

**THE DADIA–LEFKIMI–SOUFLI FOREST NATIONAL PARK, GREECE:  
BIODIVERSITY, MANAGEMENT AND CONSERVATION**

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Illustrations by  
*Paschalis Dougalis*



**WWF Greece  
Athens 2010**

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*Suggested citation:*

Author's name. 2010. Title of paper. – In: Catsadorakis, G. and Källander, H. (eds). The Dadia–Lefkimi–Soufli Forest National Park, Greece: Biodiversity, Management and Conservation. WWF Greece, Athens, pp. 000–000.

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Published by:  
WWF Greece,  
26 Filellinon str.,  
GR-105 58 Athens, Greece  
Tel:+30 2103314893, fax: +302103247578  
e-mail: support@wwf.gr  
<http://www.wwf.gr>

ISBN 978-960-7506-10-8

Typeset by ZooBo Tech, Torna Hällestad, Sweden

Printed by Schema + Chroma, GR-574 00 Sindos, Thessaloniki, <http://www.kethea-print.gr>

Illustrations by Paschalis Dougalis

Maps on pages 18–28, 36, 42, 86, 89, 217 and 231–243 prepared by Nikolaos Kasimis, those on pages 23, 27 and 232 by Konstantinos Poirazidis.

The book was printed on 130 g FSC-certified Sappi Era Silk paper.

Cover photo: Giorgos Catsadorakis.

# The flora

Georgios Korakis, Achilles Gerasimidis and Vassiliki Kati

The Dadia–Lefkimi–Soufli Forest National Park is located in Thrace, an area of great phytogeographic interest comprising one of the floristic links between Europe and Anatolia. The floristically particularly interesting mafic and ultramafic rocks that occur sporadically in the area, contribute to the plant diversity of the Park. In this paper we provide a review of the known flora of the Park. Life-forms and chorological relationships of the recorded taxa reveal their Mediterranean affinities. Furthermore, we demonstrate the strong influence of oriental floristic elements, due to the geographical position of the region, and comment on the occurrence of endemic taxa. Plant taxa, significant from a conservation point of view, including *Minuartia greuteriana*, *Onosma kittanae*, *Salix xanthicola*, *Eriolobus trilobatus*, *Cephalanthera epipactoides* and *Cistus laurifolius*, are discussed. Several other taxa, which are rare in Greece or are floristically interesting for other reasons, are reported from the Park. In total, 32 of the Park's taxa are included in databases because of their special conservation and/or legislative status.

**Keywords:** Thrace, phytogeography, chorological relationships, rare species, *Eriolobus trilobatus*, *Onosma kittanae*, Red Data Book

## Regional phytogeographical remarks

The position of the Balkans, the eastern-most of the three large peninsulas of southern Europe jutting south into the Mediterranean Sea, together with a dissected physiography and a dramatic geological history, have all contributed to create the preconditions for the evolution of the region's exceptionally rich and diversified flora.

Thrace is situated in the southeastern part of the Balkan Peninsula and is the province where two large continental masses, Europe and Asia, meet. Thus, the Dadia–Lefkimi–Soufli Forest National Park (hereafter DNP) is located in an area of high phytogeographical interest, which constitutes a floristic link between Europe and Asia Minor (Anatolia). This was recognized by several botanists decades ago (Turril 1929, Polunin 1980).

Phytogeographically, Thrace is located on the margin of three wider floristic regions: The Euro-Sibirc Region (Illyrian Province), the Mediterranean Region (Eastern Mediterranean Province) and the Aralo-Caspian Region (Sarmatic Province) (Braun-Blanquet 1932). According

to more recent researchers, such as Good (1974), the region of Thrace extends to where the Euro-Siberian, Mediterranean and West-Central Asian floristic Regions meet, while according to Takhtajan (1969, 1986) it is where the Circumboreal, Mediterranean and Irano-Turanian floristic regions meet. According to the latter author, the Balkan, Euxine and East Mediterranean floristic provinces also come into contact in the same extensive area.

From a geological perspective the region of Thrace constitutes the oldest landmass of Greece and is dominated by ancient igneous and metamorphic rock formations. Moreover, in the zone surrounding the Rhodope Mountains, including the DNP, mafic and ultramafic rocks, which are particularly interesting from a floristic perspective, are met with sporadically (Mountrakis 1985, Jacobshagen 1986).

According to Turril (1929), in the past, after the flooding of the Aegean landmass, Thrace functioned as a land bridge for the migration of plant species from Anatolia to Europe and *vice versa*. This is one of the two basic routes by which species with an oriental origin

reached Europe; the other one is along the South Aegean Island Arc. The northern route via Thrace is considered equivalent in significance to the southern one and was favoured by species requiring wetter, non-limestone biotopes (Strid 1986a, b, 1989).

Anatolian floristic elements are pronounced in the montane zones of a wider geographical area beyond Thrace. According to Strid and Tan (1998), c. 61% of the species of the floristic region of NE Greece (Eastern Macedonia and Thrace) are also encountered in Asia Minor.

## Floristic analysis

Even though the flora of the region to which the DNP belongs, is of great significance, it is not well-known even today, largely due to a lack of systematic investigation. The floristic elements presented and analysed in this paper come mainly from studies that used data collected for vegetation research (Korakis and Gerasimidis 2006, Korakis et al. 2006). This has resulted in the highest possible accuracy in the recording of the locations as well as the biotopes of the taxa (see also Tsiripidis et al. 2004). Furthermore, the uniform representation of all types of ecosystems/habitats and vegetation layers in the samples ensures, in situations such as this where the floristic catalogue has not been completed, quite an accurate picture of the area's floristic character. To the above recordings, data have also been added from certain other studies conducted in the area of Dadia (Kamari 1995a, Kati et al. 2000, Stevanovic et al. 2003, Korakis et al. 2009).

According to presently available data, the checklist of the National Park consists of 354 taxa. A floristic catalogue, which includes information on the life form, life-history characteristics and chorological distribution of each plant, is given in Appendix 1. Generally, the nomenclature follows that recommended by Strid and Tan (1997, 2002), Greuter et al. (1984 – 1989), Strid (1986b), Strid and Tan (1991) and Tutin et al. (1968 – 1980, 1993). Life-form classification follows the Raunkiaer (1934) system and is based mainly on the works of Garcke (1972) and Pignatti (1982). The majority of the above-mentioned floristic studies were used for the classification of life-history characteristics. For the chorological types the classification of Pignatti (1982) in combination with data from Tutin et al. (1968 – 1980, 1993) and Davis (1965 – 1988) were used.

Table 1 gives the positions of the collection locations of most of the taxa, together with concise information

on the type of biotope. The collection locations in the National Park are shown in Fig. 1.

Although the floristic mapping is not complete, the data reflect the phytogeographic character of the region. The analysis of the floral elements below includes life-forms, life-history characteristics and chorological relationships.

## The life-forms

The life-forms of the known flora of the DNP are presented in Fig. 2. Hemicryptophytes (H) dominate, comprising 43% of the total flora. Therophytes (Th), phanerophytes (P) and geophytes (G) follow with almost equal proportions (18%, 16% and 15% respectively). The comparatively high proportion of hemicryptophytes shows that the flora exhibits a pronounced sub-Mediterranean character, i.e. being transitional between the Mediterranean and the Central European type, in agreement with classifications of the bioclimate and the vegetation of the area (see Chapter *Vegetation and habitat types*, this volume). The spectrum of life-

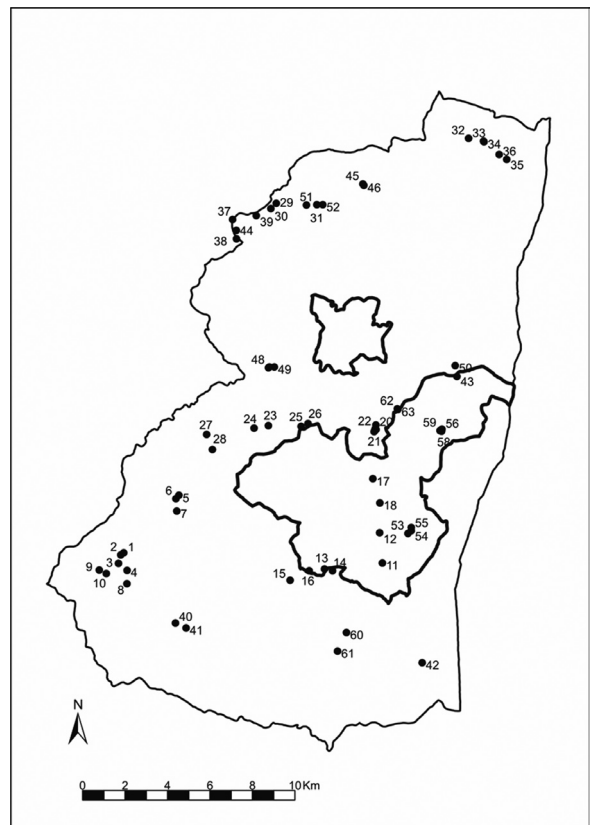


Fig. 1. Map of collecting localities.

Table 1. List of collection sites.

**1–10 HABITAT DESCRIPTION:** Low, evergreen, usually closed scrub formations dominated by *Arbutus andrachne*, *Phillyrea latifolia*, *Cistus* spp. and *Erica arborea* on rocky metamorphic substrate.

- 1: 41° 03' 53" / 26° 04' 19" – 2.7 km S of the old village of Pessani – 250 m asl – 25/5/99.  
 2: 41° 03' 50" / 26° 04' 13" – 2.7 km S of the old village of Pessani – 250 m asl – 25/5/99.  
 3: 41° 03' 37" / 24° 04' 08" – 3.3 km S of the old village of Pessani – 250 m asl – 25/5/99.  
 4: 41° 03' 26" / 26° 04' 25" – 3.5 km S of the old village of Pessani – 250 m asl – 25/5/99.  
 5: 41° 05' 19" / 26° 06' 13" – 1.7 km E of the old village of Pessani – 250 m asl – 26/5/99.  
 6: 41° 05' 14" / 26° 06' 07" – 1.5 km E of the old village of Pessani – 380 m asl – 26/5/99.  
 7: 41° 04' 55" / 26° 06' 08" – 1.7 km E of the old village of Pessani – 380 m asl – 26/5/99.  
 8: 41° 03' 06" / 26° 04' 24" – 1.1 km S of the old village of Pessani – 210 m asl – 26/5/99.  
 9: 41° 03' 28" / 26° 03' 29" – 3.9 km S of the old village of Pessani – 220 m asl – 28/5/99.  
 10: 41° 03' 22" / 26° 03' 43" – 3.9 km S of the old village of Pessani – 255 m asl – 28/5/99.

**11–18 HABITAT DESCRIPTION:** *Pinus halepensis* subsp. *brutia* forest on acid sandy soils, mostly poor in nutrients with sparsely developed herbaceous layer.

- 11: 41° 03' 28" / 26° 13' 00" – 4.3 km NE of the village of Lefkimi – 150 m asl – 29/5/99.  
 12: 41° 04' 14" / 26° 12' 56" – 4.6 km W of the village of Lira – 150 m asl – 29/5/99.  
 13: 41° 03' 21" / 26° 11' 03" – 3.8 km N of the village of Lefkimi – 150 m asl – 29/5/99.  
 14: 41° 03' 18" / 26° 11' 19" – 3.6 km N of the village of Lefkimi – 175 m asl – 29/5/99.  
 15: 41° 03' 05" / 26° 09' 53" – 4.1 km NW of the village of Lefkimi – 170 m asl – 29/5/99.  
 16: 41° 03' 19" / 26° 10' 32" – 3.9 km N of the village of Lefkimi – 245 m asl – 29/5/99.  
 17: 41° 05' 37" / 26° 12' 45" – 3.9 km S of the village of Dadia – 230 m asl – 29/5/99.  
 18: 41° 05' 00" / 26° 12' 58" – 4.8 km NW of the village of Lira – 215 m asl – 29/5/99.

**19–23 HABITAT DESCRIPTION:** Pure *Pinus nigra* subsp. *nigra* var. *caramanica* stands occupying level sites, on siliceous soils. Canopy generally open, with closely developed herbaceous layer.

- 19: 41° 06' 52" / 26° 12' 54" – 1.7 km S of the village of Dadia – 150 m asl – 22/6/99.  
 20: 41° 06' 59" / 26° 12' 54" – 1.5 km S of the village of Dadia – 150 m asl – 22/6/99.  
 21: 41° 06' 49" / 26° 12' 50" – 1.8 km S of the village of Dadia – 150 m asl – 22/6/99.  
 22: 41° 06' 53" / 26° 12' 52" – 1.7 km S of the village of Dadia – 110 m asl – 22/6/99.  
 23: 41° 07' 02" / 26° 09' 17" – 0.8 km S of the recreational area of Katrantzides – 245 m asl – 28/5/99.

**24–28 HABITAT DESCRIPTION:** Mixed *Quercus frainetto* – *Pinus halepensis* subsp. *brutia* forests that occupy more mesic biotopes than pure pinewoods. Multistorey structure and well developed shrub and herbaceous layers.

- 24: 41° 06' 59" / 26° 08' 49" – 0.8 km S of the recreational area of Katrantzides – 210 m asl – 28/5/99.  
 25: 41° 07' 00" / 26° 10' 23" – 2.1 km SE of the recreational area of Katrantzides – 215 m asl – 28/5/99.  
 26: 41° 07' 04" / 26° 10' 37" – 2.4 km SE of the recreational area of Katrantzides – 215 m asl – 28/5/99.  
 27: 41° 06' 51" / 26° 07' 12" – 2.7 km SW of the recreational area of Katrantzides – 325 m asl – 28/5/99.  
 28: 41° 06' 28" / 26° 07' 23" – 2.8 km SW of the recreational area of Katrantzides – 325 m asl – 28/5/99.

**29–44 HABITAT DESCRIPTION:** Pure coppice oak forests of *Quercus frainetto* and exceptionally *Quercus petraea* subsp. *medwediewii* (site 44). Generally low-high young stands that occupy dry to mesic sites on granite and gneiss.

- 29: 41° 12' 42" / 26° 09' 44" – 3.4 km W of the village of Giannouli – 530 m asl – 27/5/99.  
 30: 41° 12' 34" / 26° 09' 33" – 3.6 km W of the village of Giannouli – 550 m asl – 27/5/99.  
 31: 41° 12' 38" / 26° 10' 45" – 1.9 km W of the village of Giannouli – 175 m asl – 27/5/99.  
 32: 41° 14' 14" / 26° 16' 16" – 5.4 km NW of the town of Soufli – 180 m asl – 27/5/99.  
 33: 41° 14' 09" / 26° 16' 46" – 4.9 km NW of the town of Soufli – 250 m asl – 27/5/99.  
 34: 41° 14' 08" / 26° 16' 47" – 4.8 km NW of the town of Soufli – 240 m asl – 27/5/99.  
 35: 41° 13' 40" / 26° 17' 32" – 3.8 km N of the town of Soufli – 220 m asl – 27/5/99.  
 36: 41° 13' 48" / 26° 17' 17" – 4.1 km N of the town of Soufli – 215 m asl – 27/5/99.  
 37: 41° 12' 19" / 26° 08' 15" – 5.5 km W of the village of Giannouli – 590 m asl – 21/6/99.  
 38: 41° 12' 04" / 26° 08' 00" – 5.5 km SW of the village of Giannouli – 580 m asl – 21/6/99.  
 39: 41° 12' 24" / 26° 09' 03" – 4.4 km W of the village of Giannouli – 550 m asl – 21/6/99.  
 40: 41° 02' 04" / 26° 06' 00" – 8.1 km W of the village of Lefkimi – 150 m asl – 22/6/99.  
 41: 41° 01' 56" / 26° 06' 21" – 7.6 km W of the village of Lefkimi – 140 m asl – 22/6/99.  
 42: 41° 00' 54" / 26° 14' 13" – 1.9 km SW of the village of Provatonas – 95 m asl – 22/6/99.  
 43: 41° 08' 10" / 26° 15' 40" – 3.2 km NE of the village of Dadia – 140 m asl – 21/6/99.  
 44: 41° 12' 02" / 26° 08' 22" – 5.4 km SW of the village of Giannouli – 450 m asl – 21/6/99.

**45–50 HABITAT DESCRIPTION:** *Alnus glutinosa*, *Fraxinus angustifolia* and *Salix alba* galleries developing on alluvial deposits along streams and riversides.

**45:** 41° 13' 08" / 26° 12' 40" – 1.1 km SW of the village of Giannouli – 195 m asl – 21/6/99.

**46:** 41° 13' 06" / 26° 12' 42" – 1.1 km SW of the village of Giannouli – 195 m asl – 21/6/99.

**47:** 41° 08' 32" / 26° 09' 22" – 4.1 km SE of the village of Kotronia – 380 m asl – 22/6/99.

**48:** 41° 08' 33" / 26° 09' 11" – 4.0 km SE of the village of Kotronia – 380 m asl – 22/6/99.

**49:** 41° 08' 32" / 26° 09' 32" – 4.3 km SE of the village of Kotronia – 385 m asl – 22/6/99.

**50:** 41° 08' 27" / 26° 15' 37" – 3.3 km NE of the village of Dadia – 150 m asl – 22/6/99.

**51–52 HABITAT DESCRIPTION:** Low scrub dominated by *Juniperus oxycedrus* subsp. *oxycedrus*.

**51:** 41° 12' 38" / 26° 11' 06" – 1.5 km W of the village of Giannouli – 240 m asl – 17/5/00.

**52:** 41° 12' 38" / 26° 11' 18" – 1.2 km W of the village of Giannouli – 235 m asl – 17/5/00.

**53–55 HABITAT DESCRIPTION:** Mesic grassland.

**53:** 41° 04' 12" / 26° 13' 53" – 3.3 km W of the village of Lira – 115 m asl – 18/5/00.

**54:** 41° 04' 16" / 26° 14' 00" – 3.2 km W of the village of Lira – 115 m asl – 18/5/00.

**55:** 41° 04' 21" / 26° 14' 00" – 3.1 km W of the village of Lira – 115 m asl – 18/5/00.

**56–63 HABITAT DESCRIPTION:** Dry, rocky grassland.

**56:** 41° 06' 50" / 26° 15' 07" – 2.8 km SE of the village of Dadia – 160 m asl – 17/5/00.

**57:** 41° 06' 48" / 26° 15' 06" – 2.9 km SE of the village of Dadia – 180 m asl – 17/5/00.

**58:** 41° 06' 47" / 26° 15' 06" – 2.9 km SE of the village of Dadia – 170 m asl – 17/5/00.

**59:** 41° 06' 48" / 26° 15' 03" – 2.8 km SE of the village of Dadia – 160 m asl – 17/5/00.

**60:** 41° 01' 43" / 26° 11' 44" – 0.7 km N of the village of Lefkimi – 280 m asl – 19/5/00.

**61:** 41° 01' 15" / 26° 11' 25" – 0.5 km S of the village of Lefkimi – 220 m asl – 19/5/00.

**62:** 41° 07' 23" / 26° 13' 38" – 0.6 km S of the village of Dadia – 150 m asl – 19/5/00.

**63:** 41° 07' 22" / 26° 13' 39" – 0.7 km S of the village of Dadia – 150 m asl – 19/5/00.

forms is similar to that of corresponding regions with sub-Mediterranean forest vegetation (thermophilous oakwoods) in northern Greece (Theodoropoulos and Athanasiadis 1993, Eleftheriadou et al. 1998, Chasapis et al. 2004).

### Life-history characteristics

The life-history characteristics of the flora are presented in Fig. 3. Here, perennial herbs (P) predominate with 60% of the total, which can be attributed to the fact that both hemicryptophytes and geophytes belong to this category. Perennial herbs are followed by annual herbs (A) at 17% and woody perennials, consisting of shrubs (Fr) and trees (Ar), at 15% and 5%, respectively.

### Chorological relationships

The chorological relationships are presented in Fig. 4. Reaching 38% of the total, Mediterranean elements dominate numerically over other chorological groups. Two sub-units of the above, the Euro-Mediterranean and the Sub-Mediterranean, are represented almost

equally, with 17.6% and 16.4%, respectively. This is mainly because the area extends over a relatively low altitudinal zone which to a large extent is covered by sub-Mediterranean and Mediterranean types of vegetation.

However, the Mediterranean influence is not particularly strongly expressed because of the relatively long distance from the sea and cold winters; the latter fac-

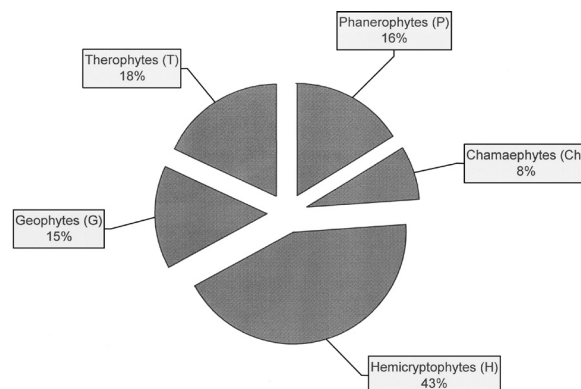


Fig. 2. Proportions of different life-forms in the present flora of Dadia–Lefkimi–Soufli Forest National Park.

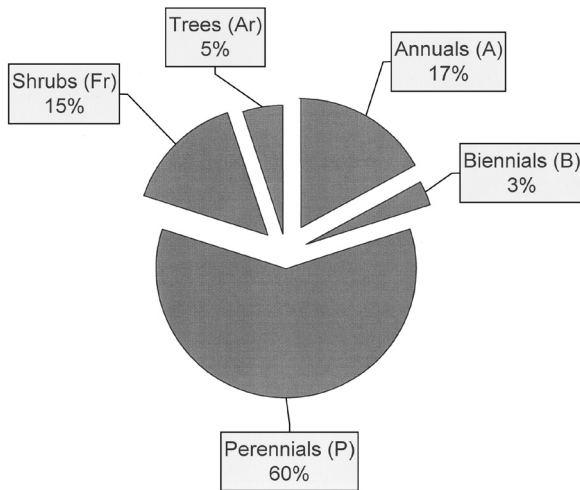


Fig. 3. Life-history characteristics of the present flora of Dadia–Lefkimi–Soufli Forest National Park.

tor is also characteristic of the wider region. The high incidence of sub-Mediterranean taxa originating from the northern limits of the Mediterranean region and especially, the presence of taxa from temperate areas of Europe and Eurasia, characterise the flora of the National Park as representative of the sub-Mediterranean zone and the woods of thermophilous oaks.

Another interesting characteristic, which arises from the geographical position of the region, is the presence of floristic elements of an eastern origin or radiance. In the European (*sensu lato*) chorological unit especially (with the exception of the Euro-Siberian unit), but also in the Mediterranean and Balkan units, many taxa occur that have distributions in Anatolia, the Black Sea region, the Caucasus and the Turanic region (see also Pavlova et al. 2004). Up to 20% of the taxa (70 taxa) belong to this category and are associated with either extensive or more restricted regions of Asia.

Local endemics are *Minuartia greuteriana* Kamari (Caryophyllaceae) and *Onosma kittanae* Strid (Boraginaceae), as well as the geographically restricted *Salix xanthicola* Christensen (Salicaceae) (see discussion below). Until today, no other local or regional endemics have been reported from the area. The absence of high mountains, and of geographical or ecological isolation, contributes to this. Endemism is also expressed by the presence of members of the Balkan chorological unit, which constitutes 10% of the total taxa. Although there is a general increasing trend in Balkan endemics towards the north of the mainland (Strid 1986a, 1993), it is not particularly strongly reflected in the Dadia area because of its low altitude.

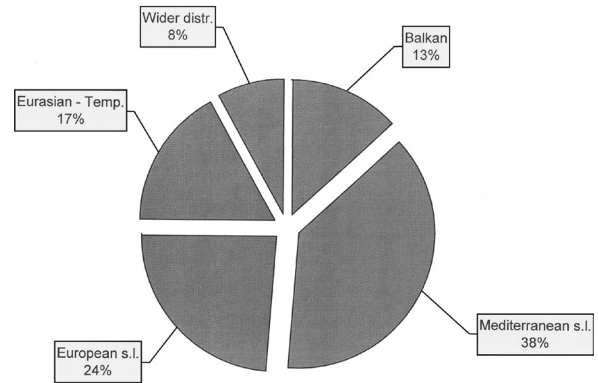


Fig. 4. Chorological relationships of the present flora of Dadia–Lefkimi–Soufli Forest National Park.

### Significant floristic records

A relatively large number of plant taxa regarded as significant because of their distribution and/or population status have been recorded in the area. Table 2 presents in concise form 32 taxa that are included in the databases because of their conservation status or because they are protected by law. Interesting plant taxa, which have been described relatively recently, include *Minuartia greuteriana*, *Onosma kittanae* and *Salix xanthicola* mentioned above.

*Minuartia greuteriana* is a densely caespitose, low cushion perennial, steno-endemic of the area, described by Kamari (1995a, 1997). Two varieties were distinguished; the typical form that was found within the protected area in two small populations and var. *peessana* near the Pessani ruins. The biotope of both populations is a rocky clearance of *Pinus halepensis* subsp. *brutia* and *Quercus frainetto* woodland, at an altitude of 100 – 400 m with a substrate of gneiss or granite. *Minuartia greuteriana* grows in rather small patches, and is characterized as “RARE” in the Red Data Book of Rare and Threatened Plants of Greece (Kamari 1995b). However, for the time being, it is not considered as threatened since it grows in the protected area (one population in the core) but its population status must be checked regularly.

*Onosma kittanae* is a lax, caespitose perennial, which is found only in the southwestern area of the National Park (Pessani) where the type specimen was collected (Stevanović et al 2003). It is a steno-endemic, growing on serpentine outcrops in mixed woodlands with deciduous oaks at an altitude of about 400 m. According to the classification of Stevanović et al. (2003) *Onosma kittanae* is an obligate serpentine endemic taxon presenting some similarities to *Onosma thracica* Velen which oc-

Table 2. List of taxa that have protection status or different forms of conservation status. END = Greek endemics, RDB = Red Data Book of Threatened Plants of Greece, EU = List of rare, threatened, and endemic plants of Europe, Council of Europe (1982), CORINE = Corine checklist of threatened plants of Europe (1991), CITES = Inclusion in Annexes B/C of CITES, 67/81 = Legislative Decree 67/1981 for the protection of native flora and wild fauna.

TAXON	END	RDB	EU	CORINE	CITES	67/81
<i>Anacamptis pyramidalis</i>					+	
<i>Cephalanthera epipactoides</i>		V	R	+	+	+
<i>Cephalanthera longifolia</i>					+	
<i>Cephalanthera rubra</i>					+	
<i>Cistus laurifolius</i>						+
<i>Dactylorhiza sulphurea</i> subsp. <i>pseudosambucina</i>					+	
<i>Epipactis atrorubens</i>					+	
<i>Epipactis helleborine</i>					+	
<i>Epipactis microphylla</i>					+	
<i>Eriolobus trilobatus</i>		V				
<i>Fritillaria pontica</i>						+
<i>Himantoglossum hircinum</i> subsp. <i>calcaratum</i>					+	
<i>Limodorum abortivum</i>					+	
<i>Minuartia greuteriana</i>	+	R				
<i>Neottia nidus-avis</i>					+	
<i>Onosma kittanae</i>	+					
<i>Ophrys sphegodes</i> subsp. <i>mammosa</i>					+	+
<i>Orchis coriophora</i> subsp. <i>fragrans</i>				+	+	
<i>Orchis laxiflora</i> subsp. <i>palustris</i>					+	
<i>Orchis mascula</i>					+	
<i>Orchis morio</i>					+	
<i>Orchis pinetorum</i>					+	
<i>Orchis papilionacea</i>					+	
<i>Orchis provincialis</i>					+	
<i>Orchis purpurea</i>					+	
<i>Orchis tridentata</i>					+	
<i>Orchis ustulata</i>					+	
<i>Platanthera chlorantha</i>					+	
<i>Salix xanthicola</i>		R				
<i>Serapias vomeracea</i>					+	
<i>Verbascum adrianopolitanum</i>						+
<i>Zygophyllum album</i>			R			+

curs in southern and southeastern Bulgaria. It is possibly related to other obligate serpentine endemics of *Onosma* in Greece, such as *Onosma elegantissimum* Rech. fil. & Goulimy and *Onosma stridii* Teppner, which are restricted to Mts Vourinos and Kallidhromon, respectively (Strid and Tan 1991). The flora of the serpentine complexes in the area, and of the adjacent Eastern Rho-

dopes, comprises several interesting taxa and a further exploration is required (Pavlova et al. 2004).

*Salix xanthicola* is a shrubby willow species, endemic to the SE Balkans, of sparse occurrence and a locally restricted distribution. It was described by Christensen (1991, 1997), who placed it in the subgenus *Vetrix*. He originally referred to it as a rather rare taxon originally



found in four sites in the region from Xanthi to Evros; in the latter area, near the borders of the DNP, it was collected again by Korakis et al. (2006) in the vicinity of Pessani within the boundaries of the National Park. Recent research revealed that the species must be more common than was initially thought (Christensen 2006). It is found along the edges of streams and creeks of permanent or temporary flow, in maquis and oakwoods, and at roadsides and in roadside ditches, generally at low altitudes (30 – 300 m) but it has been reported also in the lower montane belt (550 – 890 m) (Christensen 2006, Korakis unpublished data). In addition to the above mentioned sites, Zieliński (1992) and Boratyński et al. (1992) also refer to the Greek distribution of this species in the region of East Macedonia and Thrace. Localities have also been reported in Bulgaria by Zieliński (1992), Petrova (2004) and Petrova et al. (2004). This species is listed as “RARE” in the Red Data Book of Rare and Threatened Plants of Greece (Christensen 1995b). As it occurs along streams and rivers at low altitudes, a habitat often affected by man, it is recommended that it should be cultivated in botanical gardens and arboreta.

Another remarkable species is *Eriolobus trilobatus* (Poiret) Roemer (Rosaceae), the only species of the monotypic genus *Eriolobus* and one of the rarest trees occurring in Greece and Bulgaria. It is a small, deciduous tree up to 10 m tall that grows in mixed *Pinus-Quercus* woodland. It is an East Mediterranean species with a disjunct distribution. It extends from Lebanon and Syria, through Anatolia, to northeastern Greece and southeastern Bulgaria, where the single European localities are situated (Browicz 1972, 1982, Valev 1973, Boratyński et al. 1992). In these areas, there were only two confirmed reports for Greece and one for Bulgaria until five populations discovered in Evros, were added quite recently (Korakis et al. 2009). All the new records are either inside or at the border of the National Park.

From the research results up to now it seems that *Eriolobus trilobatus* has a relatively wide but extremely sparse occurrence in the central and southern section of the Evros Prefecture, and its populations consist of a few to several individuals. Its distribution generally falls within the altitudinal zone of 150 – 350 m and may reach inside the borders of Bulgaria, though the indigenous status of the Bulgarian population is under question (Terpó 1968). It has been listed in the Red Data Books of Greece and Bulgaria as “VULNERABLE” and “ENDANGERED”, respectively (Velchev 1984, Christensen 1995a, Petrova 2004). Its population in

Greece, according to reports by local inhabitants, has decreased in recent decades, even though traditionally, it has been protected from logging because of its edible fruit.

*Cephalanthera epipactoides* Fischer & C. A. Meyer (Orchidaceae) is an eastern (sub)Mediterranean taxon with its main distribution area in Anatolia, while the western limits of its distribution are the islands of the East Aegean Sea (Rhodes, Kos, Samos, Lesbos) and the Evros region. It grows on calcareous substrate in pine forests and garrigue. In Greece, its populations are small and isolated (Kalopissis 1995, Delforge 2006). The record in the DNP constitutes a new addition to its distribution area. The species is listed as “VULNERABLE” in the Red Data Book of Rare and Threatened Plants of Greece (Kalopissis 1995).

*Cistus laurifolius* L. (Cistaceae), a low shrub that grows in evergreen scrub and the understorey of open *Pinus* and *Quercus* woodland is found within the DNP. It is a Mediterranean species showing a markedly disjunct distribution from west to east; its single location in Greece is in Evros (Pignatti 1982, Boratyński et al. 1992), where it is under protection in accordance with the Legislative Decree 67/81.

Certain taxa recorded in the area of the National Park are referred to as rare in Greece by Strid and Tan (1997, 2002) and include *Comandra umbellata* subsp. *elegans* (Sprengel) Piehl (Santalaceae), *Ranunculus constantinopolitanus* (DC.) d' Urv. (Ranunculaceae) and *Stellaria holostea* L. (Caryophyllaceae).

Likewise, certain orchids have been considered as quite rare, such as *Orchis ustulata* L. and *Orchis provincialis* Balbis; while for *Himantoglossum hircinum* subsp. *calcaratum* (G. Beck) Soó, the region presumably comprises the eastern border of its geographical distribution (Delforge 2006).

In addition, there exists a group of taxa records of which constitute confirmation of their presence in Greece. They were either not referred to in the Flora Europaea (Tutin et al. 1968 – 1980, 1993) or their status remained uncertain. These are *Verbascum adrianopolitanum* Podp (Scrophulariaceae), *Zygophyllum album* L. (Zygophyllaceae), *Laser trilobum* L. (Borkh.) (Umbelliferae) and *Micropyrum tenellum* (L.) Link (Graminae). Some others are referred to only in the Med-Checklist (Greuter et al. 1984 – 1989), such as *Cytisus agnipilus* Velen, *Genista sericea* Wulfen (Fabaceae), *Hypericum rochelli* Griseb. & Schenk (Hypericaceae) and *Knautia macedonica* Griseb. (Dipsacaceae).

*Verbascum adrianopolitanum* Podp., *Oenanthe pimpinelloides* L., *Fritillaria pontica* Wahl., *Limodorum abor-*

*tivum* (L.) Swartz and *Serapias vomeracea* (Burm.) Briq. are also reported in the adjacent Bulgarian Eastern Rhodopes (Pavlova et al. 2004) and are included in the Red Data Book of Bulgaria (Velchev 1984).

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Appendix 1. Floristic catalogue. Families, genera and species are arranged alphabetically, numbers correspond to the collection sites. Abbreviations: T = therophyte, G = geophyte, H = hemicryptophyte, Ch = Chaemaephyte, P = phanerophyte, NP = nanophanerophyte; A = annual herb, B = biennial herb, P = perennial herb, Fr = shrub, Ar = tree; bulb = bulbous, caesp = caespitose, ep = epiphyticous, frut = fruticose, par = parasitic, rept = reptant, rhiz = rhizomatous, ros = rosulate, scand = scandent, scap = scapose, succ = succulent, suffr = suffruticose, lian = liane.

## PTERIDOPHYTA

### EQUISETACEAE

*Equisetum arvense* L. – G rhiz, P, Circumbor. – 45, 47

### POLYPODIACEAE

*Asplenium adiantum-nigrum* L. – H ros, P, Paleotemp. – 40

*Asplenium onopteris* L. – H ros, P, Subtrop. – 32, 35

*Asplenium trichomanes* L. subsp. *trichomanes* – H ros, P, Cosmop. – 3

*Notholaena marantae* (L.) Desv. subsp. *marantae* – H ros, P, Paleosubtrop. – 3, 6

*Pteridium aquilinum* (L.) Kuhn – G rhiz, P, Cosmop. – 7, 21, 24, 26

## GYMNOSPERMAE

### CUPRESSACEAE

*Juniperus oxycedrus* L. subsp. *oxycedrus* – P caesp/P scap, Fr (Ar), Eurimedit. – Common in forest understorey and scrub

### PINACEAE

*Pinus halepensis* subsp. *brutia* (Ten.) Holmboe – P scap, Ar, NE-Medit. – Abundant, consisting of pure and mixed stands

*Pinus nigra* subsp. *nigra* var. *caramanica* (Bosc ex Loudon) Rehder – P scap, Ar, E-Medit. – Locally dominant constituting a few small stands, scattered elsewhere

## DICOTYLEDONEAE

### ACERACEAE

*Acer campestre* L. – P scap, Ar (Fr), Europeo-Caucas. – 37, 42, 43

*Acer monspessulanum* L. – P scap, Ar (Fr), Eurimedit. – 23, 25, 36, 40, 49

*Acer platanoides* L. – P scap, Ar, Europeo-Caucas. – 26

*Acer tataricum* L. – P scap, Fr, Pontic-Pannonian – 42

### ANACARDIACEAE

*Cotinus coggygria* Scop. – P caesp, Fr, S-Europ.-Turan. – 26

*Pistacia terebinthus* L. subsp. *terebinthus* – P caesp, Fr (Ar), Eurimedit. – 3, 4, 7, 8, 10

*Rhus coriaria* L. – P caesp, Fr, S-Medit. – 4

### ARALIACEAE

*Hedera helix* L. subsp. *helix* – P lian, Fr, Submedit.-Subatlant. – 16, 26, 40, 45–49

**ARISTOLOCHIACEAE**

*Aristolochia clematitis* L. – G rad, P, Submedit. – 47

*Aristolochia rotunda* L. subsp. *rotunda* – G bulb, P, Eurimedit. – 9, 32, 45, 46, 49

**ASCLEPIADACEAE**

*Periploca graeca* L. – P lian, Fr, E-Medit.-Pontic – 3, 13, 45, 46, 49, 50

**BETULACEAE**

*Alnus glutinosa* (L.) Gaertner – P scap, Ar, Paleotemp. – 45, 46–50

*Carpinus orientalis* Miller – P caesp, Fr (Ar), Pontic – Common in forest understorey

*Ostrya carpinifolia* Scop. – P caesp, Fr (Ar), Circumbor. – 21, 34

**BORAGINACEAE**

*Alkanna tinctoria* Tausch subsp. *tinctoria* – H scap, P, Stenomedit. – 50

*Anchusa officinalis* L. – H scap, P, Pontic – 60, 61

*Myosotis sicula* Guss. – T scap, B, N-Medit. – 53, 54

*Myosotis sylvatica* Hoffm. – H scap, P, N-Medit. – 51

*Onosma heterophylla* Griseb. aggr. – Ch suffr, P, Balkan – 10

*Onosma kittanae* Strid – H caesp, P, Endemic – (Stevanovic et al. 2003)

*Symphytum tuberosum* L. – G rhiz, P, SE-Europ. – 37

**CAMPANULACEAE**

*Campanula cervicaria* L. – H scap, B, Europ. – 1–6, 8, 9

*Campanula glomerata* L. subsp. *glomerata* – H scap, P, Eurasiat. – 17, 19, 38

*Campanula lingulata* Waldst. & Kit – H bienn, B, SE-Europ. – 10, 12, 25–28

*Campanula persicifolia* L. subsp. *persicifolia* – H scap, P, Eurasiat. – 19, 25, 26, 28, 29, 32 – 37, 39–41, 44

*Campanula rapunculus* L. – H bienn, B, Paleotemp. – 7, 8

*Legousia falcata* (Ten.) Janchen – T scap, A, Stenomedit. – 8

*Legousia speculum-veneris* (L.) Chaix – T scap, A, Eurimedit. – 60, 62

**CAPRIFOLIACEAE**

*Lonicera implexa* Aiton – P lian, Fr, Stenomedit. – 5, 7

*Sambucus ebulus* L. – G rhiz, P, Eurimedit. – 50

**CARYOPHYLLACEAE**

*Cerastium brachypetalum* subsp. *roeseri* (Boiss. & Heldr.) Nyman – T scap, A, Eurimedit. – 35

*Cerastium brachypetalum* subsp. *tenoreanum* (Ser.) Soó – T scap, A, SE-Europ. – 51

*Dianthus cruentus* Griseb. – H caesp, P, Balkan – 6, 8, 11, 37, 38

*Minuartia greuteriana* Kamari – H caesp, P, Endemic – (Kamari, 1995)

*Moenchia mantica* (L.) Bartl. – T scap, A, N-Medit. – 34, 52, 56, 61

*Paronychia cephalotes* (M. Bieb.) Besser subsp. *cephalotes* – H caesp, P, SE-Europ.-Anatol. – close to 5

*Petrohragia prolifera* (L.) P.W. Ball & Heywood – T scap, A, Eurimedit. – 58

*Scleranthus perennis* L. subsp. *perennis* – H caesp, P, Eurosiber. – 52, 57, 60, 62

- Silene atropurpurea* (Griseb.) Greuter & Burdet – H caesp, P, SE-Balkan – 9, 40, 41  
*Silene subconica* Friv. – T scap, A, Paleotemp. – 60  
*Silene coronaria* (L.) Clairv. – H scap, P, Medit.-Turan. – 32, 37  
*Silene italica* (L.) Pers. subsp. *italica* – H ros, P, Eurimedit. – 11, 12, 15, 20, 32, 39, 40–43  
*Silene viridiflora* L. – H ros, P, S-Europ.-Centro-Asiat. – 44  
*Silene vulgaris* subsp. *bosniaca* (G. Beck) Greuter, Burdet & Long – H scap, P, E-Medit. – 47, 49  
*Stellaria holostea* L. – Ch scap, P, Europeo-Caucas. – 56, 57, 59

#### CELASTRACEAE

- Evonymus europaeus* L. – P caesp, Fr, Eurasiat. – 26

#### CISTACEAE

- Cistus creticus* L. subsp. *creticus* – NP, Fr, E-Stenomedit. – In scrub and forest, common  
*Cistus laurifolius* L. – P caesp, Fr, Stenomedit. – 19  
*Cistus salvifolius* L. – NP, Fr, Stenomedit. – 1, 2, 4, 8, 11, 28, 31  
*Fumana ericoides* (Cav.) Gand. – Ch suffr, Fr, Stenomedit. – 62  
*Helianthemum nummularium* (L.) Miller subsp. *nummularium* – Ch suffr, Fr, Europeo-Caucas. – 52, 56  
*Tuberaria guttata* (L.) Fourr. – T scap, A, Eurimedit. – 11, 51, 52, 56–59, 62, 63

#### COMPOSITAE

- Achillea grandifolia* Friv. – H scap, P, Balkan – 36, 37, 40–42  
*Achillea millefolium* L. – H scap, P, Eurosiber. – 17, 21  
*Anthemis arvensis* L. subsp. *arvensis* – T scap, A, Medit.-Atlant. – 51, 52, 56, 59–63  
*Anthemis tinctoria* subsp. *parnassica* (Boiss. & Heldr.) Franzén – H scap, P, Balkan-Anatol. – 34, 35, 37, 39–41, 43, 44  
*Carlina frigida* Boiss. & Heldr. – H scap, B, Balkan – 34  
*Centaurea cyanus* L. – T scap, A, Subcosmop. – 3, 6, 9, 11, 12, 33–35, 56, 58, 60, 61  
*Centaurea napulifera* subsp. *pseudaxillaris* (Stefanov & Georgief) Dostál – H scap, P, Balkan – 37  
*Eupatorium cannabinum* L. – H scap, P, Paleotemp. – 47, 49  
*Filago vulgaris* Lam. – T scap, A, Paleotemp. – 6  
*Hieracium bauhini* Schultes ex Besser – H scap, P, SE-Europ.-Siber. – 5, 6, 8, 10, 12, 13, 17, 25, 28, 33, 37, 39–41, 51, 52  
*Hieracium cymosum* subsp. *heldreichianum* Nägeli & Peter – H scap, P, Balkan – 27, 38, 43, 52, 53, 56, 57  
*Hieracium hoppeanum* subsp. *testimoniale* Nägeli & Peter – H ros, P, NE-Medit. – 19, 20, 37, 39, 41  
*Hieracium latifolium* Froelich ex Link aggr. – H scap, P, Europeo-Caucas. – 40, 44  
*Hieracium murorum* L. – H scap, P, Europ. – 24–29, 30, 32, 33, 41, 44  
*Hieracium olympicum* Boiss. – H scap, P, E-Balkan – 44  
*Hieracium piloselloides* Vill. – H scap, P, Europeo-Caucas. – 20, 21–23, 41  
*Inula salicina* subsp. *aspera* (Poiret) Hayek – H scap, P, Europeo-Caucas. – 37, 42, 43, 47  
*Lapsana communis* L. – T scap, A, Paleotemp. – 7, 13, 15, 28, 29, 31, 32, 34, 36–39, 41, 44  
*Leontodon cichoriaceus* (Ten.) Sanguinetti – H ros, P, Medit.-Mont. – 20, 43, 52  
*Leontodon hispidus* L. subsp. *hispidus* – H ros, P, Europeo-Caucas. – 58, 62  
*Mycelis muralis* (L.) Dumort. – H scap, P, Europeo-Caucas. – 30, 34, 36, 38, 44  
*Pulicaria dysenterica* (L.) Bernh. – H scap, P, Eurimedit. – 45, 46, 48  
*Scorzonera parviflora* Jacq. – H scap, B, Centroeurop. – 1, 2, 3, 5, 7, 9, 10

### CONVOLVULACEAE

*Calystegia sepium* (L.) R. Br. subsp. *sepium* – H scand, P, Paleotemp. – 50

*Convolvulus cantabrica* L. – H scap, P, Eurimedit. – 4, 11

### CORNACEAE

*Cornus mas* L. – P scap, Fr, SE-Europ.-Pontic – 13, 16, 25, 26, 40–42, 49

### CRASSULACEAE

*Sedum amplexicaule* subsp. *tenuifolium* (Sm.) Greuter & Burdet – Ch succ, P, E-Medit. – 3, 6, 9, 10

*Sedum cepaea* L. – T scap, A, S-Europ. – 41, 42

### CRUCIFERAE

*Alyssum chalcidicum* Janka – H caesp, P, S-Balkan – 60

*Alyssum corymbosoides* Formánek – H caesp, P, S-Balkan – 6, 8, 32–34

*Alyssum murale* Waldst. & Kit. – Ch suffr, P, E-Medit. – 60, 63

*Alyssum sibiricum* Willd. – H caesp, P, E-Balkan-W-Asiat. – close to 5

*Erysimum drenowskii* Degen – H scap/caesp, P, S-Balkan – 60, 61

*Rorippa pyrenaica* (All.) Reichenb. – H scap, P, S-Europ. – 53

### DIPSACACEAE

*Knautia ambigua* Boiss. & Orph. – H scap, P, Balkan – 35

*Knautia macedonica* Griseb. – H scap, P, Balkan – 30, 46

*Knautia orientalis* L. – T scap, A, SE-Balkan – 1, 3

*Scabiosa triniifolia* Friv. – H scap, P, Balkan – 17, 19, 20, 22

### ERICACEAE

*Arbutus andrachne* L. – P caesp, Fr, E-Stenomedit. – Dominant in evergreen scrubland

*Erica arborea* L. – P caesp, Fr (Ar), Stenomedit. – Abundant in evergreen scrubland and *Juniperus* formations

### EUPHORBIACEAE

*Euphorbia amygdaloides* L. subsp. *amygdaloides* – H scap, Fr, Submedit. – 23, 24, 26, 29, 30, 31, 37, 40, 41, 44, 47

*Euphorbia platyphyllos* L. – T scap, A, Eurimedit. – 58

### FAGACEAE

*Quercus cerris* L. – P scap, Ar, Submedit. – 17, 22, 37

*Quercus frainetto* Ten. – P scap, Ar, SE-Europ. – Dominant forest species, forming pure and mixed stands

*Quercus petraea* subsp. *medwediewii* (A. Camus) Menitsky – P scap, Ar, SE-Europ. – 21, 25, 26, 37–39, 41, 44

*Quercus pubescens* Willd. – P scap, Ar, SE-Europ. – Common in oakwoods

### GENTIANACEAE

*Centaureum erythraea* Raf. subsp. *erythraea* – T scap, B, Paleotemp. – 20, 38, 47

## GERANIACEAE

- Erodium cicutarium* (L.) L'Hér. – T caesp, A, Eurimedit. – 51, 52, 57, 59, 61, 63  
*Geranium lucidum* L. – T scap, A, Eurimedit. – 35, 36  
*Geranium molle* L. – T scap, A, Subcosmop. – 51  
*Geranium robertianum* L. – T scap, A, Eurimedit. – 28,  
*Geranium sanguineum* L. – G rhiz, P, Eurasiat. – 1, 7, 9, 14, 21, 24, 45

## GUTTIFERAE

- Hypericum aucheri* Jaub. & Spach – H scap, P, SE-Balkan – 2, 56, 57, 59, 62  
*Hypericum cerastoides* (Spach) N. K. B. Robson – H caesp, P, Balkan – 1, 14, 22  
*Hypericum olympicum* L. – H scap, P, Balkan-Anatol. – 5, 7, 11–13, 19, 20, 25, 27, 38  
*Hypericum perforatum* L. – H scap, P, Subcosmop. – 37, 40, 47  
*Hypericum rochelii* Griseb. & Schenk – H caesp, P, Balkan – 6, 8, 11, 14, 19, 24, 25, 26, 34, 35  
*Hypericum rumeliacum* Boiss. – H caesp, P, Balkan – 1, 3, 4

## LABIATAE

- Ajuga genevensis* L. – H scap, P, Subpontic-Substeppic – 22, 53, 54  
*Ajuga laxmannii* (L.) Bentham – H scap, P, Submedit. – 5  
*Ajuga reptans* L. – H rept, P, Europeo-Caucas. – 22  
*Hyssopus officinalis* L. subsp. *officinalis* – Ch sufr, P, Eurasiat. – 48  
*Lycopus europaeus* L. – H scap, P, Paleotemp. – 45, 47, 48  
*Marrubium vulgare* L. – H scap, P, Eurimedit.-S-Siber. – 61  
*Melissa officinalis* L. – H scap, P, Eurimedit. – 49  
*Mentha spicata* L. – H scap, P, Eurimedit. – 46  
*Origanum vulgare* subsp. *hirtum* (Link) Ietswaart – H scap, P, Eurasiat. – 8, 12, 16, 19, 20 – 22, 24, 27, 38, 51  
*Prunella laciniata* (L.) L. – H scap, P, Eurimedit. – 19, 20  
*Prunella vulgaris* L. – H scap, P, Circumbor. – 24, 45–48  
*Satureja pilosa* Velen. – Ch sufr, P, SE-Balkan – 56, 57, 60, 63  
*Satureja vulgaris* (L.) Fritsch – H scap, P, Circumbor. – 6, 11, 25  
*Stachys cretica* subsp. *bulgarica* Reich. – H scap, P, Balkan – 61  
*Stachys germanica* L. subsp. *germanica* – H scap, P, Eurimedit. – 12, 47  
*Teucrium capitatum* L. – Ch sufr, P, Stenomedit. – 61  
*Teucrium chamaedrys* L. – Ch sufr, P, Eurimedit. – 1, 2, 8, 13 – 16, 22–24, 27, 28, 31, 37  
*Thymus atticus* Delak. – Ch rept, Fr, NE-Stenomedit. – 8, 19, 20, 22  
*Thymus comptus* Friv. – Ch rept, P, E-Balkan – 60, 61  
*Thymus longedentatus* (Degen & Urum.) Ronniger – Ch rept, P, E-Balkan – 34  
*Thymus longicaulis* C. Presl subsp. *longicaulis* – Ch rept, P, Eurimedit. – 2  
*Thymus longicaulis* subsp. *chaubardii* (Reichenb. fil.) Jalas – Ch rept, P, Balkan-Anatol. – 6, 9, 19, 23, 26, 29, 30, 33, 37, 62, 63  
*Thymus zygoides* Griseb. – Ch rept, P, E-Balkan – close to 5

## LEGUMINOSAE

- Astragalus glycyphyllos* L. aggr. – H rept, P, Europ.-Subsiber. – 28  
*Bituminaria bituminosa* (L.) Stirton – H scap, P, Eurimedit. – 13



- Chamaecytisus triflorus* (Lam.) Skalická – Ch suffr, Fr, Eurosiber. – 1, 2, 9, 10, 24, 26, 27, 29, 30, 34, 39, 40, 41, 57
- Colutea arborescens* L. – P caesp, Fr, Eurimedit. – 8
- Cytisus agnipilus* Velen. – Ch suffr, Fr, Balkan – 31
- Dorycnium hirsutum* (L.) Ser. – Ch suffr, Fr, Eurimedit. – 15, 24, 28, 30
- Dorycnium pentaphyllum* Scop. subsp. *herbaceum* (Vill.) Rouy – Ch suffr, P, SE-Europ.-Pontic – 19, 38, 40, 52
- Genista carinalis* Griseb. – Ch suffr, Fr, E-Balkan – 1, 10, 12, 17, 25, 30, 31, 38–41, 43, 52
- Genista sericea* Wulfen – Ch suffr, Fr, Submedit. – 56, 57, 59, 60, 62, 63
- Genista tinctoria* L. – Ch suffr, Fr, Eurasiat. – 19
- Lathyrus aphaca* L. – T scap, A, Eurimedit. – 5, 13, 27, 35
- Lathyrus digitatus* (MB.) Fiori – G rhiz, P, Medit.-Pontic – 2, 3, 9
- Lathyrus laxiflorus* (Desf.) O. Kuntze – H scap, P, Medit.-Pontic – 13, 15, 16, 23 – 25, 28, 30, 31, 36, 41, 42
- Lathyrus niger* (L.) Bernh. subsp. *niger* – G rhiz, P, Europeo-Caucas. – 24, 26, 32, 40–42
- Lotus corniculatus* L. – H scap, P, Cosmop. – 57
- Melilotus officinalis* (L.) Lam. – H bienn, B, Subcosmop. – 45
- Ononis spinosa* subsp. *leiosperma* (Boiss.) Širj – Ch suffr, Fr, Eurimedit. – 48
- Ornithopus compressus* L. – T scap, A, Eurimedit. – 11
- Trifolium angustifolium* L. – T scap, A, Eurimedit. – 3, 5, 6, 8, 11, 34–36
- Trifolium arvense* L. – T scap, A, Paleotemp. – 4, 8, 9, 17, 20, 41, 55–57, 59, 62, 63
- Trifolium campestre* Schreber – T scap, A, W-Paleotemp. – Common in evergreen scrub and grassland
- Trifolium cherleri* L. – T scap, A, Eurimedit. – 58, 60
- Trifolium heldreichianum* (Gibelli & Belli) Hausskn. – G rhiz, P, Balkan – 30, 39
- Trifolium hybridum* L. – H caesp, P, S-Europ. – 26, 35
- Trifolium lappaceum* L. – T scap, A, Eurimedit. – 34
- Trifolium medium* L. – G rhiz, A, Eurasiat. – 23, 25, 26, 28, 34, 36
- Trifolium ochroleucon* Hudson – H caesp, P, Pontic-Eurimedit. – 21, 24, 25, 27, 37, 41
- Trifolium pignanti* Fauché & Chaub. – H scap, P, Balkan – 32
- Trifolium repens* L. – H rept, P, Subcosmop. – 53–55
- Trifolium stellatum* L. – T scap, A, Eurimedit. – 60, 61
- Vicia grandiflora* Scop. – H scap, A, SE-Europ.-Pontic – 35, 37
- Vicia sativa* L. T scap, A, Subcosmop. – 1
- Vicia tenuifolia* subsp. *dalmatica* (A. Kerner) Greuter – H scap, P, SE-Europ. – 26, 37

#### LINACEAE

- Linum elegans* Boiss. – Ch suffr, P, Balkan – 52
- Linum hologynum* Reichenb. – H scap, P, Balkan – 53, 54
- Linum trigynum* L. – T scap, A, Eurimedit. – 1, 3, 4

#### LORANTHACEAE

- Loranthus europaeus* Jacq. – P ep, Fr, Europeo-Caucas. – 2, 39

#### LYTHRACEAE

- Lythrum salicaria* L. – H scap, P, Subcosmop. – 47–49

#### **OLEACEAE**

*Fraxinus angustifolia* Vahl – P scap, Ar, SE-Europ.-Pontic – 47–50

*Fraxinus ornus* L. – P scap, Ar (Fr), Eurimedit.-Pontic – Common in evergreen scrub and forest understorey

*Jasminum fruticans* L. – P caesp, Fr, E-Medit. – 3–5, 7–9, 16, 42

*Ligustrum vulgare* L. – NP, Fr, Europ.-W-Asiat. – 42, 46

*Phillyrea latifolia* L. – P caesp, Fr (Ar), Stenomedit. – Abundant in evergreen scrub, scattered in forest understorey

#### **ONAGRACEAE**

*Epilobium lanceolatum* Sebastiani & Mauri – H scap, P, W-Europ. – 49

#### **OROBANCHACEAE**

*Orobanche amethystea* Thuill. subsp. *amethystea* – T par, P, Submedit.-Subatlant. – 3

#### **PLANTAGINACEAE**

*Plantago arenaria* Waldst. & Kit. – T scap, A, SE-Europ. – 59

*Plantago major* L. subsp. *major* – H ros, P, Subcosmop. – 45, 47

*Plantago media* L. – H ros, P, Eurasiat. – 60

#### **POLYGONACEAE**

*Rumex acetosella* subsp. *acetoselloides* (Balansa) den Nijs – H scap, P, Europ. – 51, 52, 57, 58, 60

#### **PRIMULACEAE**

*Lysimachia nummularia* L. – H scap, P, Europeo-Caucas. – 47

*Lysimachia punctata* L. H scap, P, SE-Europ.-Pontic – 31, 37, 45–49

#### **RAFFLECIACEAE**

*Cytinus hypocistis* (L.) L. – G par, P, Medit.-Macarones. – 1

#### **RANUNCULACEAE**

*Clematis vitalba* L. – P lian, Fr, SE-Europ.-Caucas. – 45–50

*Ranunculus constantinopolitanus* (DC.) d' Urv. – H scap, P, E-Balkan-Pontic – 29, 32, 35, 36, 40, 45, 46

*Ranunculus psilostachys* Griseb. – H scap, P, Balkan – 13

*Thalictrum minus* subsp. *saxatile* DC. ex Ces. – H scap, P, Submedit.-Subatl. – 7

#### **RHAMNACEAE**

*Paliurus spina-christi* Miller – P caesp, Fr, SE-Europ.-Pontic – 1, 16, 42, 46, 60, 61

#### **ROSACEAE**

*Agrimonia eupatoria* L. subsp. *eupatoria* – H scap, P, Subcosmop. – 16, 28, 48

*Aremonia agrimonoides* (L.) DC. subsp. *agrimonoides* – H ros, P, NE-Medit. – 14, 16, 23, 25, 30, 31, 36, 45, 48

*Crataegus monogyna* Jacq. subsp. *monogyna* – P caesp, Fr, Paleotemp. – 16, 21, 23, 24, 43

*Eriolobus trilobatus* (Poirot) Roemer – P scap, Ar, E-Medit. – (for distribution see Korakis et al. 2006)

*Filipendula vulgaris* Moench – H scap, P, Centroeurop.-S-Siber. – 36, 53, 54

- Fragaria vesca* L. – H rept, P, Eurosiber. – 29  
*Geum urbanum* L. – H scap, P, Circumbor. – 45–47  
*Potentilla detommasii* Ten. – H scap, P, SE-Europ. – 2, 6  
*Potentilla micrantha* Ramond ex DC. – H ros, P, Eurimedit. – 14, 24, 25, 28, 30, 32, 35, 40, 43, 46, 47, 49  
*Potentilla recta* L. – H scap, P, NE-Medit.-Pontic – 9, 20, 51, 52, 55, 60, 63  
*Potentilla reptans* L. – H ros, P, Paleotemp. – 45, 47, 48  
*Prunus spinosa* L. – P caesp, Fr, Europeo-Caucas. – 52  
*Pyrus spinosa* Forsskål – P caesp, Ar (Fr), Stenomedit. – 8, 42  
*Rosa agrestis* Savi – P caesp, Fr, Eurimedit. – 46, 47, 49  
*Rosa canina* L. – P caesp, Fr, Paleotemp. – 13, 14, 16, 21, 27, 31  
*Rosa gallica* L. – NP, Fr, Centroeuro.-Pontic – 24, 28, 30, 42  
*Rosa pendulina* L. – NP, Fr, S-Europ. – 42  
*Rosa pulverulenta* Bieb. – P caesp, Fr, Medit.-Mont. – 51, 52  
*Rubus canescens* DC. – NP, Fr, N-Medit. – Common in the understorey of *Quercus*, *Alnus* and *Pinus* stands  
*Rubus sanctus* Schreber agg. – NP, Fr, Eurimedit. – 50  
*Sanguisorba minor* subsp. *muricata* (Spach) Briq. – H scap, P, Subcosmop. – 5, 14, 19, 20, 22, 51, 52, 55  
*Sorbus domestica* L. – P scap, Ar, Eurimedit. – 20, 21, 25, 26, 28, 31, 35–37, 41  
*Sorbus torminalis* (L.) Crantz – P scap, Ar, Paleotemp. – 5, 23, 24, 26, 28, 40, 42, 44, 49

#### RUBIACEAE

- Asperula rumelica* Boiss. – H scap, P, SE-Europ. – 20  
*Crucianella angustifolia* L. – T scap, A, Eurimedit. – 17  
*Cruciata laevipes* Opiz – H scap, P, Eurasiat. – 45  
*Galium aparine* L. – T scap, A, Eurasiat. – 26, 58  
*Galium lucidum* All. – H scap, A, Eurimedit. – 23  
*Galium mollugo* L. agg. – H scap, P, Eurimedit. – Common in the scrub and forest  
*Galium verum* L. subsp. *verum* – H scap, P, Eurasiat. – 12–14, 16, 20–22, 28, 30, 38, 40, 41, 49  
*Sherardia arvensis* L. – T scap, A, Subcosmop. – 51, 58

#### RUTACEAE

- Dictamnus albus* L. – Ch suffr, Fr, Europ.-S-Siber. – 9

#### SALICACEAE

- Populus alba* L. – P scap, Ar, Paleotemp. – 50  
*Populus nigra* L. subsp. *nigra* – P scap, Ar, Paleotemp. – 50  
*Salix alba* L. – P scap, Ar, Paleotemp. – 50  
*Salix amplexicaulis* Bory – NP, Fr (Ar), NE-Medit. – 50  
*Salix xanthicola* K.I. Chr. – NP, Fr (Ar), SE-Balkan – Close to 1–4

#### SANTALACEAE

- Comandra umbellata* subsp. *elegans* (Sprengel) Piehl – Ch suffr, P, E-Medit. – 10

#### SCROPHULARIACEAE

- Digitalis lanata* Ehrh. – H scap, P, Centroeurop.-Balkan – 3, 11, 14  
*Gratiola officinalis* L. – H scap, P, Circumbor. – 47, 48, 49  
*Linaria pelisseriana* (L.) Miller – T scap, A, Medit.-Atlant. – 51, 56, 58, 59, 63  
*Scrophularia nodosa* L. – H scap, P, Circumbor. – 4  
*Verbascum adrianopolitanum* Podp. – H bienn, B, SE-Balkan – 19  
*Veronica austriaca* L. – H scap, P, SE-Europ. – 2–5, 7, 9, 31  
*Veronica chamaedrys* L. subsp. *chamaedrys* – H scap, P, Eurosiber. – 23, 26, 29, 32, 37, 40, 41

#### UMBELLIFERAE

- Daucus carota* L. subsp. *carota* – H scap, B, Subcosmop. – 20, 21, 23, 24, 28, 32, 36, 53–55  
*Eryngium campestre* L. – H scap, P, Eurimedit. – 51, 52, 58–61, 63  
*Heracleum sphondylium* subsp. *ternatum* (Velen.) Brummit – H scap, P, Balkan – 50  
*Laser trilobum* (L.) Borkh. H scap, P, SE-Europ. – 24  
*Myrrhoides nodosa* (L.) Cannon – T scap, A, Stenomedit. – 35, 36  
*Oenanthe pimpinelloides* L. – H scap, P, Medit.-Atlant. – 43, 45–47  
*Oenanthe tenuifolia* Boiss. & Orph. – H scap, P, Balkan – 34, 53, 55  
*Orlaya daucooides* (L.) Greuter – T scap, A, Stenomedit. – 1, 8, 35  
*Orlaya grandiflora* (L.) Hoffm. – T scap, A, Centroeurop. – 3, 4, 7  
*Physospermum cornubiense* (L.) DC. – H scap, P, Submedit.-Subatlant. – 24, 26, 40  
*Smyrnium perfoliatum* L. – H bienn, B, Eurimedit. – 32, 35, 36, 37  
*Torilis arvensis* subsp. *neglecta* (Schultes) Thell. – T scap, A, Subcosmop. – 50, 60

#### URTICACEAE

- Urtica dioica* L. – H scap, P, Subcosmop. – 26, 50  
*Urtica urens* L. – T scap, A, Subcosmop. – 46

#### VIOLACEAE

- Viola hirta* L. – H ros, P, Europ. – 46  
*Viola kitaibeliana* Schultes – T scap, A, Medit.-Caucas. – 51  
*Viola reichenbachiana* Jordan ex Boreau – H scap, P, Eurosiber. – 14, 21, 39, 42  
*Viola riviniana* Reichenb. – H scap, P, Europ. – 29

#### VITACEAE

- Vitis vinifera* subsp. *sylvestris* (C. C. Gmelin) Hegi – P lian, Fr, ? – 46–49

#### ZYGOPHYLLACEAE

- Zygophyllum album* L. – NP, Fr, Stenomedit. – 26

#### MONOCOTYLEDONEAE

#### CYPERACEAE

- Carex acuta* L. – G rhiz, P, Eurasiat. – 47–49

*Carex flacca* subsp. *serrulata* (Biv.) Greuter – G rhiz, P, Eurimedit. – Common in *Pinus*, *Quercus* and mixed forests

*Carex muricata* L. – H caesp, P, Eurasiat. – 40

*Carex pendula* Hudson – H caesp, P, Eurasiat. – 50

*Cyperus longus* L. – G rhiz, P, Paleotemp. – 47

## GRAMINAE

*Aegilops neglecta* Req. ex Bertol. – T caesp, A, Medit.-Turan. – 3, 51, 60

*Aira elegantissima* Schur – T scap, A, Eurimedit. – 1, 5, 6, 9, 11, 17, 19, 33, 51, 52, 56, 58, 59, 62, 63

*Anthoxanthum odoratum* L. – H caesp, P, Eurasiat. – Common in scrub, open forest and dry grassland

*Avena barbata* Pott ex Link – T scap, A, Eurimedit.-Turan. – 3

*Avena sterilis* L. – T caesp, A, Eurimedit.-Turan. – 58, 63

*Brachypodium distachyon* (L.) P. Beauv. – T scap, A, Stenomedit.-Turan. – 3

*Brachypodium pinnatum* (L.) P. Beauv. – H caesp, P, Eurasiat. – 13, 14, 23, 25, 30, 31, 40, 50

*Brachypodium sylvaticum* (Hudson) P. Beauv. – H caesp, P, Paleotemp. – Common in *Pinus* and *Quercus* herb layer

*Briza maxima* L. – T scap, A, Paleosubtrop. – 1, 3, 5, 8, 9, 11, 19, 31, 33, 34, 56–58

*Briza media* subsp. *elatior* (Sibth. & Sm.) Tutin – H caesp, P, Eurosiber. – 10, 17, 38, 44

*Briza minor* L. – T scap, A, Subcosmop. – 24

*Bromus intermedius* Guss. – T scap, A, Eurimedit. – 3

*Bromus ramosus* Hudson – H caesp, P, Eurasiat. – 24, 37

*Bromus rigidus* Roth – T scap, A, Paleosubtrop. – 50 bordering fields

*Bromus rubens* L. – T scap, A, S-Medit.-Turan. – 60, 61

*Bromus sterilis* L. – T scap, A, Eurimedit.-Turan. – 8, 11, 12, 25, 27, 28, 35

*Calamagrostis epigejos* (L.) Roth – H caesp, P, Eurosiber. – 47, 48

*Chrysopogon gryllus* (L.) Trin. – H caesp, P, S-Europ.-S-Siber. – 3, 6, 8, 19, 20, 56, 57, 59, 62, 63

*Cynosurus cristatus* L. – H caesp, P, Europeo-Caucas. – 45

*Cynosurus echinatus* L. – T scap, A, Eurimedit. – 3, 11, 19 – 21, 25, 33, 43

*Dactylis glomerata* L. subsp. *glomerata* H caesp, P, Paleotemp. – Common in open forest and grassland

*Danthonia alpina* Vest – H caesp, P, SE-Europ. – 21

*Festuca heterophylla* Lam. – H caesp, P, Europeo-Caucas. – 23, 28, 29, 30, 37, 39, 42

*Festuca valesiaca* Schleicher ex Gaudin – H caesp, P, SE-Europ.-S-Siber. – 10, 30, 34, 37–39, 41, 53–55

*Festuca varia* Haenke – H caesp, P, S-Europ. – 41, 45, 46, 61, 62

*Helictotrichon aetolicum* (Rech. Fil.) Holub – H caesp, P, Balkan – 53 – 55

*Helictotrichon convolutum* (C. Presl) Henrard subsp. *convolutum* – H caesp, P, Orof. NE-Medit. – 52, 56

*Holcus lanatus* L. – H caesp, P, Circumbor. – 19, 20, 21, 47, 48, 50

*Hordeum murinum* L. subsp. *murinum* – T scap, A, Circumbor. – 50 bordering fields and roadside

*Lolium rigidum* Gaudin – T scap, A, Paleosubtrop. – 11, 17

*Melica ciliata* L. – H caesp, P, Eurimedit.-Turan. – 6, 57

*Melica uniflora* Retz. – H caesp, P, Paleotemp. – 40, 42, 45, 46

*Micropyrum tenellum* (L.) Link – T scap, A, Eurimedit. – 6, 59

*Phleum montanum* C. Koch – H caesp, P, Europ. – 1, 34, 37, 38

*Phragmites australis* (Cav.) Trin. ex Steudel – G rhiz, P, Subcosmop. – 50

*Poa bulbosa* L. – H caesp, P, Paleotemp. – 3, 6, 8, 9, 11, 19, 20, 51, 53, 57–60, 63

*Poa compressa* L. – H caesp, P, Circumbor. – 47

- Poa nemoralis* L. – H caesp, P, Circumbor. – 30, 34, 37, 45, 46  
*Poa trivialis* subsp. *sylvicola* (Guss.) H. Lindb. Fil. – H caesp, P, Eurimedit. – 29, 32, 35, 37, 38  
*Stipa bromoides* (L.) Dörfler – H caesp, P, Stenomedit. – 8, 11, 12, 14, 17, 32, 41  
*Taeniatherum caput-medusae* (L.) Nevski – T scap, A, Europ.-Turan. – 56, 60  
*Vulpia ciliata* Dumort. subsp. *ciliata* – T caesp, A, Eurimedit. – 56, 63

#### IRIDACEAE

- Gladiolus illyricus* Koch – G bulb, P, SE-Europeo-Caucas. – 3, 9  
*Iris reichenbachii* Heuffel – G rhiz, P, Balkan – 2, 3, 9  
*Iris sintenisii* Janka – G rhiz, P, NE-Medit. – 30, 31

#### JUNCACEAE

- Juncus articulatus* L. – G rhiz, P, Circumbor. – 47, 48  
*Juncus inflexus* L. – G rhiz, P, Paleotemp. – 50  
*Juncus minutulus* V. Krecz. & Gontsch. – T caesp, A, Cosmop. – 53–55  
*Luzula campestris* (L.) DC. – H caesp, P, Europeo-Caucas. – 20, 33  
*Luzula forsteri* (Sm.) DC. – H caesp, P, Eurimedit. – 15, 21, 23–26, 32, 35, 39, 40, 42, 43, 52–55, 57

#### LILIACEAE

- Allium flavum* subsp. *tauricum* (Besser ex Reichenb.) K. Richter – G bulb, P, E-Stenomedit. – 19  
*Asparagus acutifolius* L. – Ch frut, Fr, Stenomedit. – 37, 23, 27, 42, 43  
*Asphodeline liburnica* (Scop.) Reichenb. – G rhiz, P, NE-Stenomedit. – 1, 2, 4–7, 9, 20, 22  
*Asphodelus ramosus* L. – G rhiz, P, Eurimedit. – 1, 3, 4, 5, 7, 11, 58, 63  
*Fritillaria pontica* Wahlenb – G bulb, P, Balkan – 2, 7, 9, 30, 40  
*Muscari botryoides* (L.) Miller – G bulb, P, Submedit. – 6, 9, 24  
*Muscari comosum* (L.) Miller – G bulb, P, Eurimedit. – 3, 5, 9, 10, 24, 51, 57, 58, 62  
*Muscari neglectum* Guss. ex Ten. – G bulb, P, Eurimedit. – 1–4, 8, 23, 32, 37, 38  
*Ruscus aculeatus* L. – Ch frut, Fr, Eurimedit. – 16, 35, 40, 42, 43  
*Smilax aspera* L. – P lian, Fr, Paleotemp. – 24, 48  
*Tamus communis* L. – G rad, P, Eurimedit. – 1, 4, 5, 13, 24, 32, 36, 47, 49

#### ORCHIDACEAE

- Anacamptis pyramidalis* (L.) L.C.M. Richard – G bulb, P, Eurimedit. – (Kati & al., 2000)  
*Cephalanthera epipactoides* Fischer & C. A. Meyer – G rhiz, P, SE-Balkan-W-Anatol. – (Kati et al. 2000)  
*Cephalanthera longifolia* (L.) Fritsch – G rhiz, P, Eurasiat. – 40  
*Cephalanthera rubra* (L.) L.C.M. Richard – G rhiz, P, Eurasiat. – 14, 16, 25, 26, 28, 37  
*Dactylorhiza sulphurea* subsp. *pseudosambucina* (Ten.) Franco – G bulb, P, Stenomedit. – 5  
*Epipactis atrorubens* (Bernh.) Besser – G rhiz, P, Europeo-Caucas. – 16, 25, 26  
*Epipactis helleborine* (L.) Crantz – G rhiz, P, Paleotemp. – 37, 38  
*Epipactis microphylla* (Erhr.) Swartz – G rhiz, P, Europeo-Caucas. – (Kati et al. 2000)  
*Himantoglossum hircinum* subsp. *calcaratum* (G. Beck) Soó – G bulb, P, SE-Europ. – (Kati et al. 2000)  
*Limodorum abortivum* (L.) Schwartz – G rhiz, P, Eurimedit. – 5, 12, 15, 17, 25, 27, 30, 37–39  
*Neottia nidus-avis* (L.) L.C.M. Richard – G rhiz, P, Eurasiat. – (Kati et al. 2000)

- Ophrys sphegodes* subsp. *mammosa* (Desf.) Soó – G bulb, P, SE-Europ. – (Kati et al. 2000)
- Orchis coriophora* subsp. *fragrans* (Pollini) Sudre – G bulb, P, Eurimedit. – (Kati et al. 2000)
- Orchis laxiflora* subsp. *palustris* (Jacq.) Bonnier & Layens – G bulb, P, Eurimedit. – 53–55
- Orchis mascula* L. – G bulb, P, Europeo-Caucas. – (Kati et al. 2000)
- Orchis mascula* L. s.l. – G bulb, P, Europeo-Caucas. – (Kati et al. 2000)
- Orchis morio* L. – G bulb, P, Europeo-Caucas. – (Kati et al. 2000)
- Orchis papilionacea* L. – G bulb, P, Eurimedit. – 51, 52
- Orchis provincialis* Balbis – G bulb, P, Stenomedit. – (Kati et al. 2000).
- Orchis purpurea* Hudson – G bulb, P, Eurasiat. – (Kati et al. 2000).
- Orchis tridentata* Scop. – G bulb, P, Eurimedit. – (Kati et al. 2000).
- Orchis ustulata* L. – G bulb, P, Europeo-Caucas. – (Kati et al. 2000).
- Platanthera clorantha* (Custer) Reichenb. – G bulb, P, Eurosiber. – (Kati et al. 2000)
- Serapias vomeracea* (Burm.) Briq. – G bulb, P, Eurimedit. – 53–55