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Kizilcahamam Flora of Soguksu National Park

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ABSTRACT
This research covers the flora of Soguksu National Park, Kizilcahamam. 7 families, 276 genera, 4 subspecies, and 3 varieties were determined with the evaluation of 1064 plant samples collected in the study area during 1989 and 1990. The total number of taxa was 481 and 49 of them were endemic in Turkey. The distribution and rates of the species by phytogeographical regions are as follows: 71 (14.8) European – Siberian components, 11 (2.3%) euxinic components, 76 (15.8%) Iranian – Turanian components, 31 (6.5%) Mediterranean components, and 292 (60.9%) unknown components or cosmopolits. 37 of the total 481 taxa were new for A4 grid square.

Key Words: Kizilcahamam, Soguksu National Park

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INTRODUCTION

Despite the studies conducted on Turkey's flora started by the beginning of the last century, it accelarated with the publication of the work of Davis titled "Flora of Turkey and Eastern Aegean Islands" in 1965. The number of researches conducted by Turkish botanists climbed especially after 1970s due to the contributions of the published volumes of Davis's flora and the elevated number of universities throughout Turkey and increased number of researchers conducting floristic studies in these universities. The entirety of the study area of Soğuksu National Park Forest, Kızılcahamam is situated within the limits of Ankara City, covering an area of 1050 hectares. The field is a volcanic field filled with regional forests and thermal springs and cold water reservoirs in its vicinity.

The National Park limits cross the shoulders and a portion of it is surrounded by barbed wire against the grazing risk. It is 7 km away from the nearest village and the elevations starting at 1030 m in the National Park field reach 1776m, the heighest point, at Tolubelen Hill.

Based on the grid system used in Davis's work "Flora of Turkey" and the samples collected by us, there were 37 plant species that were new for A4 grid square (within A4 square grid of Soğuksu National Park), belonging to the families published in 10 volumes of the flora.

By determining the flora of the National Park in this study, we think that we have contributed to the flora of Ankara City and Turkey.

BACKGROUND

Geographical Aspect of the Study Area

Soğuksu National Park is situated in the Middle Anatolian Region of Turkey to the west of Kızılcahamam County. The National Park is 1 km away from the County center and 80 km away from Ankara, extending between 40° 31' 26" - 40° 34' 13" northern latitudes and 32° 35' 10" - 32° 39' 31" eastern longtitudes. Though the part of the National Park, where activities are held, starts to the west of the County, the main border crosses Kocaçay Creek, running in parallel to Ankara-Istanbul highway that passes through the eastern part of the County, and making the eastern border of the area. The horizon line, starting at Çekeş junction and connecting Yanık Shoulder and Tolubelen Hill, forms the northern border of the area. Tolubelen Hill and Göllü and Incegeliş Shoulders to the west and Harmandoruk Hill and Uzunkavaklık Shoulder to the south make up the borders of the National Park (Figure 1).

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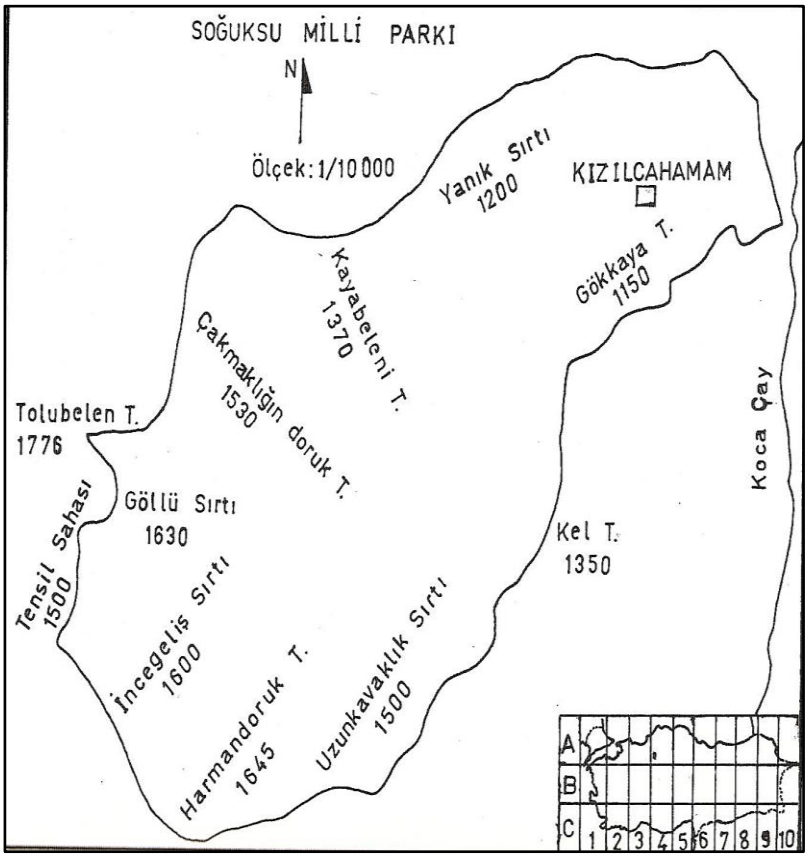
Topographical Structure and Geology

Despite there are no major mountains in the National Park, there are some high hills in the valleys, as separeted from each other. The average altitude of 1100 m by Kızılcahamam County reaches 1776 m at Tolubelen Hill positioned to the west. The other critical altitudes are Harmandoruk Hill of 1645 m, Keltepe Hill of 1350 m, Incegeliş Shoulder of 1600 m, Göllü Shoulder of 1630 m, and Çakmağın Doruk Hill of 1530 m (Figure 1).

Kocaçay Creek, making up the eastern border of the area, runs continuously in summers and winters. Although Soğuksu Creek, cutting through the middle of the National Park, is another significant creek in the National Park, it dries in summers. Another valley to the west of the area is Cehennemdere but, this Creek is situated to the west of the National Park border.

There is a depression covered with water up until the mids of summer at Göllü locality of the National Park, filled with hygrophile vegetation. Snow waters collected in this depression dries after the month of July.

The area's geological structure is rather homogenous, made of andesite and dacite extrusive rocks, and some parts include a neogenic field with a volcanic sahara intermediate layer.



Soğuksu National Park, scale: 1/10000, Tensil field, Uzzunkavaklık Shoulder, Yanık Shoulder, Kocaçay Creek

Figure1. Geographical Map of the Area

CLIMATE

Soğuksu National Park is situated in semi-arid, very cold Mediterranean bioclimatic stage (Table 1).

Temperature

Annual average temperature is 10.2°C. The hottest month in the study area is August (30 °C) and the coldest month is January (-5 °C) (Tables 2, 3, 4).

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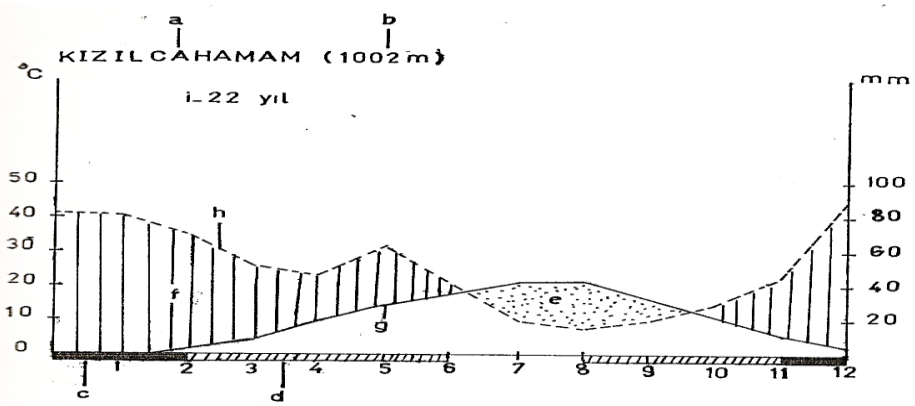
Precipitation

The annual average precipitation is 564.4mm, with maximum precipitation of 85.3mm received in December and minimum precipitation of 14.9mm received in August (Table 5). Maximum precipitation is received in winter (235.2mm) and minimum precipitation is received in summer (73.7mm) (Table 6). Average relative humidity is 65%, with maximum annual average of 77% in December and minimum annual average of 51% in August (Table 7).

The number of annual average foggy days is 4.6, with April, June, July and August having no foggy days, and December has the maximum number of foggy days. The number of snowy days is 12.6 according to the 41-year annual averages and the average number of days covered with snow is 14.6, the number of frost days is 88.6. The climatic diagram of Kızılcahamam is shown in Figure 2.

Prevailing Winds

Direction of the prevailing wind was North-eastern with the blowing number of 5102 and northern with the blowing number of 3757. In terms of the blowing force, the major directions are the southern-southeastern (3.8 m/sec) and north-northeastern (3.7 m/sec) (Table 8).



Şekil 2. Kızılcahamam'ın İklim Diyagramı

a-Meteoroloji İstasyonu
b-Meteoroloji İstasyonunun Yüksekliği
c-Mutlak Donlu Aylar
d-Don Olma İhtimali Olan Aylar
e-Kurak Mevsim
f-Nemli //
g-Sıcaklık Eğrisi
h-Yağış //
i-Rasat süresi

a-Meteorology station / b-Height of meteorology station / c- Months with absolute frost / d – Months with possible frost occurrence / e – Dry season / f- Humid season / g – Temperature curve / h- Precipitation curve / i- Observation period

Table 1. Kızılcahamam's Climatic Type

STATION	Q	m	M	PE	S	CLIMATE
Kızılcahamam	56,4	-5 °C	30 °C	73,7	2,5	Semi-arid, very cold Meditarrenean climate

P: Annual precipitation amount (mm)
S: Aridness index (mm/°C)
PE: Total three-month summer precipitation amount (mm)
M: Average maximum temperature of the hottest month (°C)
M: Average minimum temperature of the colest month of the year (°C)

Table 2. Monthly and annual average temperature

STATION	HEIGHT (m)	MONTHS												Annual average (°C)
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Kızılcahamam	1002	-0,2	-0,3	4,0	9,9	14,2	17,7	21,1	21,0	16,0	10,1	6,1	2,5	10,5

Table 3. Monthly and annual maximum temperature averages

STATION	HEIGHT (m)	MONTHS												Annual Average (°C)
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Kızılcahamam	1002	4,9	5,3	10,8	17,4	21,9	26,6	29,3	30,0	25,4	19,2	13,9	7,1	17,6

Table 4. Annual minimum temperature averages

STATION	HEIGHT (m)	MONTHS												Annual Average (°C)
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Kızılcahamam	1002	-4,1	-5,0	-1,6	3,0	6,8	9,3	12,3	11,6	7,5	3,2	0,4	-0,9	3,5

Table 5. Monthly and annual average precipitation

STATION	HEIGHT (m)	MONTHS												Annual Average
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Kızılcahamam	1002	80,5	69,4	51,1	45,8	62,6	41,0	17,8	14,9	18,5	27,2	44,3	85,3	564,4

Table 6. Precipitation values by seasons

STATION	HEIGHT (M)	Precipitation Values by Seasons								Annual average precipitation
		Winter %		Spring %		Summer %		Fall %		
Kızılcahamam	1002	235,2	41,6	165,5	29,2	73,7	12,9	90,0	15,9	564,4 K.İ.S.Y.

Table 7. Partial humidity average values

STATION	HEIGHT (m)	MONTHS												Annual Average (%)
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Kızılcahamam	1002	76	76	68	64	64	61	54	51	57	65	72	77	65

Table 8. Wind Direction

STATION	HEIGHT (m)	MONTHS												Annual Average
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Kızılcahamam	1002	SE	SE	SE	SE	NW	NW	NE	NW	NW	SE	SE	SE	SE

SE : South east
NW : North west
NE : North east

VEGETATION

The study area was a passage zone extending between European-Siberian and Iranian-Turanian phyto-geographic regions. 800 hectares of the area was forest land and 250 hectares of it was glades.

Forest Vegetation

Forest trees dominant at the park were in turn Pinus sylvestris, P.nigra, abies nordmanniana subsp. Bornmuelleriana, and Quercus pubescens. The ratios of the dominant forest trees according to Amenajman plan prepared in the area are as follows:

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65% Pinus sylvestris
24% P.nigra
6% Abies nordmanniana subsp. bornmuelleriana
5% Quercus pubescens

Moreover, the other trees found in the area were as follows:
Salix alba, S.caprea, Populus tremula, Carpinus betulus, Acer platanoides, A.campestre, A.hyrcanum, Sorbus umbellata, Crataegus monogyna, and Pyrus elaeagnifolia.
Some of the herbaceous species making up the under-wood vegetation were Polygala papilionacea, Vicia noeana, V. pannonice, Lathyrus pratensis, Campanula rapunculoides, and Orthilia secunda.

Mountain and Pasture Vegetation
Components of this vegetation exist at the glades and stream beds that dry up in summer. At the glades, Alyssum sibiricum, Astragalus plumosus, A. Micropterus, Hypericum heterophyllum, Acantholimon ulicinum, and Dipsacus laciniatus grow in abudance. At stream sides, Datisca cannabina, Lythrum salicaria, Lysimachia verticillaris, and Mentha longifolia species are common.
In addition to these common vegetation species, rock vegetation including abundant number of Crassulaceae family's genera (Sedum and Sempervivum) and Paronchia kurdica and Ephedra major grow at the rocks located in the area.

MATERIAL AND METHOD

The study materials were collected at 2-3 day trips made during the months of March through October in 1989-1990. The same regions were revisited during the study period at various vegetation stages and additional samples were collected for samples that were considered insufficient. 36 color slide films of plants that make up the area vegetation and topographic structure and some interesting plants were recorded.
The collected plant samples were pressed and dried according to the herbarium technique. Nearly all of the samples were named by benefiting from the book titled "Flora of Turkey and the East Aegean Islands". The species that were difficult to be named were characterized by using the book titled "Flora Europe, Flora of Iraq, the Genera of Flowering Plants". For some species that were difficult to characterize, the book titled "Botanical Latin, Vascular Plant Systematic" was used. The publications on A4 grid were benefited for determining species that were new for the grid. The named plant species were then categorized at family, genera and species levels and glued on cardboards. Furthermore, analogue samples, if any, were separated. The plants are preserved at the herbarium of Gazi University, Faculty of Arts and Sciences.
The sequencing used in the flora of Turkey was followed in the thesis to determine the order of families, genera and species.
First the genera name, then the species name and subspecies taxon name, if any, were given in turn when writing the plant list. Since the entire A4 grid is located within the limits of Ankara City, Kızılcahamam County, these information were not written to avoid repetition when writing the locality. The species list was prepared according to the evolution order like in the book of Davis titled "Flora of Turkey and the East Aegean Islands". 11 EUNIS Habitat codes were determined in the area and the situations of the plants were determined according to the phyto-geographic and the IUCN categories, and they are shown in the table in the flora list of the area.

FLORA OF THE STUDY AREA

No	Family	Species	EUNIS Habitat code	Endemism	Phytogeogra Phical Region	Endangerment statue
1	Equisetaceae	E.palustre L.	**C2.6**	-	-	**LC**
2	Polpodıaceae	Ceterach officinarum DC	**C2.6**	-	-	**LC**
3	Pinaceae	Abies.nordmanniana (Stev.) Spach.subsp. bornmuelleriana (Mattf.) Coode et Cullen	**G3.1**	**Endemic**	**Oxine element**	**LC**
4	Pinaceae	Cedrus libani A.Rich	**G3.4**	-	-	**LC**
5	Pinaceae	Pinus.sylvestris L.	**G4.5**	-	**Euro-Sib. element**	**LC**
6	Pinaceae	Pinus nigra Arn. subsp. pallasiana (Lamb.) Halmboe	**G4.D**	-	-	**LC**
7	Cupressaaceae	Juniperus communis L. subsp. nana Syme	**G4.9**	-	-	**LC**
8	Cupressaaceae	Juniperus oxycedrus L. subsp. Oxycedrus	**G4.9**	-	-	**LC**
9	Cupressaaceae	Thuja orientalis L.	**G3.4**	-	-	**LC**
10	Ephedraceae	Ephedra major Host.	**C2.6**	-	-	**LC**
11	Ranunculaceae	Nigella nigellastrum (L.) Wilk.	**C2.6**	-	-	**LC**
12	Ranunculaceae	Ranunculus repens L.	**C2.6**	-	**Cosmopolitan**	**LC**
13	Ranunculaceae	Ranunculus.constantinopolitanus (DC.) d'Urv.	**C2.6**	-	**Cosmopolitan**	**LC**
14	Ranunculaceae	Ranunculus polyrhizos Steph.	**C2.6**	-	**Euro-Sib element**	**LC**
15	Ranunculaceae	Ranunculus damascenus Boiss. Et. Gaill	**G4.8**	-	**Ir-Tur. Element**	**LC**
16	Ranunculaceae	Ranunculus illyricus L.subsp. illyricus	**G4.8**	-	**Cosmopolitan**	**LC**
17	Ranunculaceae	Ceratocephalus falcatus (L.) Pers.	**G4.8**	-	**Cosmopolitan**	**LC**
18	Berberidaceae	Berberıs crataegina DC.	**G4.8**	-	**Ir-Tur. Element**	**LC**
19	Papaveraceae	Chelıdonıum majus L.	**C2.6**	-	**Euro-Sib. element**	**LC**
20	Papaveraceae	Papaver apokrinomenon Fedde	**G4-8**	**Endemic**	-	**LC**
21	Papaveraceae	Papaver lacerum Popov.	**G4.8**	-	**Cosmopolitan**	**LC**
22	Papaveraceae	Papaver dubium L.	**G4.8**	-	**Cosmopolitan**	**LC**
23	Papaveraceae	Corydalıs solida Swartz subsp. Solida	**G4.8**	-	**Cosmopolitan**	**LC**
24	Papaveraceae	Fumaria cilicica Hausskn	**G4.8**	-	**Ir-Tur. element**	**LC**
25	Papaveraceae	Fumaria asepala Boiss.	**G4.8**	-	**Ir-Tur. element**	**LC**
26	Brassıcaceae	Cardarıa draba Desv. subsp. Draba	**G1.B**	-	**Cosmopolitan**	**LC**
27	Brassicaceae	Isatıs cappadocica Desv. subsp.cappadocica	**G4.D**	-	**Ir-Tur. element**	**LC**
28	Brassicaceae	Isatıs cappadocica Desv. subsp. alyssifolia (Boiss.) Davis	**G4.D**	-	**Ir-Tur. element**	**LC**
29	Brassicaceae	Aethıonema arabicum (L) Andrz.	**G4.D**	-	**Ir-Tur. element**	**LC**
30	Brassicaceae	Capsella bursa-pastoris (L) Medik.	**G4.D**	-	**Cosmopolitan**	**LC**
31	Brassicaceae	Fıbıgıa clypeata (L) Medik.	**G4.D**	-	**Cosmopolitan**	**LC**
32	Brassicaceae	Fıbıgıa eriocarpa (DC) Boiss.	**G4.D**	-	**Cosmopolitan**	**LC**

33	Brassicaceae	Alyssum linifolium Steph. var linifolium	**G4.D**	-	**Cosmopolitan**	**LC**
34	Brassicaceae	Alyssum minutum Schlecht.	**G4.D**	-	**Cosmopolitan**	**LC**
35	Brassicaceae	Alyssum strıgosum Banks et. subsp. Strigosum	**G4.D**	-	**Cosmopolitan**	**LC**
36	Brassicaceae	Alyssum xanthovarpum Boiss.	**G4.D**	-	**Cosmopolitan**	**LC**
37	Brassicaceae	Alyssum sibiricum Willd.	**G4.D**	-	**Cosmopolitan**	**LC**
38	Brassicaceae	A.murale Waldst. Et Kit subsp. murale var. Murale	**G4.D**	-	**Cosmopolitan**	**LC**
39	Brassicaceae	Arabıs sagittata (Bertol.) DC.	**G4.D**	-	**Cosmopolitan**	**LC**
40	Brassicaceae	Turrıtıs glabra L.	**G4.D**	-	**Cosmopolitan**	**LC**
41	Brassicaceae	Turrıtıs laxa (Sibth. Et Sm.) Hayek	**G4.D**	-	**Cosmopolitan**	**LC**
42	Brassicaceae	Barbarea trichopoda Hausskn.	**C2.6**	**Endemic**	-	**LC**
43	Brassicaceae	Hesperıs bicuspidata (Wild.) Poiret	**G4.D**	-	**Cosmopolitan**	**LC**
44	Brassicaceae	Erysımum cuspidatum (Bieb.) DC.	**G3.4**	-	**Cosmopolitan**	**LC**
45	Brassicaceae	Erysımum eginense Hausskn. Ex Bornm.	**G3.4**	**Endemic**	-	**VU**
46	Brassicaceae	Erysımum smyrnaeum Boiss. et Bal.	**G4.D**	-	**Cosmopolitan**	**LC**
47	Brassicaceae	Allıarıa petiolata (Bieb.) Cavara et Grande	**G4.D**	-	**Cosmopolitan**	**LC**
48	Brassicaceae	Sısymbrıum altissimum L.	**G4.D**	-	**Cosmopolitan**	**LC**
49	Brassicaceae	Descuraınıa sophia (L.) Webb	**G1.B**	-	**Cosmopolitan**	**LC**
50	Resedaceae	Reseda lutea L. Var lutea	**G4.D**	-	**Cosmopolitan**	**LC**
51	Cıstaceae	Cıstus laurifolius L.	**G4.9**	-	**Mediterranean**	**LC**
52	Cıstaceae	Helıanthemum nummularium (L.) Miller subsp. lycaonicum Coode et Cullen	**G4.9**	**Endemic**	-	**LC**
53	Cıstaceae	Helıanthemum ledifolium (L.) Miller var. Ledifolium	**G3.9**	-	**Cosmopolitan**	**LC**
54	Violaceae	Vıola odorata L.	**C2.6**	-	**Cosmopolitan**	**LC**
55	Violaceae	Vıola sieheana Becker	**G4.9**	-	**Cosmopolitan**	**LC**
56	Violaceae	Vıola occulta Lehm.	**G4.9**	-	**Cosmopolitan**	**LC**
57	Violaceae	Vıola gracilis Sibth. Et Sm.	**G4.9**	-	**Cosmopolitan**	**LC**
58	Polygalaceae	Polygala papilionacea Boiss.	**G4.D**	-	**Ir-Tur. element**	**LC**
59	Caryophyllaceae	Arenarıa ledebouriana Fenzl. var. Ledebouriana	**G4.7**	**Endemic**	-	**LC**
60	Caryophyllaceae	Mınuartıa hirsuta (Bieb.) Hand.-Mazz. subsp. falcata (Gris.) Mattf.	**G4.D**	-	**Cosmopolitan**	**LC**
61	Caryophyllaceae	Mınuartıa hamata (Hausskn.) Mattf.	**G4.D**	-	**Cosmopolitan**	**LC**
62	Caryophyllaceae	Stellarıa media (L.) Vill. subsp. media	**C2.6**	-	**Cosmopolitan**	**LC**
63	Caryophyllaceae	Cerastıum dichotomum L. Subsp. Dichotomum	**G4.D**	-	-	**LC**

		Cerastıum brachypetalum Pers. Subsp. Roeseri (Boiss. Et Heldr.) Nyman				
64	Caryophyllaceae	Cerastıum. gracile Duf	**G4.D**	-	**Cosmopolitan**	**LC**
65	Caryophyllaceae	Moenchıa mantica (L.) Bartl. subsp. Mantica	**G4.D**	-	**Cosmopolitan**	**LC**
66	Caryophyllaceae	Telephıum imperati L. subsp. orientale (Boiss.) Nyman	**G4.D**	-	**Cosmopolitan**	**LC**
67	Caryophyllaceae	Dıanthus micranthus Boiss. Et Heldr.	**G4.D**	-	**Cosmopolitan**	**LC**
68	Caryophyllaceae	Dıanthus ancyrensis Hausskn. Et Bornm.	**G4.5**	**Endemic**	**Ir.-Tur.element**	**VU**
69	Caryophyllaceae	Dıanthus zonatus Fenzl. Var. Aristatus (Boiss.) Reeve	**G4.5**	-	-	**LC**
70	Caryophyllaceae	Dıanthus lydus Boiss.	**G4.7**	**Endemic**	-	**VU**
71	Caryophyllaceae	Petrorhagıa alpina (Habl.) Ball et Heywood subsp. Alpina	**G4.5**	-	-	**LC**
72	Caryophyllaceae	Saponarıa chlorifolia Kunze	**G4.D**	**Endemic**	-	**VU**
73	Caryophyllaceae	Silene italica (L.) Pers.	**G4.D**	-	**Cosmopolitan**	**LC**
74	Caryophyllaceae	Silene chlorifolia Sm.	**G4.D**	-	**Ir.-Tur.element**	**LC**
75	Caryophyllaceae	Silene supina Bieb. subsp. Pruinosa (Boiss.) Chowdh.	**G3.4**	-	-	**LC**
76	Caryophyllaceae	Silene vulgaris (Moench) Garcke var. Vulgaris	**G4.5**	-	-	**LC**
77	Caryophyllaceae	Silene fabaria (L.) Sibth. Et Sm.	**G4.5**	-	-	**LC**
78	Caryophyllaceae	Silene compacta Fischer	**G4.5**	-	**Cosmopolitan**	**LC**
79	Caryophyllaceae	Silene alba (Miller) Krause subsp. eriocalycina (Boiss.) Walter	**G4.D**	-	-	**LC**
80	Caryophyllaceae	Silene dichotoma Ehrh. subsp. sibthorpiana (Reichb.) Rech.	**G4.D**	-	**Cosmopolitan**	**LC**
81	İllecebraceae	Hernıarıa micrantha A.K Jackson et Turrill	**G4.9**	-	**Mediterranean**	**LC**
82	İllecebraceae	Hernıarıa incana Lam.	**G4.5**	-	**Cosmopolitan**	**LC**
83	İllecebraceae	Paronychıa kurdica Boiss. subsp. kurdica var. Kurdica	**G4.D**	-	-	**LC**
84	İllecebraceae	Scleranthus uncinatus Schur.	**G4.D**	-	**Cosmopolitan**	**LC**
85	Polygonaceae	Polygonum lapathifolium L.	**C2.6**	-	-	**LC**
86	Polygonaceae	Polygonum cognatum Meissn.	**G3.4**	-	**Cosmopolitan**	**LC**
87	Polygonaceae	Polygonum bellardii All.	**C2.6**	-	**Cosmopolitan**	**LC**
88	Polygonaceae	Rumex acetosella L.	**G4.5**	-	**Cosmopolitan**	**LC**
89	Polygonaceae	Rumex scutatus L.	**G4.D**	-	**Cosmopolitan**	**LC**
90	Polygonaceae	Rumex crispus L.	**G4.5**	-	-	**LC**
91	Chenopodıaceae	Chenopodıum botrys L	**C2.6**	-	-	**LC**
92	Chenopodıaceae	Chenopodıum foliosum (Moench), Aschers	**C2.6**	-	**Cosmopolitan**	**LC**
93	Chenopodıaceae	Chenopodıum 382album L. subsp. 382album var. Albüm	**C2.6**	-	-	**LC**
94	Elatınaceae	Elatıne alsinastrum L.	**G3.4**	-	-	**LC**
95	Hypericaceae	Hypericum heterophyllum Vent.	**G4.D**	-	**Endemic**	**LC**

96	Hypericaceae	Hypericum scabrum L.	**G4.D**	-	**Ir.-Tur.element**	**LC**
97	Hypericaceae	Hypericum orientale L.	**G3.4**	-	-	**LC**
98	Hypericaceae	Hypericum perforatum L.	**G3.4**	-	**Cosmopolitan**	**LC**
99	Malvaceae	Malva alcea L.	**G3.4**	-	-	**LC**
100	Malvaceae	Alcea pallida Waldst. et Kit	**G3.4**	-	-	**LC**
101	Tiliaceae	Tilia cordata. Miller	**C2.6**	-	-	**LC**
102	Geraniaceae	Geranium robertianum L	**G4.D**	-	-	**LC**
103	Geraniaceae	Geranium macrostylum Boiss.	**G4.D**	-	**Mediterreanean mountain**	**LC**
104	Geraniaceae	Geranium pyrenaicum Burm. fil	**G4.D**	-	-	**LC**
105	Geraniaceae	Erodium acaule (L.) Becherer & Thell.	**G4.D**	-	**Mediterreanean**	**LC**
106	Geraniaceae	Pelargonium endlicherianum Fenzl.	**G4.D**	-	**Cosmopolitan**	**LC**
107	Aceraceae	Acer platanoides L.	**G4.8**	-	**Euro-Sib.element**	**LC**
108	Aceraceae	Acer campestre L. subsp. Campestre	**G4.8**	-	-	**LC**
109	Aceraceae	Acer hyrcanum Frsch. et Mey. subsp. Hyrcanum	**G4.8**	-	**Euro-Sib.element**	**LC**
110	Aceraceae	Acer negundo L.	**C2.6**	-	-	**LC**
111	Vıtaceae	Vtıs sylvestris Gmelin	**G4.8**	-	**Cosmopolitan**	**LC**
112	Anacardıaceae	Pıstacıa terebinthus L. subsp. palaestina (Boiss.) Engler	**G4.D**	-	-	**LC**
113	Celastraceae	Euonymus latifolius (L.) Miller subsp. cauconis Coode et Cullen	**G4.8**	-	-	**VU**
114	Celastraceae	Euonymus europaeus L.	**G4.D**	-	**Euro-Sib.element**	**LC**
115	Fabaceae	Sophora japonica L.	**C2.6**	-	-	**LC**
116	Fabaceae	Chamaecytısus pygmaeus (Willd.) Rothm.	**G3.4**	-	**Euro-Sib.element**	**LC**
117	Fabaceae	Robınıa pseudoacacia L.	**G4.D**	-	-	**LC**
118	Fabaceae	Galega officinalis L.	**G4.7**	-	**Euro-Sib.element**	**LC**
119	Fabaceae	Colutea cilicica Boiss. & BaL.	**G4.7**	-	-	**LC**
120	Fabaceae	Astragalus coodei Chamb. & Matthews	**G4.7**	**Endemic**	-	**LC**
121	Fabaceae	Astragalus glycyphyllos L. subsp. glycyphylloides (DC) Matthews	**G3.4**	-	**Euro-Sib.element**	**LC**
122	Fabaceae	Astragalus plumosus Willd. Var. Plumosus	**G3.4**	-	-	**LC**
123	Fabaceae	Astragalus micropterus Fischer	**G3.4**	-	**Ir.-Tur.element**	**LC**
124	Fabaceae	Astragalus brachypterus Fischer	**G4.F**	**Endemic**	**Ir.-Tur.element**	**LC**
125	Fabaceae	Astragalus mitchelianus Boiss.	**G4.F**	**Endemic**	-	**LC**
126	Fabaceae	Cıcer anatolicum Alet.	**G4.D**	-	**Ir.-Tur.element**	**LC**
127	Fabaceae	Vıcıa cracca L. subsp. stenophylla Yel.	**G4.5**	-	-	**LC**
128	Fabaceae	Vıcıa monantha Retz. subsp. Monantha	**G4.D**	-	-	**LC**
129	Fabaceae	Vicia caesarea Boiss. Et Bal.	**G4.D**	**Endemic**	**Ir.-Tur.element**	**LC**
130	Fabaceae	Vicia hirsuta (L.) S.F. Gray	**G4.D**	-	-	**LC**

131	Fabaceae	Vicia truncatula Fischer	**G4.5**	-	**Euro-Sib.element**	**LC**
132	Fabaceae	Vicia noeana Renter var. noeana	**G4.D**	-	**Ir.-Tur.element**	**LC**
133	Fabaceae	Vicia pannonica Crantz var. Pannonica	**G4.D**	-	-	**LC**
134	Fabaceae	Vicia grandiflora Scop. Var. Grandiflora	**G4.5**	-	**Cosmopolitan**	**LC**
135	Fabaceae	Vicia cuspidata Boiss.	**G4.D**	-	**Mediterreanean**	**LC**
136	Fabaceae	Vicia lathyroides L.	**G4.D**	-	-	**LC**
137	Fabaceae	Vicia sativa L. subsp. nigra (L.) Ehrh. Var	**G4.D**	-	-	**LC**
138	Fabaceae	Lathyrus aureus (Stev.) Brandza	**G4.D**	-	**Oxine element**	**LC**
139	Fabaceae	Lathyrus digitatus (Bieb.) Fiori	**G4.D**	-	**Mediterreanean**	**LC**
140	Fabaceae	Lathyrus pratensis L.	**G4.D**	-	**Euro-Sib.element**	**LC**
141	Fabaceae	Lathyrus czeczottianus Bässler	**G4.D**	**Endemic**	-	**VU**
142	Fabaceae	Lathyrus vinealis Boiss. et Noë	**G4.D**	-	**Ir.-Tur.element**	**LC**
143	Fabaceae	Lathyrus nissolia L.	**G4.D**	-	**Cosmopolitan**	**LC**
144	Fabaceae	Pisum sativum L. subsp. elatius (Breb.) Aschers. var. Elatius	**G4.D**	-	**Mediterreanean**	**LC**
145	Fabaceae	Ononis spinosa L. subsp. leiosperma (Boiss.) Sirj.	**G4.8**	-	-	**LC**
146	Fabaceae	Trifolium speciosum Willd.	**G4.D**	-	-	**LC**
147	Fabaceae	Trifolium spadiceum L.	**G4.8**	-	**Euro-Sib.element**	**LC**
148	Fabaceae	Trifolium campestre Schreb.	**G4.8**	-	-	**LC**
149	Fabaceae	Trifolium pratense L. var. pratense	**G4.8**	-	-	**LC**
150	Fabaceae	Trifolium medium L. var. medium	**G4.8**	-	-	**LC**
151	Fabaceae	Trifolium caudatum Boiss.	**G4.D**	**Endemic**	-	**VU**
152	Fabaceae	Trifolium pannonicum Jacq. subsp. elongatum (Willd.) Zoh.	**G4.8**	**Endemic**	-	**VU**
153	Fabaceae	Trifolium arvense L. var. arvense	**G4.D**	-	-	**LC**
154	Fabaceae	Melilotus officinalis (L.) Desr.	**G4.V**	-	-	**LC**
155	Fabaceae	Melilotus alba Desr.	**G4.8**	-	-	**LC**
156	Fabaceae	Melilotus bicolor Boiss. et Bal	**G4.D**	**Endemic**	**Ir.-Tur.element**	**VU**
157	Fabaceae	Trigonella fischeriana Ser.	**G4.D**	-	**Ir.-Tur.element**	**LC**
158	Fabaceae	Medicago lupulina L.	**G4.D**	-	**Cosmopolitan**	**LC**
159	Fabaceae	Medicago sativa L. subsp. sativa	**G4.D**	-	**Cosmopolitan**	**LC**
160	Fabaceae	Dorycnium graecum (L.) Ser.	**G4.D**	-	**Oxine element**	**VU**
161	Fabaceae	Lotus corniculatus L. var. Corniculatus	**G4.8**	-	-	**LC**
162	Fabaceae	Lotus aegaeus(Gris.)Boiss.	**G4.D**	-	**Ir.-Tur.element**	**LC**
163	Fabaceae	Anthyllis vulneraria L. subsp. boissieri (Sag.) Bornm.	**G4.D**	-	-	**LC**

164	Fabaceae	Coronilla varia L. subsp. Varia	**G4.D**	-	**Cosmopolitan**	**LC**
165	Rosaceae	Prunus divaricata. Ledeb. subsp. Divaricata	**G4.D**	-	-	**LC**
166	Rosaceae	Cerasus avium (L.) Moench	**G3.4**	-	-	**LC**
167	Rosaceae	Cerasus mahaleb (L.) Miller var. Mahaleb	**G3.4**	-	-	**LC**
168	Rosaceae	Armeniaca vulgaris Lam.	**G3.4**	-	-	**LC**
169	Rosaceae	Rubus idaeus L.	**G3.4**	-	-	**LC**
170	Rosaceae	Rubus discolor Weihe et Nees	**G4.D**	-	-	**LC**
171	Rosaceae	Rubus canescens DC. var. Canescens	**G4.D**	-	-	**LC**
172	Rosaceae	Potentilla rupestris L.	**G3.1**	-	**Euro.Sib.element**	**LC**
173	Rosaceae	Potentilla recta L.	**G3.1**	-	**Cosmopolitan**	**LC**
174	Rosaceae	Fragaria vesca L.	**G3.1**	-	-	**LC**
175	Rosaceae	Geum urbanum L.	**G3.1**	-	**Euro-Sib.element**	**LC**
176	Rosaceae	Agrimonia eupatoria L.	**G3.4**	-	-	**LC**
177	Rosaceae	Sanguisorba minor Scop. subsp. muricata (Spach) Briq.	**G4.5**	-	-	**LC**
178	Rosaceae	Alchemilla mollis (Buser) Rothm.	**G4.5**	-	**Cosmopolitan**	**LC**
179	Rosaceae	Rosa canina L.	**G4.D**	-	-	**LC**
180	Rosaceae	Cotoneaster nummularia Fisch. et Mey.	**G4.5**	-	**Cosmopolitan**	**LC**
181	Rosaceae	Crataegus pentagyna Waldst et Kit	**G4.8**	-	**Euro.Sib.element**	**LC**
182	Rosaceae	Crataegus x bornmuelleri Zabel	**G4.D**	**Endemic**	-	**LC**
183	Rosaceae	Crataegus monogyna Jacq. subsp. Monogyna	**G4.D**	-	-	**LC**
184	Rosaceae	Sorbus umbellata (Desf.) Fritsch var. Umbellata	**G4.5**	-	-	**LC**
185	Rosaceae	Sorbus torminalis (L.) Crantz var. Torminalis	**G4.5**	-	-	**LC**
186	Rosaceae	Malus sylvestris Miller subsp. orientalis (A.Uglitzleich)	**G3.4**	-	-	**LC**
187	Rosaceae	Pyrus communis L. subsp. sativa (DC.) Hegi	**G3.4**	-	-	**LC**
188	Rosaceae	Pyrus elaeagnifolia Pallas subsp. Elaeagnifolia	**G4.D**	-	-	**LC**
189	L ythraceae	Lythrum salicaria L.	**C2.6**	-	**Euro.Sib.element**	**LC**
190	Onagraceae	Epilobium angustifolium L.	**G4.8**	-	-	**LC**
191	Onagraceae	Epilobium hirsutum L.	**G4.8**	-	**Cosmopolitan**	**LC**
192	Onagraceae	Epilobium lanceolatum Seb. et MaurI	**G4.8**	-	-	**LC**
193	Cucurbitaceae	Bryonia alba. L.	**C2.6**	-	**Euro.Sib.element**	**LC**
194	Datiscaceae	Datisca cannabina L.	**G4.D**	-	-	**LC**
195	Crassulaceae	Umbilicus erectus DC.	**H3.6**	-	**Cosmopolitan**	**LC**
196	Crassulaceae	Sedum obtusifolium C.A. Meyer	**H3.6**	-	-	**LC**
197	Crassulaceae	Sedum amplexicaule DC	**H3.6**	-	**Mediterreanean**	**LC**
198	Crassulaceae	Sedum album L.	**H3.6**	-	-	**LC**
199	Crassulaceae	Sedum subulatum (C.A.Meyer) Boiss.	**H3.6**	-	-	**LC**

200	Crassulaceae	Sedum sempervivoides Bieb.	**H3.6**	-	-	**LC**
201	Crassulaceae	Sedum caespitosum (Cav.) DC.	**H3.6**	-	**Mediterreanean**	**LC**
202	Crassulaceae	Sedum hispanicum L. var. Hispanicum	**G3.4**	-	**Cosmopolitan**	**LC**
203	Crassulaceae	Sedum pallidum Bieb. var. Pallidum	**G4.D**	-	**Cosmopolitan**	**LC**
204	Crassulaceae	Sedum pallidum Bieb. var. Bithynicum (boiss.) Chamberlain	**G3.4**	-	**Oxine element**	**LC**
205	Crassulaceae	Senpervivum armenum Boiss. et Huet var. insigne Muirhead	**H3.6**	**Endemic**	**Oxine Mountain element**	**LC**
206	Saxifragaceae	Saxifraga cymbalaria L. var. Cymbalaria	**C2.6**	-	**Cosmopolitan**	**LC**
207	Apiaceae	Eryngıum campestre L. var. virens Link.	**G4.D**	-	**Cosmopolitan**	**LC**
208	Apiaceae	Anthrıscus nemorosa (Bieb.) Sprengel	**G4.D**	-	**Cosmopolitan**	**LC**
209	Apiaceae	Scandıx iberica Bieb.	**G4.D**	-	**Cosmopolitan**	**LC**
210	Apiaceae	Scandıx pecten-veneris L.	**G4.7**	-	**Cosmopolitan**	**LC**
211	Apiaceae	Pımpınella tragium Will. subsp. polyclada. (Boiss. et Heldr.) Tutin	**H3.6**	-	**Cosmopolitan**	**LC**
212	Apiaceae	Pımpınella tragium Will.Subspecies lithophila(Schischkin) Tutin	**G4.7**	-	-	**LC**
213	Apiaceae	Seselı peucedanoides (Bieb.) Koso-Pol.	**G4.7**	-	**Euro-Sib.element**	**LC**
214	Apiaceae	Oenanthe silaifolia Bieb.	**G4.7**	-	**Cosmopolitan**	**LC**
215	Apiaceae	Conıum maculatum L.	**G4.D**	-	-	**LC**
216	Apiaceae	Prangos meliocarpoides Boiss. var. Meliocarpoides	**G4.D**	**Endemic**	**Ir.-Tur.element**	**LC**
217	Apiaceae	Bupleurum affiine Sadler	**G4.D**	-	-	**LC**
218	Apiaceae	Bupleurum gerardii All.	**G4.D**	-	**Cosmopolitan**	**LC**
219	Apiaceae	Apıum nodiflorum (L.) Lag.	**C2.6**	-	**Cosmopolitan**	**LC**
220	Apiaceae	Petroselınum crispum (Miller) A.W.Hill	**C2.6**	-	-	**LC**
221	Apiaceae	Falcarıa vulgaris Bernh.	**G4.D**	-	**Cosmopolitan**	**LC**
222	Apiaceae	Ferulago galbanifera (Miller) W.Koch	**H3.6**	-	**Euro-Sib.element**	**LC**
223	Apiaceae	Pastinaca sativa L. subsp. urens (Req. ex Godron) Celak	**C2.6**	-	**Cosmopolitan**	**LC**
224	Apiaceae	Heracleum sphondylium L. subsp. ternatum (Velen.) Brummitt.	**C2.6**	-	**Euro-Sib.element**	**LC**
225	Apiaceae	Heracleum platytaenium Boiss.	**G4.D**	**Endemic**	**Oxine element**	**VU**
226	Apiaceae	Laserpitium hispidum Bieb.	**G4.5**	-	**Euro-Sib.element**	**LC**
227	Apiaceae	Torilis ucranica Sprengel	**G4.D**	-	-	**LC**
228	Apiaceae	Astrodaucus orientalis (L.) Drude	**G4.D**	-	**Ir.-Tur.element**	**LC**
229	Apiaceae	Caucalıs platycarpos L.	**G4.D**	-	**Cosmopolitan**	**LC**
230	Apiaceae	Daucus carota L. Grup C.	**C2.6**	-	-	**LC**
231	Araliaceae	Hedera helix L.	**C2.6**	-	-	**LC**

232	Cornaceae	Cornus sanguinea L. subsp. australis (C.A. Meyer) Jàv.	**G4.D**	-	**Euro-Sib.element**	**LC**
233	Caprifoliaceae	Vıburnum lantana L.	**C2.6**	-	**Euro-Sib.element**	**LC**
234	Caprifoliaceae	Lonicera caucasica Pallas subsp. orientalis (Lam.) Chamb. et Long.	**G4.5**	**Endemic**	-	**VU**
235	Caprifoliaceae	Lonicera etrusca Santr var. Etrusca	**G4.D**	-	**Mediterreanean**	**LC**
236	Valerianaceae	Valeriana alliariifolia Adams	**C2.6**	-	-	**LC**
237	Valerianaceae	Valeriana tuberosa L.	**G4.D**	-	-	**LC**
238	Valerianaceae	Centranthus longiflorus Stev. subsp. Langiflorus	**C2.6**	-	**Ir.-Tur.element**	**LC**
239	Valerianaceae	Valerianella carinata. Lois.	**G4.D**	-	**Cosmopolitan**	**LC**
240	Valerianaceae	Valerianella coronata (L.) DC.	**G4.D**	-	**Cosmopolitian**	**LC**
241	Dipsacaceae	Dipsacus laciniatus L.	**G4.5**	-	**Cosmopolitian**	**LC**
242	Dipsacaceae	Scabiosa argentea L.	**G4.D**	-	**Cosmopolitian**	**LC**
243	Dipsacaceae	Scabiosa rotata Bieb.	**G4.D**	-	**Ir.-Tur.element**	**LC**
244	Dipsacaceae	Pterocephalus plumosus (L.) Coulter	**G4.D**	-	**Cosmopolitan**	**LC**
245	Asteraceae	Xanthium spinosum L.	**G4.D**	-	-	**LC**
246	Asteraceae	İnula britannica L.	**G4.F**	-	**Euro-Sib.element**	**LC**
247	Asteraceae	İnula montbretiana DC.	**G4.F**	-	**Ir.-Tur.element**	**LC**
248	Asteraceae	Helichrysum plicatum DC. subsp. Plicatum	**G4.D**	-	-	**LC**
249	Asteraceae	Helichrysum arenarium (L.) Moench subsp. aucheri (Boiss.) Davis et Kupicha	**G4.5**	-	**Ir.-Tur.element**	**LC**
250	Asteraceae	Logfia arvensis (L.) Holub	**G4.5**	-	**Cosmopolitan**	**LC**
251	Asteraceae	Senecio mollis Willd.	**G4.5**	-	**Ir.-Tur.element**	**LC**
252	Asteraceae	Senecio vernalis Waldst. et Kit.	**G4.5**	-	**Cosmopolitian**	**LC**
253	Asteraceae	Senecio viscosus L.	**G4.F**	-	-	**LC**
254	Asteraceae	Tussılago farfara L.	**C2.6**	-	**Euro-Sib.element**	**LC**
255	Asteraceae	Anthemis tinctoria L. var. tinctoria	**G4.F**	-	**Cosmopolitian**	**LC**
256	Asteraceae	Anthemis wiedemanniana Fisch. et Mey.	**G4.D**	**Endemic**	-	**VU**
257	Asteraceae	Achillea teretifolia Willd.	**G4.F**	**Endemic**	**Ir.-Tur.element**	**VU**
258	Asteraceae	Achillea setacea Waldst. et Kit	**G4.F**	-	**Euro-Sib.element**	**LC**
259	Asteraceae	Tanacetum parthenium (L.) Schultz Bip.	**G4.F**	-	-	**LC**
260	Asteraceae	Tanacetum armenum (De.) Schultz Bip	**G4.D**	-	-	**LC**
261	Asteraceae	Tanacetum vulgare L.	**G4.F**	-	-	**LC**
262	Asteraceae	Tripleurospermum elongatum (Fisch. & Mey.) Bornm.	**G4.F**	-	-	**LC**
263	Asteraceae	Tripleurospermum sevanense (Manden.) Pobed.	**G4.F**	-	-	**LC**
264	Asteraceae	Arctium minus (Hill) Bernh. subsp. pubens (Babington) Arènes	**C2.6**	-	**Euro-Sib.element**	**LC**

265	Asteraceae	Onopordum turcicum Danin	**G4.D**	-	**Ir.-Tur.element**	**LC**
266	Asteraceae	Cirsium vulgare (Savi) Ten.	**C2.6**	-	**Cosmopolitan**	**LC**
267	Asteraceae	Cirsium arvense (L.) Scop. subsp. vestitum (Wimmer et Grab.) Petrak	**C4.F**	-	**Cosmopolitan**	**LC**
268	Asteraceae	Carduus nutans L. sensu lato	**G4.D**	-	**Cosmopolitan**	**LC**
269	Asteraceae	Jurinea pontica Hausskn. et Freyn	**G4.5**	**Endemic**	**Ir.-Tur.element**	**VU**
270	Asteraceae	Centaurea virgata. Lam.	**G4.F**	-	**Ir.-Tur.element**	**LC**
271	Asteraceae	Centaurea solstitialis L. subsp. Solstitialis	**G4.D**	-	**Cosmopolitan**	**LC**
272	Asteraceae	Centaurea iberica Trev.	**G4.D**	-	-	**LC**
273	Asteraceae	Centaurea urvillei DC. subsp. stepposa Wagenitz	**G4.D**	-	**Ir.-Tur.element**	**VU**
274	Asteraceae	Centaurea pichleri BoIss. subsp. Pichleri	**G4.D**	-	-	**LC**
275	Asteraceae	Centaurea triumfettii All.	**G4.5**	-	**Cosmopolitan**	**LC**
276	Asteraceae	Crupina (Pers.) crupinastrum (Moris) Vis	**G4.D**	-	-	**LC**
277	Asteraceae	Xeranthemum annuum L.	**G4.D**	-	**Cosmopolitan**	**LC**
278	Asteraceae	Echinops galaticus Freyn	**G4.D**	-	**Oxine element**	**LC**
279	Asteraceae	Cichorium intybus L.	**C2.6**	-	**Cosmopolitan**	**LC**
280	Asteraceae	Scorzonera cana (C.A.Meyer) Hoffm. var. Cana	**H3.6**	-	-	**LC**
281	Asteraceae	Scorzonera mollis Bieb. subsp. szowitzii (DC.) Chamherlain	**G4.D**	-	**Ir.-Tur.element**	**LC**
282	Asteraceae	Tragopogon longirostris Bisch. var. abbreviatus Boiss.	**G4.5**	-	-	**LC**
283	Asteraceae	Leontodon hispidus L. var. Hispidus	**G4.5**	-	-	**LC**
284	Asteraceae	Reichardia glauca Matthews	**H3.6**	-	**Ir.-Tur.element**	**LC**
285	Asteraceae	Hieracium oblongum Jordan	**G4.D**	-	**Euro-Sib.element**	**LC**
286	Asteraceae	Hieracium pannosum Boiss.	**H3.6**	-	**East Mediterranian**	**LC**
287	Asteraceae	Hieracium paphlagonicum Freyn et Sint.	**G4.5**	**Endemic**	-	**LC**
288	Asteraceae	Pilosella hoppeana (schultes) C.H. et F.W. Schultz subsp. plisquama (NP.) Sen et West	**G4.F**	-	**Cosmopolitan**	**LC**
289	Asteraceae	Pilosella piloselloides (Vill.) Sojàk subsp. megalomastix (NP.) Sell et West	**G4.5**	-	**Cosmopolitan**	**LC**
290	Asteraceae	Pılosella x macrotricha (Boiss.) C.H. et F.W. Schultz	**G4.5**	-	**Cosmopolitan**	**LC**
291	Asteraceae	Cephalorrhynchus tuberosus (Stev.) Schchian	**G4.5**	-	**Cosmopolitan**	**LC**
292	Asteraceae	Lactuca serriola L.	**C2.6**	-	**Euro-Sib.element**	**LC**
293	Asteraceae	Scariola viminea. (L.) F.W.Schmidt.	**G4.5**	-	**Cosmopolitan**	**LC**

294	Asteraceae	Mycelis muralis (L.) Dum.	**G4.5**	-	**Euro-Sib.element**	**LC**
295	Asteraceae	Lapsana communis L. subsp. alpina (Boiss. et Bal.) SelI	**G4.5**	-	**East Black Sea element**	**LC**
296	Asteraceae	Taraxacum serotinum (Woldst. et Kit.) Poiret	**C2.6**	-	**Cosmopolitan**	**LC**
297	Asteraceae	Taraxacum macrolepium Schischkin	**C2.6**	-	-	**LC**
298	Asteraceae	Chondrilla juncea L. var. juncea	**G4.D**	-	-	**LC**
299	Asteraceae	Crepis f'eotida L. subsp. f'eotida	**G4.F**	-	**Cosmopolitan**	**LC**
300	Asteraceae	Crepis f'eotida L. Subsepecies rhoeadifolia(Biep.) Celak.	**G4.F**	-	**Cosmopolitan**	**LC**
301	Campanulaceae	Campanula lyrata Lam. subsp. Lyrata	**G4.D**	**Endemic**	-	**VU**
302	Campanulaceae	Campanula rapunculoides L. subsp. Rapunculoides	**G4.5**	-	**Euro-Sib.element**	**LC**
303	Campanulaceae	Campanula glomerata L. subsp. hispida (Witasek) Hayek	**G4.5**	-	**Euro-Sib.element**	**LC**
304	Campanulaceae	Campanula involucrata Aucher	**G4.D**	-	**Ir.-Tur.element**	**LC**
305	Campanulaceae	Campanula argaea Boiss. et Bal.	**H3.6**	**Endemic**	**Ir.-Tur. element**	**VU**
306	Campanulaceae	Campanula cf.reuterena Boiss. et Bal.	**G4.D**	-	**Ir.-Tur.element**	**LC**
307	Campanulaceae	Campanula pterocaula Hausskn.	**G4.D**	**Endemic**	**Oxine element**	**VU**
308	Campanulaceae	Asyneuma rigidum (Willd.) Grossh. subsp. Rigidum	**G4.7**	-	**Ir.-Tur.element**	**LC**
309	Campanulaceae	Legousıa pentagonia (L.) Thellung	**G4.D**	-	**East Mediterranian**	**LC**
310	Ericaceae	Orthılıa secunda (L.) House	**G4.D**	-	-	**LC**
311	Primulaceae	Androsace maxima L.	**G4.D**	-	**Cosmopolitan**	**LC**
312	Primulaceae	Lysimachıa verticillaris Sprenpel	**C2.6**	-	**East Black Sea element**	**LC**
313	Primulaceae	Lysimachıa atropurpurea L.	**G4.D**	-	**East Mediterranian**	**LC**
314	Oleaceae	Jasminum fruticans L.	**G4.D**	-	**Mediterranian**	**LC**
315	Oleaceae	Forsythia europaea Degen et Bald.	**G3.4**	-	-	**LC**
316	Oleaceae	Fraxinus angustifolia. Vahl. subsp. angustifoIia	**G3.4**	-	-	**LC**
317	Asclepıadaceae	Vincetoxicum tmoIeum BoIss.	**G4.D**	-	**Ir.-Tur.element**	**LC**
318	Convolvulaceae	Convolvulus arvensis L.	**C2.6**	-	-	**LC**
319	Cuscutaceae	Cuscuta epithymum (L.) L. var. Epithymum	**G4.9**	-	**Cosmopolitan**	**LC**
320	Boraginaceae	Heliotropium suaveolens Bieb.	**C2.6**	-	**East Mediterranian**	**LC**
321	Boraginaceae	Rochelia disperma (L.fil.) C.Koch var. Disperina	**G4.D**	-	**Cosmopolitan**	**LC**
322	Boraginaceae	Myosotis alpestris F.W. Schmidt subsp. Alpestris	**G4.5**	-	**Cosmopolitan**	**LC**
323	Boraginaceae	Myosotis lithospermifolia (Willd.) Hornem.	**G4.9**	-	-	**LC**

324	Boraginaceae	Myosotis sicula Guss.	**G4.D**	-	-	**LC**
325	Boraginaceae	Paracaryum incanum (Ledeb.) Boiss.	**G4.D**	-	**Ir.-Tur.element**	**LC**
326	Boraginaceae	Paracaryum calycinum Boiss. & Bal.	**G4.D**	**Endemic**	**Ir.-Tur.element**	**LC**
327	Boraginaceae	Paracaryum ancyritanum Boiss.	**G4.D**	**Endemic**	**Ir.-Tur.element**	**LC**
328	Boraginaceae	Cynoglossum montanum L.	**G4.9**	-	**Euro-Sib.element**	**LC**
329	Boraginaceae	Buglossoıdes arvensis (L.) Johnston	**G4.9**	-	**Cosmopolitan**	**LC**
330	Boraginaceae	Neatostema apulum (L.) Jonston	**G4.9**	-	**Mediterranian**	**LC**
331	Boraginaceae	Echium italicum L.	**G4.F**	-	**Mediterranian**	**LC**
332	Boraginaceae	Echium angustifolium Miller	**G4.5**	-	**East Mediterranian**	**LC**
333	Boraginaceae	Onosma isauricum Boiss. et Heldr.	**G4.D**	**Endemic**	**Ir.-Tur.element**	**VU**
334	Boraginaceae	Cerinthe minor L. subsp. auriculata. (Ten.) Domac	**G4.9**	-	**Cosmopolitan**	**LC**
335	Boraginaceae	Anchusa leptophylla Roemer et Schultes subsp. Leptophylla	**H3.6**	-	-	**VU**
336	Solanaceae	Solanum dulcamara L.	**H3.4**	-	**Euro-Sib.element**	**LC**
337	Solanaceae	Hyoscyamus niger L.	**G4.D**	-	-	**LC**
338	Scrophulariaceae	Verbascum flavidum (Boiss.) Freyn et Bornm.	**G3.5**	-	**Euro-Sib.element**	**LC**
339	Scrophulariaceae	Verbascum armenum Boiss. et Kotschy var. tempskyanum (Freyn et Sint.) Murb.	**G4.5**	-	-	**LC**
340	Scrophulariaceae	Verbascum armenum Boiss. et Kotschy var. occidentale Hub.-Mor.	**G4.5**	**Endemic**	**Ir.-Tur.element**	**VU**
341	Scrophulariaceae	Verbascum insulare Boiss. et Heldr.	**G4.5**	**Endemic**	**Ir.-Tur.element**	**VU**
342	Scrophulariaceae	Verbascum cheiranthifolium BoIss. var. Cheirtmthifolium	**G4.D**	-	-	**LC**
343	Scrophulariaceae	Scrophularia umbrosa Dum.	**G4.5**	-	**Euro-Sib.element**	**LC**
344	Scrophulariaceae	Scrophularia xanthoglossa. Boiss. var. decipiens (Boiss. et Kotschy) Boiss.	**G4.5**	-	**Ir.-Tur.element**	**LC**
345	Scrophulariaceae	Linaria genistifolia (L.) Miller subsp. confertiflora (Boiss.) Davis	**G4.5**	**Endemic**	**Ir.-Tur.element**	**LC**
346	Scrophulariaceae	Digitalls ferruginea L. subsp. Ferruginea	**G4.5**	-	**Euro-Sib.elelment**	**LC**
347	Scrophulariaceae	Digitalls lamarckii Ivan	**G4.5**	**Endemic**	**Ir.-Tur.element**	**VU**
348	Scrophulariaceae	Veronıca pusilla. Kotschy var. pusilla.	**G4.D**	-	**Ir.-Tur.element**	**LC**
349	Scrophulariaceae	Veronica anagallis-aquatica L.	**C2.6**	-	-	**LC**
350	Scrophulariaceae	Veronica chammaedrys L.	**G4.D**	-	**Euro-Sib.element**	**LC**
351	Scrophulariaceae	Veronica orientalis Miller subsp. Orientalis	**G4.D**	-	-	**LC**
352	Scrophulariaceae	Veronica multifida L.	**G4.5**	**Endemic**	**Ir.-Tur.element**	**VU**
353	Scrophulariaceae	Veronica officinalis L.	**G4.5**	-	**Euro-Sib.element**	**LC**

354	Scrophulariaceae	Euphrasia pectinata Ten.	**G4.5**	-	**Euro-Sib.element**	**VU**
355	Scrophulariaceae	Pedicularis comosa L. var. sibthorpii (Boiss.) Boiss.	**G4.D**	-	-	**LC**
356	Orobanchaceae	Orobanche purpurea Jacq.	**C2.6**	-	**Cosmopolitan**	**LC**
357	Globulariaceae	Globularia trichosantha Fisch. et Mey.	**G4.D**	-	**Ir.-Tur.element**	**LC**
358	Lamiaceae	Teucrium orientale L. var. Orientale	**G4.5**	-	**Ir.-Tur.element**	**LC**
359	Lamiaceae	Teucrium chamaedrys L. subsp. Chamaedrys	**G4.5**	-	**Euro-Sib.element**	**LC**
360	Lamiaceae	Teucrium polium L.	**H3.6**	-	-	**LC**
361	Lamiaceae	Scutellarıai albida L. subsp. albida	**G4.5**	-	**East Mediterranian**	**LC**
362	Lamiaceae	Scutellarıai orientalis L. subsp. pinnatifida Edmondson	**G4.5**	-	-	**LC**
363	Lamiaceae	Phlomis armeniaca Willd.	**G4.5**	**Endemic**	**Ir.-Tur.element**	**VU**
364	Lamiaceae	Lamium purpureum L. var. Purpureum	**G4.D**	-	**Euro-Sib.element**	**LC**
365	Lamiaceae	Lamıum album L.	**G4.5**	-	**Euro-Sib.element**	**LC**
366	Lamiaceae	Ballota nigra L. subsp. anatolica P.H. Davis	**H3.6**	**Endemic**	**Ir.-Tur.element**	**LC**
367	Lamiaceae	Marrubium vulgare L.	**H3.6**	-	-	**LC**
368	Lamiaceae	Sideritis germanicopolitana Bornm. subsp. germanicopolitana	**G4.5**	**Endemic**	-	**LC**
369	Lamiaceae	Stachys byzantina C.Koch	**G4.5**	-	**Euro-Sib.element**	**LC**
370	Lamiaceae	Stachys iberica Bieb. subsp. stenostachya (Boiss.) Rech.	**G4.7**	-	**Ir.-Tur.element**	**LC**
371	Lamiaceae	Stachys annua (L.) L. subsp. annua var. lycaonica Bhattacharjee	**G4.5**	-	**Ir.-Tur.element**	**VU**
372	Lamiaceae	Nepeta nuda L. subsp. Nuda	**G4.D**	-	**Cosmopolitan**	**LC**
373	Lamiaceae	Prunella vulgaris L.	**C2.6**	-	**Euro-Sib.element**	**LC**
374	Lamiaceae	Clinopodıum vulgare L. subsp. Vulgare	**G4.7**	-	**Euro-Sib.element**	**LC**
375	Lamiaceae	Acinos rotundifolius Pers.	**G4.D**	-	**Cosmopolitan**	**LC**
376	Lamiaceae	Thymus sibthorpii Bentham	**G3.C**	-	**Euro-Sib.element**	**LC**
377	Lamiaceae	Thymus sipyleus Boiss. subsp. rosulans (Barbas) Jalas	**H3.6**	-	-	**VU**
378	Lamiaceae	Mentha longifolia (L.) Hudson subsp. typhoides (Briq) Harley var. Typhoides	**G4.8**	-	-	**LC**
379	Lamiaceae	Ziziphora capitata L.	**G4.D**	-	**Ir.-Tur.element**	**LC**
380	Lamiaceae	Salvia tomentosa Miller	**G4.D**	-	**Mediterranian**	**LC**
381	Lamiaceae	Salvia sclarea L.	**G4.9**	-	-	**LC**
382	Lamiaceae	Salvia candidissima Vahl. subsp. occidentalis Hedge	**H3.6**	-	**Ir.-Tur.element**	**LC**
383	Lamiaceae	Salvia virgata Jacq.	**G4.D**	-	**Ir.-Tur.element**	**LC**
384	Lamiaceae	Salvia verticillata. L. subsp. Verticillata	**G4.9**	-	**Euro-Sib.element**	**LC**
385	Plumbaginaceae	Plumbago europae L.	**C2.6**	-	**Euro-Sib.element**	**LC**

386	Plumbaginaceae	Acantholımon glumaceum (Jaub. et Spach.) Boiss.	**G4.7**	-	**Ir.-Tur.element**	**LC**
387	Plumbaginaceae	Acantholımon ulicinum (Willd. ex Schultes) Boiss. subsp. lycaonicum (Boiss. et Heldr.) Bokhari et Edmondson	**G4.7**	-	**Ir.-Tur.element**	**LC**
388	Plantaginaceae	Plantago major L. subsp. Majör	**C2.6**	-	-	**LC**
389	Plantaginaceae	Plantago holosteum Scop.	**G4.9**	-	**Mediterranian**	**LC**
390	Plantaginaceae	Plantago lanceolata. L.	**G4.F**	-	**Cosmopolitan**	**LC**
391	Santalaceae	Thesium billardieri Boiss.	**G4.7**	-	**Ir.-Tur.element**	**LC**
392	Loranthaceae	Viscum album L. subsp. austriacum (Wiesb.) Wollman	**G4.D**	-	-	**LC**
393	Euphorbıaceae	Euphorbıa stricta L.	**G4.8**	-	**Euro-Sib.element**	**LC**
394	Euphorbıaceae	Euphorbıa szovitsii Fisch. & Mey. var szovitsii	**G4.8**	-	**Ir.-Tur.element**	**LC**
395	Euphorbıaceae	Euphorbıa falcata L. subsp. falcata var. Falcata	**G4.8**	-	**Ir.-Tur.element**	**LC**
396	Euphorbıaceae	Euphorbıa myrsinites L.	**G4.D**	-	-	**LC**
397	Urticaceae	Urtica dioica L	**C2.6**	-	**Euro-Sib.element**	**LC**
398	Urticaceae	Parietaria judaica L.	**G4.7**	-	**Cosmopolitan**	**LC**
399	Moraceae	Morus alba L	**G3.4**	-	-	**LC**
400	Ulmaceae	Ulmus minor Miller subsp. minor	**G4.9**	-	-	**LC**
401	Platanaceae	Platanus orientalis L.	**G4.9**	-	-	**LC**
402	Fagaceae	Quercus macranthera Fisch. et Mey. subsp. syspirensis (C.Koch) Menitsky	**G4.7**	-	-	**LC**
403	Fagaceae	Quercus petraea (Mattuschka) Liebl. subsp. iberica (Steven ex Bieb.) Krassiln.	**G4.7**	-	-	**LC**
404	Fagaceae	Quercus pubescens Willd.	**G4.7**	-	-	**LC**
405	Corylaceae	Carpınus betulus L.	**G4.9**	-	**Euro-Sib.element**	**LC**
406	Corylaceae	Corylus avellana L. var. avellana	**G4.9**	-	**Euro-Sib.element**	**LC**
407	Salicaceae	Salix alba L. ♀	**G4.D**	-	**Euro-Sib.element**	**LC**
408	Salicaceae	Salix babylonica L. ♂	**G3.4**	-	-	**LC**
409	Salicaceae	Salix caprea. L.	**G4.D**	-	**Euro-Sib.element**	**LC**
410	Salicaceae	Populus tremula. L.	**G4.D**	-	**Euro-Sib.element**	**LC**
411	Salicaceae	Populus nigra L. subsp. Nigra	**G4.D**	-	-	**LC**
412	Rubiaceae	Crucianella bithynica. Boiss.	**G4.D**	-	**East Mediterranian**	**LC**
413	Rubiaceae	Asperula involucrata. Wahlenb.	**G4.D**	-	**Oxine element**	**LC**
414	Rubiaceae	Galium verum L. subsp. Verum	**G4.7**	-	**Euro-Sib.element**	**LC**
415	Rubiaceae	Galium verum L. Subsp. glabrescens Ehrend.	**G4.C**	-	**Ir.-Tur.element**	**LC**
416	Rubiaceae	Galium lovcense Urumov	**G4.7**	-	-	**LC**
417	Rubiaceae	Galium fissurense Ehrend. et Schönb.	**G4.7**	**Endemic**	**Oxine element**	**VU**

418	Rubiaceae	Galium incanum subsp. elatius (Boiss.) Ehrend	**G4.D**	-	**Ir.-Tur. element**	**LC**
419	Rubiaceae	Galıum penduliflorum Boiss.	**G4.D**	**Endemic**	**East mediterranian**	**LC**
420	Rubiaceae	Cruciata taurica (Pallas ex Willd.) Ehrend.	**H3.6**	-	**Ir.-Tur. element**	**LC**
421	Liliaceae	Eremurus spectabilis Bieb.	**G4.7**	-	**Ir.-Tur. element**	**LC**
422	Liliaceae	Allium huber-morathii Kollmann, N.Özhatay & Koyuncu	**G4.7**	**Endemic**	**Ir.-Tur. element**	**LC**
423	Liliaceae	Allium scorodoprasum L. subsp. rotundum (Le) Stearn	**G4.7**	-	**Mediterranian**	**LC**
424	Liliaceae	Allium vineale L.	**G4.7**	-	-	**LC**
425	Liliaceae	Allium lycaonicum Siehe	**G4.7**	-	-	**LC**
426	Liliaceae	Scilla bifolia L.	**G4.D**	-	**Mediterranian**	**LC**
427	Liliaceae	Ornithogalum oligophyllum E.D. Clarke	**G4.7**	-	-	**LC**
428	Liliaceae	Ornithogalum umbellatum L.	**G4.5**	-	-	**LC**
429	Liliaceae	Ornithogalum armeniacum Baker	**G4.D**	-	**East mediterranian**	**LC**
430	Liliaceae	Muscari comosum (L.) Miller	**G4.D**	-	**Mediterranian**	**LC**
431	Liliaceae	Muscari aucheri (Boiss.) Baker	**G4.D**	**Endemic**	-	**VU**
432	Liliaceae	Muscari armeniacum Leichtlin	**G4.D**	-	-	**LC**
433	Liliaceae	Tulipa sintenisii Baker	**G4.5**	**Endemic**	**Ir.-Tur. element**	**LC**
434	Liliaceae	Gagea luteoides Stapf.	**G4.5**	-	-	**LC**
435	Liliaceae	Gagea peduncularis (J.& C.Persl) Pascher	**G4.D**	-	**Mediterranian**	**LC**
436	Liliaceae	Colchicum szovitsii Fisch. et Mey	**G4.D**	-	**Ir.-Tur. element**	**LC**
437	Amaryllıdaceae	Galanthus elwesli Hooker subsp. tuebitaki N.Zeybek	**G4.7**	-	**East mediterranian montain**	**LC**
438	Iridaceae	Crocus ancyrensis (Herbert) Maw	**G4.D**	**Endemic**	**Ir.-Tur. element**	**VU**
439	Iridaceae	Crocus biflorus Miller subsp. pulchricolor (Herbert) Mathew	**G4.D**	**Endemic**	**Euro-Sib. element**	**LC**
440	Orchidaceae	Orchis mascula (L.) L. subsp. pinetorum (Boiss. et Kotschy). G.Camus	**G4.5**	-	**East mediterranian**	**LC**
441	Juncaceae	Juncus inflexus L.	**G1.2**	-	**Cosmopolitan**	**LC**
442	Juncaceae	Juncus gerardi Loisel. subsp. Gerardi	**G1.2**	-	-	**LC**
443	Juncaceae	Juncus articulatus L.	**C2.6**	-	**Euro-Sib.element**	**LC**
444	Cyperaceae	Eleocharıs palustris (L.) Roemer et Sehultes	**G1.2**	-	-	**LC**
445	Cyperaceae	Carex divisia Hudson	**G1.2**	-	**Euro-Sib. element**	**LC**
446	Cyperaceae	Carex spicata Hudson	**G1.2**	-	**Euro-Sib. Element**	**LC**
447	Cyperaceae	Carex melanostachya Bieb.	**G1.2**	-	**Cosmopolitan**	**LC**
448	Poaceae	Brachypodıum sylvaticum (Hudson) P.Beauv.	**G1.2**	-	**Euro-Sib. element**	**LC**
449	Poaceae	Elymus caninus (L.) L.	**H3.6**	-	**Euro-Sib. element**	**LC**

450	Poaceae	Elymus hispidus (Opiz) Melderis subsp. Hispidus	**G4.7**	-	**Cosmopolitan**	**LC**
451	Poaceae	Aegilops umbellulata. Zhukovsky subsp. umbellulata.	**G4.D**	-	**Ir.-Tur. element**	**LC**
452	Poaceae	Hordeum bulbosum L.	**G4.D**	-	**Cosmopolitan**	**LC**
453	Poaceae	Bromus danthoniae Trin.	**G4.7**	-	-	**LC**
454	Poaceae	Bromus tectorum L.	**G4.D**	-	-	**LC**
455	Poaceae	Bromus ramosus Hudson	**G1.2**	-	-	**LC**
456	Poaceae	Arrhenatherum elatius (L.) Beauv. subsp. elatius.	**G4.5**	-	**Euro-Sib. element**	**LC**
457	Poaceae	Koeleria cristata (L.) Pers.	**H3.6**	-	**Cosmopolitan**	**LC**
458	Poaceae	Calamagrostis pseudophragmites (Haner fil.) Koeler	**G4.D**	-	**Euro-Sib. element**	**LC**
459	Poaceae	Apera spica-venti (L.) P.Beauv.	**H3.6**	-	**Euro-Sib. element**	**LC**
460	Poaceae	Agrostis stolonifera L.	**G1.2**	-	**Euro-Sib. element**	**LC**
461	Poaceae	Allopecurus aequalis Sobol.	**G1.2**	-	**Euro-Sib. element**	**LC**
462	Poaceae	Allopecurus arundineceus Poiret	**G4.5**	-	**Euro-Sib. element**	**LC**
463	Poaceae	Allopecurus textilis Boiss. subsp. Textilis	**G4.5**	-	**Ir.-Tur. element**	**LC**
464	Poaceae	Phleum bertolonii DC.	**G4.5**	-	**Cosmopolitan**	**LC**
465	Poaceae	Festuca valesiaca Schleicher	**G4.7**	-	**Cosmopolitan**	**LC**
466	Poaceae	Festuca callieri (Hackel) F.Markgraf subsp. zederbaueri Markgr.-Dannenb.	**G4.D**	**Endemic**	**Ir.-Tur. element**	**LC**
467	Poaceae	Poa pratensis L.	**G4.D**	-	**Cosmopolitan**	**LC**
468	Poaceae	Poa angustifolia. L.	**G4.D**	-	**Cosmopolitan**	**LC**
469	Poaceae	Poa bulbosa L.	**G4.D**	-	**Cosmopolitan**	**LC**
470	Poaceae	Dactylis glomerata L. subsp. hispanica (Roth) Nyman	**G4.7**	-	-	**LC**
471	Poaceae	Briza humilis Bieb.	**G4.7**	-	-	**LC**
472	Poaceae	Melica ciliata L. subsp. Ciliata	**G4.9**	-	-	**LC**
473	Poaceae	Glyceria plicata. (Fries) Fries	**G4.5**	-	-	**LC**
474	Poaceae	Stipa holosericea Trin.	**H3.6**	-	**Ir.-Tur. element**	**LC**
475	Poaceae	Stipa pulcherrimia C.Koch. subsp. epilosa (Martinovsky) Tzvelev	**H3.6**	-	-	**LC**
476	Poaceae	Piptatherum holciforme (Bieb.) Roemer et Schultes subsp. holciforme var. Holciforme	**G4.D**	-	-	**LC**
477	Poaceae	Setaria verticillata (L.) P.Beauv. var. ambigua. (Guss.) ParI	**G4.D**	-	-	**LC**

478	Poaceae	Pennisetum orientale L.C.M. Richard	**G4.D**	-	**Ir.-Tur. element**	**LC**

CONCLUSION

The results of this study are based on the examination of 1064 plant samples collected in a two year period and field observations and literature search on the subject. As a result of naming of the plant samples, a total of 481 taxons were determined including 276 genera, 474 species, 4 subspecies, 3 varieties belonging to 74 families. 49 species (10.6%) out of 474 species were endemic. 2 plant species collected belonged to PTERIDOPHYTA Division and 472 species belonged to SPERMATOPHYTA Division.

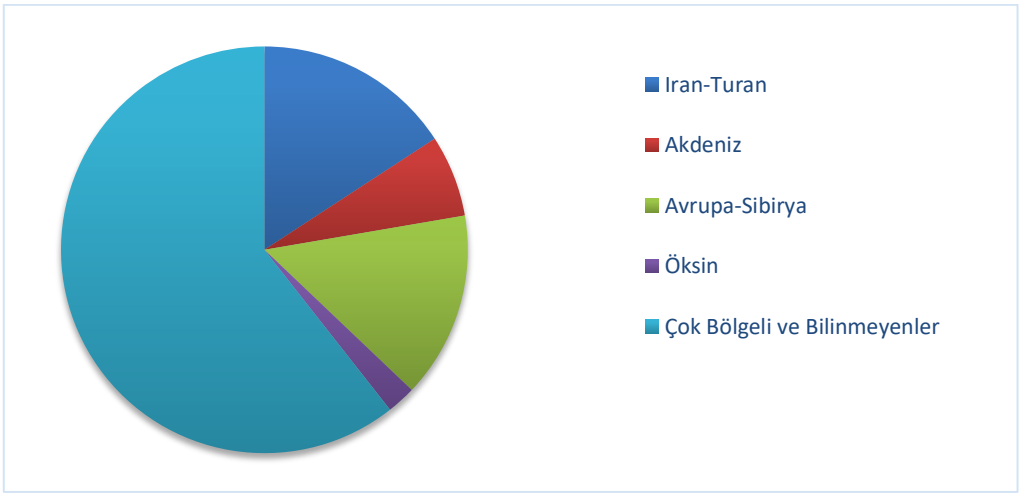
The distribution of the species in the study area by phyto-geographic regions is shown in Table 9, the phyto-geographic region spectrum is shown in Figure 3, the first ten families consisting of the most number of species are shown in Table 110, the family spectrum is shown in Figure 4, the comparison of the first ten families consisting of the most number of species with other studies is shown in Table 11, the comparison of the first ten genera consisting of the most number of species is shown in Table 12, the distribution of the study area and other studies by phyto-geographic regions is shown in Table 113, and our samples showing morphological differences according to the flora are shown in Table 14.

The plant geographical region with the most number of species in our area was European-Siberian region (82 species), and the other regions were in turn Iranian-Turanian region (76 species), and the Mediterranean region (31 species). 292 species showed wide distribution or belonged to no specific region (Table 9, Figure 3).

The family that was rich in terms of species number in our study area was *Asteraceae. Fabaceae, Poaceae, Lamiaceae* and *Brassicaceae* families were the first 5 families rich in terms of species number. The genus having the most number of species in the area was V*icia.* The second genus was *Trifalium*, the third genus was *Silene*, the fourth genera was S*edum*, and the fifth genera was *Campanula*. Among these, *Vicia* is widespread in particularly under the non-evergreen forests and at the glades. *Trifolium* and *Campanula* are widespread in such type of forests. *Sedum* was represented by rich number of species because of the abundant number of rocks and stony areas located in the area.

Table9. Distribution of the species by phyto-geopraphical regions

Phyto-geographical Region	**Number of Species**	**Ratio %**
European – Siberian	71	14,8
Black Sea	11	2,3
Iranian-Turanian	76	15,8
Mediterranean	31	6,5
Multiple regions and unknown	292	60,6



Iranian-Turanian / Mediterranean / European-Siberian / Siberian-Oxin / Multiple regions and unknown
Figure3. Phtogeographical region spectrum of the species

Table10. The first 10 families consisting of the most number of species

Family Name	**Number of Species**	**Ratio of the Total Number of Species %**
Asteraceae	55	11,6
Fabaceae	50	10,6
Poaceae	31	6,6
Lamiaceae	27	5,7
Brassicaceae	24	5,0
Rosaceae	24	5,0
Caryophyllaceae	23	4,9
Apiaceae	26	4,9
Boraginaceae	16	3,4
Scrophulariaceae	16	3,4
Total	289	61,1
Remaining 63 Families	185	38,9

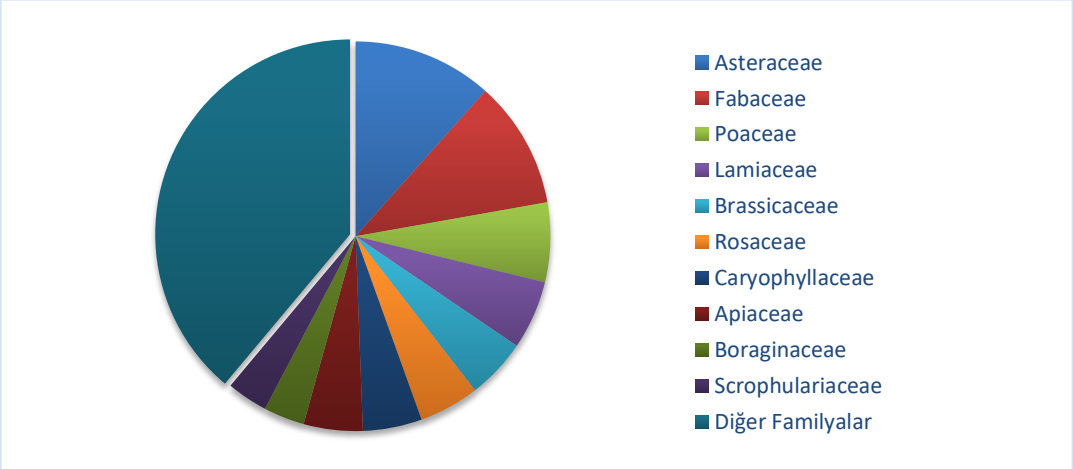


Figure4. Family spectrum

The plant samples collected by other researchers, not by us, in the study area and its vicinity are listed below. Though the exact locations were not specified in the majority of the labels of these plant samples, it can be concluded that the samples were collected in areas in the vicinity of our area or within our area.

• *Ophioglossum vulgatum L.*
A4 Ankara: Kızılcahamam, Kühne 1312
• *Asplenium septentrionale* (L.) Hoffm.
A4 Ankara: Kızılcahamam 1840 m, Karamanoğlu 5700
• *Sagina procumbens* L.
A4 Ankara: Kızılcahamam, Kühne 1312
• *Astragalus squalidus* Boiss. & Nöe in Boiss.
A4 Ankara: Kızılcahamam, 1340 m, Hub.-Mor. 12896
• *Trifoliiim retusum L.*
A4 Ankara: d. Kızılcahamam, M.Zohary 51341
• *Trifolium patens* Schreb.
A4 Ankara: Kızılcahamam, 1350 m, Alpay (ANKO2625)
• *Trifolium physodes* Stev.
A4 Ankara: Kızılcahamam, Orshan 51331
• *Trifolium ochroleucum* Huds

A4 Ankara: Kızılcahamam forest M. Zohary 51342
• *Crataegus orientalis* Pallas var. *orientalis*
A4 Ankara: Kızılcahamam, Uluocak ve Tammuz (ISTO 1090)
• *Bidens tripartita L.*.
A4 Ankara: Kızılcahamam, Müller 198
• *Taraxaciim androssovii* Schischkin
A4 Ankara: N-of Kızılcahamam, 1300 m, Sorger 71.3.12
• *Crepis pulchra* L. subsp. *pulchra*
A4 Ankara: Kızılcahamam, Birand et M.Zohary 3374
• *Anchusa barrelieri* (All.) Vitman var. *barellieri*
A4 Ankara: Kızılcahamam, 1100-1400 m, Khan et al 693
• *Serophularia. lucida* L.
A4 Ankara: Kızılcahamam to Soğuksu, Leblebici ve Ersoy
(EGE 12621)
• *Linaria corifolia* Desf.
A4 Ankara: Kızılcahamam, T.Baytop (ISTE 13392)
• *Orobanche mutelli* F.Schultz
A4 Ankara: Kızılcahamam, 1960, Fitz
• *Stachys macrantha* (C.Koch) Stearn
A4 Ankara: nr Kızılcahamam, Bilger 5214
. • *Nepeta italica* L.
A4 Ankara: Kızılcahamam, Birand et Zohary 3379
• *Najas minor* All.
A4 Ankara: Kızılcahamam, 100 m, A.Baytop (ISTE 40867 p.p)
• *Potamogeton panormitanus* Biv.
A4 Ankara: Kızılcahamam, 1000 m, A.Baytop (ISTE 40871)
• *Lemna gibba* L.
A4 Ankara: Kızılcahamam, 1000 ID, A.Baytop (ISTE 40869 p.p)
• *Lemna. minor* L.
A4 Ankara: Kızılcahamam, A.Baytop (ISTE 27121)
• *Colchicum bornmuelleri* Freyn
A4 Ankara: Kızılcahamam, 15.IX.1940, Kasaplıgil
• *Crocus danfordiae* Maw
A4 Ankara: Kızılcahamam, 1500 ID, Mathew et Tomlinson 4053
• *Epipactis eondensata* Boiss.
A4 Ankara: Soğuksu Milli Parkı, 1300 ID, A. et. C.Nieschalk 1124

DISCUSSION

As a result of the comparison of our results obtained in the study area and the results of the previous studies conducted in the places in the vicinity of the area, the situation regarding the families having the most number of species is as follows:

The richest family in our area was *Asteraceae* family. This family was in the second rank generally in all other studies. According to the results of the study conducted at Ayaş Mountains and Beypazarı-Nallıhan region, these two regions were in the third rank. These two regions are different than our region in terms of formation and step formation is dominant in those regions in general. Due to the characteristics of these two regions, *Poaceae* family, which is common in step fields, was ranked second in these regions and this family was in the third rank in our area. Despite there was a difference between our area and the other areas in terms of the families listed in the first 10 ranks, the names were similar. Though the names of the families listed in the first 5 ranks were generally identical, there were some differences in the listing. However, in the studies conducted in the vicinity of Gerede-Aktaş and Kızılcahamam-Kargasekmez, *Scrophulariaceae* family ranked the 3rd and 5th. This family ranked the 10th in our area.

This family was in the 3rd rank in the vicinity of Gerede-Aktas because *Veronica* genus belonging to this family was the richest genus in this area and because this area had unique features. Considering the genera of the vicinity of Gerede-Aktas (Table 121), it is clear that the rich genera of this area had some characteristics different than the other areas. The genus having the most number of species in our area was *Vicia* with 11 species. The glades and tensile area situated in our area are the cause for the richness of this genus that is widespread in such type of forests. This genus was the 5th richest genus at Ayaş Mountain, having a typical forest destruction field and covered with dwarf oaks. The second richest genus

in our area was *Trifolium* and it ranked the second in the vicinity of Gerede-Aktas, Beypazarı-Nallıhan and again the second in the vicinity of Kızılcahamam-Kargasekmez. The first 2 areas, particularly Gerede-Aktas environs were similar to our area in terms of formation and the dominant tree species. *Quercus* was dominant in the vicinity of Kargasekmez. It is natural that *Quercus* was widespread in both our area and in the dense and thin forests made up by other forest trees, and *Trifolium* genus, which is the most common genus in such type of habitats, was represented by abundant number of species. Another remarkable issue among the rich genera was that *Astragalus*, which ranked the first in the floras of Beypazarı-Nallıhan and Beynam, ranked the 7th in our area, and it ranked the 6th in Gerede-Aktas, which was a similar area. Another remarkable issue was that *Salvia* ranked first in some other studies and it was not listed in the first 10 in our area. This was due to the commonness of this genus in step areas in general. *Centaurea* genus, which is again common in step areas, ranked the 9th in our area due to the same reason. Another interesting situation in terms of rich genera occurs for *Sedum.* This genus ranked the 4th in both our area and Gerede-Aktas, which is similar to our area and in the vicinity of our area. The richness of this genus in our area can be explained with the quite abundance of rocks, which is the growing environment of this genus, in our area. *Elatine alsinastrum*, the most interesting genus and species collected in our area, grows in Göllü locality, covered with water until midsummer and drying up in July. Though this genus seems to be new in Anatolia according to the record of Flora of Turkey, it was reported in A9 grid by Donner. This species was recorded in Denizli as well. However, this species was recorded in Thrace in the book titled Med-Checq List. Thus, determination of this species in our area is the second record in Anatolia. However, many researchers might have missed the fact that the plant is very short and it grows in aquatic habitats. Therefore, we hope that this product will widespread in Turkey through carefully conducted future studies.

Table11. Comparison of the first ten families consisting of the most number of species with other studies (%)

CONDUCTED STUDIES	S.M.P (A4)	Gerede-Aktaş (A4)	Kızılcahamam-Kargasekmez (A4)	Ayaş (A4)	Beypazarı-Nallıhan (A4)	Beynam (A4)
CONDUCTED STUDIES	1	2	3	4	5	6
FAMİLY NAME TOT. SPECIES S. RATE (%)	Asteraceae 11,6	Fabaceae 11,1	Fabaceae 16,4	Fabaceae 12,0	Fabaceae 12,0	Fabaceae 12,8
” ” ”	Fabaceae 10,6	Asteraceae 8,5	Asteraceae 9,9	Poaceae 8,8	Poaceae 9,0	Asteraceae 10,2
” ” ”	Poaceae 6,6	Scrophulariaceae 8,2	Poaceae 7,9	Asteraceae 8,3	Asteraceae 7,6	Lamiaceae 8,3
” ” ”	Lamiaceae 5,7	Poaceae 5,3	Lamiaceae 7,5	Lamiaceae 8,1	Brassicaceae 6,8	Poaceae 6,2
” ” ”	Brassicaceae 5,0	Lamiaceae 5,0	Scrophulariaceae 5,0	Brassicaceae 5,5	Lamiaceae 6,0	Rosaceae 5,4
” ” ”	Rosaceae 5,0	Rosaceae 5,0	Brassicaceae 4,8	Caryophyllaceae 5,5	Caryophyllaceae 4,7	Caryophyllaceae 4,5
” ” ”	Caryophyllaceae 4,9	Caryophyllaceae 5,0	Apiaceae 4,2	Scrophulariaceae 4,3	Rosaceae 4,2	Brassicaceae 4,2
” ” ”	Apiaceae 4,9	Barassicaceae 4,7	Caryophyllaceae 3,7	Boraginaceae 3,8	Scrophulariaceae 3,7	Boraginaceae 3,8
” ” ”	Boraginaceae 3,4	Boraginaceae 4,4	Boraginaceae 3,7	Apiaceae 3,5	Boraginaceae 2,5	Apiaceae 3,5
” ” ”	Scrophulariaceae 3,4	Apiaceae 3,1	Rosaceae 3,7	Rosaceae 2,7	Apiaceae 2	Scrophulariaceae 3,5

Table 12. Comparison of the first 10 genera containing the most number of species with the other studies

CONDUCTED STUDIES	S.M.P (A4)	Gerede-Aktaş	Kızılcahamam-Kargasekmez	Ayaş	Beypazarı-Nallıhan	Beynam
TOTAL NUMBER OF SPECIES	474	315	451	387	616	419
GENUS NAME AND SPECIES CONTAINED NUMBER OF SPECIES	Vicia 11	Veronica 12	Trifolium 13	Astragalus 21	Astragalus 18	Astragalus 23
” ” ”	Trifolium 8	Trifolium 9	Astragalus 11	Silene 9	Trifolium 14	Salvia 9
” ” ”	Silene 8	Lathyrus 7	Ranunculus 8	Salvia 8	Galium 11	Silene 9
” ” ”	Sedum 7	Sedum 7	Silene 8	Alyssum 7	Galium 11	Silene 9
” ” ”	Campanala 6	Ranunculus 6	Veronica 8	Vicia 7	Alyssum 10	Centaurea 6
” ” ”	Alyssum 6	Astragalus 6	Hypericum 7	Anthemis 7	Silene 9	Hieracium 5
” ” ”	Astragalus 6	Campanula 6	Verbascum 7	Euphorbia 7	Veronica 9	Ranunculus 5
” ” ”	Lathyrus 6	Myosotis 6	Galium 7	Trifolium 6	Bromus 9	Galium 5
” ” ”	Centaurea 6	Hypericum 5	Alyssum 5	Carex 6	Epilobium 7	Hypericum 4
” ” ”	Veronica 6	Galium 5	Sedum 5	Galium 5	Campanula 6	Trifolium 4

Table 13. Distribution of the study area and other studies by phyto-geographical regions

STUDY AREA	S.M.P (1990)	Gerede-Aktaş (19799	Kızılcahamam-Kargasekmez (1979)	Ayaş (1979)	Beypazarı-Nallıhan (1974)
Plant Geographical Region	European-Sib 17,1% Ir-Tur 15,8% Mediterranen 6,5%	European-Sib 7,8% Ir-Tur. 7,6% Mediterranean 7,6%	Ir-Tur. %11,9 Mediterranean %11,7 Euro-Sib %6,1	Ir-Tur %23,3 Mediterranean %14,7 Euro-Sib %3,5	Mediterranean %20,3 Ir.-Tur. %17 Euro-Sib. %3,7

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Table14. Species differing in terms of their morphological characteristics

Species Name	**Characteristic of the Flora**	**Characteristic of the Sample**
Silene fabaria	Base leaves are obovat Calyx is not bulged.	Taban yapraklar spatulat Calyx is bulged.
Ferulago galbanifera	Bractea is 3-5 mm Rays are 4-8	Bractea is 6,8 mm Rays are 10-12
Neatostema apulum	Stem is 8-22 cm	Stem is taller than 22 cm, it is 45 cm
Campanula cf. Reuterena	Branched stem Corolla is maximum 35 mm	Branched stem Corolla is 40 mm
Plantago holosteum	Pedicle is maximum 14 cm	Pedicle can be 18 cm
Muscari aucheri	Pedicel is maximum 5 mm	Pedicel can be 8 mm

Comparison of the plant samples collected in our area and in its vicinity in terms of their geographical locations and components does not provide concrete results since the studies on Beypazarı-Nallıhan were published in 1974 and the other studies were published in 1979. The first 4 volumes of the Flora of Turkey were published in 1974 and the first 6 volumes were published in 1979. Therefore, the ratios provided in these studies may not be very precise.

In our area, the European-Siberian region contained the most number of species and the second richest region was the Iranian-Turanian region and the last region was the Mediterranean. This order was identical to Gerede-Aktas as mentioned since its conditions were similar to that of our area. Mediterranean-origin plants dominated in Beypazarı-Nallıhan, Iranian-Turanian-origin plants dominated in Ayas, and Iranian-Turanian-origin plants dominated in Kızılcahamam-Kargasekmez. Considering the ecological conditions of the areas where those studies were conducted, these results are normal but, the ratios are not consistent with each other. For example, the ratios of Iranian-Turanian and Mediterranean components in Kızılcahamam-Kargasekmez were almost identical and this may not be quite accurate considering the location of the area. There was a similar situation in Gerede-Aktas as well. Despite the number of European-Siberian components was higher in this area in comparison to the other areas, this difference was 0.2%.

We think that these results are not very accurate. It is certain that these ratios will change with the evaluation of the plant samples collected in this area today when the flora publication is completed. With this study, we hope that the floristic composition of one of our National Parks has been put forward and that we have contributed to the flora of Turkey.

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