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# The Flora of the Northern Part of the Emirdağ Mountains

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**Abstract:** This study concerns the flora of the northern part of the Emirdağ mountains. According to Davis's grid system, the research area lies in B3 square. Four hundred and ninety-five taxa belonging to 279 genera and 70 families were found after the identification of 754 plant specimens collected from the research area. Forty-seven taxa are new records for the B3 grid square. The rate of endemism is 15.9%. The distribution of taxa within the phytogeographical regions is as follows: Irano-Turanian elements 17.9%, Mediterranean elements 8.8% and Euro-Siberians 5.4%. Moreover, 67.9% of total taxa are undetermined as far as the phytogeographic area is concerned or cosmopolitan. The largest 3 families are *Asteraceae* (53 species), *Fabaceae* (52 species) and *Lamiaceae* (44 species). The largest 3 genera are *Astragalus* L. (12 species), *Silene* L. (9 species) and *Salvia* L. (8 species).

**Key Words:** Flora, Emirdağları, Turkey

## Emirdağları Kuzey Yarı Florası

**Özet:** Bu çalışma Davis' in grid sistemine göre B3 karesinde yer alan Emirdağlarının kuzey yarısının florasını kapsamaktadır. Araştırma alanından toplanan 754 bitki örneğinin teşhis edilmesi sonucunda 70 familyaya ait 279 cins, 495 tür ve tür altı takson tespit edilmiştir. Bunlardan 47 takson B3 karesi için yeni kayıttır. Endemizm oranı% 15,9 dir. Taksonların fitocoğrafik bölgelere göre dağılımı; İran-Turan elementleri % 17,9, Akdeniz elementleri % 8,8, Avrupa-Sibirya elementleri ise % 5,4 şeklindedir. Toplam taksonun % 67,9' sı ise geniş yayılışlı veya bölgesi kesin karar verilemeyenlerdir. En büyük üç familya *Asteraceae* (53 tür), *Fabaceae* (51 tür) ve *Lamiaceae* (44) dir. En büyük üç cins ise *Astragalus* L. (12), *Silene* L. (9) ve *Salvia* L. (8)'dir.

**Anahtar Sözcükler:** Flora, Emirdağları, Türkiye

## Introduction

Emirdağ mountains are located in the administrative districts Emirdağ and Bolvadin within Afyon province. According to Davis's grid system this area is situated in the Irano-Turanian phytogeographical region (Figure 1).

We chose this research area for the following reasons:

1. There are no floristic studies from this area.
2. Dandindere (Afyon) Nature Reserve Area lies in this region.
3. The study area is close to the transition zone between the Irano-Turanian and Mediterranean phytogeographical regions.

Paleozoic, Mesozoic and Quaternary period blocks represent the geological aspect of the research area.

Brown forest, colluvial and brown soil are the dominant soil groups, indicating that this area does not have a homogeneous soil structure.

The research area exhibits a characteristic extremely cold half-dry Mediterranean climate. The precipitation regime of this area belongs to the second type of East Mediterranean precipitation regime. The annual precipitation average of is 434 mm in Afyon, 394 mm in Emirdağ and 383 mm in Bolvadin according to data obtained from the Afyon, Emirdağ and Bolvadin meteorology stations. The annual average temperature is 11.1 °C in Afyon, 11.4 °C in Emirdağ and 10.7 °C in Bolvadin. The seasonal precipitation regime for a year is as follows: spring (S), winter (W), autumn (A) and summer (S)-(SWAS') (Figure 2).

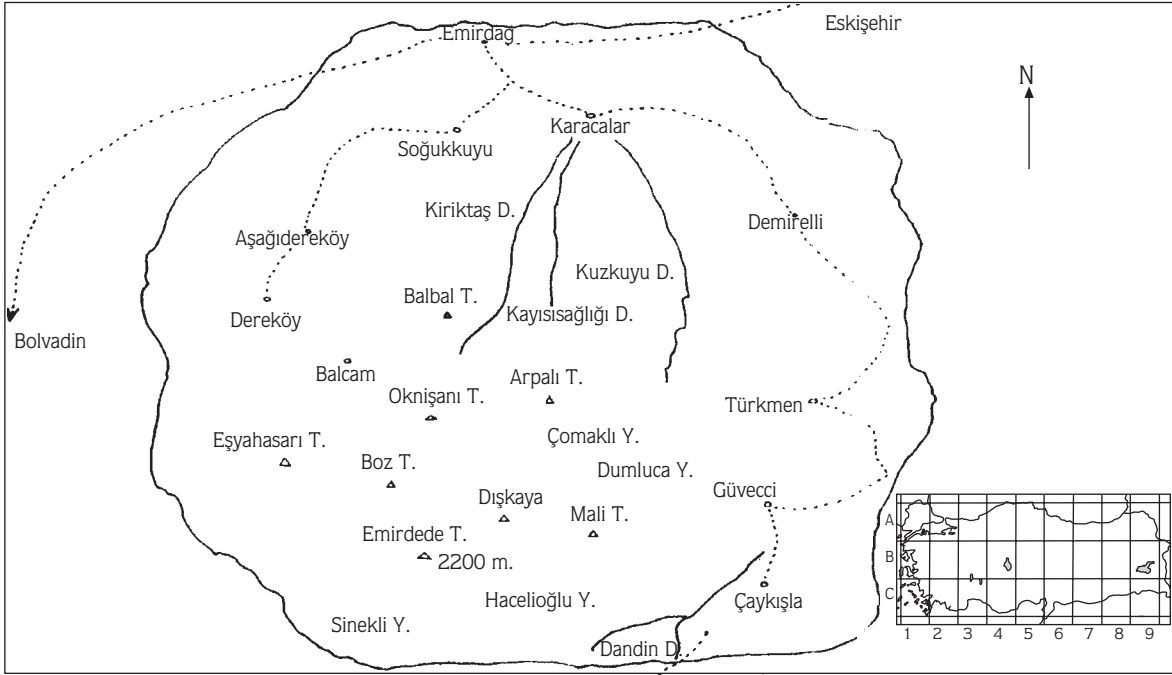


Figure 1. Map of the study area.

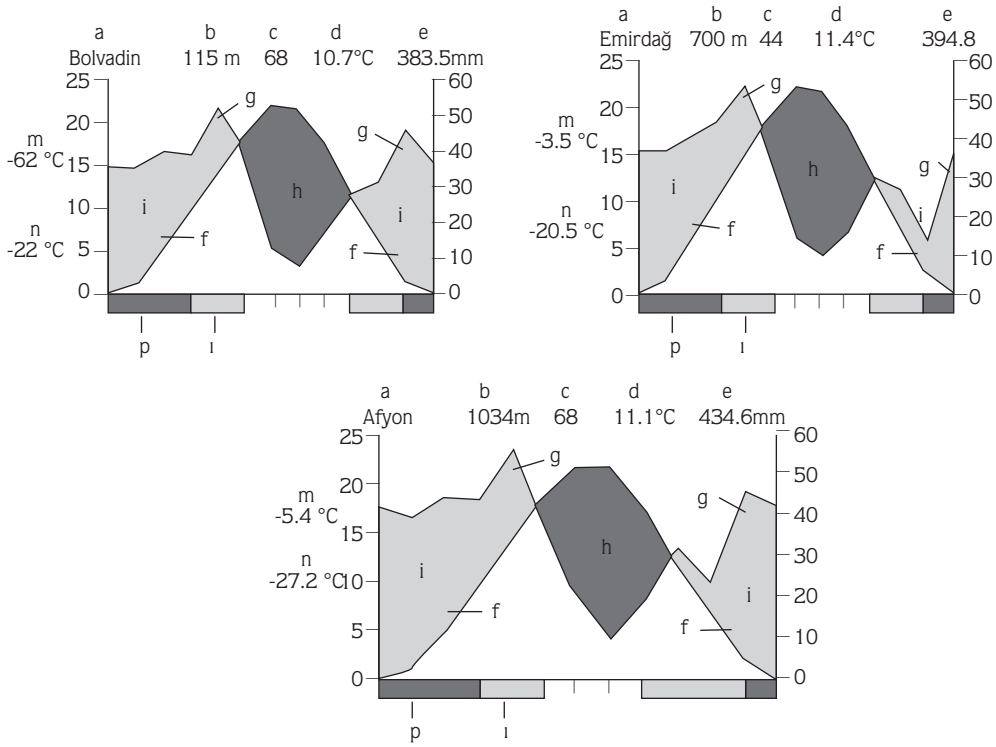


Figure 2. Climatic diagrams of the study area.

The main types of vegetation in the research area are forest, steppe and rock vegetation. *Quercus* L. and *Cedrus* Link forest vegetation types are represented in this area. These forest formations cover 20% of the research area. *Cedrus libani* A.Rich is generally distributed in the south and south-west of Turkey. It could have diffused to the northern border of the transition zone to steppe region in inner west Anatolia and become isolated in this region (Dandindere Nature Reserve Area). The deciduous forest in the Emirdağ mountains has been formed by *Quercus vulcanica* [Boiss. & Heldr. ex] Kotschy, which are regional endemic, and *Quercus infectoria* Olivier subsp. *boissieri* (Reut.) O.Schwarz and *Quercus cerris* L. var. *cerris*, *Prunus domestica* L., *Rosa canina* L., *Crataegus monogyna* Jacq. subsp. *monogyna*, *Crataegus orientalis* Pall. ex M.Bieb. var. *orientalis*, *Juglans regia* L. and *Berberis crataegina* DC. are spreading as shrub and tree forms. The evergreen forest consists of *Cedrus libani*. *Chamaecytisus hirsutus* (L.) Link, *Verbascum stachydifolium* Boiss. & Heldr., *Verbascum lasianthum* Boiss. ex Benth., *Astragalus prusianus* Boiss. and *Astragalus angustifolius* Lam. are forming steppe vegetation.

## Materials and Methods

The flora of the northern part of the Emirdağ mountains was thoroughly and extensively surveyed between 1999 and 2000, and 754 plant specimens, which had different appearances during different vegetation periods, were collected. After the specimens had been dried by pressing, identifications were carried out and the specimens were prepared as herbarium material according to herbarium techniques. The specimens are kept at the Anadolu University Faculty of Pharmacy Herbarium (ESSE). During the identification areas of plants, The Flora of Turkey (Davis, 1965-1985; Davis et al., 1988) and the ESSE herbarium were used to a great extent. Other floras were also used, such as *Flora Europaea* (Tutin et al., 1964-1980) as well as a published study carried out in a nearby area (Çetik & Vural, 1979).

The plant taxa of the research area are listed in the appendix. Ferns are listed before spermatophytes. Gymnosperms are similarly given before angiosperms in the group of spermatophytes and dicots are listed before monocots within the group of angiosperms. All taxa at the level of specific and subspecific ranks in the list are represented in the following order:

- i. The legitimate names and the authors of the species, subspecies and varieties.
- ii. The locality, habitat, altitude and collection date of the specimens are given under each legitimate name of taxa.
- iii. Collector's name and number.
- iv. The endemism, IUCN threat category and phytogeographical status of taxa are stated.

The abbreviations used in the text and appendix are as follows: Euro-Sib. – Euro-Siberian element; E. Medit. – East Mediterranean element; Medit. – Mediterranean element; Ir-Tur. – Irano-Turanian element; DD-Data deficient, EN-Endangered, LC-Least concern, VU-Vulnerable, YBK- Yavuz Bülent Köse. An asterisk indicates a new record for the B3 grid square.

## Conclusion and Comments

More than 754 plant specimens were collected between 1999 and 2000. After the identification of these specimens, 495 taxa were found belonging to 279 genera and 70 families. Two species are nonflowering vascular plants (of *Pteridophyta*). Five species belong to *Gymnospermae*, while the other 488 are *Angiospermae*.

The 10 largest families are shown in Table 1. The largest family is *Asteraceae* with 53 species (10.7%). This is related to its being the largest family in the Flora of Turkey (Davis, 1988). The second largest family is *Fabaceae* with 52 species (10.5%). The reason *Fabaceae* is second, is that it is the second largest family in the flora of Turkey and has wide tolerance limits and involves large genera containing many species. *Lamiaceae* with 44 species (8.8%) and *Poaceae* with 38 species (7.6%) follow them; they are in the same order in the total flora of Turkey. The other families are *Brassicaceae* with 36 species (7.2%), *Caryophyllaceae* with 29 species (5.8%), *Liliaceae* with 23 species (4.6%), *Apiaceae* with 19 species (3.8%), *Scrophulariaceae* with 18 species (3.6%) and *Rosaceae* with 17 species (3.4%). These 10 largest families include more than half of the species (66%) in the flora. As seen in Table 1, the results of this article were also in agreement with those of similar studies. Differences in several taxa might be a result of dissimilarities in climate and habitat.

The 6 largest genera are *Astragalus* L. (12 species), *Silene* L. (9 species), *Salvia* L. (8 species), *Centaurea* L. (7

Table 1. The 10 largest families in the northern part of the Emirdağ mountains and adjacent region.

Families	Northern part of Emirdağ mountains %	Sultan Mountains Doğanhisar region (Ocakverdi) %	Flora of Afyon, Bayat-Köroğlubi (Çetik, Vural) %	Mount Yandağ (Isparta) (Kargioğlu et al.) %
Asteraceae	10.7	11.9	12.5	11.5
Fabaceae	10.5	10.4	9.5	12.1
Lamiaceae	8.8	7.5	6.6	7.1
Poaceae	7.6	9.7	10.8	7.7
Brassicaceae	7.2	4.5	7.5	7.5
Caryophyllaceae	5.8	5.8	6.9	5.5
Liliaceae	4.6	3.4	4.9	2.9
Apiaceae	3.8	3.6	3.3	3.7
Scrophulariaceae	3.6	3.6	4.9	3.3
Rosaceae	3.4	3	3.9	2.7

species), *Ranunculus* L. (6 species) and *Alyssum* L. (6 species) in the study area. *Astragalus* has c. 2500 species in the world; it is one of the largest genera of flowering plants. The estimated number of species in Turkey is c. 400. The reason *Astragalus* ranks first, is that it is the largest genus, represented by the most species in Turkey. Furthermore, the study area is mostly steppic in character. *Silene* is the fifth largest genus in Turkey.

The entire research area is located in the Irano-Turanian region. Therefore, Irano-Turanian elements (17.9%) have the highest percentage in the flora. Furthermore, Mediterranean elements have a higher percentage (8.8%) than Euro-Siberian elements (5.4%) because the research area is very close to the Mediterranean region. Euro-Siberian elements are relatively less common in the area. Dandin, Kuzkuyu and Kayısısalığı streams, which are located in the study area and where the *Salix alba* L. communities occur naturally, serve as a suitable habitat for the plants. Since this microclimatic area has more humidity than the other parts of the Emirdağ mountains, Euro-Siberian elements occur more densely. Mediterranean and Irano-Turanian elements show a wider distribution and spread in the less humid regions of the study area. Three hundred and thirty-five taxa (67.9%) are widespread in more than 1 phytogeographical region. The percentage of phytogeographical elements in the Emirdağ mountains is very similar to the results of the Flora of Sultan Mountains Doğanhisar Region (Ocakverdi, 1987), because these areas very close to each other and the are

in the transition zone between the Irano-Turanian and Mediterranean phytogeographical regions. The percentage of Irano-Turanian elements in our study was higher than that stated by Çetik & Vural (1979). A possible explanation is that our study area is further away than that of Çetik & Vural from the Mediterranean region (Table 2.)

Seventy-nine species are endemic to Turkey. The rate of endemism in the research area is 15.9%, whereas the average ratio in the Flora of Turkey is 34.5% in volume 11 (Güner et al., 2000). This ratio seems low when its compared to Turkey's endemism ratio. Endemic taxa are found densely in nearby regions (Amanos and Kaz mountains etc.) in Turkey and if this is taken into consideration the endemism ratio in our study area seems high. The main reason for this is the edaphic, climatic and topographic properties of the region and the altitude is between 950 and 2200 m. As is known, endemic species are mostly found on high mountains and in places where ecological diversity is rich.

Families with the most endemic species are as follows: *Lamiaceae* (13), *Fabaceae* (12), *Scrophulariaceae* (9), *Asteraceae* (8), *Cruciferae* (5). Forty (50.6%) endemic species are Irano-Turanian elements. Furthermore, 15 (18.9%) of the endemic species are Mediterranean elements and 2 (2.5%) are Euro-Siberian. The phytogeographic region of 22 endemic taxa is unknown.

The species which are endangered is listed as follows: LC-Least Concern 60, NT-Near Threatened 9, VU-Vulnerable 6, and DD-Data Deficient 4 (IUCN, 2001).

Table 2. Percentage of phytogeographical elements and endemism in thenorthern part of the Emirdağ mountains and adjacent regions.

Families	Northern part of Emirdağ mountains %	Sultan Mountains Doğanhisar region (Ocakverdi) %	Flora of Afyon, Bayat-Köroğlubeli (Çetik, Vural) %	Mount Yandağ (Isparta) (Kargioğlu et al.) %
Mediterranean elements	8.8	12.5	12.2	19.8
Euro-Siberian elements	5.4	5.7	7.2	3.8
Irano-Turanian elements	17.9	13	9.5	16.3
Others	67.9	68.8	70.9	60.1
Endemic	15.9	14	10.5	13.8

Forty-seven taxa were defined as new records for the square B3 (Donner, 1990; Akman & Ketenoğlu, 1987; Bekat, 1989; Duman & Karavelioğulları, 1995; Erik & Demirkuş, 1985; Mutlu & Erik, 1996-1999; Yıldırım, 1987). Furthermore, 31.9% of new records are Irano-Turanian elements, 10.1% are Mediterranean and 4.2% are Euro-Siberian. New records for the B3 square were found in this region due to our study area being in the transition zone between the Irano-Turanian and Mediterranean phytogeographical regions. However,

these specimens have been collected from neighbouring squares in the Flora of Turkey.

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**APPENDIX**

Floristic List

**PTERIDOPHYTA**

**ASPLENIACEAE**

*Ceterach officinarum* DC.

B3 Afyon: Emirdağ, Kuşkalesi hill (east part), stony slopes, 1600 m, 3 iii 2000, YBK 1053.

**ASPIDIACEAE**

*Dryopteris pallida* (Bory) Fomin

B3 Afyon: Emirdağ, Arpalı hill, under *Quercus cerris*, 1400-1500 m, 12 vi 1999, YBK 1135.

**SPERMATOPHYTA**

**GYMNOSPERMAE**

**PINACEAE**

*Cedrus libani* A.Rich

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1134.

**CUPRESSACEAE**

*Cupressus sempervirens* L.

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1234.

*Juniperus drupacea* Labill.

B3 Afyon: Emirdağ, Balcam village, Oknişanı hill, very steep rocks, 1500 m, 30 iv 2000, YBK 1235.

*J. oxycedrus* L. subsp. *oxycedrus*

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1103.

*Thuja orientalis* L.

B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1069.

**ANGIOSPERMAE**

**RANUNCULACEAE**

*Nigella elata* Boiss.

B3 Afyon: Emirdağ, Arpalı tepe foothills, beside *Quercus* forest, 110-1400 m, 17 vii 1999, YBK 1114.

*Consolida orientalis* (J.Gay) Schrödinger

B3 Afyon: Emirdağ, around Karacalar

village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1115.

*C. raveyi* (Boiss.) Schrödinger

B3 Afyon: Emirdağ, Güveçci village, Çayönü, steppe, 1300 m, 30 vi 2000, YBK 1406.

Endemic, LC, Ir-Tur.

*C. hellespontica* (Boiss.) Chater

B3 Afyon: Emirdağ, Güveçci village, Çayönü, steppe, 1300 m, 30 vi 2000, YBK 1405.

*Adonis aestivalis* L. subsp. *aestivalis*

B3 Afyon: Emirdağ, north part of Karacalar village, steppe, 1200 m, 12 v 2000, YBK 1454.

*A. flammea* Jacq.

B3 Afyon: Emirdağ, Balcam village, Oknişanı hill, very steep rocks, 1500m, 30 iv 2000, YBK 1407.

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

B3 Afyon: Emirdağ, northern part of Karacalar village, steppe, 1200 m, 12 v 2000, YBK 1410.

*R. damascenus* Boiss. & Gaill.

B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1409  
Ir-Tur.

*R. cuneatus* Boiss.

B3 Afyon: Emirdağ, Arpalı hill, under *Quercus cerris*, 1400-1500 m, 12 vi 1999, YBK 1117.

*R. illyricus* L. subsp. *illyricus*

B3 Afyon: Emirdağ, Kayısısalığı stream, *Quercus* forest, 1300 m, 13 v 2000, YBK 1131.

*R. arvensis* L.

B3 Afyon: Emirdağ, Kırıktaş, steppe, 1100-1200 m, 27 v 2000, YBK 1411.

*R. ficaria* L. subsp. *ficariiformis* G.P.Roy & Foucaud

B3 Afyon: Emirdağ, Balcam village, Oknişanı hill, very steep rocks, 1500 m, 30 iv 2000, YBK 1408.

*R. ficaria* L. subsp. *calthifolius* (Rchb.) Arcang.

B3 Afyon: Emirdağ, Çomaklı plateau,

rocky place, 1700-1800 m, 11 iii 1999, YBK 1188.

*Thalictrum minus* L. var. *minus*

B3 Afyon: Emirdağ, Arpalı tepe foothill, beside *Quercus* forest, 110-1400 m, 17 vii 1999, YBK 1116.

**BERBERIDACEAE**

*Berberis crataegina* DC.

B3 Afyon: Emirdağ, Arpalı tepe foothills, beside *Quercus* forest, 110-1400 m, 17 vii 1999, YBK 1001.

**PAPAVERACEAE**

*Glacium flavum* Crantz

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1438.

*Papaver apokrinomenon* Fedde

B3 Afyon: Emirdağ, Arpalı hill, under *Quercus cerris*, 1400-1500 m, 12 vi 1999, YBK 1025.

Endemic, LC.

*P. somniferum* L.

B3 Afyon: Emirdağ, northern part of Karacalar village, steppe, 1200 m, 12 v 2000, YBK 1486.

*P. rhoeas* L.

B3 Afyon: Emirdağ, northern part of Karacalar village, steppe, 1200 m, 12 v 2000, YBK 1487.

*P. hybridum* L.

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1133.

*Hypecoum imberbe* Sibth. & Sm.

B3 Afyon: Emirdağ, Kayısısalığı stream, *Quercus* forest, 1300 m, 13 v 2000, YBK 1101.

**FUMARIACEAE**

\**Corydalis bulbosa* (L.) DC. subsp. *marschalliana* (Pall.) Chater

B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1439.

Euro-Sib.

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

B3 Afyon: Emirdağ, Çomaklı plateau, rocky place, 1700-1800 m, 11 iii 1999, YBK 1185.

- Fumaria asepalata* Boiss.  
B3 Afyon: Emirdağ, Boztepe hill, meadow, 1750 m, 17 iv 1999, YBK 1230.  
Ir-Tur.
- CRUCIFERAE (BRASSICACEAE)**
- Hirschfeldia incana* (L.) Lagr.-Foss.  
Karacalar-Demircili-Güveçci road, road side, 1100 m, 25 vi 2000, YBK 1330.  
\**Diploaxis tenuifolia* (L.) DC.  
B3 Afyon: Emirdağ, Balcam village, Oknişanı hill, very steep rocks, 1500m, 30 iv 2000, YBK 1329.
- Calepina irregularis* (Asso) Thell.  
B3 Afyon: Emirdağ, Gölcük plateau, meadow, 1450 m, 23 iv 2000, YBK 1335.
- Crambe tataria* Sebeök var. *tataria*  
B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1342.
- C. orientalis* L. var. *orientalis*  
B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1341.  
Ir-Tur.
- Conringia orientalis* (L.) Andrz.  
B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1343.  
\**Lepidium campestre* (L.) R.Br.  
B3 Afyon: Emirdağ, Gölcük plateau, meadow, 1450 m, 23 iv 2000, YBK 1386.
- Cardaria draba* (L.) Desv. subsp. *draba*  
B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1336.  
Ir-Tur.
- Isatis glauca* Aucher ex Boiss. subsp. *glauca*  
B3 Afyon: Emirdağ, Güveçci village, Çayönü, steppe, 1300 m, 30 vi 2000, YBK 1331.  
Ir-Tur.
- Aethionema arabicum* (L.) Andrz. ex DC.  
B3 Afyon: Emirdağ, Çaykişla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1338.
- Thlaspi arvense* L.  
B3 Afyon: Emirdağ, Türkmenköy village, Çaydere, beside water, 1150 m, 30 vi 2000, YBK 1332.  
*T. ochroleucum* Boiss. & Heldr.  
B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1337.  
\**T. violescens* Boiss.  
B3 Afyon: Emirdağ, Gölcük plateau, meadow, 1450 m, 23 iv 2000, YBK 1334.  
Endemic, LC.  
*Capsella bursa-pastoris* (L.) Medik.  
B3 Afyon: Emirdağ, Balcam village, Oknişanı hill, very steep rocks, 1500 m, 30 iv 2000, YBK 1112.
- Boreava orientalis* Jaub. & Spach  
B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1345.
- Fibigia eriocarpa* (DC.) Boiss.  
B3 Afyon: Emirdağ, Malı hill, rocky, 1800-1900 m, 29 vii 2000, YBK 1350.
- Alyssum linifolium* Stephan ex Willd. var. *linifolium*  
B3 Afyon: Emirdağ, Arpalı hill, under *Quercus cerris*, 1400-1500 m, 12 vi 1999, YBK 1388.  
*A. blepharocarpum* Dudley & Hub.-Mor.  
B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1109.  
Endemic, NT, Ir-Tur.
- A. dasycarpum* Stephan ex Willd.  
B3 Afyon: Emirdağ, northern part of Karacalar village, steppe, 1200 m, 12 v 2000, YBK 1328.  
*A. minus* (L.) Rothm. var. *minus*  
B3 Afyon: Emirdağ, Çaykişla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1324.
- A. sibiricum* Willd.  
B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1327.  
*A. murale* Waldst. & Kit. subsp. *murale* var. *murale*  
B3 Afyon: Emirdağ, Dişkaya hill, rocky, 1750 m, 7 vii 2000, YBK1349.
- Clypeola jonthlaspi* L.  
B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1333.  
*Arabis caucasica* Willd. subsp. *caucasica*  
B3 Afyon: Emirdağ, Gölcük plateau, meadow, 1450 m, 23 iv 2000, YBK 1187.  
*A. sagittata* (Bertol.) DC.  
B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1347.  
*A. nova* Willd.  
B3 Afyon: Emirdağ, Kayısısalığı stream, *Quercus* forest, 1300 m, 13 v 2000, YBK 1326  
*Barbarea trichopoda* Hausskn. ex Bornm.  
B3 Afyon: Emirdağ, Balcam village, Oknişanı hill, very steep rocks, 1500m, 30 iv 2000, YBK 1323.  
Endemic, NT.  
*Aubrieta pinardii* Boiss.  
Türkmenköy, Altahir, steppe, 1200 m, 10 vi 2000, YBK 1325.  
Endemic, LC, Ir-Tur.  
*Chorispora syriaca* Boiss.  
B3 Afyon: Emirdağ, Balcam village, Oknişanı hill, very steep rocks, 1500 m, 30 iv 2000, YBK 1346.  
Ir-Tur.  
*Malcolmia africana* (L.) R.Br.  
B3 Afyon: Emirdağ, Elmalı plateau, stony slopes, 1600-1700 m, 12 viii 2000, YBK 1348.  
*Erysimum lycaonicum* (Hand.-Mazz.) Hub.-Mor.  
B3 Afyon: Emirdağ, Çaykişla village, Çiftözü, rocky, 1400 m, 30 vi 2000, YBK 1389.  
Endemic, LC, Ir-Tur.  
*E. repandum* L.  
B3 Afyon: Emirdağ, Boztepe foothills, steppe, 1750 m, 1 iv 2000, YBK 1111  
*Alliaria petiolata* (M.Bieb.) Cavara & Grande  
B3 Afyon: Emirdağ, Balcam village, Oknişanı hill, very steep rocks, 1500m, 30 iv 2000, YBK 1110.



*Sisymbrium altissimum* L.

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1344.

*S. loeselii* L.

B3 Afyon: Emirdağ, Kırıktaş, steppe, 1100-1200 m, 27 v 2000, YBK 1340.

*Camelina rumelica* Vell.

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1339.

RESEDACEAE

*Reseda lutea* L. var. *lutea*

B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1229.

CISTACEAE

*Cistus laurifolius* L.

B3 Afyon: Emirdağ, between Gölcük hill and Sinekli plateau, meadow, 1850-1900 m, 26 viii 2000, YBK 1377.

*Helianthemum nummularium* (L.) Mill. subsp. *lycanicum* Coode & Cullen

B3 Afyon: Emirdağ, Kayısısalığı stream, Quercus forest, 1300 m, 13 v 2000, YBK 1031.

Endemic, LC.

*H. canum* (L.) Baumg.

B3 Afyon: Emirdağ, Boztepe foothills, steppe, 1750 m, 1 iv 2000, YBK 1074.

VIOLACEAE

*Viola suavis* M.Bieb.

B3 Afyon: Emirdağ, Arpalı hill, under Quercus cerris, 1400-1500 m, 12 vi 1999, YBK 1102.

*V. alba* Besser subsp. *dehnhardtii* (Ten.) Becker

B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1051.

*V. kitaibeliana* Roem. & Schult.

B3 Afyon: Emirdağ, Balcam village, Oknişanı hill, very steep rocks, 1500 m, 30 iv 2000, YBK 1052.

*V. heldreichiana* Boiss.

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1050.

E.Medit.

POLYGALACEAE

*Polygala pruniosa* Boiss. subsp. *pruniosa*

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1038.

CARYOPHYLLACEAE

*Telephium imperati* L. subsp. *orientale* (Boiss.) Nyman

B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1055.

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

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1365.

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

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1364.

Endemic, LC, Ir-Tur.

*M. multinervis* (Boiss.) Bornm.

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1368.

*M. hamata* (Hausskn.) Mattf.

B3 Afyon: Emirdağ, Boztepe hill environs, rocky, 1400-1500 m, 17 iv 1999, YBK 1351.

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

B3 Afyon: Emirdağ, Boztepe hill, meadow, 1750 m, 17 iv 1999, YBK 1370.

*Cerastium anomalum* Waldst. & Kit.

B3 Afyon: Emirdağ, northern part of Karacalar village, steppe, 1100 m, 12 v 2000, YBK 1367.

*C. banaticum* (Rochebr.) Heuff.

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1366.

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

B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1361.

*Spergularia rubra* (L.) J. & C.Presl

B3 Afyon: Emirdağ, Arpalı tepe foothills, beside Quercus forest, 110-1400 m, 17 vii 1999, YBK 1353.

*Dianthus anatolicus* Boiss.

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1373.

*D. micranthus* Boiss. & Heldr.

B3 Afyon: Emirdağ, Türkmenköy village, Çaydere, beside water side, 1150 m, 30 vi 2000, YBK 1132

*D. crinitus* Sm. var. *crinitus*

B3 Afyon: Emirdağ, Emirdede foothills, rocky, 2000-2100 m, 4 viii 1999, YBK 1382.

*D. zonatus* Fenzl var. *zonatus*

B3 Afyon: Emirdağ, Arpalı hill, under Quercus cerris, 1400-1500 m, 12 vi 1999, YBK 1352.

*Velezia rigida* L.

B3 Afyon: Emirdağ, Dişkaya hill, rocky, 1750 m, 7 vii 2000, YBK 1357.

*Saponaria glutinosa* M.Bieb.

B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1354.

*Gypsophila parva* Barkoudah

B3 Afyon: Emirdağ, Türkmenköy village, Altıahir, steppe, 1200 m, 10 vi 2000, YBK 1374.

Endemic, LC, Ir-Tur.

*Bolanthus cherlerioides* (Bornm.) Barkoudah

B3 Afyon: Emirdağ, Karacalar-Demircili-Güveçci road, road side, 1100 m, 25 vi 2000, YBK 1384.

Endemic, NT, E. Medit.

*Vaccaria pyramidata* Medik. var. *grandiflora* (Fisch. ex DC.) Cullen

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1488.

*Silene italica* (L.) Pers.

B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1362.

*S. caeserea* Boiss. & Balansa

B3 Afyon: Emirdağ, Güveçci village, Çayönü, steppe, 1300 m, 30 vi 2000, YBK 1372.

Endemic, DD, Ir-Tur.

*S. otites* (L.) Wibel

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1371.

*S. cappadocica* Boiss. & Heldr.

B3 Afyon: Emirdağ, Çaykışla village, Çiftözü, rocky, 1400 m, 30 vi 2000, YBK 1369.

Ir-Tur.

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

B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1355.

*S. alba* (Mill.) Krause subsp. *ericalycina* (Boiss.) Walters

B3 Afyon: Emirdağ, Mali hill, rocky, 1800-1900 m, 29 vii 2000, YBK 1356.

*S. dichotoma* Ehrh. subsp. *dichotoma*

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1363.

*S. dichotoma* Ehrh. subsp. *sibthorpiana* (Rchb.) Rech.f.

B3 Afyon: Emirdağ, Dişkaya hill, rocky, 1750 m, 7 vii 2000, YBK 1358.

*S. subconica* Friv.

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1359.

*S. conoidea* L.

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1360.

*Agrostemma githago* L.

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1060.

#### ILLECEBRACEAE

*Paronychia carica* Chaudhri

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1236.

Endemic, DD.

#### POLYGONACEAE

*Atraphaxis billardieri* Jaub. & Spach

B3 Afyon: Emirdağ, Türkmenköy village, Çaydere, beside water, 1150 m, 30 vi 2000, YBK 1089.

Ir-Tur.

*Polygonum cognatum* Meisn.

B3 Afyon: Emirdağ, Türkmenköy village, Çaydere, beside water, 1150 m, 30 vi 2000, YBK 1043.

*P. bellardii* All.

B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1104.

*Rumex acetocella* L.

B3 Afyon: Emirdağ, Boztepe hill, meadow, 1750 m, 17 iv 1999, YBK 1042.

*R. crispus* L.

B3 Afyon: Emirdağ, Balcam village, Oknişanı hill, very steep rocks, 1500m, 30 iv 2000, YBK 1227.

#### CHENOPODIACEAE

*Chenopodium foliosum* (Moench) Asch.

B3 Afyon: Emirdağ, Eskiköy village, Balbalkaya hill, rocky, 1350 m, 15 vii 2000, YBK 1080.

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

B3 Afyon: Emirdağ, Türkmenköy village, Çaydere, beside water, 1150 m, 30 vi 2000, YBK 1228.

#### HYPERICACEAE (GUTTIFERAE)

*Hypericum origanifolium* Willd.

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1032.

*H. aviculariifolium* Jaub. & Spach subsp. *byzantinum* (Azn.) Robson

B3 Afyon: Emirdağ, Balcam village, Eşyahasari hill, rocky, 1750 m, 6 ix 1999, YBK 1082.

Endemic, LC, E. Medit.

*H. perforatum* L.

B3 Afyon: Emirdağ, Arpalı hill, under *Quercus cerris*, 1400-1500 m, 12 vi 1999, YBK 1113.

#### MALVACEAE

*Malva slyvestris* L.

B3 Afyon: Emirdağ, Arpalı tepe foothills, beside *Quercus* forest, 110-1400 m, 17 vii 1999, YBK 1489.

*M. neglecta* Willd.

B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1424.

*Alcea pallida* Waldst. & Kit.

B3 Afyon: Emirdağ, Karacalar-Demircili-Güveçci road, road side, 1100 m, 25 vi 2000, YBK 1425.

*Althaea officinalis* L.

B3 Afyon: Emirdağ, Arpalı tepe foothills, beside *Quercus* forest, 110-1400 m, 17 vii 1999, YBK 1423.

\**A. hirsuta* L.

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1095.

#### LINACEAE

*Linum hirsutum* L. subsp. *anatolicum* (Boiss.) Hayek var. *anatolicum*

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1039.

Endemic, LC, Ir-Tur.

*L. tenuifolium* L.

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1040.

#### GERANIACEAE

*Geranium tuberosum* L. subsp. *tuberosum*

B3 Afyon: Emirdağ, Boztepe hill environs, rocky, 1400-1500 m, 17 iv 1999, YBK 1224.

*G. cinerium* Cav. subsp. *subcaulescens* (L'Hér. ex DC.) Hayek var. *subacutum* (Boiss.) P.H.Davis & Roberts

B3 Afyon: Emirdağ, Arpalı tepe foothills, beside *Quercus* forest, 110-1400 m, 17 vii 1999, YBK 1044.

Endemic, LC, Ir-Tur.

*Erodium ciconium* (L.) L'Hér.

B3 Afyon: Emirdağ, Çaykışla village, Dandindere Nature Reserve, *Cedrus libani*

forest, 1300-1400 m, 25 vi 2000, YBK 1045.

*E. amanum* Boiss. & Kotschy

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1046.

Endemic, LC.

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

B3 Afyon: Emirdağ, Emirdede foothills, rocky, 2000-2100 m, 4 viii 1999, YBK 1047.

#### RUTACEAE

\**Haplophyllum armenum* Spach

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1402.

Endemic, LC.

*H. myrtifolium* Boiss.

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1087.

Endemic, LC, Ir-Tur.

#### ACERACEAE

*Acer hyrcanum* Fisch. & C.A.Meyer subsp. *sphaerocoryum* Yalt.

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1237.

Endemic, VU, E. Medit.

#### VITACEAE

*Vitis vinifera* L.

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1238.

#### RHAMNACEAE

*Rhamnus petiolaris* Boiss.

B3 Afyon: Emirdağ, Kırıktaş, steppe, 1100-1200 m, 27 v 2000, YBK 1136.

Endemic, LC.

#### LEGUMINOSAE (FABACEAE)

*Chamaecytisus hirsutus* (L.) Link

B3 Afyon: Emirdağ, Boztepe hill environs, rocky, 1400-1500 m, 17 iv 1999, YBK 1214.

*Genista albida* Willd.

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1490.

*Colutea cilicica* Boiss. & Balansa

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1013.

*Astragalus suberosus* Banks & Sol. subsp. *anceylus* (Boiss.) V.A.Matthews

B3 Afyon: Emirdağ, Kayısısalığı stream, Quercus forest, 1300 m, 13 v 2000, YBK 1010.

Endemic, DD.

\**A. coodei* D.F.Chamb. & V.A.Matthews

B3 Afyon: Emirdağ, Türkmenköy village, Çaydere, beside water, 1150 m, 30 vi 2000, YBK 1502.

Endemic, LC.

*A. melanophrurius* Boiss.

B3 Afyon: Emirdağ, Kırıktaş, steppe, 1100-1200 m, 27 v 2000, YBK 1014.

Endemic, NT, Ir-Tur.

*A. prusianus* Boiss.

B3 Afyon: Emirdağ, Balcam village, Oknişanı hill, very steep rocks, 1500 m, 30 iv 2000, YBK 1005.

E. Medit.

*A. brachypterus* Fisch.

B3 Afyon: Emirdağ, Türkmenköy village, Çaydere, beside water, 1150 m, 30 vi 2000, YBK 1009.

Ir-Tur.

*A. tmoleus* Boiss. var. *baunacanthus* (Boiss.) D.F.Chamb.

B3 Afyon: Emirdağ, Eskiköy village, Balbalkaya hill, rocky, 1350 m, 15 vii 2000, YBK 1004.

Endemic, LC.

*A. mitchelianus* Boiss.

B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1129.

*A. odoratus* Lam.

B3 Afyon: Emirdağ, Karacalar-Demircili-Güveçci road, road side, 1100 m, 25 vi 2000, YBK 1501.

*A. lydius* Boiss.

B3 Afyon: Emirdağ, Boztepe hill, meadow, 1750 m, 17 iv 1999, YBK 1216.

Endemic, LC, Ir-Tur.

*A. squalidus* Boiss. & Noé

B3 Afyon: Emirdağ, Eskiköy village, Balbalkaya hill, rocky, 1350 m, 15 vii 2000, YBK 1503.

Endemic, DD.

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

B3 Afyon: Emirdağ, Çaykışla village, Çiftözü, rocky, 1400 m, 30 vi 2000, YBK 1003.

*A. vulneraria* DC.

B3 Afyon: Emirdağ, Çaykışla village, Dandindere Nature Reserve, Cedrus libani forest, 1300-1400 m, 25 vi 2000, YBK 1266.

Endemic, LC.

\**Cicer arietinum* L.

B3 Afyon: Emirdağ, Çaykışla village, Dandindere Nature Reserve, Cedrus libani forest, 1300-1400 m, 25 vi 2000, YBK 1265.

*Vicia cracca* L. subsp. *stenophylla* Vell.

B3 Afyon: Emirdağ, Karacalar-Demircili-Güveçci road, road side, 1100 m, 25 vi 2000, YBK 1002.

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

B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1203.

*V. bithynica* L.

B3 Afyon: Emirdağ, Kuşkalesi hill (eastern part), stony slopes, 1600 m, 3 iii 2000, YBK 1012.

*Lens orientalis* (Boiss.) Hand.-Mazz.

B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1211.

\**Lathyrus brachypterus* Célak. var. *brachypterus*

B3 Afyon: Emirdağ, Boztepe hill, meadow, 1750 m, 17 iv 1999, YBK 1213.

Endemic, LC, Ir-Tur.

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

B3 Afyon: Emirdağ, Boztepe hill, meadow, 1750 m, 17 iv 1999, YBK 1205.

*L. czeczottianus* Bassler

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1262.

Endemic, LC.

*L. nissolia* L.

B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1208.

*Pisum sativum* L. subsp. *sativum* var. *sativum*

B3 Afyon: Emirdağ, northern part of Karacalar village, steppe, 1100 m, 12 v 2000, YBK 1267.

*Ononis spinosa* L. subsp. *antiquorum* (L.) Briq.

B3 Afyon: Emirdağ, Boztepe hill, meadow, 1750 m, 17 iv 1999, YBK 1376.

Medit.

*Trifolium repens* L. var. *repens*

B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1017.

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

B3 Afyon: Emirdağ, Çaykışla village, Dandindere Nature Reserve, *Cedrus libani* forest, 1300-1400 m, 25 vi 2000, YBK 1008.

Medit.

\**T. diffusum* Ehrh.

B3 Afyon: Emirdağ, Arpalı tepe foothills, beside *Quercus* forest, 110-1400 m, 17 vii 1999, YBK 1201.

*T. ochroleucum* Huds.

B3 Afyon: Emirdağ, Türkmenköy village, Altıahır, steppe, 1200 m, 10 vi 2000, YBK 1006.

*T. hirtum* All.

B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1207.

Medit.

\**T. lappaceum* L.

B3 Afyon: Emirdağ, Boztepe hill, meadow, 1750 m, 17 iv 1999, YBK 1212.

Medit.

*Melilotus officinalis* (L.) Desr.

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1263.

\**Trigonella cretica* (L.) Boiss.

B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1206.

Endemic, NT, E.M edit.

*T. monspeliaca* L.

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1261.

Medit.

*T. procumbens* (Besser) Rchb.

B3 Afyon: Emirdağ, Arpalı hill, under *Quercus cerris*, 1400-1500 m, 12 vi 1999, YBK 1204.

*T. capitata* Boiss.

B3 Afyon: Emirdağ, Boztepe hill environs, rocky, 1400-1500 m, 17 iv 1999, YBK 1215.

Ir-Tur.

*T. courelescens* (M.Bieb.) Halacsy

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1022.

Ir-Tur.

*Medicago sativa* L. subsp. *sativa*

B3 Afyon: Emirdağ, Karacalar-Demircili-Güveçci road, road side, 1100 m, 25 vi 2000, YBK 1007.

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

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1260.

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

B3 Afyon: Emirdağ, Emirdede foothills, rocky, 2000-2100 m, 4 viii 1999, YBK 1210.

*L. aegaeus* (Gris) Boiss.

B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1209.

Ir-Tur.

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

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1096.

*Coronilla emerus* L. subsp. *emeroides* (Boiss. & Spruner) Hayek

B3 Afyon: Emirdağ, Boztepe hill environs, rocky, 1400-1500 m, 17 iv 1999, YBK 1217.

*C. scorpioides* (L.) W.D.J.Koch

B3 Afyon: Emirdağ, Arpalı hill, under *Quercus cerris*, 1400-1500 m, 12 vi 1999, YBK 1015.

*C. coronata* L.

B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1491.

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

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1084.

*Hedysarum varium* Willd.

B3 Afyon: Emirdağ, Karacalar-Demircili-Güveçci road, road side, 1100 m, 25 vi 2000, YBK 1081.

Ir-Tur.

*Onobrychis oxydonta* Boiss.

B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1500.

*O. cornuta* (L.) Desv.

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1264.

Ir-Tur.

*O. armena* Boiss. & A.Huet

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1011.

Endemic, LC.

*Ebenus hirsuta* Jaub. & Spach

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1259.

Endemic, LC, Ir-Tur.

**ROSACEAE**

*Prunus x domestica* L.

B3 Afyon: Emirdağ, Eskiköy village, Balbalkaya hill, rocky, 1350 m, 15 vii 2000, YBK 1413.

*Cerasus prostrata* (Labill.) Ser. var. *glabriflora* (Morris) Browicz

B3 Afyon: Emirdağ, Gölcük plateau, meadow, 1450 m, 23 iv 2000, YBK 1030.

*Filipendula vulgaris* Moench

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1073.

Euro-Sib.

*Rubus canescens* DC. var. *canescens*

B3 Afyon: Emirdağ, Dumluca plateau, meadow, 1700 m, 8 vii 2000, YBK 1121.

*Potentilla recta* L.

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1120.

*P. reptans* L.

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1492.

*Fragaria vesca* L.

B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1066.

*Geum urbanum* L.

B3 Afyon: Emirdağ, Dumluca plateau, meadow, 1700 m, 8 vii 2000, YBK 1417.

Euro- Sib.

*Agrimonia eupatoria* L.

B3 Afyon: Emirdağ, Arpalı hill, under *Quercus cerris*, 1400-1500 m, 12 vi 1999, YBK 1118.

\**Sanguisorba minor* Scop. subsp. *minor*

B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1418.

*Rosa canina* L.

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1416.

*Cotoneaster nummularia* Fisch. & C.A.Mey.

B3 Afyon: Emirdağ, Kayısısalığı stream, *Quercus* forest, 1300 m, 13 v 2000, YBK 1414.

*Crataegus orientalis* Pall. ex M.Bieb. var. *orientalis*

B3 Afyon: Emirdağ, Eskiköy village,

Balbalkaya hill, rocky, 1350 m, 15 vii 2000, YBK 1123.

*C. monogyna* Jacq. subsp. *monogyna*

B3 Afyon: Emirdağ, Malı hill, rocky, 1800-1900 m, 29 vii 2000, YBK 1119.

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

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1098.

*Malus sylvestris* Mill. subsp. *orientalis* var. *orientalis*

B3 Afyon: Emirdağ, Balcam village, Oknişanı hill, very steep rocks, 1500 m, 30 iv 2000, YBK 1380.

*Pyrus eleagnifolia* Pall. subsp. *eleagnifolia*

B3 Afyon: Emirdağ, Gölcük plateau, meadow, 1450 m, 23 iv 2000, YBK 1412.

\**Amelanchier parviflora* Boiss. var. *parviflora*

B3 Afyon: Emirdağ, Demircili village, Gökkoçak, steppe, 1100 m, 10 vi 2000, YBK 1415.

#### ONAGRACEAE

*Epilobium angustifolium* L.

B3 Afyon: Emirdağ, Arpalı tepe foothills, beside *Quercus* forest, 110-1400 m, 17 vii 1999, YBK 1385.

#### CUCURBITACEAE

\**Bryonia multiflora* Boiss. & Heldr.

B3 Afyon: Emirdağ, Elmalı plateau, stony slopes, 1600-1700 m, 12 viii 2000, YBK 1400.

Ir-Tur.

*Cucurbita pepo* L.

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1223.

#### CRASSULACEAE

*Umbilicus erectus* DC.

B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1433.

*Sedum acre* L.

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1431.

*S. album* L.

B3 Afyon: Emirdağ, Arpalı hill, under *Quercus cerris*, 1400-1500 m, 12 vi 1999, YBK 1432.

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

B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1027.

#### GROSSULARIACEAE

\**Ribes uva-crispa* L.

B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1093.

#### APIACEAE (UMBELLIFERAE)

*Sanicula europae* L.

B3 Afyon: Emirdağ, Kırıktaş, steppe, 1100-1200 m, 27 v 2000, YBK 1146.

Euro-Sib.

\**Eryngium billardieri* Delarb.

B3 Afyon: Emirdağ, Güveççi village, Çayönü, steppe, 1300 m, 30 vi 2000, YBK 1059.

Ir-Tur.

*Echinophora tournefortii* Jaub. & Spach

B3 Afyon: Emirdağ, Emirdede foothills, rocky, 2000-2100 m, 4 viii 1999, YBK 1378.

Ir- Tur.

*Anthriscus nemorosa* (M.Bieb.) Spreng.

B3 Afyon: Emirdağ, Çaykışla village, Dandindere Nature Reserve, *Cedrus libani* forest, 1300-1400 m, 25 vi 2000, YBK 1143.

*Scandix iberica* M.Bieb.

B3 Afyon: Emirdağ, Gölcük plateau, meadow, 1450 m, 23 iv 2000, YBK 1387.

*S. australis* L. subsp. *grandiflora* (L.) Thell.

B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1147.

*Scaligeria tripartita* (Kalen.) Tamamsch.

B3 Afyon: Emirdağ, Malı hill, rocky, 1800-1900 m, 29 vii 2000, YBK 1128.

Euxine.

*Smyrniium connatum* Boiss. & Kotschy

B3 Afyon: Emirdağ, Güveççi village, Çayönü, steppe, 1300 m, 30 vi 2000, YBK 1148.

E. Medit.

- Bunium ferulaceum* Sm.  
B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1140.  
Medit.  
*Seseli peucedanoides* (M.Bieb.) Koso-Pol.  
B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1144.  
Euro-Sib.  
*Bupleureum flavum* Forssk.  
B3 Afyon: Emirdağ, Türkmenköy village, Çaydere, beside water, 1150 m, 30 vi 2000, YBK 1138.  
E. Medit.  
*B. turcicum* Snogerup  
B3 Afyon: Emirdağ, Eskiköy village, Balbalkaya hill, rocky, 1350 m, 15 vii 2000, YBK 1141.  
Endemic, NT, Ir-Tur.  
*Falcaria vulgaris* Bernh.  
B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1397.  
*Opopanax hispidus* (Friv.) Gris  
B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1396.  
*Malabaila secacul* Banks & Sol.  
B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1142.  
*Heracleum platytaenium* Boiss.  
B3 Afyon: Emirdağ, Dumluca plateau, meadow, 1700 m, 8 vii 2000, YBK 1149.  
Endemic, LC, Euxine.  
*Torilis ucranica* Spreng.  
B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1097.  
*Turginea latifolia* (L.) Hoffm.  
B3 Afyon: Emirdağ, Türkmenköy village, Altahır, steppe, 1200 m, 10 vi 2000, YBK 1150.  
*Lisae papyracea* Boiss.  
B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1145.  
Ir-Tur.  
**CAPRIFOLIACEAE**  
*Lonicera etrusca* Santi var. *etrusca*  
B3 Afyon: Emirdağ, Arpalı hill, under *Quercus cerris*, 1400-1500 m, 12 vi 1999, YBK 1219.  
**VALERIANACEAE**  
*Valeriana officinalis* L.  
B3 Afyon: Emirdağ, Boztepe hill environs, rocky, 1400-1500 m, 17 iv 1999, YBK 1218.  
*Valerianilla pumila* (L.) DC.  
B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1137.  
**DIPSACACEAE**  
*Knautia involucrata* Sommier & Levier  
B3 Afyon: Emirdağ, Türkmenköy village, Altahır, steppe, 1200 m, 10 vi 2000, YBK 1440.  
Euxine (mt).  
*Scabiosa argentea* L.  
B3 Afyon: Emirdağ, Karacalar-Demircili-Güveçci road, road side, 1100 m, 25 vi 2000, YBK 1441.  
*Pteroccephalus plumosus* (L.) Coult.  
B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1086.  
**COMPOSITAE (ASTERACEAE)**  
*Xanthium strumarium* L. subsp. *strumarium*  
B3 Afyon: Emirdağ, Karacalar-Demircili-Güveçci road, road side, 1100 m, 25 vi 2000, YBK 1375.  
*Inula montbretiana* DC.  
B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1289.  
Ir-Tur.  
*I. heterolepis* Boiss.  
B3 Afyon: Emirdağ, Karacalar-Demircili-Güveçci road, road side, 1100 m, 25 vi 2000, YBK 1063.  
E. Medit.  
*I. anatolica* Boiss.  
B3 Afyon: Emirdağ, Dişkaya hill, rocky, 1750 m, 7 vii 2000, YBK 1309.  
Endemic, LC.  
*Helichrysum pilicatum* DC. subsp. *pilicatum*  
B3 Afyon: Emirdağ, between Gölcük hill and Sinekli plateau, meadow, 1850-1900 m, 26 viii 2000, YBK 1379.  
*Doronicum orientale* Hoffm.  
B3 Afyon: Emirdağ, Kayısısalığı stream, *Quercus* forest, 1300 m, 13 v 2000, YBK 1016.  
*Senecio mollis* Willd.  
B3 Afyon: Emirdağ, northern part of Karacalar village, steppe, 1200 m, 12 v 2000, YBK 1319.  
Ir-Tur.  
*S. vernalis* Waldst. & Kit.  
B3 Afyon: Emirdağ, Kayısısalığı stream, *Quercus* forest, 1300 m, 13 v 2000, YBK 1065.  
*Anthemis cretica* L. subsp. *albida* (Boiss.) Grierson  
B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1314.  
*A. aciphylla* Boiss. var. *aciphylla*  
B3 Afyon: Emirdağ, Emirdede foothills, rocky, 2000-2100 m, 4 viii 1999, YBK 1280.  
Endemic, LC, E. Medit.  
\**A. arvensis* L.  
B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1302.  
*A. tinctoria* L. var. *tinctoria*  
B3 Afyon: Emirdağ, Emirdede foothills, rocky, 2000-2100 m, 4 viii 1999, YBK 1287.  
*Achillea teretifolia* Willd.  
B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1297.  
Endemic, LC, Ir-Tur.  
*A. millefolium* L. subsp. *millefolium*  
B3 Afyon: Emirdağ, Çaykışla village,

Dandindere Nature Reserve, Cedrus libani forest, 1300-1400 m, 25 vi 2000, YBK 1321.

Euro-Sib.

**A. biebersteinii** Afan.

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1298.

Ir-Tur.

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

B3 Afyon: Emirdağ, Kayısısalığı stream, Quercus forest, 1300 m, 13 v 2000, YBK 1291.

**T. argenteum** (Lam.) Willd. subsp. **argenteum**

B3 Afyon: Emirdağ, Arpalı hill, under Quercus cerris, 1400-1500 m, 12 vi 1999, YBK 1062.

Endemic, LC, Ir-Tur.

\***Tripleurospermum oreades** (Boiss.) Rech. f. var. **oreades**

B3 Afyon: Emirdağ, Malı hill, rocky, 1800-1900 m, 29 vii 2000, YBK 1278.

\***T. rosellum** (Boiss. & Orph.) Hayek var. **rosellum**

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1288.

**T. decipiens** (Fisch. & C.A.Mey.) Bornm.

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1313.

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

B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1292.

**Ptilostemon afer** (Jacq.) Greuter subsp. **eberneus** Greuter

B3 Afyon: Emirdağ, Arpalı tepe foothills, beside Quercus forest, 110-1400 m, 17 vii 1999, YBK 1282.

Endemic, LC.

**Carduus nutans** L. subsp. **nutans sensu lato**

B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1296.

**Jurinea pontica** Hausskn. & Freyn ex Hausskn.

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1311.

Endemic, LC, Ir-Tur.

**Centaurea virgata** Lam.

B3 Afyon: Emirdağ, Dumluca plateau, meadow, 1700 m, 8 vii 2000, YBK 1310.

**C. drabifolia** Sm. subsp. **detonsa** (Bornm.) Wagenitz

B3 Afyon: Emirdağ, Türkmenköy village, Çaydere, beside water, 1150 m, 30 vi 2000, YBK 1320.

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

B3 Afyon: Emirdağ, Çaykışla village, Çiftözü, rocky, 1400 m, 30 vi 2000, YBK 1305.

**C. kotschyi** (Boiss. et Heldr.) Hayek var. **persica** (Boiss.) Wagenitz

B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1018.

**C. iberica** Trevir. ex Spreng.

B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1281.

**C. urvillei** DC. subsp. **urvillei**

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1303.

E. Medit.

**C. triumfetti** All.

B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1295.

**Crupina crupinastrum** (Moris) Vis.

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1304.

**Carthamus dentatus** Vahl

B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1306.

**Xeranthemum annuum** L.

B3 Afyon: Emirdağ, Karacalar-Demircili-Güveçci road, road side, 1100 m, 25 vi 2000, YBK 1285.

**Carlina oligocephala** Boiss. & Kotschy subsp. **oligocephala**

B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1307.

**Echinops ritro** L.

B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1308.

**Scolymus maculatus** L.

B3 Afyon: Emirdağ, Arpalı hill, under Quercus cerris, 1400-1500 m, 12 vi 1999, YBK 1293.

**Cichorium intybus** L.

B3 Afyon: Emirdağ, Karacalar-Demircili-Güveçci road, road side, 1100 m, 25 vi 2000, YBK 1322.

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

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1316.

**S. semicana** DC.

B3 Afyon: Emirdağ, Boztepe hill, meadow, 1750 m, 17 iv 1999, YBK 1284.

Endemic, LC, Ir-Tur.

\***S. latifolia** (Fisch. & C.A.Mey.) DC.

B3 Afyon: Emirdağ, Arpalı tepe foothills, beside Quercus forest, 110-1400 m, 17 vii 1999, YBK 1312.

Ir-Tur.

**S. tomentosa** L.

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1315.

Endemic, LC, Ir-Tur.

**Tragopogon longirostris** Bisch. ex Sch.Bip. var. **abbreviatus** Boiss.

B3 Afyon: Emirdağ, between Gölcük hill and Sinekli plateau, meadow, 1850-1900 m, 26 viii 2000, YBK 1398.

\***T. coloratus** C.A.Meyer

B3 Afyon: Emirdağ, northern part of Karacalar village, steppe, 1200 m, 12 v 2000, YBK 1294.

Ir-Tur.

**T. buphthalmoides** (DC.) Boiss. var. **buphthalmoides**

B3 Afyon: Emirdağ, northern part of Karacalar village, steppe, 1200 m, 12 v 2000, YBK 1318.

*Picris strigosa* M.Bieb.

B3 Afyon: Emirdağ, Arpalı tepe foothills, beside Quercus forest, 110-1400 m, 17 vii 1999, YBK 1299.

*Hieracium pannosum* Boiss.

B3 Afyon: Emirdağ, Arpalı tepe foothill, Quercus forest side, 110-1400 m, 17 vii 1999, YBK 1301.

E. Medit. (mt).

*Pilocella hoppeana* (Schult.) C.H. & F.W.Schultz subsp. *pilisquama* (NP.) Sell & West

B3 Afyon: Emirdağ, Malı hill, rocky, 1800-1900 m, 29 vii 2000, YBK 1381.

*P. cymosa* (L.) C.H. & F.W.Schultz

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1493.

Euro-Sib.

*Lactuca sativa* L.

B3 Afyon: Emirdağ, Elmalı plateau, stony slopes, 1600-1700 m, 12 viii 2000, YBK 1283.

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

B3 Afyon: Emirdağ, Arpalı tepe foothills, beside Quercus forest, 110-1400 m, 17 vii 1999, YBK 1279.

*Taraxacum officinale* Weber

B3 Afyon: Emirdağ, Boztepe foothills, steppe, 1750 m, 1 iv 2000, YBK 1085.

\**Crepis reutana* Boiss. subsp. *reutana*

B3 Afyon: Emirdağ, Arpalı hill, under Quercus cerris, 1400-1500 m, 12 vi 1999, YBK 1290.

E. Medit.

*C. foetida* L. subsp. *rhoeadifolia* (M.Bieb.) Célak.

B3 Afyon: Emirdağ, Karacalar-Demircili-Güveçci road, road side, 1100 m, 25 vi 2000, YBK 1286.

#### CAMPANULACEAE

*Campanula lyrata* Lam. subsp. *lyrata*

B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1037.

*C. argaea* Boiss. & Balansa

B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1448.

Endemic, LC, Ir-Tur.

\**C. argentea* Lam.

B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1078.

*C. cymbalaria* Sm.

B3 Afyon: Emirdağ, Arpalı tepe foothills, beside Quercus forest, 110-1400 m, 17 vii 1999, YBK 1076.

E. Medit.

*Asyneuma linifolium* (Boiss. & Heldr.) Bornm. subsp. *linifolium*

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1075.

Endemic, LC, E. Medit.

*A. rigidum* (Willd.) Grassi subsp. *rigidum*

B3 Afyon: Emirdağ, Dumluca plateau, meadow, 1700 m, 8 vii 2000, YBK 1233.

Ir-Tur.

*Legousia speculum-veneris* (L.) Chaix

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1041.

Medit.

#### ERICACEAE

\**Vaccinium myrtillus* L.

B3 Afyon: Emirdağ, Emirdede foothills, rocky, 2000-2100 m, 4 viii 1999, YBK 1077.

#### PRIMULACEAE

*Androsace maxima* L.

B3 Afyon: Emirdağ, Gölcük plateau, meadow, 1450 m, 23 iv 2000, YBK 1094.

*Cyclamen cilicium* Boiss. & Heldr. var. *intaminatum* Meikle

B3 Afyon: Emirdağ, Kuşkalesi hill (eastern part), stony slopes, 1600 m, 3 iii 2000, YBK 1186.

Endemic, VU, E. Medit.

#### OLEACEAE

*Jasminum fruticans* L.

B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1220.

Medit.

*Fraxinus angustifolia* Vahl subsp. *angustifolia*

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1092.

#### APOCYNACEAE

*Vinca herbacea* Waldst. & Kit.

B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1222.

#### ASCLEPIADACEAE

*Vincetoxicum fuscatum* (Hornem.) Rchb f. subsp. *fuscatum*

B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1100.

#### CONVOLVULACEAE

*Convolvulus lineatus* L.

B3 Afyon: Emirdağ, Kırıktaş, steppe, 1100-1200 m, 27 v 2000, YBK 1072.

*C. holosericeus* M.Bieb. subsp. *holosericeus*

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1028.

\**C. assyricus* Griseb.

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1421.

Endemic, LC, Ir-Tur.

*C. arvensis* L.

B3 Afyon: Emirdağ, Eskiköy village, Balbalkaya hill, rocky, 1350 m, 15 vii 2000, YBK 1420.

*C. galaticus* Rostan ex Choisy

B3 Afyon: Emirdağ, Kuşkalesi hill (eastern part), stony slopes, 1600 m, 3 iii 2000, YBK 1422.

Endemic, LC, Ir-Tur.

#### BORAGINACEAE

*Heliotropium europaeum* L.

B3 Afyon: Emirdağ, northern part of Karacalar village, steppe, 1200 m, 12 v 2000, YBK 1124.



- Lappula barbata* (M.Bieb.) Gürke  
B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1255.  
Ir-Tur.
- Myosotis ramosissima* Rochel ex Schult. subsp. *ramosissima*  
B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1257.
- M. stricta* Link. ex Roem. & Schult.  
B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1258.  
Euro-Sib.
- M. arvensis* (L.) Hill subsp. *arvensis*  
B3 Afyon: Emirdağ, northern part of Karacalar village, steppe, 1200 m, 12 v 2000, YBK 1251.  
Euro-Sib.
- Lithospermum officinale* L.  
B3 Afyon: Emirdağ, Dişkaya hill, rocky slopes, 1800 m, 2 iv 2000, YBK 1090.  
Euro-Sib.
- Echium italicum* L.  
B3 Afyon: Emirdağ, Eskiköy village, Balbalkaya hill, rocky, 1350 m, 15 vii 2000, YBK 1067.
- Moltkia aurea* Boiss.  
B3 Afyon: Emirdağ, Gölcük plateau, meadow, 1450 m, 23 iv 2000, YBK 1249.  
Endemic, LC, Ir-Tur.
- \**Onosma bracteosum* Hausskn. & Bornm.  
B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1252.  
Endemic, LC, Ir-Tur.
- \**O. hebebulbum* DC.  
B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 20, YBK 1256.  
Ir-Tur.
- Cerintho minor* L. subsp. *auriculata* (Ten.) Domac  
B3 Afyon: Emirdağ, Kayısısalığı stream, Quercus forest, 1300 m, 13 v 2000, YBK 1057.
- Anchusa leptophylla* Roem. & Schult. subsp. *leptophylla*  
B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1126.
- A. leptophylla* Roem. & Schult. subsp. *incana* (Ledeb.) Champ.  
B3 Afyon: Emirdağ, Arpalı tepe foothills, beside Quercus forest, 110-1400 m, 17 vii 1999, YBK 1248.  
Endemic, LC, Ir-Tur.
- A. undulata* L. subsp. *hybrida* (Ten.) Cout.  
B3 Afyon: Emirdağ, Balcam village, Oknişanı hill, very steep rocks, 1500 m, 30 iv 2000, YBK 1250.  
Medit.
- A. azurea* M.Bieb. var. *azurea*  
B3 Afyon: Emirdağ, Dumluca plateau, meadow, 1700 m, 8 vii 2000, YBK 1253.
- A. stylosa* M.Bieb.  
B3 Afyon: Emirdağ, Çaykışla village, Dandindere Nature Reserve, Cedrus libani forest, 1300-1400 m, 25 vi 2000, YBK 1125.
- Alkanna tubulosa* Boiss.  
B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1254.  
Endemic, LC, E. Medit.
- SOLANACEAE**
- Datura stramonium* L.  
B3 Afyon: Emirdağ, Türkmenköy village, Çaydere, beside water, 1150 m, 30 vi 2000, YBK 1427.
- Hyoscyamus niger* L.  
B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1426.
- SCROPHULARIACEAE**
- Verbascum adenocarpum* Hub.-Mor.  
B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1494.  
Endemic, VU, Ir-Tur.
- \**V. stachydifolium* Boiss. & Heldr. var. *stachydifolium*  
B3 Afyon: Emirdağ, Dişkaya hill, rocky, 1750 m, 7 vii 2000, YBK 1392.  
Endemic, VU, Ir-Tur.
- \**V. stachydifolium* Boiss. & Heldr. var. *adpersum* (Freyh. & Sint.) Murb.  
B3 Afyon: Emirdağ, Arpalı hill, under Quercus cerris, 1400-1500 m, 12 vi 1999, YBK 1391.  
Endemic, VU, Ir-Tur.
- \**V. vulcanicum* Boiss. & Heldr. var. *vulcanicum*  
B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1395.  
Endemic, LC, Ir-Tur.
- V. lasianthum* Boiss. ex Benth.  
B3 Afyon: Emirdağ, Eskiköy village, Balbalkaya hill, rocky, 1350 m, 15 vii 2000, YBK 1393.
- V. cheiranthifolium* Boiss. var. *asperulum* (Boiss.) Murb.  
B3 Afyon: Emirdağ, Dumluca plateau, meadow, 1700 m, 8 vii 2000, YBK 1394.  
Endemic, LC.
- Scrophularia cryptophila* Boiss. & Heldr.  
B3 Afyon: Emirdağ, northern part of Karacalar village, steppe, 1200 m, 12 v 2000, YBK 1390.  
Endemic, LC, E. Medit.
- S. scopolii* [Hoppe ex] Pers. var. *scopolii*  
B3 Afyon: Emirdağ, northern part of Karacalar village, steppe, 1200 m, 12 v 2000, YBK 1243.
- \**S. xanthoglossa* Boiss. var. *decipiens* (Boiss. & Kotschy) Boiss.  
B3 Afyon: Emirdağ, Malı hill, rocky, 1800-1900 m, 29 vii 2000, YBK 1383.  
Ir-Tur.
- Linaria genistifolia* (L.) Mill. subsp. *confertiflora* (Boiss.) P.H.Davis  
B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1246.  
Endemic, LC, Ir-Tur.
- L. grandiflora* Desf.  
B3 Afyon: Emirdağ, Kırıқтаş, steppe, 1100-1200 m, 27 v 2000, YBK 1244.  
Ir-Tur.

**L. corifolia** Desf.

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1245.

Endemic, LC, Ir-Tur.

**Digitalis ferruginea** L. subsp. **ferruginea**

B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1247.

Euro-Sib.

**Veronica anagallis-acuatica** L.

B3 Afyon: Emirdağ, Arpalı tepe foothills, beside Quercus forest, 110-1400 m, 17 vii 1999, YBK 1099.

**V. chamaedrys** L.

B3 Afyon: Emirdağ, northern part of Karacalar village, steppe, 1200 m, 12 v 2000, YBK 1242.

Euro-Sib.

**V. pectinata** L. var. **pectinata**

B3 Afyon: Emirdağ, Balcam village, Oknişanı hill, very steep rocks, 1500m, 30 iv 2000, YBK 1241.

**V. multifida** L.

B3 Afyon: Emirdağ, Gölçük plateau, meadow, 1450 m, 23 iv 2000, YBK 1240.

Endemic, LC.

**Bunaea trifida** (Vahl) C.A.Meyer

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1061.

Ir-Tur.

**OROBANCHACEAE****Phelypaea coccinea** (M.Bieb.) Poir.

B3 Afyon: Emirdağ, Çaykışla village, Dandindere Nature Reserve, Cedrus libani forest, 1300-1400 m, 25 vi 2000, YBK 1130.

Ir-Tur.

**Orobanche ramosa** L.

B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1033.

**O. minor** Sm.

B3 Afyon: Emirdağ, northern part of Karacalar village, steppe, 1200 m, 12 v 2000, YBK 1034.

**O. anatolica** Boiss. & Reut.

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1035.

**ACANTHACEAE****Acanthus hirsutus** Boiss.

B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1221.

Endemic, LC.

**GLOBULARIACEAE****Globularia orientalis** L.

B3 Afyon: Emirdağ, Gölçük plateau, meadow, 1450 m, 23 iv 2000, YBK 1226.

Ir-Tur.

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

B3 Afyon: Emirdağ, Türkmenköy village, Altahır, steppe, 1200 m, 12 vi 2000, YBK 1225.

**LAMIACEAE (LABIATAE)****Ajuga chamaepitys** (L.) Schreb. subsp. **chia** (Schreb.) Arcang.

B3 Afyon: Emirdağ, Gölçük plateau, meadow, 1450 m, 23 iv 2000, YBK 1164.

**\*A. bombycina** Boiss.

B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1152.

Endemic, NT, E. Medit.

**Teucrium orientale** L.

B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1088.

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

B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1155.

Euro-Sib.

**T. polium** L.

B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1165.

**Scutellaria albida** L. subsp. **albida**

B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1071.

E. Medit.

**\*S. orientalis** L. subsp. **pectinata** (Benth.) J.R.Edm.

B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1151.

Endemic, LC, Ir-Tur.

**Phlomis pungens** Willd. var. **pungens**

B3 Afyon: Emirdağ, Çaykışla village, Dandindere Nature Reserve, Cedrus libani forest, 1300-1400 m, 25 vi 2000, YBK 1171.

**\*P. grandiflora** H.S.Thomps. var. **fimbrilligera** (Hub.-Mor.) Hub.-Mor.

B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1194.

Endemic, VU, E. Medit.

**P. armeniaca** Willd.

B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1196.

Endemic, LC, Ir-Tur.

**P. nissolii** L.

B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1198.

Endemic, LC, Ir-Tur.

**Lamium garganicum** L. subsp. **laevigatum** Arcang.

B3 Afyon: Emirdağ, Boztepe hill environs, rocky, 1400-1500 m, 17 iv 1999, YBK 1162.

Euxine.

**L. amplexuale** L.

B3 Afyon: Emirdağ, Arpalı hill, under Quercus cerris, 1400-1500 m, 12 vi 1999, YBK 1163.

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

B3 Afyon: Emirdağ, Çomaklı plateau, rocky place, 1700-1800 m, 11 iii 1999, YBK 1495.

Euro-Sib.

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

B3 Afyon: Emirdağ, Balcam village, Oknişanı hill, very steep rocks, 1500m, 30 iv 2000, YBK 1168.

- Marrubium vulgare** L.  
B3 Afyon: Emirdağ, Karacalar-Demircili-Güveçci road, road side, 1100 m, 25 vi 2000, YBK 1496.
- M. anisodon** K.Koch  
B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1497.
- \***M. trachyticum** Boiss.  
B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1172.  
Endemic, LC, Ir-Tur.
- M. astracanicum** Jacq. subsp. **astracanicum**  
B3 Afyon: Emirdağ, Arpalı hill, under *Quercus cerris*, 1400-1500 m, 12 vi 1999, YBK 1195.
- Sideritis montana** L. subsp. **montana**  
B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1153.
- Stachys balansae** Boiss. & Kotschy subsp. **balansae**  
B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1070.  
Euro-Sib.
- S. tmolea** Boiss.  
B3 Afyon: Emirdağ, Arpalı hill, under *Quercus cerris*, 1400-1500 m, 12 vi 1999, YBK 1193.  
Endemic, LC, E. Medit.
- S. cretica** L. subsp. **anatolica** Rech.f.  
B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1194.  
Endemic, LC, Ir-Tur.
- S. byzantina** K.Koch  
B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1158.  
Euro-Sib.
- S. iberica** M.Bieb. subsp. **iberica** var. **iberica**  
B3 Afyon: Emirdağ, Arpalı hill, under *Quercus cerris*, 1400-1500 m, 12 vi 1999, YBK 1498.
- S. annua** (L.) L. subsp. **annua** var. **lycaonica** Bhattacharjee  
B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1154.  
Ir-Tur.
- Nepeta italica** L.  
B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1174.
- N. nuda** L. subsp. **nuda**  
B3 Afyon: Emirdağ, Boztepe hill environs, rocky, 1400-1500 m, 17 iv 1999, YBK 1161.
- Prunella laciniata** (L.) L.  
B3 Afyon: Emirdağ, Arpalı hill, under *Quercus cerris*, 1400-1500 m, 12 vi 1999, YBK 1200.  
Euro-Sib.
- Clinopodium vulgare** L. subsp. **vulgare**  
B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1083.
- Acinos rotundifolius** Pers.  
B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1156.
- Thymus zygioides** Griseb. var. **lycaonicus** (Célak.) Ronniger  
B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1173.  
Endemic, LC, E. Medit.
- T. leucostomus** Hausskn. & Velen. var. **argillaceus** Jalas  
B3 Afyon: Emirdağ, Kırıktaş, steppe, 1100-1200 m, 27 v 2000, YBK 1157.
- T. longicaulis** C.Presl subsp. **chaubardii** (Boiss.& Heldr. ex Rchb.) Jalas var. **chaubardii**  
B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1199.
- Ziziphora tenuior** L.  
B3 Afyon: Emirdağ, Çaykışla village, Dandindere Nature Reserve, *Cedrus libani* forest, 1300-1400 m, 25 vi 2000, YBK 1170.  
Ir-Tur.
- Z. taurica** M.Bieb. subsp. **cleonioides** (Boiss.) P.H.Davis  
B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1169.  
Endemic, NT, E. Medit.
- Salvia tomentosa** Mill.  
B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999.
- S. cadmica** Boiss.  
B3 Afyon: Emirdağ, Boztepe hill, meadow, 1750 m, 17 iv 1999, YBK 1189.  
Endemic, LC.
- S. cryptantha** Montbret & Aucher ex Benth.  
B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1159.  
Endemic, LC, Ir-Tur.
- S. sclarea** L.  
B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1191.
- S. aethiopsis** L.  
B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1167.
- S. frigida** Boiss.  
B3 Afyon: Emirdağ, Kırıktaş, steppe, 1100-1200 m, 27 v 2000, YBK 1160.  
Ir-Tur.
- S. candidissima** Vahl subsp. **occidentalis** Hedge  
B3 Afyon: Emirdağ, Türkmenköy village, Çaydere, beside water, 1150 m, 30 vi 2000, YBK 1166.  
Ir-Tur.
- S. dichroantha** Stapf  
B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1192.  
Endemic, LC, Ir-Tur.

#### PLUMBAGINACEAE

##### **Plumbago europae** L.

B3 Afyon: Emirdağ, between Gölcük hill and Sinekli plateau, meadow, 1850-1900 m, 26 viii 2000, YBK 1056.

Euro-Sib.

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

B3 Afyon: Emirdağ, Eskiköy village, Balbalkaya hill, rocky, 1350 m, 15 vii 2000, YBK 1079.

Ir-Tur.

#### PLANTAGINACEAE

*Plantago lanceolata* L.

B3 Afyon: Emirdağ, northern part of Karacalar village, steppe, 1200 m, 12 v 2000, YBK 1232.

#### THYMELAEACEAE

*Daphne oleoides* Schreb. subsp. *oleoides*

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1231.

#### SANTALACEAE

*Thesium arvense* Horv.

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1058.

Euro-Sib.

#### ARISTOLOCHIACEAE

*Aristolochia maurorum* L.

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1091.

Ir-Tur.

#### EUPHORBIACEAE

*Euphorbia stricta* L.

B3 Afyon: Emirdağ, Elmalı plateau, stony slopes, 1600-1700 m, 12 viii 2000, YBK 1029.

Euro-Sib.

*E. coniosperma* Boiss. & Buhse

B3 Afyon: Emirdağ, Çaykışla village, Dandindere Nature Reserve, Cedrus libani forest, 1300-1400 m, 25 vi 2000, YBK 1048.

Ir-Tur.

*E. rhabdotosperma* Radcl.-Sm.

B3 Afyon: Emirdağ, Balcam village, Oknişanı hill, very steep rocks, 1500 m, 30 iv 2000, YBK 1049.

Ir-Tur.

*E. szovitsii* Fisch. & C.A.Mey. var. *szovitsii*

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1404.

Ir-Tur.

*E. macroclada* Boiss.

B3 Afyon: Emirdağ, Çaykışla village, Dandindere Nature Reserve, Cedrus libani forest, 1300-1400 m, 25 vi 2000, YBK 1401.

Ir-Tur.

#### URTICACEAE

*Urtica dioica* L.

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1239.

Euro-Sib.

#### MORACEAE

*Ficus carica* L. subsp. *carica*

B3 Afyon: Emirdağ, Dişkaya hill, rocky, 1750 m, 7 vii 2000, YBK 1139.

#### JUGLANDACEAE

*Juglans regia* L.

B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1024.

#### FAGACEAE

*Quercus vulcanica* [Boiss. & Heldr. ex ] Kotschy

B3 Afyon: Emirdağ, Kuzkuyu stream, stony, 1300-1500 m, 8 v 1999, YBK 1428.

Endemic, NT, E. Medit.

*Q. infectoria* Olivier subsp. *boissieri* (Reut.) O.Schwarz

B3 Afyon: Emirdağ, Arpalı hill, 1400-1500 m, 12 vi 1999, YBK 1430.

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

Arpalı tepe, under *Quercus cerris*, 1400-1500 m, 12 vi 1999, YBK 1429.

Medit.

#### SALICACEAE

*Salix alba* L.

B3 Afyon: Emirdağ, Türkmenköy village, Çaydere, beside water, 1150 m, 30 vi 2000, YBK 1434.

Euro-Sib.

#### RUBIACEAE

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

B3 Afyon: Emirdağ, Çaykışla village, Çiftözü, rocky, 1400 m, 30 vi 2000, YBK 1026.

Endemic, LC.

*A. arvensis* L.

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1436.

Medit.

*Galium verum* L. subsp. *verum*

B3 Afyon: Emirdağ, Arpalı hill, under *Quercus cerris*, 1400-1500 m, 12 vi 1999, YBK 1435.

Euro-Sib.

*G. canum* Req. ex DC. subsp. *canum*

B3 Afyon: Emirdağ, Eskiköy village, Balbalkaya hill, rocky, 1350 m, 15 vii 2000, YBK 1399.

E. Medit.

*Cruciata taurica* (Pall. ex Willd.) Ehrend

B3 Afyon: Emirdağ, Boztepe hill environs, rocky, 1400-1500 m, 17 iv 1999, YBK 1068.

Ir-Tur.

*Rubia tinctorum* L.

B3 Afyon: Emirdağ, Kırıқтаş, steppe, 1100-1200 m, 27 v 2000, YBK 1437.

Ir-Tur.

#### MONOCOTYLEDONES

#### ARACEAE

*Arum elongatum* Steven subsp. *elongatum*

B3 Afyon: Emirdağ, Arpalı tepe foothills, beside *Quercus* forest, 110-1400 m, 17 vii 1999, YBK 1064.

Ir-Tur.

#### LILIACEAE

*Asparagus officinalis* L.

B3 Afyon: Emirdağ, Boztepe hill environs, rocky, 1400-1500 m, 17 iv 1999, YBK 1182.

*Polygonatum orientale* Desf.

B3 Afyon: Emirdağ, Kayısısalığı stream, Quercus forest, 1300 m, 13 v 2000, YBK 1127.

*Allium olympicum* Boiss.

B3 Afyon: Emirdağ, Malı hill, rocky, 1800-1900 m, 29 vii 2000, YBK 1023.

Endemic, LC, Euxine.

*A. paniculatum* L. subsp. *paniculatum*

B3 Afyon: Emirdağ, Türkmenköy village, Çaydere, beside water, 1150 m, 30 vi 2000, YBK 1020.

Medit.

*A. flavum* L. subsp. *tauricum* (Besser ex Rchb.) Stearn var. *tauricum*

B3 Afyon: Emirdağ, Elmalı plateau, stony slopes, 1600-1700 m, 12 viii 2000.

Medit.

*A. stamineum* Boiss.

B3 Afyon: Emirdağ, Arpalı tepe foothills, beside Quercus forest, 110-1400 m, 17 vii 1999, YBK 1021.

E. Medit.

*A. atrovioleaceum* Boiss.

B3 Afyon: Emirdağ, Demircili village, Gökkoyak, steppe, 1100 m, 10 vi 2000, YBK 1273.

*A. scorodoprasum* L. subsp. *rotundum* (L.) Stearn

B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1054.

Medit.

*A. guttatum* Steven subsp. *guttatum*

B3 Afyon: Emirdağ, Malı hill, rocky, 1800-1900 m, 29 vii 2000, YBK 1506.

*Scilla bifolia* L.

B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1106.

Medit.

*Ornithogalum pyrenaicum* L.

B3 Afyon: Emirdağ, Arpalı hill, under Quercus cerris, 1400-1500 m, 12 vi 1999, YBK 1183.

*O. oligophyllum* E.D.Clarke

B3 Afyon: Emirdağ, Emirdede hill (top),

rocky, 2100 m, 19 v 2000, YBK 1275.

*O. platyphyllum* Boiss.

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1499.

Ir-Tur.

*O. orthophyllum* Ten.

B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1276.

*O. armeniacum* Baker

B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1184.

E. Medit.

*O. nutans* L.

B3 Afyon: Emirdağ, Güveççi village, Çayönü, steppe, 1300 m, 30 vi 2000, YBK 1272.

E. Medit.

\**Muscari longipes* Boiss.

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1277.

Ir-Tur.

*M. armeniacum* Leichtlin ex Baker

B3 Afyon: Emirdağ, Boztepe hill environs, rocky, 1400-1500 m, 17 iv 1999, YBK 1181.

*M. neglectum* Guss.

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1274.

*Fritillaria pinardii* Boiss.

B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1271.

Ir-Tur.

*Gagea foliosa* (J. & C.Presl) Schult. & Schult. f.

B3 Afyon: Emirdağ, Çomaklı plateau, rocky place, 1700-1800 m, 11 iii 1999, YBK 1107.

*Colchicum szovitsii* Fisch. & C.A.Mey.

B3 Afyon: Emirdağ, Kuşkalesi hill (eastern part), stony slopes, 1600 m, 3 iii 2000, YBK 1177.

Ir-Tur.

*Merendera trigyna* (Steven ex Adam) Stapf

B3 Afyon: Emirdağ, Kuşkalesi hill (eastern part), stony slopes, 1600 m, 3 iii 2000, YBK 1108.

Ir-Tur.

AMARYLLIDACEAE

*Galanthus elwessii* Hook. f.

B3 Afyon: Emirdağ, Çomaklı plateau, rocky place, 1700-1800 m, 11 iii 1999, YBK 1176.

E. Medit.

IRIDACEAE

*Iris pseudocorus* L.

B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1178.

*Crocus ancyrensis* (Herb.) Maw

B3 Afyon: Emirdağ, Boztepe foothills, steppe, 1750 m, 1 iv 2000, YBK 1268.

Endemic, LC, Ir-Tur.

*C. chrysanthus* (Herb.) Herb.

B3 Afyon: Emirdağ, Çomaklı plateau, rocky place, 1700-1800 m, 11 iii 1999, YBK 1105.

*C. biflorus* Mill. subsp. *tauri* (Maw) B.Mathew

B3 Afyon: Emirdağ, Çomaklı plateau, slopes, 1800-1900 m, 26 v 1999, YBK 1175.

Ir-Tur.

ORCHIDACEAE

*Cephalanthera rubra* (L.) Rich.

B3 Afyon: Emirdağ, Kırıktaş, steppe, 1100-1200 m, 27 v 2000, YBK 1270.

*Platanthera chlorantha* (Custer) Rchb.

B3 Afyon: Emirdağ, Dumluca plateau, steep slopes, 1700-1900 m, 26 vi 1999, YBK 1180.

*Orchis mascula* (L.) L. subsp. *pinetorum* (Boiss. & Kotschy) Camus

B3 Afyon: Emirdağ, Boztepe hill environs, rocky, 1400-1500 m, 17 iv 1999, YBK 1179.

E. Medit.

*O. palustris* Jacq.

B3 Afyon: Emirdağ, Kayısısalığı stream, Quercus forest, 1300 m, 13 v 2000, YBK 1269.

#### JUNCACEAE

*Juncus inflexus* L.

B3 Afyon: Emirdağ, Dumluca plateau, meadow, 1700 m, 8 vii 2000, YBK 1442.

#### CYPERACEAE

*Cyperus glaber* L.

B3 Afyon: Emirdağ, Malı hill, rocky, 1800-1900 m, 29 vii 2000, YBK 1443.

*Carex halleriana* Asso

B3 Afyon: Emirdağ, Arpalı hill, under Quercus cerris, 1400-1500 m, 12 vi 1999, YBK 1444.

#### GRAMINEAE

*Agropyron cristatum* (L.) Gartner subsp. *pectinatum* (M.Bieb.) Tzvelev var. *pectinatum*

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1464.

\**Elymus hispidus* (Opiz & Melderis) subsp. *hispidus*

B3 Afyon: Emirdağ, Çaykışla village, Dandindere Nature Reserve, Cedrus libani forest, 1300-1400 m, 25 vi 2000, YBK 1477.

*Eremopyrum bonaepartis* (Spreng.) Nevski subsp. *hirsutum* (Bertol.) Melderis

B3 Afyon: Emirdağ, Türkmenköy village, Altahır, steppe, 1200 m, 10 vi 2000, YBK 1455.

\**E. orientale* (L.) Jaub. & Spach

B3 Afyon: Emirdağ, Türkmenköy village, Çaydere, water side, 1150 m, 30 vi 2000, YBK 1478.

*Amblyopyrum muticum* (Boiss.) Eig var. *loliaceum* (Jaub.& Spach) Eig

B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1446.

*Aegilops triuncialis* L. subsp. *triuncialis*

B3 Afyon: Emirdağ, Çaykışla village, Çiftözü, rocky, 1400 m, 30 vi 2000, YBK 1479.

*Triticum aestivum* L.

B3 Afyon: Emirdağ, Karacalar-Demircili-

Güveçci road, road side, 1100 m, 25 vi 2000, YBK 1447.

*T. vulgare* L.

B3 Afyon: Emirdağ, Eskiköy village, Balbalkaya hill, rocky, 1350 m, 15 vii 2000, YBK 1456.

\**Leymus cappadicus* (Boiss. & Balansa) Melderis

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1480.

*Secale cereale* L. subsp. *cereale*

B3 Afyon: Emirdağ, Çaykışla village, Dandindere Nature Reserve, Cedrus libani forest, 1300-1400 m, 25 vi 2000, YBK 1457.

*Hordeum murinum* L. subsp. *glaucum* (Steud.) Tzvelev

B3 Afyon: Emirdağ, Kayısısalığı stream, Quercus forest, 1300 m, 13 v 2000, YBK 1450.

\**H. distichom* L.

B3 Afyon: Emirdağ, Elmalı plateau, stony slopes, 1600-1700 m, 12 viii 2000, YBK 1476.

*H. geniculatum* All.

B3 Afyon: Emirdağ, Malı hill, rocky, 1800-1900 m, 29 vii 2000, YBK 1459.

*H. bulbosum* L.

B3 Afyon: Emirdağ, between Gölcük hill and Sinekli plateau, meadow, 1850-1900 m, 26 viii 2000, YBK 1449.

*Taeniatherum caput-medusae* (L.) Nevski subsp. *crinitium* (Schreb.) Melderis

B3 Afyon: Emirdağ, Kırıktaş, steppe, 1100-1200 m, 27 v 2000, YBK 1460.

*Bromus japonicus* Thunb. subsp. *anatolicus* (Boiss. & Heldr.) Péntzes

B3 Afyon: Emirdağ, Karacalar-Demircili-Güveçci road, road side, 1100 m, 25 vi 2000, YBK 1452.

*B. sterilis* L.

B3 Afyon: Emirdağ, Güveçci village, Çayönü, steppe, 1300 m, 30 vi 2000, YBK 1451.

*B. cappadocicus* Boiss. & Balansa subsp. *cappadocicus*

B3 Afyon: Emirdağ, Karacalar-Demircili-

Güveçci road, road side, 1100 m, 25 vi 2000, YBK 1461.

\**B. danthoniae* Trin.

B3 Afyon: Emirdağ, Emirdede hill (top), rocky, 2100 m, 19 v 2000, YBK 1445.

*B. tomentellus* Boiss.

B3 Afyon: Emirdağ, Çaykışla village, Çiftözü, rocky, 1400 m, 30 vi 2000, YBK 1462.

*B. tectorum* L.

Türkmenköy, Altahır, steppe, 1200 m, 10 vi 2000, YBK 1453.

\**Avena sativa* L.

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1463.

*A. sterilis* L. subsp. *ludoviciana* (Durie) Nyman

B3 Afyon: Emirdağ, Türkmenköy village, Çaydere, beside water, 1150 m, 30 vi 2000, YBK 1467.

*Arrehenatherum palaestium* Boiss.

B3 Afyon: Emirdağ, northern part of Karacalar village, steppe, 1200 m, 12 v 2000, YBK 1474.

*Alopecurus arundinaceus* Poir.

B3 Afyon: Emirdağ, Karacalar-Demircili-Güveçci road, road side, 1100 m, 25 vi 2000, YBK 1466.

\**Phleum montanum* K.Koch subsp. *montanum*

B3 Afyon: Emirdağ, northern part of Karacalar village, steppe, 1200 m, 12 v 2000, YBK 1481.

*Festuca valesiaca* Schleich. ex Gaudin

B3 Afyon: Emirdağ, Kuşkalesi hill (eastern part), stony slopes, 1600 m, 3 iii 2000, YBK 1482.

*Poa annua* L.

B3 Afyon: Emirdağ, northern part of Karacalar village, steppe, 1200 m, 12 v 2000, YBK 1468.

*P. trivialis* L.

B3 Afyon: Emirdağ, Güveçci village, Çayönü, steppe, 1300 m, 30 vi 2000, YBK 1475.

*P. timoleonis* Heldr. & Boiss.

B3 Afyon: Emirdağ, Gölcük plateau, meadow, 1450 m, 23 iv 2000, YBK 1483.

***P. bulbosa* L.**

B3 Afyon: Emirdağ, Çaykışla village, Dandin stream, bed of stream, 1100-1300 m, 10 vi 2000, YBK 1469.

***Dactylis glomerata* L. subsp. *hispanica* (Roth) Nyman**

B3 Afyon: Emirdağ, Çaykışla village, Dandindere Nature Reserve, *Cedrus libani* forest, 1300-1400 m, 25 vi 2000, YBK 1484.

***Briza humilis* M.Bieb.**

B3 Afyon: Emirdağ, around Karacalar village, steppe-rocky, 1000-1200 m, 27 v 2000, YBK 1470.

***Melica ciliata* L. subsp. *ciliata***

B3 Afyon: Emirdağ, Balcam village, Oknişanı hill, very steep rocks, 1500 m, 30 iv 2000, YBK 1471.

**\**M. persica* Kunth subsp. *inaequiglumis* (Boiss.) Bor**

B3 Afyon: Emirdağ, Türkmenköy village, Çaydere, beside water, 1150 m, 30 vi 2000, YBK 1473.

***Puccinellia distans* (Jacq.) Parl. subsp. *distans***

B3 Afyon: Emirdağ, Kırıkaş, steppe, 1100-1200 m, 27 v 2000, YBK 1472.

***Echinaria capitata* (L.) Desf.**

B3 Afyon: Emirdağ, Gölcük plateau, meadow, 1450 m, 23 iv 2000, YBK 1485.

***Phragmites australis* (Cav.) Trin. ex Steudel**

B3 Afyon: Emirdağ, Türkmenköy village, Altıahır, steppe, 1200 m, 12 vi 2000, YBK 1465.