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# The flora of Dereiçi village (Yusufeli, Artvin, Turkey) and its surroundings

***Dereiçi köyü (Yusufeli, Artvin, Türkiye) ve çevresinin florası***

Emrah YÜKSEL[a,*], Hayal AKYILDIRIM BEĞEN[b]

[a]Department of Forest Engineering, Faculty of Forestry, Artvin Coruh University, 08000 Artvin, Turkey

[b]Health Services Vocational School, Artvin Coruh University, Artvin, Turkey

***Article Info***



**Corresponding author*:
e-mail: emrahyuksel@artvin.edu.tr
ORCID: 0000-0002-8171-0383

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*Artvin, Dereiçi, endemism, flora, Yusufeli.*
**Anahtar kelimeler:**
*Artvin, Dereiçi, endemizm, flora, Yusufeli.*

**ABSTRACT**

The vascular flora of the Dereiçi Village and its environs (Yusufeli, Artvin, Turkey) was assessed between March and September 2017. It is located in the north-east of the Eastern Black Sea Region and is taken place in Colchic province of Euro-Siberian floristic area of Holarctic Region and lies between 650 and 2900 m. In this study, 312 genera and 552 plant taxa were found in 87 families. Of these, 11 taxa belong to Pteridophyta, the remaining 541 taxa belong to Magnoliophyta. Magnoliophyta includes Pinidae with 6 taxa and Magnoliidae with 535 taxa. The biggest families identified were as follows: Asteraceae 58 taxa, Poaceae 49 taxa, Rosaceae 37 taxa, Lamiaceae 30 taxa, Fabaceae 25 taxa, Brassicaceae 24 taxa, Apiaceae 18 taxa, Boraginaceae 16 taxa, Caryophyllaceae 15 taxa and Ranunculaceae 14 taxa. The ratio of the phytogeographical regions of 266 taxa was determined as follows: Euro-Siberian with 216 taxa (%39.1), Irano-Turanian with 42 taxa (%7.6), Mediterranean with 8 taxa (%1.5) and unidentified phytogeographic region with 286 taxa (%51.8). The ratio of endemism is % 5.4 with endemic taxa. Threat categories were proposed for 83 taxa (endemic and non-endemic rare plants) according to International Union for Conservation of Nature and Natural Resources (IUCN) Red List Categories.

**ÖZ**

Dereiçi köyü ve çevresinin (Yusufeli, Artvin, Türkiye) damarlı bitkiler florası, 2017 yılı Mart ve Eylül ayları arasında tespit edilmiştir. Alan, Doğu Karadeniz Bölgesi'nin Kuzeydoğu kısmında ve Holarktik bölgenin, Avrupa-Sibirya flora alanının Öksin kesiminin Kolşik altkesiminde bulunmakta olup 650 ile 2900 m yükseltiler arasında yer almaktadır. Bu araştırmada 87 familya, 312 cinse ait, 552 bitki taksonu saptanmıştır. Bunlardan 11'i Pteridophyta, kalan 541 taksonu Magnoliophyta bölümüne ilişkindir. Magnoliophyta bölümüne ilişkin taksonlardan 6 tanesi Pinidae ve 535 tanesi ise Magnoliidae alt sınıfında bulunmaktadır. Alandaki en fazla takson içeren familyalar şöyledir: Asteraceae 58 takson, Poaceae 49 takson, Rosaceae 37 takson, Lamiaceae 30 takson, Fabaceae 25 takson, Brassicaceae 24 takson, Apiaceae 18 takson, Boraginaceae 16 takson, Caryophyllaceae 15 takson ve Ranunculaceae 14 taksondur. Araştırmada, 266 taksonun fitocoğrafik bölgeleri saptanmış olup; 216 adet (%39,1) Avrupa-Sibirya, 42 adet (%7,6) İran-Turan, 8 adet (%1,5) Akdeniz elementi ve 286 adet (%51,8) fitocoğrafi bölgesi bilinmeyen takson bulunmaktadır. 30 adet takson endemik olup endemizm oranı % 5,4'tür. IUCN tehlike kategorilerine göre 83 adet endemik ve endemik olmayan nadir bitki taksonunun tehlike kategorileri değerlendirilmiştir.

## 1. INTRODUCTION

Artvin is the richest city in terms of plant diversity and Yusufeli (Artvin, Turkey) province reflects this diversity with its geographic and geomorphological features. Naturally growing plants are distributed in this area and diversity of this plants related to climate, habitat and vegetation (Eminağaoğlu, 2015).

Dereiçi (Yusufeli) is located in the Caucasus Anatolian-Hyrcanian Temperate Forests classified as one of the 200 Global Ecoregions and in the North-eastern Anatolia

Centre of Plant Diversity "SWA No.19" (WWF & IUCN, 1994; Zazanashvili et al., 1999).

This study was carried out to contribute to the knowledge on the flora of Artvin. This region reflects the eastern part of the rich plant composition of the Black Sea region. So it was focused to the new floristic taxa, the endemic and rare plants, and to enrich the Herbarium of Artvin Coruh University (ARTH) with the new data obtained from this study.

Some flora studies in nearby areas were published by Anşin (1979, 1983), Güner (1983), Güner at al. (1987), Vural (1996), Anşin et al. (2000), Eminağaoğlu and Anşin (2002, 2003, 2004, 2005), Eminağaoğlu et al. (2007, 2012, 2018), Eminağaoğlu (2009, 2015) and Yüksel and Eminağaoğlu (2017).

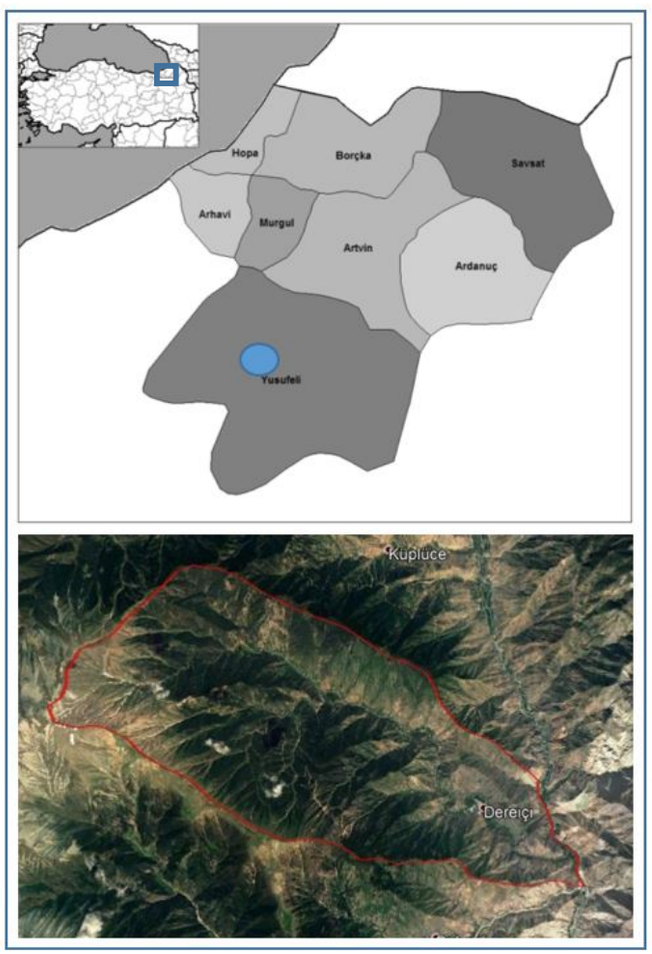


**Figure 1.** Map of the research area.

According to the Davis's grid system, the research area is in the A9 square, and within the Colchic province of the Euro-Siberian floristic area in the Holarctic region (Davis et al., 1971; Eminağaoğlu, 2015). The research area is located between long 41°32'26''-41°24'45''E and lat 40°51'17''–40°53'45''N, and its elevation ranges between 650 and 2900 m (Figure 1).

Climatological data were provided from Yusufeli Meteorological station. The average rainfall is 275,4 mm (annual) and the average temperature is 14.13 °C in the research area (DMİ, 2018) (Table 1). The climatic diagram was prepared using Walter's method (Walter, 1956). Most rainy season in winter, the driest of seasons in summer (Figure 2).

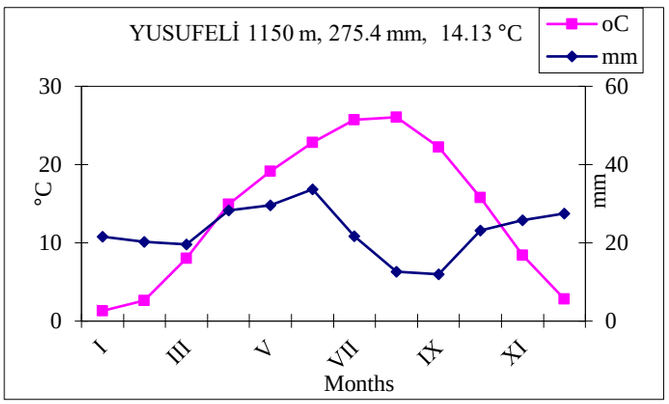


**Figure 2.** Climatic diagram of Yusufeli.

## 2. MATERIAL AND METHOD

A total of 1781 plant specimens were collected from Dereiçi Village of Yusufeli District (Artvin ) during March–September 2017. Three plant samples collected were placed in the Artvin Coruh University Herbarium (ARTH). They were photographed, and their GPS coordinates were recorded. The plant specimens were identified by 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) and other floras (Ketzkhoveli & Gagnidze, 1971-2001). At least 1 sample for each taxon was prepared by herbarium techniques and kept at the Herbarium of Artvin Coruh University (ARTH), Artvin, Turkey. All rare plants are listed in the Appendix. According to IUCN risk categories, threatened

**Table 1.** The average climatic values in Yusufeli (DMİ, 2018).

| Meteorological Data | Months | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **Average 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** |

categories were given (Ekim et al., 2000, 2014; IUCN, 2018). The phytogeographical regions of the taxa were evaluated according to Davis (1965 - 85) and Davis et al., (1988). The plant names were given the accepted names using Türkiye Bitkileri Listesi, Damarlı Bitkiler (Güner et al., 2012), The International Plant Names Index (IPNI, 2012) and The Plant List (2013). The abbreviations used in the appendix and in the text are as follows: LC: Least concern; CR: Critically endangered; VU: Vulnerable; NT: Near threatened;.NE: Not evaluated; EN: Endangered.

## 3. RESULTS AND DISCUSSION

A total of 552 taxa from 87 families were identified. 11 of them belong to Pteridophyta and the remaining 541 taxa were Magnoliophyta, which included 6 taxa from the Pinidae and 535 taxa from the Magnoliidae (Table 2).

**Table 2.** The dispersion of taxa into large taxonomical groups.

| | Number of Families | Number of Taxa |
|---|---|---|
| **Pteridophyta** | 5 | 11 |
| **Magnoliophyta** | 82 | 541 |
| **Pinidae** | 2 | 6 |
| **Magnoliidae** | 80 | 535 |
| **Total** | 87 | 552 |

The ratio of endemism is 5.4%, with 30 taxa. According to IUCN risk categories (Ekim et al., 2000; IUCN, 2018), totally 83 rare taxa (30 endemic taxa and 53 nonendemic) were evaluated. The distribution of the threat categories is as follows: 4 endemic taxa in CR **[***Campanula troegerae* Damboldt, *Helichrysum artvinense* P.H.Davis & Kupicha, *Saxifraga artvinensis* V.A.Matthews, *Stachys choruhensis* Kit Tan & Sorger**]**, 9 endemic **[***Acer cappadocicum* Gled. subsp. *divergens* (K.Koch ex Paxton) A.E.Murray, *Alyssum artvinense* N.Busch., *Bupleurum schistosum* Woronow, *Chesneya elegans* Fomine, *Gypsophila simulatrix* Bornm. & Woronow, *Eminium koenenianum* Lobin & P.C.Boyce, *Salvia huberi* Hedge*, Sempervivum staintonii* Muirhead, *Sorbus caucasica* Zinserl. var. *yaltirikii* Gökşin**]** and 1 nonendemic **[***Knautia montana* DC.**]** taxa in EN, 5 endemic **[***Bupleurum brachiatum* K.Koch ex Boiss., *Cirsium pseudopersonata* Boiss. & Balansa ex Boiss. subsp. *pseudopersonata, Papaver lateritium* K.Koch subsp. *lateritium, Primula longipes* Freyn & Sint., *Psephellus taochius* Sosn.**]** and 6 nonendemic **[***Crocus scharojanii* Rupr., *Cyanus cheiranthifolius* (Willd.) Soják var. *purpurascens* (DC.) Wagenitz, *Cynoglossum holosericeum* Steven, *Gypsophila tenuifolia* M.Bieb., *Lilium kesselringianum* Miscz., *Primula elatior* (L.) Hill subsp. *pseudoelatior* (Kusn.) W.W.Sm & Forrest**]** taxa in VU, 1 endemic **[***Ballota rotundifolia* K.Koch**]** and 1 nonendemic **[***Astrantia maxima* Pall. subsp. *maxima***]** taxa in NT, 11 endemic **[***Alcea calvertii* (Boiss.) Boiss., *Allium djimilense* Boiss. ex Regel*, Campanula betulifolia* K.Koch, *Cerastium armeniacum* Gren*., Elymus lazicus* (Boiss.) Melderis, *Euonymus latifolius* (L.) Mill. subsp. *cauconis* Coode & Cullen, *Galium margaceum* Ehrend. & Schönb.-Tem., *Linaria genistifolia* (L.) Mill. subsp. *confertiflora* (Boiss.) P.H.Davis, *Salvia rosifolia* Sm., *Taraxacum turcicum* Soest, *Tragopogon aureus* Boiss.**]** and 20 nonendemic **[***Abies nordmanniana* (Steven) Spach subsp. *nordmanniana*, *Alnus glutinosa* (L.) Gaertn. subsp. *barbata* (C.A.Mey) Yalt., *Betula pendula* Roth, *Carpinus betulus* L., *C. orientalis* Mill., *Daphne glomerata* Lam, *Heracleum cyclocarpum* C. Koch, *Juniperus oxycedrus* L. subsp. *oxycedrus, J. excelsa* M.Bieb*., J. foetidissima* Willd*., Ostrya carpinifolia* Scop., *Picea orientalis* (L.) Peterm., *Populus tremula* L., *Salix alba* L., *S. caprea* L., *S. excelsa* S.G.Gmel.,

*S. triandra* L., *Sempervivum transcaucasicum* Muirhead, *Sorbus subfusca* (Ledeb. Ex Nordm.) Boiss., *Swertia iberica* Fisch. ex C.A.Mey.**]** taxa in LC, 25 nonendemic **[***Androsace intermedia* Ledeb., *Campanula alliariifolia* Willd., *C. lactiflora* M.Bieb., *Cirsium caucasicum* Petr., *C. obvallatum* (M.Bieb.) M.Bieb., *Crocus vallicola* Herb., *Delphinium flexuosum* M.Bieb., *Draba hispida* Willd., *D. siliquosa* M.Bieb., *Epilobium colchicum* Albov, *Fritillaria latifolia* Willd., *Geranium ibericum* Cav. subsp. *ibericum, G. psilostemon* Ledeb., *Origanum rotundifolium* Boiss., *Pedicularis wilhelmsiana* Fisch. Ex M.Bieb., *Potentilla elatior* Willd. ex Schltdl., *Primula meyeri* Rupr., *Rhamnus pallasii* Fisch. & C.A.Mey., *Rhododendron caucasicum* Pall., *Rhynchocorys stricta* Albov, *Ribes petraeum* Wulfen, *Sedum spurium* M.Bieb., *Sorbus caucasica* Zinserl. var. *caucasica, Scutellaria pontica* K.Koch, *Thymus praecox* Opiz subsp. *grossheimii* (Ronniger) Jalas var. *grossheimii***]** taxa in NE.

The study area is included in the Colchic sub-section of Euxine section of the Euro-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 similar with other floristic studies (Güner, 1983; Güner et al., 1987; Eminağaoğlu & Anşin, 2003; Eminağaoğlu et al., 2007, 2018; Eminağaoğlu, 2009; Yüksel & Eminağaoğlu, 2017).

The research area is located in a transitional zone among this three phytogeographic region. The Euro-Siberian elements (39.1%) seem to be dominant in all areas studied, the Irano-Turanian elements (7.6%) come second. When the distribution of taxa determined by phytogeographic regions is examined, it is seen that the European -Siberian elements are more 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 (28), Asteraceae (26), Lamiaceae (22), Rosaceae (18), Brassicaceae (17), Boraginaceae (17), Fabaceae (16), Apiaceae (14), Caryophyllaceae (11), Ranunculaceae (10). The richest families in terms of number of species were Asteraceae (58), Poaceae (49), Rosaceae (37), Lamiaceae (30), Fabaceae (25), Brassicaceae (24), Apiaceae (18), Boraginaceae (16), Caryophyllaceae (15), Ranunculaceae (14). The total ratio of the 10 major families is 51.8%, with the remaining families comprising 48.2% (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 with those of other similar studies. As a result of climatic and habitat changes, plant families might differ and show diversity. In this study, *Campanula* (10), *Geranium* (9), *Poa* (9) are the richest genera with their taxon number.

**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 | 552 | 566 | 651 | 459 | 963 | 769 | 1430 | 1024 |
| Euro-Siberian | 39.1 | 22.90 | 50.08 | 17.2 | 48.90 | 35.60 | 48.25 | 40.82 |
| Irano-Turanian | 7.6 | 14 | 2.92 | 17.6 | 2.00 | 6.90 | 5.73 | 4.00 |
| Mediterranean | 1.5 | 2.40 | 0.77 | 2.6 | 2.00 | 2.20 | 3.01 | 1.46 |
| Endemism | 5.4 | 3.20 | 2.92 | 7.6 | 1.10 | 7.40 | 18.46 | 20.02 |

**Table 4.** Comparison of the ten 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) |
|---|---|---|---|---|---|---|---|---|
| Asteraceae | 10.5 | 6.3 | 12.0 | 8.1 | 11.5 | 9.5 | 12.5 | 13.2 |
| Poaceae | 8.9 | 6.7 | 6.8 | 8.7 | 7.0 | 4.9 | 10.7 | 6.5 |
| Rosaceae | 6.7 | 6.7 | 5.9 | 3.0 | 6.1 | 6.5 | 5.0 | 5.9 |
| Lamiaceae | 5.4 | 6.7 | 4.3 | 4.5 | 4.5 | 5.5 | 4.3 | 4.3 |
| Fabaceae | 4.5 | 5.6 | 4.6 | 8.1 | 6.0 | 8.7 | 4.8 | 5.8 |
| Brassicaceae | 4.4 | 4.5 | 4.3 | 5.0 | 4.6 | 6.4 | 4.4 | 4.2 |
| Apiaceae | 3.3 | 2.8 | 2.6 | 4.1 | 2.5 | 1.7 | 3.3 | 3.2 |
| Boraginaceae | 2.9 | 3.8 | 2.8 | 3.4 | 3.6 | 3.3 | - | 2.7 |
| Caryophyllaceae | 2.7 | 3.8 | 3.2 | 5.0 | 3.0 | 3.7 | 3.9 | 4.0 |
| Ranunculaceae | 2.5 | 3.5 | 3.1 | 1.3 | 3.2 | 4.2 | - | 2.7 |

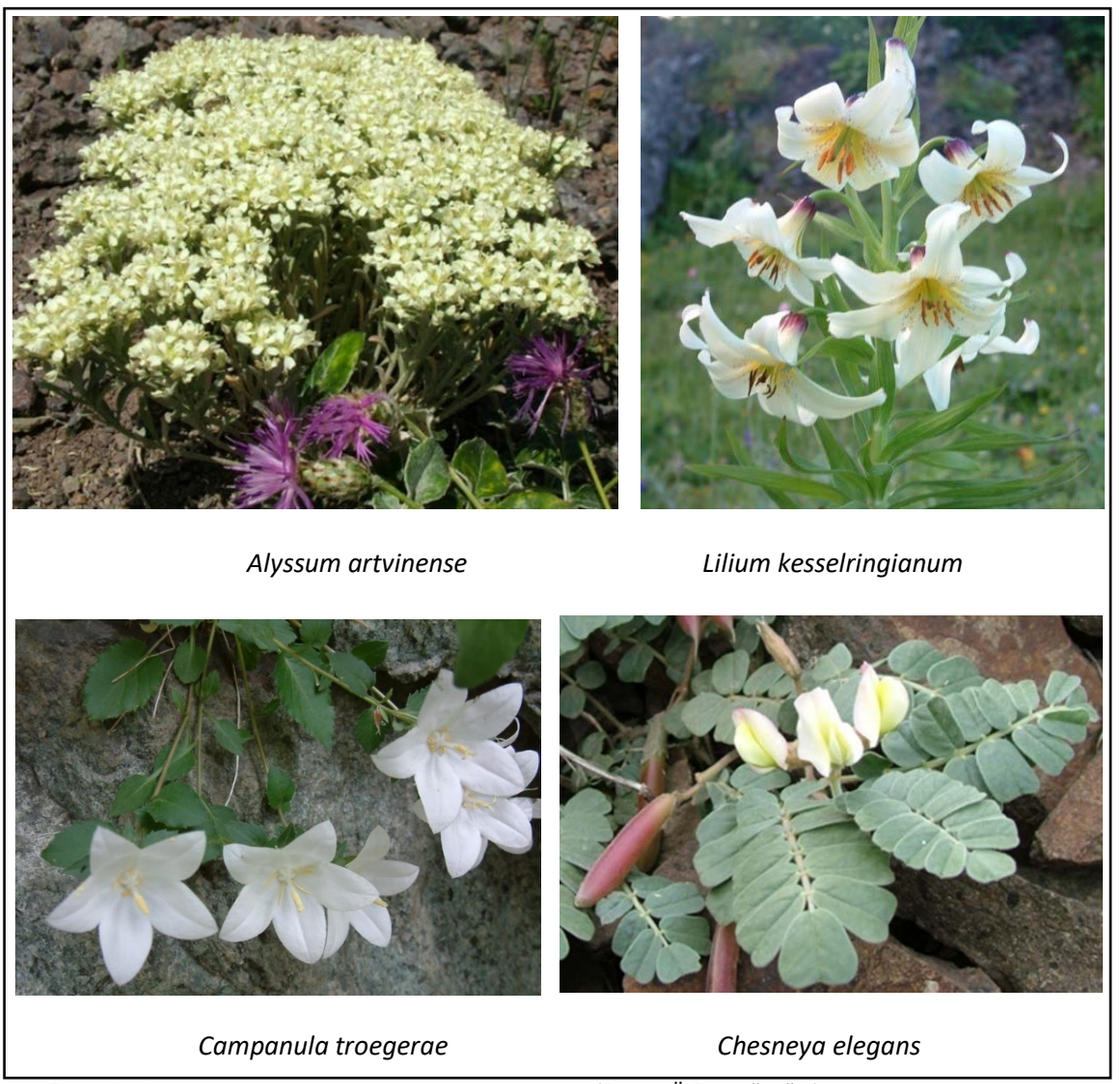


**Figure 3.** Some important endemic and non endemic taxa (Photo: Ö.Eminağaoğlu)

*Campanula troegerae*, *Helichrysum artvinense*, *Acer cappadocicum* subsp. *divergens, Saxifraga artvinensis*, *Stachys choruhensis*, *Sorbus caucasica* var. *yaltirikii* which have limited distribution area in this region. Considering this biological richness, the research area should be protected (Figure 3).

## 4. CONCLUTION

Biodiversity in Yusufeli is under the threat of various factors; investment projects, dam construction, illegal cutting, road construction. The study area has been exposed to these factors. For this reason, similar activities to be carried out in Dereiçi and its surroundings may cause detrimental impact on habitat changes and result in the destruction of rare species in the area.

These areas should be conservation status. The construction of the dam in the vicinity of the site threatens the existing vegetation diversity directly and indirectly. Populations that will be damaged by dam water or dam construction should be transported to the areas determined by ex situ conservation. *Bupleurum schistosum* and *Chesneya elegans* which are distributed at lower altitudes and the majority of their populations will remain under the dam water mirror, may be damaged by road and dam construction activities. For this reason, especially the rare and endemic areas of this plant species should be protected and their generations should be protected (Figure 3).

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

| TAXA | ENDEMİSM | IUCN (2018) |
|---|---|---|
| *Campanula troegerae* Damboldt | Endemic | CR |
| *Helichrysum artvinense* P.H.Davis & Kupicha | Endemic | CR |
| *Saxifraga artvinensis* V.A.Matthews | Endemic | CR |
| *Stachys choruhensis* Kit Tan & Sorger | Endemic | CR |
| *Acer cappadocicum* Gled. subsp. *divergens* (K.Koch ex Paxton) A.E.Murray | Endemic | EN |
| *Alyssum artvinense* N.Busch. | Endemic | EN |
| *Bupleurum schistosum* Woronow | Endemic | EN |
| *Chesneya elegans* Fomine | Endemic | EN |
| *Gypsophila simulatrix* Bornm. & Woronow | Endemic | EN |
| *Eminium koenenianum* Lobin & P.C.Boyce | Endemic | EN |
| *Salvia huberi* Hedge | Endemic | EN |
| *Sempervivum staintonii* Muirhead | Endemic | EN |
| *Sorbus caucasica* Zinserl. var. *yaltirikii* Gökşin | Endemic | EN |
| *Bupleurum brachiatum* K.Koch ex Boiss. | Endemic | VU |
| *Cirsium pseudopersonata* Boiss. & Balansa ex Boiss. subsp. *pseudopersonata* | Endemic | VU |
| *Papaver lateritium* K.Koch subsp. *lateritium* | Endemic | VU |
| *Primula longipes* Freyn & Sint. | Endemic | VU |
| *Psephellus taochius* Sosn. | Endemic | VU |
| *Ballota rotundifolia* K.Koch | Endemic | NT |
| *Alcea calvertii* (Boiss.) Boiss. | Endemic | LC |
| *Allium djimilense* Boiss. ex Regel | Endemic | LC |
| *Campanula betulifolia* K.Koch | Endemic | LC |
| *Cerastium armeniacum* Gren. | Endemic | LC |
| *Elymus lazicus* (Boiss.) Melderis | Endemic | LC |
| *Euonymus latifolius* (L.) Mill. subsp. *cauconis* Coode & Cullen | Endemic | LC |
| *Galium margaceum* Ehrend. & Schönb.-Tem. | Endemic | LC |
| *Linaria genistifolia* (L.) Mill. subsp. *confertiflora* (Boiss.) P.H.Davis | Endemic | LC |
| *Salvia rosifolia* Sm. | Endemic | LC |
| *Taraxacum turcicum* Soest | Endemic | LC |
| *Tragopogon aureus* Boiss. | Endemic | LC |
| *Knautia montana* DC. | Non Endemic | EN |
| *Crocus scharojanii* Rupr. | Non Endemic | VU |
| *Cyanus cheiranthifolius* (Willd.) Soják var. *purpurascens* (DC.) Wagenitz | Non Endemic | VU |
| *Cynoglossum holosericeum* Steven | Non Endemic | VU |
| *Gypsophila tenuifolia* M.Bieb. | Non Endemic | VU |
| *Lilium kesselringianum* Miscz. | Non Endemic | VU |
| *Primula elatior* (L.) Hill subsp. *pseudoelatior* (Kusn.) W.W.Sm & Forrest | Non Endemic | VU |
| *Astrantia maxima* Pall. subsp. *maxima* | Non Endemic | NT |
| *Abies nordmanniana* (Steven) Spach subsp. *nordmanniana* | Non Endemic | LC |
| *Alnus glutinosa* (L.) Gaertn. subsp. *barbata* (C.A.Mey) Yalt. | Non Endemic | LC |
| *Betula pendula* Roth | Non Endemic | LC |
| *Carpinus betulus* L. | Non Endemic | LC |
| *Carpinus orientalis* Mill. | Non Endemic | LC |
| *Daphne glomerata* Lam | Non Endemic | LC |
| *Heracleum cyclocarpum* C. Koch | Non Endemic | LC |
| *Juniperus oxycedrus* L. subsp. *oxycedrus* | Non Endemic | LC |
| *Juniperus excelsa* M.Bieb. | Non Endemic | LC |
| *Juniperus foetidissima* Willd. | Non Endemic | LC |
| *Ostrya carpinifolia* Scop. | Non Endemic | LC |
| *Picea orientalis* (L.) Peterm. | Non Endemic | LC |
| *Populus tremula* L. | Non Endemic | LC |
| *Salix alba* L. | Non Endemic | LC |
| *Salix caprea* L. | Non Endemic | LC |
| *Salix excelsa* S.G.Gmel. | Non Endemic | LC |
| *Salix triandra* L. | Non Endemic | LC |
| *Sempervivum transcaucasicum* Muirhead | Non Endemic | LC |
| *Sorbus subfusca* (Ledeb. Ex Nordm.) Boiss. | Non Endemic | LC |
| *Swertia iberica* Fisch. ex C.A.Mey. | Non Endemic | LC |
| *Androsace intermedia* Ledeb. | Non Endemic | NE |
| *Campanula alliariifolia* Willd. | Non Endemic | NE |
| *Campanula lactiflora* M.Bieb. | Non Endemic | NE |
| *Cirsium caucasicum* Petr. | Non Endemic | NE |
| *Cirsium obvallatum* (M.Bieb.) M.Bieb. | Non Endemic | NE |
| *Crocus vallicola* Herb. | Non Endemic | NE |
| *Delphinium flexuosum* M.Bieb. | Non Endemic | NE |
| *Draba hispida* Willd. | Non Endemic | NE |
| *Draba siliquosa* M.Bieb. | Non Endemic | NE |
| *Epilobium colchicum* Albov | Non Endemic | NE |
| *Fritillaria latifolia* Willd. | Non Endemic | NE |
| *Geranium ibericum* Cav. subsp. *ibericum* | Non Endemic | NE |
| *Geranium psilostemon* Ledeb. | Non Endemic | NE |
| *Origanum rotundifolium* Boiss. | Non Endemic | NE |
| *Pedicularis wilhelmsiana* Fisch. Ex M.Bieb. | Non Endemic | NE |
| *Potentilla elatior* Willd. ex Schltdl. | Non Endemic | NE |
| *Primula meyeri* Rupr. | Non Endemic | NE |
| *Rhamnus pallasii* Fisch. & C.A. Mey. | Non Endemic | NE |
| *Rhododendron caucasicum* Pall. | Non Endemic | NE |
| *Rhynchocorys stricta* Albov | Non Endemic | NE |
| *Ribes petraeum* Wulfen | Non Endemic | NE |
| *Sedum spurium* M.Bieb. | Non Endemic | NE |
| *Sorbus caucasica* Zinserl. var. *caucasica* | Non Endemic | NE |
| *Scutellaria pontica* K.Koch | Non Endemic | NE |
| *Thymus praecox* Opiz subsp. *grossheimii* (Ronniger) Jalas var. *Grossheimii* | Non Endemic | NE |