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Flora of Karagüney Mountain (Kırıkkale)

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Abstract: This paper deals with a floristic study of Karagüney Mountain (Kırıkkale/Turkey). The study was carried out during 1989-1991 and 2500 vascular plant samples were collected. Eight hundred and sixty-eight taxa of 378 genera have been identified. *Fabaceae*, *Asteraceae* and *Poaceae* are the largest families and *Astragalus* L., *Silene* L. and *Salvia* L. are the largest genera in the area. The endemism rate of the area is 13.1%. The classification of the taxa into three main chorological units shows that Irano-Turanian elements are predominant. Threatened categories were proposed for 109 taxa according to IUCN categories.

Key Words: Flora, Karagüney Mountain, Kırıkkale, Turkey

Karagüney Dağı'nın (Kırıkkale) Florası

Özet: Bu makale Karagüney Dağı'nda (Kırıkkale/Türkiye) yapılan floristik bir çalışmayı sunmaktadır. Floristik çalışma, 1989-1991 yılları arasında gerçekleştirilmiş ve 2500 damarlı bitki örneği toplanmıştır. Bu bitkilerin teşhisi ile 378 cinsle ait toplam 868 takson tespit edilmiş, *Fabaceae*, *Asteraceae* ve *Poaceae* sırasıyla en büyük familya, *Astragalus* L., *Silene* L. ve *Salvia* L. ise yine sırasıyla en büyük cinsler olarak belirlenmiştir. Alanın endemizm oranı %13.1'dir. Tespit edilen taksonların fitocoğrafik bölgelere dağılımında İrano-Turanian elementleri baskındır. IUCN tehlike kategorilerine göre 109 taksonun tehlike durumu değerlendirilmiştir.

Anahtar Sözcükler: Flora, Karagüney Dağı, Kırıkkale, Türkiye

Introduction

The study area lies in the Central Anatolian steppe. Davis (1976) places the area in the moderately known category with respect to flora. However, the area has received little attention by botanists. Only one trip to the area by İnal to collect the *Quercus ithaburensis* Decne. specimens recorded in the Flora of Turkey has been done (Hedge & Yaltırık, 1985). On the other hand, particular areas of Turkey, such as the Taurus mountain ranges, Hakkari and Sivas were more intensively examined. Davis (1976) states that these areas are rich in endemic taxa and new species.

Since steppe areas have long been neglected, this study was undertaken to give more attention to steppes and the Kırıkkale region so as to understand their floristic composition and the environmental changes caused by human impact.

Investigated area

The main part of the study area is situated in Kırıkkale province within the A4 square according to the Davis' grid

system (Davis, 1965-1985). The rest of the area is situated in Çankırı province in the A5 square. The area is bounded to the south by the Samsun road, E88, to the north-west by the Kızılırmak River and to the east by the Delice River (Fig. 1). The Karagüney area is dominated by small mountain ranges lying in a SW-NE direction and the highest peak is called Koçubaba (1374 m).

The area is mainly covered by gypsum facies rocks of Oligo-Miocene. In addition to this, some sedimentary and magmatic rocks are present. Mesozoic ophiolite series are the oldest rocks the area and they crop out around Kuru and Yenilli villages. The western parts of the area (Hıdırşeyh and Pazarlık villages) are formed by Eocene sedimentary rocks. Other sedimentary units of the area belong to the Neogene continental rocks. Granites are observed around the Sulakyurt, Alişeyh and Kavak settlement areas. There are some small igneous rock crops around Büyükavşar, Delice and to the south of Delice. The youngest geological unit of the area belongs to Quaternary period alluvium. These units extend through the streambeds (Mayer-Gossner, 1959).

In the area there are five main soil types: red-brown, brown, brown without lime, alluvial and hydromorphic soils (KHT, 1974). The area is mainly covered by the first three types of soil. The Sulakyurt, Koru, Yeşilyazı, Cingeyli, Tokuş Dağı and Irmakkaralısı settlements are covered by red-brown soil, which covers the largest part of the area. The vegetation of this area is dominated by *Quercus* L. scrub and open steppe. The Balışeyh, Beşbiçak, Koru, Evliyali, Güvendik, Akkuzulu, and Akkuyu settlements are covered by brown soils. These localities are used as fields. Pazarcık, Faraşlı and Sarıkızlı villages have small extensions of brown soil without lime. The Kızılırmak and Delice rivers and their environs, forming a narrow belt, have alluvial soils. These areas are used as fields or grazing lands. In the region of İzzettin, Büyükavşar and Irmakkaralısı hydromorphic soil is present in small extensions.

Meteorological data are only available from one station in the area obtained between 1962 and 1991 in Kırıkkale (775 m) (MİGM, 2000). The mean annual temperature is 12.2 °C and precipitation is 384 mm. The values of "M" and "m" of the hottest and coldest months were calculated to be 18.4 °C and -2.4 °C respectively (Yurdakulol et al., 1990). The dry period is between the end of May and the end of October. The coldest month is January with a mean temperature of -0.1 °C. With respect to Emberger's climatic divisions modified for Turkey by Akman (1990), the area belongs to the Mediterranean zone, with semi-xeric winters.

Vegetation outline

The study area is covered by fields, open steppes, and *Quercus* scrub. The largest part of the area is covered by fields surrounding Karagüney Mountain. The altitude of the largest area ranges from 650 to 950 m but in some places it reaches 1200 m. Crop plants are dominated by *Triticum aestivum* L., *Hordeum vulgare* L., *Helianthus annuus* L., *Beta vulgaris* L., *Citrullus lanatus* (Thunb.) Matsum. et Nakai, *Cucumis melo* L. and other cultivated plants. Fields in the study area play host to a wide variety of weeds and other therophytes such as *Boreava orientalis* Jaub. et Spach, *Wiedemannia orientalis* Fisch. et C.A.Mey., *Ranunculus arvensis* L., *Holosteum umbellatum* Vill., *Arabis nova* Vill., *Portulaca oleracea* L., *Secale cereale* L. and *Anethum graveolens* L. Another part of the study area lies between the fields and the upper parts of Karagüney Mountain. The elevation of this area ranges from 900 to 1300 m and is covered by

steppes which can be divided into two groups: grass steppes and tragacanthic steppes. *Festuca valesiaca*, *Aegilops* L. spp., *Bromus* L. spp., *Taeniatherum caput-medusae* (L.) Nevski subsp. *crinitum* (Schreb.) Melderis, *Cynodon dactylon* (L.) Pers. var. *villosus* Regel, *Koeleria cristata* (L.) Pers., *Lolium perenne* L. and other grasses are the dominant elements of the grass steppes. The grass steppes also include some dicotyledoneous plants such as *Astragalus xylobasis* Freyn et Bornm. var. *angustus* (Freyn & Sint.) Freyn et Bornm., *Vicia sativa* L. subsp. *nigra* (L.) Ehrh., *Reseda lutea* L. var. *lutea*, *Polygala pruinosa* Boiss. subsp. *pruinosa*, *Helianthemum canum* (L.) Baumg., *Fumana aciphylla* Boiss. and others. On the other hand, the tragacanthic steppes are mainly composed of *Astragalus microcephalus* Willd., *A. plumosus* Willd. var. *plumosus* and *A. strictifolius* Boiss. var. *kutepovii* Sirj. Stands of these communities can be seen in the Koçubaba, Sulakyurt, Büyükavşar and Kavak regions. While *Acantholimon acaesum* (Willd.) Boiss. var. *acaesum* forms associations in Koçubaba town, *A. caesareum* Boiss. et Bal. forms associations around Ambardere village. The rest of the area is located in the highest part of Karagüney Mountain at an elevation of 1100-1374 m and it is covered by *Quercus pubescens* Willd. and *Quercus cerris* L. var. *cerris*. This oak scrub includes some shrubs such as *Prunus cocomilia* Ten., *Juniperus oxycedrus* L., *Pyrus elaeagnifolia* Pallas, *Cotoneaster nummularia* Fisch. et C.A.Mey., *Amelanchier rotundifolia* (Lam.) Dum.-Cours., *Rosa canina* L., *Crataegus orientalis* Pallas ex M.Bieb., and *Jasminum fruticans* L. The highest part of the area is interrupted by plantations of *Pinus nigra* Arn. The herb layer of the scrub includes *Astragalus vulnerariae* DC., *Globularia trichosantha* Fisch. et C.A.Mey., *Carex* L. spp. *Poa alpina* L. subsp. *fallax* F.Hermann and some other plants.

There are a lot of wet places fed by underground water or springs characterised by a different vegetation mainly including grasses such as *Glyceria plicata* (Fr.) Fr., *Poa trivialis* L., *Phleum montanum* K.Koch subsp. *montanum*, *Carex* spp., and some dicotyledoneous plants such as *Epilobium angustifolium* L., *Veronica anagallis-aquatica* L., *Cirsium arvense* (L.) Scop. subsp. *vestitum* (Wimmer & Grab.) Petr. A few small streams formed by the melting snows originate from higher levels of Karagüney Mountain. These streams join the Kızılırmak and Delice rivers and the Çoruh stream.

Materials and Methods

Many botanical trips were made to the area from 1989 to 1991. The field works resulted in the collection of 2500 vascular plants. These specimens were identified basically using the Flora of Turkey (Davis, 1965-1985; Davis et al, 1988; Güner et al, 2000) and other floristic books (Tutin et al, 1964-1979; Pignatti, 1982; Townsend et al, 1968; Townsend & Guest, 1968-1985; Komarov, 1948; Rechinger, 1966; Meikle, 1977-1985; Zohary, 1966-1986). The floristic list includes natural, naturalised, alien and widely cultivated plants in the region. Cultivated plants are indicated by an asterisk and they are not considered in the endemism ratio. Taxonomic data are presented in alphabetical order. Author abbreviations follow Brummitt & Powell (1992).

Threatened categories are proposed for endemic and some non-endemic taxa according to IUCN risk categories (IUCN, 2001). The reasons for these threats are discussed after the taxa. Phytogeographical regions of the taxa were evaluated according to Davis (1965) and Takhtajan (1986), but mainly Davis' records are taken into consideration. Abbreviations used in the text are as follows: AAD: Ali A. Dönmez; AG: Adil Güner (a field trip carried out on June 2-3, 1990 was supervised by Güner); B: Cihan Bircan (a few samples were collected from the Büyükavşar town area by C. Bircan); En.: endemic; LC: least concern; VU: vulnerable; EN: endangered; CR: critically endangered; Ir.-Tur.: Irano-Turanian element, Medit.: Mediterranean element; Euro-Sib.: Euro-Siberian element. At least one sample for each taxon is deposited at HUB, and duplicates were given to E, K, GAZI and ANK.

Results and Discussion

The identification of 2500 vascular plant specimens collected in this study revealed 868 taxa belonging to 378 genera present in the area. A summary of the statistics is presented in Table 1. The largest families in the area are *Fabaceae* (102 species), *Asteraceae* (99 sp.), *Poaceae* (72 sp.), *Lamiaceae* (54 sp.) and *Brassicaceae* (44 sp.). According to the statistical analysis of Turkish flora (Davis & Tan, 1988) *Asteraceae* is the largest family followed by *Fabaceae*. However, in the present floristic study the opposite has been recorded. The worldwide distribution of these two families shows that they have a similar distribution pattern (Heywood, 1978). Both families are very common in Turkey. Therefore, the disagreement between Davis & Tan's and my views are not related to the distribution pattern of these families. This contradiction would depend on the habitats of the area. Fields cover larger areas in the region and they play host to annual plants. *Fabaceae* have 102 species and the annuals (44 species) to perennials (+biennial- 58 sp.) ratio is 0.76 while *Asteraceae* have 99 species and the annuals (33 sp.) to perennials (+biennial- 66 sp.) ratio is 0.50. Some genera (*Trigonella* L., *Lathyrus* L., *Vicia* L. etc.) of the *Fabaceae* are dominated by annual species. The high ratio of annual to perennials (+biennials) of the *Fabaceae* supports this proposal and the number of annual species of the *Fabaceae* are nearly double that of the *Asteraceae*. When the results of this study are compared with those of other floristic studies (Ekim & Düzenli, 1983; Erik, 1994; Erik, 1999; Hamzaoğlu, 1998) with respect to the largeness of the families, some similarities can be seen (Table 2). The largest genera are *Astragalus* L. (27 sp.), *Silene* L. (14 sp.), *Salvia* L. (12 sp.), *Trigonella* L. (11 sp.) and *Centaurea* L. (9 sp.) respectively on Karagüney Mountain. However, in the

Systematic Unit	Families	Genera	Species	Subsp.	Varieties	Taxa	Endemics
Pteridophyta	2	2	2	-	-	2	-
Spermatophyta	84	376	845	19	4	866	106
Gymnospermae	3	4	5	-	-	5	-
Angiospermae	81	372	838	19	4	861	106
Dicotyledones	72	349	703	18	4	725	97
Monocotyledones	9	23	135	1	-	136	9
Total	86	378	845	18	4	868	106

Table 1. Floristic composition of the Karagüney Mountain.

	Karagüney	Beytepe	Karagöl	İncebel	Kervansaray
<i>Fabaceae</i>	102	43	34	-	66
<i>Asteraceae</i>	99	64	50	-	82
<i>Poaceae</i>	72	26	28	-	59
<i>Lamiaceae</i>	54	35	28	-	42
<i>Brassicaceae</i>	44	36	19	-	46

Table 2. Comparisons of the floristic studies carried out in Central Anatolia with respect to size of the families.

Table 3. Risk categories of endangered taxa, with most of them being endemics.

Categories	LC	VU	EN	CR	Total
Taxa	98	7	3	1	109

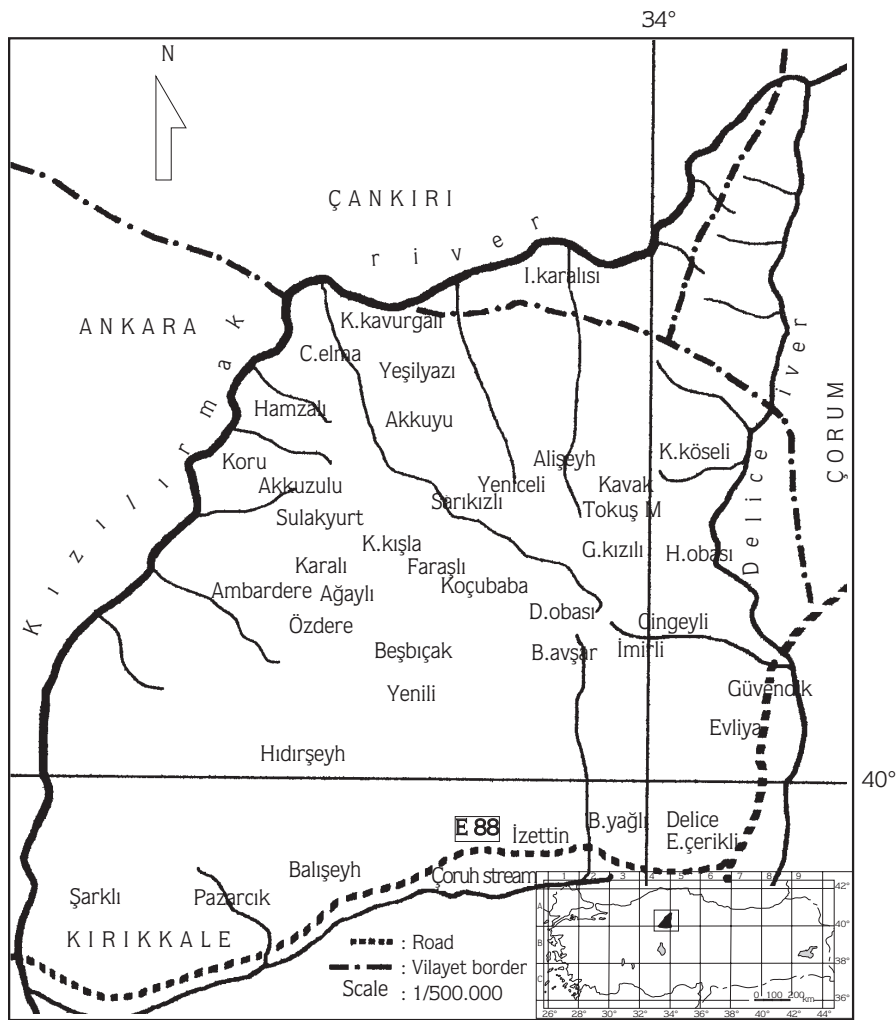


Figure 1. Map of Karagüney Mountain showing the collection localities.

statistical analysis of the Flora of Turkey *Astragalus* is given as the first genus while *Verbascum* L., *Centaurea* L. and *Allium* L. are given as the second, third and fourth genera respectively. These genera have more perennial species than annual ones. Therefore, fields are not suitable habitats for these genera and their representatives are rare in the study area.

In the study area, 106 taxa are endemic to Turkey and the ratio of endemism is 13.1%. As the majority of the area is covered by fields, most of the endemic taxa grow in the steppe and scrubs. Therefore, the steppes seem to be of more importance for the conservation of these endemic taxa.

Pinus nigra is widely planted in Pazarcık village, Özdere region, Koçubaba town and Büyükyazlı town and around the Delice town area. These areas support many endemic steppe species of Central Anatolia. Despite government legislation to protect the forest and its environs, field areas are mainly expanding into steppe borders illegally. Human activities unfortunately, have left disturbed steppes in the area.

A total of 109 taxa, all endemics, and 29 non-endemics were evaluated according to IUCN risk categories. The results are summarised in Table 3. Ninety-nine taxa are placed in the least concern categories, while 7 taxa are put in the vulnerable category, and 3 in the endangered. Threats to the taxa in the endangered category are discussed under the related taxa. On the other hand, the main problems for the taxa included in the least concern and vulnerable categories are clearing and over-grazing on the steppe. An updated version of the Red Data Book for the vascular plants of Turkey was published by Ekim et al. (2000). There are some disagreements between the authors of that book and the present study on the evaluation of the risk categories for some taxa. This is because they have considered the Turkish flora as a whole; while my

observations are based only on the study area. Meanwhile, further floristic studies in Turkish flora would contribute more to the Red Data Book in the future. Another reason disagreement is that they have used the criteria of IUCN 1994. However, new criteria have been used in this paper.

An evaluation of the taxa with respect to phytogeographical regions shows the following origins, Irano-Turanian-194 (60 endemics) taxa, Mediterranean-54 (2 endemics) taxa and Euro-Siberian-51 (3 endemics) taxa (Table 4). The rest of the taxa are either cosmopolitan or phytogeographically unknown. The dominance of the Irano-Turanian elements would be expected because the study area lies in the Irano-Turanian region. Similar results were obtained from other floristic studies in Central Anatolia close to Karagüney Mountain. The Irano-Turanian elements seem to be dominant in all areas studied while the Euro-Siberian elements come second in all these areas except Karagüney Mountain. The secondary dominance of the Mediterranean elements can be attributed to the lower altitude and warmer climatic conditions around the Delice River. It is interesting that although the study area is closer to the Euro-Siberian region geographically, the number of Mediterranean elements is higher than that of Euro-Siberian elements. This can be explained by the fact that the area is situated in the Mediterranean climatic zone (Akman, 1990). Thus, more Mediterranean elements which are mostly xeric can be expected. The Euro-Siberian elements, however, are cosmopolitan and they mainly thrive either in wet areas of the steppe or in shady places of the *Quercus* scrub.

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Table 4. The phytogeographical spectrum of the taxa in the area and other areas.

	Irano-Turanian	Medit.	Euro-Siberian	Cosmopolitan and other	Endemism
Karagüney	22,4	6,3	6,1	65,2	13,1
Kervansaray	60	2	3	43	16,8
Beytepe	29	4	5	62	14
İncebel	38	2,5	9	50,5	15
Karagöl	11,6	4,7	17,6	56,4	9,7

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APPENDIX

The Floristic List

PTERIDOPHYTA

ATHYRIACEAE

Cystopteris fragilis (L.) Bernh.

Sulakyurt, Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 10 viii 1989, AAD 1758.

This species grows in shady places and under *Quercus* scrub.

EQUISETACEAE

Equisetum fluviatile L.

Koçubaba, garden, 1100-1200 m, 23 ix 1990, AAD 1539.

SPERMATOPHYTA

GYMNOSPERMAE

CUPRESSACEAE

**Cupressus sempervirens* L.

Balışeyh, around the city, hedge, 600 m, 17 x 1993, AAD 3402.

Medit.

Juniperus oxycedrus L. subsp. *oxycedrus*

Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 1772. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2363. Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2096.

J. excelsa M.Bieb.

Şarklı, empty places in *Quercus* scrub, limestone, 900 m, 26 v 1990, AAD 2093. Şarklı, steppe, limestone, 850 m, 26 v 1990, AAD 2138.

EPHEDRACEAE

Ephedra major Host

Tokuş Mountain, in *Quercus* scrub, 1200-1350 m, 5 viii 1990, AAD 2762.

PINACEAE

Pinus nigra Arn. subsp. *pallasiana* (Lamb.) Holmboe

Tokuş Mountain, in *Quercus* scrub, 1200-1350 m, 5 viii 1990, AAD 2759. Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 1771.

ANGIOSPERMAE

DICOTYLEDONES

ACANTHACEAE

Acanthus hirsutus Boiss.

Hıdırşeyh, steppe areas between fields, 1000 m, 18 vi 1990, AAD 2261-AG.

En.-LC.

ACERACEAE

**Acer negundo* L.

Balışeyh, around the city, hedge, 600 m, 17 x 1993, AAD 4025.

AMARANTHACEAE

Amaranthus retroflexus L.

Koçubaba, fields, 1100-1200 m, 23 ix 1990, AAD 2717.

ANACARDIACEAE

Pistacia atlantica Desf.

Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2206-AG.

P. terebinthus L. subsp. *palaestina* (Boiss.) Engl.

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1197.

Medit.

Rhus coriaria L.

Dağobası, steppe areas between *Quercus* scrub, 900-1100 m, 23 ix 1990, AAD 2832.

APIACEAE

Actinolema macrolema Boiss.

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2383-AG.

Ir.-Tur.

Anethum graveolens L.

Koçubaba, garden, 1100-1200 m, 23 ix 1990, AAD 2712.

Anthriscus nemorosa (Bieb.) Sprengel

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1939.

Artemisia squamata L.

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1856. Hıdırşeyh, steppe areas, 1000 m, 2 vi 1990, AAD 2209-AG.

Berula erecta (Huds.) Coville

Koçubaba, gardens, and fields, 1100-1200 m, 23 ix 1990, AAD 1520.

Bifora radians M.Bieb.

Delice, around the city, fallow fields, sandy places, 650 m, 18 v 1989, AAD 1853. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2424.

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

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2390.

Medit.

Bupleurum cappadocicum Boiss.

Şarklı, empty places in *Quercus* scrub, limestone, 900 m, 26 vi 1990, AAD 2113.

Ir.-Tur.

B. rotundifolium L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 2731.

B. sulphureum Boiss. et Bal.

Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 17 vi 1990, AAD 1976. Pazarlık, steppe areas between fields, 900-1100 m, 2 vi 1990, AAD 2521.

En.-LC, Ir.-Tur.

B. turcicum Snogerup

Büyükyazlı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2603. Kavak to Gözükızıllı, steppe, 740 m, 3 vi 1990, AAD 2783.

En.-LC, Ir.-Tur.

The species is rare in the area and its habitats are under pressure from over-grazing.

Caucalis platycarpus L.

Sulakyurt, Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 2012.

Daucus carota L.

Evlialı to Güvendik, steppe areas between fields, 750-1000 m, 3 vi 1990, AAD 2785. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1525.

Echinophora tournefortii Jaub. et Spach

İmirli to Cingeyli, in *Quercus* scrub, 900-1100 m, 10 viii 1989, AAD 1431. Tokuş Mountain, in *Quercus* scrub, 1200-1350 m, 5 viii 1990, AAD 2773.

Ir.-Tur.

E. tenuifolia L. subsp. *sibthorpiana* (Guss.) Tutin

Evlialı to Güvendik, steppe areas between fields, 750-1000 m, 5 viii 1990, AAD 2787.

Ir.-Tur.

Eryngium billardieri Delar.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 2687.

Ir.-Tur.

Er. campestre L. var. *virens* Link

Dağobası, steppe areas between *Quercus* scrub, 900-1100 m, 23 ix 1990, AAD 2825.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1527.

Falcaria vulgaris Bernh.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1515.

Ferulago pauciradiata Boiss. et Heldr.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 2736.

En.-LC.

F. platycarpa Boiss. et Bal.

Büyükavşar, Ziyaret region, *Pinus nigra* plantation area, 1150 m, 16 vi 1990, B 1430!

En.-LC, Ir.-Tur.

Two *Ferulago* species grow only in steppe areas near fields. Their habitats are under threat due to the enlargement of fields and over-grazing.

Malabaila secacul Banks et Sol.

Yeniceli to Ağaylı, steppe, 800 m, 17 vi 1990, AAD 2461.

Opopanax hispidus (Friv.) Gris.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 2671.

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

Koçubaba, garden, 1100-1200 m, 23 ix 1990, AAD 1537.

Peucedanum palimbioides Boiss.

Sulakyurt, Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 2017. Gözükızıllı to Hacıobası, steppe areas between fields, 710 m, 24 vi 1990, AAD 2326.

En.-LC, Ir.-Tur.

***Pimpinella anisum** L.

Koçubaba, garden, 1100-1200 m, 23 ix 1990, AAD 2689b.

Scandix pecten-veneris L.

Yeşilyazı, streamside, meadows, 800 m, 8 iv 1989, AAD 1067. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 1678.

S. stellata Banks et Sol.

Delice, around the Delice river, sandy places, 600 m, 10 viii 1989, AAD 1939. Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2142.

Seseli tortuosum L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1448.

The specimens have variations in the colour of their vegetative parts. While some specimens are light green, others are dull purplish.

Torilis japonica (Houtt.) DC.

Koçubaba, garden, and fields, 1100-1200 m, 23 ix 1990, AAD 1486.

T. leptophylla (L.) Reichb.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1485. Pazarçık, steppe areas between fields, 900-1100 m, 2 vi 1990, AAD 2185.

Turgenia latifolia (L.) Hoffm.

Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1849.

Zosima absinthifolia (Vent.) Link

Koçubaba, mixed *Quercus* forest, 1300-1370 m 30 iv 1989, AAD 2662. Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1196.

APOCYNACEAE

Trachomitum venetum (L.) Woodson subsp. *sarmatiense* (Woodson) Avet.

Tokuş Mountain, in *Quercus* scrub, 1200-1350 m, 5 viii 1990, AAD 2748.

Medit.

Vinca herbacea Waldst. et Kit.

Yeşilyazı, streamside, meadows, 800 m, 8 iv 1989, AAD 1047. Çankırı: Irmakaralısı, steppe areas between fields, 800 m, 31 iii 1990, AAD 1712.

ARISTOLOCHIACEAE

Aristolochia maurorum L.

Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1038. Sulakyurt, around the city, in *Quercus* scrub, 800-1100 m, 25 vii 1990, AAD 1767.

Ir.-Tur.

ASCLEPIADACEAE

Cynanchum acutum L. subsp. *acutum*

Evlialı to Güvendik, steppe areas between fields, 750-1000 m, 5 viii 1990, AAD 1616. Karaköseli, steppe areas between fields, 800 m, 10 viii 1989, AAD 2743.

Vincetoxicum canescens (Willd.) Decne. subsp. *canescens*

Gözükızıllı to Hacıobası, steppe areas between fields. 710 m, 24 vi 1990, AAD 2578.

Ir.-Tur.

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

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2414. Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2094.

ASTERACEAE

Achillea arabica Kotschy (Valant-Vetschera, 1999).

Büyükyağlı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2593.

A. cappadocica Hausskn. et Bornm.

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 1791-AG.

En.-LC, Ir.-Tur.

A. setacea Waldst. et Kit.

Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1568.

Euro.-Sib.

A. wilhelmsii K.Koch

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1681.

Ir.-Tur.

Acroptilon repens (L.) DC.

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1615.

Ir.-Tur.

Anthemis austriaca J.Jacq.

Şarklı, empty places in *Quercus* scrub, limestone, 900 m, 26 vi 1990, AAD 2562.

An. cretica L. subsp. *anatolica* (Boiss.) Grierson

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1131.

An. kotschyana Boiss. var. *kotschyana*

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1457.

An. tinctoria L. var. *tinctoria*

Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1565.

An. wiedemanniana Fisch. et C.A.Mey.

Sulakyurt, Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 2026.

En.-LC

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

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1546.

Euro.-Sib.

Artemisia austriaca J.Jacq.

Sulakyurt, around the city, in *Quercus* scrub, 800-1100 m, 25 iii 1990, AAD 2808. Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1298.

Ar. campestris L.

Karaköseli, steppe areas between fields, 800 m, 10 vii 1990, AAD 2744.

Bidens tripartita L.

Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1580.

Calendula arvensis L.

Balışeyh, around the city, hedge, 600 m, 17 x 1993, AAD 4028.

Carduus nutans L. subsp. *falcato-incurvus* P.H.Davis

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1184.

C. pycnocephalus L. subsp. *albidus* (M.Bieb.) Kazmi

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1313.

Carlina oligocephala Boiss. et Kotschy subsp. *oligocephala*

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1473.

Carthamus dentatus Vahl.

Sulakyurt, Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 1589. Koçubaba, garden and fields, 1100-1200 m, 23 ix 1990, AAD 2732.

Ca. lanatus L.

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2539. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 1442.

Centaurea carduiformis DC. subsp. *carduiformis* var. *carduiformis*

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1414.

Ce. carduiformis DC. subsp. *carduiformis* var. *thrincoifolia* (DC.) Wagenitz

Kavak to Gözükişlı, steppe, 740 m, 5 viii 1990, AAD 3941.

Ce. consanguinea DC.

Koçubaba, fields, 1100-1200 m, 23 ix 1989, AAD 1475.

En.-LC

Ce. depressa M.Bieb.

Koçubaba, garden, 1100-1200 m, 26 iii 1989, AAD 1341.

Ce. patula DC.

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2520.

Ir.-Tur.

Ce. pulchella Ledeb.

Şarklı, empty places in *Quercus* scrub, limestone, 900 m, 26 v 1990, AAD 2512.

Ir.-Tur.

Ce. solstitialis L. var. *solstitialis*

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 2729.

Ce. triumfettii All.

Şarklı, empty places in *Quercus* scrub, limestone, 900 m, 26 vi 1990, AAD 2117. Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 2044.

Ce. urvillei DC. subsp. *urvillei*

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2435.

Medit.

Ce. urvillei DC. subsp. *stepposa* Wagenitz

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 1792.

Ir.-Tur.

Ce. virgata Lam.

Büyükyayağlı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2611.

Cephalorrhynchus tuberosus (Stev.) Schchian

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1992, AAD 4102.

Chardinia orientalis (L.) Kuntze

Delice, around the city, fallow fields, sandy places, 650 m, 18 v 1989, AAD 1832. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2339.

Ir.-Tur.

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

Çatalelma to Kiyıkavurgalı, steppe areas between fields, 700 m, 10 viii 1989, AAD 1601. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1524.

Cichorium intybus L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 1543.

Cirsium alatum (Gmelin) Bobrow subsp. *alatum*

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 4116.

Ir.-Tur.

Ci. alatum (Gmelin) Bobrow subsp. *pseudocreticum* P.H.Davis et Parris

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 4153.

En.-VU, Ir.-Tur.

Ci. arvense (L.) Scop. subsp. *vestitum* (Wimmer et Grab.) Petr.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 1573.

Ci. ligulare Boiss.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1452.

Ci. vulgare (Savi) Ten.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 4140.

Conyza canadensis (L.) Cronquist

Büyükyığı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 3911.

Cousinia caesarea Boiss. et Bal.

Büyükyığı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2596.

En.-VU, Ir.-Tur.

The number of the pairs of basal leaves is up to 14 on the specimen, but in the Flora of Turkey (5: 336) it is described as up to 8.

Cnicus benedictus L. var. **kotschy** Boiss.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 1747. İmirli to Cingeyli, in *Quercus* scrub, 900-1100 m, 10 iv 1989, AAD 1443.

Crepis alpina L.

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1831.

Cr. foetida L. subsp. **commutata** (Spreng.) Babc.

Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 17 vi 1990, AAD 1981. Şarklı, empty places in *Quercus* scrub, limestone, 900 m, 26 v 1990, AAD 2144.

Cr. foetida L. subsp. **rheadifolia** (M.Bieb.) Celak.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1635.

Cr. sancta (L.) Babc.

Yeniceli to Sarıkızlı, open areas in *Quercus* scrub, 1100 m, 17 vi 1990, AAD 1741.

Cr. setosa Hall. fil.

Yeniceli to Ağaylı, in *Quercus* scrub, 1000 m, 17 vi 1990 AAD 2477. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1513.

Euro.-Sib.

Crupina crupinastrum (Moris) Vis.

Yeniceli to Ağaylı, steppe, 800 m, 17 vi 1990, AAD 2474.

Cru. vulgaris Cass.

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1830.

Echinops microcephalus Sm.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 4141.

Medit.

E. orientalis Trautv.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1511.

Ir.-Tur.

E. ritro L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 4111.

Gundelia tournefortii L. var. **tournefortii**

Karaköseli, steppe areas between fields, 800 m, 10 viii 1990, AAD 2368.

Helianthus annuus L.

Sulakyurt, around the city, in *Quercus* scrub, 800-1100 m, 25 vi 1990, AAD 2805.

H. tuberosus L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 2829.

Helichrysum arenarium (L.) Moench subsp. **aucherii** (Boiss.) P.H.Davis et Kupicha

Gözükızılı to Hacıobası, steppe areas between fields. 710 m, 3 vi 1990, AAD 1586.

En.-LC, Ir.-Tur.

Hieracium pannosum Boiss.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1451.

Medit.

Ifloga spicata (Forssk.) Sch.Bip.

Delice, around the city, fallow fields, sandy places, 650 m, 18 v 1989, AAD 1263.

Inula ensifolia L.

Tokuş Mountain, in *Quercus* scrub, 1200-1350 m, 5 viii 1990, AAD 2757.

Euro.-Sib.

I. germanica L.

Koçubaba, between fields, 1100-1200 m, 23 ix 1990, AAD 1560.

Euro.-Sib.

I. heterolepis Boiss.

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2505.

Medit.

I. montbretiana DC.

Büyükyığı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2616.

Ir.-Tur.

I. salicina L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1991, AAD 4114.

Euro.-Sib.

Jurinea consanguinea DC.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 23 ix 1991, AAD 4113.

J. pontica Hausskn. et Freyn ex Hausskn.

Gözükızılı to Hacıobası, steppe areas between fields. 710 m, 3 vi 1990, AAD 2571.

En.-LC, Ir.-Tur.

Koelpinia linearis Pallas

Delice, around the city, fallow fields, sandy places, 650 m, 18 v 1989, AAD 1801.

Ir.-Tur.

Lactuca serriola L.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 10 viii 1989, AAD 2815.

Euro.-Sib.

Lapsana communis L. subsp. **intermedia** (M.Bieb.) Hayek

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1954.

L. communis L. subsp. **pisidica** (Boiss. et Heldr.) Rech.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1480.

Euro.-Sib.

Leontodon asperrimus (Willd.) Ball

Şarklı, empty places in *Quercus* scrub, limestone, 900 m, 26 vi 1990, AAD 2526.

Ir.-Tur.

Le. crispus Vill. subsp. **asper** (Waldst. et Kit.) Rohlena var. **setulosus** (Hal.) Kupicha

Yeniceli to Ağaylı, in *Quercus* scrub, 1000 m, 17 vi 1990, AAD 2475. Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 2033.

Logfia arvensis (L.) Holub

Büyükavşar, Büyükhemit region, in *Quercus* scrub, 1150 m, 25 ii 1990, B 1386!

Onopordum tauricum Willd.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1435b.

Euro.-Sib.

O. turcicum Danin

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 4110.

Ir.-Tur.

Picnomon acarna (L.) Cass.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1626.

Medit.

Picris strigosa M.Bieb.

Büyükyağlı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2600. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1482.

Ir.-Tur.

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

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 vii 1990, AAD 2665.

P. piloselloides (Vill.) Soják. subsp. **piloselloides**

Yeniceli to Ağaylı, steppe, 800 m, 17 vi 1990, AAD 2467.

Ptilostemon afer (J.Jacq.) Greuter subsp. **eburneus** Greuter

Ambardere, steppe areas between fields, 1100 m, 17 viii 1991, AAD 3950.

En.-LC

Pulicaria dysenterica (L.) Bernh.

Karaköseli, steppe areas between fields, 800 m, 10 viii 1989, AAD 2738.

Scariola viminea (L.) F.W.Schmidt

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1415.

Scorzonera cana (C.A.Meyer) Hoffm. var. **jacquiniana** (W.Koch) D.F.Chamb.

Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1090.

S. cinerea Boiss.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 2655.

Ir.-Tur.

S. eriophora DC.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 10 viii 1989, AAD 2042.

En.-LC

S. mollis M.Bieb. subsp. **mollis**

Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 1763.

S. suberosa K.Koch subsp. **suberosa**

Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1090b.

Ir.-Tur.

Senecio vernalis Waldst. et Kit.

Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 8 iv 1989, AAD 1983.

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

Yeniceli to Ağaylı, steppe, 800 m, 17 vi 1990, AAD 2479. Gözükkızılı to Hacıobası, steppe areas between fields, 710 m, 24 vi 1990, AAD 2328.

Steptorhamphus tuberosus (J.Jacq.) Grossh.

Yeniceli to Ağaylı, in *Quercus* scrub, 1000 m, 17 vi 1990, AAD 2469.

***Tagetes erecta** L.

Balışeyh, around the city, hedge, 600 m, 17 x 1993, AAD 4027.

Tanacetum poteriifolium (Ledeb.) Grierson

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 2648.

Taraxacum scaturiginosum G.Hagl.

Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1055. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1116.

T. serotinum (Waldst. et Kit.) Poir.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1517.

Tragopogon aureus Boiss.

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2380.

En.-LC

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

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1422.

Tr. coloratus C.A.Mey.

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2397.

Ir.-Tur.

Tripleurospermum callosum (Boiss. et Heldr.) E.Hossain

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 2723.

Tri. decipiens (Fisch. et C.A.Mey.) Bornm.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1351.

Tri. oreades (Boiss.) Rech. var. **oreades**

Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1048.

Tussilago farfara L.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 10 viii 1989, AAD 1645.

Euro.-Sib.

Xanthium spinosum L.

İmirli to Cingeyli, in *Quercus* scrub, 900-1100 m, 10 viii 1989, AAD 1793-AG.

X. strumarium L. subsp. **strumarium**

Kavak to Gözükkızılı, steppe, 740 m, 5 viii 1990, AAD 3941.

Xeranthemum annum L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 2718. Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990.

BERBERIDACEAE**Berberis vulgaris** L.

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1318.

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

Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2193-AG.

Anchusa aucheri DC.

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2097.

A. azurea Mill. var. *azurea*

Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, *AAD* 1991.

A. leptophylla Roem. et Schult. subsp. *leptophylla*

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, *AAD* 1221. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, *AAD* 2672.

A. leptophylla Roem. et Schult. subsp. *incana* (Ledeb.) D.F.Chamb.

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, *AAD* 1530. Tokuş Mountain, in *Quercus* scrub, 1200-1350 m, 5 viii 1990, *AAD* 2777.

A. pusilla Guşul.

Çankırı: Irmakaralısı, steppe areas between fields, 800 m, 31 vi 1990, *AAD* 1726.

A. strigosa Labill.

Çatalelma to Kıyıkavurgalı, steppe areas between fields, 700 m, 10 viii 1989, *AAD* 1590.

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

Samsun road to Şarklı, steppe, limestone, 800 m, 26 v 1990, *AAD* 2567. Hıdırşeyh, 1000 m, steppe areas, 2 vi 1990, *AAD* 2214.

Medit.

Asperugo procumbens L.

Delice, around the Delice river, sandy places, 600 m, 10 viii 1989, *AAD* 1868. Yeniceli to Ağaylı, in *Quercus* scrub, 1000 m, 17 vi 1990, *AAD* 1743.

Euro.-Sib.

Buglossoides arvensis (L.) Johnston

Yeşilyazı, streamside, meadows, 800 m, 8 iv 1989, *AAD* 1053. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 25 iii 1989, *AAD* 1360.

Caccinia macranthera (Banks et Sol.) Brand var. *crassifolia* (Vent.) Brand

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, *AAD* 1794.

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

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, *AAD* 1367.

Cynoglossis chetickiana Vural et Kit Tan subsp. *chetickiana*

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 10 viii 1989, *AAD* 2706.

En.-EN, Ir.-Tur.

The taxon is rare and its habitat in the area is under threat of over-grazing and field opening.

Echium italicum L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, *AAD* 1428.

Heliotropium dolosum DeNot.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, *AAD* 1479.

Heterocaryum szovitsianum (Fisch. et C.A.Mey.) A.DC.

Eskiçerikli, fallow fields and steppe areas between fields, 650 m, 18 v 1990, *AAD* 1826.

Ir.-Tur.

Lappula barbata (M.Bieb.) Gürke

Şarklı, empty places in *Quercus* scrub, limestone, 900 m, 26 v 1990, *AAD* 2535.

Ir.-Tur.

L. patula (Lehm.) Asch. ex Gürke

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, *AAD* 1162. Gözükişlı to Hacıobası, steppe areas between fields. 710 m, 3 vi 1990, *AAD* 2574.

L. squarrosa (Retz.) Dumort.

Hıdırşeyh, steppe areas between fields, 1000 m, 18 v 1990, *AAD* 2238.

Myosotis arvensis (L.) Hill subsp. *arvensis*

Yeşilyazı, streamside, meadows, 800 m, 8 iv 1989, *AAD* 1043.

Euro.-Sib.

M. lithospermifolia (Willd.) Hornem.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, *AAD* 1393.

M. ramosissima Rochel ex Schult. subsp. *ramosissima*

Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, *AAD* 1768.

M. sicula Guss.

Deredüzü, steppe, 1000 m, 2 vi 1990, *AAD* 2296-AG.

M. stricta Link ex Roem. et Schult.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 10 viii 1989, *AAD* 2074.

Euro.-Sib.

Moltkia aurea Boiss.

İmirli to Cingeyli, in *Quercus* scrub, 900-1100 m, 31 iii 1990, *AAD* 1798.

En.-LC, Ir.-Tur.

Mo. coerulea (Willd.) Lehm.

Yeşilyazı, streamside, meadows, 800 m, 8 iv 1989, *AAD* 1091. Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, *AAD* 1372.

Ir.-Tur.

Neatostema apulum (L.) Johnston

Eskiçerikli, fallow fields and steppe areas between fields, 650 m, 18 v 1990, *AAD* 1813.

Medit.

Nonea caspica (Willd.) G.Don

Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 8 iv 1989, *AAD* 1992. Eskiçerikli, fallow fields, 650 m, 18 v 1990, *AAD* 1818.

Ir.-Tur.

N. macrosperma Boiss. et Heldr.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, *AAD* 2075.

En.-LC, Ir.-Tur.

N. stenosolen Boiss. et Bal.

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, *AAD* 1304. Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, *AAD* 1213.

En.-LC, Ir.-Tur.

Onosma armenum DC.

Çatalelma to Kıyıkavurgalı, steppe areas between fields, 700 m, 10 viii 1989, *AAD* 2056b.

En.-LC.

O. bornmuelleri Hausskn.

Hıdırşeyh, steppe areas between fields, 1000 m, 18 iii 1990, *AAD* 2263-AG.

En.-LC, Ir.-Tur.

O. briquetii Czecz.

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2347-AG.

En.-LC, Ir.-Tur.

This species is rare in the area. On the other hand, the locality of the taxon is under threat due to human impact.

O. isauricum Boiss. et Heldr.

Samsun road to Şarklı, steppe, limestone, 800 m, 26 v 1990, AAD 2555. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2347.

En.-LC, Ir.-Tur.

O. molle DC.

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1172.

Ir.-Tur.

O. roussaei DC.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 2077. Çankırı: İrmakaralısı, steppe areas between fields, 800 m, 23 vi 1990, AAD 1708.

Ir.-Tur.

Paracaryum incanum (Ledeb.) Boiss.

Eskişehirli, fallow fields and steppe areas between fields, 650 m, 18 v 1990, AAD 1805.

P. paphlagonicum (Bornm.) R.R.Mill

Şarklı, empty places in *Quercus* scrub, limestone, 900 m, 26 v 1990, AAD 2133.

En.-LC, Ir.-Tur.

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

Eskişehirli, fallow fields and steppe areas between fields, 650 m, 18 v 1990, AAD 1827. Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1224.

Ir.-Tur.

BRASSICACEAE**Aethionema arabicum** (L.) Andr.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 10 viii 1989, AAD 1757. Yenice to Sarıkızlı, open areas in *Quercus* scrub, 1100 m, 31 iii 1990, AAD 1739.

A. armenum Boiss.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 2670. Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1319.

Ir.-Tur.

Alyssum condensatum Boiss. et Hausskn. subsp. **flexibile** (Nyár.) T.R.Dudley

Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1302. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2388.

Al. desertorum Stapf var. **desertorum**

Koru, steppe areas between *Quercus* scrub clearing, 650 m, 25 v 1990, AAD 1650. Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1072.

Al. desertorum Stapf var. **prostratum** T.R.Dudley

Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 1738.

Al. hirsutum M.Bieb.

Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1204.

Al. lepidoto-stellatum (Hausskn. et Bornm.) T.R.Dudley

Şarklı, empty places in *Quercus* scrub, limestone, 900 m, 26 vi 1990, AAD 2149. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2343.

En.-LC, Ir.-Tur.

Al. linifolium Steph. ex Willd. var. **linifolium**

Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 1006. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2346.

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

Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 8 iv 1989, AAD 1028. Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1240.

Al. murale Waldst. et Kit. subsp. **murale**

Hıdırşeyh, steppe areas between fields, 1000 m, 18 iii 1990, AAD 2254-AG. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2434.

Al. pateri Nyár subsp. **pateri**

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 2350.

En.-LC, Ir.-Tur.

Al. sibiricum Willd.

Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 1785. Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 8 iv 1989, AAD 2403.

En.-LC, Ir.-Tur.

Arabis nova Vill.

Yeniceli to Ağaylı, in *Quercus* scrub, 1000 m, 17 vi 1990 AAD 1745. Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1124.

Barbarea plantaginea DC.

Yeşilyazi, streamside, meadows, 800 m, 8 iv 1989, AAD 1042.

Boreava orientalis Jaub. et Spach

Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1860.

Ir.-Tur.

The species is a weedy for wheat.

Camelina hispida Boiss. var. **hispida**

Yeşilyazi, streamside, meadows, 800 m, 8 iv 1989, AAD 1046. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 25 iii 1989, AAD 1399.

C. rumelica Vel.

Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 8 iv 1989, AAD 1995.

Capsella bursa-pastoris (L.) Medik.

Yeşilyazi, streamside, meadows, 800 m, 8 iv 1989, AAD 1056. Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 8 iv 1989, AAD 1056.

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

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1410.

Conringia orientalis (L.) Andr.

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 1673. Yeşilyazi, streamside, meadows, 800 m, 8 iv 1989, AAD 1034.

Co. perfoliata (C.A.Mey.) E.A.Busch,

Koçubaba, gardens and fields, 1100-1200 m, 26 iii 1989, AAD 1125.

Co. planisiliqua Fisch. et C.A.Mey.

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 1850.

Ir.-Tur.

Crambe orientalis L. var. **orientalis**

Sulakyurt, around the city, in *Quercus* scrub, 800-1100 m, 25 iii 1990, AAD 2014.

Ir.-Tur.

Descurainia sophia (L.) Webb ex Prantl.

Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1879.

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

Yenilli, fields, 650 m, 25 iii 1989, AAD 1012. Koru, steppe areas between *Quercus* scrub clearings, 650 m, 25 v 1990, AAD 1658.

Erysimum crassipes Fisch. et C.A.Mey.

Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 8 iv 1989, AAD 1980. Sulakyurt, around the city, in *Quercus* scrub, 800-1100 m, 25 iii 1990, AAD 2041.

E. hamosum Blanche ex Post

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1368. Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1270.

Euclidium syriacum (L.) R.Braga

Çankırı: Irmakaralısı, steppe areas between fields, 800 m, 31 iii 1990, AAD 1722. Delice, around the Delice river, sandy places, 600 m, 10 vi 1989, AAD 1874.

Fibigia clypeata (L.) Medik.

Sulakyurt, around the city, in *Quercus* scrub, 800-1100 m, 25 iii 1990, AAD 1761. İmirli to Cingeyli, in *Quercus* scrub, 900-1100 m, 10 viii 1989, AAD 1436.

Hesperis bicuspidata (Willd.) Poir.

Koçubaba, gardens and fields, 1100-1200 m, 26 iv 1989, AAD 1109. Hidirşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2223.

Hirschfeldia incana (L.) Lagr.-Foss.

Yeniceli to Ağaylı, in *Quercus* scrub, 1000 m, 17 vi 1990 AAD 1592. Samsun road to Şarklı, steppe, limestone, 800 m, 26 v 1990, AAD 2530.

Isatis floribunda Boiss. ex Bornm.

Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1288.

En.-LC, Ir.-Tur.

Lepidium latifolium L.

Çankırı: Irmakaralısı, steppe areas between fields, 800 m, 31 iii 1990, AAD 2487.

L. perfoliatum L.

Çankırı: Irmakaralısı, marshy places, 700 m, 23 vi 1990, AAD 1715.

Malcolmia africana (L.) R.Braga

Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1848.

Matthiola longipetala (Vent.) DC. subsp. **bicornis** (Sibth. et Sm.) P.W.Ball

Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 17 vi 1990, AAD 1076. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2382.

Nasturtium officinale R.Braga

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 2090.

Neslia apiculata Fisch. et C.A.Mey. et Ave-Lall.

Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 8 iv 1989, AAD 1981.

Raphanus raphanistrum L.

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1847. Eskiçerikli, fallow fields and steppe areas between fields, 650 m, 18 v 1990, AAD 1809.

Sisymbrium altissimum L.

Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 8 iv 1989, AAD 1051. Yeşilyazı, streamside, meadows, 800 m, 8 iv 1989, AAD 1077.

S. orientale L.

Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 8 iv 1989, AAD 1996. Hidirşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2310.

Sinapis arvensis L.

Yeşilyazı, streamside, meadows, 800 m, 8 iv 1989, AAD 1045.

Thlaspi arvense L.

Koçubaba, garden, and fields, 1100-1200 m, 26 iii 1992, AAD 6236.

T. perfoliatum L.

Koru, steppe areas between *Quercus* scrub clearings, 650 m, 25 v 1990, AAD 1648. Yenilli, fields, 650 m, 25 iii 1989, AAD 1005. Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1072.

Torularia torulosa (Desf.) Schulz

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1810.

CAMPANULACEAE

Asyneuma limonifolium (L.) Janch. subsp. **pestalozzae** (Boiss.) Dambolt

Yeniceli to Sarıkızlı, open areas in *Quercus* scrub, 1100 m, 17 vi 1990, AAD 2466. Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 2636.

En.-LC

A. lobelioides (Willd.) Hand.-Mazz.

Şarklı, empty places in the *Quercus* scrub, limestone, 900 m, 26 v 1990, AAD 2112. Delice, around the city, fallow fields, sandy places, 650 m, 18 v 1989, AAD 1297

Ir.-Tur.

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

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1420.

Ir.-Tur.

A. rigidum (Willd.) Grossh. subsp. **sibthorpiatum** (Roem. et Schult.) Dambolt

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 2826.

En.-LC, Medit.

Campanula glomerata L. subsp. **hispida** (Witasek) Hayek

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1930.

C. kırikkaleensis Dönmez & Güner

Tokuş Mountain, in *Quercus* scrub, 1200-1350 m, 5 viii 1990, AAD 2753.

En.-EN, Ir.-Tur.

The species is known only from the type collection in the area (Dönmez & Güner 1994). The species forms small populations and it is also known from two localities outside of the study area. The habitats of the species are under threat of field opening and over-grazing. The species would become extinct in the near future. Luckily, however, the seeds of the species were given to the gene bank in İzmir.

C. lyrata Lam. subsp. *lyrata*

Yeniceli to Ağaylı, in *Quercus* scrub, 1000 m, 17 vi 1990 AAD 2480, Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1932.

En.-LC

C. pterocaula Hausskn.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 2661.

Euro.-Sib.

Legousia speculum-veneris (L.) Chaix

Sulakyurt, around the city, in *Quercus* scrub, 800-1100 m, 25 iii 1990, AAD 2010. Delice, around the city, fallow fields, sandy places, 650 m, 18 v 1989, AAD 1322.

Medit.

CAPPARACEAE**Cleome steveniana** Schult. (Carlström 1984)

Samsun road to Şarklı, steppe, limestone, 800 m, 26 vi 1990, AAD 2563.

En.-LC, Ir.-Tur.

CAPRIFOLIACEAE**Lonicera etrusca** Santi var. *etrusca*

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 4156.

Medit.

This species is rare in the area and it grows only in the *Quercus* scrub of the area.

***Sambucus nigra** L.

Yeniceli to Ağaylı, in *Quercus* scrub, 1000 m, 17 vi 1990, AAD 2459.

Euro.-Sib.

Viburnum lantana L.

İmirli to Cingeyli, in *Quercus* scrub, 900-1100 m, 10 viii 1989, AAD 1445. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 2642.

Euro.-Sib.

CARYOPHYLLACEAE**Arenaria ledebouriana** Fenzl var. *ledebouriana*

Yeniceli to Sarıkızlı, open areas in *Quercus* scrub, 1100 m, 17 vi 1990, AAD 2464. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 25 iii 1989, 30 iv 1989, AAD 1464.

En.-LC

A. serpyllifolia L.

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1238.

A. leptoclados (Reichb.) Guss.

Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 1766. Delice, around the city, fallow fields, sandy places, 650 m, 18 v 1989, AAD 1336.

Bufonia tenuifolia L.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 2722.

Cerastium anomalum Waldst. et Kit.

Koçubaba, gardens and fields, 1100-1200 m, 26 iii 1989, AAD 1407.

Cerastium gracile Duf

Yeşilyazı, streamside, meadows, 800 m, 8 iv 1989, AAD 1066.

C. dichotomum L. subsp. *dichotomum*

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 1753. Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1893.

Cucubalus baccifer L.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 10 viii 1989, AAD 2819.

Dianthus balansae Boiss.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1467.

En.-LC

D. cibrarius Clem.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 10 viii 1989, AAD 2032. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 2667.

En.-LC

D. lydius Boiss.

Büyükkavşar, Büyükhemit region, in *Quercus* scrub, 1150 m, 25 ii 1990, B 1321!

En.-LC

D. zederbaueri Vierh.

Büyükyayağlı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2630.

En.-LC

D. zonatus Fenzl var. *zonatus*

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2529. Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1348.

D. zonatus Fenzl var. *aristatus* (Boiss.) Reeve

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 2724.

Gypsophila parva Barkh.

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 1796.

En.-LC, Ir.-Tur.

G. perfoliata L.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 2806.

G. viscosa Al.Murray

Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1814.

G. pilosa Huds.

Kavak to Gözükızılı, steppe, 740 m, 3 vi 1990, AAD 2367-AG. Çankırı: Irmakaralısı, steppe areas between fields, 800 m, 31 iii 1990, AAD 2501.

Holosteum umbellatum L. var. *umbellatum*

Deredüzü, steppe, 1000 m, 18 iii 1990, AAD 1668. Yenilli, fields, 650 m, 25 iii 1989, AAD 1001.

H. umbellatum L. var. *glutinosum* (M.Bieb.) Gay

Koçubaba, gardens and fields, 1100-1200 m, 26 iii 1989, AAD 1096. Yeşilyazı, streamside, meadows, 800 m, 8 iv 1989, AAD 1060.

Minuartia anatolica (Boiss.) Woron. var. *arachnoidea* McNeill

Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2227. Delice, around the city, fallow fields, sandy places, 650 m, 18 v 1989, AAD 1837.

En.-LC, Ir.-Tur.

M. hirsuta (M.Bieb.) Hand.-Mazz. subsp. *falcata* (Gris) Matff.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1355.

M. montana L. subsp. **wiesneri** (Stapf) McNeill

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2358-AG.

Ir.-Tur.

Petrorhagia cretica (L.) Ball et Heywood

Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 17 vi 1990, AAD 1977.

Saponaria glutinosa M.Bieb.

Hıdırşeyh, steppe areas between fields, 1000 m, 18 iii 1990, AAD 2282-AG.

S. prostrata Willd. subsp. **prostrata**

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 2045. İmirli to Cingeyli, in *Quercus* scrub, 900-1100 m, 10 viii 1989, AAD 2439.

En.-LC, Ir.-Tur.

Silene alba (Mill.) K.Krause subsp. **divaricata** (Reichb.) Walters

Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2270. Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 2025.

Si. cappadocica Boiss. et Heldr.

Esikçerikli, fallow fields and steppe areas between fields, 650 m, 18 v 1990, AAD 1820. Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 17 vi 1990, AAD 2020.

Ir.-Tur.

Si. chlorifolia Sm.

Gözükızıllı to Hacıobası, steppe areas between fields. 710 m, 24 vi 1990, AAD 2587. Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 2656.

Ir.-Tur.

Si. compacta Fisch.

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 1446. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 2659.

Si. conica L.

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2233-AG. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2335.

Si. conoidea L.

Delice, around the city, fallow fields, sandy places, 650 m, 18 v 1989, AAD 1892.

Si. dichotoma Ehrh. subsp. **dichotoma**

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1403.

Si. italica (L.) Pers.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1955. Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 2018.

Si. otites (L.) Wibel

Sulakyurt, around the city, in *Quercus* scrub, 800-1100 m, 25 iii 1990, AAD 2023.

Si. rhynchocarpa Boiss.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 2080.

Si. spergulifolia (Desf.) M.Bieb.

Yeniceli to Sarıkızlı, open areas in *Quercus* scrub, 1100 m, 17 vi 1990, AAD 2456. Büyükyavaşlı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2632.

Ir.-Tur.

Si. subconica Friv.

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2134. Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 2029.

Si. supina Bieb. subsp. **pruinosa** (Boiss.) H.J.Chowdhary

Büyükavşar, Büyükhemit region, in *Quercus* scrub, 1150 m, 25 ii 1990, B 1105!

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

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1484.

Spergularia rubra (L.) J. et C.Presl

Delice, around the Delice river, sandy places, 600 m, 10 viii 1989, AAD 1873.

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

Büyükyavaşlı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 3912.

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

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 1795.

Velezia rigida L.

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2430-AG. Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 2362.

CELASTRACEAE

Euonymus verrucosus Scop.

Hıdırşeyh, steppe areas between fields, 1000 m, 18 iii 1990, AAD 2252-AG.

CHENOPODIACEAE

Atriplex nitens Schkuhr

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1628.

Beta lomatogona Fisch. et C.A.Mey.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 1973.

Ir.-Tur.

B. trigyna Waldst. et Kit.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 1483.

***B. vulgaris** L.

Çankırı: Irmakaralısı, marshy places, 700 m, 23 vi 1990. Delice, around the Delice river, sandy places, 600 m, 10 viii 1989, obs.

Camphorosma monspeliaca L. subsp. **lessingii** (Litv.) Aellen

Tokuş Mountain, in *Quercus* scrub, 1200-1350 m, 5 viii 1990, AAD 2752. Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1836.

Chenopodium album L. subsp. **album** var. **album**

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 1348.

C. album L. subsp. **iranicum** Aellen

Kırıkkale, in the city, empty places, 800 m, 22 ix 1989, AAD 1632. Çatalelma to Kiyıkavurgalı, steppe areas between fields, 700 m, 25 v 1990, AAD 1594.

C. botrys L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1550.

C. foliosum (Moench) Asch.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 2123.

Kochia prostrata (L.) Schrad.

Sulakyurt, around the city, in *Quercus* scrub, 800-1100 m, 25 iii 1990, AAD 2802.

***K. scoparia** (L.) Schrad.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 2716.

Noaea mucronata (Forssk.) Asch. et Schweinf. subsp. *mucronata*

Kavak to Gözükızılı, steppe, 740 m, 3 vi 1990, AAD 2795. Koçubaba, fields, 1100-1200 m, 23 ix 1990, AAD 1347.

Salsola ruthenica Iljin

Çatalelma to Kiyıkavurgalı, steppe areas between fields, 700 m, 10 viii 1989, AAD 1611. Kırıkkale, in the city, empty places, 800 m, 22 ix 1989, AAD 1631.

Spinacia tetrandra Stev.

Koçubaba, garden and fields, 1100-1200 m, 23 ix 1990, AAD 3321.

CISTACEAE**Cistus laurifolius** L.

Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 2031. Medit.

Fumana aciphylla Boiss.

Şarklı, steppe, limestone, 850 m, 26 v 1990, AAD 2126. Pazarçık, steppe areas between fields, 900-1100 m, 18 iii 1990, AAD 2197.

Ir.-Tur.

F. paphlagonica Bornm. et Janch.

Şarklı, steppe, limestone, 850 m, 26 v 1990, AAD 2124. Pazarçık, steppe areas between fields, 900-1100 m, 18 iii 1990, AAD 2204.

En.-LC, Ir.-Tur.

This species is rare in the area and it grows in open places on steppe being turned into fields.

Helianthemum canum (L.) Baumg.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1397. Hıdırşeyh, steppe areas between fields, 1000 m, 18 iii 1990, AAD 2239.

H. nummularium (L.) Mill.

Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1089.

En.-LC

H. salicifolium (L.) Mill.

Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1073. Çankırı: İrmakaralısı, steppe areas between fields, 800 m, 31 iii 1990, AAD 1724.

CONVOLVULACEAE**Convolvulus arvensis** L.

Yeniceli to Sarıkızılı, open areas in *Quercus* scrub, 1100 m, 17 vi 1990, AAD 2468. Büyükyayağı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2604.

C. assyricus Griseb.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 1704.

En.-LC, Ir.-Tur.

C. betonicifolius Mill. subsp. *betonicifolius*

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2432-AG.

C. compactus Boiss.

Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 17 vi 1990, AAD 1975. Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2139.

C. galaticus Rostan ex Choisy

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1500.

En.-LC, Ir.-Tur.

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

Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 17 vi 1990, AAD 1989. Pazarçık, steppe areas between fields, 900-1100 m, 18 iii 1990, AAD 2199.

C. stachydifolius Choisy

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1854.

Ir.-Tur.

Ipomoea purpurea (L.) Roth

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 10 viii 1989, AAD 2814.

CORYLACEAE***Corylus avellana** L. var. *avellana*

Koçubaba, gardens and fields, 1100-1200 m, 26 iii 1989, 23 ix 1990, AAD 3721b.

CRASSULACEAE**Sedum caespitosum** (Cav.) DC.

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2348-AG.

Medit.

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

Hıdırşeyh, steppe areas between fields, 1000 m, 18 v 1990, AAD 2250-AG.

CUCURBITACEAE**Bryonia alba** L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 1972.

***Citrullus lanatus** (Thunb.) Matsum. et Nakai

İmirli to Cingeyli, in *Quercus* scrub, 900-1100 m, 10 viii 1989, AAD 4030.

***Cucurbita pepo** L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 2701.

***Cucumis melo** L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 2706.

***C. sativus** L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 2708.

Ecballium elaterium (L.) A.Rich.

Çatalelma to Kiyıkavurgalı, steppe areas between fields, 700 m, 10 viii 1989, AAD 1606.

CUSCUTACEAE**Cuscuta approximata** Bab. var. *approximata*

Gözükızılı to Hacıobası, steppe areas between fields, 710 m, 24 vi 1990, AAD 2580. Koçubaba, garden, 1100-1200 m, 23 ix 1990, AAD 2709.

This species grows on *Genista sessilifolia*, *Prunus cocomilia* and *Helichrysum arenarium* subsp. *aucheri*.

C. campestris Yuncker

Çankırı: İrmakaralısı, steppe areas between fields, 800 m, 23 iii 1990, AAD 2492.

This species grows on *Malva sylvestris*.

C. monogyna Vahl subsp. *monogyna*

Kavak to Gözükızılı, steppe, 740 m, 5 viii 1990, AAD 1782.

This species mainly grows on *Vitis vinifera* and rarely on *Quercus* spp. This parasitic plant is harmful to vineyards in the area.

C. palaestina Boiss. subsp. **balansae** (Yuncker) Plitmann

Yeniceli to Ağaylı, steppe, 800 m, 17 vi 1990, AAD 2481. Çankırı: Irmakaralısı, marshy places, 700 m, 23 vi 1990, AAD 2500.

This species grows on the *Alyssum sibiricum*, *Fumana aciphylla*, *Phlomis armena* and *Thymus sipyleus*.

C. planiflora Ten.

Şarklı, empty places in *Quercus* scrub, limestone, 900 m, 26 vi 1990, AAD 2544.

This species grows on *Astragalus spruneri*.

DIPSACACEAE

Dipsacus laciniatus L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 1578.

Ptercephalus plumosus (L.) Coult.

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2513. Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2212.

Scabiosa argentea L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 2728. Koçubaba, gardens and fields, 1100-1200 m, 26 iii 1989, AAD 1542.

S. micrantha Desf.

Şarklı, steppe, limestone, 850 m, 26 v 1990, AAD 2510.

S. rotata M.Bieb.

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1293.

Ir.-Tur.

ELAEAGNACEAE

***Elaeagnus angustifolia** L.

Çatalelma to Kiyıkavurgalı, steppe areas between fields, 700 m, 10 viii 1989, AAD 2052.

EUPHORBIACEAE

Andrachne telephioides L.

Çatalelma to Kiyıkavurgalı, steppe areas between fields, 700 m, 25 v 1990, AAD 1599.

Chrozophora tinctoria (L.) Raf.

İmirli to Cingeyli, in *Quercus* scrub, 900-1100 m, 10 viii 1989, AAD 3940a.

Euphorbia anacampseros Boiss. var. **anacampseros**

Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 1784.

En.-LC

E. cardiophylla Boiss. et Heldr.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1105.

En.-LC

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

Ağaylı to Karalı, in *Quercus* scrub, 1000 m, 17 vi 1990, AAD 1717.

E. falcata L. subsp. **macrostegia** (Bornm.) O.Schwarz

Büyükyığılı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2619.

En.-LC, Medit.

E. ledebourii Boiss.

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2115.

E. macroclada Boiss.

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2398-AG.

Ir.-Tur.

FABACEAE

Alhagi pseudoalhagi (M.Bieb.) Desv.

Kavak to Gözüközüllü, steppe, 740 m, 5 viii 1990, AAD 2786. Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 1346.

Ir.-Tur.

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

Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2291-AG.

Astragalus andrachneifolius Fenzl

Şarklı, empty places in *Quercus* scrub, limestone, 900 m, 26 vi 1990, AAD 2132. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2342.

A. asterias Stev. ex Ledeb.

Şarklı, empty places in *Quercus* scrub, limestone, 900 m, 26 v 1990, AAD 2190.

Ir.-Tur.

A. barbarae Bornm.

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2396-AG.

En.-VU

A. camptoceras Bunge

Şarklı, steppe, limestone, 850 m, 26 v 1990, 23 vi 1990, AAD 2107. Eskiçerikli, fallow fields and steppe areas between fields, 650 m, 18 v 1990, AAD 1823.

Ir.-Tur.

A. cephalotes Banks et Sol. var. **sintenisianus** (Sirj.) D.F.Chamb. et Matthews

Tokus, Mountain, in *Quercus* scrub, 1200-1350 m, 5 viii 1990, AAD 2776.

A. corrugatus Bertol.

Eskiçerikli, fallow fields and steppe areas between fields, 650 m, 18 v 1990, AAD 1812.

A. elongatus Willd. subsp. **elongatus**

Hıdırşeyh, steppe areas between fields, 1000 m, 18 iii 1990, AAD 2246-AG.

A. guttatus Banks et Sol.

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1882.

Ir.-Tur.

A. hamosus L.

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2130. Hıdırşeyh, steppe areas between fields, 1000 m, 18 iii 1990, AAD 2284, AAD 2286.

A. lycius Boiss.

Pazarçık, steppe areas between fields, 900-1100 m, 2 vi 1990, AAD 2168. Eskiçerikli, fallow fields and steppe areas between fields, 650 m, 18 v 1990, AAD 1825.

En.-LC

A. lydius Boiss.

Büyükkavşar, Büyükhemit region, in *Quercus* scrub, 1150 m, 25 ii 1990, B 1198!

En.-LC

A. macrocephalus Willd. subsp. **macrocephalus**

Delice, between İmirli and Cingeyli villages, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 1430.

En.-LC, Ir.-Tur.

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

Büyükavşar, Ziyaret region, *Pinus nigra* plantation area, 1150 m, 16 vi 1990, AAD 2317-AG. Samsun road to Şarklı, steppe, limestone, 800 m, 26 v 1990, AAD 2547.

Ir.-Tur.

A. melanophurius Boiss.

Çankırı: Irmakaralısı, steppe areas between fields, 800 m, 31 iii 1990, AAD 1699.

En.-LC, Ir.-Tur.

A. microcephalus Willd.

Gözükızılı to Hacıobası, steppe areas between fields. 710 m, 3 vi 1990, AAD 2576. Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 2678.

Ir.-Tur.

A. nitens Boiss. et Heldr.

Pazarçık, steppe areas between fields, 900-1100 m, 2 vi 1990, AAD 2187-AG. Tokuş Mountain, in *Quercus* scrub, 1200-1350 m, 5 viii 1990, AAD 2768.

Ir.-Tur.

A. odoratus Lam.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1901.

A. oxytropifolius Boiss.

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2095.

En.-LC, Ir.-Tur.

A. panduratus Bunge

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2549.

En.-VU, Ir.-Tur.

This species is rare in the area and it produces few viable seeds. Fortunately, its seeds were given to the gene bank in İzmir survival.

A. physodes L. subsp. **acikirensis** Ekim

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1822.

En.-VU, Ir.-Tur.

This species was first described from the Ankara region by Ekim (Ekim et al., 1991). A few specimens of the taxon were collected from the study area and its population was small. The habitat of the species also faces human pressures.

A. plumosus Willd. var. **plumosus**

Büyükavşar, Büyükhemit region, in *Quercus* scrub, 1150 m, 25 ii 1990, B 1209!

A. polemoniicus Bunge

Gözükızılı to Hacıobası, steppe areas between fields. 710 m, 3 vi 1990, AAD 2583. En.-LC.

This specimen is the first collection after the type specimen. However, the identification of the specimens should be verified.

A. spruneri Boiss.

Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1084. Eskiçerikli, fallow fields and steppe areas between fields, 650 m, 18 v 1990, AAD 1789.

A. strictifolius Boiss. var. **kutepovii** Sirj

Tokuş Mountain, in *Quercus* scrub, 1200-1350 m, 5 viii 1990, AAD 2776.

Ir.-Tur.

A. tigridis Boiss.

Şarklı, empty places in *Quercus* scrub, limestone, 900 m, 26 vi 1990, AAD 2106. Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1138.

Ir.-Tur.

A. triradiatus Bunge

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1846.

The height of the specimens is up to 20 cm, leaves 5 cm and standards up to 8 mm, but these characters are given as about 5 cm, 3 cm and up to 10-15 mm respectively in the Flora of Turkey 3: 62.

A. vulnerariae DC.

Çankırı: Irmakaralısı, steppe areas between fields, 800 m, 31 iii 1990, AAD 1437. Pazarçık, steppe areas between fields, 900-1100 m, 2 vi 1990, AAD 2164.

En.-LC

A. xylobasis Freyn et Bornm. var. **angustus** (Freyn et Sint.) Freyn et Bornm.

Yeniceli to Ağaylı, steppe, 800 m, 17 vi 1990, AAD 2462. Şarklı, steppe, limestone, 850 m,

23 vi 1990, AAD 2102. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2391.

En.-LC, Ir.-Tur.

Cicer anatolicum Alef.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 2643. Hidirşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2775.

Ir.-Tur.

***C. arietinum** L.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 2703.

Colutea cilicica Boiss. et Bal.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 25 iii 1989, 30 iv 1989, AAD 1455. Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1325.

Coronilla scorpioides (L.) Koch.

Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1069. Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1887.

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

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1417. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1506.

Dorycnium graecum (L.) Ser.

Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 1783. Euro.-Sib.

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

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1966.

Galega officinalis L.

Çatalelma to Kiyıkavurgalı, steppe areas between fields, 700 m, 25 v 1990, AAD 1602.

Euro.-Sib.

Genista sessilifolia DC.

Yeşilyazı, streamside, meadows, 800 m, 8 iv 1989, AAD 1569.

Ir.-Tur.

***Gleditsia triacanthos** L.

Balışeyh, around the city, hedge, 600 m, 17 x 1993, AAD 4026.

Glycyrrhiza glabra L. subsp. *glandulifera* (Waldst. et Kit.) Boiss.

Tokuş Mountain, in *Quercus* scrub, 1200-1350 m, 5 viii 1990, AAD 2758. Kavak to Gözükızıllı, steppe, 740 m, 5 viii 1990, AAD 2371.

Hedysarum varium Willd.

Büyükyığı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2599. İmirli to Cingeyli, in *Quercus* scrub, 900-1100 m, 10 viii 1989, AAD 2413.

Ir.-Tur.

H. syriacum Boiss.

Gözükızıllı to Hacıobası, steppe areas between fields, 710 m, 24 vi 1990, AAD 1888.

Ir.-Tur.

Lathyrus aphaca L. var. *affinis* (Guss.) Archer

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 2007.

L. aphaca L. var. *biflorus* Post

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1869.

L. digitatus (M.Bieb.) Fiori

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1391. Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2248.

Medit.

L. inconspicuus L.

Gözükızıllı to Hacıobası, steppe areas between fields, 710 m, 24 vi 1990, AAD 2556. Yeşilyazı, streamside, meadows, 800 m, 8 iv 1989, AAD 1039.

L. nissolia L.

Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2268-AG.

L. sativus L.

Yeniceli to Ağaylı, steppe, 800 m, 17 vi 1990, AAD 2070. Çankırı: İrmakaralısı, steppe areas between fields, 800 m, 31 iii 1990, AAD 1727.

***Lens culinaris** Medik.

Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1327.

Le. nigricans (M.Bieb.) Godr.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1968. Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2280, AAD 2288.

Medit.

Le. orientalis (Boiss.) Hand.-Mazz.

Yeniceli to Ağaylı, in *Quercus* scrub, 1000 m, 17 vi 1990, AAD 2069.

Lotus aegaeus (Gris) Boiss.

Sulakyurt, around the city, in *Quercus* scrub, 800-1100 m, 25 vi 1990, AAD 2066.

Ir.-Tur.

Lo. uliginosus Schkuhr

Çatalelma to Kıyıkavurgalı, steppe areas between fields, 700 m, 25 v 1990, AAD 1610.

Melilotus alba Desr.

Şarklı, steppe, limestone, 850 m, 26 v 1990, AAD 2104. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2433.

M. officinalis (L.) Desr.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1553.

Medicago lupulina L.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1552. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1579.

Me. minima (L.) Bartal. var. *minima*

Şarklı, steppe, limestone, 850 m, 26 v 1990, 23 vi 1990, AAD 2128. Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 2067.

Me. polymorpha L. var. *vulgaris* (Benth.) Shinnars

Çatalelma to Kıyıkavurgalı, steppe areas between fields, 700 m, 25 v 1990, AAD 2055.

Me. radiata L.

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1883. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2379. Ir.-Tur.

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

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1244. Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1228.

Me. sativa L. subsp. *sativa*

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 2824. Koçubaba, gardens and fields, 1100-1200 m, 26 vi 1989, AAD 1912.

Me. x varia Martyn

Koçubaba, gardens and fields, 1100-1200 m, 26 iii 1989, AAD 1551.

Onobrychis argyrea Boiss. subsp. *argyrea*

Tokuş Mountain, in *Quercus* scrub, 1200-1350 m, 5 viii 1990, AAD 2760. Gözükızıllı to Hacıobası, steppe areas between fields, 710 m, 3 vi 1990, AAD 2369.

En.-LC, Ir.-Tur.

O. caput-galli (L.) Lam.

Büyükavşar, Ziyaret region, *Pinus nigra* plantation area, 1150 m, 16 vi 1990, AAD 2536.

Medit.

O. fallax Freyn. et Sint.

Gözükızıllı to Hacıobası, steppe areas between fields, 710 m, 3 vi 1990, AAD 2579. Pazarlık, steppe areas between fields, 900-1100 m, 2 vi 1990, AAD 2166, AAD 2175.

En.-LC

O. ornata (Willd.) Desv.

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2101. Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2234.

En.-LC, Ir.-Tur.

O. radiata (Desf.) M.Bieb.

Gözükızıllı to Hacıobası, steppe areas between fields, 710 m, 24 vi 1990, AAD 2581.

Ononis pusilla L.

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 1797.

Medit.

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

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1481.

Oxytropis fominii Grossh.

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2103.

En.-LC, Ir.-Tur.

Ox. pallasii Pers.

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1324.

***Phaseolus vulgaris** L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 2705.

Pisum sativum L. subsp. **elatius** (M.Bieb.)
Asch. et Graebn. var. **elatius**

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1823.

Medit.

***Robinia pseudoacacia** L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 2721.

Sophora alopecuroides L. var. **alopecuroides**

Şarklı, steppe, limestone, 850 m, 23 vi 1989, AAD 1545.

Trifolium arvense L. var. **arvense**

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 2590.

T. hirtum All.

Yeniceli to Ağaylı, steppe, 800 m, 17 vi 1990, AAD 2068.

Medit.

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

Büyükkavşar, Büyükhemit region, in *Quercus* scrub, 1150 m, 25 ii 1990, B 1419!

T. ochroleucum Huds.

Koçubaba, gardens and fields, 1100-1200 m, 26 iii 1989, AAD 1463.

T. pannonicum J.Jacq. subsp. **elongatum**
(Willd.) Zoh.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 1927, AAD 1925. Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2267.

En.-LC

T. patens Schreb.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 1936. Pazarçık, steppe areas between fields, 900-1100 m, 2 vi 1990, AAD 2184.

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

Büyükkavşar, Büyükhemit region, in *Quercus* scrub, 1150 m, 25 ii 1990, B 1207!

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

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 2645. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 2645.

T. repens L. var. **macrorrhizum** (Boiss.)
Boiss.

Koçubaba, garden, and fields, 1100-1200 m, 23 ix 1990, AAD 1645. Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1341.

Trigonella brachycarpa (Fisch.) Morris

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 2482.

Ir.-Tur.

Tr. capitata Boiss.

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1875.

Ir.-Tur.

Tr. coeruleascens (M.Bieb.) Hal.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 2005. Delice, around the city, fallow fields, sandy places, 650 m, 18 v 1989, AAD 1245.

Ir.-Tur.

Tr. crassipes Boiss.

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1155. Delice, around the city, fallow fields, sandy places, 650 m, 18 v 1989, AAD 1256.

Tr. fischeriana Ser.

Büyükyığı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2542. Şarklı, steppe, limestone, 850 m, 26 v 1990, AAD 2131.

Tr. foenum-graecum L.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 3948.

Tr. lunata Boiss.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 2072. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 2009.

Ir.-Tur.

Tr. monantha C.A.Mey. subsp. **monantha**

Şarklı, steppe, limestone, 850 m, 26 v 1990, AAD 2127.

Ir.-Tur.

Tr. monspeliaca L.

Yeşilyazı, streamside, meadows, 800 m, 8 iv 1989, AAD 1025. Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 10 viii 1989, AAD 2071.

Medit.

Tr. spicata Sibth. & Sm.

Yeniceli to Ağaylı, steppe, 800 m, 17 vi 1990, AAD 2455. Şarklı, steppe, limestone, 850 m, 26 v 1990, AAD 2105. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2374.

Medit.

Tr. velutina Boiss.

Delice, around the city, fallow fields, sandy places, 650 m, 18 v 1989, AAD 1285, AAD 1252.

Ir.-Tur.

Vicia anatolica Turriill

Çatalelma to Kiyıkavurgalı, steppe areas between fields, 700 m, 25 v 1990, AAD 2053. Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 2037.

Ir.-Tur.

V. cracca L. subsp. **stenophylla** Vel.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 1959. Hıdırşeyh, steppe areas, field margin, 1000 m, 2 vi 1990, AAD 2208.

V. cuspidata Boiss.

Yeniceli to Ağaylı, steppe, 800 m, 17 vi 1990, AAD 2073.

Medit.

V. galilaea Plitmann et Zoh.

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2340-AG.

V. monantha Retz. subsp. **monantha**

Delice, around the city, fallow fields, sandy places, 650 m, 18 v 1989, AAD 1859.

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

Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 17 vi 1990, AAD 1030, AAD 1061.

V. peregrina L.

Pazarlık, steppe areas between fields, 900-1100 m, 2 vi 1990, AAD 2265. Çankırı: Irmakaralısı, steppe areas between fields, 800 m, 31 iii 1990, AAD 1729.

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

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 2639. Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2277-AG.

FAGACEAE

Quercus cerris L. var. cerris

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1447.

This taxon is the most dominant element of the oak scrub in the area. It is usually associated with *Q. pubescens*. Both species have been used for fire wood. Many kinds of galls were observed on the leaves of these species.

Q. ithaburesis Decne. subsp. macrolepis (Kotschy.) Hedge et Yalt.

Dağobası, steppe areas between *Quercus* scrub, 900-1100 m, 23 ix 1990, AAD 2833. İmirli to Cingeyli, in *Quercus* scrub, 900-1100 m, 10 viii 1989, AAD 1434. Medit.

These specimens grow only in hedges and gardens. They are protected for their timber and edible fruit.

Q. pubescens Willd.

Yeşilyazi, streamside, 800 m, 8 iv 1989, AAD 1044. Tokuş Mountain, in *Quercus* scrub, 1200-1350 m, 5 viii 1990, AAD 2754.

FRANKENIACEAE

Frankenia hirsuta L.

Çatalelma to Kırıkkavurgalı, steppe areas between fields, 700 m, 10 viii 1989, AAD 1612.

GERANIACEAE

Erodium acaule (L.) Bech. et Thell.

Şarklı, empty places in *Quercus* scrub, limestone, 900 m, 26 v 1990, AAD 1679. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1120.

Medit.

E. ciconium (L.) L'Hér.

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2332-AG.

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

Şarklı, steppe, limestone, 850 m, 26 v 1990, AAD 2059. Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1150.

Geranium rotundifolium L.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 2087. Ambardere, steppe areas between fields, 1100 m, 2 vi 1990, AAD 2311.

G. tuberosum L. subsp. tuberosum

Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1049. Koçubaba, gardens and fields, 1100-1200 m, 26 iii 1989, AAD 1108.

GENTIANACEAE

Centaurium erythraea Rafn subsp. turcicum (Velen.) Melderis

Büyükyığı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2591.

Medit.

C. pulchellum (Sw.) Druce

Koru, steppe areas between *Quercus* scrub clearings, 650 m, 17 vi 1990, AAD 1614.

C. spicatum (L.) Fritsch

Koru, steppe areas between *Quercus* scrub clearings, 650 m, 17 vi 1990, AAD 1613.

GLOBULARIACEAE

Globularia orientalis L.

Gözükızıllı to Hacıobası, steppe areas between fields. 710 m, 3 vii 1990, AAD 2575.

Ir.-Tur.

An albino population of the species was observed in the Delice region.

G. trichosantha Fisch. et C.A.Mey.

Akkuyu, steppe areas between fields, 1100 m, 10 iii 1989, AAD 1050. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1476.

HYPERICACEAE

Hypericum adenotrichum Spach

Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2290-AG.

En.-LC

H. lydium Boiss.

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1295. Hıdırşeyh, 1000 m, steppe areas, 2 vi 1990, AAD 2292. Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 2040.

Ir.-Tur.

H. perforatum L.

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2558. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1423.

H. scabrum L.

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2121. Delice, around the city, fallow fields, sandy places, 650 m, 18 v 1989, AAD 1311.

Ir.-Tur.

H. triquetrifolium Turra

Büyükyığı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2728.

ILLECEBRACEAE

Herniaria glabra L.

Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2283-AG.

H. incana Lam.

İmirli to Cingeyli, steppe, 900-1100 m, 3 vi 1990, AAD 2344-AG.

Paronychia kurdica Boiss. subsp. kurdica var. kurdica

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1233. Akkuzulu, in mixed *Quercus* scrub, 850-1100 m, 17 vi 1990, AAD 1985.

Scleranthus annuus L. subsp. annuus

İmirli to Cingeyli, steppe, 900-1100 m, 3 vi 1990, AAD 2361-AG.

LAMIACEAE

Acinos rotundifolius Pers.

Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 1889.

Ajuga chamaepitys (L.) Schreb. subsp. chia (Schreb.) Arcang. var. chia

Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1227.

A. salicifolia (L.) Schreb.

İmirli to Cingeyli, steppe, 900-1100 m, 3 vi 1990, AAD 2373.AG.

Ir.-Tur.

Ballota nigra L. subsp. **anatolica** P.H.Davis

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 10 viii 1989, AAD 2811.

En.-LC, Ir.-Tur.

Clinopodium vulgare L. subsp. **arundanum** (Boiss.) Nyman

Samsun road to Şarklı, steppe, limestone, 800 m, 26 v 1990, AAD 2412. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 2647.

Lallemantia iberica (M.Bieb.) Fisch. et C.A.Mey.

Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 17 vi 1990, AAD 2004.

Ir.-Tur.

Lamium amplexicaule L.

Koru, steppe areas between *Quercus* scrub clearing, 650 m, 25 v 1990, AAD 1649. Yeşilyazi, streamside, meadows, 800 m, 8 iv 1989, AAD 1023.

Euro.-Sib.

L. macrodon Boiss. et Huet

Sulakyurt, around the city, in *Quercus* scrub, 800-1100 m, 25 iii 1990, AAD 1576. Ambardere, steppe areas between fields, 1100 m, 2 vi 1990, AAD 2309.

Ir.-Tur.

Lycopus europaeus L.

Delice, around the city, steppe areas between fields, 650 m, 18 v 1991, AAD 2813.

Euro.-Sib.

Marrubium anisodon K.Koch

Ambardere, steppe areas between fields, 1100 m, 17 viii 1990, AAD 2303.

M. parviflorum Fisch. et C.A.Mey. subsp. **parviflorum**

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1488. Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1427.

Ir.-Tur.

M. parviflorum Fisch. et C.A.Mey. subsp. **oligodon**

Delice, around the city, steppe areas, 650 m, 18 v 1989, AAD 1170, AAD 1890. Gözükızıllı to Hacıobası, steppe areas between fields, 710 m, 3 vi 1990, AAD 2370.

Mentha spicata L. subsp. **tomentosa** (Briq.) Harley

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1342. Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1989, AAD 1503.

Moluccella laevis L.

Karaköseli, steppe areas between fields, 800 m, 10 viii 1990, AAD 2745.

Ir.-Tur.

Nepeta cataria L.

Şarklı, empty places in *Quercus* scrub, limestone, 900 m, 26 v 1990, AAD 2564. Euro.-Sib.

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

Yeniceli to Ağaylı, in *Quercus* scrub, 1000 m, 17 vi 1990, AAD 2476.

***Ocimum basilicum** L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1989, AAD 1831b.

Phlomis armeniaca Willd.

İmirli to Cingeyli, steppe areas, 900-1100 m, 3 vi 1990, AAD 2436-AG.

En.-LC, Ir.-Tur.

P. pungens Willd. var. **pungens**

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1697.

Prunella laciniata (L.) L.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1909.

Euro.-Sib.

Salvia aethiopsis L.

Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2289-AG.

S. bracteata Banks et Sol.

Faraşlı to Kalekişla, in *Quercus* scrub, 1200 m, 10 viii 1989, AAD 2091.

Ir.-Tur.

S. caespitosa Montbret et Aucher ex Benth.

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2538.

En.-LC, Ir.-Tur.

S. ceratophylla L.

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1891.

Ir.-Tur.

S. cryptantha Montbret et Aucher ex Benth.

Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1083. Çankırı: İrmakaralısı, marshy places, 700 m, 23 vi 1990, AAD 1710.

En.-LC, Ir.-Tur.

S. cyanescens Boiss. et Bal.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 2693.

En.-LC, Ir.-Tur.

S. sclarea L.

Yeniceli to Sarıkızlı, open areas in *Quercus* scrub, 1100 m, 17 vi 1990, AAD 2473.

S. syriaca L.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1364. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2387.

Ir.-Tur.

S. tchihatcheffii (Fisch. et C.A.Mey.) Boiss.

Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2202-AG. Şarklı, *Quercus* scrub, limestone, 900 m, 26 v 1990, AAD 2198.

En.-LC, Ir.-Tur.

S. verticillata L. subsp. **amasiaca** (Freynt et Bornm.) Bornm.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1528. Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1828.

Ir.-Tur.

S. virgata J.Jacq.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1502.

Ir.-Tur.

S. viridis L.

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1179. Çankırı: Irmakaralısı, steppe areas between fields, 800 m, 31 iii 1990, AAD 1711.

Medit.

Satureja hortensis L.

Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1597. Yenice to Sarıkızlı, open areas in *Quercus* scrub, 1100 m, 17 vi 1990, AAD 2835.

Scutellaria orientalis L. subsp. *pinnatifida* Edmondson

Ambardere, steppe areas between fields, 1100 m, 2 vi 1990, AAD 2312. Hıdırşeyh, steppe areas, 1000 m, 2 vi 1990, AAD 2231.

Sc. rubicunda Hornem. subsp. *subvelutina* (Rech. fil.) Edmondson

Kavak to Gözükızıllı, steppe, 740 m, 3 vi 1990, AAD 2774.

Medit.

Sc. salviifolia Benth.

Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2293-AG.

En.-LC

Sideritis lanata L.

Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2177-AG.

Medit.

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

Büyükyığılı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2608. Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2211.

Medit.

Stachys annua (L.) L. subsp. *annua* var. *annua*

Büyükavşar, Büyükhemit region, in *Quercus* scrub, 1150 m, 25 ii 1990, B 1178!

St. annua (L.) L. subsp. *annua* var. *lycaonica* Bhattacharjee

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1400.

Ir.-Tur.

St. byzantina K.Koch

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 1911. Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1514.

St. cretica L. subsp. *anatolica* Rech.

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1866.

En.-LC, Ir.-Tur.

St. iberica M.Bieb. subsp. *iberica* var. *iberica*

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 2690.

En.-LC, Ir.-Tur.

St. iberica M.Bieb. subsp. *stenostachya* (Boiss.) Rech.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1948.

Ir.-Tur.

St. lavandulifolia Vahl var. *lavandulifolia*

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 4160.

Ir.-Tur.

St. setifera C.A.Mey. subsp. *lycia* (Gand.) Bhattacharjee

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1992, AAD 4144.

En.-LC, Ir.-Tur.

Teucrium chamaedrys L. subsp. *chamaedrys*

Koru, steppe areas between *Quercus* scrub clearings, 650 m, 17 vi 1990, AAD 2409. Ağaylı to Karalı, in *Quercus* scrub, 1000 m, 17 vi 1990, AAD 1974.

Euro.-Sib.

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

Yeniceli to Sarıkızlı, open areas in *Quercus* scrub, 1100 m, 31 iii 1990, AAD 2454.

Ir.-Tur.

T. orientale L. var. *orientale*

Delice, Tokuş Mountain, in *Quercus* scrub, 1200-1350 m, 5 viii 1990, AAD 2633.

Ir.-Tur.

T. polium L.

İmirli to Cingeyli, in *Quercus* scrub, 900-1100 m, 10 viii 1989, AAD 1440.

T. scordium L. subsp. *scordioides* (Schreb.) Maire et Petitm.

Çatalema to Kırıkkavurgalı, steppe areas between fields, 700 m, 10 viii 1989, AAD 1608..

Euro.-Sib.

Thymus longicaulis C.Presl subsp. *longicaulis* var. *subisophyllus* (Borbás) Jalas

İmirli to Cingeyli, in *Quercus* scrub, 900-1100 m, 10 viii 1989, AAD 2400.

Th. sipyleus Boiss. subsp. *sipyleus* var. *sipyleus*

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1477.

En.-LC

Th. praecox Opiz subsp. *skorpilii* (Velen.) Jalas var. *skorpilii*

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2136.

Wiedemannia orientalis Fisch. et C.A.Mey.

Eskiçerikli, fallow fields and steppe areas between fields, 650 m, 18 v 1990, AAD 1802. Hıdırşeyh, steppe areas, field margin, 1000 m, 2 vi 1990, AAD 2210.

En.-LC, Ir.-Tur.

Ziziphora capitata L.

Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2215-AG.

Ir.-Tur.

Z. taurica M.Bieb. subsp. *taurica*

Şarklı, steppe, limestone, 850 m, 26 v 1990, AAD 2098.

Ir.-Tur.

Z. tenuior L.

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1198.

Ir.-Tur.

LINACEAE

Linum austriacum L. subsp. *austriacum*

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2511. Delice, around the city, fallow fields, sandy places, 650 m, 18 v 1989, AAD 1290. Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1898.

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

Kavak to Gözükızıllı, steppe, 740 m, 3 vi 1990, AAD 2325-AG.

En.-LC, Ir.-Tur.

L. hirsutum L. subsp. *anatolicum* (Boiss.) Hayek var. *pseudoanatolicum* P.H.Davis

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2386-AG.

En.-LC, Ir.-Tur.

L. mucronatum Bertol. subsp. *mucronatum*

Gözükızıllı to Hacıobası, steppe areas between fields, 710 m, 24 vi 1990, AAD 2366-AG.

Ir.-Tur.

L. mucronatum Bertol. subsp. *armenum* (Brodz.) P.H.Davis

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1161.

Ir.-Tur.

L. nodiflorum L.

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1896. Delice, around the city, fallow fields, sandy places, 650 m, 18 v 1989, AAD 1163.

Medit.

L. tenuifolium L.

Şarklı, steppe, limestone, 850 m, 26 v 1990, AAD 2125.

LORANTHACEAE

Viscum album L. subsp. *abietis* (Wiesb.) Abromeit

Koçubaba, garden, 1100-1200 m, 23 ix 1990, AAD 1752.

This species mainly grows on *Amygdalus communis*, *Pyrus communis* subsp. *sativa* and *P. elaeagnifolia*, and it rarely grows on *Pinus nigra*.

LYTHRACEAE

Lythrum salicaria L.

Koru, steppe areas between *Quercus* scrub clearings, 650 m, 17 vi 1990, AAD 1591.

Euro.-Sib.

L. hyssopifolia L.

Yeşilyazi, streamside, meadows, 800 m, 8 iv 1989, AAD 1563, AAD 1564.

MALVACEAE

Althaea officinalis L.

Çatalelma to Kıyıkavurgalı, steppe areas between fields, 700 m, 10 viii 1989, AAD 1593.

Alcea pallida Waldst. et Kit.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 10 viii 1989, AAD 2809.

**Hibiscus esculentus* L.

Sulakyurt, around the city, in *Quercus* scrub, 800-1100 m, 25 viii 1990, AAD 2823.

Malva neglecta Wallr.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1404. Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 2085.

M. sylvestris L.

Çankırı: Irmakaralısı, marshy places, 700 m, 23 vi 1990, AAD 2491.

MORACEAE

**Morus alba* L.

Çankırı: Irmakaralısı, marshy places, 700 m, 23 viii 1990, AAD 2502.

MORINACEAE

Morina persica L.

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2109.

OLEACEAE

**Fraxinus angustifolia* Vahl subsp. *angustifolia*

Balışeyh, around the city, hedge, 600 m, 17 x 1993, AAD 4023.

Jasminum fruticans L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1379.

**Syringa vulgaris* L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 2681.

ONOGRACEAE

Epilobium angustifolium L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 2660.

E. hirsutum L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1512. Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 2796.

E. montanum L.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 2799.

Euro.-Sib.

E. minutiflorum Hausskn.

Büyükyazlı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2623.

Ir.-Tur.

OROBANCHACEAE

Orobanche anatolica Boiss. et Reut.

Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 17 vi 1990, AAD 1087.

The specimens were collected near *Quercus* scrub, but no relation to other plants by roots of the parasitic plants was observed.

O. nana Noë ex G.Becker

Şarklı, empty places in *Quercus* scrub, limestone, 900 m, 26 vi 1990, AAD 2123.

O. cernua Loefl.

Sulakyurt, around the city, in *Quercus* scrub, 800-1100 m, 25 iii 1990, AAD 2078.

The plant grows on *Trigonella spicata*.

PAPAVVERACEAE

Fumaria densiflora DC.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1387. Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1807.

F. officinalis L.

Yeniceli to Ağaylı, steppe, 800 m, 17 vi 1990, AAD 1732. Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1899.

Glaucium corniculatum (L.) Rud. subsp. *corniculatum*

Büyükyazlı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2627. Çankırı: Irmakaralısı, steppe areas between fields, 800 m, 31 iii 1990, AAD 2497. Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 17 vi 1990, AAD 1990.

Hypecoum imberbe Sibth. et Sm.

Yeşilyazı, streamside, meadows, 800 m, 8 iv 1989, AAD 1065. Yeniceli to Sarıkızlı, open areas in *Quercus* scrub, 1100 m, 31 iii 1990, AAD 1734.

Papaver argemone L.

Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2213-AG. Koçubaba, garden, 1100-1200 m, 26 iii 1989, AAD 1180.

P. dubium L.

Şarklı, steppe, limestone, 850 m, 26 v 1990, AAD 2510.

P. macrostomum Boiss. et Huet ex Boiss.

Çankırı: Irmakaralısı, steppe areas between fields, 800 m, 23 iii 1990, AAD 1706.

Ir.-Tur.

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

Şarklı, steppe, limestone, 850 m, 26 v 1990, AAD 2151.

PLANTAGINACEAE

Plantago major L. subsp. **major**

Koçubaba, gardens and fields, 1100-1200 m, 20 ix 1991, AAD 2827.

P. maritima L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 1950.

P. lanceolata L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 25 iii 1989, 30 iv 1989, AAD 1507, AAD 1353. Eskiçerikli, fallow fields and steppe areas between fields, 650 m, 18 v 1990, AAD 1815. Samsun road to Şarklı, steppe, limestone, 800 m, 26 v 1990, AAD 2557.

P. scabra Moench

Gözükızılı to Hacıobası, steppe areas between fields. 710 m, 24 vi 1990, AAD 2582.

PLUMBAGINACEAE

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

Tokuş Mountain, in *Quercus* scrub, 1200-1350 m, 5 viii 1990, AAD 2761. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1450.

Ir.-Tur.

A. caesareum Boiss. et Bal.

Ambardere, steppe areas between fields, 1100 m, 17 viii 1993, AAD 3949.

En.-LC, Ir.-Tur.

The species was collected only from the given locality. The area is widely used for plantation.

Goniolimon collinum (Griseb.) Boiss.

Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 17 vi 1990, AAD 1988. Samsun road to Şarklı, steppe, limestone, 800 m, 26 vi 1990, AAD 2525.

Medit.

Limonium gmelinii (Willd.) O.Kunze

Karaköseli, steppe areas between fields, 800 m, 10 viii 1989, AAD 1586.

Euro.-Sib.

L. liliacinum (Boiss. et Bal.) Wagenitz

Çankırı: Irmakaralısı, marshy places, 700 m, 23 vi 1990, AAD 3942.

En.-LC, Ir.-Tur.

Plumbago europaea L.

Kavak to Gözükızılı, steppe, 740 m, 5 viii 1990, AAD 2780. İmirli to Cingeyli, in *Quercus* scrub, 900-1100 m, 10 viii 1989, AAD 1433.

Euro.-Sib.

POLYGALACEAE

Polygala anatolica Boiss. et Heldr.

Koçubaba, gardens and fields, 1100-1200 m, 26 iii 1989, AAD 1396.

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

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1201.

POLYGONACEAE

Atraphaxis billardieri Jaub. et Spach var. **billardieri**

Tokuş Mountain, in *Quercus* scrub, 1200-1350 m, 5 viii 1990, AAD 2769.

Ir.-Tur.

Polygonum arenastrum Bor

Kırkkale, in the city, empty places, 800 m, 22 ix 1989, AAD 1634 (Leblebici, 1990).

P. aviculare L.

Yeşilyazı, streamside, meadows, 800 m, 8 iv 1989, AAD 1562. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1497.

P. cognatum Meisn.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1398.

P. convolvulus L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 3211.

P. laphatfolium L.

Yeşilyazı, streamside, meadows, 800 m, 8 iv 1989, AAD 1581.

Euro.-Sib.

Rumex acetosella L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1381. Ambardere, steppe areas between fields, 1100 m, 2 vi 1990, AAD 2307-AG.

R. conglomeratus Al.Murray

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1523.

R. crispus L.

Yeniceli to Ağaylı, in *Quercus* scrub, 1000 m, 17 vi 1990, AAD 2460. Delice, around the city, fallow fields, sandy places, 650 m, 18 v 1989, AAD 1998. Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 1969.

PORTULACACEAE

Portulaca oleracea L.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 2822.

PRIMULACEAE

Anagallis foemina Mill.

Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1583.

Medit.

Androsace maxima L.

Sulakyurt, Ağaylı to Karalı, in *Quercus* scrub, 1000 m, 31 iii 1990, AAD 1651.

Glaux maritima L.

Delice, around the Delice river, sandy places, 600 m, 10 viii 1989, AAD 1870.

This species was collected only from riversides.

RANUNCULACEAE

Adonis aestivalis L. subsp. *aestivalis*

Koru, steppe areas between *Quercus* scrub clearings, 650 m, 25 v 1990, AAD 1187. Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 8 iv 1989, AAD 1071.

Ceratocephalus falcatus (L.) Pers.

Deredüzü, steppe, 1000 m, 18 iii 1990, AAD 1663. Koçubaba, mixed *Quercus* forest, 1300 m, 25 iii 1989, AAD 1008. Yenilli, fields, 650 m, 25 iii 1989, AAD 1009.

Clematis orientalis L.

Çatalelma to Kiyıkavurgalı, steppe areas between fields, 700 m, 10 viii 1989, AAD 1588. Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1878.

Consolida glandulosa (Boiss. et Huet) Bornm.

Tokuş Mountain, in *Quercus* scrub, 1200-1350 m, 5 viii 1990, AAD 2766.

En.-LC, Ir.-Tur.

C. orientalis (Gay) Schröd.

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 2828.

Ir.-Tur.

C. raveyi (Boiss.) Schröd.

Ağaylı to Karalı, in *Quercus* scrub, 1000 m, 17 vi 1990, AAD 2451.

En.-LC, Ir.-Tur.

C. regalis S.F.Gray subsp. *paniculata* (Host) Soó var. *paniculata*

Samsun road to Şarklı, steppe, limestone, 800 m, 26 v 1990, AAD 2523. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1425.

C. thirkeana (Boiss.) Schröd.

Büyükyığı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2622. Tokuş Mountain, in *Quercus* scrub, 1200-1350 m, 5 viii 1990, AAD 2778.

En.-LC.

Delphinium venulosum Boiss.

Evlialı to Güvendik, steppe areas between fields, 750-1000 m, 3 vi 1990, AAD 2778. Koçubaba, fields, 1100-1200 m, 23 ix 1990, AAD 1340.

Nigella orientalis L.

Ambardere, steppe areas between fields, 1100 m, 17 viii 1993, AAD 2537.

N. segetalis M.Bieb.

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1852.

Ranunculus argyrea Boiss.

Hıdırşeyh, steppe areas between fields, 1000 m, 18 iii 1990, AAD 2276.

R. arvensis L.

Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 17 vi 1990, AAD 1032. Akkuyu, steppe areas between fields, 1100 m, 10 iii 1989, AAD 1093.

R. constantinopolitanus (DC.) d'Urv.

Koçubaba, meadows, 1100-1200 m, 23 ix 1990, AAD 2003.

R. damascenus Boiss. et Gaill.

Koçubaba, steppe, 1100-1200 m, 23 ix 1990, AAD 1386.

Ir.-Tur.

R. illyricus L. subsp. *tenorii* (D.S.Jord.) P.H.Davis

Hıdırşeyh, steppe areas between fields, 1000 m, 18 iii 1990, AAD 2287. Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1361.

R. isthmicus Boiss. subsp. *stepporum* P.H.Davis

Yeniceli to Sarıkızlı, open areas in *Quercus* scrub, 1100 m, 17 vi 1990, AAD 1742. Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1264.

Ir.-Tur.

R. repens L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 1921.

R. trichophyllus Chaix

Çatalelma to Kiyıkavurgalı, steppe areas between fields, 700 m, 25 v 1990, AAD 2049.

RESEDACEAE

Reseda inodora Reichb.

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1148, AAD 1139.

R. lutea L. var. *lutea*

Koru, steppe areas between *Quercus* scrub clearings 650 m, 17 vi 1989, AAD 1185. Büyükyığı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2597.

R. orientalis (Müller) Boiss.

Samsun road to Şarklı, steppe, limestone, 800 m, 26 vi 1990, B. Mutlu 5047.

Medit.

RHAMNACEAE

Paliurus spina-christi Mill.

Yeniceli to Sarıkızlı, open areas in *Quercus* scrub, 1100 m, 17 vi 1990, AAD 2457.

Rhamnus rhodopeus Velen.

Ambardere, steppe areas between fields, 1100 m, 2 vi 1990, AAD 2313-AG.

ROSACEAE

Agrimonia eupatoria L.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1509. Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 2588.

Amelanchier rotundifolia (Lam.) Dum.-Cours. subsp. *integrifolia* (Boiss. et Hohen.) Browicz

Tokuş Mountain, in *Quercus* scrub, 1200-1350 m, 5 viii 1990, AAD 2764.

Medit.

***Amygdalus communis** L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 4529.

Ir.-Tur.

A. orientalis Mill.

Şarklı, empty places in the *Quercus* scrub, limestone, 900 m, 26 v 1990, AAD 2122.

***Armeniaca vulgaris** L.

Evlialı to Güvendik, steppe areas between fields, 750-1000 m, 5 viii 1990, AAD 2322-AG.

***Cerasus avium** (L.) Moench

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 2715.

Cotoneaster nummularia Fisch. et C.A.Mey.
Şarklı, empty places in *Quercus* scrub, limestone, 900 m, 26 vi 1990, AAD 2148. Kavak to Gözükızıllı, steppe, 740 m, 5 viii 1990, AAD 2772.

Crataegus monogyna J.Jacq. subsp. *monogyna*

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1320. İmirli to Cingeyli, in *Quercus* scrub, 900-1100 m, 10 viii 1989, AAD 1438.

C. orientalis Pallas ex M.Bieb. var. *orientalis*
Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1571.

C. szovitsii Pojark.

Şarklı, empty places in *Quercus* scrub, limestone, 900 m, 26 vi 1990, AAD 2146.

***Cydonia oblonga** Mill.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 2635.

Filipendula vulgaris Moench

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 2843.

Euro.-Sib.

Geum urbanum L.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1923.

Euro.-Sib.

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

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 2684.

Potentilla recta L.

Şarklı, steppe, limestone, 850 m, 26 v 1990, 23 vi 1990, AAD 2147. İmirli to Cingeyli, in *Quercus* scrub, 900-1100 m, 10 viii 1989, AAD 2416.

P. supina L.

Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1567. Koçubaba, garden, 1100-1200 m, 23 ix 1990, AAD 1343.

P. reptans L.

Büyükyayağı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2628.

Prunus cocomilia Ten. (Dönmez & Yıldırım, 2000)

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 25 iii 1989, AAD 1540.

Pr. spinosa L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 4090.

***Pr. x domestica** L.

Şarklı, garden, 700 m, 23 vi 1990, AAD 2560. Koçubaba, garden, 1100-1200 m, 26 iii 1990, AAD 2685, AAD 2675.

***Pyrus communis** L. subsp. *sativa* (DC.) Hegi

Şarklı, garden, 700 m, 23 vi 1990, AAD 2552. Koçubaba, garden, 1100-1200 m, 23 ix 1990, AAD 2682, AAD 2676.

Py. elaeagnifolia Pallas subsp. *elaeagnifolia*

Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2274-AG.

Py. elaeagnifolia Pallas subsp. *kotschyana* (Boiss.) Browicz

Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1078. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2341.

Rosa canina L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 1478.

***R. damascena** Mill.

Koçubaba, garden, 1100-1200 m, 23 ix 1990, AAD 1093.

R. hemisphaerica Herrm.

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1337. Hıdırşeyh, 1000 m, steppe areas, 2 vi 1990, AAD 2231.

Ir.-Tur.

Rubus canescens DC. var. *canescens*

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 2658. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1418.

Ru. discolor Weihe et Nees

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 2812.

Ru. sanctus Schreb.

Sulakyurt, around the city, in *Quercus* scrub, 800-1100 m, 25 iii 1990, AAD 2810.

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

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1136. Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2189.

Sorbus torminalis (L.) Crantz var. *pinnatifida* Boiss.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 4143.

Euro.-Sib.

Spiraea crenata L.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 1752.

RUBIACEAE

Asperula arvensis L.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1413. Ambardere, steppe areas between fields, 1100 m, 17 viii 1993, AAD 2301.

Medit.

A. glomerata (M.Bieb.) Griseb. subsp. *glomerata*

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2150. Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1193.

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

Kavak to Gözükızıllı, steppe, 740 m, 5 viii 1990, AAD 2790. Büyükyayağı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2613.

En.-LC

A. orientalis Boiss. et Hohen.

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1834.

Callipeltis cucullaria (L.) Steven

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2360-AG.

Ir.-Tur.

Crucianella bithynica Boiss.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1951.

Medit.

Cruciata taurica (Pallas ex Willd.) Ehrend.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 1682. Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 1781.

Ir.-Tur.

C. articulata (L.) Ehrend.

Sulakyurt, around the city, in *Quercus* scrub, 800-1100 m, 25 iii 1990, AAD 1723.

Ir.-Tur.

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

Yeniceli to Sarıkızlı, open areas in *Quercus* scrub, 1100 m, 17 vi 1990, AAD 2465. Büyükyaağlı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2595.

Ir.-Tur.

G. spurium L. subsp. *spurium*

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1917.

Euro.-Sib.

G. tenuissimum M.Bieb. subsp. *trichophorum* (Kar.& P.Kir.) Ehrend.

Büyükyaağlı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2612. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2428.

Ir.-Tur.

G. tricornutum Dandy

Yeşilyazı, streamside, meadows, 800 m, 8 iv 1989, AAD 1064. Yeşilyazı, streamside, meadows, 800 m, 8 iv 1989, AAD 1897.

Medit.

G. verum L. subsp. *verum*

Büyükyaağlı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2595. Euro.-Sib.

Rubia peregrina L.

Koru, steppe areas between *Quercus* scrub clearings, 650 m, 17 vi 1990, AAD 2406.

Medit.

RUTACEAE

Haplophyllum telephioides Boiss.

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2111.

En.-LC, Ir.-Tur.

H. thesioides (Fisch. ex DC.) G.Don

Kavak to Gözükızıllı, steppe, 740 m, 5 viii 1990, AAD 2325-AG.

SALICACEAE

**Populus alba* L.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 10 viii 1990, AAD 2820.

Euro.-Sib.

**P. nigra* L. subsp. *nigra*

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1990, AAD 2686.

P. tremula L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1990, AAD 2646.

Euro.-Sib.

This species is rare in the area and only three shrub specimens were seen in the given locality.

**Salix alba* L.

Yeşilyazı, streamside, meadows, 800 m, 8 iv 1989, AAD 1057. Koçubaba, garden, 1100-1200 m, 26 iii 1989, AAD 1113 (male), AAD 1114 (female).

Euro.-Sib.

**S. babylonica* L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 4239.

SANTALACEAE

Thesium billardieri Boiss.

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1165. Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 2699.

Ir.-Tur.

SCROPHULARIACEAE

Bungea trifida (Vahl) C.A.Mey.

Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1075.

Ir.-Tur.

Digitalis lamarckii N.R.Ivanov

Eskiçerikli, fallow fields and steppe areas between fields, 650 m, 18 v 1990, AAD 2629.

En.-LC, Ir.-Tur.

Kickxia spuria (L.) Dumort. subsp. *integrifolia* (Brot.) R.Fernandes

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1558.

Linaria corifolia Desf.

Şarklı, empty places in *Quercus* scrub, limestone, 900 m, 26 v 1990, AAD 2140.

En.-LC, Ir.-Tur.

L. kurdica Boiss. et Hohen. subsp. *kurdica*

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1547.

Ir.-Tur.

L. simplex (Willd.) DC.

Büyükyaağlı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2517.

Odontites aucheri Boiss.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1990, AAD 2692.

Ir.-Tur.

Scrophularia scopolii [Hoppe ex] Pers. var. *scopolii*

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 2589.

S. xanthoglossa Boiss. var. *decipiens* (Boiss. et Kotschy) Boiss.

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1788.

Ir.-Tur.

Verbascum afyonense Hub.-Mor.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1991, AAD 4100.

En.-EN, Ir.-Tur.

No specimen of this species was found despite several trips to the type locality, Afyon, in western Turkey, by the author and other botanists. However, the author came across flowering and fruiting materials of the species in the given locality in Kırıkkale. The seeds were sent to the gene bank in İzmir. After this collection, another specimen collected from Kahramanmaraş by Murat Ekici was examined by the author. In the last two localities the species is represented only by two or three individuals. Therefore, the species may become extinct.

V. caudatum Freyn et Bornm.

Büyükyığı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1991, AAD 3909.

En.-LC, Ir.-Tur.

V. cheiranthifolium Boiss. var. *asperulum* (Boiss.) Murb.

Büyükyığı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1991, AAD 3915.

En.-LC

V. cheiranthifolium Boiss. var. *cheiranthifolium*

Dağobası, steppe areas between *Quercus* scrub, 900-1100 m, 23 ix 1990, AAD 2831.

V. lasianthum Boiss. ex Benth.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1570.

V. tossiense Freyn et Sint.

Samsun road to Şarklı, steppe, limestone, 800 m, 26 vi 1990, AAD 2504.

En.-LC, Ir.-Tur.

V. wiedemannianum Fisch. et C.A.Mey.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 2735.

En.-LC

This species is rare in the area. White- and violet-flowered specimens were observed.

Veronica anagallis-aquatica L.

Koçubaba, garden, 1100-1200 m, 23 ix 1990, AAD 1522.

Ve. bozakmanii M.A.Fischer

Ambardere, steppe areas between fields, 1100 m, 2 vi 1990, AAD 2308.

Ir.-Tur.

Ve. grisebachii Walters

Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1272. Medit.

Ve. multifida L.

Sulakyurt, Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 10 viii 1989, AAD 1750.

En.-LC

Ve. polita Fr.

Deredüzü, steppe, 1000 m, 18 iii 1990, AAD 1667.

En.-LC

Ve. pusilla Kotschy var. *erciyesdagi* (M.A.Fischer) M.A.Fischer

Koçubaba, empty places, 1100-1200 m, 23 ix 1990, AAD 4103.

En.-VU

This species was collected from the one locality and it is rare in the area.

Ve. triloba (Opiz) Kerner

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 1684.

Ve. triphyllus L.

Yenilli, fields, 650 m, 12 vi 1996, AAD 1019.

SIMAROUBACEAE

Ailanthus altissima (Mill.) Swingle

Koru, steppe areas between *Quercus* scrub clearings, 650 m, 17 vi 1990, AAD 2407.

This taxon is naturalised in the area and it has high adaptive value.

SOLANACEAE

***Capsicum annum** L.

Koçubaba, gardens, and fields, 1100-1200 m, 23 ix 1990, AAD 1712.

Datura stramonium L.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 1584.

Hyoscyamus reticulatus L.

Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 17 vi 1990, AAD 1993.

Ir.-Tur.

Lycium depressum Stocks

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1510.

***Lycopersicon esculentum** Mill.

Koçubaba, gardens, and fields, 1100-1200 m, 23 ix 1990, AAD 2704.

Solanum dulcamara L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1531.

S. nigrum L. subsp. *nigrum*

Yeşilyazı, streamside, 800 m, 8 iv 1989, AAD 1582.

S. nigrum L. subsp. *schultesii* (Opiz) Wessely

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 2818.

***S. tuberosum** L.

Koçubaba, garden, 1100-1200 m, 23 ix 1990, AAD 2713.

TAMARICACEAE

Myricaria germanica (L.) Desv.

Hıdırşeyh, 1000 m, field margin, 2 vi 1990, AAD 2273-AG.

Tamarix parviflora DC.

Çatalelma to Kıyıkavurgalı, steppe areas between fields, 700 m, 10 viii 1989, AAD 1700.

THYMELAEACEAE

Thymelaea passerina (L.) Coss. et Germ.

Büyükyığı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2607. Evliyali to Güvendik, steppe areas between fields, 750-1000 m, 5 viii 1990, AAD 2789.

ULMACEAE

Celtis caucasica Willd.

Şarklı, empty places in the *Quercus* scrub, limestone, 900 m, 23 vi 1990, AAD 2092.

Ulmus minor Mill. subsp. *minor*

Koçubaba, gardens, and fields, 1100-1200 m, 23 ix 1990, AAD 2683, AAD 2674.

The leaves of shrubs are often infected by insects.

URTICACEAE

Parietaria judaica L.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 4240.

Urtica dioica L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1545.

Euro.-Sib.

VALERIANACEAE

Centranthus longiflorus Stev. subsp. *longiflorus*

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 2668. Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1335.

C. calcitrapa (L.) Dufur.

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2099.

Medit.

Valeriana phu L.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 1760.

Valerianella carinata Loisel.

Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1027.

V. coronata (L.) DC.

Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1236. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2354-AG.

V. pumila (L.) DC.

Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1166.

V. vesicaria (L.) Moench

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1894.

VERBENACEAE

Verbena officinalis L.

Koru, steppe areas between *Quercus* scrub clearing, 650 m, 17 vi 1990, AAD 2404.

VIOLACEAE

Viola occulta Lehm.

Büyükyaağlı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2615. Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1317.

V. sieheana W.Becker

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1991, AAD 4092.

VITACEAE

***Vitis vinifera** L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 1526. Delice, around the city, fallow fields, sandy places, 650 m, 18 v 1989, AAD 1316.

ZYGOPHYLLACEAE

Peganum harmala L.

Çatalelma to Kıyıkavurgalı, steppe, 700 m, 10 viii 1989, AAD 1603. Gözükızıllı to Hacıobası, steppe, 710 m, 24 vi 1990, AAD 2323.

This species forms associations in the given localities.

Tribulus terrestris L.

Kavak to Gözükızıllı, steppe, 740 m, 5 viii 1990, AAD 3719-AG.

Zygophyllum fabago L.

Delice, around the Delice river, sandy places, 600 m, 10 viii 1989.

Ir.-Tur.

Monocotyledones

ARACEAE

Arum elongatum Steven subsp. **detruncatum** (C.A.Mey. ex Schott) Riedl

Sulakyurt, around the city, in *Quercus* scrub, 800-1100 m, 25 iii 1990, AAD 2062.

Ir.-Tur.

This species mainly grows in *Quercus* scrub.

AMARYLLIDACEAE

Sternbergia colchiciflora Waldst. et Kit.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1991, AAD 2834.

The specimens were collected only from the given locality and approximately a hundred samples were observed. The locality was visited three times in successive years but no specimen was found. There is no particular threat to this taxon.

CYPERACEAE

Bolboschoenus maritimus (L.) Palla var. **cymosus** (Reichb.) Kit Tan et Oteng-Yeboah

Çatalelma to Kıyıkavurgalı, steppe areas between fields, 700 m, 10 viii 1989, AAD 2050.

Carex divulsa Stokes subsp. **divulsa**

Büyükkavşar, Büyükhemit region, in *Quercus* scrub, 1150 m, 25 ii 1990, B 1397!

Euro.-Sib.

C. divulsa Stokes subsp. **leersii** (Kneuck.) W.Koch

Hıdırşeyh, 1000 m, steppe areas, 2 vi 1990, AAD 2558-AG.

Euro.-Sib.

C. divisa Huds.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1689. Çatalelma to Kıyıkavurgalı, steppe, 700 m, 10 viii 1990, AAD 2058.

C. flacca Schreb. subsp. **serrulata** (Biv.) Greuter

Büyükyaağlı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2610.

Medit.

C. hordeistichos Vill.

Deredüzü, steppe, 1000 m, 2 vi 1990, AAD 2299-AG.

C. distans L.

Deredüzü, steppe, 1000 m, 2 vi 1990, AAD 2297-AG.

C. halleriana Asso

İmirli to Cingeyli, in *Quercus* scrub, 900-1100 m, 31 iii 1990, AAD 2437.

Cyperus fuscus L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 2853.

Euro.-Sib.

Eleocharis palustris (L.) Roem. et Schult.

Çatalelma to Kıyıkavurgalı, steppe areas between fields, 700 m, 10 viii 1989, AAD 2061.

Scirpoides holoschoenus (L.) Soják

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1561.

IRIDACEAE

Crocus ancyrensis (Herb.) Maw

Deredüzü, steppe, 1000 m, 18 iii 1990, AAD 1665.

En.-LC, Ir.-Tur.

C. danfordiae Maw

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1013.

En.-LC

C. olivieri Gay subsp. **olivieri**

Büyükkavşar, Ziyaret region, *Pinus nigra* plantation area, 1150 m, 2 v 1990, AAD 1644.

LC

Gladiolus atroviolaceus Boiss.

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2420.

Ir.-Tur.

Iris kerneriana Asch. et Sint. ex Baker

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1924.

En.-LC, Euro.-Sib.

I. suaveolens Boiss. & Reuter

Sulakyurt, Hamzalı village, c. 900 m, damp places, 21 iv 2000, H. Şağban 3466.

I. caucasica Hoffm. subsp. *caucasica*

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1749.

JUNACEAE

Juncus inflexus L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 1577. Koçubaba, steppe, 1100-1200 m, 23 ix 1990, AAD 1518.

J. gerardi Loisel. subsp. *gerardi*

Çatalelma to Kiyıkavurgalı, steppe areas between fields, 700 m, 10 viii 1989, AAD 2060.

J. hybridus Brot.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1556.

J. articulatus L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1519. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1557.

Euro.-Sib.

LILIACEAE

***Allium cepa** L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 2701.

***A. sativum** L.

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, AAD 2705.

A. paniculatum L. subsp. *paniculatum*

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 2797. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1621.

Medit.

A. pseudoflavum Vved.

Büyükyığı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2614. Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2517.

Ir.-Tur.

A. ampeloprasum L.

Şarklı, steppe, limestone, 850 m, 26 v 1990, AAD 2551. Koçubaba, fields, 1100-1200 m, 23 ix 1990, AAD 2689.

Medit.

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

Gözükızıllı to Hacıobası, steppe areas between fields, 710 m, 24 vi 1990, AAD 2584. Pazarcık, steppe areas between fields, 900-1100 m, 2 vi 1990, AAD 2180.

Medit.

Asparagus officinalis L.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 10 viii 1989, AAD 2807. Sulakyurt, around the city, in *Quercus* scrub, 800-1100 m, 25 iii 1990, AAD 2011. Amardere, steppe areas between fields, 1100 m, 2 vi 1990, AAD 2205.

Asphodeline globifera J.Gay ex Baker

Çatalelma to Kiyıkavurgalı, steppe areas between fields and small ponds, 700 m, 25 v 1990, AAD 2407. Akkuzulu, in mixed *Quercus* scrub, steppe, 850-1100 m, 17 vi 1990, AAD 1978.

Medit.

Bellevalia clusiana Griseb.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 2654.

En.-LC

B. longipes Post

Hıdırşeyh, steppe areas between fields, 1000 m, 18 iii 1990, AAD 2224-AG.

Ir.-Tur.

B. sarmatica (Pallas ex Georgi) Woronow

Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1245.

Colchicum triphyllum G.Kunze

Büyükavşar, Ziyaret region, *Pinus nigra* plantation area, 1150 m, 2 v 1990, AAD 1643.

Medit.

Fritillaria pinardii Boiss.

Akkuyu, steppe areas between fields, 1100 m, 10 viii 1989, AAD 1074.

Ir.-Tur.

The species is common in Central Anatolia, but the habitats of the species are on the decline due to field opening.

Gagea fistulosa Ker-Gawl.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 25 iii 1989, AAD 1692.

G. peduncularis (J. et C.Presl) Pascher

Hıdırşeyh, steppe areas between fields, 1000 m, 18 iii 1990, AAD 1681.

Medit.

G. granatelli (Parl.) Parl.

Deredüzü, steppe, 1000 m, 18 iii 1990, AAD 1666.

Medit.

Hyacinthella micrantha (Boiss.) Chouard

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 1683.

En.-VU, Ir.-Tur.

This species is known from few localities in Turkey. It was collected only at one given locality in the area. The habitat is under threat from over-grazing and field opening.

Merendera sobolifera C.A.Mey.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1011.

Ir.-Tur.

Muscari comosum (L.) Mill.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 2083.

Medit.

M. longipes Boiss.

Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1278.

Ir.-Tur.

M. aucheri (Boiss.) Baker

Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 1776.

En.-LC

M. armeniacum Leichtlin ex Baker

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1117.

M. neglectum Guss.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 1733.

M. azureum Fenzl

Yeniceli to Sarıkızlı, open areas in *Quercus* scrub, 1100 m, 31 iii 1989, AAD 1695.

En.-LC

Ornithogalum sphaerocarpum Kerner

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 2666. Sulakyurt, around the city, in *Quercus* scrub, 800-1100 m, 25 iii 1990, AAD 2024.

O. oligophyllum E.D.Clarke

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 1574.

O. comosum L.

Delice, around the city, fallow fields, sandy places, 650 m, 29 iv 1989, AAD 1177.

ORCIDACEAE**Cephalanthera rubra** (L.) Rich.

İmirli to Cingeyli, in *Quercus* scrub, 900-1100 m, 31 iii 1990, AAD 2446.

C. damasonium (Mill.) Druce

Şarklı, empty places in *Quercus* scrub, limestone, 900 m, 26 v 1990, AAD 2110.

Euro.-Sib.

Dactylorhiza iberica (M.Bieb. ex Willd.) Soó

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1991, AAD 3537.

Medit.

Epipactis condensata Boiss. ex D.P.Young

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1462.

Medit.

E. microphylla (Ehrh.) Swartz

Büyükyaağlı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 2618.

Orchis tridentata Scop.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1991, AAD 4098.

LC, Medit.

O. purpurea Huds.

Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 2023.

LC, Euro.-Sib.

O. mascula (L.) L. subsp. **pinetorum** (Boiss. et Kotschy) E.G.Camus

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 2001. Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 1774.

O. pallens L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1990, AAD 2002.

LC, Euro.-Sib.

Platanthera bifolia (L.) Rich.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1992, AAD 4097.

LC, Euro.-Sib.

POACEAE**Aegilops cylindrica** Host

Büyükyaağlı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, AAD 1821. Hıdırşeyh, 1000 m, steppe areas, 2 vi 1990, AAD 2240.

Ir.-Tur.

A. geniculata Roth

Şarklı, steppe, limestone, 850 m, 26 v 1990, AAD 2118.

Medit.

A. triuncialis L. subsp. **triuncialis**

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2445. Büyükvavşar, Ziyaret region, *Pinus nigra* plantation area, 1150 m, 16 vi 1990, AAD 2318.

A. umbellulata Zhuk. subsp. **umbellulata**

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2540.

Ir.-Tur.

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

Çankırı: İrmakaralısı, steppe areas between fields, 800 m, 23 iii 1990, AAD 2498.

Agrostis stolonifera L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1504.

Euro.-Sib.

Alopecurus arundinaceus Poirlet

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1373.

Euro.-Sib.

Al. myosuroides Huds. var. **myosuroides**

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1876.

Euro.-Sib.

Apera spica-venti (L.) P.Beauv.

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2443.

Euro.-Sib.

Arundo donax L.

Çankırı: İrmakaralısı, marshy places, 700 m, 23 vi 1990, AAD 3944.

Avena sterilis L. subsp. **sterilis**

Büyükvavşar, Büyükhemit region, in *Quercus* scrub, 1150 m, 25 iv 1990, B 1425!

Av. sativa L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 2719.

Bothriochloa ischaemum (L.) Keng

Yeniceli to Sarıkızlı, open areas in *Quercus* scrub, 1100 m, 17 vi 1990, AAD 2470. Koçubaba, mixed *Quercus* forest, 1300-1370 m, 10 viii 1989, AAD 1459.

Briza media L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 2844.

Br. humilis M.Bieb.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1937. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2429.

Bromus japonicus Thunb. subsp. **japonicus**

Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2183. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2372-AG.

B. scoparius L.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1906. Pazarçık, steppe areas between fields, 900-1100 m, 2 vi 1990, AAD 2255-AG.

B. danthoniae Trin.

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2524.

B. tectorum L.

Delice, around the city, fallow fields, sandy places, 650 m, 18 v 1989, AAD 1208. Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 1778.

B. sterilis L.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1908.

B. tomentellus Boiss.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1916. Delice, around the city, fallow fields, sandy places, 650 m, 18 v 1989, AAD 1168.

Ir.-Tur.

Catabrosa aquatica (L.) P.Beauv.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 1063.

Chrysopogon gryllus (L.) Trin. subsp. **gryllus**

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1960.

Crypsis schoenoides (L.) Lam.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1575.

Cynodon dactylon (L.) Pers. var. **villosus** Regel

Çatalelma to Kıyıkavurgalı, steppe areas between fields, 700 m, 10 viii 1989, AAD 1607.

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

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1424.

Echinaria capitata (L.) Desf.

Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 1769.

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

Samsun road to Şarklı, steppe, limestone, 800 m, 26 v 1990, AAD 2334a.

E. hispidus (Opiz) Melderis subsp. **barbatus** (Schur) Melderis

Samsun road to Şarklı, steppe, limestone, 800 m, 26 v 1990, AAD 2334b.

Eragrostis minor Host.

Kavak to Gözükızıllı, steppe, 740 m, 3 vi 1990, AAD 2779.

Eremopyrum orientale (L.) Jaub. et Spach

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, AAD 1844.

Ir.-Tur.

Festuca valesiaca Schleich. ex Gaudin

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2415.

F. paphlagonica (St.-Yves) Markgr.-Dannenb. subsp. **paphlagonica**

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 1949. Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2281-AG.

En.-LRlc, Euro.-Sib.

Gaudiniopsis macra (M.Bieb.) Eig subsp. **macra**

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2359-AG.

Glyceria plicata (Fr.) Fr.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1990, AAD 2064.

Hordeum geniculatum All.

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1900.

Euro.-Sib.

H. marinum Huds. var. **marinum**

Kavak to Gözükızıllı, steppe, 740 m, 3 vi 1990, AAD 2329-AG.

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

Delice, around the city, fallow fields, sandy places, 650 m, 18 v 1989, AAD 1330.

***H. vulgare** L.

Kavak to Gözükızıllı, steppe, 740 m, 3 vi 1990, AAD 2327-AG.

Koeleria cristata (L.) Pers.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 2664. Pazarçık, steppe areas between fields, 900-1100 m, 2 vi 1990, AAD 2165-AG.

Lolium perenne L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1496.

Ir.-Tur.

Melica ciliata L. subsp. **ciliata**

Şarklı, empty places in the *Quercus* scrub, limestone, 900 m, 26 v 1990, AAD 2561. Pazarçık, steppe areas between fields, 900-1100 m, 2 vi 1990, AAD 2169-AG.

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

Şarklı, steppe, limestone, 850 m, 23 vi 1990, AAD 2566.

Micropyrum tenellum (L.) Link

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2364.

Medit.

Pennisetum orientale Rich.

Yeniceli to Sarıkızlı, open areas in *Quercus* scrub, 1100 m, 17 vi 1990, AAD 1463.

Ir.-Tur.

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

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1990, AAD 2653. İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2532.

Phragmites australis (Cav.) Trin. ex Steud.

Koçubaba, garden, and fields, 1100-1200 m, 23 ix 1990, AAD 1533.

Euro.-Sib.

Piptatherum miliaceum (L.) Coss. subsp. **thomasii** (Duby) Freitag

Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, AAD 2195-AG.

Pi. holciforme (M.Bieb.) Roem. et Schult. subsp. **holciforme** var. **holciforme**

Hıdırşeyh, steppe areas between fields, 1000 m, 18 vi 1990, AAD 2257.

Pisilurus incurvus (Gouan) Schinz et Thell.

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, AAD 2345.

Poa alpina L. subsp. **fallax** F.Hermann

Delice, around the city, steppe areas between fields, 650 m, 29 iv 1989, AAD 1214. Özdere *Pinus nigra* plantation area, in mixed *Quercus* scrub, 1100 m, 12 v 1990, AAD 1777.

Po. nemoralis L.

Çatalelma to Kıyıkavurgalı, steppe areas, 700 m, 25 v 1990, AAD 2057.

Po. pratensis L.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1989, AAD 1384.

Po. trivialis L.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1521.

Polypogon monspeliensis (L.) Desf.

Koçubaba, mixed *Quercus* forest, 1300-1370 m, 30 iv 1989, AAD 1491.

Puccinellia koeieana Melderis subsp. *anatolica* Kit Tan

Kavak to Gözükızıllı, steppe, 740 m, 3 vi 1990, *AAD* 2330.

En.-LC

Sclerochloa dura (L.) P.Beauv.

Faraşlı to Kalekişla, in *Quercus* scrub, 900-1200 m, 12 v 1989, *AAD* 1063.

Secale cereale L. var. *cereale*

Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, *AAD* 2278-AG.

Setaria viridis (L.) P.Beauv.

Koçubaba, steppe, plantation area, 1100-1300 m, 16 vi 1989, *AAD* 1576.

S. glauca (L.) P.Beauv.

Tokuş Mountain, in *Quercus* scrub, 1200-1350 m, 5 viii 1990, *AAD* 2775.

Stipa arabica Trin. et Rupr.

Şarklı, steppe, limestone, 850 m, 26 v 1990, 23 vi 1990, *AAD* 2153. Pazarlık, steppe areas between fields, 900-1100 m, 2 vi 1990, *AAD* 2226.

Ir.-Tur.

St. bromoides (L.) Dörfel.

İmirli to Cingeyli, steppe areas between fields,

900-1100 m, 3 vi 1990, *AAD* 2448.

Medit.

St. capillata L.

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, *AAD* 1338.

St. holosericea Trin.

Çankırı: Irmakaralısı, steppe areas between fields, 800 m, 31 iv 1990, *AAD* 2495.

Ir.-Tur.

St. pontica P.Smirn.

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, *AAD* 1275.

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

Büyükyazlı, *Pinus nigra* plantation area, steppe, 1100-1200 m, 3 vii 1990, *AAD* 2594. Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, *AAD* 1947.

Ir.-Tur.

Tragus racemosus (L.) All.

Karaköseli, steppe areas between fields, 800 m, 10 viii 1990, *AAD* 2739.

**Triticum aestivum* L.

Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, *AAD* 2205-AG.

T. baeoticum Boiss. subsp. *baeoticum*

Koçubaba, gardens and fields, 1100-1200 m, 23 ix 1990, *AAD* 2827a.

Trachynia distachya (L.) Link

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, *AAD* 2441. Hıdırşeyh, 1000 m, steppe areas, field margin, 2 vi 1990, *AAD* 2181-AG.

Medit.

Vulpia ciliata Dumort. subsp. *ciliata*

İmirli to Cingeyli, steppe areas between fields, 900-1100 m, 3 vi 1990, *AAD* 2357.

V. unilateralis (L.) Stace

Delice, around the city, steppe areas between fields, 650 m, 18 v 1989, *AAD* 1167.

**Zea mays* L. subsp. *mays*

Sulakyurt, around the city, in *Quercus* scrub, 800-1100 m, 25 vii 1990, *AAD* 2817.

THYPACEAE

Typha shuttleworthii W.Koch et Sond.

Yeşilyazı, streamside, 800 m, 8 iv 1989, *AAD* 1585.