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## The Flora of Ahırdağı (Afyonkarahisar) and its Environs

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**Abstract:** The flora of Ahırdağı was investigated between 1996 and 2000. In the vegetation periods, a total of 965 plant specimens were collected. At the end of the study 603 taxa at species and subspecies ranks belonging to 299 genera and 80 families had been determined. Seventy-nine taxa are endemic, and the ratio is 13.10%. The phytogeographical spectra of the species are as follows: Mediterranean 13.10%, Irano-Turanian 11.61%, Euro-Siberian 11.61% and phytogeographically unknown 63.68%. Threatened categories were proposed for the 79 endemic taxa according to IUCN categories.

**Key Words:** Flora, Ahırdağı, Afyon, Turkey

### Ahırdağı (Afyonkarahisar) ve Çevresinin Florası

**Özet:** Ahırdağı'nın florası 1996-2000 yılları arasında araştırıldı. Araştırma alanından 965 bitki örneği toplandı. Bu çalışmanın sonunda araştırma alanında 80 familyaya ait 299 cins ve 603 tür ve türaltı takson tespit edildi. Bu taksonların 79'u Türkiye için endemik olup endemizm oranı % 13.10'dur. Türlerin fitocoğrafik bölgelere göre dağılımı şöyledir: Akdeniz % 13.10, İran-Turan % 11.61, Avrupa-Sibirya % 11.61 ve fitocoğrafik olarak bilinmeyenler ise % 63.68'dir. IUCN tehlike kategorilerine göre 79 endemik taksonun tehlike durumu değerlendirilmiştir.

**Anahtar Sözcükler:** Flora, Ahırdağı, Afyon, Türkiye

### Introduction

Ahırdağı is located in the south-west of Afyonkarahisar province, and borders on the Sincanlı and Hocalar districts. It is also a point on the intersection zone of the Mediterranean, Irano-Turanian and Euro-Siberian phytogeographic regions.

According to the grid square system, the southern part of Hocalar is located in the square B2 and the other part in B3. The lowest altitude is 800 m around Hocalar. Its highest point is 2000 m, at Ahırdağı (Figure 1). The region chosen as the study area has an intersectional feature. The study area has an interesting feature in that its plant diversity consists of plants of the three phytogeographic regions. For example, although *Pinus brutia* Ten. is a Mediterranean element, it is found around Hocalar town; *Tilia rubra* DC. subsp. *caucasica* (Rupr.) V. Engl., a Euro-Siberian element, is found on the northern slopes of Fındıklı hill in the form of natural communities. Widely extended forests formed by *Pinus nigra* Arn. subsp. *nigra* var. *caramanica* (Loudon) Rehder

trees, well-built and 30-35 m tall, are found around Çataloluk and Karapınar, and south of Yağcı, Yürükmezari and Çobanözü villages. Around Tazlar village, a community of monumental trees, *P. nigra* subsp. *nigra* var. *caramanica*, can be seen in picnic areas. In the places where *P. nigra* subsp. *nigra* var. *caramanica* has been damaged by biotic factors., *Quercus cerris* L. var. *cerris* and *Cistus laurifolius* L. community formations were found. The other parts of the region display steppe-forest intersectional features. The literature showed that these had never been studied before. That is why Ahırdağı and its environs were chosen as the study area. This research was also intended to contribute to the flora of Afyon and Turkey in order to determine the plant diversity of the study area.

The climatic data for the area were obtained from the Afyon meteorological station (State Meteorological Institute, 2000). A Mediterranean climate is present in the study area and its precipitation regime is of the East Mediterranean Type 2 SWAS (spring, winter, autumn, summer).

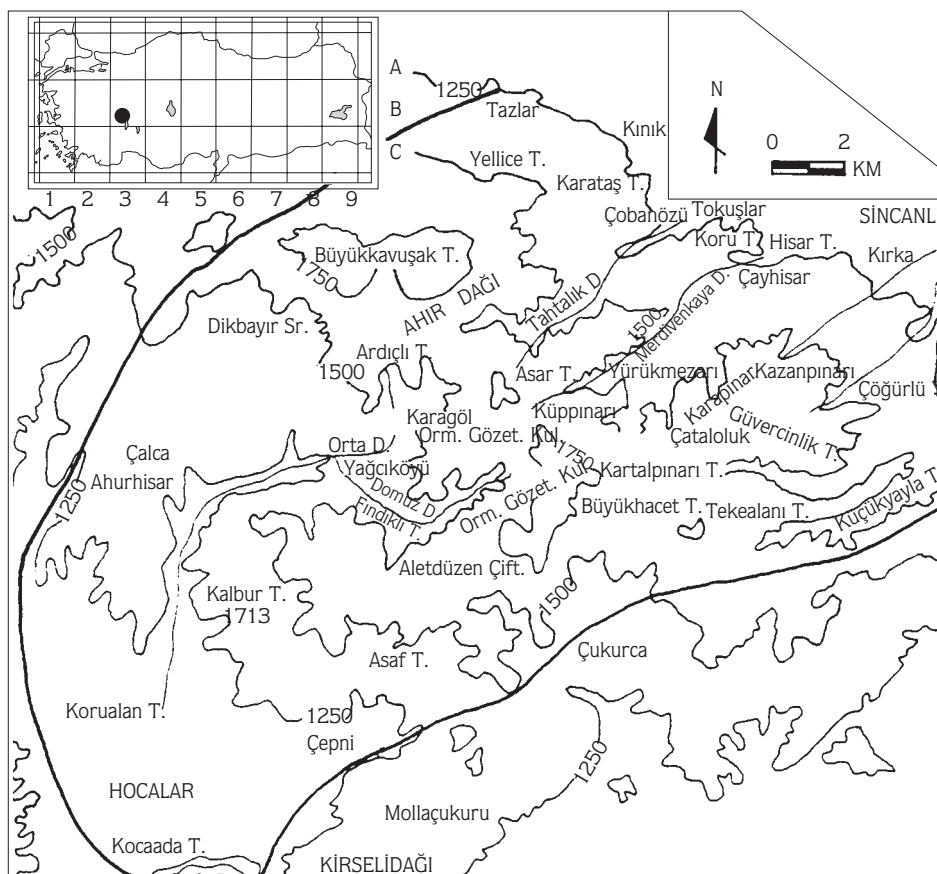


Figure 1. Topographical map of the study area.

## Materials and Methods

The material consisted of 965 plant specimens collected from the area between 1996 and 2000. Efforts were made to collect both flowering and fruiting specimens where possible, and the specimens were prepared according to established herbarium techniques. The Flora of Turkey (Davis, 1965-1985; Davis et al., 1988; Güner et al., 2000) was used in the identification of the specimens. Some *Boraginaceae*, *Lamiaceae*, *Brassicaceae* and *Scrophulariaceae* members were determined by Duman & Aytaç (Gazi Univ., Ankara) and *Pteridophyta* specimens by Benlioğlu (Dumlupınar Univ., Kütahya). Author abbreviations follow Brummit & Powell (1992). Threatened categories are proposed for endemic taxa according to IUCN risk categories (Red Data Book of Turkish Plants, 2000). Some specimens were compared with the specimens at the GAZI and ANK herbaria. The floristic list is given in the appendix. All the plant specimens collected are kept at the herbarium of Kocatepe University.

## Conclusions and Comments

This study was based on the 965 vascular plant specimens collected from the research area. As a result of taxonomical studies, 603 species and subspecies and 299 genera belonging to 80 families were determined. Seven species were non-flowering vascular plants. Seven taxa belonged to *Gymnospermae*, while the other 589 were *Angiospermae*. *Dicotyledones* and *Monocotyledones* comprised 514 and 75 taxa, respectively. The study area is very rich floristically. The main reasons for this floristic richness could be habitat diversity, climate and the fact that this is a transitional belt between three phytogeographical regions, the Mediterranean, Irano-Turanian and Euro-Siberian. Mediterranean elements are located in south of study area; Irano-Turanian elements are found at the sub-alpine zone of Ahırdağı and Euro-Siberian elements on northern slopes of Fındıklı hill, Güvercinlik hill and the vicinity of Tahtalık stream.

Some large families in terms of the number of genera are *Asteraceae* (37), *Fabaceae* (18), *Brassicaceae* (10), *Lamiaceae* (21), *Poaceae* (21) and *Scrophulariaceae* (10). The richest families in terms of the number of taxa (species and subspecies) are *Fabaceae*, 77, (12.62%), *Asteraceae*, 65, (10.79%), *Lamiaceae*, 50, (8.30%), *Brassicaceae*, 34, (5.64%) and *Poaceae*, 33, (5.48%). These families contain 259 (42.85%) taxa. These families were also compared with those reported in studies carried out near to our study area (Gemici, 1988; Ekim et al., 1985; Çirpıcı, 1989; Vural & Çetik, 1976; Aytaç & Vural, 1990; Ocakverdi, 1982). The families *Asteraceae*, *Fabaceae*, *Lamiaceae*, *Brassicaceae* and *Poaceae* comprise the most taxa in Ahırdağı, Akdağ, Maymun Dağları and Simav Dağı, as seen in Table 1. The other study areas show similar features to our study area although there

are some minor differences. For example, in the first order, *Caryophyllaceae* replace *Brassicaceae* in Kocatepe and Sultandağları, *Poaceae* in Murat Dağı and *Lamiaceae* in Köroğlu Beli.

The richest genera in terms of number of taxa are *Astragalus* L. (16), *Verbascum* L. (8), *Trifolium* L. (12), *Veronica* L. (8), *Ranunculus* L. (11), *Silene* L. (8), *Alyssum* L. (7), *Centaurea* L. (8), *Galium* L. (8), *Potentilla* L. (5) and *Minuartia* L. (6).

According to Table 2, the richest genus is not absolute and clear on the family level. In the most studies carried out in Turkey, *Astragalus* is shown as the richest genus, but in some studies *Centaurea* and *Silene* are in first place.

Table 1. Species totals of the major families from eight floristic studies carried out close to our study area.

Families	Ahırdağı (Afyon)	Kocatepe Milli Parkı (Afyon)	Akdağ (Sandıklı)	Murat Dağı (Kütahya)	Köroğlu Beli (Bayat)	Sultandağ. Doğanhisar	Maymun Dağları	Simav D. (Kütahya)
Number of species	603	667	1060	890	310	461	481	502
<i>Asteraceae</i>	65	89	137	113	39	55	81	55
<i>Fabaceae</i>	77	81	103	65	30	48	41	68
<i>Lamiaceae</i>	50	45	61	52	20	35	41	31
<i>Brassicaceae</i>	34	29	67	60	24	21	26	30
<i>Poaceae</i>	33	47	57	31	33	45	20	30
<i>Caryophyllaceae</i>	31	41	53	55	23	27	12	25
<i>Scrophulariaceae</i>	28	38	53	42	16	18	17	22
<i>Rosaceae</i>	21	30	38	42	12	14	14	15
<i>Apiaceae</i>	19	26	44	34	10	17	17	13
<i>Boraginaceae</i>	18	20	24	27	9	11	17	25

Table 2. Species totals of the large genera from eight floristic studies.

Families	Ahırdağı (Afyon)	Kocatepe Milli Parkı (Afyon)	Akdağ (Sandıklı)	Murat Dağı (Kütahya)	Köroğlu Beli (Bayat)	Sultandağ. Doğanhisar	Maymun Dağları	Simav D. (Kütahya)
<i>Astragalus</i>	16	21	18	11	4	10	12	6
<i>Trifolium</i>	12	15	22	8	9	1	12	14
<i>Verbascum</i>	8	12	10	4	5	5	9	1
<i>Veronica</i>	8	11	15	6	7	4	14	10
<i>Ranunculus</i>	11	11	16	5	5	5	14	10
<i>Silene</i>	8	11	13	10	10	4	15	8
<i>Alyssum</i>	7	8	10	7	5	2	12	9
<i>Centaurea</i>	8	8	15	9	6	9	17	6
<i>Galium</i>	8	7	8	9	6	4	8	4
<i>Potentilla</i>	5	7	8	1	1	2	6	4
<i>Minuartia</i>	6	6	9	3	2	-	5	3

Differences in listings of both family and genus are closely related to the collection areas such as steppe, forest and areas cultivated by grazing, mentioned by Ekim et al. (1985). However, the difference between Table 1 and 2 could be explained by the aims of the studies. In phytosociologic studies in particular, researchers attach importance to collecting those species which help their studies achieve their aims. For this reason, some researchers are very careful when collecting specimens, leading to the changes in their lists (Ekim et al, 1985).

Mediterranean taxa are the dominant group in the research area. Mediterranean elements comprise some 13.10% (79) of the total taxa determined. Irano-Turanian taxa constitute 11.61% (70), 11.61% (70) of the taxa belong to the Euro-Siberian phytogeographic region and 63.68% of the taxa are phytogeographically unknown. When the results were compared, it was apparent that these rates were quite similar to those of other studies. This can be explained by the fact that the

study area is a transition zone between different phytogeographical regions (Table 3). There are some differences between our study and other studies carried out near the study area. Our results are similar to those of Ekim et al. (1985) in respect of floristic composition.

The number of endemic taxa in the study area is 79 and the endemism rate is 13.10%. Twenty-eight (35.44 %) of these taxa belong to the Irano-Turanian phytogeographic region. Nineteen (24.05%) of these taxa belong to the Mediterranean and two (2.53%) to the Euro-Siberian (Euxine) phytogeographical regions. The number of phytogeographically unknown endemics is 30 (37.97%).

Seventy-nine endemic taxa were evaluated according to IUCN risk categories. The results are summarised in Table 4. Fifty-four taxa are placed in the least concern categories, while four are placed in the vulnerable category, three in the endangered, six in the conservation dependent and 12 in the near threatened.

Table 3. The phytogeographical regions compared to those of similar studies.

Families	Ahırdağı (Afyon)	Kocatepe Milli Parkı (Afyon)	Sultandağ Doğanhisar	Akdağ (Sandıklı)	Maymun Dağları	Murat Dağı (Kütahya)	Simav D. (Kütahya)
Taxa	602	667	461	1060	481	890	502
Mediterranean element	13.10%	10.94%	12.50%	18.48%	45.30%	10.48%	16.53%
Irano-Turanian element	11.61%	8.39%	13.00%	10.75%	16.00%	9.57%	4.98%
Euro-Siberian element	11.61%	9.14%	5.70%	8.39%	3.60%	11.30%	7.77%
Phytogeographically Unknown	63.68%	71.53%	74.44%	62.38%	35.10%	68.65%	70.72%

Table 4. Risk categories of endangered endemic taxa.

Categories	LR (lc)	LR (nt)	LR (cd)	VU	EN	Total
Taxa	54	12	6	4	3	79

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## Appendix

This is the list of vascular plant species found on Ahırdağı. The sequence of families, genera and species in the following list follows the system adopted in the Flora of Turkey. Abbreviations used in the appendix are as follows:

E. Medit.: East Mediterranean

Ir.-Tur.: Irano-Turanian

Euro-Sib.: Euro-Siberian

LR (lc): Least concern

LR (cd): Conservation dependent

LR (nt): Near threatened

VU: Vulnerable

EN: Endangered

\*: An asterisk indicates cultivated plants.

### PTERIDOPHYTA

#### EQUISETACEAE

*Equisetum ramosissimum* Desf.

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, wet meadows, 1450 m, 21 vi 1996, Kargioğlu 2115.

*E. palustre* L.

B3 Afyon: Hocalar, Yağcı village, Karagöl district, damp places, 1500 m, 13 vi 1998, Kargioğlu 2545.

*E. arvense* L.

B3 Afyon: Hocalar, Yağcı village, Karagöl district, streamsides, 1500 m, 13 vi 1998, Kargioğlu 2544.

#### ATHYRIACEAE

*Cystopteris fragilis* (L.) Bernh.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, rocky places, 1900 m, 28 vi 1997, Kargioğlu 2417.

#### ASPIDIACEAE

*Dryopteris filix-mas* (L.) Schott

B3 Afyon: Sincanlı, Tazlar village, Yellice hill, rocky places, 1500 m, 28 vi 1997, Kargioğlu 2415.

*D. affinis* (Lowe) Fraser-Jenk. subsp. *borreri* (Newman) Fraser-Jenk.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, rocky places, 1900 m, 31 v 1997, Kargioğlu 2349.

*D. pallida* (Bory) Fomin subsp. *pallida*

B3 Afyon: Sincanlı, Tazlar village, Yellice hill, rocky places, 1500 m, 01 vi 1997, Kargioğlu 2364.

#### SPERMATOPHYTA

##### GYMNOSPERMAE

##### PINACEAE

*Cedrus libani* A.Rich.

B3 Afyon: Sincanlı, Yürükmezarı village, Karapınar district, plantation, 1650 m, 11 ix 1999, Kargioğlu 2788. Medit. (mt.) element.

*Pinus sylvestris* L. var. *hamata* Steven

B3 Afyon: Sincanlı, Yürükmezarı village, Karapınar district, plantation, 1650 m, 11 ix 1999, Kargioğlu 2789. Euro-Sib. element.

*P. nigra* Arn. subsp. *nigra* var. *caramanica* (Loudon) Rehder

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, 1450 m, 12 vi 1996, Kargioğlu 2078.

*P. brutia* Ten.

B2 Afyon: Around Hocalar, south slopes, 900 m, 14 vi 1998, Kargioğlu 2638.

E. Medit. element.

#### CUPRESSACEAE

*Juniperus oxycedrus* L. subsp. *oxycedrus*

B3 Afyon: Sincanlı, around Tazlar village, clearings of *Pinus nigra* forest, 1400 m, 27 viii 2000, Kargioğlu 2800.

*J. foetidissima* Willd.

B3 Afyon: Sincanlı, around Çayhisar village, clearings of *Quercus cerris* forest, 1380 m, 16 vii 1998, Kargioğlu 2776.

*J. excelsa* M.Bieb.

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, rocky places, 1650 m, 28 vi 1997, Kargioğlu 2418.

#### ANGIOSPERMAE

##### RANUNCULACEAE

*Eranthis hyemalis* (L.) Salisb.

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, clear places, 1500 m, 09 iii 1997, Kargioğlu 2313.

*Nigella arvensis* L. var. *glauca* Boiss.

B3 Afyon: Hocalar, Yağcı village, clearings of *Cistus laurifolius* shrubs, 1300 m, 05 vii 1996, Kargioğlu 2201.

*Delphinium fissum* Waldst. & Kit. subsp. *anatolicum* Chowdhuri & P.H.Davis

B3 Afyon: Hocalar, north-east of Yağcı village, Ortadere district, clearings of *Cistus laurifolius* shrubs, 1300 m, 28 vi 1988, Kargioğlu 2667. Endemic. "LR (lc)"

*Consolida regalis* Gray subsp. *paniculata* (Host) Soo var. *paniculata*

B3 Afyon: Sincanlı, Çayhisar village, roadsides, 1100 m, 26 vii 1996, Kargioğlu 2280.

*Adonis flammea* Jacq.

B3 Afyon: Sincanlı, field and roadsides, 1150 m, 08 v 1996, Kargioğlu 2022.

*Ranunculus brutius* Ten.

B3 Afyon: Hocalar, Yağcı village, around Karagöl, clearings of *Pinus nigra* forest, 1400 m, 13 vi 1998, Kargioğlu 2553. Euro-Sib. element.

*R. neapolitanus* Ten.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya streamsides, 1400 m, 03 vii 1996, Kargioğlu 2147.

*R. repens* L.

B3 Afyon: Hocalar, Yağcı village, around Karagöl, clearings of *Pinus nigra* forest, wet places, 1500 m, 13 vi 1998, Kargioğlu 2547.

*R. polyanthemus* L.

B3 Afyon: Sincanlı, Çayhisar village, around spring, wet places, 1100 m, 26 vii 1996, Kargioğlu 2248.

*R. constantinopolitanus* (DC.) d' Urv.

B3 Afyon: Sincanlı, around Tazlar village, damp meadows, 1500 m, 01 vi 1997, Kargioğlu 2383.

*R. argyreus* Boiss.

B3 Afyon: Hocalar, Yağcı village, around Karagöl, clearings of *Pinus nigra* forest, 1500 m, 25 v 1996, Kargioğlu 2052.

*R. reuterianus* Boiss.

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, stony slopes, 1800 m, 14 iv 1996, Kargioğlu 2000. Endemic. "LR (lc)"

*R. heterorhizus* Boiss. & Bal.

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, clearings of *Pinus nigra* forest, 1550 m, 03 vii 1996, Kargioğlu 2186. Endemic. "LR (cd)"

*R. arvensis* L.

B3 Afyon: Sincanlı, Yürükmezarı village, fields, 1450 m, 21 vi 1996, Kargioğlu 2114.

*R. ficaria* L. subsp. *ficariiformis* Rouy & Foucaud

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, field margins, wet places, 1550 m, 09 iii 1997, Kargioğlu 2316.

*R. saniculifolius* Viv.

B3 Afyon: Hocalar, Yağcı village, Karagöl, 1350 m, 13 vi 1998, Kargioğlu 2556.

*Ceratocephalus falcatus* (L.) Pers.

B3 Afyon: Sincanlı, Çayhisar village, clear places, 1150 m, 22 v 1996, Kargioğlu 2027.

*C. testiculatus* (Crantz) Roth

B3 Afyon: Sincanlı, Çobanözü village, clear places, 1300 m, 25 v 1996, Kargioğlu 2039.

#### PAEONIACEAE

*Paeonia mascula* (L.) Mill. subsp. *mascula*

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, rocky slopes, 1900 m, 28 vi 1997, Kargioğlu 2431.

#### PAPAVERACEAE

*Roemeria hybrida* (L.) DC. subsp. *hybrida*

B3 Afyon: Hocalar, Yağcı village, fields, 1500 m, 31 v 1998, Kargioğlu 2527.

\**Papaver somniferum* L.

B3 Afyon: Sincanlı, Çobanözü village, cultivated, 1200 m, 27 viii 2000, Kargioğlu 2813.

*P. dubium* L.

B3 Afyon: Sincanlı, field and roadsides, 1200 m, 13 vi 1998, Kargioğlu 2601.

*P. argemone* L.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2637.

*Corydalis solida* (L.) Sw. subsp. *solida*

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, slopes, 1550 m, 16 iv 1997, Kargioğlu 2324.

*Fumaria asepsala* Boiss.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia*, 900 m, 14 vi 1998, Kargioğlu 2636.

Ir.-Tur. element.

#### CRUCIFERAE (BRASSICACEAE)

*Raphanus raphanistrum* L.

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, field margins, 1500 m, 03 vii 1996, Kargioğlu 2181.

*Crambe tataria* Sebeök

B3 Afyon: Sincanlı, field and roadsides, 1100 m, 04 vii 1997, Kargioğlu 2339.

*Rapistrum rugosum* (L.) All.

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, field margins, 1500 m, 03 vii 1996, Kargioğlu 2182.

*Conringia perfoliata* (C.A.Mey.) E.A.Busch

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2610.

*Lepidium sativum* L. subsp. *sativum*

B3 Afyon: Sincanlı, Yürükmezarı village, cultivated places, 1450 m, 03 vii 1996, Kargioğlu 2161.

*Cardaria draba* (L.) Desv. subsp. *draba*

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, cultivated places, 1500 m, 03 vii 1996, Kargioğlu 2180.

*Isatis glauca* Aucher ex Boiss. subsp. *glauca*

B3 Afyon: Sincanlı-Çayhisar road, roadsides, 1100 m, 26 vii 1996, Kargioğlu 2279.

Ir.-Tur. element.

*Iberis sempervirens* L.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, steppe, 1600 m, 08 v 1996, Kargioğlu 2015. Medit. element.

*Aethionema arabicum* (L.) Andr. ex DC.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2609.

*Thlaspi arvense* L.

B3 Afyon: Sincanlı, around Yürükmezarı village, clear places, 1400 m, 08 v 1996, Kargioğlu 2009.

*Capsella bursa-pastoris* (L.) Medik.

B3 Afyon: Sincanlı, Yürükmezarı village, cultivated places, 1450 m, 03 vii 1996, Kargioğlu 2160.

*Neslia apiculata* Fisch.

B3 Afyon: Sincanlı, roadsides, 1150 m, 22 v 1996, Kargioğlu 2031.

*Alyssum huetii* Boiss.

B3 Afyon: Sincanlı, cultivated places, 1150 m, 08 v 1996, Kargioğlu 2024.

Endemic, Ir.-Tur. element. "LR (lc)"

*A. desertorum* Stapf var. *desertorum*

B3 Afyon: Sincanlı, west of Çayırhisar village, rocky places, 1300 m, 04 v 1997, Kargioğlu 2338.

*A. minutum* Schltld. ex DC.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 03 vii 1997, Kargioğlu 2190.

*A. minus* (L.) Rothm. var. *micranthum* (Meyer) T.R.Dudley

B3 Afyon: Sincanlı, cultivated places and roadsides, 1150 m, 08 v 1996, Kargioğlu 2025.

*A. strigosum* Banks & Sol. subsp. *strigosum*

B2 Afyon: Hocalar, Yağcı village, clearings of *Pinus nigra* forest, 1500 m, 31 v 1998, Kargioğlu 2529.

*A. constellatum* Boiss.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1650 m, 22 vii 1997, Kargioğlu 2458.

*A. pateri* Nyar. subsp. *pateri*

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1750 m, 03 vii 1996, Kargioğlu 2167. Endemic, Ir.-Tur. element. "LR (lc)"

*Draba bruniifolia* Steven subsp. *bruniifolia*

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, steppe, 1750 m, 25 v 1996, Kargioğlu 2035.

Subsp. *heterocoma* (Fenzl) Coode & Cullen var. *nana* (Stapf) Schulz

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, steppe, 1750 m, 25 v 1996, Kargioğlu 2036. Endemic. "LR (lc)"

*D. muralis* L.

B3 Afyon: Sincanlı, Yürükmezarı village, Karapınar district, clear places, 1600 m, 01 vi 1997, Kargioğlu 2392.

*Erophila verna* (L.) Chevall. subsp. *verna*

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1700 m, 31 v 1998, Kargioğlu 2506.

*Arabis caucasica* Willd. subsp. *caucasica*

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1550 m, 25 v 1996, Kargioğlu 2048.

*A. sagittata* (Bertol.) DC.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1450 m, 25 v 1996, Kargioğlu 2060.

*A. nova* Vill.

B2 Afyon: Hocalar, Yağcı village, around Karagöl, clearings of *Pinus nigra* forest, 1500 m, 31 v 1998, Kargioğlu 2530.

*Turritis laxa* (Sibth. & Sm.) Hayek

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1500 m, 03 vii 1996, Kargioğlu 2191.

*Nasturtium officinale* R.Braga

B3 Afyon: Sincanlı-Yürükmezarı village road, around spring, 1200 m, 28 vi 1997, Kargioğlu 2412.

*Barbarea verna* (Mill.) Asch.

B3 Afyon: Sincanlı, Yürükmezarı village, Karapınar district, wet places, 1650 m, 22 vi 1996, Kargioğlu 2128.

*Aubrieta pinardii* Boiss.

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, rocky places, 1900 m, 28 vi 1997, Kargioğlu 2421. Ir.-Tur. element.

*Malcolmia africana* (L.) R.Braga

B3 Afyon: Hocalar, Yağcı village, waste places, 1200 m, 31 v 1997, Kargioğlu 2356.

*Erysimum cuspidatum* (M.Bieb.) DC.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya stream banks, damp meadows, 1450 m, 12 vi 1996, Kargioğlu 2063.

*Sisymbrium altissimum* L.

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, field margins, 1500 m, 03 vii 1996, Kargioğlu 2183.

*Camelina rumelica* Velen.

B3 Afyon: Sincanlı, south-east of Tazlar, cultivated places, 1500 m, 01 vi 1997, Kargioğlu 2368.

## RESEDACEAE

*Reseda lutea* L. var. *lutea*

B3 Afyon: Sincanlı, Çayhisar village, field and roadsides, 1200 m, 10 vii 1996, Kargioğlu 2228.

## CISTACEAE

*Cistus laurifolius* L.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2614. Medit. element.

*Helianthemum salicifolium* (L.) Mill.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2616.

*Fumana procumbens* (Dunal) Gren. & Godr.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2615.

## VIOLACEAE

*Viola odorata* L.

B3 Afyon: Hocalar, Yağcı village, Çavdarlı district, stream bed, 1500 m, 25 v 1996, Kargioğlu 2058.

*V. sieheana* W.Becker

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, rocky places, 1800 m, 14 vi 1998, Kargioğlu 2649.

*V. occulta* Lehm.

B3 Afyon: Sincanlı, Çayırhisar village, cultivated land, 1300 m, 04 v 1997, Kargioğlu 2342.

*V. parvula* Tineo

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, steppe, 1800 m, 14 iv 1996, Kargioğlu 2001.

*V. kitaibeliana* Roem. & Schult.

B3 Afyon: Sincanlı, Güvercinlik hill, stony slopes, 1750 m, 31 v 1997, Kargioğlu 2348.

## POLYGALACEAE

*Polygala supina* Schreb.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2639.



**P. pruinosa** Boiss. subsp. *pruinosa*

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1650 m, 16 vii 1998, Kargioğlu 2770.

**CARYOPHYLLACEAE**

**Arenaria serpyllifolia** L.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1650 m, 31 v 1998, Kargioğlu 2507.

**A. acerosa** Boiss.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1750 m, 03 vii 1996, Kargioğlu 2170. Endemic. "LR (lc)"

**Minuartia juniperina** (L.) Maire & Petitm.

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, rocky slopes, 1900 m, 28 vi 1997, Kargioğlu 2424.

**M. hamata** (Hausskn.) Mattf.

B3 Afyon: Hocalar, Yağcı village, clearings of *Pinus nigra* forest, 1550 m, 31 v 1997, Kargioğlu 2352.

**M. anatolica** (Boiss.) Woronow var. *phrygia* (Bornm.) McNeill

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, stony and rocky places, 1800 m, 16 vii 1998, Kargioğlu 2728.

Endemic, Ir.-Tur. element. "VU"

**M. anatolica** (Boiss.) Woronow var. *polymorpha* McNeill

B3 Afyon: Sincanlı, Tazlar village, Yellice hill, stony places, 1500 m, 01 vi 1997, Kargioğlu 2372.

**M. leucocephaloides** (Bornm.) Bornm.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, stony places, 1650 m, 22 vii 1997, Kargioğlu 2460. Endemic. "LR (lc)"

**M. hybrida** (Vill.) Schischk. subsp. *hybrida*

B3 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2568.

**Stellaria media** (L.) Vill. subsp. *media*

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1650 m, 16 vii 1998, Kargioğlu 2756.

**Cerastium anomalum** Waldst. & Kit.

B2 Afyon: Hocalar, around Yağcı village, meadows, 1500 m, 31 vi 1998, Kargioğlu 2532.

**C. dichotomum** L. subsp. *dichotomum*

B3 Afyon: Sincanlı, south-east of Tazlar village, cultivated ground, 1500 m, 01 vi 1997, Kargioğlu 2369.

**C. brachypetalum** Pers. subsp. *roeseri* (Boiss. & Heldr.) Nyman

B3 Afyon: Hocalar, Yağcı village, around Karagöl, clearings of *Pinus nigra* forest, 1500 m, 31 v 1998, Kargioğlu 2533.

**C. fragillimum** Boiss.

B3 Afyon: Hocalar, Yağcı village, clearings of *Pinus nigra* forest, 1550 m, 31 v 1997, Kargioğlu 2351.

**C. gracile** Dufur.

B3 Afyon: Sincanlı, Ahırdağı, rocky slopes, 1750 m, 31 v 1998, Kargioğlu 2519.

**Holosteum umbellatum** L. var. *umbellatum*

B3 Afyon: Sincanlı, fields and roadsides, 1150 m, 08 v 1996, Kargioğlu 2017.

**Moenchia mantica** (L.) Bartl. subsp. *mantica*

B3 Afyon: Sincanlı, Kırka town, Hisar hill, clearings of *Cistus laurifolius* shrubs, 1380 m, 28 vi 1998, Kargioğlu 2671.

Subsp. *caerulea* (Boiss.) A.R.Clapham

B3 Afyon: Sincanlı, south-east of Tazlar village, clear places, 1500 m, 01 vi 1997, Kargioğlu 2373.

**Dianthus zonatus** Fenzl var. *zonatus*

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1650 m, 26 vii 1996, Kargioğlu 2266.

**D. lydus** Boiss.

B3 Afyon: Sincanlı, Kinik village, Karata? hill, clearings of *Quercus cerris* forest, 1310 m, 14 vii 1998, Kargioğlu 2684. Endemic. "LR (lc)"

**Petrohragia alpina** (Hablitz) Ball & Heywood subsp. *olympica* (Boiss.) Ball & Heywood

B3 Afyon: Sincanlı, Kinik village, Karata? hill, clearings of *Quercus cerris* forest, 1310 m, 14 vii 1998, Kargioğlu 2685.

**Velezia rigida** L.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2613.

**Saponaria glutinosa** M.Bieb.

B3 Afyon: Sincanlı, Kırka town, Hisar hill, clearings of *Cistus laurifolius* shrubs, 1380 m, 28 vi 1998, Kargioğlu 2673.

**Silene italica** (L.) Pers.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1450 m, 12 vi 1996, Kargioğlu 2076.

**S. supina** M.Bieb. subsp. *pruinosa* (Boiss.) Chowdhuri

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, field and roadsides, 1550 m, 10 vii 1996, Kargioğlu 2220.

**S. vulgaris** (Moench) Garcke var. *vulgaris*

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya stream banks, 1500 m, 21 vi 1996, Kargioğlu 2089.

**S. rhynchocarpa** Boiss.

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, rocky slopes, 1900 m, 28 vi 1997, Kargioğlu 2425.

**S. compacta** Fisch.

B3 Afyon: Sincanlı, Yürükmezarı village, Karapınar district, clearings of *Pinus nigra-Cistus laurifolius* community, 1600 m, 10 vii 1996, Kargioğlu 2233.

**S. subconica** Friv.

B3 Afyon: Sincanlı, fields and roadsides, 1150 m, 08 v 1996, Kargioğlu 2019.

**S. lydia** Boiss.

B3 Afyon: Sincanlı, roadsides, 1150 m, 22 v 1996, Kargioğlu 2029.

E. Medit. element.

**S. conoidea** L.

B3 Afyon: Sincanlı, field and roadsides, 1200 m, 13 vi 1998, Kargioğlu 2596.

**Agrostemma githago** L.

B3 Afyon: Hocalar, around Yağcı village, fields, 1200 m, 13 vi 1998, Kargioğlu 2603.

**ILLECEBRACEAE**

**Herniaria incana** Lam.

B3 Afyon: Sincanlı, Kırka town, roadsides, 1300 m, 05 vii 1996, Kargioğlu 2208.

*Paronychia chionaea* Boiss. subsp. *chionaea*

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1800 m, 16 vii 1998, Kargioğlu 2734. Endemic. "LR (nt)"

*P. dudleyi* Chaudhri

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, stony slopes, 1800 m, 16 vii 1998, Kargioğlu 2735. Endemic, Ir.-Tur. element. "LR (cd)"

*P. carica* Chaudhri

B3 Afyon: Sincanlı, Tazlar village, Yellice hill, rocky places 1400 m, 26 vii 1996, Kargioğlu 2267. Endemic. "LR (nt)"

#### POLYGONACEAE

*Polygonum lapathifolium* L.

B3 Afyon: Sincanlı, Kırka town, damp meadows, 1300 m, 05 vii 1996, Kargioğlu 2205.

*P. bellardii* All.

B3 Afyon: Sincanlı, Kırka town, damp places, 1300 m, 05 vii 1996, Kargioğlu 2204.

*Rumex acetosella* L.

B3 Afyon: Sincanlı, south-east of Tazlar village, waste places, 1500 m, 01 vi 1997, Kargioğlu 2380.

*R. scutatus* L.

B3 Afyon: Sincanlı, Tazlar village, Yellice hill, rocky places, 1500 m, 28 vi 1997, Kargioğlu 2409.

*R. crispus* L.

B3 Afyon: Sincanlı, Çayhisar village, waste places 1250 m, 10 vii 1996, Kargioğlu 2215.

*R. pulcher* L.

B3 Afyon: Sincanlı, Tazlar village, Yellice hill, rocky places, 1500 m, 28 vi 1997, Kargioğlu 2408.

*R. nepalensis* Spreng.

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, clearings of *Pinus nigra* forest, 1550 m, 10 vii 1996, Kargioğlu 2227.

#### CHENOPODIACEAE

*Chenopodium botrys* L.

B3 Afyon: Sincanlı, Çobanözü village, roadsides, 1600 m, 14 ix 1997, Kargioğlu 2484.

*C. foliosum* (Moench) Asch.

B3 Afyon: Sincanlı, around Yürükmezarı village, clear places, 1400 m, 04 ix 1996, Kargioğlu 2299.

*C. album* L. subsp. *album* var. *album*

B3 Afyon: Sincanlı, cultivated land, 1100 m, 04 ix 1996, Kargioğlu 2307.

#### AMARANTHACEAE

*Amaranthus albus* L.

B3 Afyon: Sincanlı, Yürükmezarı village, cultivated land, 1400 m, 26 vii 1996, Kargioğlu 2238.

#### TAMARICACEAE

*Tamarix smyrnensis* Bunge

B3 Afyon: Hocalar, Yağcı village, Ortadere banks, 1200 m, 28 vi 1998, Kargioğlu 2003.

*Myricaria germanica* (L.) Desv.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya stream banks, 1400 m, 04 ix 1996, Kargioğlu 2304.

#### GUTTIFERAE (HYPERICACEAE)

*Hypericum confertum* Choisy subsp. *confertum*

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, clearings of *Pinus nigra* forest, 1700 m, 12 vi 1996, Kargioğlu 2081.

*H. orientale* L.

B3 Afyon: Sincanlı, Kırka town, Hisar hill, clearings of *Cistus laurifolius* shrubs, 1340 m, 28 vi 1998, Kargioğlu 2657.

*H. origanifolium* Willd.

B3 Afyon: Sincanlı, Kınık village, Karata? hill, clearings of *Quercus cerris* forest, 1310 m, 14 vii 1998, Kargioğlu 2691.

*H. aviculariifolium* Jaub. & Spach subsp. *depilatum* (Freyn & Bornm.) N. Robson var. *depilatum*

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1650 m, 16 vii 1998, Kargioğlu 2766. Endemic, Ir.-Tur. element. "LR (lc)"

Subsp. *depilatum* (Freyn & Bornm.) N. Robson var. *bourgaei* (Boiss.) N. Robson

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, clearings of *Pinus nigra* forest, 1450 m, 21 vi 1996, Kargioğlu 2118. Endemic. "LR (lc)"

*H. tetrapterum* Fr.

B3 Afyon: Sincanlı, around Tazlar village, wet places, 1400 m, 27 viii 2000, Kargioğlu 2807.

*H. perforatum* L.

B3 Afyon: Sincanlı, Kınık village, Karata? hill, clearings of *Quercus cerris* forest, 1310 m, 14 vii 1998, Kargioğlu 2692.

#### MALVACEAE

*Malva sylvestris* L.

B3 Afyon: Sincanlı, fields, 1200 m, 27 viii 2000, Kargioğlu 2811.

*M. neglecta* Wallr.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2633.

*Alcea pallida* Waldst. & Kit.

B3 Afyon: Sincanlı, roadsides, 1200 m, 27 viii 2000, Kargioğlu 2810.

#### TILIACEAE

*Tilia rubra* DC. subsp. *caucasica* (Rupr.) V. Engl.

B3 Afyon: Hocalar, Yağcı village, north of Fındıklı hill, rocky slopes, 1250 m, 31 v 1998, Kargioğlu 2543. Euxine element.

#### LINACEAE

*Linum hirsutum* L. subsp. *pseudoanatolicum* P.H. Davis

B3 Afyon: Sincanlı, Tazlar village, Yellice hill, rocky places, 1500 m, 28 vi 1997, Kargioğlu 2407. Endemic, Ir.-Tur. element. "LR (lc)"

*L. tenuifolium* L.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2632.

GERANIACEAE

*Geranium purpureum* Vill.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya stream banks, 1400-1500 m, 03 vii 1996, Kargioğlu 2146.

*G. rotundifolium* L.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya stream banks, 1400 m, 22 vii 1997, Kargioğlu 2446.

*G. molle* L. subsp. *molle*

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, stony slopes, 1400 m, 31 v 1998,

Kargioğlu 2511.

*G. pusillum* Burm.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1450 m, 12 vi 1996, Kargioğlu 2066.

*G. tuberosum* L. subsp. *tuberosum*

B3 Afyon: Sincanlı, fallow fields, 1150 m, 08 v 1996, Kargioğlu 2021.

*G. macrostylum* Boiss.

B3 Afyon: Sincanlı, Tazlar village, Yellice hill, slopes, 1500 m, 01 vi 1997, Kargioğlu 2376. E. Medit. (mt.) element.

*Erodium ciconium* (L.) L'Her.

B3 Afyon: Sincanlı, field and roadsides, 1150 m, 08 v 1996, Kargioğlu 2020.

*E. cicutarium* (L.) L'Her. subsp. *cicutarium*

B3 Afyon: Hocalar, Yağcı village, fallow fields, 1250 m, 31 v 1997, Kargioğlu 2353.

ZYGOPHYLLACEAE

*Zygophyllum fabago* L.

B3 Afyon: Sincanlı, waste places, 1100 m, 10 vii 1996, Kargioğlu 2237.

Ir.-Tur. element.

ACERACEAE

*Acer platanoides* L.

B3 Afyon: Hocalar, Yağcı village, north slopes of Fındıklı hill, 1300 m, 31 v 1998, Kargioğlu 2526. Euro-Sib. element.

ANACARDIACEAE

*Pistacia terebinthus* L. subsp. *terebinthus*

B3 Afyon: Sincanlı, Çobanözü village, Tahtalık stream banks, rocky places, 1500 m, 28 vi 1997, Kargioğlu 2398. Medit. element.

CELASTRACEAE

*Euonymus latifolius* (L.) Mill. subsp. *latifolius*

B3 Afyon: Sincanlı, Tazlar village, Yellice hill, rocky places, 1500 m, 28 vi 1997, Kargioğlu 2400. Euro-Sib. element.

LEGUMINOSAE (FABACEAE)

*Chamaecytisus hirsutus* (L.) Link

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya streamsides, 1400 m, 03 vii 1996, Kargioğlu 2145.

*Genista tinctoria* L.

B3 Afyon: Sincanlı, Kırka town, Koru hill, clearings of *Cistus laurifolius* shrubs, 1480 m, 14 vii 1998, Kargioğlu 2679. Euro-Sib. element.

*G. burdurensis* Gibbs

B3 Afyon: Sincanlı, Güvercinlik hill, clearings of *Pinus nigra*-*Populus tremula* community, 1600 m, 10 vii 1996, Kargioğlu 2223. Endemic, Ir.-Tur. element. "LR (cd)"

*Colutea melanocalyx* Boiss. & Heldr. subsp. *melanocalyx*

B3 Afyon: Hocalar, west of Yağcı village, with *Cistus laurifolius*, 1200 m, 13 vi 1998, Kargioğlu 2569. Endemic, E. Medit. element. "EN"

*Astragalus hamosus* L.

B3 Afyon: Sincanlı, Yürükmezarı village, roadsides, 1200 m, 01 vi 1997, Kargioğlu 2389.

*A. oxytropifolius* Boiss.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1500 m, 25 v 1996, Kargioğlu 2056. Ir.-Tur. element.

*A. microcephalus* Willd.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, steppe. 1720 m, 16 vii 1998, Kargioğlu 2723. Ir.-Tur. element.

*A. strictispinis* Boiss.

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, clearings of *Pinus nigra* forest, 1550 m, 16 vii 1998, Kargioğlu 2726. Endemic. "LR (nt)"

*A. baibutensis* Bunge

B3 Afyon: Sincanlı, Küçükhacet hill, clearings of *Pinus nigra* forest, 1560 m, 16 vii 1988, Kargioğlu 2722. Endemic, Ir.-Tur. element. "LR (lc)"

*A. ponticus* Pall.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya streamsides, 1400 m, 22 vii 1997, Kargioğlu 2434.

*A. odoratus* Lam.

B3 Afyon: Sincanlı, Yürükmezarı village, around Küppinari, 1500 m, 12 vi 1996, Kargioğlu 2077.

*A. lydus* Boiss.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia*, 900 m, 14 vi 1998, Kargioğlu 2594. Endemic, Ir.-Tur. element. "LR (lc)"

*A. macrocephalus* Willd. subsp. *finitimus* (Bunge) Chamb.

B3 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2565. Ir.-Tur. element.

*A. paecilanthus* Boiss. & Heldr.

B3 Afyon: Hocalar, Yağcı village, Ortadere district, clearings of *Cistus laurifolius* shrubs, 1400 m, 28 vi 1998, Kargioğlu 2677. Endemic. "LR (nt)"

*A. squalidus* Boiss. & Noe

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1650 m, 31 v 1998, Kargioğlu 2510. Endemic. "LR (nt)"

*A. acmonotrichus* Fenzl

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, stony slopes, 1700 m, 08 v 1996, Kargioğlu 2023. Endemic, E. Medit. element. "LR (lc)"

*A. campylosema* Boiss. subsp. *campylosema*

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia*, 900 m, 14 vi 1998, Kargioğlu 2608. Endemic, Ir.-Tur. element. "LR (lc)"

**A. angustifolius** Lam. subsp. **angustifolius** var. **angustifolius**

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, steppe. 1750 m, 03 vii 1996, Kargioğlu 2168.

Subsp. **pungens** (Willd.) Hayek

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1550 m, 03 vii 1996, Kargioğlu 2162.

**A. vulnerariae** DC.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia*, 900 m, 14 vi 1998, Kargioğlu 2612. Endemic. "LR (lc)"

**Vicia cracca** L. subsp. **tenuifolia** (Roth) Gaudin

B3 Afyon: Sincanlı, Yürükmezari village, Çataloluk district, clearings of *Pinus nigra* forest, 1450 m, 21 vi 1996, Kargioğlu 2117.

**V. cracca** L. subsp. **stenophylla** Velen.

B3 Afyon: Sincanlı, Yürükmezari village, Merdivenkaya stream banks, 1400 m, 21 vi 1996, Kargioğlu 2094.

**V. villosa** Roth subsp. **dasycarpa** (Ten.) Cav.

B3 Afyon: Sincanlı, Çayhisar village, clearings of *Quercus cerris* forest, 1380 m, 16 vii 1998, Kargioğlu 2778.

**V. hirsuta** (L.) Gray

B3 Afyon: Sincanlı, Kırka town, Hisar hill, clearings of *Cistus laurifolius* shrubs, 1380 m, 28 vi 1998, Kargioğlu 2672.

**V. hybrida** L.

B3 Afyon: Hocalar, east of Yağcı village, fields, 1200 m, 13 vi 1998, Kargioğlu 2604.

**V. lathyroides** L.

B3 Afyon: Sincanlı, Tazlar village, Yellice hill, rocky slopes, 1500 m, 01 vi 1997, Kargioğlu 2390.

**V. sativa** L. subsp. **nigra** (L.) Ehrh. var. **nigra**

B3 Afyon. Sincanlı, Yürükmezari village, Merdivenkaya stream banks, damp meadows, 1450 m, 12 vi 1996, Kargioğlu 2065.

**V. sativa** L. subsp. **nigra** (L.) Ehrh. var. **segetalis** (Thuill.) Ser. ex DC.

B3 Afyon: Sincanlı, Yürükmezari village, Merdivenkaya stream banks, 1400 m, 21 vi 1996, Kargioğlu 2096.

**V. narbonensis** L. var. **narbonensis**

B3 Afyon: Sincanlı, field and roadsides, 1200 m, 13 vi 1998, Kargioğlu 2599.

**Lathyrus digitatus** (M.Bieb.) Fiori

B3 Afyon: Hocalar, Yağcı village, around Karagöl, clearings of *Pinus nigra* forest, 1500 m, 31 v 1998, Kargioğlu 2535. E. Medit. element.

**L. pratensis** L.

B3 Afyon: Sincanlı, Yürükmezari village, Merdivenkaya streamsides, 05 vii 1996, Kargioğlu 2199. Euro-Sib. element.

**L. laxiflorus** (Desf.) Kuntze subsp. **laxiflorus**

B3 Afyon: Sincanlı, Kırka town, Hisar hill, clearings of *Cistus laurifolius* shrubs, 1380 m, 28 vi 1998, Kargioğlu 2670.

**L. inconspicuus** L.

B2 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2571.

**L. sativus** L.

B3 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2572.

**L. nissolia** L.

B3 Afyon: Sincanlı, Yürükmezari village, Merdivenkaya stream banks, 1400 m, 21 vi 1996, Kargioğlu 2092.

**Ononis adenotricha** Boiss. var. **adenotricha**

B3 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2575. E. Medit. element.

**O. pusilla** L.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1650 m, 16 vii 1998, Kargioğlu 2761. Medit. element.

**O. spinosa** L. subsp. **leiosperma** (Boiss.) Sirj.

B3 Afyon: Sincanlı, Yürükmezari village, Merdivenkaya streamsides, 1400 m, 22 vii 1997, Kargioğlu 2445.

**Trifolium nigrescens** Viv. subsp. **petrisavii** (Clementi) Holmboe

B3 Afyon: Hocalar, Yağcı village, around Karagöl, clearings of *Pinus nigra* forest, 1500 m, 31 v 1998, Kargioğlu 2536.

**T. speciosum** Willd.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2622.

**T. campestre** Schreb.

B3 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2576.

**T. dubium** Sibth.

B3 Afyon: Sincanlı, Kırka town, Koru hill, clearings of *Cistus laurifolius* shrubs, 1340 m, 28 vi 1998, Kargioğlu 2655.

**T. physodes** Steven ex M.Bieb. var. **physodes**

B3 Afyon: Sincanlı, Kırka town, Koru hill, clearings of *Cistus laurifolius* shrubs, 1340 m, 28 vi 1998, Kargioğlu 2656. Medit. element.

**T. pratense** L. var. **pratense**

B3 Afyon: Sincanlı, Yürükmezari village, Merdivenkaya stream banks, 1400 m, 21 vi 1996, Kargioğlu 2093.

**T. medium** L. var. **medium**

B3 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2577.

**T. ochroleucum** Huds.

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, rocky places, 1900 m, 28 vi 1997, Kargioğlu 2427.

**T. caudatum** Boiss.

B3 Afyon: Hocalar, Yağcı village, around Karagöl, clearings of *Pinus nigra* forest, 1400 m, 13 vi 1998, Kargioğlu 2552. Endemic. "LR (lc)"

**T. alpestre** L.

B3 Afyon: Sincanlı, Kınık village, Karataş hill, clearings of *Quercus cerris* forest, 1310 m, 14 vii 1998, Kargioğlu 2688. Euro-Sib. element.

**T. lucanicum** Gasp.

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, rocky places, 1600 m, 28 vi 1997, Kargioğlu 2426. Medit. element.

**T. arvense** L. var. **arvense**

B3 Afyon: Sincanlı, Yürükmezari village, Çataloluk district, grassy places, 1550 m, 14 iv 1996, Kargioğlu 2008.

**Melilotus officinalis** (L.) Desr.

B3 Afyon: Sincanlı, Çayhisar village, cultivated fields, 1100 m, 26 vii 1996, Kargioğlu 2274.

**Trigonella brachycarpa** (Fisch.) Moris

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2624. Ir.-Tur. element.

**T. lunata** Boiss.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2625. Ir.-Tur. element.

**T. velutina** Boiss.

B3 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2579. Ir.-Tur. element.

**T. aurantiaca** Boiss.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2623. Ir.-Tur. element.

**T. fischeriana** Ser.

B3 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2578. Ir.-Tur. element.

**T. monantha** C.A.Mey. subsp. **noeana** (Boiss.) Hub.-Mor.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2626. Ir.-Tur. element.

**T. monspeliaca** L.

B3 Afyon: Sincanlı, south-east of Tazlar village, fallow fields, 1500 m, 01 vi 1997, Kargioğlu 2375. Medit. element.

**Medicago orbicularis** (L.) Bart.

B3 Afyon: Sincanlı, fallow fields, 1200 m, 13 vi 1998, Kargioğlu 2597.

**M. lupulina** L.

B3 Afyon: Sincanlı, south-east of Tazlar village, grassy places, 1500 m, 01 vi 1997, Kargioğlu 2374.

**M. sativa** L. subsp. **sativa**

B3 Afyon: Sincanlı, Yürükmezari village, Çataloluk district, field and roadsides, 1550 m, 10 vii 1996, Kargioğlu 2225.

**M. x varia** Martyn

B3 Afyon: Hocalar, north-east of Yağcı village, Ortadere district, meadows, 1300 m, 28 vi 1998, Kargioğlu 2665.

**M. minima** (L.) Bart. var. **minima**

B3 Afyon: Hocalar, west of Yağcı village, fields, 1200 m, 13 vi 1998, Kargioğlu 2574.

**M. rigidula** (L.) All. var. **rigidula**

B3 Afyon: Sincanlı, field and roadsides, 1200 m, 13 vi 1998, Kargioğlu 2598.

**Dorycnium pentaphyllum** Scop. subsp. **anatolicum** (Boiss.) Gams

B3 Afyon: Sincanlı, Kırka town, Hisar hill, clearings of *Cistus laurifolius* shrubs, 1380 m, 28 vi 1998, Kargioğlu 2679.

**Lotus corniculatus** L. var. **corniculatus**

B3 Afyon: Sincanlı, Kırka town, Koru hill, clearings of *Cistus laurifolius* shrubs, 1340 m, 28 vi 1998, Kargioğlu 2653.

**L. corniculatus** L. var. **tenuifolius** L.

B3 Afyon: Hocalar, north-east of Yağcı village, Ortadere district, stream banks, 1300 m, 28 vi 1998, Kargioğlu 2664.

**L. corniculatus** L. var. **alpinus** Ser.

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, rocky slopes, 1650 m, 04 ix 1996, Kargioğlu 2288.

**Tetragonolobus maritimus** (L.) Roth

B3 Afyon: Sincanlı, Yürükmezari village, Karapınar district, wet places, 1650 m, 11 ix 1999, Kargioğlu 2786.

**Anthyllis vulneraria** L. subsp. **boissieri** (Sagorski) Bornm.

B3 Afyon: Hocalar, Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2566.

**A. vulneraria** L. subsp. **pulchella** (Vis.) Bornm.

B3 Afyon: Sincanlı, Yürükmezari village, Karapınar district, grassy places, 1650 m, 11 ix 1999, Kargioğlu 2785.

**Coronilla scorpioides** (L.) Koch

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2619.

**C. varia** L. subsp. **varia**

B3 Afyon: Sincanlı, Yürükmezari village, Çataloluk district, field margins, 1500 m, 03 vii 1996, Kargioğlu 2184.

**Hedysarum varium** Willd.

B3 Afyon: Hocalar, north-east of Yağcı village, Ortadere district, clearings of *Cistus laurifolius* shrubs, 1300 m, 28 vi 1998, Kargioğlu 2663. Ir.-Tur. element.

**Onobrychis pisidica** Boiss.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1450 m, 26 vii 1996, Kargioğlu 2265. Endemic, Ir.-Tur. element. "LR (nt)"

**O. montana** DC. subsp. **cadmea** (Boiss.) P.W.Ball

B3 Afyon: Sincanlı, Yürükmezari village, Çataloluk district, field margins, 1500 m, 03 vii 1996, Kargioğlu 2185.

**O. hypargyrea** Boiss.

B3 Afyon: Sincanlı, Çayhisar village, clearings of *Quercus cerris* forest, 1380 m, 16 vii 1998, Kargioğlu 2777.

**ROSACEAE**

**Prunus divaricata** Ledeb. subsp. **divaricata**

B3 Afyon: Sincanlı, Yürükmezari village, Merdivenkaya streamsides, 1400 m, 26 vii 1996, Kargioğlu 2255.

**Filipendula vulgaris** Moench

B3 Afyon: Sincanlı, Yürükmezari village, Karapınar district, around spring, moist places, 1650 m, 03 vii 2000, Kargioğlu 2794. Euro-Sib. element.

**Rubus caesius** L.

B3 Afyon: Sincanlı, Yürükmezari village, Karapınar district, clearings of *Pinus nigra* forest, 1650 m, 11 ix 1999, Kargioğlu 2791.

**R. canescens** DC. var. **canescens**

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, stony slopes, 1650 m, 04 ix 1996, Kargioğlu 2291.

**Potentilla rupestris** L.

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, rocky places, 1800 m, 14 vi 1998, Kargioğlu 2648. Euro-Sib. element.

**P. argentea** L.

B3 Afyon: Sincanlı, Kırka town, Hisar hill, clearings of *Cistus laurifolius* shrubs, 1380 m, 28 vi 1998, Kargioğlu 2673.

**P. recta** L.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2641.

**P. kotschyana** Fenzl

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, stony slopes, 1450 m, 21 vi 1996, Kargioğlu 2122. E. Medit. element.

**P. reptans** L.

B3 Afyon: Sincanlı, Kırka town, Hisar hill, around spring, 1380 m, 28 vi 1998, Kargioğlu 2674.

**Fragaria vesca** L.

B3 Afyon: Hocalar, Yağcı village, Karagöl district, moist places in *Pinus nigra* forest, 1500 m, 13 vi 1998, Kargioğlu 2548.

**Geum urbanum** L.

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, clearings of *Pinus nigra* forest, 1500 m, 21 vi 1996, Kargioğlu 2121. Euro-Sib. element.

**Agrimonia eupatoria** L.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya stream banks, damp meadows, 1400 m, 03 vii 1996, Kargioğlu 2148.

**Sanguisorba minor** Scop. subsp. *muricata* (Spach) Briq.

B3 Afyon: Sincanlı, Yürükmezarı village, clearings of *Pinus nigra* forest, 1500 m, 21 vi 1996, Kargioğlu 2111.

**Alchemilla bursensis** Pawl.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya stream banks, 1400 m, 22 vii 1997, Kargioğlu 2450. Endemic, Euxine element. "EN"

**Rosa hemisphaerica** Herrm.

B3 Afyon: Hocalar, west of Yağcı village, clear places, 1200 m, 13 vi 1998, Kargioğlu 2582. Ir.-Tur. element.

**R. pulverulenta** M.Bieb.

B3 Afyon: Sincanlı, Ahırdağı, Ardiçlı hill, stony slopes, 1650 m, 04 ix 1996, Kargioğlu 2290.

**R. canina** L.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya stream banks, 1400 m, 21 vi 1996, Kargioğlu 2103.

**Pyracantha coccinea** Roem.

B3 Afyon: Sincanlı, Çobanözü village, Tahtalık stream banks, rock slopes, 1350 m, 14 ix 1997, Kargioğlu 2476.

**Sorbus umbellata** (Desf.) Fritsch var. *umbellata*

B3 Afyon: Sincanlı, Ahırdağı, Ardiçlı hill, rocky places, 1900 m, 28 vi 1997, Kargioğlu 2432.

**Malus sylvestris** Mill. subsp. *orientalis* (Uglitzk.) Browicz var. *orientalis*

B3 Afyon: Sincanlı, Yürükmezarı village, Karapınar district, around spring 1650 m, 11 ix 1999, Kargioğlu 2790.

**Pyrus elaeagnifolia** Pall. subsp. *elaeagnifolia*

B3 Afyon: Sincanlı, Yürükmezarı village, edge of *Pinus nigra* forest, 1300 m, 04 ix 1996, Kargioğlu 2300.

## LYTHRACEAE

**Lythrum salicaria** L.

B3 Afyon: Sincanlı, south of Çobanözü village, clearings of *Pinus nigra* forest, dry pool bed, 1600 m, 14 ix 1997, Kargioğlu 2485. Euro-Sib. element.

## ONAGRACEAE

**Epilobium angustifolium** L.

B3 Afyon: Sincanlı, Yürükmezarı village, Karapınar district, clearings of *Cistus laurifolius* shrubs, 1650 m, 10 vii 1996, Kargioğlu 2234.

**E. dodonaei** Vill.

B3 Afyon: Sincanlı, Yürükmezarı village, stony slopes, 1250 m, 10 vii 1996, Kargioğlu 2213. Euro-Sib. element.

**E. hirsutum** L.

B3 Afyon: Sincanlı, Yürükmezarı village, around Küppınarı, wet places, 1650 m, 04 ix 1996, Kargioğlu 2285.

**E. montanum** L.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya streamsides, 1400 m, 22 vii 1997, Kargioğlu 2448. Euro-Sib. element.

**E. lanceolatum** Seb. & Mauri

B3 Afyon: Sincanlı, Kırka town, Güvercinlik hill, clearings of *Pinus nigra*-*Populus tremula* community, 1560 m, 15 vii 1998, Kargioğlu 2712.

## CRASSULACEAE

**Sedum amplexicaule** DC.

B3 Afyon: Sincanlı, Tazlar village, Yellice hill, rocky places, 1500 m, 28 vi 1997, Kargioğlu 2402. Medit. element.

**S. laconicum** Boiss. & Heldr.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1650 m, 22 vii 1997, Kargioğlu 2461. E. Medit. element.

**S. pallidum** M.Bieb. var. *pallidum*

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2617.

**S. pallidum** M.Bieb. var. *bithynicum* (Boiss.) Chamb.

B3 Afyon: Sincanlı, Kırka town, Güvercinlik hill, clearings of *Pinus nigra*-*Populus tremula* community, 1560 m, 15 vii 1998, Kargioğlu 2706. Euxine element.

## SAXIFRAGACEAE

**Saxifraga sibirica** L. subsp. *sibirica*

B3 Afyon: Sincanlı, Ahırdağı, Ardiçlı hill, rocky places, 1800 m, 31 v 1998, Kargioğlu 2524.

## PARNASSIACEAE

**Parnassia palustris** L.

B3 Afyon: Sincanlı, Yürükmezarı village, around Küppınarı, wet meadows, 1700 m, 14 ix 1997, Kargioğlu 2490.

## UMBELLIFERAE (APIACEAE)

**Eryngium campestre** L. var. *virens* Link

B3 Afyon: Sincanlı, Tazlar village, disturbed steppe, 1400 m, 27 viii 2000, Kargioğlu 2801.

**Scandix iberica** M.Bieb.

B3 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2560.

**S. pecten-veneris** L.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya stream banks, 1400 m, 21 vi 1996, Kargioğlu 2084.

**S. macrorhyncha** C.A.Mey.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1800 m, 16 vii 1998, Kargioğlu 2718.

**Bunium microcarpum** (Boiss.) Freyn  
subsp. **microcarpum**

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1450 m, 12 vi 1996, Kargioğlu 2072. E. Medit. element.

**Pimpinella tragium** Vill. subsp. **lithophila** (Schischk.) Tutin

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1450 m, 26 vii 1996, Kargioğlu 2260.

Subsp. **polyclada** (Boiss. & Heldr.) Tutin

B3 Afyon: Sincanlı, Güvercinlik hill, clearings of *Pinus nigra*-*Populus tremula* community, 1600 m, 10 vii 1996, Kargioğlu 2235.

**Seseli tortuosum** L.

B3 Afyon: Sincanlı, Tazlar village, disturbed steppe, 1400 m, 27 viii 2000, Kargioğlu 2803.

**Falcaria vulgaris** Bernh.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya streamsides, 1400 m, 26 vii 1996, Kargioğlu 2240.

**Ferulago macrosciadia** Boiss. & Bal.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1650 m, 16 vii 1998, Kargioğlu 2753. Endemic, E. Medit. element. "LR (lc)"

**F. aucheri** Boiss.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1450 m, 26 vii 1996, Kargioğlu 2258. Endemic. "LR (lc)"

**Pastinaca sativa** L. subsp. **urens** (Req. ex Godr.) Celak

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya streamsides, 1400 m, 22 vii 1997, Kargioğlu 2436.

**Malabaila secacul** Banks & Sol.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1450 m, 26 vii 1996, Kargioğlu 2259.

**Heracleum platytaenium** Boiss.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya streamsides, 1400 m, 22 vii 1997, Kargioğlu 2435. Endemic. "LR (lc)"

**Torilis ucranica** Spreng.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya streamsides, 1400 m, 26 vii 1996, Kargioğlu 2243.

**T. leptophylla** (L.) Reichb.

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, field margins, 1500 m, 03 vii 1996, Kargioğlu 2178.

**Caucalis platycarpus** L.

B3 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2559.

**Turgenia latifolia** (L.) Hoffm.

B3 Afyon: Sincanlı, cultivated places, 1200 m, 28 vi 1997, Kargioğlu 2413.

**Daucus carota** L.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya streamsides, 1400 m, 22 vii 1997, Kargioğlu 2433.

#### CORNACEAE

**Cornus sanguinea** L. subsp. **australis** (C.A.Mey.) Jav.

B3 Afyon: Sincanlı, Çobanözü village, Tahtalık stream banks, rocky slopes, 1350 m, 14 ix 1997, Kargioğlu 2474. Euro-Sib. element.

#### CAPRIFOLIACEAE

**Sambucus ebulus** L.

B3 Afyon: Sincanlı, west of Çobanözü village, roadside banks in valley, 1350 m, 14 ix 1997, Kargioğlu 2472. Euro-Sib. element.

**S. nigra** L.

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, edge of *Pinus nigra* forest, 1500 m, 27 viii 2000, Kargioğlu 2805. Euro-Sib. element.

**Viburnum lantana** L.

B3 Afyon: Sincanlı, Tazlar village, Yellice hill, rocky slopes, 1500 m, 01 vi 1997, Kargioğlu 2388. Euro-Sib. element.

**V. opulus** L.

B3 Afyon: Sincanlı, Çobanözü village, Tahtalık stream banks, rocky slopes, 1350 m, 27 vii 2000, Kargioğlu 2806. Euro-Sib. element.

**Lonicera caucasica** Pall. subsp. **orientalis** (Lam.) Chamb. & Long

B3 Afyon: Sincanlı, Tazlar village, Yellice hill, rocky places, 1500 m, 28 vi 1997, Kargioğlu 2397. Endemic. "LR (lc)"

**L. etrusca** Santi var. **etrusca**

B3 Afyon: Sincanlı, Çobanözü village, Tahtalık stream banks, rocky slopes, 1350 m, 14 ix 1997, Kargioğlu 2471. Medit. element.

#### VALERIANACEAE

**Valerianella coronata** (L.) DC.

B3 Afyon: Sincanlı, Çayhisar village, field and roadsides, 1200 m, 21 vi 1996, Kargioğlu 2105.

**V. glomerata** Boiss. & Bal.

B3 Afyon: Sincanlı, south-east of Tazlar village, fields, 1300 m, 01 vi 1997, Kargioğlu 2381. Endemic, Ir.-Tur. element. "LR (lc)"

**V. vesicaria** (L.) Moench

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2645.

#### MORINACEAE

**Morina persica** L.

B3 Afyon: Sincanlı, roadsides, 1200 m, 27 viii 2000, Kargioğlu 2812.

Ir.-Tur. element.

#### DIPSACACEAE

**Dipsacus laciniatus** L.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya stream banks, 1400 m, 04 ix 1996, Kargioğlu 2302.

**Scabiosa argentea** L.

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, field and roadsides, 1550 m, 10 vii 1996, Kargioğlu 2221.

**S. rotata** M.Bieb.

B3 Afyon: Sincanlı-Yürükmezarı road, roadsides, 1200 m, 31 v 1997, Kargioğlu 2361.

Ir.-Tur. element.

#### COMPOSITAE (ASTERACEAE)

**Xanthium strumarium** L. subsp. **strumarium**

B3 Afyon: Sincanlı, around Yürükmezarı village, clearings, 1400 m, 04 ix 1996, Kargioğlu 2297.

**Inula salicina L.**

B3 Afyon: Sincanlı, Yürükmezarı village, moist ground by Merdivenkaya stream, 1400 m, 26 vii 1996, Kargioğlu 2246. Euro-Sib. element.

**I. oculus-christi L.**

B3 Afyon: Sincanlı, Yürükmezarı village, Karapınar district, clearings of *Pinus nigra-Cistus laurifolius* community, 1600 m, 10 vii 1996, Kargioğlu 2232.

Euro-Sib. element.

**Pulicaria dysenterica (L.) Bernh.**

B3 Afyon: Sincanlı, Çobanözü village, Tahtalık stream, edge of water, 1550 m, 16 vii 1998, Kargioğlu 2752.

**Helichrysum plicatum DC. subsp. plicatum**

B3 Afyon: Sincanlı, Tazlar village, Yellice hill, rocky slopes, 1500 m, 28 vi 1997, Kargioğlu 2411.

**Logfia arvensis (L.) Holub**

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1800 m, 16 vii 1998, Kargioğlu 2720.

**Erigeron acer L. subsp. pycnotrichus (Vierh.) Grierson**

B3 Afyon: Sincanlı, Yürükmezarı village, moist ground by Merdivenkaya stream, 1400 m, 22 vii 1997, Kargioğlu 2440. Euro-Sib. element.

**Bellis perennis L.**

B3 Afyon: Sincanlı, Yürükmezarı-Yağcı villages road, Çavdarlı district, wet stream bed, 1500 m, 25 v 1996, Kargioğlu 2055. Euro-Sib. element.

**Doronicum orientale Hoffm.**

B3 Afyon: Hocalar, Yağcı village, shady places in *Pinus nigra* forest, 1600 m, 31 v 1997, Kargioğlu 2354.

**Senecio castagneanus DC.**

B3 Afyon: Sincanlı, Kırka town, Güvercinlik hill, clearings of *Pinus nigra-Populus tremula* community, 1560 m, 15 vii 1998, Kargioğlu 2701.

Endemic, E. Medit. element. "LR (lc)"

**S. vernalis Waldst. & Kit.**

B3 Afyon: Sincanlı, around Çayırhisar village, rocky slopes, 1300 m, 04 v 1997, Kargioğlu 2337.

**Tussilago farfara L.**

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, moist places, 1550 m, 14 iv 1996, Kargioğlu 2007. Euro-Sib. element.

**Anthemis aciphylla Boiss. var. aciphylla**

B3 Afyon: Sincanlı, south-east of Tazlar village, clearings, 1500 m, 01 vi 1997, Kargioğlu 2365. Endemic, E. Medit. element. "LR (lc)"

**A. tinctoria L. var. tinctoria**

B3 Afyon: Sincanlı, Kınık village, Karataş hill, clearings of *Quercus cerris* forest, 1310 m, 14 vii 1998, Kargioğlu 2681.

**A. coelopoda Boiss. var. bourgaei Boiss.**

B3 Afyon: Sincanlı, south of Çobanözü village, fields, 1200 m, 14 ix 1997, Kargioğlu 2470.

**A. wiedemanniana Fisch. & C.A. Mey.**

B3 Afyon: Sincanlı, south-east of Tazlar village, clearings, 1500 m, 01 vi 1997, Kargioğlu 2366. Endemic. "LR (lc)"

**Achillea teretifolia Willd.**

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1750 m, 03 vii 1996, Kargioğlu 2165. Endemic, Ir.-Tur. element. "LR (lc)"

**A. millefolium L. subsp. millefolium**

B3 Afyon: Sincanlı, Yürükmezarı village, moist ground by Merdivenkaya stream, 1400 m, 26 vii 1996, Kargioğlu 2244. Euro-Sib. element.

**A. setacea Waldst. & Kit.**

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, fallow fields, 1500 m, 03 vii 1996, Kargioğlu 2179. Euro-Sib. element.

**A. coarctata Poir.**

B3 Afyon: Sincanlı, Kırka town, roadsides, 1300 m, 05 vii 1996, Kargioğlu 2207.

**A. biebersteinii Afan.**

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, field and roadsides, 1550 m, 10 vii 1996, Kargioğlu 2216. Ir.-Tur. element.

**Tanacetum parthenium (L.) Sch. Bip.**

B3 Afyon: Hocalar, Yağcı village, north of Fındıklı hill, shady places, 1300 m, 28 vi 1998, Kargioğlu 2651.

**T. armenum (DC.) Sch. Bip.**

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, clearings of *Pinus nigra* forest, 1700 m, 12 vi 1996, Kargioğlu 2080.

**Tripleurospermum sevanense (Manden.) Pobed.**

B3 Afyon: Sincanlı-Çayhisar road, moist meadows, 1100 m, 26 vii 1996, Kargioğlu 2272.

**Artemisia campestris L.**

B3 Afyon: Sincanlı-Çayhisar village road, sandy places, 1100 m, 04 ix 1996, Kargioğlu 2305.

**Arctium minus (Hill) Bernh. subsp. pubens (Bab.) Arenes**

B3 Afyon: Sincanlı, Çobanözü village, around Tahtalık stream, clearings of *Pinus nigra* forest, 1500 m, 14 ix 1997, Kargioğlu 2478. Euro-Sib. element.

**Onopordum anatolicum (Boiss.) Eig**

B3 Afyon: Sincanlı-Çayhisar road, roadsides, 1100 m, 26 vii 1996, Kargioğlu 2276.

Endemic, Ir.-Tur. element. "LR (lc)"

**Cirsium vulgare (Savi) Ten.**

B3 Afyon: Sincanlı, Yürükmezarı village, clear places, 1400 m, 04 ix 1996, Kargioğlu 2296.

**C. creticum (Lam.) d' Urv. subsp. creticum**

B3 Afyon: Sincanlı, Yürükmezarı village, around Küppinari, 1700 m, 14 ix 1997, Kargioğlu 2487. E. Medit. element.

**C. arvense (L.) Scop. subsp. vestitum (Wimm. & Grab.) Petr.**

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya streamsides, 1400 m, 22 vii 1997, Kargioğlu 2438.

**Jurinea consanguinea DC.**

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2607.

**J. pontica Hausskn. & Freyn ex Hausskn.**

B3 Afyon: Sincanlı, Yürükmezarı village-Yağcı village road, roadsides, 1550 m, 03 vii 1996, Kargioğlu 2166. Endemic, Ir.-Tur. element. "LR (lc)"



**Centaurea cariensis** Boiss. subsp. **maculiceps** (O.Schwarz) Wagenitz

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1400 m, 26 vii 1996, Kargioğlu 2245. Endemic, E. Medit. element. "LR (lc)"

Subsp. **microlepis** (Boiss.) Wagenitz

B3 Afyon: Sincanlı-Yürükmezarı village road, roadsides 1250 m, 10 vii 1996, Kargioğlu 2209. Endemic, E. Medit. element. "LR (nt)"

**C. solstitialis** L. subsp. **solstitialis**

B3 Afyon: Sincanlı-Çayhisar road, roadsides, 1100 m, 26 vii 1996, Kargioğlu 2275.

**C. urvillei** DC. subsp. **stepposa** Wagenitz

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2607. Ir.-Tur. element.

**C. reuterana** Boiss. var. **reuterana**

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, steppe, 1750 m, 25 v 1996, Kargioğlu 2034.

**C. pichleri** Boiss. subsp. **pichleri**

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, steppe, 1750 m, 25 v 1996, Kargioğlu 2033.

**C. triumfettii** All.

B3 Afyon: Sincanlı, around Çöğürlü plateau, clearings of *Pinus nigra-Cistus laurifolius* community, 1650 m, 22 vi 1996, Kargioğlu 2127.

**C. depressa** M.Bieb.

B3 Afyon: Sincanlı, field and roadsides, 1200 m, 13 vi 1998, Kargioğlu 2592.

**Xeranthemum annuum** L.

B3 Afyon: Sincanlı-Yürükmezarı village road, roadsides 1250 m, 10 vii 1996, Kargioğlu 2212.

**Echinops viscosus** DC. subsp. **bithynicus** (Boiss.) Rech.

B3 Afyon: Sincanlı, fallow fields, 1100 m, 26 vii 1996, Kargioğlu 2281.

**Scolymus hispanicus** L.

B3 Afyon: Sincanlı-Çayhisar road, roadsides, 1100 m, 26 vii 1996, Kargioğlu 2277.

Medit. element.

**Cichorium intybus** L.

B3 Afyon: Sincanlı-Yürükmezarı village road, roadsides 1250 m, 10 vii 1996, Kargioğlu 2210.

**Scorzonera cana** (C.A.Mey.) Hoffm. var. **cana**

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1500 m, 25 v 1996, Kargioğlu 2042.

**S. eriophora** DC.

B3 Afyon: Hocalar, north-east of Yağcı village, Ortadere district, clearings of *Cistus laurifolius* shrubs, 1300 m, 28 vi 1998, Kargioğlu 2659. Endemic. "LR (lc)"

**Tragopogon latifolius** Boiss. var. **latifolius**

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, field and roadsides, 1550 m, 10 vii 1996, Kargioğlu 2218.

**T. latifolius** Boiss. var. **angustifolius** Boiss.

B3 Afyon: Sincanlı, field and roadsides, 1200 m, 13 vi 1998, Kargioğlu 2593.

Ir.-Tur. element.

**Leontodon asperrimus** (Willd.) Ball

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1800 m, 16 vii 1998, Kargioğlu 2719. Ir.-Tur. element.

**L. crispus** Vill. subsp. **asper** (Waldst. & Kit.) Rohlena var. **asper**

B3 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2561.

**Picris strigosa** M.Bieb.

B3 Afyon; Sincanlı-Yürükmezarı village road, roadsides 1250 m, 10.07.1996, Kargioğlu 2211. Ir.-Tur. element.

**Rhagadiolus angulosus** (Jaub. & Spach.) Kupicha

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya stream banks, 1400 m, 21 vi 1996, Kargioğlu 2085. Ir.-Tur. element.

**Sonchus asper** (L.) Hill subsp. **glaucescens** (Jord.) Ball

B3 Afyon: Sincanlı, Çobanözü village, around Tahtalık stream, clearings of *Pinus nigra* forest, 1600 m, 14 ix 1997, Kargioğlu 2482.

**Hieracium labillardierei** Arv.-Touv.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1450 m, 12 vi 1996, Kargioğlu 2073.

**H. pannosum** Boiss.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1450 m, 26 vii 1996, Kargioğlu 2263. E. Medit. element.

**Pilosella hoppeana** (Schult.) C.H. & F.W.Schultz subsp. **troica** (Zahn) P.D.Sell & West

B3 Afyon: Sincanlı, around Çöğürlü plateau, clearings of *Cistus laurifolius* shrubs, 1480 m, 14 vii 1998, Kargioğlu 2678.

**P. piloselloides** (Vill.) Sojak subsp. **megalomastix** (NP.) P.D.Sell & West

B3 Afyon: Sincanlı, Kırka town, Hisar hill, clearings of *Cistus laurifolius* shrubs, 1380 m, 28 vi 1998, Kargioğlu 2670.

**Scariola viminea** (L.) F.W.Schmidt

B3 Afyon: Sincanlı, south-east of Çayhisar, clearings of *Quercus cerris* community, 1380 m, 27 viii 2000, Kargioğlu 2804.

**Lapsana communis** L. subsp. **adenophora** (Boiss.) Rech.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya streamsides, 1400 m, 22 vii 1997, Kargioğlu 2441.

**Taraxacum bessarabicum** (Hornem.) Hand.-Mazz. subsp. **bessarabicum**

B3 Afyon: Sincanlı, west of Afyon, Aellen 1967: 1008!

**T. serotinum** (Waldst. & Kit.) Poir.

B3 Afyon: Sincanlı, Yürükmezarı village, Karapınar district, dry places, 1500 m, 01 xi 1996, Kargioğlu 2311.

**T. buttleri** Soest

B3 Afyon: Sincanlı, Güvercinlik hill, stony places, 1900 m, 31 v 1997, Kargioğlu 2346.

**Chondrilla juncea** L. var. **acantholepis** (Boiss.) Boiss.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1650 m, 22 vii 1997, Kargioğlu 2457.

**Crepis foetida** L. subsp. **rheoadifolia** (M.Bieb.) Celak.

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, field and roadsides, 1550 m, 10 vii 1996, Kargioğlu 2217.

**C. sancta** (L.) Babc.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1500 m, 25 v 1996, Kargioğlu 2041.

## CAMPANULACEAE

**Campanula iconia** Phitos

B3 Afyon: Sincanlı, Tazlar village, Yellice hill, rocky places, 1500 m, 28 vi 1997, Kargioğlu 2395. Endemic, Ir.-Tur. element. "EN"

**C. lyrata** Lam. subsp. *lyrata*

B3 Afyon: Sincanlı, Kınık village, Karata? hill, clearings of *Quercus cerris* forest, 1310 m, 14 vii 1998, Kargioğlu 2683. Endemic. "LR (lc)"

**C. cymbalaria** Sm.

B3 Afyon: Sincanlı, Tazlar village, Yellice hill, rocky places, 1500 m, 01 vi 1997, Kargioğlu 2387. E. Medit. (mt.) element.

**Asyneuma limonifolium** (L.) Janchen subsp. *limonifolium*

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1800 m, 16 vii 1998, Kargioğlu 2724.

Subsp. *pestalozzae* (Boiss.) Damboldt

B3 Afyon: Hocalar, north-east of Yağcı village, Ortadere district, clearings of *Cistus laurifolius* shrubs, 1300 m, 28 vi 1998, Kargioğlu 2661. Endemic. "LR (lc)"

**Legousia speculum-veneris** (L.) Chaix

B2 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2567. Medit. element.

**L. pentagonia** (L.) Thell.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2611. E. Medit. element.

## ERICACEAE

**Pyrola chlorantha** Sw.

B3 Afyon: Hocalar, Yağcı village, around Karagöl, *Pinus nigra* forest, 1500 m, 13 vi 1998, Kargioğlu 2562.

## PRIMULACEAE

**Primula vulgaris** Huds. subsp. *vulgaris*

B3 Afyon: Sincanlı, Yürükmezari village, Karapınar district, clearings of *Pinus nigra* forest, 1650 m, 01 v 1997, Kargioğlu 2327. Euro-Sib. element.

**Androsace maxima** L.

B3 Afyon: Sincanlı, west of Çayırhisar village, fallow fields, 1300 m, 04 v 1997, Kargioğlu 2341.

**Cyclamen coum** Mill. var. *coum*

B3 Afyon: Hocalar, Ahırdağı, Ardıçlı hill, clearings of *Quercus cerris-Cistus laurifolius* community, 1400 m, 18 iv 1988, Kargioğlu 2497.

**Lysimachia punctata** L.

B3 Afyon: Sincanlı, Çobanözü village, around Tahtalık stream, clearings of *Pinus nigra* forest, dry pool beds, 1600 m, 14 ix 1997, Kargioğlu 2486. Euro-Sib. element.

**Anagallis arvensis** L. var. *caerulea* (L.) Gouan

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2640.

## OLEACEAE

**Jasminum fruticans** L.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2635. Medit. element.

**Ligustrum vulgare** L.

B3 Afyon: Sincanlı, south of Çobanözü village, moist places in valley, 1350 m, 14 ix 1997, Kargioğlu 2475. Euro-Sib. element.

## ASCLEPIADACEAE

**Vincetoxicum fuscatum** (Hornem.) Reichb. subsp. *fuscatum*

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2606.

## GENTIANACEAE

**Centaurium erythraea** Rafn subsp. *turcicum* (Velen.) Melderis

B3 Afyon: Sincanlı, south-east of Tazlar village, damp meadows, 1500 m, 01 vi 1997, Kargioğlu 2382.

## CONVOLVULACEAE

**Convolvulus arvensis** L.

B3 Afyon: Sincanlı, Kırka town, Hisar hill, clearings of *Cistus laurifolius* shrubs, 1380 m, 28 vi 1998, Kargioğlu 2676.

## CUSCUTACEAE

**Cuscuta palaestina** Boiss. subsp. *balansae* (Yunck.) Plitmann

B3 Afyon: Sincanlı, Yürükmezari village, around Küppinari, on *Sambucus ebulus*, 1700 m, 14 ix 1997, Kargioğlu 2489.

**C. brevistyla** A. Braun

B3 Afyon: Sincanlı, Yürükmezari village, Merdivenkaya streamsides, on *Vicia sp.*, 1400 m, 22 vii 1997, Kargioğlu 2444.

## BORAGINACEAE

**Lappula barbata** (M.Bieb.) Gürke

B3 Afyon: Hocalar, west of Yağcı village, field margins, 1200 m, 13 vi 1998, Kargioğlu 2546. Ir.-Tur. element.

**Rochelia cancellata** Boiss. & Bal.

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, stony places, 1800 m, 31 v 1998, Kargioğlu 2538. Ir.-Tur. element.

**R. disperma** (L.f.) K.Koch var. *disperma*

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1800 m, 22 vii 1997, Kargioğlu 2465.

**Myosotis ramosissima** Rochel ex Schult. subsp. *ramosissima*

B2 Afyon: Hocalar, Yağcı village, Fındıklı hill, stony places, 1250 m, 31 v 1998, Kargioğlu 2539.

**M. stricta** Link ex Roem. & Schult.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1700 m, 31 v 1998, Kargioğlu 2502. Euro-Sib. element.

**M. refracta** Boiss. subsp. *refracta*

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1500 m, 25 v 1996, Kargioğlu 2043. Medit. element.

**M. alpestris** F.W.Schmidt subsp. **alpestris**

B3 Afyon: Sincanlı, Kırka town, around Çözürlü plateau, stony dry stream bed, clearings of *Pinus nigra* forest, 1550 m, 22 vi 1996, Kargioğlu 2136.

**M. lithospermifolia** (Willd.) Hornem.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1650-1700 m, 31 v 1998, Kargioğlu 2501.

**Cynoglossum creticum** Mill.

B3 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2564.

**Buglossoides arvensis** (L.) Johnston

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, rocky places, 1900 m, 28 vi 1997, Kargioğlu 2416.

**Echium orientale** L.

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, rocky places, 1900 m, 28 vi 1997, Kargioğlu 2419. Endemic, Euxine element. "LR (lc)"

**E. italicum** L.

B3 Afyon: Sincanlı-Çayhisar road, roadsides, 1100 m, 26 vii 1996, Kargioğlu 2278.

Medit. element.

**Onosma tauricum** Pall. ex Willd. var. **tauricum**

B2 Afyon: Hocalar, north-east of Yağcı village, Ortadere district, clearings of *Cistus laurifolius* shrubs, 1300 m, 28 vi 1998, Kargioğlu 2660.

**O. aucheranum** DC.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1500 m, 01 vi 1997, Kargioğlu 2367. E. Medit. element.

**Cerintho minor** L. subsp. **auriculata** (Ten.) Domac

B3 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2563.

**Anchusa undulata** L. subsp. **hybrida** (Ten.) Cout.

B3 Afyon: Hocalar, Yağcı village, field margins, 1500 m, 31 v 1998, Kargioğlu 2525.

Medit. element.

**A. azurea** Mill. var. **azurea**

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, field margins, 1550 m, 10 vii 1996, Kargioğlu 2219.

**Alkanna tinctoria** (L.) Tausch subsp. **glandulosa** Hub.-Mor.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya stream banks, 1400 m, 21 vi 1996, Kargioğlu 2086. Endemic, E. Medit. element. "LR (cd)"

**SOLANACEAE**

**Solanum nigrum** L. subsp. **nigrum**

B3 Afyon: Sincanlı, cultivated ground, 1100 m, 04 ix 1996, Kargioğlu 2309.

**Hyoscyamus niger** L.

B3 Afyon: Hocalar, Yağcı village, roadsides, 1500 m, 31 v 1998, Kargioğlu 2528.

**SCROPHULARIACEAE**

**Verbascum adenocarpum** Hub.-Mor.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1580 m, 15 vii 1988, Kargioğlu 2708. Endemic, Ir.-Tur. element. "VU"

**V. phrygium** Bornm.

B3 Afyon: Sincanlı, Çobanözü village, Tahtalık stream banks, 1340 m, 16 vii 1998, Kargioğlu 2729. Endemic, Ir.-Tur. element. "LR (cd)"

**V. krauseanum** Murb.

B3 Afyon: Sincanlı, Çayhisar village, stony slopes, 1400 m, 31 v 1997, Kargioğlu 2363. Endemic, Ir.-Tur. element. "LR (nt)"

**V. varians** Freyn & Sint. var. **varians**

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1650 m, 22 vii 1997, Kargioğlu 2456.

**V. stenostachyum** Hub.-Mor.

B3 Afyon: Sincanlı, Çobanözü village, around Tahtalık stream, clearings of *Pinus nigra* forest, 1500 m, 14 ix 1997, Kargioğlu 2481. Endemic, Ir.-Tur. element. "LR (nt)"

**V. uschakense** (Murb.) Hub.-Mor.

B3 Afyon: Hocalar, Yağcı village, Aletdüzen farm, roadsides, 1340 m, 16 vii 1998, Kargioğlu 2755. Endemic, Ir.-Tur. element. "LR (lc)"

**V. lasianthum** Boiss. ex Benth.

B3 Afyon: Sincanlı, Tazlar village, Yellice hill, rocky places, 1500 m, 01 vi 1997, Kargioğlu 2386.

**V. insulare** Boiss. & Heldr.

B3 Afyon: Sincanlı, Çobanözü village, around Tahtalık stream, clearings of *Pinus nigra* forest, 1350 m, 16 vii 1998, Kargioğlu 2754. Endemic, Ir.-Tur. element. "LR (lc)"

**Scrophularia scopoli** (Hoppe ex ) Pers. var. **scopoli**

B3 Afyon: Sincanlı, Kırka town, around Çözürlü plateau, moist stony places, clearings of *Pinus nigra* forest, 1550 m, 22 vi 1996, Kargioğlu 2138.

**S. umbrosa** Dumort.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya stream banks, 1400 m, 22 vii 1997, Kargioğlu 2453. Euro-Sib. element.

**Chaenorhinum minus** (L.) Lange subsp. **minus**

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2620.

**Linaria genistifolia** (L.) Mill. subsp. **confertiflora** (Boiss.) P.H.Davis

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya streamsides, 1400 m, 22 vii 1997, Kargioğlu 2452. Ir.-Tur. element.

**L. grandiflora** Desf.

B3 Afyon: Sincanlı, field and roadsides, 1200 m, 13 vi 1998, Kargioğlu 2595.

Ir.-Tur. element.

**L. corifolia** Desf.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2643. Endemic, Ir.-Tur. element. "LR (lc)"

**L. simplex** (Willd.) DC.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2644. Medit. element.

*Digitalis ferruginea* L. subsp. *ferruginea*

B3 Afyon: Sincanlı, around Küppinari, clearings of *Pinus nigra* forest, 1650 m, 04 ix 1996, Kargioğlu 2292. Euro-Sib. element.

*Veronica bozakmanii* M.A.Fisch.

B3 Afyon: Hocalar, around Yağcı village, clearings of *Pinus nigra* forest, 1500 m, 31 v 1998, Kargioğlu 2537. Ir.-Tur. element.

*V. triphylos* L.

B3 Afyon: Sincanlı, Yürükmezarı village, Karapınar district, clearings of *Pinus nigra* forest, 1600 m, 01 vi 1997, Kargioğlu 2393.

*V. triloba* (Opiz) Kerner

B3 Afyon: Sincanlı, Çobanözü village, around Tahtalık stream, clearings in *Pinus nigra*, 1300 m, 18 iv 1988, Kargioğlu 2499.

*V. hederifolia* L.

B2 Afyon: Hocalar, Yağcı village, Fındıklı hill, shady rocky places, 1250 m, 31 v 1998, Kargioğlu 2542.

*V. anagallis-aquatica* L.

B3 Afyon: Sincanlı, Tazlar village, springs, 1400 m, 27 viii 2000, Kargioğlu 2814.

*V. chamaedrys* L.

B3 Afyon: Sincanlı, Kınık village, Karata? hill, clearings of *Quercus cerris* forest, 1310 m, 14 vii 1998, Kargioğlu 2698. Euro-Sib. element.

*V. pectinata* L. var. *glandulosa* Riek ex M.A.Fisch.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1600 m, 16 vii 1998, Kargioğlu 2747.

*V. multifida* L.

B2 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2584. Endemic, Ir.-Tur. element. "LR (lc)"

*Euphrasia pectinata* Ten.

B3 Afyon: Sincanlı, Kırka town, around Çöğürlü plateau, clearings of *Cistus laurifolius* shrubs, 1480 m, 14 vii 1998, Kargioğlu 2680. Euro-Sib. element.

*Odontites verna* (Bellardi) Dumort. subsp. *serotina* (Dumort.) Corb.

B3 Afyon: Sincanlı, Yürükmezarı village, damp meadows, 1450 m, 04 ix 1996, Kargioğlu 2293. Euro-Sib. element.

*Pedicularis comosa* L. var. *acmodonta* (Boiss.) Boiss.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya stream banks, damp meadows, 1400 m, 12 vi 1996, Kargioğlu 2070.

*Rhinanthus angustifolius* C.C.Gmel. subsp. *grandiflorus* (Wallr.) D.A.Webb

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya streamsides, damp meadows, 1400 m, 12 vi 1996, Kargioğlu 2074.

## OROBANCHACEAE

*Orobanche mutellii* Schultz

B3 Afyon: Sincanlı, on *Lycopersicum* sp., 1100 m, 04 ix 1996, Kargioğlu 2308.

*O. minor* Sm.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, on *Lathyrus* sp., 1650 m, 16 vii 1998, Kargioğlu 2769.

## ACANTHACEAE

*Acanthus hirsutus* Boiss.

B3 Afyon: Sincanlı, fallow fields, 1150 m, 22 v 1996, Kargioğlu 2030.

Endemic. "LR (lc)"

## GLOBULARIACEAE

*Globularia orientalis* L.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2628. Ir.-Tur. element.

*G. trichosantha* Fisch. & C.A.Mey.

B3 Afyon: Sincanlı, south-east of Tazlar village, grassy slopes, 1500 m, 01 vi 1997, Kargioğlu 2377.

## VERBENACEAE

*Verbena officinalis* L.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya streamsides, 1400 m, 22 vii 1997, Kargioğlu 2455.

## LABIATAE (LAMIACEAE)

*Ajuga chamaepitys* (L.) Schreb. subsp. *chia* (Schreb.) Arcangeli var. *chia*

B3 Afyon: Sincanlı, south-east of Tazlar village, fallow fields, 1500 m, 01 vi 1997, Kargioğlu 2378.

Subsp. *mesogitana* (Boiss.) Bornm.

B3 Afyon: Sincanlı, around Çobanözü village, rock slopes, 1400-1450 m, 12 vi 1996, Kargioğlu 2067. E. Medit. (mt.) element.

*A. bombycina* Boiss.

B3 Afyon: Sincanlı, around Çobanözü village, rock slopes, 1350 m, 25 v 1996, Kargioğlu 2051. Endemic, E. Medit. element. "LR (nt)"

*Teucrium orientale* L. var. *glabrescens* Hausskn. ex Bornm.

B3 Afyon: Sincanlı, south of Çobanözü village, clearings of *Pinus nigra* forest, 1500 m, 14 ix 1997, Kargioğlu 2468. Ir.-Tur. element.

*T. scordium* L. subsp. *scordium*

B3 Afyon: Sincanlı, Çobanözü village, around Tahtalık stream, clearings of *Pinus nigra* forest, moist places, 1600 m, 14 ix 1997, Kargioğlu 2483. Euro-Sib. element.

*T. chamaedrys* L. subsp. *chamaedrys*

B3 Afyon: Sincanlı, Tazlar village, Yellice hill, rocky places, 1500 m, 28 vi 1997, Kargioğlu 2406. Euro-Sib. element.

*T. chamaedrys* L. subsp. *tauricolum* Rech.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya streamsides, 1400 m, 26 vii 1996, Kargioğlu 2253. Endemic, E. Medit. element. "LR (lc)"

*T. chamaedrys* L. subsp. *sypshirense* (K.Koch) Rech.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1650 m, 26 vii 1996, Kargioğlu 2268. Ir.-Tur. element.

*Scutellaria albida* L. subsp. *albida*

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1450 m, 04 ix 1996, Kargioğlu 2303. E. Medit. element.

**Phlomis armeniaca** Willd.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1800 m, 16 vii 1998, Kargioğlu 2739. Endemic, Ir.-Tur. element. "LR (lc)"

**Lamium garganicum** L. subsp. **reniforme** (Montbret & Aucher ex Benth.) R.R.Mill

B3 Afyon: Sincanlı, Ahırdağı, around Tahtalık stream, shady banks, 1700 m, 31 v 1998, Kargioğlu 2512.

**L. amplexicaule** L.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1750 m, 03 vii 1996, Kargioğlu 2172. Euro-Sib. element.

**L. purpureum** L. var. **purpureum**

B3 Afyon: Sincanlı, south-east of Tazlar village, waste places, 1500 m, 01 vi 1997, Kargioğlu 2379. Euro-Sib. element.

**L. moschatum** Mill. var. **moschatum**

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, rocky slopes, 1700 m, 31 v 1998, Kargioğlu 2513. E. Medit. element.

**Wiedemannia orientalis** Fisch. & C.A.Mey.

B3 Afyon: Hocalar, east of Yağcı village, fields, 1200 m, 13 vi 1998, Kargioğlu 2605.

Endemic, Ir.-Tur. element. "LR (lc)"

**Marrubium anisodon** K.Koch

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1800 m, 16 vii 1998, Kargioğlu 2737.

**M. astracanicum** Jacq. subsp. **macrodon** (Bornm.) P.H.Davis

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1800 m, 16 vii 1998, Kargioğlu 2738. Endemic. "LR (lc)"

**Sideritis montana** L. subsp. **montana**

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2630. Medit. element.

**S. montana** L. subsp. **remota** (d'Urv.) P.W.Ball ex Heywood

B3 Afyon: Sincanlı, Yürükmezarı village, fallow fields, 1400 m, 21 vi 1996, Kargioğlu 2097. E. Medit. element.

**Stachys tmolea** Boiss.

B3 Afyon: Sincanlı, Tazlar village, Yellice hill, rocky places, 1500 m, 28 vi 1997, Kargioğlu 2405. Endemic, E. Medit. element. "LR (lc)"

**S. cretica** L. subsp. **anatolica** Rech.

B3 Afyon: Hocalar, Yağcı village, roadsides, 1550 m, 03 vii 1996, Kargioğlu 2159.

Endemic, Ir.-Tur. element. "LR (lc)"

**S. byzantina** K.Koch

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya streamsides, 1400 m, 26 vii 1996, Kargioğlu 2271. Euro-Sib. element.

**S. iberica** M.Bieb. subsp. **iberica** var. **iberica**

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, stony slopes, 1900 m, 28 vi 1997, Kargioğlu 2430. Ir.-Tur. element.

Subsp. **iberica** var. **densipilosa** R.Bhattacharjee

B3 Afyon: Sincanlı, Tazlar village, Yellice hill, rocky places, 1500 m, 28 vi 1997, Kargioğlu 2404. Endemic, Ir.-Tur. element. "LR (lc)"

**S. annua** (L.) L. subsp. **annua** var. **lycaonica** R.Bhattacharjee

B3 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2580. Ir.-Tur. element.

**Nepeta nuda** L. subsp. **albiflora** (Boiss.) Gams

B3 Afyon: Sincanlı, Kınık village, Karata? hill, clearings of *Quercus cerris* forest, 1310 m, 14 vii 1998, Kargioğlu 2693.

**Prunella vulgaris** L.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya stream banks, 1400 m, 26 vii 1996, Kargioğlu 2251. Euro-Sib. element.

**P. laciniata** (L.) L.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1650 m, 16 vii 1998, Kargioğlu 2768. Euro-Sib. element.

**Origanum sipyleum** L.

B3 Afyon: Sincanlı, Çobanözü village, around Tahtalık stream, clearings of *Pinus nigra* forest, 1500 m, 14 ix 1997, Kargioğlu 2480. Endemic, E. Medit. element. "LR (lc)"

**O. vulgare** L. subsp. **hirtum** (Link) Letsw.

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, rocky slopes, 1700 m, 08 v 1996, Kargioğlu 2010. E. Medit. element.

**Calamintha grandiflora** (L.) Moench

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1650 m, 16 vii 1998, Kargioğlu 2767. Euro-Sib. element.

**Clinopodium vulgare** L. subsp. **vulgare**

B3 Afyon: Hocalar, Yağcı village, around Karagöl, clearings of *Pinus nigra* forest, 1400 m, 22 vii 1997, Kargioğlu 2447.

**Acinos rotundifolius** Pers.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1800 m, 16 vii 1998, Kargioğlu 2736.

**Micromeria cristata** (Hampe) Griseb. subsp. **phrygia** P.H.Davis

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, on limestone rock and cliff, 1650 m, 22 vii 1997, Kargioğlu 2462. Endemic, E. Medit. (mt.) element. "LR (lc)"

**Thymus zygoides** Griseb. var. **lycaonicus** (Celak.) Ronniger

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1650 m, 22 vii 1997, Kargioğlu 2463.

Endemic, E. Medit. element. "LR (lc)"

**T. sipyleus** Boiss. subsp. **sipyleus** var. **sipyleus**

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1800 m, 16 vii 1998, Kargioğlu 2741. Endemic. "LR (lc)"

**T. longicaulis** C.Presl subsp. **longicaulis** var. **subisophyllus** (Borbas) Jalas

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, rocky slopes, 1800 m, 16 vii 1998, Kargioğlu 2740.

Subsp. **chaubardii** (Boiss. & Heldr. ex Reichb.) Jalas var. **alternatus** Jalas

B3 Afyon: Sincanlı, Güvercinlik hill, clearings of *Pinus nigra*-*Populus tremula* community, 1560 m, 15 vii 1998, Kargioğlu 2711.

Subsp. **chaubardii** (Boiss. & Heldr. ex Reichb.) Jalas var. **antalyanus** (Klokov) Jalas

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1650 m, 26 vii 1996, Kargioğlu 2269. Endemic. "LR (nt)"

*Mentha aquatica* L.

B3 Afyon: Sincanlı, around Çayhisar village, damp banks, 1100 m, 26 vii 1996, Kargioğlu 2273.

*M. longifolia* (L.) Huds. subsp. *longifolia*

B3 Afyon: Sincanlı, Yürükmezari village, around Küppınarı, wet places, 1650 m, 04 ix 1996, Kargioğlu 2284.

Subsp. *typhoides* (Briq.) Harley var. *typhoides*

B3 Afyon: Sincanlı, Yürükmezari village, Merdivenkaya streamsides, 1400 m, 26 vii 1996, Kargioğlu 2250.

*Lycopus europaeus* L.

B3 Afyon: Sincanlı, Yürükmezari village, Merdivenkaya streamsides, 1400 m, 26 vii 1996, Kargioğlu 2249. Euro-Sib. element.

*Ziziphora tenuior* L.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1800 m, 16 vii 1998, Kargioğlu 2743. Ir.-Tur. element.

*Z. taurica* M.Bieb. subsp. *cleonioides* (Boiss.) P.H.Davis

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2631. Endemic, E. Medit. element. "LR (cd)"

*Salvia tomentosa* Mill.

B3 Afyon: Sincanlı, Güvercinlik hill, clearings of *Pinus nigra*-*Populus tremula* community, 1600 m, 10 vii 1996, Kargioğlu 2236. Medit. element.

*S. cadmica* Boiss.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1700 m, 31 v 1997, Kargioğlu 2345. Endemic. "LR (lc)"

*S. sclarea* L.

B3 Afyon: Sincanlı, Yürükmezari village, Merdivenkaya streamsides, 1400 m, 26 vii 1996, Kargioğlu 2252.

*S. ceratophylla* L.

B3 Afyon: Sincanlı, south-east of Tazlar village, fallow fields, 1750 m, 25 v 1996, Kargioğlu 2038. Ir.-Tur. element.

*S. virgata* Jacq.

B3 Afyon: Hocalar, Aletdüzen farm, roadsides 1300 m, 16 vii 1998, Kargioğlu 2725.

Ir.-Tur. element.

#### PLUMBAGINACEAE

*Acantholimon acerosum* (Willd.) Boiss. var. *acerosum*

B3 Afyon: Sincanlı, Çobanözü village, around Tahtalık stream, clearings of *Pinus nigra* forest, 1360 m, 16 vii 1998, Kargioğlu 2721. Ir.-Tur. element.

*A. puberulum* Boiss. & Bal. var. *puberulum*

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, with *Astragalus microcephalus*, 1650 m, 26 vii 1996, Kargioğlu 2270. Ir.-Tur. element.

*A. ulicinum* (Willd. ex Schult.) Boiss. var. *ulicinum*

B3 Afyon: Sincanlı, Çobanözü village, around Tahtalık stream, clearings of *Pinus nigra* forest, 1360 m, 16 vii 1998, Kargioğlu 2727.

#### PLANTAGINACEAE

*Plantago major* L. subsp. *intermedia* (Gilib.) Lange

B3 Afyon: Sincanlı, around Kırka town, damp meadow, 1300 m, 05 vii 1996, Kargioğlu 2203.

*P. holosteam* Scop.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1800 m, 22 vii 1997, Kargioğlu 2467. Medit. element.

*P. lanceolata* L.

B3 Afyon: Sincanlı, Yürükmezari village, Merdivenkaya streamsides, 1800 m, 16 vii 1998, Kargioğlu 2744.

*P. lagopus* L.

B3 Afyon: Sincanlı, Çobanözü village, damp meadows, 1450 m, 12 vi 1996, Kargioğlu 2068. Medit. element.

#### THYMELAEACEAE

*Thymelaea passerina* (L.) Coss. & Germ.

B3 Afyon: Sincanlı, Yürükmezari village, Merdivenkaya stream banks, 1400 m, 12 vi 1996, Kargioğlu 2071.

#### LORANTHACEAE

*Viscum album* L. subsp. *album*

B3 Afyon: Sincanlı, around Tazlar village, on *Pinus nigra*, 1400 m, 27 viii 2000, Kargioğlu 2809.

#### ARISTOLOCHIACEAE

*Aristolochia pallida* Willd.

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, rocky slopes, 1750 m, 31 v 1998, Kargioğlu 2517.

#### EUPHORBIACEAE

*Euphorbia stricta* L.

B3 Afyon: Sincanlı, Yürükmezari village, Merdivenkaya stream banks, 1500 m, 21 vi 1996, Kargioğlu 2091. Euro-Sib. element.

*E. falcata* L. subsp. *falcata* var. *falcata*

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2618.

*E. anacampseros* Boiss. var. *anacampseros*

B3 Afyon: Sincanlı, Yürükmezari village, Merdivenkaya stream banks, 1400 m, 21 vi 1996, Kargioğlu 2090. Endemic. "LR (lc)"

*E. macroclada* Boiss.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1650 m, 16 vii 1998, Kargioğlu 2757. Ir.-Tur. element.

*E. seguieriana* Neck. subsp. *seguieriana*

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1800 m, 16 vii 1998, Kargioğlu 2732. Euro-Sib. element.

#### URTICACEAE

*Urtica dioica* L.

B3 Afyon: Sincanlı, Yürükmezari village, Merdivenkaya streamsides, 1400 m, 03 vii 1996, Kargioğlu 2151. Euro-Sib. element.

#### ULMACEAE

##### *Ulmus glabra* Huds.

B3 Afyon: Sincanlı, Yürükmezari village, Merdivenkaya streamsides, 1400 m, 26 vii 1996, Kargioğlu 2256. Euro-Sib. element.

#### JUGLANDACEAE

##### \**Juglans regia* L.

B3 Afyon: Sincanlı, Yürükmezari village, garden, 1400 m, 27 viii 2000, Kargioğlu 2808.

#### FAGACEAE

*Quercus vulcanica* (Boiss. & Heldr. ex Kotschy

B3 Afyon: Sincanlı, around Çayhisar village, with *Quercus cerris*, 1380 m, 16 vii 1998, Kargioğlu 2780. Endemic, E. Medit. (mt.) element. "LR (nt)"

##### *Q. cerris* L. var. *cerris*

B3 Afyon: Sincanlı, around Çayhisar village, 1380 m, 16 vii 1998, Kargioğlu 2779.

Medit. element.

*Q. ithaburensis* Decne. subsp. *macrolepis* (Kotschy) Hedge & Yalt.

B2 Afyon: Around Hocalar, south slopes, with *Pinus brutia*, 900 m, 14 vi 1998, Kargioğlu 2627. E. Medit. element.

#### CORYLACEAE

##### *Corylus colurna* L.

B3 Afyon: Hocalar, Yağcı village, north of Fındıklı hill, rocky slopes, 1250 m, 31 v 1998, Kargioğlu 2541. Euro-Sib. element.

##### *C. avellana* L. var. *avellana*

B3 Afyon: Sincanlı, Tazlar village, Yellice hill, rocky places, 1500 m, 28 vi 1997, Kargioğlu 2401. Euro-Sib. element.

#### SALICACEAE

##### *Salix alba* L.

B3 Afyon: Sincanlı, Yürükmezari village, Merdivenkaya streamsides, 1500 m, 31 v 1997, Kargioğlu 2362. Euro-Sib. element.

##### *Populus tremula* L.

B3 Afyon: Sincanlı, around Karapınar, mixed *Pinus nigra*, 1600 m, 22 vi 1996, Kargioğlu 2142. Euro-Sib. element.

#### RUBIACEAE

##### *Crucianella latifolia* L.

B3 Afyon: Sincanlı, Yürükmezari village, Karapınar district, grassy places 1650 m, 03 vii 2000, Kargioğlu 2795. Medit. element.

*Asperula lilaciflora* Boiss. subsp. *phrygia* (Bornm.) Schönb.-Tem.

B3 Afyon: Sincanlı, Yürükmezari village, around Küppınarı, stony slopes, 1400 m, 14 ix 1997, Kargioğlu 2492. Endemic. "LR (lc)"

##### *A. involucrata* Wahlenb.

B3 Afyon: Sincanlı, Çayhisar village, clearings of *Quercus cerris* forest, 1250 m, 31 v 1997, Kargioğlu 2347. Euxine element.

##### *A. arvensis* L.

B3 Afyon: Hocalar, around Yağcı village, fields, 1200 m, 13 vi 1998, Kargioğlu 2583.

Medit. element.

##### *Galium verum* L. subsp. *verum*

B3 Afyon: Sincanlı, Yürükmezari village, Çataloluk district, waste places, 1550 m, 10 vii 1996, Kargioğlu 2230. Euro-Sib. element.

*G. incanum* Sm. subsp. *elatius* (Boiss.) Ehrend.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1800 m, 16 vii 1998, Kargioğlu 2745. Ir-Tur. element.

##### *G. spurium* L. subsp. *spurium*

B3 Afyon: Hocalar, Yağcı village, waste places, 1400 m, 13 vi 1998, Kargioğlu 2555.

Euro-Sib. element.

##### *G. aparine* L.

B3 Afyon: Sincanlı, Yürükmezari village, cultivated ground, 1400-1500 m, 21 vi 1996, Kargioğlu 2104.

##### *G. tricornutum* Dandy

B3 Afyon: Sincanlı, field and roadsides, 1200 m, 13 vi 1998, Kargioğlu 2602.

Medit. element.

##### *G. peplidifolium* Boiss.

B3 Afyon: Sincanlı, Kınık village, Karata? hill, clearings of *Quercus cerris* forest, 1310 m, 14 vii 1998, Kargioğlu 2697. E. Medit. element.

*G. floribundum* Sm. subsp. *floribundum*

B3 Afyon: Sincanlı, Kırka town, Koru hill, clearings of *Cistus laurifolius* shrubs, 1380 m, 28 vi 1998, Kargioğlu 2675.

##### *G. verticillatum* Danthoine ex Lam.

B3 Afyon: Sincanlı, Kırka town, Koru hill, stony slopes, 1380 m, 28 vi 1998, Kargioğlu 2676. Medit. element.

##### *Callipeltis cucullaria* (L.) Steven

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2642. Ir.-Tur. element.

#### MONOCOTYLEDONES

#### LEMNACEAE

##### *Lemna trisulca* L.

B3 Afyon: Hocalar, west of Yağcı village, salmon production farm, on ponds 1200 m, 13 vi 1998, Kargioğlu 2588.

#### LILIACEAE

##### *Polygonatum orientale* Desf.

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, rocky slopes, 1750 m, 31 v 1998, Kargioğlu 2523. Euxine element.

##### *Asphodeline lutea* (L.) Rchb.

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, rocky slopes, 1800 m, 14 vi 1998, Kargioğlu 2650. Medit. element.

*Allium paniculatum* L. subsp. *paniculatum*

B3 Afyon: Sincanlı, Karapınar district, clearings of *Pinus nigra* forest, 1650 m, 03 vii 2000, Kargioğlu 2798. Medit. element.

##### *A. stamineum* Boiss.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1650 m, 16 vii 1998, Kargioğlu 2773. E. Medit. element.

*A. scorodoprasum* L. subsp. *rotundum* (L.) Stearn

B3 Afyon: Sincanlı, Yürükmezari village, Merdivenkaya streamsides, 1400 m, 03 vii 1996, Kargioğlu 2156. *Medit. element.*

**A. guttatum** Steven subsp. **sardoum** (Moris) Stearn

B3 Afyon: Sincanlı, Güvercinlik hill, clearings of *Pinus nigra*-*Populus tremula* community, 1560 m, 15 vii 1998, Kargioğlu 2709. *Medit. element.*

**Scilla bifolia** L.

B3 Afyon: Sincanlı, Yürükmezari village, Karapınar district, clearings of *Pinus nigra* forest, 1650 m, 01 v 1997, Kargioğlu 2329. *Medit. element.*

**S. autumnalis** L.

B3 Afyon: Sincanlı, Tazlar village, clearings of *Pinus nigra* forest, 1400 m, 27 viii 2000, Kargioğlu 2815. *Medit. element.*

**Ornithogalum oligophyllum** E.D.Clarke

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, stony slopes, 1700 m, 08 v 1996, Kargioğlu 2014.

**O. montanum** Cyr.

B3 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2591. *E. Medit. element.*

**O. plathyphyllum** Boiss.

B3 Afyon: Sincanlı, Yürükmezari village, Çataloluk district, damp places, 1450 m, 21 vi 1996, Kargioğlu 2106. *Ir.-Tur. element.*

**O. armeniacum** Baker

B3 Afyon: Sincanlı, Yürükmezari village, Çataloluk district, clearings of *Pinus nigra* forest, 1700 m, 12 vi 1996, Kargioğlu 2082. *E. Medit. element.*

**O. nutans** L.

B3 Afyon: Sincanlı, Yürükmezari village, Karapınar district, meadows, 1600 m, 01 vi 1997, Kargioğlu 2394. *E. Medit. element.*

**Muscari comosum** (L.) Mill.

B3 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2590. *Medit. element.*

**M. tenuiflorum** Tausch

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, rocky slopes, 1750 m, 31 v 1998, Kargioğlu 2521.

**M. neglectum** Guss.

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, rocky slopes, 1900 m, 25 v 1996, Kargioğlu 2053.

**Fritillaria pinardii** Boiss.

B3 Afyon: Sincanlı, Ahırdağı, Ardıçlı hill, rocky slopes, 1600 m, 08 v 1996, Kargioğlu 2012. *Ir.-Tur. element.*

**Gagea fibrosa** (Desf.) Schult & Schult.f.

B3 Afyon: Sincanlı, Yürükmezari village, Çataloluk district, clearings of *Pinus nigra* forest, 1650 m, 04 v 1997, Kargioğlu 2333.

**G. foliosa** (J. & C. Presl) Schult. & Schult.f.

B3 Afyon: Sincanlı, Yürükmezari village, Karapınar district, clearings of *Pinus nigra* forest, 1650 m, 01 v 1997, Kargioğlu 2328.

**G. granatellii** (Parl.) Parl.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, stony slopes, 1800 m, 14 iv 1996, Kargioğlu 2004. *Medit. element.*

**Colchicum triphyllum** Kunze

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, stony slopes, 1800 m, 14 iv 1996, Kargioğlu 2002. *Medit. element.*

**C. burtii** Meikle

B3 Afyon: Sincanlı, Güvercinlik hill, stony slopes, 1550 m, 15 vii 1998, Kargioğlu 2716. *Endemic, E. Medit. element. "LR (lc)"*

**Merendera attica** (Spruner) Boiss. & Spruner

B3 Afyon: Sincanlı, around Çataloluk, clearings of *Pinus nigra* forest, 1550 m, 09 iii 1997, Kargioğlu 2317. *E. Medit. element.*

## AMARYLLIDACEAE

**Galanthus gracilis** Celak.

B3 Afyon: Hocalar, Yağcı village, north of Fındıklı hill, rocky slopes, 1250 m, 18 iv 1998, Kargioğlu 2496. *E. Medit. element.*

## IRIDACEAE

**Crocus chrysanthus** (Herb.) Herb.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1500 m, 09 iii 1997, Kargioğlu 2314.

**C. biflorus** Mill. subsp. **isaureus** (Siehe ex Bowles) B.Mathew

B3 Afyon: Sincanlı, Yürükmezari village, Karapınar district, clearings of *Pinus nigra* forest, 1650 m, 01 v 1997, Kargioğlu 2330.

*Endemic, E. Medit. element. "LR (lc)"*

**C. flavus** Weston subsp. **dissectus** T.Baytop & B.Mathew

B3 Afyon: Sincanlı, Çobanözü village, around Tahtalık stream, clearings in *Pinus nigra*, 1300 m, 18 iv 1988, Kargioğlu 2500.

*Endemic. "VU"*

**C. pallasi** Goldb. subsp. **dispathaceus** (Bowles) B.Mathew

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, stony places, 1800 m, 01 xi 1996, Kargioğlu 2310.

## ORCHIDACEAE

**Cephalanthera rubra** (L.) Rich.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1650 m, 16 vii 1998, Kargioğlu 2774.

**C. damasonium** (Mill.) Druce

B3 Afyon: Hocalar, north-east of Yağcı village, Ortadere district, clearings of *Cistus laurifolius* shrubs, 1300 m, 28 vi 1998, Kargioğlu 2668. *Euro-Sib. element.*

**Epipactis helleborine** (L.) Crantz

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1650 m, 16 vii 1998, Kargioğlu 2775.

**Limodorum abortivum** (L.) Sw.

B3 Afyon: Hocalar, north-east of Yağcı village, Ortadere district, clearings of *Cistus laurifolius* shrubs, 1300 m, 28 vi 1998, Kargioğlu 2669.

**Orchis mascula** (L.) L. subsp. **pinetorum** (Boiss. & Kotschy) Camus

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1550 m, 25 v 1996, Kargioğlu 2050. *E. Medit. element.*

**O. pallens** L.

B3 Afyon: Sincanlı, Yürükmezari village, clearings of *Pinus nigra* forest, 1450 m, 12 vi 1996, Kargioğlu 2079. *Euro-Sib. element.*



**O. palustris** Jacq.

B3 Afyon: Sincanlı, Yürükmezarı village, around Küppınarı, moist meadows, 1700 m, 14 ix 1997, Kargioğlu 2494.

**Dactylorhiza iberica** (M.Bieb. ex Willd.)  
Soo

B3 Afyon: Sincanlı, Yürükmezarı village, Karapınar district, moist meadows, 1650 m, 03 vii 2000, Kargioğlu 2799. E. Medit. element.

**TYPHACEAE**

**Typha angustifolia** L.

B3 Afyon: Hocalar, Yağcı village, Karagöl, 1350 m, 13 vi 1998, Kargioğlu 2558.

**JUNACEAE**

**Juncus inflexus** L.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya streamsides, 1400 m, 03 vii 1996, Kargioğlu 2155.

**Luzula forsteri** (Sm.) DC.

B3 Afyon: Sincanlı, Güvercinlik hill, clearings of *Pinus nigra*-*Populus tremula* community, 1560 m, 15 vii 1998, Kargioğlu 2715. Euro-Sib. element.

**CYPERACEAE**

**Schoenoplectus lacustris** (L.) Palla  
subsp. *lacustris*

B3 Afyon: Sincanlı, Çobanözü village, around Tahtalık stream, clearings of *Pinus nigra* forest, dry pool beds, 1600 m, 14 ix 1997, Kargioğlu 2477.

**Scirpoides holoschoenus** (L.) Sojak

B3 Afyon: Sincanlı, Kırka town, wet meadows, 1300 m, 15 vii 2000, Kargioğlu 2797.

**Carex panicea** L.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1650 m, 16 vii 1998, Kargioğlu 2771.

**POACEAE (GRAMINEAE)**

**Brachypodium sylvaticum** (Huds.) P. Beauv.

B3 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2587. Euro-Sib. element.

**Aegilops umbellulata** Zhuk. subsp. *umbellulata*

B3 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2586. Ir.-Tur. element.

**Ae. triuncialis** L. subsp. *triuncialis*

B3 Afyon: Hocalar, west of Yağcı village, fallow fields, 1200 m, 13 vi 1998, Kargioğlu 2585.

**Hordeum murinum** L. subsp. *glaucom* (Steud.) Tzvelev

B3 Afyon: Sincanlı, around Kınık village, cultivated fields, 1310 m, 14 vii 1998, Kargioğlu 2700.

**H. bulbosum** L.

B3 Afyon: Sincanlı, Ahırdağı, Asar hill, clearings of *Pinus nigra* forest, 1450 m, 16 vii 1998, Kargioğlu 2772.

**Taeniatherum caput-medusae** (L.) Nevski subsp. *crinitum* (Schreb.) Melderis

B3 Afyon: Hocalar, west of Yağcı village, clearings of *Cistus laurifolius* shrubs, 1200 m, 13 vi 1998, Kargioğlu 2589. Ir.-Tur. element.

**Bromus japonicus** Thunb. subsp. *japonicus*

B3 Afyon: Sincanlı, Çayhisar village, field margins, 1200 m, 03 vii 1996, Kargioğlu 2188.

**B. squarrosus** L.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1800 m, 16 vii 1998, Kargioğlu 2749.

**B. scoparius** L.

B3 Afyon: Hocalar, Yağcı village, cultivated fields, 1200 m, 13 vi 1998, Kargioğlu 2549.

**B. tectorum** L.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1700 m, 16 vii 1998, Kargioğlu 2750.

**B. sterilis** L.

B3 Afyon: Sincanlı, around Kırka town, moist meadows, 1300 m, 05 vii 1996, Kargioğlu 2206.

**B. tomentellus** Boiss.

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1750 m, 03 vii 1996, Kargioğlu 2173. Ir.-Tur. element.

**Avena fatua** L. var. *fatua*

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya streamsides, 1400 m, 21 vi 1996, Kargioğlu 2108.

**Arrhenatherum elatius** (L.) P.Beauv. ex J. & C.Presl subsp. *elatius*

B3 Afyon: Sincanlı, Kınık village, Karata? hill, clearings of *Quercus cerris* forest, 1310 m, 14 vii 1998, Kargioğlu 2699. Euro-Sib. element.

**Calamagrostis pseudophragmites** (Haller f.) Koeler

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya stream banks, 1400 m, 03 vii 1996, Kargioğlu 2154. Euro-Sib. element.

**Apera intermedia** Hack.

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, field margins, 1500 m, 03 vii 1996, Kargioğlu 2187. Ir.-Tur. element.

**Alopecurus arundinaceus** Poir.

B3 Afyon: Sincanlı, Yürükmezarı village, Karapınar district, wet meadows, 1700 m, 03 vii 2000, Kargioğlu 2796. Euro-Sib. element.

**Phleum montanum** K.Koch subsp. *serrulatum* (Boiss.) Dogan

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1750 m, 03 vii 1996, Kargioğlu 2176. E. Medit. element.

**P. phleoides** (L.) H.Karst.

B3 Afyon: Sincanlı, Kartalpınarı district, *Astragalus* steppe, 1700 m, 03 vii 1996, Kargioğlu 2197. Euro-Sib. element.

**P. exaratum** Hochst. ex Griseb. subsp. *exaratum*

B3 Afyon: Sincanlı, Yürükmezarı village, Çataloluk district, field margins, 1500 m, 03 vii 1996, Kargioğlu 2189.

**Festuca valesiaca** Schleich. ex Gaudin

B3 Afyon: Sincanlı, Ahırdağı, Büyükkavuşak hill, in *Astragalus microcephalus* steppe, 1750 m, 03 vii 1996, Kargioğlu 2174.

**Poa pratensis** L.

B3 Afyon: Sincanlı, Yürükmezarı village, clearings of *Pinus nigra* forest, 1400 m, 21 vi 1996, Kargioğlu 2124.

**P. nemoralis** L.

B3 Afyon: Sincanlı, Karapınar district, moist meadows, 1700 m, 16 vii 1998, Kargioğlu 2751.

**P. bulbosa** L.

B3 Afyon: Sincanlı, Kartalpınarı district, *Astragalus* steppe, 1700 m, 03 vii 1996, Kargioğlu 2196.

**Nephelochloa orientalis** Boiss.

B3 Afyon: 3.2 km from Sincanlı to Dumlupınar, 1200 m, Coode & Jones 2347!

Endemic, E. Medit. element. "VU"

**Catabrosa aquatica** (L.) P.Beauv.

B3 Afyon: Hocalar, Yağcı village, around Karagöl, clearings of *Pinus nigra* forest, water meadows, 1500 m, 13 vi 1998, Kargioğlu 2550.

**Dactylis glomerata** L. subsp. *hispanica* (Roth) Nyman

B3 Afyon: Sincanlı, Yürükmezarı village, clearings of *Pinus nigra* forest, 1500 m, 21 vi 1996, Kargioğlu 2109.

**Cynosurus cristatus** L.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya streamsides, moist meadows, 1600 m, 22 vii 1997, Kargioğlu 2464. Euro-Sib. element.

**Briza media** L.

B3 Afyon: Sincanlı, Yürükmezarı village, Merdivenkaya streamsides, 1500 m, 03 vii 1996, Kargioğlu 2153.

**B. humilis** M.Bieb.

B2 Afyon: Around Hocalar, south slopes, clearings of *Pinus brutia* forest, 900 m, 14 vi 1998, Kargioğlu 2646.

**Stipa holosericea** Trin.

B3 Afyon: Sincanlı, Kartalpınarı district, *Astragalus* steppe, 1700 m, 03 vii 1996, Kargioğlu 2198. Ir.-Tur. element.

**Phragmites australis** (Cav.) Trin. ex Steud.

B2 Afyon: Hocalar, Yağcı village, Karagöl, 1350 m, 13 vi 1998, Kargioğlu 2557.

Euro-Sib. element.

**Setaria viridis** (L.) P.Beauv.

B3 Afyon: Sincanlı, Yürükmezarı village, Karapınar district, moist meadows, 1650 m, 03 vii 2000, Kargioğlu 2797.