

Phyton (Austria)	Vol. 27	Fasc. 2	267–283	30. 11. 1987
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## The Flora of Mount Menikion in North East Greece

By

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With 2 figures

Received January 26, 1987

Key words: *Pteridophyta*, *Spermatophyta*. – Floristics, local flora. – SE Europe, Greece.

### 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

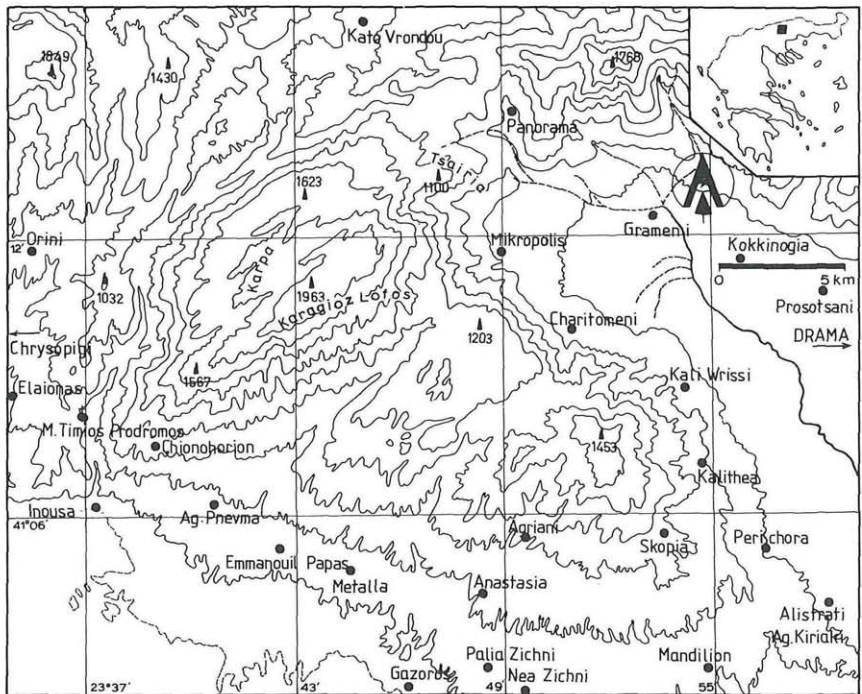


Fig. 1. Geographical map of Mount Menikion.

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.

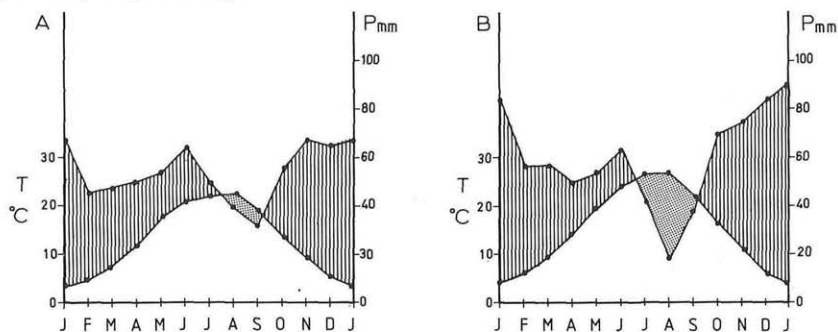


Fig. 2. Ombrothermic diagrams of the two meteorological stations, A: Chrysopigi and B: Drama.

## 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. marmoreum* (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. *cutarium* 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. *ascendens* IV (3578), V (3731)
- C. nepeta* subsp. *nepeta* IV (3579)
- Clinopodium vulgare* subsp. *arundanum* 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, KOKKINI 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, PAPANICOLAOU & 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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Jahr/Year: 1987

Band/Volume: [27\\_2](#)

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Artikel/Article: [The Flora of Mount Menikion in North East Greece. 267-283](#)