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RESEARCH ARTICLE

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The flora of Alanbaşı and Bakırtepe villages (Yusufeli, Artvin, Turkey) and its surroundings

Alanbaşı ve Bakırtepe (Yusufeli, Artvin, Turkey) ve çevresinin florası

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Anahtar kelimeler:
Alanbaşı, Artvin, Bakırtepe, bitki, endemizm, flora.

ABSTRACT

This study has been carried out between 2017 and 2018 in order to determine the flora of Alanbası and Bakırtepe (Yusufeli, Artvin, Turkey). The research area under review takes place in Colchic province of Euro-Siberian floristic area of Holarctic region and is found in the A8 square according to grid system of Davis. The study area lies between 780 and 2150 m elevation above the sea level. In this study, total 448 taxa belong to 75 families and 302 genera were determined. 16 of them belong to Pteridophyta, the remaining 432 taxa were Magnoliophyta, which included 5 taxa from the Pinidae and 427 taxa from the Magnoliidae. The largest families recorded were as follows: Poaceae (62 taxa), Asteraceae (57 taxa), Rosaceae (30 taxa), Fabaceae (28 taxa), Lamiaceae (26 taxa), Brassicaceae (20 taxa), Apiaceae (20 taxa), Boraginaceae (17 taxa), Plantaginaceae (11 taxa), Caprifoliaceae (9 taxa) and Orobanchaceae (9 taxa). The percentage of phytogeographical origins of 259 taxa was determined. The distribution of the taxa according to the phytogeographical regions was as follows: Avrupa-Sibirya with 161 taxa (31,5%), Iran-Turan with 81 taxa (15,9%), Mediterranean with 17 taxa (3,3%) and multiregional or of unknown phytogeographic origin with 193 taxa (49,3%). The life form spectrum of 391 taxon was as follows: Hemicryptophytes 127 taxa (24,9%), Cryptophytes 95 taxa (18,6%), Phanerophytes 62 taxa (12,1%), Chamaephytes 54 taxa (10,6%) and Therophytes 53 taxa (10,4%). The taxa that unknown the life form spectrum is 61. Endemism is 6,8% and included 35 endemic taxa and 63 non-endemic rare plants.

ÖZ

Bu çalışma, Alanbası and Bakırtepe (Yusufeli, Artvin-Türkiye) Florası'nın tespit edilmesi amacıyla 2017ve 2018 yılları arasında yapılmıştır. Araştırma alanı, Davis'in grid sistemine göre A8 karesinde yer almakta olup, Holarktik bölgenin, Avrupa-Sibirya flora alanının Öksin kesiminin Kolşik altkesiminde yer almaktadır. Çalışma alanı 780-2150 m yükseltiler arasında yer almaktadır. Bu araştırmada 75 familya, 302 cinse ilişkin toplam 448 adet takson saptanmıştır. Bunlardan 16 takson *Pteridophyta*, 432 takson ise *Magnoliophyta* bölümüne ilişkindir ve bunlardan 5 taxon Pinidae ve 427 takson Magnoliidae alt bölümüne ilişkindir. Araştırma alanında en fazla takson içeren familya sırasıyla; *Poaceae* (62 takson), *Compositae* (57 takson), *Rosaceae* (30 takson), *Leguminosae* (28 takson), *Lamiaceae* (26 takson), *Brassicaceae* (20 takson), *Apiaceae* (20 takson), *Boraginaceae* (17 takson), *Plantaginaceae* (11 takson), *Caprifoliaceae* (9 takson) ve *Orobanchaceae* (9 takson). Çalışma alanında belirlenen 259 taksonun fitocoğrafik bölgeleri saptanmıştır. Bu türlerin fitocoğrafik bölgelere göre dağılımları ise şöyledir: 161 adeti (%31,5) Avrupa-Sibirya, 81 adeti (%15,9) İran-Turan ve 17 adeti (%3,3) Akdeniz'dir ve coğrafi bölgesi bilinmeyen ve birden fazla bölgede yayılış gösterenler 252 adet (%49,3)'dir. 391 taksonun hayat formlarına göre dağılım ve oranları sırasıyla şöyledir: Hemikriptofitler 127 takson (%24,9), Kriptofitler 95 takson (%18,6), Fanerofitler 62 takson (%12,1), Kamefitler 54 takson (%10,6) ve Terofitler 53 takson (%10,4)'dir ve hayat formları belirlenemeyen 61 adet takson bulunmaktadır. Araştırma alanında 35 adet endemik ve 63 adet endemik olamayan nadir bitki türü saptanmış olup, endemizim oranı %6,8'dir.

1. INTRODUCTION

The study area, Alanbası and Bakırtepe, which exposed to dam constructions, are two vicinities of Yusufeli and their flora and vegetation are under the influence of these dam constructions (Eminagaoglu, 2015). There are many studies on flora in the nearer areas. Some of them were studied by Anşin (1979, 1983), Güner (1983), Güner at al. (1987), Vural (1996), Anşin et al. (2000), Eminağaoğlu & Anşin (2002, 2003, 2004, 2005), Eminağaoğlu et al. (2007, 2012), Eminağaoğlu (2009, 2015), Yüksel &Eminağaoğlu (2017), Eminağaoğlu et al., (2018).

The aim of this study was to determine flora of Alanbası and Bakırtepe and it's surrounding. Any floristic research was studied in this area. So the new floristic taxa, the endemic rates and rare plants were wanted to be determined and to contribute to the Herbarium of Artvin Coruh University (ARTH) with the data obtained from this study.

The area of Alanbası and Bakırtepe (Yusufeli) are located in the Caucasus Biodiversity Hotspot, one of the 35 World Biodiversity Hotspots identified by the Conservation International and covers the Eastern Black Sea Mountains, designated as one of the 144 Important Plant Areas (IPA) in Turkey (WWF & IUCN, 1994; Zazanashvili et al., 1999; Özhatay et al., 2005).

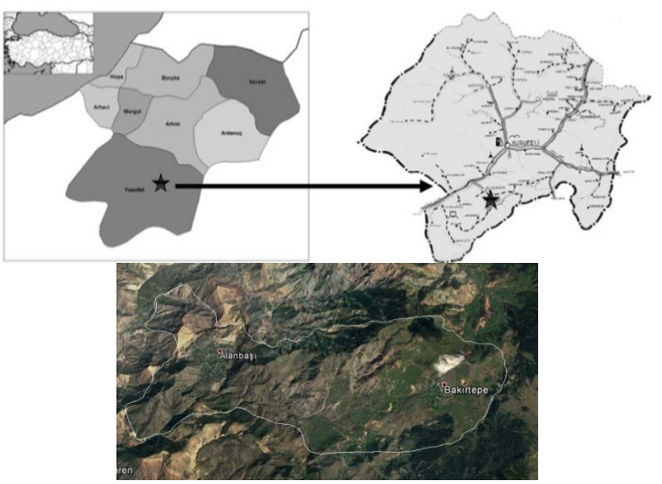

Figure 1. Map of the study area.

According to Davis et al. (1971)'s grid system, Alanbası and Bakırtepe (Yusufeli, Artvin) are located in the A9 square and within the Colchic province of the Euro-Siberian floristic area in the Holarctic region (Eminağaoğlu, 2015).

The altitude of the area is between 780 and 2150 m. The area is situated between lat 40°42'44'' – 40°38'45'' N and long 41°24'25''- 41°27'08'' E (Figure 1).

Meteorological data were obtained from Yusufeli Meteorological station. The annual average rainfall is 275,4 mm, the most rainy month is October (43,9 mm) and the average temperature is 14,13 °C in the area (DMI, 2018) (Table 1). The climatic diagram was prepared using Walter's method (Figure 2).

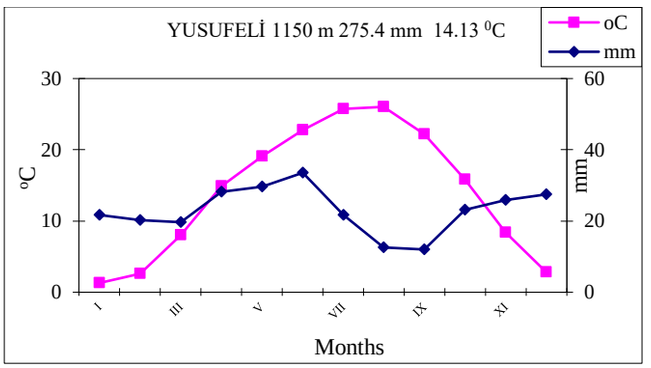

Figure 2. Climatic diagram of Artvin (Walter, 1956).

2. MATERIAL AND METHOD

A total of 1856 plant specimens related to Pteridophyta and Spermatophyta sections were collected in Alanbası and Bakırtepe Village of Yusufeli District (Artvin) between 2017 and 2018. Three or four samples were collected from each plant taxon.

Each plant specimens were photographed and GPS coordinates were taken. The plant specimens were dried by herbarium methods and identified using identification keys given in Flora of Turkey (Davis, 1965-1985; Davis et al., 1988; Güner et al., 2000), Flora of USSR (Komarov, 1934-1978; Ketzkhoveli & Gagnidze, 1971-2001).

The voucher specimens have been deposited at the Herbarium of Artvin Coruh University (ARTH), Artvin, Turkey. All rare plants (endemic and non-endemic plants) were given in the Appendix. Threatened categories were given (Ekim et al., 2000, 2014; IUCN, 2018).

Table 1. The meteorological data of Yusufeli (DMI, 2018).

Meteorological elements	Months												
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Annual
Mean Temparature (°C)	1,3	2,6	8	14,9	19,1	22,8	25,7	26	22,2	15,8	8,4	2,8	14,13
Total rainfall (mm)	21,6	20,2	19,6	28,2	29,6	33,6	21,7	12,6	12,0	23,1	25,8	27,4	275,4

The phytogeographical regions of the taxa were evaluated according to Davis (1965-85) and Davis et al., (1988). The plant names were checked using Türkiye Bitkileri Listesi, Damarlı Bitkiler (Güner et al., 2012), The International Plant Names Index (IPNI, 2015) and the Plant List (PL, 2013). The abbreviations used in the text and in the floristic list are as follows: CR: Critically endangered; EN: Endangered; LC: Least concern; NT: Near threat.

3. RESULTS

As a result of this study, 448 taxa, belong to 302 genera from 75 families were identified. 16 of them belonged to Pteridophyta and the remaining 432 taxa were Magnoliophyta, which included 5 taxa from the Pinidae and 427 taxa from the Magnoliidae. The dispersion of the plant taxa that were defined in the study area according to the large taxonomical groups was shown in Table 2.

Table 2. The numbers of taxa in large taxonomical groups.

	Number of Families	Number of Taxa
Pteridophyta	5	16
Magnoliophyta	70	432
Pinidae	2	5
Magnoliidae	68	427
Total	75	448

The total endemism rate is 6.8%, with 35 taxa. All rare taxa (18 endemic and 63 nonendemic) were evaluated according to IUCN risk categories (Ekim et al., 2000; IUCN, 2018). The distribution of the threat categories are as follows: 3 endemic taxa in CR **[***Lathyrus woronowii* Bomm., *Helichrysum artvinense* Davis & Kupicha, *Iris nezahatiae* Güner & H. Duman**]**, 7 endemic **[***Clypeola raddeana* Albov., *Alcea calvertii* (Boiss.) Boiss., *Acer cappadocicum* Gled. subsp. divergens (K. Koch ex Paxton) A.E. Murray, *Sorbus caucasica* Zinserl var. *yaltirikii* Gökşin, *Bupleurum schistosum* Woronow, *Psephellus appendicigerus* (K. Koch) Wagenitz*, Psephellus pecho* Wagenitz**]** and 1 nonendemic **[***Knautia montana* (Bieb.) DC.**]** taxon in EN, 2 endemic **[***Tchihatchewia isatidea* Boiss., *Psephellus taochius* Sosn.**]** and 9 nonendemic **[***Dryopteris abbreviata* (DC.) Newman, *Kemulariella caucasica* (Willd.) Tamamsch., *Cirsium caucasicum* (Adams) Petrak, *C. obvallatum* (M.Bieb.) Fischer, *Cyanus cheiranthifolius* (Willd.) Sojak, *Veronica liwanensis* L., *Crocus scharojanii* Rupr., *Aegilops tauschii* Cosson, *Poa caucasica* Trin.**]** taxa in VU, 2 endemic [*Ballota rotundifolia* C.Koch, *Bromus armenus* Boiss.] and 1 nonendemic **[***Astrantia maxima* Pall. subsp. *maxima***]** taxa in NT, 15 endemic **[***Genista aucheri* Boiss., *Chesneya elegans* Fomin*., Tragopogon aureus* Boiss. *Androsace armeniaca* var. *macrantha* (Boiss. & A.Huet.) Martelli*, Convolvulus pseudoscammonia* C.Koch., *Moltkia aurea* Boiss., *Alkanna cordifolia* C.Koch, *Salvia rosifolia* Sm., *Salvia huberi* Hedge, *Veronica oltensis* Woronow ex Elenensky, *Linaria genistifolia* (L.) Mill. subsp. *confertiflora* (Boiss.) Davis, *Galium margaceum* Ehrend. & Schönb.-Tem, *Elymus lazicus* (Boiss.) Melderis, *Helictotrichon argaeum* (Boiss.) Parsa**]** and 36 nonendemic **[***Equisetum hyemale* L., *E. fluviatile* L., *E. telmateia* Ehrh., *Adiantum capillus-veneris* L., *Abies nordmanniana* (Stev.) Spach subsp. *nordmanniana, Juniperus oxycedrus* L. *subsp. oxycedrus, J. foetidissima* Willd., *J. excelsa* Bieb., *Ruta suaveolens* DC., *Sorbus subfusca* (Ledeb.) Boiss., *Lythrum salicaria* L., *Sempervivum transcaucasicum* Muirhead, *Heracleum sphondylium* L. subsp. *cyclocarpum* (C.Koch) Davis, *Primula auriculata* Lam., *Androsace armeniaca* var. *macrantha* (Boiss. & A. Huet) Martelli, *Centaurium erythraea* Rafn. subsp. *erythraea, Swertia iberica* Fisch. ex C.A.Mey., *Convolvulus pseudoscammonia* C.Koch, *Mentha longifolia* (L.) L., *Veronica anagalis-aquatica* L., *Carpinus betulus* L., *C. orientalis* Mill., *Ostrya carpinifolia* Scop., *Betula pendula* Roth., *Salix alba* L., *S. excelsa* J.F. Gmelin*, Juncus inflexus* L., *J.effusus* L., *Cyperus glaber* L., *Alopecurus aequalis* Sobol, *Phalaris arundinacea L., Phleum alpinum* L., *P. australis* (Cav.) Trin. ex Steudel, *Poa angustifolia* L., *P. annua* L., *Polypogon viridis* (Govan) Breistr.**]** taxa in LC.

Table 3. The phytogeographical spectra of the taxa (%) in this study and other studies.

	Study Area	Eminağaoğlu et al. (2018)	Yüksel and Eminağaoğlu (2017)	Eminağaoğlu (2009)	Eminağaoğlu et al. (2007)	Eminağaoğlu & Anşin (2003)	Güner et al. (1987)	Güner (1983)
Taxa	*448*	*566*	*651*	*459*	*963*	*769*	*1430*	*1024*
Euro-Siberian	*31.5*	*22.90*	*50.08*	*17.2*	*48.90*	*35.60*	*48.25*	*40.82*
Irano-Turanian	*15.9*	*14*	*2.92*	*17.6*	*2.00*	*6.90*	*5.73*	*4.00*
Mediterranean	*3.3*	*2.40*	*0.77*	*2.6*	*2.00*	*2.20*	*3.01*	*1.46*
Endemism	*6.8*	*3.20*	*2.92*	*7.6*	*1.10*	*7.40*	*18.46*	*20.02*

Table 4. Comparison of the 10 families containing the most species in studies conducted in nearby regions (%).

Families	Study Area	Eminağaoğlu et al. (2018)	Yüksel and Eminağaoğlu (2017)	Eminağaoğlu (2009)	Eminağaoğlu et al. (2007)	Eminağaoğlu & Anşin (2003)	Güner et al. (1987)	Güner (1983)
Poaceae	*12.1*	*6.7*	*6.8*	*8.7*	*7.0*	*4.9*	*10.7*	*6.5*
Asteraceae	*11,2*	*6.3*	*12.0*	*8.1*	*11.5*	*9.5*	*12.5*	*13.2*
Rosaceae	*5,9*	*6.7*	*5.9*	*3.0*	*6.1*	*6.5*	*5.0*	*5.9*
Fabaceae	*5.5*	*5.6*	*4.6*	*8.1*	*6.0*	*8.7*	*4.8*	*5.8*
Lamiaceae	*5,1*	*6.7*	*4.3*	*4.5*	*4.5*	*5.5*	*4.3*	*4.3*
Brassicaceae	*3.9*	*4.5*	*4.3*	*5.0*	*4.6*	*6.4*	*4.4*	*4.2*
Apiaceae	*3.9*	*2.8*	*2.6*	*4.1*	*2.5*	*1.7*	*3.3*	*3.2*
Boraginaceae	*3.3*	*3.8*	*2.8*	*3.4*	*3.6*	*3.3*	-	*2.7*
Caryophyllaceae	*1.5*	*3.8*	*3.2*	*5.0*	*3.0*	*3.7*	*3.9*	*4.0*
Ranunculaceae	*0.7*	*3.5*	*3.1*	*1.3*	*3.2*	*4.2*	-	*2.7*

4. CONCLUSIONS

The research area is included in the Colchic sub-section of the European-Siberian phytogeographic area of the Holarctic region in terms of plant geography. The reason of this plant diversity is that the area is located close to one of the 144 Important Plant Areas of Turkey "Important Plant Areas Yalnızçam mountains" and "Coruh Valley Important Plant Areas" (Özhatay et al., 2005).

The endemic elements and phytogeographical percentages are given in Table 3. Endemism ratio is 6.8 % and similar with other floristic studies (Güner, 1983; Güner et al., 1987; Anşin et al., 2000; Eminağaoğlu & Anşin, 2003; Eminağaoğlu et al., 2007, 2018; Yüksel & Eminağaoğlu, 2017). Çevreli village, which is the nearest place to Alanbası and Bakırtepe has similar endemism ratio (7.6%) (Eminağaoğlu, 2009).

The study area is located in a transitional zone among this three phytogeographic region. The Euro-Siberian elements (31.5%) seem to be dominant in all areas studied and the Irano-Turanian elements (15.9%) come second. When the distribution of taxa determined by phytogeographic regions is examined, it is seen that the Euro-Siberian elements are common in the all works. Mediterranean taxa were determined in some regions like other studies with low number of taxa (Table 3).

The largest families in terms of number of genera were Poaceae (34), Asteraceae (39), Lamiaceae (16), Brassicaceae (17), Boraginaceae (14), Rosaceae (17), Fabaceae (16), Apiaceae (17), Caryophyllaceae (8), Ranunculaceae (4). The richest families in terms of number of taxa were Poaceae (62), Asteraceae (57), Lamiaceae (26), Brassicaceae (20), Boraginaceae (17), Rosaceae (30), Fabaceae (28), Apiaceae (20), Caryophyllaceae (6), Ranunculaceae (4). The total ratio of the 10 major families is 53.1%, with the remaining families comprising 46.9% (Table 4). The major family order in our study is concordant with the Flora of Turkey (Güner et al., 2000).

A comparison of families in terms of the largest number of species found in this study and in previous studies carried out in nearby regions is given in Table 4. The data of this research are similar to those of other studies (Güner, 1983; Güner et al., 1987; Eminağaoğlu & Anşin, 2003; Eminağaoğlu et al., 2007; Eminağaoğlu, 2009; Yüksel & Eminağaoğlu, 2017; Eminağaoğlu et al., 2018).

In this study, *Poa* (9), *Trifolium* (7), *Geranium* (6), *Veronica* (6), *Epilobium* (6), *Salix* (6), *Salvia* (5), *Campanula* (5), *Festuca* (5), *Psephellus* (5), *Sorbus* (5) are the richest genera with their taxon number.

Tchihatchewia isatidea, *Lathyrus woronowii*, *Helichrysum artvinense*, *Iris nezahatiae*, *Acer cappadocicum* subsp. *divergens* which have limited distribution area in this region. Due to having very rich floristic diversity, the research area should be protected.

The ecological integrity in Artvin is threatened by various factors, such as mining, agricultural fields expansion, investment projects, and tourism. The research area has been exposed to a couple of these factors (roadworks, dam construction etc.) and this kind of human impact may cause habitat changes and destruction of rare and endemic species in the area.

Endemic and non-endemic rare species detected in the study area, especially *Iris caucasica*, *I. nezahatiae*, *Lathyrus woronowii*, *Genista aucheri*, *Lamium galactophyllum* and *Tchihatchewia isatidea* may be affected by dam activities and endangers their generations (Figure 3-6).

Finally, these areas need to be protected and monitored. Inspection of the mining operations carried out should be done regularly and mining activities should not be started in excess of the required area.

Figur 3. General view of *Tchihatchewia isatidea* (Photo: Ö.Eminağaoğlu)

Figure 4. General view of *Acer cappadocicum* subsp. *divergens (*Photo: H.Akyıldırım Beğen)

Figure 5. General view of *Lathyrus woronowi* (Photo: E.Yüksel)

Figure 6. General view of *Androsace armeniaca* var. *macrantha* (Photo: Ö.Eminağaoğlu)

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APPENDIX: IUCN risk categories of endemic and non-endemic rare plants in the research area.

TAXA	*ENDEMISM*	*IUCN (2018)*
Helichrysum artvinense Davis & Kupicha	*Endemic*	*CR*
Lathyrus woronowii Bomm.	*Endemic*	*CR*
Acer cappadocicum Gled. subsp. *divergens* (K.Koch ex Paxton) A.E.Murray	*Endemic*	*EN*
Alcea calvertii (Boiss.) Boiss	*Endemic*	*EN*
Bupleurum schistosum Woronow	*Endemic*	*EN*
Clypeola raddeana Albov	*Endemic*	*EN*
Psephellus appendicigerus (K.Koch) Wagenitz	*Endemic*	*EN*
Psephellus pecho Wagenitz	*Endemic*	*EN*
Sorbus caucasica Zinserl var. *yaltirikii* Gökşin	*Endemic*	*EN*
Psephellus taochius Sosn.	*Endemic*	*VU*
Tchihatchewia isatidea Boiss.	*Endemic*	*VU*
Genista aucheri Boiss.	*Endemic*	*LC*
Chesneya elegans Fomin.	*Endemic*	*LC*
Tragopogon aureus Boiss.	*Endemic*	*LC*
Androsace armeniaca var. *macrantha* (Boiss. & A.Huet.) Martelli	*Endemic*	*LC*
Convolvulus pseudoscammonia C.Koch.	*Endemic*	*LC*

Moltkia aurea Boiss.	*Endemic*	*LC*
Alkanna cordifolia C.Koch	*Endemic*	*LC*
Salvia rosifolia Sm.	*Endemic*	*LC*
Salvia huberi Hedge	*Endemic*	*LC*
Veronica oltensis Woronow ex Elenensky	*Endemic*	*LC*
Astragalus campylosema Boiss.	*Endemic*	*NE*
Astraalus xylobasis Freyn et Bomm.	*Endemic*	*NE*
Onobrychis stenostachya Freyn	*Endemic*	*NE*
Lamium galactophyllum Boiss. et Reuter	*Endemic*	*NE*
Ballota rotundifolia C.Koch	*Endemic*	*NT*
Knautia montana (Bieb.) DC	*Non Endemic*	*EN*
Dryopteris abbreviata (DC.) Newman	*Non Endemic*	*VU*
Kemulariella caucasica (Willd.) Tamamsch.	*Non Endemic*	*VU*
Circium caucasicum (Adams) Petrak	*Non Endemic*	*VU*
C. obvallatum (M. Bieb.) Fischer	*Non Endemic*	*VU*
Cyanus cheiranthifolius (Willd.) Sojak	*Non Endemic*	*VU*
Veronica liwanensis L.	*Non Endemic*	*VU*
Crocus scharojanii Rupr	*Non Endemic*	*VU*
Aegilops tauschii Cosson	*Non Endemic*	*VU*
Poa caucasica Trin.	*Non Endemic*	*VU*
Astrantia maxima Pall. subsp. *maxima*	*Non Endemic*	*NT*
Equisetum hyemale L.	*Non Endemic*	*LC*
E. fluviatile L.	*Non Endemic*	*LC*
E. telmateia Ehrh.	*Non Endemic*	*LC*
Adiantum capillus-veneris L.	*Non Endemic*	*LC*
Abies nordmanniana (Stev.) Spach subsp. *nordmanniana*	*Non Endemic*	*LC*
Juniperus oxycedrus L. subsp. *oxycedrus*	*Non Endemic*	*LC*
J. foetidissima Willd.	*Non Endemic*	*LC*
J. excelsa Bieb.	*Non Endemic*	*LC*
Ruta suaveolens DC.	*Non Endemic*	*LC*
Sorbus subfusca (Ledeb.) Boiss.	*Non Endemic*	*LC*
Lythrum salicaria L.	*Non Endemic*	*LC*
Sempervivum transcaucasicum Muirhead	*Non Endemic*	*LC*
Heracleum sphondylium L. subsp. *cyclocarpum* (C. Koch) Davis	*Non Endemic*	*LC*
Primula auriculata Lam.	*Non Endemic*	*LC*
Androsace armeniaca var. *macrantha* (Boiss. & A. Huet) Martelli	*Non Endemic*	*LC*
Centaurium erythraea Rafn. subsp. *erythraea*	*Non Endemic*	*LC*
Swertia iberica Fisch. ex C.A.Mey.	*Non Endemic*	*LC*
Convolvulus pseudoscammonia C.Koch	*Non Endemic*	*LC*
Mentha longifolia (L.) L.	*Non Endemic*	*LC*
Veronica anagalis-aquatica L.	*Non Endemic*	*LC*
Carpinus betulus L.	*Non Endemic*	*LC*
C. orientalis Mill.	*Non Endemic*	*LC*
Ostrya carpinifolia Scop.	*Non Endemic*	*LC*
Betula pendula Roth.	*Non Endemic*	*LC*
Salix alba L.	*Non Endemic*	*LC*
S. excelsa J. F. Gmelin	*Non Endemic*	*LC*
Juncus inflexus L.	*Non Endemic*	*LC*
J.effusus L.	*Non Endemic*	*LC*
Cyperus glaber L.	*Non Endemic*	*LC*
Alopecurus aequalis Sobol	*Non Endemic*	*LC*
Phalaris arundinacea L.	*Non Endemic*	*LC*
Phleum alpinum L.	*Non Endemic*	*LC*
P. australis (Cav.) Trin. ex Steudel	*Non Endemic*	*LC*
Poa angustifolia L.	*Non Endemic*	*LC*
P. annua L.	*Non Endemic*	*LC*
Polypogon viridis (Govan) Breistr.)	*Non Endemic*	*LC*