

The Flora of the Mount Kısır (Kars and Ardahan) and Nearest Environs

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Abstract: Mount Kısır constitutes the study area; the northern and western parts are within the boundary of the Çıldır district (Ardahan), the southwestern part is within the boundary of Susuz and the eastern and southeastern parts are within the boundary of Arpaçay (Kars). This place is the highest part of Northeastern Anatolia (3150 m) and lies within square A9. On Mount Kısır and in its environs, a continental climate prevails. In accordance with the climate, basaltic and chestnut brown soil prevails in the region.

The study was carried out in the region in suitable periods between 1996 and 1999. During the study, about 800 plant specimens were identified and thus 60 families, 266 genera and 416 species, 119 subspecies and 43 varieties associated with them were determined, as they were considered distinct.

The floristic regions of 44.8% of the collected plants are known. Of all the species, 22.5% are Irano-Turanian and 22.3% are Euro-Siberian, 10.2% of the last group being Euxine. The endemic rate is 5.4%. On Mount Kısır, the vegetation types are steppic rocky, alpine, shrub, wet meadow (hygrophilic) and marshy (hydrophytic), the most common of which is steppic vegetation.

Key Words: Flora, Kars, Çıldır, Mount Kısır, Turkey

Kısır Dağı (Kars ve Ardahan) ve Yakın Çevresinin Florası

Özet: Kısır Dağı, kuzey ve batısı Çıldır ilçesinin (Ardahan), güneybatısı Susuz, doğu ve güneydoğusu da Arpaçay ilçesinin (Kars) sınırları içerisinde. Burası Bölgenin en yüksek (3150 m.) yeri olup A9 karesine girer. Kısır Dağı ve çevresinde karasal iklim hüküm sürer. Bu iklimin karakterine uygun olarak da bazaltik ve kestanerengi topraklar hakimdir.

Bölgede 1996-1999 tarihleri arasında uygun dönemlerde araştırma yapıldı. Araştırma sırasında farklı görülerek alınan yaklaşık 800 bitki örneğinin adlandırılmasıyla 60 familya, 266 cins ve bunlara bağlı olarak 415 tür, 119 alttür ve 43 varyete belirlendi.

Toplanan bitkilerin% 44.8'inin floristik bölgesi bellidir. Bunlardan% 22.5'i İran-Turan ve% 10.2'si Öksin (Karadeniz) olmak üzere% 22.3'ü de Avrupa-Sibirya elementleridir. Endemizm oranı da% 5.4'tür. Kısır Dağı'nda en yaygın vejetasyon tipi step olmak üzere, kaya vejetasyonu, alpin vejetasyonu, çalı vejetasyonu, sulu çayır (higrofil) vejetasyonu ve bataklık (hidrofit) vejetasyonu tipleri mevcuttur.

Anahtar Sözcükler: Flora, Kars, Çıldır, Kısır Dağı, Türkiye

Introduction

Mount Kısır lies within the boundaries of the Çıldır district (Ardahan) to the north and west, Susuz to the southwest, and the Arpaçay district (Kars) to the east and southeast. The highest part of the region, Mount Kısır occupies the grid square A9 in *The Flora of Turkey's* (Davis, 1965) grid system (Figure 1). As its height ranges from 1800 to 3150 m, low-mountain and high-mountain steppe vegetation is generally found. There is only one published study carried out in a nearby area (Ocakverdi, 1986).

Although the terrestrial climate is dominant in the environs of the mountain, conditions at higher elevations are quite different from those in lower zones. For example, during an observation made on 28 June 1998 at 11:00, the temperature in Arpaçay, at an elevation of 1700 m, was 32°C, while at Mount Kısır's peak it was 12.6°C. This difference of nearly 20°C is significant enough to affect the distribution of many plants in this area. Thus, in order to understand the differences in climate types and diagrams, climatic data for Mount Kısır itself were analyzed as well as data for Arpaçay and

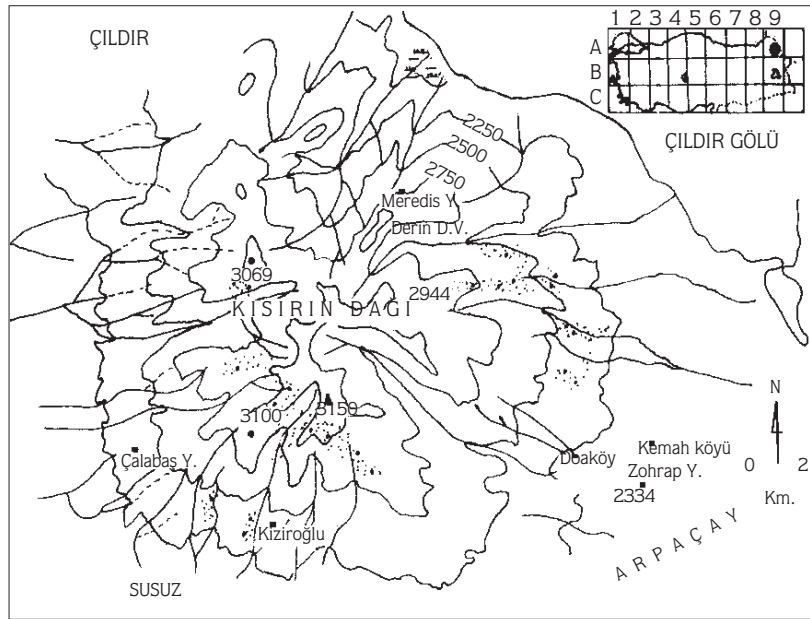


Figure 1. Map of the study area.

Ardahan with the scientifically developed Schreiber formula (Erinç, 1969). According to the analysis, the semi-arid and wet climate, which is defined as terrestrial, was dominant in Arpaçay, which was undergoing a period of drought, while the wet and cold climate, which is the true terrestrial climate, was dominant in Ardahan and Mount Kısır, which were not undergoing drought (Figures 2 and 3). In accordance with the character of this climate, basaltic and chestnut brown soils are dominant on Mount Kısır. The mountain was selected as a research area as it is little-studied and isolated area, in addition to the properties given above.

Materials and Methods

The research material comprised of plant specimens collected and observed between September 1996 and September 1999. Eight hundred plant specimens, which had different appearances during different vegetation periods, were collected. After the specimens had been dried by pressing, identifications were carried out and the specimens were prepared as herbarium material according to the herbarium techniques. The specimens are kept at the Gazi University Herbarium (GAZI).

During the identification areas of the plants, *The Flora of Turkey* (Davis 1965-1985; Davis et al., 1988) and the Gazi Herbarium were used to a great extent. Other floras were also used, such as *Flora of the USSR* (Komorow et

al., 1934-1960), *Flora of Iraq* (Townsend, 1968), *Flora orientalis* (Boissier, 1867-1888) and *Flora Europaea* (Tutin et al., 1964-1980) as well as a published study carried out in a nearby area (Ocakverdi, 1986). The life forms of the species in the floristic list were determined according to Raunkiaer (Mueller-Dombois and Ellenberg, 1974). The climates of the region in general and of Mount Kısır in particular were found with the aid of climate books (Erinç, 1969; and Akman, 1990).

The plant species collected from the region and the families they belong to are given in alphabetical order for the reader's convenience. The endemic plants in the flora have been indicated according to IUCN threat categories (IUCN Commission, 1994). In addition, while the term "cosmopolitan" was used for plants with distribution in more than three regions, and the term "unknown" was used for species whose areas of distribution are multi-regional, the phytogeographic regions of plants with special areas of distribution were specified. Because all of the plants were collected from the study area in square A9, this information is not repeated.

Results and Discussion

The results of the research comprise the collection of approximately 800 plant specimens, their identification and field observations. Five hundred and seventy-seven plant species were determined, 3 belonging to the

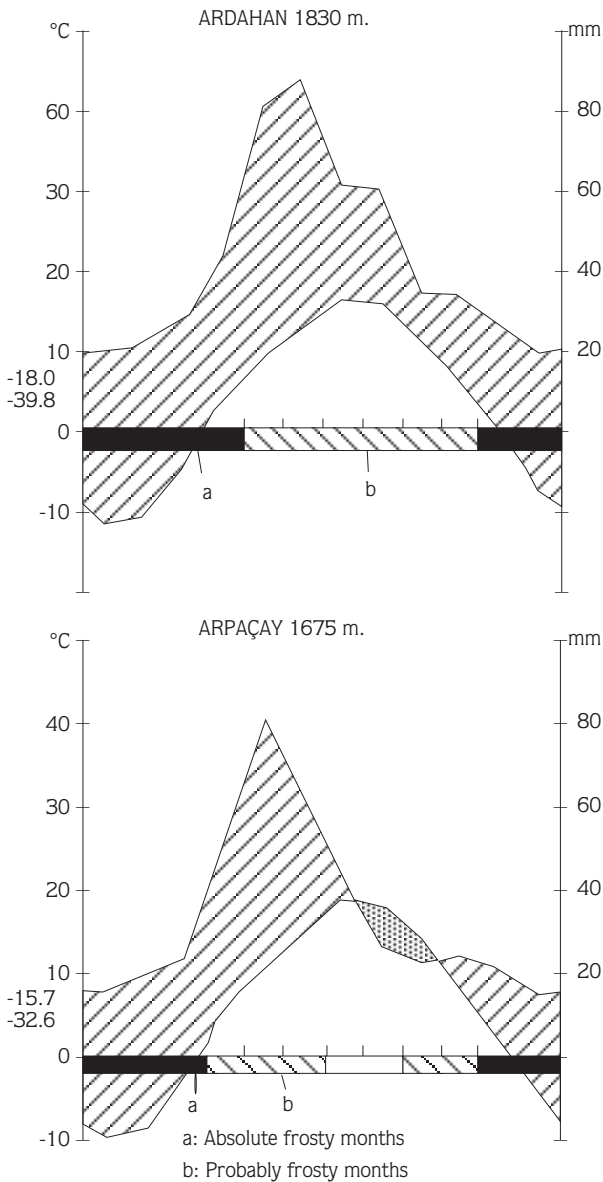


Figure 2. Climatic diagrams of Ardahan and Arpaçay.

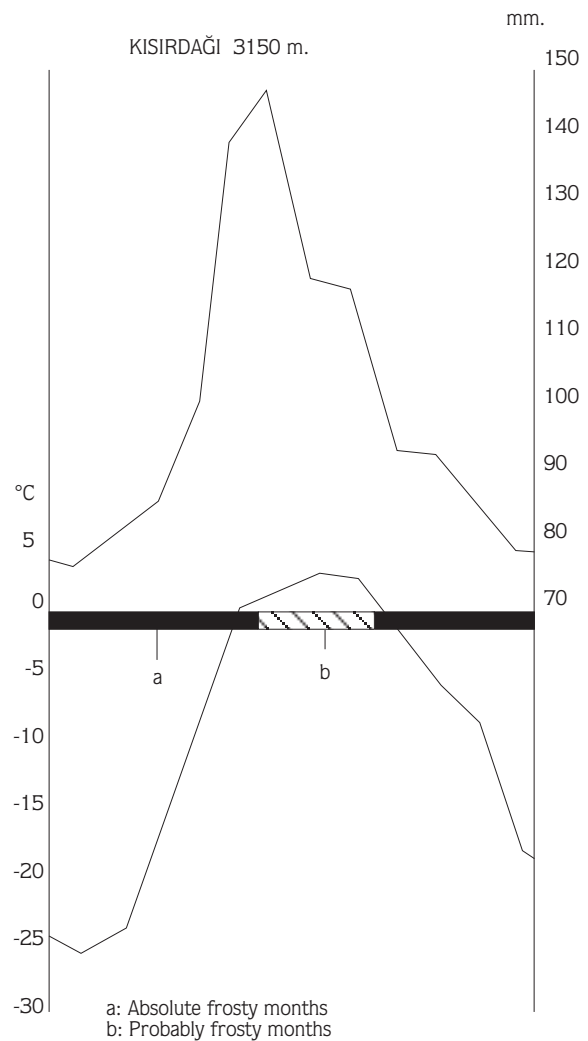


Figure 3. Climatic diagrams of Kısır Dağ.

division *Pteridophyta*, one belonging to *Gymnospermae* and the others belonging to *Angiospermae*. Of the angiosperms, 78 belong to the Monocotyledones, and 496 to the Dicotyledones.

These figures indicate that Mount Kısır is not floristically rich. There are very important geographic and ecological reasons for this. In the general region, which neighbours Georgia, the continental climate is dominant (Erinç, 1969; Akman, 1990). Since heat is inversely proportion to elevation, it is understandable that frost or

the possibility of frost is present all months of the year (Fig. 3). In addition to these extreme climatic conditions, grazing occurs on vast areas of the mountain that have been allocated to animal breeders. If the settled plateaus on the mountain are also taken into consideration, the areas used for grazing and agriculture exceed the protected areas. Furthermore, the mountain is lacking in habitat variety because of the presence of Lake Çıldır and many villages in the vicinity. While there is a general decline in the diversity of species in Anatolia as one moves

from west to east, there is also an increase in the number of individuals of certain species. The same can be said of endemics. This is because, apart from transition zones such as Sivas and microclimatic zones such as Erzincan and Iğdır, the harsh continental climate in this region reduces the vegetation period, especially as one moves northeast, and is thus not suitable for the distribution of species that have low ecological tolerance.

Phytogeographically speaking, Mount Kısır is part of the Eastern Anatolian High Mountain sector of the Irano-Turanian phytogeographic region (Zohary, 1973). Furthermore, the distribution of the plants in the phytogeographic regions is quite interesting (Table 1).

Table 1. Distribution of species in floristic regions and comparison with studies done in nearby area (%).

Study Name and Date	Mount Kısır 1999	Akyaka-Arpaçay 1986
Number of Species	577	748
Irano-Turanian	22.5	24.7
Euro-Siberian	22.3	15.1
Mediterranean	-	-
Unknown	35.4	48.1
Cosmopolitan	14.4	12.1
Endemics	5.4	4.4

According to the information in the table, while the Irano-Turanian elements were 22.5%, Euro-Siberian elements were 22.3%, values very close to one another. This is because although the Euro-Siberian region lies within Anatolia's Black Sea borders, our research area was very close to this region. In addition, because most Euro-Siberian elements are dependent on hygrophilic and hydrophytic habitats, they spread easily in these types of environments regardless of climatic region. The reason for this, aside from the fact that they generally have high ecological tolerance, is that in terms of climate they are cosmopolitan while in terms of habitat they have hydrophytic and hygrophilic habitats. Thus as the hygrophilic low and high mountain pastures, humid valleys and hydrophytic marshes on which they are dependent are found on Mount Kısır and environs, the climate has no drought period (Fig. 3). In any event, because such habitats are found throughout Anatolia, species of Euro-Siberian origin also have a certain

distribution density throughout Anatolia. As seen in Table 1, in each research area, there are no elements of the Mediterranean phytogeographic region. However, in every region there are, to varying extents, microclimates that are topographically and climatically similar to the climates of neighbouring regions. Furthermore, the primary reason may be that this area is very far from the Mediterranean phytogeographic region. A second reason is that the heat and precipitation regimes of the dominant climate of northeastern Anatolia are not suitable for the formation of enclaves of plants of Mediterranean origin, particularly on Mount Kısır, where frost or the probability of frost are present in all months of the year (Fig. 3). Perhaps the region's endemism can be interpreted in the same way. Although in some studies (Davis et al., 1965-1985) the political boundary is cited as the reason for the low number of endemic species in northeastern Anatolia, especially in the Kars region, I do not share this opinion. The political boundary is the reason for the inadequate evaluation of the Irano-Turanian phytogeographic region as a whole. The border region of northeastern Anatolia is poor in terms not only of endemism, but also in flora in general. It would be more logical to attribute this situation to the extreme climatic conditions that are dominant in the high mountain strata of the region. The same conclusion is reached when studies carried out are compared in terms of size of area.

Again in Table 1, it can be seen that Euro-Siberian elements in particular formed a difference of 7.2% between the two research areas, which are close to one another. The reason for this, apart from Mount Kısır's geographic position, is that it has mountain steppes 3000 meters in height, as well as mountain pastures. In the second research area, however, apart from the plain, half of the area is covered with low mountain steppes. As seen in the climate diagrams of Arpaçay and Mount Kısır, these two general features give rise to a difference in the water capacity sufficient to affect the distribution of Euro-Siberian elements between the two neighboring areas. Also the endemism rate is nearly same in these areas.

Mount Kısır's flora is also interesting in terms of its structural complexity. Life forms of species according to the total number of species are as follows: Hemicryptophytes (H) 76.4%, Therophytes (T) 11.3%, Geophytes (G) 5.9%, Vascular hydrophytes (Vh) 2.4%, Nanophanerophytes (NP) 2.4%, Chamaephytes (Ch) 1.2% and Phanerophytes (P) 0.3%. The abundance of

Table 2. Comparison of the 10 genera containing the most species in the studies conducted in the nearby region.

Study area	Mount Kısır (Kars)	Akyaka-Arp. (Kars)
Genera Name and Number of Species	Centaurea 11	Silene 17
	Carex 10	Carex 16
	Potentilla 10	Veronica 15
	Silene 10	Astragalus 14
	Astragalus 10	Centaurea 12
	Sedum 9	Trifolium 12
	Trifolium 9	Ranunculus 12
	Ranunculus 9	Potentilla 11
	Tanacetum 9	Campanula 10
	Campanula 8	Polygonum 10

hemicryptophytic plants here is an indication that there is no forest vegetation in the region and thus no apparent structural complexity. This is because in mountainous areas such as this, where the topographic structure is not suitable for the formation of microclimates, structural complexity is dependent on optimum climatic and biotic factors. The woody vegetation found on the northern slopes of Mount Kısır clearly shows that forest vegetation previously existed in this region. The *Quercus petrae* and *Populus tremula* dwarf trees here suggest that the final example of regressive development in the area was a mixed forest of these two species. Although there is excessive livestock grazing here, the real reason for the regressive development of the forest vegetation is that a very cold climate is dominant here (Erinç, 1969 and Akman, 1990). There are no forests on Mount Kısır, and, other than grain production, the local people have no alternative but to use plant sources for fuel and as lumber.

The 10 families to which the plants collected on Mount Kısır belong were ordered and compared with the results of the study conducted nearby (Table 3). The *Asteraceae* family always ranks first not only in the areas compared, but in Turkey in general. This is due to the diverse characteristics of the *Asteraceae* family, as well as

Table 3. Comparison of the 10 families containing the most species in studies conducted in the nearby region (%).

Study Area and Number of Species	Mount Kısır 578	Akyaka-Arpaçay 748
Asteraceae	16.8	16.8
Fabaceae	7.3	7.4
Poaceae	7.3	9.5
Lamiaceae	5.7	6.4
Rosaceae	5.7	3.6
Caryophyllaceae	5.2	7.2
Brassicaceae	5.2	4.5
Apiaceae	4.7	3.9
Scrophulariaceae	4.7	4.8
Boraginaceae	3.5	3.6

to the large number of species it contains. The other families in the first ten also generally rank high in other studies. Likewise, it has been stated that the first three families of Turkey are *Asteraceae*, *Fabaceae* and *Lamiaceae* (Davis, 1965, 1975, 1985) and that the fourth family is *Rosaceae* (Heywood, 1978).

As was the case with the families, the genera represented by the highest number of species generally occupy the highest positions on the list. However, it is necessary to take into consideration Anatolia's topographic and climatic structures. This is because although the study areas are close to one another the land's morphology, elevation above sea level, and influence from neighbouring regions tend to differ. Furthermore, there tend to be differences between areas in certain factors harming biological diversity, and hence environmental health, such as excessive population increase, and uses of land such as for construction, irrigation, grazing and preservation. Thus, while species belonging to families and genera are absent in certain habitats, they are concentrated in others according to ecological needs and ecological tolerance. For this reason, it is not possible to generalize about the wilderness, as there will always be variation.

Recommendation

In the north, northeast and southwest zones of Mount Kısır there are creeks and low-elevation valleys with streams. Because the precipitation regime is regular, the vegetation thrives until autumn, and so these zones are suitable for beekeeping.

The northern and eastern slopes of Mount Kısır lead directly to Lake ıldır. However, because these slopes have a very dense plant covering, there is no threat of erosion or of pollution caused by other factors. There are therefore many species and populations of fish in the lake. In addition, the differences in temperature between the lake's environs and the high zones of the mountain are quite remarkable. For example, on 31 July 1998 at 13:00, the temperature on the shore of Lake ıldır was 28.6°C, while at 13:30 the temperature at the peak of Mount Kısır, which surrounds two sides of the lake, was 11.8°C.

The environment of Mount Kısır and Lake ıldır, which are located next to one another, where two different climates occur at the same time, is an excellent touristic and therapeutic ecological area, especially where the northern and eastern slopes meet the shore, the shoreline on the eastern slope being particularly spacious.

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APPENDIX

Below is a list of the vascular plant species found on Mount Kısır and environs. The families, genera and species are listed in alphabetical order to make it easier for the reader to understand. Abbreviations used in the appendix are as follows: EN: Endangered, Euro-Sib.: Euro-Siberian element, Ir.-Tur.: Irano-Turanian element, LR (cd): Lower Risk (conservation dependent), LR (lc): Lower Risk (least concern), LR (nt): Lower Risk (near threatened), Ocak.: Ocakverdi, VU: Vulnerable.

PTERIDOPHYTA	Astrodaucus orientalis (L.) Drude	C. roseum M.Bieb.
ASPIDACEAE	East of Kısır Da., roadside, 1950 m, 22 viii 1999, Ocak. 3575.	North of Kısır Da., <i>Rosa</i> community, 2350 m, 29 vii 1998, Ocak. 3396.
Dryopteris abbreviata (DC.) Newman	Ir.-Tur.	Chamaecidium acaule (M.Bieb.) Boiss.
East of Arpaçay plateau, stony places, 2000 m, 26 vii 1997, Ocak. 2840.	Bunium paucifolium DC. var. paucifolium	North of Kısır Da., steppe, 2950 m, 11 viii 1998, Ocak. 3241.
Euro-Sib.	East of Kısır Da., stony slopes, 2400 m, 23 vii 1997, Ocak. 2956.	S.W. slope of Kısır Da., 2700 m, P.H.Davis 30577.
ATHYRIACEAE	Ir.-Tur.	Euxine.
Cystopteris fragilis (L.) Bernh.	Bupleurum falcatum L. subsp. persicum (Boiss.) Koso.-Pol.	Falcaria vulgaris Bernh.
Dağköy valley, rocky slopes, 2400 m, 24 vi 1997, Ocak. 3160.	Dağköy valley, steppe, 2250 m, 17 vii 1997, Ocak. 3017.	Kızıroğlu district, steppe, 2300 m, 21 vii 1997, Ocak. 2842.
EQUISETACEAE	B. falcatum L. subsp. polyphyllum (Ledeb.) Wolf	Ferulago setifolia K.Koch
Equisetum ramosissimum Desf.	North of Kısır Da., stony slopes, 2450 m, 30 vii 1998, Ocak. 3428.	East of Kısır Da., steppe, 2350 m, 22 vii 1997, Ocak. 3056.
South of Kısır Da., wet places, 1750 m, 27 vii 1999, Ocak. 3537.	Euxine.	Ir.-Tur.
SPERMATOPHYTA	B. rotundifolium L.	Grammosciadium pterocarpum Boiss.
GYMNOSPERMAE	Güvercinköy, fallow field, 1800 m, 20 vii 1999, Ocak. 3559.	Kızıroğlu district, steppe, 2250 m, 11 vii 1997, Ocak. 3077.
EPHEDRACEAE	Carum carvi L.	Ir.-Tur.
Ephedra major Host.	Dağköy valley, wet places, 2300 m, 26 vii 1998, Ocak. 3420.	Heracleum antasiaticum Manden
West of Kısır Da., rocky places, 1960 m, 30 vii 1999, Ocak. 3548.	Chaerophyllum aureum L.	North of Kısır Da., steppe, 2400 m, 29 vii 1998, Ocak. 3430.
ANGIOSPERMAE	North of Kısır Da., <i>Rosa</i> community, 2280 m, 29 vii 1998, Ocak. 3462.	H. persicum Desf.
ALISMATACEAE	C. bulbosum L.	North of Kısır Da., rocky places, 1940 m, 25 vi 1998, Ocak. 3458.
Alisma plantago-aquatica L.	East of Kısır Da., steppe, 2400 m, 23 vii 1998, Ocak. 2958.	Ir.-Tur.
Dağköy valley, marshy places, 2000 m, 23 vii 1998, Ocak. 3290.	Euro-Sib.	H. trachyloma Fisch. & Mey.
Kısır Da., 2300 m, P.H.Davis 30547.	C. karsianum Kit Tan & Ocakverdi	Dağköy valley, marshy places, 2200 m, 22 vii 1997, Ocak. 3044.
Euro-Sib.	East of Kısır Da., stony steppe, 2000 m, 24 vii 1997, Ocak. 2158.	Euxine.
APIACEAE	Endemic. VU. (Because of intensive agricultural activities and excessive pasturing).	Malabaila dasyantha (K.Koch) Grossh.
Anthriscus nemorosa (M.Bieb.) Sprengel		South of Kısır Da., steppe, 2350 m, 10 vii 1998, Ocak. 3192.
Kızıroğlu district, rocky places, 2350 m, 16 vii 1998, Ocak. 3370.		S.W. slope of Kısır Da., 2000 m, P.H.Davis 30520.
Astrantia maxima Pallas subsp. maxima		Ir.-Tur.
North of Kısır Da., <i>Rosa</i> community, 2600 m, 24 vii 1997, Ocak. 2830.		
Euxine.		

- Peucedanum ruthenicum* M.Bieb.
Dağköy valley, steppe, 2300 m, 27 vii 1998, Ocak. 3244.
- Pimpinella saxifraga* L.
South of Kısır Da., steppe, 2200 m, 22 viii 1999, Ocak. 3569.
- Prangos ferulacea* (L.) Lindl.
South of Kısır Da., steppe, 2400 m, 23 vii 1997, Ocak. 2843.
- Scandix iberica* M.Bieb.
Kısır Da., above Susuz, 2000 m, P.H.Davis 30518.
- Seseli grandivittatum* (Som. & Lev.) Schischkin
East of Kısır Da., steppe, 2200 m, 12 vii 1997, Ocak. 2958.
- S. libanotis* (L.) Koch
North of Kısır Da., *Rosa* community, 2500 m, 26 vi 1998, Ocak. 3461.
- W. foot of Kısır Da., 2100 m, P.H.Davis 32574.
- S. peucedanoides* (M.Bieb.) Koso.-Pol.
Dağköy district, steppe, 2250 m, 18 vii 1997, Ocak. 3018.
- Euro-Sib.
- Zosima absinthifolia* (Vent.) Link
Kızıroğlu district, steppe, 2000 m, 29 vii 1997, Ocak. 3018.
- ASCLEPIADACEAE**
- Vincetoxicum fuscatum* (Hornem) Rech.f.subsp. *fuscatum*
Kamahköy district, rocky places, 2450 m, 24 vi 1997, Ocak. 3163.
- ASTERACEAE**
- Achillea biebersteinii* Afan.
South of Kısır Da., steppe, 2350 m, 10 vii 1997, Ocak. 2950.
- A. millefolium* L. subsp. *millefolium*
North of Kısır Da., stony steppe, 2400 m, 31 vii 1998, Ocak. 3442.
- Euro-Sib.
- A. kotschyi* Boiss. Subsp. *kotschyi*
Dağköy valley, rocky places, 2400 m, 24 vii 1997, Ocak. 3015.
- Antennaria dioica* (L.) Gaertner
Dağköy valley, fallow field, 1950 m, 21 viii 1999, Ocak. 3568.
- Euro-Sib.
- Anthemis cretica* L. subsp. *albida* (Boiss.) Grierson
Kızıroğlu valley, steppe, 2750 m, 27 vii 2000, Ocak. 3591.
- A. marchalliana* Willd. subsp. *pectinata* (Boiss.) Grierson
Dağköy valley, rocky places, 2350 m, 28 vii 1998, Ocak. 3221.
- Euxine.
- Arctium tomentosum* Miller var. *glabrum* (Kornicke) Arenes
East of Kısır Da., roadside, 2400 m, 3 viii 1998, Ocak. 3482.
- Artemisia absinthium* L.
Güvercinköy, roadside, 2100 m, 14 vii 1997, Ocak. 3422.
- A. caucasica* Willd.
East of Kızıroğlu, high mountain steppe, 2800 m, 27 vii 2000, Ocak. 3592.
- A. chamaemellifolia* Vill.
Dağköy valley, steppe, 2350 m, 28 vii 1998, Ocak. 3405.
- Euro-Sib.
- A. marchalliana* Sprengel
East of Kısır Da., steppe, 2300 m, 21 viii 1999, Ocak. 3577.
- A. spicigera* K.Koch
Kısır Da. between Kurtkale, rocky places, 1750 m, 31 vii 1999, Ocak. 3546.
- Ir.-Tur.
- A. splendens* Willd.
Southeast of Kısır Da., as community, 2800 m, 26 vii 2000, Ocak. 3610.
- Ir.-Tur.
- A. vulgaris* L.
North of Kısır Da., roadside, 2150 m, 30 vii 1998, Ocak. 3339.
- Aster alpinus* L.
South of Kısır Da., steppe, 2900 m, 29 vii 1998, Ocak. 3444.
- A. amellus* L. subsp. *ibericus* (Stev.) Avet.
Dağköy valley, steppe, 2400 m, 27 vii 1998, Ocak. 3433.
- Euxine.
- Carduus adpressus* C.A.Mey.
North of Kısır Da., fallow field, 2400 m, 9 vii 1998, Ocak. 3339.
- Euxine.
- C. hamulosus* Ehrh. subsp. *hamulosus*
Dağköy valley, rocky places, 2450 m, 28 vii 1998, Ocak. 3412.
- Euro-Sib.
- C. nawaschii* Bordz.
North of Kısır Da., fallow field, 2400 m, 9 vii 1998, Ocak. 3440.
- Euxine.
- C. nutans* L.
West of Kısır Da., roadside, 1850 m, 16 vii 1997, Ocak. 3179.
- Centaurea armena* Boiss.
Arpaçay plateau, steppe, 2000 m, 25 vii 1998, Ocak. 2849.
- Endemic. Ir.-Tur. LR (nt). (Because of intensive agricultural activities and excessive pasturing).
- Centaurea cherianthifolia* Will. subsp. *purpurascens* (DC.) Wagenitz
S.W. slope of Kısır Da., 2700 m, P.H.Davis 30576.
- C. glastifolia* L.
Burcallı district, steppe, 1800 m, 8 vii 1998, Ocak. 3262.
- Ir.-Tur.
- C. macrocephala* Muss. Puschk. ex Willd.
Dağköy valley, stony slopes, 2450 m, 30 vii 1998, Ocak. 3443.
- Euxine.
- C. nigrifimbria* (K.Koch) Sosn.
Kızıroğlu district, steppe, 2700 m, 26 vi 1997, Ocak. 3228.
- Euxine.
- C. pseudoscabiosa* Boiss. Bulse subsp. *pseudoscabiosa*
Güvercinköy district, steppe, 1800 m, 29 vii 1997, Ocak. 3101.
- Ir.-Tur.

- C. pulcherrima* Willd. var. *pulcherrima*
South of Kısır Da., rocky places, 2500 m, 30 vii 1998, Ocak. 3371.
- C. pterocaula* Trautv.
East of Kısır Da., steppe, 1950 m, 6 viii 1997, Ocak. 3117.
Ir.-Tur.
- C. rhizantha* C.A.Mey.
West of Kısır Da., steppe, 2000 m, 27 vii 1997, Ocak. 2850.
Ir.-Tur.
- C. triumfettii* All.
Kızıroğlu district, steppe, 2250 m, 20 vi 1997, Ocak. 3016.
- C. aff. triumfettii* All. (Albino form).
North of Kısır Da., stony step, 2500 m, 10 vii 1998, Ocak. 3309.
- Cicerbita boissieri* (Rouy) C.Jeffrey
Dağköy valley, rocky places, 2100 m, 22 viii 1999, Ocak. 3561.
Endemic. Euxine VU. (Because of intensive agricultural activities and excessive pasturing).
- C. racemosa* (Willd.) Beauverd
North of Kısır Da., rocky places, 2000 m, 28 vi 1997, Ocak. 3171.
Euxine.
- Cichorium intybus* L.
South of Kısır Da., steppe, 2270 m, 6 viii 1997, Ocak. 2851.
- Cirsium arvense* (L.) Scop. subsp. *arvense*
South of Kısır Da., roadside, 1850 m, 22 viii 1999, Ocak. 3560.
- C. arvense* (L.) Scop. subsp. *vestitum* (Wimmer & Grab.) Petrak
East of Kısır Da., wet places, 1940 m, 31 vii 1998, Ocak. 3465.
- C. ciliatum* (Murr.) Moench subsp. *szovitsii* (K.Koch) Petrak
North of Kısır Da., steppe, 2450 m, 30 vii 1998, Ocak. 3187.
- C. echinus* (M.Bieb.) Hand.-Mazz.
East of Kısır Da., roadside, 1950 m, 26 vii 1998, Ocak. 3534.
- Kısır Da., above Susuz, 2000 m, P.H.Davis 30501.
Ir.-Tur.
- C. kosmellii* (Adams) Fisch. ex Hohen.
East of Kısır Da., stony steppe, 2400 m, 4 viii 1997, Ocak. 2854.
- C. lappaceum* (M.Bieb.) Fisch. subsp. *tenuilobum* (K.Koch) P.H.Davis & Parris
South of Kısır Da., stony steppe, 2350 m, 24 vii 1998, Ocak. 2853.
Endemic. Ir.-Tur. LR (lc). (Because of intensive agricultural activities and excessive pasturing).
- C. rhozocephalum* C.A.Mey. subsp. *rhozocephalum*
Dağköy valley, wet meadow, 2400 m, 28 vii 1998, Ocak. 2848.
Ir.-Tur.
- Cnicus benedictus* L. var. *kotschyi*
Güvercinköy district, fallow field, 1800 m, 16 vii 1998, Ocak. 3520.
- Crepis armena* DC.
Dağköy valley, steppe, 2350 m, 26 vii 1997, Ocak. 3185.
Endemic. Ir.-Tur. LR (nt). (Because of intensive agricultural activities and excessive pasturing).
- C. sancta* (L.) Babcock
North of Kısır Da., steppe, 1960 m, 22 vii 1997, Ocak. 3170.
- Doronicum balansae* Cavill
Kamahköy valley, wet meadow, 1850 m, 27 vii 1997, Ocak. 2954.
Endemic. Euxine. LR (nt). (Because of intensive agricultural activities and excessive pasturing).
- D. macrolepis* Freyn & Sint.
North of Kısır Da., rocky places, 1950 m, 11 vii 1998, Ocak. 3325.
Endemic. Ir.-Tur. LR (cd). (Because of intensive agricultural activities and excessive pasturing).
- D. oblongifolium* DC.
Kızıroğlu district, steppe, 2500 m, 24 vi 1997, Ocak. 2836.
Euro-Sib.
- Erigeron acer* L. subsp. *pyncnotrichus* (Vierh.) Grierson
North of Kısır Da., steppe, 2600 m, 24 vii 1997, Ocak. 3177.
E. *caucasicus* Stev. subsp. *venustus* (Botsch.) Grierson
Kamahköy plateau, steppe, 2450 m, 9 vii 1998, Ocak. 3367.
- Galatella punctata* (Waldst. & Kit) Nees.
North of Kısır Da., steppe, 2150 m, 29 vii 1998, Ocak. 3446.
Euro-Sib.
- Gnaphalium supinum* L.
Southeast of Kısır Da., *Narduus community*, 2750 m, 27 vii 2000, Ocak. 3593.
- Helichrysum arenarium* (L.) Moench subsp. *rubicundum* (K.Koch) P.H.Davis & Kupicha
Southwest of Kısır Da., steppe, 1800 m, 31 vii 1999, Ocak. 3555.
Ir.-Tur.
- H. armenum* DC. subsp. *armenum*
Kamahköy district, steppe, 2300 m, 8 vii 1998, Ocak. 3238.
Ir.-Tur.
- H. plicatum* DC. subsp. *plicatum*
Kızıroğlu district, steppe, 2000 m, 21 vii 1997, Ocak. 2984.
- Hieracium tamderense* Hub.-Mor.
Dağköy valley, steppe, 2000 m, 6 vii 1998, Ocak. 3225.
Endemic. Euxine EN. (Because of intensive activities and excessive pasturing).
- H. umbellatum* L.
Dağköy valley, rocky places, 2550 m, 24 vii 1998, Ocak. 3424.
West foot of Kısır Da., 2100 m, P.H.Davis 32564.
- H. verruculata* (Link) Sojak
East of Kısır Da., rocky places, 2200 m, 18 vii 1997, Ocak. 3208.
- Inula britannica* L.
Kızıroğlu district, wet places, 2100 m, 25 viii 1999, Ocak. 3581.

- I. oculus-christi* L.
Dağköy valley, stony steppe, 2450 m, 27 vii 1998, Ocak. 3419.
Euro-Sib.
- I. salicina* L.
West of Kısır Da., steppe, 2400 m, 30 vii 1998, Ocak. 3450.
Euro-Sib.
- Jurinea consanguinea* DC.
Susuz to Çıldır, steppe, 1900m, 16 vii 1998, Ocak. 3522.
- Jurinella moschus* (Habl.) Babrov. subsp. *pinnatisecta* (Boiss.) Danin & P.H.Davis
Kamahköy plateau, steppe, 3000 m, 21 vii 1997, Ocak. 2955.
Kısır Da., 3100 m, P.H.Davis 30535.
Ir.-Tur.
- Lactuca serriola* L.
Dağköy to Burcallı roadside, 1950 m, 29 vii 1998, Ocak. 3414.
Euro-Sib.
- Lapsana communis* L. subsp. *adenophora* (Boiss.) Rech.f.
North of Kısır Da., Rosa community, 2350 m, 20 vii 1998, Ocak. 3306.
- L. communis* L. subsp. *grandiflora* (M.Bieb.) Sell
Dağköy valley, rocky places, 2300 m, 20 vii 1997, Ocak. 3021.
Euxine.
- Leontodon hispidus* (L.) Holub.
East of Kısır Da., stony slopes, 2350 m, 9 vii 1998, Ocak. 3063.
- Ligularia sibirica* (L.) Cass.
Dağköy valley, wet meadows, 2500 m, 29 vii 1998, Ocak. 3454.
Euxine VU. (Because of intensive agricultural activities and excessive pasturing).
- Logfia arvensis* (L.) Holub.
East of Kısır Da., stony slopes, 1950 m, 28 vii 1998, Ocak. 3382.
- Onopordum acanthium* L.
West of Kısır Da., roadside, 1970 m, 20 viii 1998, Ocak. 3521.
- Picris hieracioides* L.
Dağköy valley, rocky places, 2400 m, 27 vii 1998, Ocak. 3417.
Euro-Sib.
- Pilosella auriculoides* (A.F.Lang.) Sell & West
Arpaçay plateau, steppe, 2350 m, 10 vii 1998, Ocak. 3374.
- P. echioides* (Lumn.) C.H. & F.Schultz subsp. *echioides*
Kızıroğlu district, steppe, 2400 m, 16 vii 1998, Ocak. 3487.
Euro-Sib.
- P. hoppeana* (Schultes) C.H. & F.Schultz subsp. *cilicica* (NP) Sell & West
Kamahköy plateau, steppe, 2450 m, 7 vii 1998, Ocak. 3280.
- Scorzonera seidlitzii* Boiss.
North of Kısır Da., steppe, 2800 m, 22 viii 1998, Ocak. 2837.
- Senecio athonnae* M.Bieb.
West of Dağköy, wet places, 2300 m, 25 vii 2000, Ocak. 3594.
Euxine.
- S. intergrifolius* (L.) Chairv. subsp. *karsianus* Matthews
South of Kısır Da., steppe, 2400 m, 7 vii 1998, Ocak. 3368.
Endemic. Euxine VU. (Because of intensive agricultural activities and excessive pasturing).
- S. lorentii* Hochst.
Arpaçay plateau, rocky places, 2350 m, 25 vii 1997, Ocak. 3193.
Ir.-Tur.
- S. pseudo-orientalis* Schischkin
Zinçal plateau, rocky places, 2400 m, 24 vii 1997, Ocak. 3094.
Ir.-Tur.
- S. vernalis* Waldst. & Kit
Kızıroğlu district, steppe, 2000 m, 14 vii 1997, Ocak. 3102.
- Serratula radiata* (Waldst. & Kit) M.Bieb.
North of Kısır Da., steppe, 2450 m, 29 vii 1998, Ocak. 3431.
Ir.-Tur.
- Solidago virgaurea* L. subsp. *virgaurea*
Dağköy valley, rocky places, 2400 m, 27 vii 1998, Ocak. 3455.
- Tanacetum abrotanifolium* (L.) Druce
North of Kısır Da., rocky places, 2100 m, 31 vii 1998, Ocak. 3346.
Ir.-Tur.
- T. argyrophyllum* (K.Koch) Tvetz. var. *argyrophyllum*
Dağköy valley, rocky places, 2450 m, 30 vii 1998, Ocak. 3217.
Ir.-Tur.
- T. balsamita* L. subsp. *balsamitoides* (Sch.Bip.) Grierson
Gülyüzüköy, rocky places, 2450 m, 30 vii 1998, Ocak. 3445.
- T. chilophyllum* (Fisch. & Mey.) Sch.Bip. var. *chilophyllum*
Dağköy valley, rocky places, 2250 m, 10 vii 1998, Ocak. 3237.
- T. parthenifolium* (Willd.) Sch.Bip.
Kamahköy district, rocky places, 2300 m, 26 vi 1997, Ocak. 3121.
Ir.-Tur.
- T. poteriifolium* (Ledeb.) Grierson
North of Kısır Da., rocky places, 1970 m, 11 vii 1998, Ocak. 3310.
Euxine.
- T. parthenium* (L.) Sch.Bip.
East of Kısır Da., wet steppe, 2600 m 24 vii 1997, Ocak. 3122.
- T. punctatum* (Desr.) Grierson
Dağköy valley, wet meadow, Heracleum community, 2200 m, 24 vii 1997, Ocak. 3607.
Euxine.
- Taraxacum crepidiforme* DC. subsp. *crepidiforme*
Kızıroğlu district, steppe, 2600 m, 24 vi 1997, Ocak. 3271.
Ir.-Tur.
- T. scaturiginosum* G.Hagl.
Dağköy valley, wet meadow, 2350 m, 24 vii 1997, Ocak. 3250.

Tragopogon aureus Boiss.

Kamahköy district, steppe, 2550 m, 28 vi 1997, Ocak. 3196.

Endemic. LR (lc). (Because of intensive agricultural activities and excessive pasturing).

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

Dağköy district, steppe, 1900 m, 14 vii 1997, Ocak. 3123.

Tripleurospermum callosum (Boiss. & Heldr.) R.Hossain

North of Kısır Da., steppe, 2700 m, 2 viii 1997, Ocak. 3124.

Endemic. LR (lc). (Because of intensive agricultural activities and excessive pasturing).

T. oreades (Boiss.) Rech.f. var. *oreades*
Kızıroğlu district, steppe, 2550 m, 22 vi 1997, Ocak. 3201.

T. oreades (Boiss.) Rech.f. var. *tchihatchewii* (Boiss.) E.Hossain

Kızıroğlu district, wet steppe, 2200 m, 20 vi 1997, Ocak. 3200.

T. transcaasicum (Manden) Poped
North of Kısır Da., wet steppe, 2350 m, 24 vii 1997, Ocak. 3125.

BORAGINACEAE

Alkanna cordifolia K.Koch

Dağköy valley, steppe, 2150 m, 9 vii 1998, Ocak. 3263.

Endemic. Ir.-Tur. LR (lc). (Because of intensive agricultural activities and excessive pasturing).

A. orientalis (L.) Boiss. var. *orientalis*
Arpaçay plateau, rocky places, 2250 m, 20 vii 1998, Ocak. 2966.

Ir.-Tur.

Anchusa arvensis (L.) M.Bieb.

West of Kısır Da., steppe, 1880 m, 7 vii 1998, Ocak. 3357.

A. azurea Miller var. *azurea*

Kamahköy district, fallow field, 2200 m, 19 vii 1997, Ocak. 3002.

Arnebia pulchra (Roemer & Schultes) Edmondson

Arpaçay plateau, rocky places, 2450 m, 26 vii 1998, Ocak. 3195.

Southwest side of Kısır Da., between Kars and Ardahan, 2200 m, P.H.Davis 29623.

Euxine.

Buglossoides arvensis (L.) Johnston

Kamahköy district, stony slopes, 2000 m, 11 vii 1998, Ocak. 3197.

Cerintho minor L. subsp. *minor*

North of Kısır Da., steppe, 2400 m, 11 vii 1998, Ocak. 3317.

Euro-Sib.

Echium russicum J.F.Gmel.

Kızıroğlu district, steppe, 2500 m, 24 vii 1997, Ocak. 2964.

Southwest slope of Kısır Da., 2200 m, P.H.Davis 30446.

Euro-Sib.

E. vulgare L.

Kamahköy roadside, 1900 m, 6 viii 1998, Ocak. 2858.

Euro-Sib.

Lappula barbata (M.Bieb.) Gürke

Kızıroğlu district, steppe, 2300 m, 25 vii 1997, Ocak. 2859.

Ir.-Tur.

Myosotis alpestris F.Schmidt subsp. *alpestris*

Arpaçay plateau, steppe, 2600 m, 21 vii 1998, Ocak. 3037.

M. laxa Lehm. subsp. *caespitosa* (C.F.Schultz) Hyl. ex Nordth.

Dağköy valley, wet places, 2600 m, 30 vii 1998, Ocak. 3427.

M. lithospermifolia (Willd.) Hornem

North of Kısır Da., rocky places, 1950 m, 28 vii 1998, Ocak. 3285.

M. sicula Guss.

Kızıroğlu district, wet meadows, 2200 m, 20 vi 1997, Ocak. 3051.

M. sylvatica Ehrh. ex Hoffm. subsp. *cyanea* Vestergren

East of Kısır Da., stony steppe, 2350 m, 18 vii 1997, Ocak. 2965.

Nonea pulla (L.) DC. subsp. *scabrisquamata* A.Baytop

Kamahköy district, fallow field, 1850 m, 24 vi 1998, Ocak. 3523.

Onosma armeniacum Klokov.

East of Kısır Da., rocky places, 2350 m, 20 vii 1997, Ocak. 3003.

Rindera albida (Wettst.) Kusn.

Güvercinköy district, steppe, 1850 m, 24 vii 1997, Ocak. 2860.

Ir.-Tur.

Symphytum asperum Lepechin

Dağköy valley, rocky places, 2350 m, 10 vii 1998, Ocak. 3302.

Euxine.

BRASSICACEAE

Alyssum desertorum Stapf. var. *desertorum*

West of Kısır Da., steppe, 2200 m, 27 vi 1997, Ocak. 2862.

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

Kızıroğlu district, steppe, 2100 m, 8 vii 1998, Ocak. 3207.

A. minus (L.) Rothm. var. *minus*

Gülyüzüköy district, steppe, 2350 m, 10 vii 1998, Ocak. 2948.

A. murale Waldst. & Kit subsp. *murale*

North of Kısır Da., stony slopes, 2200 m, 13 vii 1998, Ocak. 3353.

A. repens Baumg. subsp. *trichostachyum* (Rupr.) Hayek var. *trichostachyum*

Dağköy valley, steppe, 2450 m, 9 vii 1998, Ocak. 3258.

Arabis brachycarpa Rupr.

Kızıroğlu valley, stony slopes, 2700 m, 27 vii 2000, Ocak. 3596.

Euxine.

Barbarea lutea Cullen & Coode

Kamahköy district, rocky places, 2200 m, 24 vii 1998, Ocak. 3011.

Endemic. EN. (Because of intensive agricultural activities and excessive pasturing).

- B. minor** K.Koch var. *minor*
Dağköy valley, rocky places, 2350 m, 26 vi 1997, Ocak. 2833.
- B. vulgaris** R.Br.
West of Kısır Da., rocky places, 2300 m, 24 vi 1998, Ocak. 3234.
- Brassica elongata** Ehrh.
North of Kısır Da., fallow field, 1950 m, 30 vii 1998, Ocak. 3475.
- Ir.-Tur.
- Bunias orientalis** L.
North of Kısır Da., fallow field, 1960 m, 21 vii 1999, Ocak. 3550.
- Camelina microcarpa** Andrz.
Kızıroğlu district, steppe, 2200 m, 20 vi 1997, Ocak. 2976.
- Capsella bursa-pastoris** (L.) Medik.
West of Kısır Da., roadside, 2200 m, 20 vi 1997, Ocak. 2835.
- Cardaria draba** (L.) Desv.
West of Kısır Da., roadside, 2000 m, 20 vi 1997, Ocak. 3057.
- Conringia planisiliqua** Fisch. & Mey.
North of Kısır Da., rocky places, 1950 m, 7 vii 1998, Ocak. 3480.
- Ir.-Tur.
- Crambe orientalis** L. var. *orientalis*
Kızıroğlu district, steppe, 2000 m, 6 vii 1998, Ocak. 3174.
- Descurainia sophia** (L.) Webb. ex Prantl.
Kızıroğlu village, roadside, 2100 m, 26 vi 1997, Ocak. 2864.
- Draba bruniifolia** Stev. subsp. *armeniaca* Coode & Cullen
South of Kısır Da., high mountain steppe, 3000 m, 24 vii 1997, Ocak. 3054.
- Endemic. **LR (nc)**. (Because of intensive agricultural activities and excessive pasturing).
- D. bruniifolia** Stev. subsp. *bruniifolia*
East of Kısır Da., high mountain steppe, 3050 m, 24 vii 1997, Ocak. 2832.
- D. bruniifolia** Stev. subsp. *olympica* (Sibth. ex DC.) Coode & Cullen
South of Kısır Da., 2000 m, N.Demirkuş 1154.

- D. nemorosa** L.
Susuz to Çıldır roadside, steppe, 2200 m, 20 vi 1997, Ocak. 3074.
- D. siliquosa** M.Bieb.
Peak of Kısır Da., stony slopes, 3150 m, 18 vi 1997, Ocak. 2821.
- Euxine.
- Erysimum leptophyllum** (M.Bieb.) Andrz.
Arpaçay plateau, steppe, 2100 m, 26 vii 1997, Ocak. 2865.
- Hesperis matronalis** L. subsp. *matronalis*
North of Kısır Da., rocky places, 2450 m, 21 vi 1997, Ocak. 2983.
- Isatis glauca** Aucher ex Boiss. subsp. *glauca*
Güvercinköy, roadside, 1800 m, 3 viii 1997, Ocak. 2866.
- Lepidium cartilagineum** (J.May.) Thell. subsp. *crassifolium* (Waldst. & Kit) Thell.
Kâmahköy roadside, wet places 1800 m, 22 viii 1999, Ocak. 3572.
- Malcolmia africana** (L.) R.Br.
Susuz to Çıldır roadside, steppe, 1900 m, 23 vii 1997, Ocak. 3418.
- Neslia paniculata** (L.) Desv.
Arpaçay plateau, rocky places, 2300 m, 21 vii 1997 Ocak. 3075.
- Thlaspi arvense** L.
Susuz to Çıldır roadside, 1950 m, 21 vi 1997, Ocak. 3032.
- T. huetii** Boiss.
Kamahköy to Dağköy roadside, 1900 m, 24 vi 1997, Ocak. 3076.
- Sisymbrium elatum** Koch
West of Kısır Da., steppe, 2150 m, 22 vii 1999, Ocak. 3551.
- Turritis glabra** L.
Dağköy valley, *Cephalaria* community, 2450 m, 27 vii 2000, Ocak. 3598.
- BUTOMACEAE**
- Butomus umbellatus** L.
Lake Çıldır, marshy places, 1940 m, 7 viii 1998, Ocak. 3347.

CAMPANULACEAE

- Asyneuma amplexicaule** (Willd.) Hand.-Mazz. subsp. *amplexicaule*
North of Kısır Da., *Rosa* community, 2350 m, 10 vii 1998, Ocak. 3268.
- A. rigidum** (Willd.) Gross. subsp. *rigidum*
West of Kısır Da., steppe, 2350 m, 29 vii 1998, Ocak. 3426.
- Ir.-Tur.
- Campanula aucheri** A. DC.
Southeast of Kısır Da., steppe, 2750 m, 29 vii 1997, Ocak. 2980.
- Southwest side of Kısır Da., 2700 m, P.H.Davis 30499.
- Euxine.
- C. collina** Sims.
Dağköy valley, rocky places, 2400 m, 27 vii 1998, Ocak. 3298.
- Euxine.
- C. glomerata** L. subsp. *hispida* (Witasek) Hayek
North of Kısır Da., steppe, 2500 m, 31 vii 1998, Ocak. 3408.
- Euro-Sib.
- C. involucrata** Aucher ex A. DC.
Zinzal plateau, rocky places, 2350 m, 3 viii 1997, Ocak. 3036.
- Ir.-Tur.
- C. rapunculoides** L. subsp. *rapunculoides*
North of Kısır Da., *Rosa* community, 2250 m, 21 vii 1997, Ocak. 2972.
- Euro-Sib.
- C. sibirica** L. subsp. *hohenackeri* (Fisch. & Mey.) Damboldt
North of Kısır Da., steppe, 1950 m, 18 vii 1998, Ocak. 3337.
- Euxine.
- C. stevenii** M.Bieb. subsp. *beauverdiana* (Fomin) Rech.fil & Schiman-Czeika
Dağköy valley, rocky places, 2450 m, 8 vii 1998, Ocak. 3052.

- C. tridentata* Schreber
Dağköy valley, rocky places, 2600 m, 10 vii 1998, Ocak. 3213.
Southwest of Kısır Da., 2700 m, P.H.Davis 30495.
Euxine.
- CAPRIFOLIACEAE**
- Lonicera caucasica* Pallas subsp. *caucasica*
North of Kısır Da., Rosa community, 2150 m, 9 vii 1998, Ocak. 3314.
Viburnum lantana L.
North of Kısır Da., Rosa community, 2150 m, 19 vii 1998, Ocak 3343.
Euro-Sib.
- CARYOPHYLLACEAE**
- Agrostemma githago* L.
North of Kısır Da., field, 2000 m, 20 vii 1998, Ocak. 3204.
Arenaria dianthoides Sm.
Arpaçay plateau, steppe, 2500 m, 24 vii 1997, Ocak. 2968.
Southwest side of Kısır Da., 2300 m, P.H.Davis 30493.
Ir.-Tur.
A. holostea M.Bieb. subsp. *macrantha* (Schischk) McNeil
Kamahköy district, steppe, 2250 m, 20 vi 1997, Ocak. 2986.
Ir.-Tur.
A. rotundifolia M.Bieb. subsp. *rotundifolia*
Zinzal plateau, fallow field, 2400 m, 28 vii 1998, Ocak. 3349.
A. serpyllifolia L.
Northeast of Kısır Da., fallow field, 2300 m, 9 vii 1998, Ocak. 3478.
Cerastium anomalum Waldst. & Kit
Kamahköy district, wet meadows, 2200 m, 22 vii 1997, Ocak. 3022.
Southwest slope of Kısır Da., 2300 m, P.H.Davis 30553.
C. dahuricum Fisch.
North of Kısır Da., rocky places, 1940 m, 21 vii 1997, Ocak. 3046.
Euro-Sib.
- Dianthus carmelitarum* Reut. ex Boiss.
West of Kısır Da., stony slopes, 2400 m, 21 vii 1998, Ocak. 3065.
Endemic. Euxine LR (nt). (Because of intensive agricultural activities and excessive pasturing).
D. floribundus Boiss.
Kızıroğlu district, stony slopes, 2400 m, 19 vii 1997, Ocak. 3084.
Ir.-Tur.
D. masmenaeus Boiss. var. *glabrescens* Boiss.
East of Kısır Da., steppe, 2400 m, 21 vii 1998, Ocak. 3255.
Endemic. Ir.-Tur. LR (nt). (Because of intensive agricultural activities and excessive pasturing).
Gypsophila bitlisensis Bark.
Susuz to Çıldır roadside, 2000 m, 7 vii 1998, Ocak. 3246.
Endemic. Ir.-Tur. LR (lc). (Because of intensive agricultural activities and excessive pasturing).
G. elegans M.Bieb.
East of Kısır Da., fallow field, 1950 m, 17 vii 1997, Ocak. 2868.
Ir.-Tur.
Minuartia aizoides (Boiss.) Bornm.
North of Kısır Da, steppe, 2850 m, 20 viii 1997, Ocak. 2823.
M. glandulosa (Boiss. & Huet.) Bornm.
Zinzal plateau, rocky places, 2350 m, 12 vii 1998, Ocak. 3327.
Endemic. Ir.-Tur, LR (lc). (Because of intensive agricultural activities and excessive pasturing).
M. mesogitana (Boiss.) Hand.-Mazz.
Dağköy valley, steppe, 2400 m, 9 vii 1998, Ocak. 3273.
M. recurva (All.) Schinz Thell. subsp. *oreina* (Mattf.) McNeil
Zinzal plateau, steppe, 2550 m, 30 vii 1998, Ocak. 3402.
M. rimarum (Boiss. & Bal) var. *rimarum*
Arpaçay plateau, steppe, 2550 m, 17 vii 1997, Ocak. 3095.
Endemic. Ir.-Tur, LR (lc). (Because of intensive agricultural activities and excessive pasturing).
- Petrorhagia alpina* (Habl.) Ball. & Heywood subsp. *alpina*
North of Kısır Da., steppe, 1950 m, 30 vii 1998, Ocak. 3481.
Silene alba (Miller) Krause subsp. *divaricata* (Reichb.) Walters
Kızıroğlu district, rocky places, 2100 m, 21 vi 1997, Ocak. 3062.
S. alba (Miller) Krause subsp. *eriocalycina* (Boiss.) Walters.
Arpaçay plateau, rocky places, 2150 m, 22 vi 1997, Ocak. 3103.
S. conidea L.
Zinzal plateau, fallow field, 2180 m., 21 vi 1997, Ocak. 2985.
S. dichotoma Ehrh. subsp. *sibthorpiana* (Reichb.) Rech.
Zinzal plateau, steppe, 1950 m, 10 vii 1998, Ocak. 3351.
S. lasiantha Koch
West of Kısır Da., rocky places, 2450 m, 21 vi 1997, Ocak. 3104.
S. marchallii C.A.Mey.
Northwest of Kısır Da., rocky places, 2000 m, 19 vii 1998, Ocak. 3023.
Ir.-Tur.
S. montbretiana Boiss.
Kamahköy plateau, steppe, 2250 m, 21 vii 1997, Ocak. 3105.
Ir.-Tur.
S. multifida (Adams) Rohrb.
North of Kısır Da., rocky slopes, 1950 m, 9 vii 1998, Ocak. 3331.
S. saxatilis Sims.
North of Kısır Da., steppe, 2350 m, 11 vii 1998, Ocak. 3358.
S. vulgaris (Moench) Garcke var. *commutata* (Guss.) Coode & Cullen
Zinzal plateau, rocky places, 2300 m, 12 vii 1998, Ocak. 3220.
Stellaria persica Boiss.
Dağköy valley, wet meadows, 2300 m, 29 vi 1997, Ocak. 2969.

- Vaccaria pyramidata* Medik.
Burcallı district, fallow field, 1850 m, 20 vii 1998, Ocak. 3519.
- CHENOPODIACEAE**
- Beta trigyna* Waldst. & Kit
Çıldır, field margin, 1950 m, 3 viii 1998, Ocak. 3293.
- Chenopodium album* L. subsp. *album*
Dağköy to Kamahköy roadside, 1950 m, 7 vii 1998, Ocak. 3415.
- C. botrys* L.
Burcallı district, rocky places, 1800 m, 22 viii 1999, Ocak. 3580.
- C. foliosum* (Moench) Aschers
East of Kısır Da., roadside, 2000 m, 29 vii 1998, Ocak. 3432.
- CISTACEAE**
- Helianthemum nummularium* (L.) Miller subsp. *tomentosum* (Scop.) Schinz & Thell.
North of Kısır Da., Rosa community, 2400 m, 10 vii 1998, Ocak. 3313.
- CONVOLVULACEAE**
- Convolvulus arvensis* L.
West of Kısır Da., roadside, 1950 m, 25 vi 1997, Ocak. 2869.
- C. lineatus* L.
Dağköy valley, steppe, 2150 m, 27 vi 1997, Ocak. 2870, Ir.-Tur.
- CRASSULACEAE**
- Sedum gracile* C.A.Mey.
Dağköy valley, rocky places, 2400 m, 9 vii 1998, Ocak. 3348.
- S. nanum* Boiss.
Kamahköy district, rocky places, 1950 m, 21 viii 1999, Ocak. 3557, Ir.-Tur.
- S. pallidum* M.Bieb. var. *pallidum*
Kızıroğlu district, stony slopes, 2300 m, 20.07.1998, Ocak. 3525.
- S. pilosum* M.Bieb.
North of Kısır Da., high mountain steppe, 3000 m, 25 vi 1997, Ocak. 3025.
Euxine.
- S. cf. pilosum* M.Bieb. (Petals long and white)
Zinçal plateau, rocky places, 2900 m, 24 vii 1997, Ocak. 3062.
Euxine.
- S. stoloniferum* Gmel.
Dağköy valley, rocky places, 2600 m, 3 viii 1998, Ocak. 3287.
Euxine.
- S. subulatum* (C.A.Mey.) Boiss.
North of Kısır Da., rocky places, 2500 m, 11 vii 1998, Ocak. 3342.
- S. telephium* L. subsp. *maximum* (L.) Krockner
North of Kısır Da., rocky places, 1950 m, 31 vii 1998, Ocak. 3387.
Euro-Sib.
- S. tenellum* M.Bieb.
North of Kısır Da., high mountain steppe, 3100 m, 22 viii 1997, Ocak. 3082.
- Sempervivum armenum* Boiss. & Huet var. *armenum*
Dağköy valley, rocky places, 2300 m, 22 viii 1999, Ocak. 3574.
Endemic. Euxine, LR (lc). (Because of intensive agricultural activities and excessive pasturing).
S. davisii Muirhead
North of Kısır Da., rocky places, 2000 m, 17 viii 1998, Ocak. 3215.
- CUCURBITACEAE**
- Bryonia aspera* Stav. ex Ledeb.
South of Kısır Da., rocky places, 1760 m, 29 vii 1999, Ocak. 3553.
- CUSCUTACEAE**
- Cuscuta campestris* Yuncker
Dağköy valley, on *Veronica*, 2300 m, 18 vii 1998, Ocak. 3439.
- CYPERACEAE**
- Carex acutiformis* Ehrh.
East of Kısır Da., Lavaş marshy, 1960 m, 24 vi 1997, Ocak. 2959.
Euro-Sib.
- C. caryophyllea* Latourr.
Kamahköy, rocky places, 1900 m, 27 vi 1997, Ocak. 3024.
Euro-Sib.
- C. cilicica* Boiss. subsp. *cilicica*
East of Kısır Da., *Festuca* community, 2850-3100 m, 6 viii 1998, Ocak. 3453.
Ir.-Tur.
- C. kurdica* Kükenthal
East of Kısır Da., Lavaş marshy, 1960 m, 4 viii 1998, Ocak. 2871.
Ir.-Tur.
- C. melanostachya* M.Bieb.
Dağköy valley, wet meadows, 2400 m, 27 vi 1997, Ocak. 3045.
- C. cf. orbicularis* Bott. subsp. *kotschyana* (Boiss. & Hohen.) Kukkonen
Kızıroğlu district, wet places, 2100 m, 21 vi 1997, Ocak. 2960.
Ir.-Tur.
- C. ovalis* Good.
Dağköy valley, wet meadows, 2100 m, 21 vii 1997, Ocak. 2978.
Euro-Sib.
- C. stenophylla* Wahlenb. subsp. *stenophylloides* (V.Krecz.) Egorova
Arpaçay plateau, steppe, 2000 m, 21 vi 1997, Ocak. 3067.
Ir.-Tur.
- C. supina* Willd. ex Wahlenb.
Arpaçay plateau, steppe, 1950 m, 2 vi 1997, Ocak. 3085.
Euro-Sib.
- C. vesicaria* L.
East of Kısır Da., Lavaş marshy, 1960 m, 28 vi 1997, Ocak. 2872.
- Eleocharis palustris* (L.) Roemer & Schultes
East of Kısır Da., Lavaş marshy, 1960 m, 21 vii 1997, Ocak. 3126.
- DIPSACACEAE**
- Cephalaria microcephala* Boiss.
West of Kısır Da., stony slopes, 2450 m, 9 vii 1998, Ocak. 3377.
Ir.-Tur.

- C. procera* Fisch. & Lall.
Kısır Da., by Lake Çıldır, rocky places, 1950 m, 3 viii 1998, Ocak. 3429.
Ir.-Tur.
- Knautia involucrata* Somm & Lev.
Arpaçay plateau, rocky places, 2250 m, 23 vii 1997, Ocak. 3169.
Euxine.
- K. montana* (M.Bieb.) DC.
North of Kısır Da., rocky places, 1960 m, 3 viii 1998, Ocak. 3391.
Euro-Sib.
- Scabiosa calocephala* Boiss.
Arpaçay plateau, steppe, 2250 m, 18 vii 1997, Ocak. 3176.
Ir.-Tur.
- S. caucasica* M.Bieb.
Dağköy valley, rocky places, 2400 m, 11 vii 1998, Ocak. 3248.
- EUPHORBIACEAE**
- Euphorbia cardiophylla* Boiss. & Heldr.
East of Kısır Da., steppe, 2450 m, 3 vii 1997, Ocak. 3172.
- E. oblongifolia* (K.Koch) K.Koch
Kızıroğlu district, steppe, 2600 m, 20 vi 1997, Ocak. 3182.
Euxine.
- E. sanasunitensis* Hand.-Mazz.
Zinzal plateau, steppe, 2400 m, 3 viii 1998, Ocak. 3488.
Endemic. Ir.-Tur. LR (nt). (Because of intensive agricultural activities and excessive pasturing).
- Euphorbia virgata* Waldst. & Kit
North of Kısır Da., stony slopes, 2650 m, 6 viii 1998, Ocak. 3407.
- FABACEAE**
- Anthyllis vulneraria* L. subsp. *boissieri* (Lang.) Bornm.
East of Kısır Da., steppe, 2300 m, 14 vii 1997, Ocak. 2825.
Astragalus adunciformis Boiss.
Dağköy district, steppe, 2300 m, 26 vii 2000, Ocak.3613.
- Astragalus flaccidus* M.Bieb.
Kızıroğlu district, steppe, 2300 m, 21 vi 1997, Ocak. 2815.
- A. fragrans* Willd.
Kızıroğlu district, steppe, 2200 m, 22 vi 1997, Ocak. 2826.
Ir.-Tur.
- A. cf. fragrans* Willd. (Leaves 13-14 cm, leaflets 16-17 mm, peduncles 8cm)
Dağköy to Kamahköy, steppe, 1900 m, 8 vii 1998, Ocak. 3252.
Ir.-Tur.
- A. galegiformis* L.
Arpaçay to Çıldır roadside, 1900 m, 9 vii 1998, Ocak. 3292.
Euro-Sib.
- A. globosus* Vahl.
Kızıroğlu district, steppe, 2250 m, 21 vi 1997, Ocak. 2829.
Endemic.. Ir.-Tur., LR (lc). (Because of intensive agricultural activities and excessive pasturing).
- A. hyalolepis* Bunge
Dağköy valley, steppe, 2300 m, 22 vi 1997, Ocak. 2809.
Ir.-Tur.
- A. incertus* Ledeb.
Kısır Da., High mountain steppe, 3000 m, 23 vii 1997, Ocak. 2811.
- A. microcephalus* Willd.
Southeast of Kısır Da., steppe, 1900 m, 3 viii 1997, Ocak. 2875.
Ir.-Tur.
- A. pinetorum* Boiss.
Susuz to Çıldır, steppe, 1750 m, 30 vii 1999, Ocak. 3558.
Endemic. Ir.-Tur., LR (lc). (Because of intensive agricultural activities and excessive pasturing).
- A. vicifolius* DC.
Kısır Da., 3000 m, P.H.Davis 30539.
- Coronilla orientalis* Miller var. *orientalis*
Burcallı district, steppe, 2400 m, 19 vii 1998, Ocak. 3489.
- C. varia* L. subsp. *varia*
North of Kısır Da., steppe, 2450 m, 27 vii 1998, Ocak. 3490.
- Hedysarum hedysaroides* (L.) Schinz & Thell.
Kızıroğlu valley, stony slopes, 2700 m, 27 vii 2000, Ocak. 3597.
- Lathyrus cyaneus* (Stev.) Koch var. *cyaneus*
North of Kısır Da., *Rosa* community, 2550 m, 28 vii 1998, Ocak. 2997.
Southwest of Kısır Da., 2300 m, P.H.Davis 30490.
- L. pallescens* (M.Bieb.) Koch
Southwest side of Kısır Da., 200 m, P.H.Davis 30490.
- L. pratensis* L.
Dağköy valley, wet meadows, 2200 m, 22 vii 1997, Ocak. 2951.
- L. rotundifolius* Willd, subsp. *miniatus* (M.Bieb. ex Stev.) P.H.Davis
North of Kısır Da., *Rosa* community, 2600 m, 10 vii 1998, Ocak. 3312.
- L. tuberosus* L.
North of Kısır Da., fallow field, 2500 m, 20 vii 1998, Ocak. 3319.
Euro-Sib.
- Lotus corniculatus* L. var. *corniculatus*
North of Kısır Da., steppe, 1850 m, 17 vii 1998, Ocak. 3492.
- Medicago lupulina* L.
Kızıroğlu district, steppe, 2350 m, 29 vi 1998, Ocak. 3528.
- M. papillosa* Boiss.
North of Kısır Da., rocky steppe, 2000 m, 9 vii 1998, Ocak. 3352.
- M. sativa* L. subsp. *sativa*
Northeast of Kısır Da, steppe, 2400 m, 27 vii 1998, Ocak. 3492.
- M. x varia* Martyn
Dağköy valley, rocky places, 1950 m, 25 vii 1998, Ocak. 3493.
- Melilotus officinalis* (L.) Pers.
Susuz to Çıldır, roadsides 2000 m, 8 vii 1997, Ocak. 3284.
- Onobrychis altissima* Grossh.
Zinzal plateau, steppe, 2600 m, 9 vii 1998, Ocak. 3291.

- O. araxina** Schischkin
Top of Kısır Da., steppe, 3100 m, 26 vii 1997, Ocak. 2812.
Endemic. Ir.-Tur. VU. (Because of intensive agricultural activities and excessive pasturing).
- O. radiata** (Desf.) M.Bieb.
Güvercinköy district, steppe, 1800 m, 29 vi 1998, Ocak. 3493.
- O. viciifolia** Scop.
Güvercinköy district, cultural form, field, 1850 m, 29 vi 1998, Ocak. 3494.
- Oxytropis albana** Stev.
Top of Kısır Da., steppe, 3100 m, 27 vi 1997, Ocak. 3008.
- O. pallasii** Pers.
Güvercinköy district, steppe, 1800 m, 26 vii 1998, Ocak. 2818.
VU. (Because of intensive agricultural activities and excessive pasturing).
- Trifolium alpestre** L.
Arpaçay plateau, steppe, 2300 m, 27 vi 1997, Ocak. 2979.
Euro-Sib.
- T. ambiguum** M.Bieb.
Kızıroğlu district, steppe, 2350 m, 20 vii 1997, Ocak. 2952.
- T. arvense** L. var. *arvense*
Kamahköy district, rocky places, 1850 m, 19 vii 1998, Ocak. 3529.
- T. aureum** Pol.
Arpaçay plateau, steppe, 2000 m, 22 vii 1997, Ocak. 2883.
Euro-Sib.
- T. campestre** Schreb.
Kamahköy district, steppe, 1900 m, 27 vii 1999, Ocak. 3545.
- T. medium** L. var. *medium*
North of Kısır Da., *Rosa* community, 2450 m, 31 vii 1998, Ocak. 2884.
- T. nigrescens** Viv. subsp. *petrisavii* (Clem.) Holmboe
Dağköy valley, steppe, 1900 m, 7 vii 1998, Ocak. 3254.
- T. ochroleucum** Huds.
North of Kısır Da., stony slopes, 2450 m, 9 vii 1998, Ocak. 3247.
- T. spadiceum** L.
Kamahköy, wet places, 1800 m, 27 vii 1997, Ocak. 2953.
Euro-Sib.
- Trigonella fischeriana** Ser.
Güvercinköy district, steppe, 1850 m, 16 vii 1998, Ocak. 3530.
Ir.-Tur.
- Vicia cracca** L. subsp. *cracca*
North of Kısır Da., *Rosa* community, 1945 m, 31 vii 1998, Ocak. 2885.
Euro-Sib.
- V. truncatula** Fisch. ex M.Bieb.
North of Kısır Da., *Rosa* community, 2550 m, 13 vii 1998, Ocak. 3118.
Euro-Sib.
- V. villosa** Roth subsp. *villosa*
North of Kısır Da., *Rosa* community, 2350 m, 11 vii 1998, Ocak. 3328.
- FAGACEAE
Quercus petraea (Mattuschka) Liebl. subsp. *iberica* (Steven ex M.Bieb.) Krassiln.
North of Kısır Da., *Rosa* community 2500 m, 9 vii 1998, Ocak. 3321.
- GENTIANACEAE
Gentiana gelida M.Bieb.
Zinzal plateau, steppe, 2400 m, 13 viii 1998, Ocak. 2886.
Euxine.
- G. septemfida** Pallas
Dağköy valley, wet places, 2400 m, 21 viii 1999, Ocak. 3563.
Euxine.
- G. verna** L. subsp. *pontica* (Soltok) Payek
Top of Kısır Da., steppe, 3150 m, 21 vi 1997, Ocak. 2817.
Euxine.
- Gentianella caucasea** (Lodd. ex Sims) Holub.
Dağköy valley, wet places, 2100 m, 20 vii 1997, Ocak. 2987.
Euxine.
- Swertia iberica** Fischer ex C.A.Mey.
Dağköy valley, wet places, 2400 m, 22 viii 1999, Ocak. 3578.
Euxine.
- GERANIACEAE
Geranium collinum Steph. ex Willd.
Dağköy valley, rocky places, 2000 m, 25 vii 1997, Ocak. 3168.
Ir.-Tur.
- G. palustre** L.
Dağköy valley, wet places, 2350 m, 29 vii 1997, Ocak. 3189.
Euro-Sib.
- G. pratense** L. subsp. *finitimum* (Woronow) Knuth
East of Kısır Da., wet places, 2100 m, 24 vii 1998, Ocak. 3315.
Southwest side of Kısır Da., 2300 m, P.H.Davis 30485.
- G. rotundifolium** L.
Dağköy valley, rocky places, 2600 m, 7 vii 1998, Ocak. 3232.
- G. sylvaticum** L.
Kızıroğlu district, rocky places, 2250 m, 25 vii 1999, Ocak. 3582.
Euro-Sib.
- GROSSULARIACEAE
Ribes biebersteinii Berl. ex DC.
North of Kısır Da., rocky places, 2100 m, 20 vii 2000, Ocak. 3601.
Euxine.
- HALORAGIDACEAE
Myriophyllum spicatum L.
Lake Çıldır, 1940 m, 31 vii 1998, Ocak. 3470.
- HYPERICACEAE
Hypericum armenum Jaub. & Spach.
Kızıroğlu, rocky places, 2300 m, 22 vii 1997, Ocak. 2963.
Ir.-Tur.
- H. hyssofolium** Chaix subsp. *elongatum* (Ledeb.) Woronow
Arpaçay plateau, steppe, 2450 m, 30 vii 1998, Ocak. 3376.

- H. linarioides* Boiss.
Dağköy valley, steppe, 2350 m, 16 vii 1997, Ocak. 2982.
- H. perforatum* L.
Northeast of Kısır Da., rocky places, 2100 m, 17 vii 1998, Ocak. 3463.
- ILLECEBRACEAE**
- Herniaria glabra* L.
East of Kısır Da., steppe, 2500 m, 27 vii 1998, Ocak. 3162.
- H. incana* Lam.
Southeast of Kısır Da., steppe, 2600 m, 10 vii 1998, Ocak. 3305.
- Scleranthus uncinatus* Schur.
Kamahköy district, steppe, 2400 m, 8 vii 1998, Ocak. 3370.
Ir.-Tur.
- IRIDACEAE**
- Crocus biflorus* Miller subsp. *tauri* (Maw.) Mathews
East of Kısır Da., steppe, 2000 m, 22 v 1997, Ocak. 2888.
Ir.-Tur.
- Gladiolus kotschyanus* Boiss.
East of Kısır Da., steppe, 2000 m, 28 vi 1997, Ocak. 2889.
Ir.-Tur.
- G. cf. kotschyanus* Boiss. (Albino form)
Arpaçay plateau, steppe, 1950 m, 26 vii 1997, Ocak. 2962.
Ir.-Tur.
- Iris caucasica* Hoffm. subsp. *turcica* B.Mathew
Güvercinköy district, steppe, 1850 m, 5 v 1998, Ocak. 3526.
Ir.-Tur.
- I. reticulata* M.Bieb. subsp. *reticulata*
Kamahköy valley, rocky places, 1850 m, 5 v 1998, Ocak. 3527.
Ir.-Tur.
- I. spuria* L. subsp. *musulmanica* (Fomin) Takht.
Kamahköy valley, rocky places, 1850 m, 27 vi 1998, Ocak. 3435.
Ir.-Tur.
- JUNCACEAE**
- Juncus alpigenus* K.Koch
Southwest side of Kısır Da., 2500 m, P.H.Davis 30495.
- J. atratus* Krockner
Dağköy valley, wet places, 2250 m, 7 vii 1998, Ocak. 3294.
- J. bufonius* L.
Dağköy valley, wet places, 2350 m, 29 vii 1998, Ocak. 3068.
- Luzula pallescens* Swartz
Dağköy valley, wet places, 2000 m, 24 vii 1997, Ocak. 2961.
- LAMIACEAE**
- Ajuga orientalis* L.
Kızıroğlu district, steppe, 2500 m, 27 vi 1997, Ocak. 2994.
Kısır Da., 2900 m, P.H.Davis 30536.
- Galeopsis ladanum* L.
North of Kısır Da., rocky places, 1940 m, 29 vii 1998, Ocak. 3388.
Euro-Sib.
- Lallemantia iberica* (M.Bieb.) Fisch. & Mey.
West of Kısır Da., fallow field, 1950 m, 22 vii 1997, Ocak. 2892.
Ir.-Tur.
- Lamium album* L.
West of Kısır Da., rocky places, 2150 m, 24 vi 1997, Ocak. 3038.
Euro-Sib.
- Leonurus glaucescens* Bunge
East of Kısır Da., rocky places, 1945 m, 30 vii 1998, Ocak. 3390.
Ir.-Tur.
- Mentha arvensis* L.
Gülyüzü village, wet places, 1940 m, 3 viii 1998, Ocak. 3477.
- M. longifolia* (L.) Hudson subsp. *longifolia*
Dağköy valley, wet meadows, 2500 m, 27 vii 1998, Ocak. 3418.
Euxine.
- Nepeta betonicifolia* C.A.Mey.
Kızıroğlu district, rocky places, 2200 m, 21 vi 1997, Ocak. 3049.
Ir.-Tur.
- N. nuda* L. subsp. *albiflora* (Bois.) Gams.
Northeast of Kısır Da., rocky places, 1945 m, 30 vii 1998, Ocak. 3479.
- N. nuda* L. subsp. *nuda*
Arpaçay plateau, steppe, 2350 m, 20 vii 1997, Ocak. 3071.
- N. racemosa* Lam.
West of Kısır Da., rocky places, 2100 m, 22 vii 1998, Ocak. 3037.
Ir.-Tur.
- N. transcaucasica* Grossh.
Dağköy valley, rocky places, 2400 m, 11 vii 1998, Ocak. 3186.
Ir.-Tur.
- Origanum vulgare* L. subsp. *vulgare*
West of Kısır Da., rocky places, 1945 m, 31 vii 1998.
Euro-Sib.
- Phlomis pungens* Willd. var. *hirta* Velen
Güvercinköy district, steppe, 1850 m, 18 vii 1997, Ocak. 2894.
- P. tuberosa* L.
North of Kısır Da., steppe, 2250-2400 m, 10 vii 1998, Ocak. 3364.
- Prunella vulgaris* L.
Dağköy valley, wet places, 2100 m, 7 vii 1998, Ocak. 3282.
Euro-Sib.
- Salvia aethiopsis* L.
Kızıroğlu district, steppe, 2200 m, 20 vi 1997, Ocak. 3097.
- Salvia staminea* Montbret & Aucher ex Benth.
Kamahköy district, steppe, 2300 m, 20 vi 1997, Ocak. 3109.
Ir.-Tur.
- S. verticillata* L. subsp. *amasiaca* (Freynt & Bornm.) Bornm.
North of Kısır Da., steppe, 2250 m, 18 vi 1997, Ocak. 3050.
Ir.-Tur.

Scutellaria orientalis L. subsp. *sosnowskyi* (Takht.) Fed.

Kamahköy district, stony slopes, 1950 m, 29 vii 1997, Ocak. 2896.

Ir.-Tur.

Stachys atherocalyx K.Koch

Arpaçay plateau, rocky places, 2300 m, 28 vii 1997, Ocak. 2897.

Euro-Sib.

S. balansae Boiss. & Kotschy subsp. *balansae*

North of Kısır Da., rocky places, 1945 m, 30 vii 1998, Ocak. 3386.

S. iberica M.Bieb. subsp. *georgica* Rech.f.

Arpaçay plateau, steppe, 2350 m, 28 vii 1997, Ocak. 2898.

Ir.-Tur.

S. macrantha (K.Koch) Tearn.

Arpaçay plateau, steppe, 2250 m, 28 vii 1997, Ocak. 2899.

Euxine.

S. macrostachya (Wend.) Briq.

Arpaçay plateau, rocky places, 2300 m, 1 viii 1997, Ocak. 2900.

Euxine.

Teucrium chamaedrys L. subsp. *chamaedrys*

Kamahköy valley, rocky places, 1850 m, 23 vii 1997, Ocak. 3395.

Euro-Sib.

T. orientale L. var. *puberulens*

Gülyüzü district, rocky places, 2300 m, 20 vii 1998, Ocak. 3332.

Ir.-Tur.

Thymus fallax Fisch. & Mey.

Zinzal plateau, steppe, 2200 m, 11 vii 1998, Ocak. 3333.

Ir.-Tur.

T. kotschyanus Boiss. & Hohen. var. *kotschyanus*

Southeast of Kısır Da., steppe, 2350 m, 22 viii 1999, Ocak. 3576.

Ir.-Tur.

T. praecox Opiz subsp. *grossheimi* (Ronniger) Jalas

Zinzal plateau, steppe, 2850 m, 23 vii 1997, Ocak. 3118.

Ir.-Tur.

T. transcaucasicus Ronniger

North of Kısır Da., steppe, 2400 m, 10 vii 1998, Ocak. 3460.

Kısır Da., 2900 m, P.H.Davis 30449.

Ziziphora clinopodioides Lam.

North of Kısır Da., Rosa community, 2400 m, 12 vii 1998, Ocak. 3459.

LILIACEAE

Allium albidum Fisch. & M.Bieb. subsp. *caucasicum* (Regel) Stearn.

Kamahköy plateau, rocky places, 2500 m, 10 vii 1998, Ocak. 3350.

Ir.-Tur.

A. aucheri Boiss.

Kamahköy district, rocky places, 2400 m, 28 vii 1997, Ocak. 2997.

Ir.-Tur.

A. cardiostemon Fisch. & Mey.

Arpaçay plateau, steppe, 2350 m, 29 vii 1998, Ocak. 3203.

Ir.-Tur.

A. oreophilum C.A.Mey.

Dağköy valley, rocky places, 2450 m, 9 vii 1998, Ocak. 3300.

Ir.-Tur.

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

West of Kısır Da., steppe, 2250-2400 m, 21 vii 1997, Ocak. 3041.

A. vineale L.

Dağköy valley, wet places, 2200 m, 9 vii 1998, Ocak. 3377.

Bellevalia paradoxa (Fisch. & Mey.) Boiss.

Kızıroğlu district, fallow field, 2500 m, 21 vi 1997, Ocak. 3047.

Ir.-Tur.

B. sarmatica (Pallas ex Georgi) Woronow

Kamahköy district, fallow field, 2000 m, 26 vi 1997, Ocak. 3069.

Colchicum szovitsii Fisch. & Mey.

Kamahköy district, steppe, 1990 m, 5 v 1997, Ocak. 2901.

Ir.-Tur.

Fritillaria caucasica J.F.Adam

North of Kısır Da., steppe, 2200-2400 m, 21 v 1997, Ocak. 2902.

Euxine.

Gagea taurica Steven

Kızıroğlu district, steppe, 2650 m, 23 vi 1997, Ocak. 3096.

Ir.-Tur.

Muscari armeniacum Leichtlin ex Baker

Kızıroğlu valley, steppe, 2250 m, 21 ix 1997, Ocak. 3087.

Ornithogalum oligophyllum E.D.Clarke

Kızıroğlu district, steppe, 2300 m, 21 vi 1997, Ocak. 3107.

O. platyphyllum Boiss.

Arpaçay plateau, wet places, 2250 m, 20 vii 1997, Ocak. 3108.

Ir.-Tur.

LINACEAE

Linum hypericifolium Salisb.

Zinzal plateau, steppe, 2600 m, 27 vii 1998, Ocak. 3269.

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

North of Kısır Da., Rosa community, 2400 m, 10 vii 1998, Ocak. 3301.

Endemic. Ir.-Tur. LR (Ic) (Because of intensive agricultural activities and excessive pasturing).

LYTHRACEAE

Lythrum salicaria L.

Lake Çıldır, marshy, 1940 m, 4 viii 1998, Ocak. 3471.

Euro-Sib.

MALVACEAE

Alcea apterocarpa (Fenzl.) Boiss.

Susuz to Çıldır, roadside, 1960 m, 30 vii 1999, Ocak. 3552.

Endemic. Ir.-Tur. LR (Ic) (Because of intensive agricultural activities and excessive pasturing).

- A. hohenackeri** (Boiss. & Huet) Boiss.
East of Kısır Da., steppe, 1950 m, 30 vii 1998, Ocak. 3472.
- Malva neglecta** Wallr.
Burcallıköy, roadside, 1800 m, 20 viii 1999, Ocak. 3565.
- ONAGRACEAE**
- Epilobium angustifolium** L.
Kısır Da., rocky places, 2350-2500 m, 11 vii 1998, Ocak. 3316.
Kısır Da., above Susuz, 2000 m, P.H.Davis 30526.
- E. hirsutum** L.
Kamahköy valley, wet meadows, 1850 m, 20 vii 1998, Ocak. 3531.
- E. minutiflorum** Hausskn.
Dağköy valley, rocky places, 2500 m, 28 vii 1998, Ocak. 3425.
Ir.-Tur.
- E. montanum** L.
Dağköy valley, wet places, 2250 m, 24 vii 1997, Ocak. 3164.
Euro-Sib.
- ORCHIDACEAE**
- Dactyldriza euxine** (Nevski)
H.Baumann & Künkele var. **euxine**
Dağköy valley, wet places, 2300 m, 26 vii 1997, Ocak. 3165.
Euxine.
- Orchis coriophora** L.
Dağköy valley, rocky places, 2000 m, 7 vii 1998, Ocak. 3227.
- OROBANCHACEAE**
- Orobanche alba** Stephan
Dağköy valley, rocky places, 2300 m, 26 vi 1998, Ocak. 3441.
- Orobanche caucasica** G.Beck
Kamahköy valley, steppe, 2100 m, 26 vi 1998, Ocak. 3441.
- PAPAVERACEAE**
- Corydalis rutifolia** (Sibth. & Sm.) DC.
subsp. **erdellii** (Zucc.) Cullen & P.H.Davis
Güvercinköy district, rocky places, 1900 m, 20 v 1998, Ocak. 3205.
- Fumaria microcarpa** Boiss. ex Hausskn.
Susuz to Çıldır, roadsides, 1980 m, 8 vii 1998, Ocak. 3275.
- Papaver fugax** Poir. var. **fugax**
South of Kısır Da., rocky places, 2400 m, 8 vii 1998, Ocak. 3281.
- P. lateritium** Koch
North of Kısır Da., steppe, 2800 m, 23 vii 1998, Ocak. 3190.
Endemic. Euxine **VU**. (Because of intensive agricultural activities and excessive pasturing).
- P. orientale** L. var. **parviflora** Busch.
Kısır Da., rocky places, 1950 m, 10 vii 1998, Ocak. 3270.
Ir.-Tur.
- PARNASSIACEAE**
- Parnassia palustris** L.
Dağköy valley, wet places, 2350 m, 22 viii 1999, Ocak. 3571.
- PLANTAGINACEAE**
- P. atrata** Hoppe
Kamahköy district, steppe, 2600 m, 28 vi 1997, Ocak. 3159.
Southwest slopes of Kısır Da., 2800 m, P.H.Davis 30575.
- P. lanceolata** L.
Dağköy valley, steppe, 2400 m, 6 vii 1998, Ocak. 3242.
- P. major** L. subsp. **major**
Gülyüzüköy district, wet meadows, 1940 m, 30 vii 1998, Ocak. 3383.
- P. media** L.
Kızıroğlu district, steppe, 2200 m, 22 vii 1998, Ocak. 3361.
- POACEAE**
- Agrostis stolonifera** L.
Dağköy valley, wet places, 2350 m, 11 vii 1998, Ocak. 3000.
Euro-Sib.
- Alopecurus arundinaceus** Poir.
Kızıroğlu district, wet places, 2250 m, 20 vi 1997, Ocak. 3019.
Euro-Sib.
- A. textilis** Boiss. subsp. **tiflisensis** (Westb.) Tzvelev
Dağköy valley, rocky places, 2000 m, 28 vi 1997, Ocak. 3001.
Ir.-Tur.
- Avena ludoviciana** Duriev.
West of Kısır Da., fallow field, 2100 m, 16 vii 1998, Ocak. 3278.
- Beckmannia eruciformis** (L.) Host.
East of Kısır Da., Lavaş marshy, 1960 m, 7 vii 1998, Ocak. 3496.
- Bromus inermis** Lysser
Dağköy valley, rocky places, 2350 m, 10 vii 1998, Ocak. 3283.
- B. tectorum** L.
Kızıroğlu district, roadside steppe, 2100 m, 24 vi 2000, Ocak. 3609.
Kısır Da., above Susuz, 2000 m, P.H.Davis 30514.
- B. tomentellus** Boiss.
North of Kısır Da., steppe, 2550 m, 12 vii 1998, Ocak. 3341.
- B. variegatus** M.Bieb. subsp. **villosulus** (Steudel) P.M.Sm.
Kamahköy district, steppe, 2300 m, 20 vi 1998, Ocak. 3042.
Southwest slope of Kısır Da., 2500 m, P.H.Davis 30565.
Ir.-Tur.
- Calamagrostis pseudophragmites** (Haller f.) Koeler
Lake Çıldır, marshy, 1960 m, 29 vii 2000, Ocak. 3600.
- Catabrosella variegata** (Boiss.) Tzvelev var. **variegata**
Kızıroğlu district, rocky places, 2200 m, 21 vi 1997, Ocak. 3055.
- Dactylis glomerata** L.
North of Kısır Da., rocky places, 2150 m, 26 vii 1998, Ocak. 2921.
Southwest side of Kısır Da., 2300 m, P.H.Davis 30505.
- Deschampsia caespitosa** (L.) P.Beauv.
Dağköy valley, wet meadows, 2600 m, 11 vii 1998, Ocak. 3249.

- Elymus repens** (L.) Gould subsp. **repens**
Kâmahköy district, steppe, 2250 m, 8 vii 1998, Ocak. 3277.
- Eremopoa persica** (Trin.) Roshev.
Arpaçay plateau, rocky places, 2000 m, 27 vi 1998, Ocak. 3497.
Ir.-Tur.
- E. songarica** (Schrenk) Roshev.
Dağköy valley, rocky places, 2200 m, 18 vii 1998, Ocak. 3261.
Ir.-Tur.
- Festuca chalcophaea** V.Krecz & Bobrov subsp. **chalcophaea**
East of Kısır Da., steppe, 2800 m, 25 vii 1997, Ocak. 3073.
Ir.-Tur.
- F. gigantea** (L.) Vill.
Dağköy valley, *Heracleum* community, wet places, 2250 m, 24 vii 2000, Ocak. 3602.
Euro-Sib.
- Hordeum bulbosum** L.
Burcallı district, wet places, 1900 m, 18 vii 1998, Ocak. 3498.
- H. violaceum** Boiss. & Huet.
Arpaçay plateau, steppe, 2250 m, 25 vi 1997, Ocak. 3092.
Ir.-Tur.
- Koeleria gracilis** Per.
East of Kısır Da., steppe, 2250 m, 28 vii 1997, Ocak. 2913.
- K. eriostachya** Panic
Dağköy valley, steppe, 2450 m, 6 vii 1998, Ocak. 3226.
Southwest slope of Kısır Da., 2500 m, P.H.Davis 30567.
- Lolium persicum** Boiss. Hoh.
Gölyüzü district, steppe, 2300 m, 24 vii 1997, Ocak. 3210.
Ir.-Tur.
- Melica persica** Kunth. subsp. **inaequiglumis** (Boiss.) Bor
Dağköy valley, rocky places, 2450 m, 8 vii 1998, Ocak. 3210.
- Nardus stricta** L.
Kızıroğlu, wet places, 2950 m, 27 vii 2000, Ocak. 3603.
Euro-Sib.
- Phalaris arundinacea** L.
Lake Çıldır, marshy, 1940 m, 3 viii 1998, Ocak. 3409.
- Phleum montanum** K.Koch subsp. **montanum**
East of Kısır Da., steppe, 2300-2400 m, 8 vii 1998, Ocak. 3199.
- Phragmites australis** (Cav.) Trin. ex Steudel
Lake Çıldır, marshy, 1940 m, 31 vii 1998, Ocak. 3464.
- Poa angustifolia** L.
Dağköy valley, rocky places, 2350 m, 10 vii 1998, Ocak. 3286.
- P. bulbosa** L.
West of Kısır Da., steppe, 2350 –2550 m, 27 vi 1997, Ocak. 2918.
- P. cf. caucasica** Trin. (Anthers 1.5-2.0 mm)
Dağköy valley, rocky slopes, 2450 m, 7 vii 1998, Ocak. 3532.
Euxine.
- P. longifolia** Trin.
Dağköy valley, rocky slopes, 2350 m, 10 vii 1998, Ocak. 3286.
- P. pratensis** L.
North of Kısır Da., rocky places, 1945 m, 29 vii 1998, Ocak. 3404.
- Stipa tirsia** Steven
Meredis plateau, steppe, 2700 m, 4 vii 1998, Ocak. 3403.
Euro-Sib.
- Trisetum flavescens** (L.) P.Beauv.
Dağköy valley, rocky places, 2350 m, 6 vii 1998, Ocak. 3501.
Euro-Sib.
- T. thospiticum** Chrtek
Dağköy valley, rocky places, 2500 m, 8 vii 1998, Ocak. 3198.
Endemic. Ir.-Tur. VU. (Because of intensive agricultural activities and excessive pasturing).
- Zingeria biebersteiniana** (Claus) P.Smironov subsp. **biebersteiniana**
Dağköy valley, rocky places, 2450 m, 27 vii 1997, Ocak. 3276.
Ir.-Tur.
- Z. pisidica** (Boiss.) Tudin
Kâmahköy valley, rocky places, 2050 m, 28 vii 1999, Ocak. 3542.
Ir.-Tur.
- POLYGALACEAE**
- Polygala alpestris** Reichb.
North of Kısır Da., wet places, 2800 m, 26 vii 1998, Ocak. 3299.
Euro-Sib.
- P. anatolica** Boiss. & Heldr.
Kamahköy district, steppe, 2400 m, 7 vii 1998, Ocak. 3451.
- P. supina** Schreb.
Meredis plateau, steppe, 2650 m, 2 vii 1998, Ocak. 2826.
- POLYGONACEAE**
- Polygonum alpinum** All.
Meredis plateau, steppe, 2500 m, 29 vi 1998, Ocak. 3502.
Euro-Sib.
- P. amphibium** L.
Lake Çıldır, marshy, 1940 m, 8 viii 1998, Ocak. 3469.
- P. bistorta** L. subsp. **bistorta**
Dağköy valley, wet meadows, 2450 m, 30 vii 1998, Ocak. 3503.
Southwest slope of Kısır Da., 2100 m, P.H.Davis 30443.
Euro-Sib.
- P. cognatum** Meissn.
Susuz to Çıldır roadsides, 1975 m, 30 vii 1998, Ocak. 3504.
- P. convolvulus** L.
Güvercinköy district, field, 1800 m, 2 viii 1998, Ocak. 3505.
- P. persicaria** L.
Kâmahköy, wet places, 1800 m, 20 viii 1999, Ocak. 3570.

- Rumex acetosella* L.
Kızıroğlu district, steppe, 2250 m, 7 vii 1997, Ocak. 3506.
- R. angustifolius* Campd. subsp. *angustifolius*
Dağköy valley, rocky places, 2500 m, 30 vii 1998, Ocak. 3507.
- R. crispus* L.
Kızıroğlu district, wet meadows, 2250 m, 31 vii 1998, Ocak. 3508.
- Southwest slope of Kısır Da., 2300 m, P.H.Davis 30552.
- R. gracilescens* Rech.
Kamahköy district, wet meadows, 1920 m, 21 vi 1997, Ocak. 2928.
- Endemic. LR (nt). (Because of intensive agricultural activities and excessive pasturing).
- R. tuberosus* L. subsp. *horizontalis* (Koch) Rech.
Zinzal plateau, rocky places, 2400 m, 1 viii 1998, Ocak. 3509.
- POTAMOGETONACEAE**
- Potamogeton crispus* L.
North of Kısır Da., Lake Çıldır, 1940 m, 6 viii 1998, Ocak. 3579.
- P. gramineus* L.
North of Kısır Da., Lake Çıldır, 1940 m, 21 vii 1997, Ocak. 3161.
- P. perfoliatus* L.
North of Kısır Da., Lake Çıldır, 1940 m, 6 viii 1998, Ocak. 3381.
- P. trichoides* Cham. & Schlecht.
Kamahköy to Dağköy canal, 1850 m, 21 viii 1999, Ocak. 3567.
- PRIMULACEAE**
- Androsace albana* Steven
Kısır Da., by Lake Çıldır, 2560 m, Watson 361.
- A. armeniaca* Duby var. *armeniaca*
South of Kısır Da., high mountain steppe, 2800 m, 24 vii 1997, Ocak. 2831.
- Ir.-Tur.
- A. villosa* L.
Top of Kısır Da., steppe, 3150 m, 18 vi 1997, Ocak. 2820.
- Southwest side of Kısır Da., 2700 m, P.H.Davis 30500.
- Lysimachia vulgaris* L.
Susuz district, marshy, 1800 m, 30 vii 1999, Ocak. 3547.
- Primula auriculata* Lam.
Arpaçay plateau, rocky places, 2400 m, 26 vii 1998, Ocak. 3167.
- Kısır Da., 2000 m, N.Demirkuş 1156 !
Ir.-Tur.
- P. elatior* (L.) Hill. subsp. *pallasii* (Lehm.) W.W.Sm. & Forrest
Kısır Da., Güvercinlik district, 2000 m, N.Demirkuş 1164.
- P. veris* L. subsp. *macrocalyx* (Bunge) Ludi
Kısır Da., rocky places, 1975 m, 23 v 1997, Ocak. 3283.
- Southwest of Kısır Da., 2000 m, P.H.Davis 29625.
Euro-Sib.
- RANUNCULACEAE**
- Aconitum anthora* L.
Kamahköy valley, wet places, 1950 m, 29 vii 1999, Ocak. 3539.
- Euxine. LR(nt). (Because of intensive agricultural activities and excessive pasturing).
- A. nasutum* Fisch. ex Reichb.
Dağköy valley, *Heracleum* community, wet places, 2000 m, 28 vi 1997, Ocak. 2992.
- Euxine.
- A. orientale* Miller
Side of Lake Çıldır, 1945 m, 27 vii 1998, Ocak. 3434.
- Euxine.
- Adonis flammea* Jacq.
Kızıroğlu district, steppe, 2250 m, 19 vii 1997, Ocak. 3058.
- Anemone albana* Stev.
Northeast of Kısır Da., steppe, 2650 m, 23 vii 1997, Ocak. 3029.
- South of Kısır Da., 2800 m, N.Demirkuş 1162.
Ir.-Tur.
- A. narcissiflora* L. subsp. *narcissiflora*
Kamahköy district, rocky places, 2200 m, 28 vi 1997, Ocak. 3079.
- South of Kısır Da., Güvercinlik, 2000 m, N.Demirkuş 1183 !
- A. narcissiflora* L. subsp. *wildenowii* (Boiss.) P.H.Davis
Kızıroğlu district, steppe, 2600 m, 22 vi 1997, Ocak. 3485.
- Caltha polypetalata* Hochst. ex Lorent
Kamahköy valley, wet meadows, 2100 m, 29 vi 1997, Ocak. 3091.
- Consolida orientalis* (Gay.) Schröd.
West of Kısır Da., fallow field, 1900 m, 24 vi 1997, Ocak. 2930.
- Delphinium buschianum* Gross.
Mamaş plateau, stony slopes, 2650 m, 29 vii 1998, Ocak. 3411.
- W. foot of Kısır Da., 2100 m, P.H.Davis 32562.
Ir.-Tur.
- D. linearilobum* (Trautv.) Busch
Arpaçay plateau, stony slopes, 2000 m, 20 vii 1997, Ocak. 2839.
- W. foot of Kısır Da., 2100 m, P.H.Davis 32562.
Ir.-Tur.
- D. schmalhauseni* All.
Side of Lake Çıldır, rocky places, 1980 m, 22 vii 1997, Ocak. 3059.
- Nigella segetalis* M.Bieb.
Güvercinlik district, fallow field, 1800 m, 16 vii 1997, Ocak. 3013.
- Ranunculus arvensis* L.
Arpaçay plateau, roadside, 2250 m, 23 vii 1997, Ocak. 2932.
- R. caucasicus* M.Bieb. subsp. *caucasicus*
North of Kısır Da., steppe, 2100 m, 22 vii 1999, Ocak. 3596.
- Endemic. VU. (Because of intensive agricultural activities and excessive pasturing).
- R. caucasicus* M.Bieb. subsp. *subleiocarpus* (Som & Lev.) P.H.Davis
North of Kısır Da., *Rosa* community, 2500 m, 10 vii 1998, Ocak. 3308.

- R. grandiflorus** L.
Kızıroğlu district, wet meadows, 2250 m, 20 vi 1997, Ocak. 3100.
- R. illyricus** L. subsp. *illyricus*
Kamahköy district, steppe, 2300 m, 22 vii 1997, Ocak. 2934.
- R. kochii** Ledeb.
Arpaçay plateau, rocky places, 1975 m, 20 iv 1997, Ocak. 3397.
Ir.-Tur.
- R. polyanthemos** L.
Kızıroğlu district, steppe, 2500 m, 19 vii 1997, Ocak. 3014.
- R. repens** L.
Arpaçay plateau, steppe, 2300 m, 23 vi 1997, Ocak. 2993.
- R. trichophyllus** Chaix
Dağköy to Kamahköy, canal, 1900 m, 27 vii 1999, Ocak. 3566.
- Thalictrum minus** L. var. *minus* (Crantz) Crepin
South of Kısır Da., rocky places, 2400 m, 23 viii 1997, Ocak. 2946.
- Trollius ranunculinus** (Sm.) Stearn
Kamahköy valley, rocky places, 2100 m, 27 vii 1999, Ocak. 3484.
- RESEDACEAE**
- Reseda lutea** L. subsp. *lutea*
South of Kısır Da., stony slopes, 1950–2000 m, 26 vi 1997, Ocak. 2935.
- ROSACEAE**
- Agrimonia eupatoria** L.
Kızıroğlu district, wet places, 1800 m., 26 vii 1999, Ocak. 3536.
- Alchemilla erythropoda** Juz.
North of Kısır Da., steppe, 2750 m, 24 vii 1997, Ocak. 2990.
Euro-Sib.
- A. heterophylla** Rothm.
Dağköy valley, rocky places, 2450 m, 28 vii 1998, Ocak. 3423.
- A. minusculiflora** Buser
Kızıroğlu district, steppe, 2450 m, 9 vii 1998, Ocak. 3265.
Euxine.
- A. pseudocartilainica** Juz.
North of Kısır Da., rocky places, 1950 m, 10 vii 1998, Ocak. 3334.
- A. retinervis** Busser
Dağköy valley, rocky places, 2400 m, 22 viii 1999, Ocak. 3562.
Euxine.
- Cotoneaster melanocarpus** (Bunge) Fisch.
Arpaçay plateau, rocky places, 1950 m, 26 vi 1997, Ocak. 2935.
- C. nummularia** Fisch. & Mey.
Dağköy valley, rocky places, 2350 m, 14 vii 1998, Ocak. 3211.
- Filipendula ulmaria** (L.) Maxim
Dağköy valley, wet meadows, 2250 m, 28 vii 1998, Ocak. 3435.
Euro-Sib.
- F. vulgaris** Moench
East of Kısır Da., steppe, 2350 m, 27 vii 1997, Ocak. 3099.
Euro-Sib.
- Fragaria vesca** L.
Gülyüzü district, steppe, 2400 m, 11 vii 1998, Ocak. 3344.
- Geum urbanum** L.
North of Kısır Da., rocky places, 1945 m, 30 vii 1998, Ocak. 3379.
Euro-Sib.
- G. rivale** L.
Dağköy valley, *Heracleum* community, wet places, 2200 m, 24 vii 2000, Ocak. 3604.
- Padus avium** Miller
North of Kısır Da., rocky slopes, 1975 m, 27 vii 2000, Ocak. 3605.
- Potentilla adsharica** Som & Lev. ex Keller
Kızıroğlu district, steppe, 2500 m, 21 vi 1997, Ocak. 3106.
Euxine.
- P. anserina** L. subsp. *anserina*
Dağköy valley, wet meadows, 2300 m, 26 vi 1997, Ocak. 3112.
- P. argaea** Boiss. & Bal.
S. side of Kısır Da., 2800 m, P.H.Davis 30498.
- P. argentea** L.
Dağköy valley, rocky places, 2350 m, 28 vii 1998, Ocak. 3457.
- P. crantzii** (Crantz) G.Beck ex Fritach var. *crantzii*
Kızıroğlu district, steppe, 2400 m, 27 vi 1997, Ocak. 3116.
Southwest side of Kısır Da., 2300 m, P.H.Davis 30574.
- P. fruticosa** L. subsp. *floribunda* (Pursch) Elkington
Dağköy valley, rocky places, 2450 m, 31 vii 1998, Ocak. 3456.
- P. inclinata** Vill.
Dağköy district, *Cephalaria* community, 2350 m, 28 vii 1998, Ocak. 3384.
- P. palustris** (L.) Scop.
Kamahköy valley, wet meadows, 2200 m, 27 vi 1998, Ocak. 3119.
- P. pimpinelloides** L.
Kızıroğlu district, steppe, 2250 m, 19 vii 1997, Ocak. 3120.
Euro-Sib.
- P. recta** L.
North of Kısır Da., Rosa community, 2400 m, 26 vii 1997, Ocak. 2937.
- P. reptans** L.
Arpaçay plateau, steppe, 2000 m, 18 vii 1997, Ocak. 3061.
- Rosa canina** L.
North of Kısır Da., Rosa community, 2450 m, 10 vii 1998, Ocak. 3338.
- R. pimpinellifolia** L.
North of Kısır Da., Rosa community, 2350 m, 30 vii 1998, Ocak. 3467.
Euro-Sib.
- Rubus idaeus** L.
North of Kısır Da., rocky places, 1940 m, 13 viii 1998, Ocak. 3406.
- R. saxatilis** L.
North of Kısır Da, rocky places, 1940 m, 9 vii 1998, Ocak. 3272.

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

West of Kısır Da., steppe, 1950 m, 12 vii 1998, Ocak. 3510.

S. officinalis L.

Dağköy valley, steppe, 2200 m, 27 vii 1998, Ocak. 3438.

Sibbaldia parviflora Willd. var. *parviflora*

Southeast of Kısır Da., steppe, 2950 m, 27 ix 1996, Ocak. 2991.

Southwest of Kısır Da., 2800 m, P.H.Davis. 30526.

Sorbus aucuparia L.

North of Kısır Da., rocky places, 1975 m, 26 vii 2000, Ocak. 3606.

Euro-Sib.

Spiraea hypericifolia L.

Kamahköy valley, rocky places, 2000 m, 31 vii 1998, Ocak. 2938.

RUBIACEAE

Asperula laxiflora Boiss.

Dağköy valley, rocky places, 2550 m, 28 vii 1998, Ocak. 3400.

Euxine.

A. xlorrhiza Nab.

Arpaçay plateau, steppe, 2400 m, 24 vii 1997, Ocak. 2939.

Ir.-Tur.

Cruciata laevipes Opiz

Dağköy valley, rocky places, 2450 m, 11 vii 1998, Ocak. 3378.

Southwest side of Kısır Da., 2200 m, P.H.Davis 29633.

C. taurica (Pallas ex Willd.) Ehrh.

South of Kısır Da., steppe, 1850 m, 23 vii 1997, Ocak. 2940.

Kısır Da., 3000 m, P.H.Davis. 30540.

Galium boreale L.

Kamahköy valley, rocky places, 1950 m, 30 vii 1999, Ocak. 3543.

Ir.-Tur.

G. samuellssonii Ehrend.

Dağköy valley, rocky places, 1950 m, 29 vii 1999, Ocak. 3538.

G. spurium L. subsp. *spurium*

Dağköy valley, rocky places, 2300 m, 8 vii 1998, Ocak. 3229.

Euro-Sib.

G. verum L. subsp. *glabrescens*

North of Kısır Da., steppe, 2650 m, 30 vii 1998, Ocak. 3389.

SALICACEAE

Populus tremula L.

North of Kısır Da., Rosa community, 2450 m, 31 vii 1998, Ocak. 3466.

Salix triandra L. subsp. *triandra*

Lake Çıldır, marshy, 1940 m, 4 viii 1998, Ocak. 3468.

Euro-Sib.

SANTALACEAE

Thesium arvense Horvatovszky

North of Kısır Da., steppe, 2350 m, 9 vii 1998, Ocak. 3329.

Euro-Sib.

SCROPHULARIACEAE

Euphrasia pectinata Ten.

Dağköy valley, wet places, 2100 m, 10 vii 1998, Ocak. 3222.

Southwest of Kısır Da., 2400 m, P.H.Davis 30492.

Euro-Sib.

Lagotis stolonifera (K.Koch) Maxim

Burcallı district, steppe, 1950 m, 23 v 1997, Ocak. 2944.

Ir.-Tur.

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

Kızıroğlu district, steppe, 2100-2400 m, 8 vii 1998, Ocak. 3363.

Endemic. Ir.-Tur. LR (lc). Because of intensive agricultural activities and excessive pasturing.

L. grandiflora Desf.

Kızıroğlu district, steppe, 1950 m, 21 vi 1997, Ocak. 2819.

Ir.-Tur.

L. kurdica Boiss. & Hohen.

Dağköy valley, steppe, 2400 m, 8 vii 1998, Ocak. 3184.

Ir.-Tur.

Melampyrum arvense L.

Zinza plateau, rocky places, 2200 m, 10 vii 1998, Ocak. 3326.

Euro-Sib.

Pedicularis caucasica M.Bieb.

Kızıroğlu valley, steppe, 2900 m, 31 vii 1998, Ocak. 3511.

Kısır Da., 3000 m, P.H.Davis 30556.

Euxine.

P. comosa L. var. *sibthorpii* (Boiss.) Boiss.

Kızıroğlu district, steppe, 2300 m, 21 vi 1997, Ocak. 3034.

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

Zinza district, steppe, 2000 m, 24 vii 1997, Ocak. 3053.

Scrophularia chrysantha Jaub. & Spach.

Kızıroğlu district, steppe, 2200 m, 21 vi 1997, Ocak. 3072.

Euxine.

S. cinereascens Boiss.

Kısır Da., above Susuz, 2000 m, P.H.Davis 30527.

S. libanotica Boiss. subsp. *libanotica*

North of Kısır Da., rocky places, 1945 m, 6 vi 1997, Ocak. 2822.

Ir.-Tur.

S. orientalis L.

Kızıroğlu district, rocky places, 2350 m, 23 vi 1997, Ocak. 3089.

Ir.-Tur.

S. umbrosa Dum

Arpaçay plateau, wet meadows, 2050 m, 24 vii 1997, Ocak. 3098.

Euro-Sib.

Verbascum biscutellifolium Benth.

Dağköy valley, steppe, 2250 m, 18 vii 1997, Ocak. 3110.

Ir.-Tur.

V. flavidum (Boiss.) Freyn & Bornm.

Kızıroğlu district, steppe, 2100 m, 18 vii 1998, Ocak. 3512.

Euro-Sib.

V. georgicum Benth.

Gülyüzü district, steppe, 1950 m, 23 vii 1997, Ocak. 3113.

Ir.-Tur.

V. oreophilum K.Koch var. **oreophilum**

Dağköy valley, steppe, 2250 m, 21 vii 1997, Ocak. 3006.

Endemic. Ir.-Tur. **LR (nt)** (Because of intensive agricultural activities and excessive pasturing).

V. phoenicum L.

Dağköy valley, steppe, 2450 m, 9 vii 1998, Ocak. 3202.

V. pyramidatum M.Bieb.

Kısır Da., Kızıroğlu district, steppe, 2450 m, 24 vii 1997, Ocak. 3035.

Euxine.

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

Gülyüzü district, steppe, 1960 m, 24 vii 1998, Ocak. 3513.

Veronica anagallis-aquatica L.

Kamahköy plateau, wet meadows, 2000 m, 1 viii 1998, Ocak. 3452.

V. armena Boiss. & Huet

Kızıroğlu district, steppe, 1950 m, 3 viii 1998, Ocak. 3514.

Ir.-Tur.

V. gentianoides Vahl.

Kızıroğlu district, steppe, 2200 m, 20 vi 1997, Ocak. 2975.

Ir.-Tur.

V. multifida L.

Dağköy valley, steppe, 2250 m, 19 vi 1997, Ocak. 3007.

Ir.-Tur.

V. pusilla Kotschy

Southwest side of Kısır Da., 2300 m, P.H.Davis 30496.

SOLANACEAE

Hyoscyamus niger L.

Kamahköy roadside, 2000 m, 7 vii 1998, Ocak. 3256.

URTICACEAE

Urtica dioica L.

Arpaçay plateau, rocky places, 2500 m, 19 vii 1997, Ocak. 2436.

Euro-Sib.

U. urens L.

Dağköy valley, rocky places, 2000 m, 20 vii 1998, Ocak. 2463.

VALERIANACEAE

Valeriana leucophaea DC.

Southwest of Kısır Da., 2200 m, P.H.Davis 29629.

V. officinale L.

Arpaçay plateau, steppe, 2400 m, 7 vii 1998, Ocak. 3515.

V. phu L.

North of Kısır Da., rocky places, 1945 m, 21 vii 1997, Ocak. 3048.

VIOLACEAE

Viola arvensis Murray

North of Kısır Da., fallow field, 2300 m, 11 vii 1998, Ocak. 3355.

Viola gracilis Sibth. & Sm.

Dağköy valley, wet places, 2050 m, 21 vii 1997, Ocak. 2999.

Viola rupestris F.Schmidt

Northeast of Kısır Da., high mountain steppe, 2950 m, 14 vi 1997, Ocak. 3070.

Viola tricolor L.

Kamahköy, stony places 1950 m, 12 vii 1998, Ocak. 3516.