (2): 267–283, 2 Abbildungen. – Englisch mit deutscher Zusammenfassung.

Das Menikion-Gebirge erstreckt sich östlich der Stadt Serres; sein höchster Gipfel erreicht eine Höhe von 1963 m. Insgesamt werden 552 Sippen (Species and Subspecies), die zu 69 Familien und 266 Gattungen gehören, in einer Liste aufgeführt. Von jenen werden 339 Sippen erstmals für das Menikion-Gebirge erwähnt. Einige ökologische Daten und Bemerkungen zur Vegetation sind auch angeführt.

Introduction

Mount Menikion is situated in NE Greece (to the east of Serres city) and is bordered by the plains of Serres (to the south) and Dramas (to the east) as

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well as by Mount Vrontous (to the north). The geographical limits of Menikion can be determined by these points:

A. 23°40'21" Longit. East	42°12'48" Latit. North
B. 23°49'17"	41°15'00"
C. 23°34'10"	41° 6'00"
D. 24°00'00"	41° 1'21"

Mt Menikion has NW–SE direction. The highest peaks lie to the west side (places called Karagioz lofos 1963 m, Karpa 1800 m); it is important to note that these do not form isolated peaks in contrast to the geomorphology of the most greek mountains, but they belong to a total of continuous levels with very small differences in altitude (Fig. 1).

The most important references for the flora of Menikion are these of RECHINGER 1939, who mentions 164 taxa, and of the Mountain Flora of Greece I (STRID 1986) which reports 76 taxa.

This study was based on our own collections and field observations during the years 1985–86. The determination of the specimens has been based on the following Floras: Prodr. Fl. Penins. Balc. (HAYEK 1924–1933), Flora Europaea (TUTIN & al 1964–80), Mountain Flora of Greece (STRID

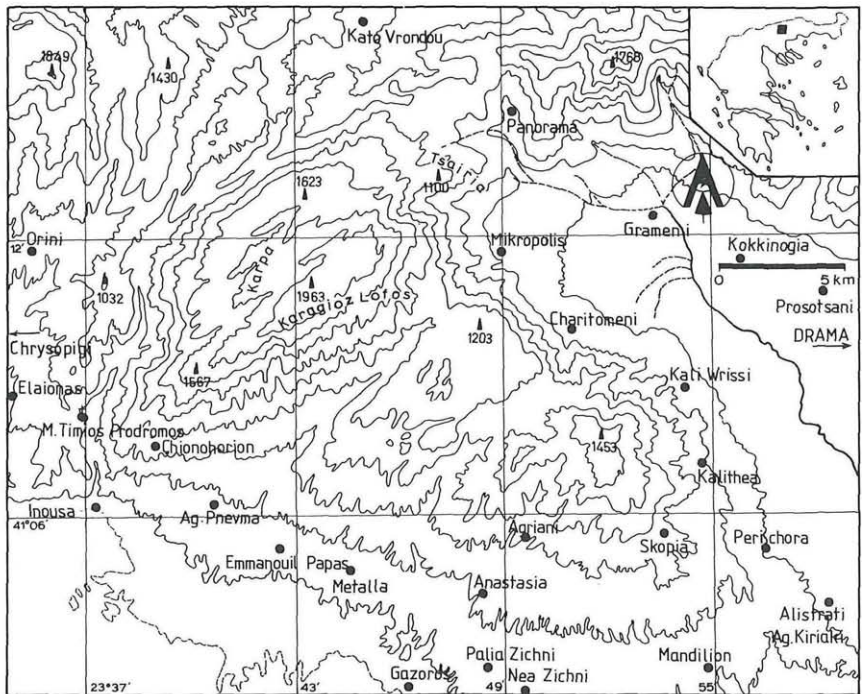


Fig. 1. Geographical map of Mount Menikion.

1986), Flora d'Italia (PIGNATTI 1982), Fl. Reip. Pop. Bulgaricae (JORDANOV & al. 1963–82).

All the collections used in this study are kept in the Herbarium of the Institute of Systematic Botany of the University of Thessaloniki (TAU).

Geology

From the geological point of view Menikion belongs to the Rodopi crystalline massif (KOSSMAT 1924). DE BOER 1970 distinguishes two series belonging to this massif, the upper and the lower series. The lower series consists of white-grey fractured marbles. On the upper 1000 m of this series, intercalations of siliceous rocks and thin-bedded marbles occur. The upper series consists of alternations of marbles and gneisses.

Magmatic rocks occur eastwards of the Eleona village and in particular around the Timios Prodromos monastery. Neogen sediments occur in lower parts between the villages Alistrati, Agriani and Haritomeni. Quaternary deposits appear in plainlands over the Neogen sediments (VAVLIAKIS 1981).

Climate

According to the KOEPPEN's classification the climate of Menikion belongs to the intermediate type Csa-Ssb. This climatic type is characterized as transitional of the mediterranean to the continental climate (BALAFOUTIS 1977).

The ombrothermic diagrams (temperature-precipitation) of Chrysopigi (altitude 610 m, 41°06' North, 23°33' East) and Drama (altitude 130 m, 41°04' North, 24°08' East) may represent the climate of Menikion. The maximum of the temperature is in August whilst the wet period occurs during autumn and winter (Fig. 2). The dry period lasts 2.5 months, from mid-July up to the end of September. The annual amount of precipitation of the two meteorological stations is c. 966 mm (Chrysopigi) and 670 mm (Drama) respectively.

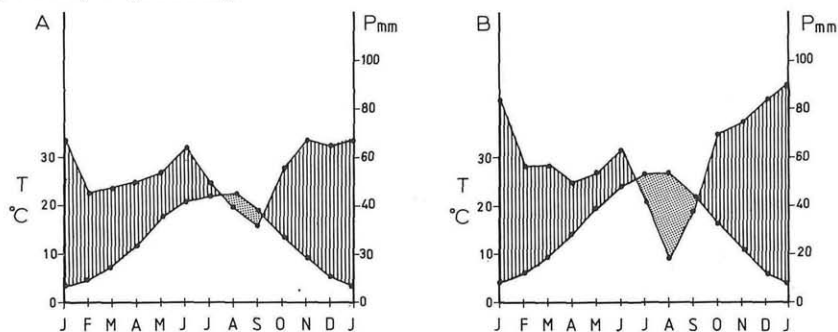


Fig. 2. Ombrothermic diagrams of the two meteorological stations, A: Chrysopigi and B: Drama.

Vegetation

The forests

Zone of submediterranean mixed deciduous forests

This zone mainly occurs on calcaceous rocks of SW and E side of Menikion.

Quercus coccifera is the dominant species in the SW side (near the villages of Inousa and Chionohorion) where it grows at an altitude between 300(–600) and 1300 m. Also in the same area the shrubs *Juniperus oxycedrus*, *Crataegus monogyna*, *Cistus incanus* and *Daphne oleoides* occur.

The E side, above the village of Mikropolis, at an altitude between 700 and 900 (–1100) m, is distinguished by the characteristic species *Carpinus orientalis*. Other woody species occurring here are *Corylus avellana*, *Fraxinus ornus*, *Ostrya carpinifolia*, *Syringa vulgaris*, *Ligustrum vulgare*, *Cornus mas*, *Lonicera etrusca* and *Quercus pubescens*.

The most common of the herbaceous species in the zone of mixed deciduous forests are: *Chamaecytisus eriocarpus*, *Dorycnium pentaphyllum*, *Thymus sibthorpii*, *T. atticus*, *Teucrium chamaedrys*, *Medicago minima*, *Trifolium angustifolium*, *Dactylis glomerata*, *Aegilops geniculata*, *Origanum vulgare*, *Arenaria leptoclados*, *Petrorrhagia thessala*, *Silene conica* and also different species of the genera *Campanula*, *Hieracium*, *Hypericum*, *Verbascum*, *Digitalis*, *Galium*, *Scrophularia*.

Zone of mixed deciduous oak forests

The oak forests are scattered on calcareous rocks with the main appearance in the E and SE side.

Two groups of vegetation can be distinguished:

The xerothermic oak forests are growing in dryer places and spread over a larger area. The most characteristic trees occurring here are deciduous species of *Quercus* (*Q. pubescens* and *Q. frainetto*). Other common and woody species growing in these forests are: *Juniperus oxycedrus*, *Sorbus domestica*, *Corylus avellana*, *Acer obtusatum* and *Fraxinus ornus*.

The chestnut (*Castanea sativa*) forests extend over a small area and grow in wet places of the E side (above the villages of Mikropoli and Charitomeni) at an altitude between 700 and 1000 m. On this side the trees *Tilia tomentosa*, *Ostrya carpinifolia*, *Cornus mas*, *Carpinus orientalis*, *Quercus frainetto* and *Fraxinus ornus* occur.

Among the commonest herbaceous species occurring in the above forests are: *Clinopodium vulgare*, *Campanula persicifolia*, *Brachypodium sylvaticum*, *Euphorbia amygdaloides*, *Helleborus cyclophyllus*, *Primula vulgaris*, *Geum urbanum*, *Poa nemoralis* and *Anthemis tinctoria*.

Zone of deciduous beech forests

The beech forests are mainly limited to the E side. The lower limits of the dominant species *Fagus sylvatica* subsp. *sylvatica* come down to c. 600 m, while its upper limits are climbing up to 1600 m (above Mikropolis) or up to 1350 m (above the villages of Agriani, Anastasia and Eleonas). Also scattered individuals occur in ravines (near Chionohorion) between 900–1200 m.

Other woody species occurring in beech forest are the different deciduous species of *Quercus*, *Ostrya carpinifolia*, *Fraxinus ornus*, *Carpinus orientalis*, *Juniperus oxycedrus* and *Sorbus domestica*.

The most common beechwood plants are: *Poa nemoralis*, *Mycelis muralis*, *Luzula sylvatica*, *Euphorbia amygdaloides*, *Galium aparine* and *Lathyrus laxiflorus*.

The penetration of the different species of *Quercus* and *Castanea sativa* in the beech forest occurs often in the lower places, so that the accurate limitation is very difficult.

The meadows

Zone of subalpine and alpine meadows

It mainly occurs on calcareous and metamorphic rocks in the W side of Menikion at an altitude between 1100 and 1963 m (up to the highest peak). These meadows are characterised by taxa such as *Festuca graeca*, *F. macedonica*, *F. paniculata*, *Daphne oleoides*, *Genista depressa*, *Astragalus angustifolius*, *Thymus cherlerioides*, *T. thracicus*, *Trifolium alpeste*, *Stipa pulcherrima*, *Sesleria coerulans*, *S. tenerrima*, *Bromus riparius*, *Calamagrostis varia*, *Anthyllis aurea*, *Cytisus agnipilus* etc.

It is important to note the high occurrence of endemic taxa of the Balcan Peninsula in the flora of alpine meadows.

Meadows in clearings of forests

They occur in clearings of forests in the SE and E side, at an altitude between 600 and 900 m, on calcareous and metamorphic rocks as well as in alluvial places. The three grasses *Chrysopogon gryllus*, *Dichanthium ischaemum* and *Brachypodium sylvaticum* are the dominant species in the meadows around the villages of Mikropolis, Agriani and Charitomeni. Other common species occurring here are: *Apera spica-venti*, *Agrostis stolonifera*, *Trifolium campestre*, *T. aureum*, *Lotus corniculatus*, *Petrorhagia glumacea*, *Vulpia myuros*, *Agrimonia eupatoria*, *Bromus secalinus*, *Sanguisorba minor*, *Anthoxanthum odoratum*, *Gnaphalium luteo-album* etc.

Introduced species

Small parts of the torrents Gazoros, Palia Zihni, Mandilion, Ag. Kiriaki and Perichora (in the SE side) were reforested by the Ministry of Agriculture, 25–35 years ago, with different conifers (*Pinus brutia* and *Cupressus sempervirens*) as well as with broadleaved species (*Robinia pseudoacacia*, *Populus nigra* and *P. alba*).

Flora

In this study 552 taxa are reported for Mt Menikion. They belong to 69 families and 266 genera. 339 species and subspecies are mentioned for the first time in the above area. Several of the listed taxa are very interesting from the floristic and phytogeographical point of view.

Unless otherwise stated the nomenclature of the following taxa is according to the Mountain Flora of Greece I (STRID 1986) or to the Flora Europaea 1–5 (TUTIN & al 1964–1980); the names of the authors have been omitted for practical purposes.

The sequence of families, genera and species is alphabetical.

The following abbreviations are used for references: R = RECHINGER 1939, S & P = STRID & PAPANICOLAOU 1981, S & F = STRID & FRANZEN 1982, MF = STRID 1986. – For localities: I = monastery of Timios Prodromos (300 m), II = near the village of Chionochorion (400–900 m), III: above the village of Chionochorion (1200–1963 m), IV = near the village of Mikropolis (600–1000 m), V = above the village of Mikropolis (1200–1900 m), VI = near the village of Agriani (600–900 m), VII = valley called Tsairia (1100 m).

The collection numbers of KARAGIANNAKIDOU & KOKKINI are given in brackets. obs = observation only, no herbarium specimen.

List of the taxa found in Mt Menikion

<i>Pteridophyta</i>	<i>Hypolepidiaceae</i>
<i>Adiantaceae</i>	<i>Pteridium aquilinum</i> subsp.
<i>Adiantum capillus-veneris</i>	<i>aquilinum</i> IV (3500), VI (39900),
II (3100)	VII (4100)
<i>Aspleniaceae</i>	<i>Ophioglossaceae</i>
<i>Asplenium ruta-muraria</i> (MF: 22)	<i>Botrychium lunaria</i> (MF: 14)
<i>Ceterach officinarum</i> VII obs	
<i>Aspidiaceae</i>	<i>Spermatophyta</i>
<i>Polystichum aculeatum</i> III (3300)	<i>Aceraceae</i>
<i>P. lonchitis</i> (MF: 31)	<i>Acer monspessulanum</i> IV (3501)
<i>Athyriaceae</i>	<i>A. obtusatum</i> IV (3502)
<i>Cystopteris fragilis</i> III (3301)	

*Anacardiaceae**Cotinus coggygria* IV (3503), VI (3901)*Pistacia terebinthus* II (3101), (R)*Rhus coriaria* IV (3504), V (3700)*Apiaceae**Bupleurum asperuloides* IV (3505)*Carum graecum* (R)*C. rigidulum* subsp. *palmatum* (R, MF: 699)*C. strictum* III (3302), (MF: 697)*Daucus guttatus* IV (3506)*Eryngium campestre* II (3102), VI (3902)*Ferulago sylvatica* subsp. *sylvatica* (R)*F. sylvatica* subsp. *confusa* V (3701), (MF: 713)*Orlaya grandiflora* IV (3506), VI (3903)*Physospermum cornubiense* IV (3507)*Seseli rigidum* subsp. *rigidum* V (3702)*Tordylium maximum* VII (4101)*Torilis japonica* III (3304)*T. nodosa* IV (3508), VI (3904)*T. ucranica* VI (3905)*Araceae**Arum maculatum* VII (4102)*Dracunculus vulgaris* II (3103), (R)*Araliaceae**Hedera helix* subsp. *helix* II (3104), IV (3509)*Asclepiadaceae**Vincetoxicum hirsutinaria* subsp. *nivale* III (3305), V (3703), (R)*Asteraceae**Achillea ageratifolia* III (3306), (R)*A. coarctata* VI (3906), (R)*A. crithmifolia* VI (3907), (R)*A. holosericea* III (3307)*A. millefolium* subsp. *millefolium* VI (3908)*A. setacea* VII (4103), IV (3510)*Anthemis ruthenica* (R)*A. tinctoria* subsp. *tinctoria* VI (3909)*A. triumfetti* VI (3910)*Artemisia alba* III (3308), V (3704), (R)*Aster alpinus* (S & F)*Carduus adpressus* (R)*C. thoermeri* IV (3511)*Carlina corymbosa* subsp. *corymbosa* III (3309)*C. vulgaris* subsp. *intermedia* II (3105), IV (3512), VII (4103)*Carthamus lanatus* subsp. *lanatus* IV (3513)*Centaurea calcitrapa* VII (4104)*C. diffusa* II (3106), IV (3514), VII (4105), (R)*C. grisebachii* subsp. *grisebachii* VII (4106)*C. napulifera* subsp. *nyssana* III (3310), (R)*C. orphanidea* (R)*C. pindicola* III (3311)*C. salonitana* subsp. *macracantha* II (3107), IV (3515), VI (3911)*C. salonitana* subsp. *salonitana* II (3108)*C. triumfetti* subsp. *triumfetti* III (3312)*C. uniflora* subsp. *davidovii* VI (3912)*Chondrilla juncea* II (3109), IV (3516)*C. uromoffii* (S & F)*Cichorium intybus* II (3110), VIII (4107)*Cirsium italicum* III (3313), V (3705)*C. ligulare* subsp. *armatum* V (3706), (R)*Conyza canadensis* II (3111)

- Crepis setosa* subsp.
topoliana IV (3518)
Crupina vulgaris IV (3519)
Echinops ritro subsp. *thracicus* VII
 (4109)
E. sphaerocephalus subsp. *albidus*
 VI (3914)
Gnaphalium luteo-album IV (3520),
 VI (3915)
Hieracium cymosum subsp. *mic-*
rosabinum (R)
H. gaudryi III (3314), V (3707)
H. hoppeanum subsp. *troicum* III
 (3315), VII (4110)
H. laevigatum group VI (3916)
H. pannosum group VI (3917), (R)
H. pilosissimum group VI (3918)
H. piloselloides subsp. *megalomas-*
tix III (3316)
H. praealtum subsp. *bauhinii* III
 (3317)
H. sartorianum group III (3318)
Inula oculus-christi VI (3919), (R)
I. salicina subsp. *aspera* VI (3920),
 IV (3521)
I. verbascifolia subsp.
aschersoniana VI (3921), (R)
Jurinea mollis subsp.
transylvanica (R)
J. mollis subsp. *mollis* VI (3922)
Lapsana communis subsp.
adenophora VI (3923)
Leontodon crispus subsp.
asperrimus VI (3924)
L. crispus subsp. *crispus* III (3319),
 VI (3925), VII (4111)
L. hispidus subsp. *danubialis* II
 (3112)
Matricaria trichophylla VI (3926)
Mycelis muralis IV (3522)
Picnomon acarna II (3113)
Prenanthes purpurea V (3708)
Scorzonera cana (R)
S. laciniata III (3320), IV (3523)
Senecio macedonicus V (3709), (R)
S. papposus subsp. *wagneri* III
 (3321)
S. squalidus III (3322), V (3710), (R)
Sonchus arvensis subsp.
uliginosus II (3114)
Tanacetum corymbosum subsp.
corymbosum VI (3927)
T. vulgare (R)
Taraxacum erythrospermum group
 (R)
T. hoppeanum group II (3115)
T. officinale group II (3116)
Tragopogon crocifolius subsp.
samaritani III (3323)
Xeranthemum annuum IV (3524),
 (R)
 Betulaceae
Betula pendula IV (3525)
 Boraginaceae
Anchusa officinalis VI (3928), (R)
Buglossoides arvensis subsp.
arvensis VI (3929), (R)
B. purpureocaerulea IV (3526)
Echium italicum II (3117)
E. vulgare IV (3527)
Heliotropium europaeum II (3118)
Myosotis incrassata VII (4112), (R)
M. stricta III (3324), (R)
M. sylvatica subsp. *cyanea* III (3325)
Onosma heterophylla (R)
 Brassicaceae
Aethionema saxatile subsp.
oreophilum VI (3930)
Alyssum montanum subsp. *repens*
 III (3326), (R)
A. murale III (3327), (MF: 298)
A. pichleri II (3119), IV (3528), VI:
 3931, (R)
Arabis collina III (3328)
Aubrieta deltoidea (MF: 270)
Berteroa stricta (R)

- Draba lasiocarpa* subsp. *lasiocarpa* III (3329), V (3711)
- Erysimum comatum* (R)
- E. diffusum* IV (3529), V (3712)
- E. drenowskii* III (3330), (MF: 242)
- Iberis saxatilis* subsp. *saxatilis* III (3331), V (3713), (S & F, MR: 333)
- I. sempervirens* (R, MF: 332)
- Rorippa thracica* VI (3933), VII (4113)
- Campanulaceae*
- Asyneuma canescens* subsp. *canescens* III (3332), V (3714)
- A. limonifolium* IV (3530), (R)
- Campanula bononiensis* VI (3924)
- C. glomerata* subsp. *serotina* III (3333)
- C. macrostachya* IV (3531)
- C. orphanidea* III (3334), (R)
- C. patula* subsp. *patula* VII (4114)
- C. persicifolia* subsp. *persicifolia* IV (3532), III (3335), (R)
- C. rapunculoides* IV (3533), VI (3925)
- C. rapunculus* IV (3534)
- C. spatulata* subsp. *sprunerana* VI (3926)
- C. trachelium* subsp. *athoa* IV (3535)
- C. scutellata* (R)
- Jasione heldreichii* IV (3536)
- Trachelium jaquinii* subsp. *rumelianum* (R)
- Caprifoliaceae*
- Lonicera etrusca* IV (3537)
- Caryophyllaceae*
- Arenaria leptoclados* IV (3538), (R)
- A. serpyllifolia* III (3336), (R)
- Cerastium banaticum* subsp. *banaticum* III (3337), IV (3539), (R, MF: 115)
- C. brachypetalum* subsp. *roeseri* III (3338), R, MF: 121
- C. decalvans* III (3339), (R, MF: 113)
- Dianthus cruentus* IV (3539)
- D. gracilis* subsp. *gracilis* III (3340), IV (3540), VII (4115), (R, MF: 187)
- D. petraeus* subsp. *orbelicus* III (3341), II (3120), V (3715), (R, MF: 181)
- D. pinifolius* subsp. *serbicus* IV (3541)
- D. viscidus* IV (3542), VII (4115)
- Herniaria incana* VI (3927)
- Lychnis coronaria* VI (3928), VII (4116)
- Minuartia glomerata* subsp. *macedonica* III (3343), VI (3929), (MF: 94)
- M. setacea* (R)
- M. verna* III (3344), (R)
- Moenchia erecta* subsp. *erecta* VI (3928)
- M. mantica* subsp. *mantica* III (3342), IV (3543)
- Paronychia rechingeri* III (3345), (MF: 128)
- Petrorhagia glumacea* VI (3930), (R)
- P. thessala* IV (3544), VII (4117), (R)
- Scleranthus annuus* subsp. *polycarpus* VI (3934)
- Silene ciliata* (MF: 164)
- S. conica* subsp. *subconica* IV (3545), VI (3931), (R)
- S. flavescens* T, S & P)
- S. saxifraga* (R)
- S. supina* VI (3932)
- S. thessalonica* subsp. *thessalonica* VI (3933)
- S. vulgaris* subsp. *commutata* IV (3546)
- Velezia rigida* IV (3547), (R)
- Chenopodiaceae*
- Chenopodium album* subsp. *album* II (3121), VI (3935)
- C. bonus-henricus* III (3346)
- C. botrys* II (3122), VI (3936)
- C. murale* VI (3937)

Cistaceae

- Cistus incanus* subsp. *creticus* II (3123)
C. incanus subsp. *incanus* VI (3938)
Fumana procumbens IV (3548)
Helianthemum canum subsp. *canum* III (3347), (R: MF: 643)
H. nummularium III (3348), IV (3549), V (3716), VI (3939), (MF: 641)
H. oelandicum subsp. *rupifragum* (R)
H. salicifolium II (3124), (R)

Convolvulaceae

- Calystegia sylvatica* VI (3940)
Convolvulus arvensis VII (4118)

Cornaceae

- Cornus mas* IV (3550), VI (3941)

Corylaceae

- Carpinus orientalis* II (3125), III obs, IV (3551), VI (3942), (R)
Corylus avellana IV (3552), VI (3943)
Ostrya carpinifolia IV (3553), V obs

Crassulaceae

- Sedum cepaea* VI (3944)
S. dasyphyllum (R, MF: 352)
S. hispanicum III (3349)
S. ochroleucum IV (3554), (MF: 344)
S. sediforme (R)
S. urvillei IV (3554), (R, MF: 347)
Sempervivum kindingeri III (3350), (MF: 339)
S. marmoratum (MF: 340)
Umbilicus rupestris (R)

Cupressaceae

- Juniperus communis* subsp. *communis* VII (4119)
J. communis subsp. *nana* V (3717)
J. oxycedrus subsp. *oxycedrus* II obs, IV (3555), VI obs

Cyperaceae

- Carex digitata* (S & F)
C. echinata III (3352), VI (3945)
C. kitaibeliana III (3353), (R)
Dipsacaceae
Cephalaria flava II (3126), (R)
C. transylvanica II (3127)
Knautia ambigua III (3354), V (3718), VI: 3946, VII: 4120, (R)
K. integrifolia (R)
K. orientalis IV (3556), VI (3947)
Ptercephalus papposus (R)
Scabiosa argentea VI (3948)
S. ochroleuca VII (4121)
S. triniaefolia IV (3557), VI (3949), VII (4122)

Ericaceae

- Arctostaphylos uva-ursi* III obs, V obs, (MF: 740)
Bruckenthalia spiculifolia III obs, (MF: 739)
Vaccinium myrtillus III (3355)

Euphorbiaceae

- Euphorbia amygdaloides* subsp. *amygdaloides* III (3356), V (3719)
E. basilices III (3357), V (3720), (MF: 573)
E. cyparissias VI (3950), VII (4123)
E. falcata VII (4124)
E. helioscopia IV (3558), VI (3951)
E. myrsinites subsp. *myrsinites* II (3128), IV obs
E. sequierana subsp. *niciana* III (3358), VII (4125), IV (3559), (R)

Fabaceae

- Anthyllis aurea* III (3359), (MF: 522)
A. montana subsp. *jacquini* III (3360), (R, MF: 522)
A. vulneraria subsp. *pulchella* III (3361), (R, MF: 525)
Astragalus angustifolius subsp. *pungens* III (3362), (R, MF: 468)

- A. depressus* III (3363), (MF: 463)
A. monspessulanus subsp. *monspessulanus* IV obs
Cercis siliquastrum I (300), IV obs
Chamaecytisus eriocarpus VI (3952)
Colutea arborescens IV (3560)
Coronilla varia III (3364)
Cytisus agnipilus III (3365), (MF: 448)
Dorycnium pentaphyllum subsp. *herbaceum* IV (3561), VI (3953), (MF: 517)
Genista carinalis III (3366), V (3721)
G. depressa III (3367), V (3722), (MF: 453, R)
Hippocrepis comosa (MF: 530)
Lathyrus laxiflorus VI (3954), IV obs
L. niger subsp. *niger* VI (3955), IV (3562)
L. nissolia III (3368)
L. pratensis III (3369), (MF: 491)
Lotus aegaeus (R)
L. corniculatus VI (3956), VII (4126)
L. tenuis IV (3563)
Medicago minima IV (3564), (R)
M. sativa subsp. *falcata* IV (3565), (R)
Melilotus alba IV (3566), VI (3957)
M. indica VI (3958)
Onobrychis alba subsp. *calcarea* (MF: 535)
O. montana subsp. *scardica* III (3370), (R, MF: 536)
O. pindicola (R)
Trifolium alpestre III (3371), IV (3567), V (3723), VI (3958), (R, MF: 515)
T. angustifolium IV (3568), VI (3959)
T. arvense IV obs, VI obs
T. aureum IV obs, VI obs
T. campestre VI (3960)
T. heldreichianum III (3372), V (3724), (R, MF: 513)
T. hirtum VI (3961)
T. hybridum subsp. *hybridum* VII (4127)
T. medium subsp. *balcanicum* III (3373)
T. nigrescens s. lat. IV obs
T. ochroleucon VI (3962)
T. pratense III (3374), VI (3963), IV obs
T. purpureum IV (3569)
T. repens III (3375), (R, MF: 504)
T. scabrum VI (3964)
T. striatum VI (3965)
T. strictum VI (3966)
T. tenuifolium VI (3967)
Trigonella monspeliaca (R)
Vicia cracca IV (obs)
V. dalmatica VI (3968)
V. grandiflora VI (3969)
V. hirsuta VI (3970)
V. sativa subsp. *macrocarpa* VI (3971)
V. tetrasperma VI (3972)
- Fagaceae*
Castanea sativa IV (3570)
Fagus sylvatica subsp. *sylvatica* II (3129), IV (3571), V (3725)
Quercus coccifera II (3130), III (3376), VI (3973), (R)
Q. frainetto IV (3572), VI (3974)
Q. pubescens IV (3573)
- Gentianaceae*
Gentiana asclepiadea III (3377), V (3726), VII (4128)
G. cruciata subsp. *cruciata* (R)
- Geraniaceae*
Geranium columbinum V (3727)
G. macrorrhizum III (3378), V (3728), VII (4129), (R, MF: 540)
G. robertianum IV (3975)
G. sanguineum III (3378), IV (3574), VI (3976), VII (4130)
G. sylvaticum IV (3575)

Erodium cicutarium subsp.
cuticularium VII (4131)

Globulariaceae

Globularia meridionalis III (3379),
(R)

Guttiferae

Hypericum barbatum III (3380),
(MF: 604)

H. maculatum III (3381)

H. olympicum f. *uniflorum* III
(3382), V (3729), (R, MF: 598)

H. rochelii VII (4132), (R, MF: 603)

H. perforatum var. *angustifolium* II
(3131), VI (3977)

H. rumeliacum subsp. *rumeliacum*
IV (3576), (MF: 605)

Juncaceae

Juncus effusus VII (4133)

Luzula luzuloides subsp.

luzuloides III (3383)

L. multiflora subsp. *multiflora* III
(3384)

L. sylvatica subsp. *sylvatica* III
(3385), V (3770)

Lamiaceae

Acinos alpinus subsp. *meridionalis*
III (3386), IV (3577), V (3731)

A. suaveolens VI (3987)

Ajuga laxmanni III (3387), (R)

Calamintha sylvatica subsp. *ascen-*
dens IV (3578), V (3731)

C. nepeta subsp. *nepeta* IV (3579)

Clinopodium vulgare subsp. *arun-*
danum VI (3979)

Clinopodium vulgare subsp. *vulgare*
III (3388), V (3732)

Lamium garganicum subsp.
laevigatum III (3389), (R)

Marrubium peregrinum VII (4134)

M. vulgare VI obs

Melissa officinalis subsp. *altissima*
VI (3980), (R)

Mentha spicata II (3132), (R, KOK-
KINI 1983)

Micromeria cremnofila II (3133), VI
(3981)

M. dalmatica subsp. *bulgarica* (R)

M. juliana (R)

Nepeta nuda subsp. *nuda* III (3390),
VI (3982), VII (4135), (R)

Origanum vulgare subsp. *vulgare* III
(3391), IV (3580), VI (3983), VII
(4136)

Prunella laciniata III (3392), VI
(3984), VII (4137)

Salvia amplexicaulis IV (3581)

S. verbenaca IV obs

S. virgata III (3393)

S. viridis IV (3582)

Satureja pilosa II (3134), IV (3583),
VI (3985), (S & F)

Sideritis montana subsp. *montana*
(R)

S. montana subsp. *remota* III (3394),
IV (3584)

S. scardica subsp. *longibracteata* III
(3395), V (3733), (R, PAPANICOLA-
OU & KOKKINI 1982)

Stachys cassia (R)

S. germanica subsp. *heldreichii* VII
(4138)

S. leucoglossa (R)

S. officinalis (R, S & P)

S. tymphaea III (3395), V (3733), (R)

Teucrium chamaedrys II (3135), III
(3396), IV (3585), V (3734), VI
(3986), (R)

T. montanum III (3397), V (3735), (R)

T. polium s. lat. VI (3987), (R)

Thymus atticus IV (3586), VI (3988)

T. cherlerioides III (3398), (R)

T. degenii III (3399), VII (4139)

T. glabrescens s. lat. III (3400), (R)

T. sibthorpii II (3136), IV (3587), VI
(3989), VII (4140), (R)

T. spectabilis (RONNINGER in R)

T. substriatus VI (3990), VII (4141)
T. thracicus V (3736), (R)

Liliaceae

Allium carinatum subsp. *pulchellum* III (3401), (R)

A. flavum subsp. *flavum* V (3737)

A. paniculatum subsp. *paniculatum* IV (3588), V (3738)

A. sphaerocephalon subsp. *sphaerocephalon* III (3402), V (3739)

A. sphaerocephalon subsp. *trachypus* III (3403), VI (3991)

Asparagus acutifolius II (3137), V (3740), VI (3992)

Colchicum autumnale V (3741), VII (4142)

C. bivonae III (3404), (R)

Lilium martagon III (3405)

Muscari botryoides III (3406)

M. comosum IV obs.

Ornithogalum montanum (R)

O. umbellatum III (3407)

Polygonatum odoratum IV (3589)

Ruscus aculeatus IV (3590)

Linaceae

Linum austriacum III (3408), (MF: 561)

L. elegans III (3409), R, MF: 559

L. nodiflorum IV (3591)

L. tenuifolium III (3410), V (3742), VI (3993), (MF: 564)

Oleaceae

Fraxinus ornus IV (3592), VI obs

Ligustrum vulgare II (3138), IV (3593)

Syringa vulgaris IV (3594), R, S & P)

Orchidaceae

Dactylorhiza saccifera III (3411)

D. sambucina subsp. *sambucina* III (3412)

Orobanchaceae

Orobanche caryophyllacea III (3411)

Papaveraceae

Papaver rhoeas VI (3994)

Plantaginaceae

Plantago holosteam III (3414)

P. lanceolata VI (3995), VII (4143)

P. major subsp. *intermedia* II (3139)

Plumbaginaceae

Armeria canescens VI (3996), VII (4144)

Goniolimon tataricum II (3161)

Poaceae

Aegilops geniculata IV (3595), VI (3996)

Agrostis stolonifera VI (3997), VII (4145)

Alopecurus gerardii (R)

Anthoxanthum odoratum III (3415), V (3742), VII (4146)

Apera spica-venti VI (3998)

Arrhenatherum elatius III obs, (R)

Avenula pratensis III (3416)

Bellardiochloa violacea III (3417), (R)

Brachypodium distachyon IV (3596)

B. pinnatum III (3418), V (3743)

B. sylvaticum subsp. *sylvaticum* II (3140), V (3744)

Briza media subsp. *media* III (3419), VI (3999)

Bromus cappadocicus subsp. *lacmonicus* (R)

B. commutatus subsp. *commutatus* VI (4000)

B. hordeaceus subsp. *hordeaceus* VI (4001)

B. japonicus subsp. *japonicus* II (3141)

B. riparius III (3420), V (3745)

B. secalinus IV (3597), VI (4002), VII (4147)

- B. squarrosus* V (3746), VI (4003), (R)
B. tectorum VI (4004)
Calamagrostis arundinacea III (3421)
C. varia III (3422)
Chrysopogon gryllus IV obs, VI (4005)
Cynodon dactylon III (3423), VI (4148)
Cynosurus echinatus IV (3598), VI (4006)
Dactylis glomerata s. lat. III (3424), V (3747)
Dasyphyrum villosum VI (4007)
Deschampsia cespitosa subsp. *cespitosa* III (3425)
D. flexuosa III (3426)
Dichanthium ischaemum II (3142), IV (3599)
Festuca graeca subsp. *graeca* III (3427), (R)
F. macedonica III (3429)
F. panciciana (R)
F. paniculata subsp. *paniculata* III (3428)
Festucopsis sancta III (3430), (R, S & P)
Glyceria maxima III (3431)
Holcus lanatus VI (4008)
Koeleria macrantha IV (3600), VI (4009)
K. splendens III (3432), (R)
Lolium perenne IV (3601)
L. rigidum IV (3602)
Melica ciliata subsp. *ciliata* III (3433), (R)
M. uniflora IV (3603)
Phleum montanum III (3434)
P. pratense subsp. *pratense* IV (3604), VI (4010)
Poa alpina III (3435), V (3748)
P. brevifolia (R)
P. bulbosa IV (3605)
P. compressa (R)
- P. nemoralis* IV (3606), V obs, VI (4011)
P. pratensis III (3436)
P. timoleontis IV (3607)
P. trivialis subsp. *trivialis* VI (4012), VII (4149)
Sesleria coerulans III (3437), V (3749)
S. nitida (R)
S. tenerrima III (3438), V (3750), (R)
Sorghum halepense II (3143)
Stipa pulcherrima III (3439), V (3751), (R)
Taeniatherum caput-medusae VI (4013)
Vulpia ciliata subsp. *ciliata* VI (4014)
V. myuros IV (3608)
- Polygalaceae*
Polygala nicaeensis subsp. *mediterranea* III (3440), IV (3609), (MF: 586)
- Polygonaceae*
Polygonum aviculare VI (4015)
P. equisetiforme II (3114)
P. hydropiper II (3145)
Rumex acetosella subsp. *acetoselloides* VI (4016), VII (4150)
R. alpinus (MF: 73)
R. crispus IV (3610)
R. kernerii (R, MF: 74)
R. pulcher subsp. *pulcher* VI (4017), (R)
- Platanaceae*
Platanus orientalis T (3001), (R)
- Primulaceae*
Anagallis arvensis IV (3611)
Cyclamen hederifolium II (3146)
Primula veris subsp. *columnae* III (3441), (R)

*Ranunculaceae**Consolida regalis* subsp. *paniculata* (R)*Clematis flammula* II (3147), IV (3612)*Helleborus cyclophyllus* IV obs*Nigella arvensis* subsp. *arvensis* IV (3613), VI (4018)*Ranunculus illyricus* III (3442), (R)*R. millefoliatus* III (3443)*R. sartorianus* III (3444), (MF: 216)*Thalictrum minus* subsp. *olym-picum* III (3445), (R, MF: 229)*Resedaceae**Reseda lutea* II (3148)*Rhamnaceae**Paliurus spina-christi* II (3149), IV (3614)*Rosaceae**Agrimonia eupatoria* subsp. *grandis* VI (4019), VII (4151)*Alchemilla flabellata* III (3446), V (3752), (R, MF: 420)*A. glaucescens* (MF: 420)*Amelanchier ovalis* subsp. *ovalis* III (3447), V (3753)*Aremonia agrimonoides* subsp. *agrimonoides* III (3448), V obs*Cotoneaster integerrimus* (MF: 438)*C. nebrodensis* III (3449)*C. nebrodensis* X *C. intergerrimus* III (3450), (MF: 439)*Crataegus monogyna* II (3150), VI (4020)*C. orientalis* IV (3615), VII (4152)*Fragaria vesca* II (3151), III (3451), IV obs, V obs, VI (4021), VII (4153)*Filipendula vulgaris* III (3452), V (3754)*Geum urbanum* III (3453)*Potentilla argentea* III (3454), IV (3616), (R)*P. cinerea* III (3455), V (3755), (R, MF: 412)*P. detommasii* III (3456), V (3756), (R)*P. laciniosa* VII (4154)*P. recta* s. str. IV (3617)*P. reptans* III obs, IV obs*Prunus spinosa* IV obs, VI obs*Rosa agrestis* II (3152)*R. arvensis* (MF: 390)*R. pendulina* V (3757), (MF: 390)*R. pimpinellifolia* III (3457), (MF: 390)*R. pulverulenta* III (3458), (R, MF: 398)*Rubus canescens* II (3153)*R. hirtus* VII (4155)*R. idaeus* VI (4022)*Sanguisorba minor* subsp. *muricata* II (3154), IV (3618), VI (4023)*Sorbus torminalis* IV (3619)*S. umbellata* III (3459), (MF: 435)*Rubiaceae**Asperula aristata* subsp. *nestia* (R)*A. aristata* subsp. *scabra* IV (3620), VI (4024)*A. aristata* subsp. *thessala* III (3460)*A. purpurea* subsp. *purpurea* II (3155), IV (3621), V (3758), VII (4156), (R)*Crucianella graeca* II (3156), IV (3622), (R)*Cruciana glabra* III (3461)*C. laevipes* III (3462)*C. pedemontana* VI (4025), (R)*Galium aparine* VI (4026)*G. capitatum* IV (3623)*G. flavescens* (R)*G. heldreichii* IV (3624), VI (4027)*G. rhodopeum* III (3463), (R)*G. verum* subsp. *verum* III (3464), IV (3625), VI (4028)*Sherardia arvensis* VI (4029)

Rutaceae

Haplophyllum balcanicum III
(3465), V (3759), (R, S & P, MF:
577)

Salicaceae

Populus nigra VI (4030), (R)

Santalaceae

Thesium alpinum III (3466), (MF:
54)

T. brachyphyllum (MF: 58)

T. linophyllum subsp. *linophyllum* IV
(3626)

Saxifragaceae

Saxifraga chrysosplenifolia III
(3467)

S. ferdinandi-coburgi (S & P, MF:
376)

S. luteoviridis (R)

S. sempervivum III (3468), R, MF:
377)

S. stribrnyi III (3469), (MF: 379)

S. tridactylites (R, MF: 367)

Scrophulariaceae

Digitalis lanata IV (3627), (R)

D. laevigata s. lat. VI (4031)

D. viridiflora III (3470), VII (4157)
cf. *D. laevigata* X *D. viridiflora* II
(3157)

Linaria angustissima III (3471)

Melampyrum fimbriatum IV (3628)

Odontites verna subsp. *serotina* VII
(4158)

Parentucellia latifolia III (3472), IV
(3629)

Rhinanthus minor III (3473)

R. rumelicus V (3760), (R)

Scrophularia heterophylla subsp.
laciniata III (3474), (R)

Verbascum longifolium VII obs

V. nobile II (3158), (R)

V. orientale (R)

V. phlomoides (R)

V. speciosum subsp. *speciosum* VII
(4159), (R)

Veronica austriaca subsp. *austriaca*
III (3475), V (3761), (R)

V. chamaedrys s. lat. III (3476), IV
(3630), VI (4032)

V. longifolia V (3762)

V. verna III (3477)

V. urumovii IV (3631), V (3763), (R, S
& P)

Solanaceae

Solanum dulcamara II (3159)

Thymeleaceae

Daphne oleoides III (3478), V (3764),
VII (4160), (R, MF: 593)

Tiliaceae

Tilia tomentosa IV (3632)

Ulmaceae

Ulmus minor II obs, IV obs, VI obs

Urticaceae

Parietaria officinalis II obs

Urtica urens VI (4033)

Valerianaceae

Valeriana officinalis II obs, VI obs,
(R)

Verbenaceae

Verbena officinalis II (3160)

Violaceae

Viola alba subsp. *dehnhardtii* III
(3479)

V. hymettia VII (4161)

V. reichenbachiana VI (4034)

V. sieheana III (3480)

V. tricolor subsp. *macedonica* III
(3481), VII (4162), (R, MF: 633)

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