

SOME INTERESTING ENDEMIC PLANTS COLLECTED FROM THE EAST AND THE NORTHEAST OF TURKEY AND THEIR THREATENED CATEGORIES

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Abstract

This study was carried out during the field trips for Turkey's endemic plant seeds collection project where 48 taxa presented in this study were interesting in terms of being known from the type-gathering, their collection long years ago and as topotype, their distribution in very small area, providing data of unknown morphological characteristics in the Flora of Turkey. They are also presented with their threatened categories.

Introduction

Turkey, with its nearly 10000 vascular plant species, is one of the countries of the world which has rich flora where 3072 taxa of Turkey flora are endemic. Main factors threatening Turkey's endemic and other plants include industrialization and urbanization, forest fires, conversion of forests into agricultural land, overgrazing, overuse of pesticides, desalinization of halophytic lands and exportation of bulbaceous and medicinal plants. The most important threat among them is exploitation of natural resources unconsciously by humans.

Turkey has been a center of attention for a large number of endemic plant species, which are an indispensable part of Turkey's natural bounties. After having taken into consideration above mentioned threatening factors, it is necessary to take various measures in the protection of endemic plants. One of the most important protective measures is to conserve them in their natural habitats which can be done by converting the relevant steppe, forest, mountain, plain, and salty and paludal areas into national parks.

Materials and Methods

The endemic plants of Turkey were collected from Bitlis, Van, Malatya, Erzurum and Artvin cities during the field trips for endemic plant seed collection project between 1992-1997.

Flora of Turk has been used for the identification of plant samples (Davis, 1965-1988). The identified plants have been deposited in GAZÝ Herbarium, Department of Biology, Faculty of Arts and Science, Gazi University, Ankara, Türkiye.

The list of plants was made by using the order of Flora of Turk. The following information was also included under every species record; location, habitat, altitude, date, sample number (Altan), phytogeographic region, type-gathering site, reason for threatened category and complementary information about morphological characteristics. Their IUCN (Anon., 1994; Ekim *et. al.*, 1989) have been used in the determination of threatened categories. The symbols of IUCN indicating threatened category were emphasized by placing them in the paranthesis following the author of taxon.

LIST OF PLANTS

Brassicaceae

Isatis bitlisica Davis (EN)

Van: Bahçesaray to Kırmızı Köprü, rocky slopes, 1700 m, 26.7.1995, A.6013, Ir.-Tur. element.

This species is known from the type-gathering in B9 (Bitlis) square. In addition to being uncommon in the area it is under the threat of overgrazing. In the description of this species in the Flora of Turkey, its mature fruits are not known. The mature fruits in the samples collected are 13x15 mm in size.

Isatis spatella Davis (EN)

Van: 46 km. from Çatak to Bahçesaray, stony slopes, 2800 m, 27.7.1995, A.6022, Ir.-Tur. element.

Known from the type-gathering in B9 (Van) square. This species is under the threat of erosion and overgrazing.

Thlaspi watsonii P. H. Davis (CR)

Van: Hoşap, Güzeldere Tepe, dry stones slopes, 2900 m, 27.8.1993, A.5597, Ir.-Tur. element.

Known from the type-gathering in B9 (Van-Güzeldere Tepe) square, this species, was collected as topotype. Extending a maximum 500 m² area, it is under the threat of overgrazing.

Thlaspi valerianoides Rech.fil. (CR)

Van: Bahçesaray, 13 km. N.E. Bahçesaray pass, high alpine pasture, 2600 m, 24.7.1995, A.5996, Ir.-Tur. element.

Known only from the type-gathering in B9 square, this species was collected as topotype. It faces the threat of overgrazing. In the description of this species in Flora of the Turkey, its mature fruits are not known. The mature fruits in the samples collected are 25x3 mm in size.

Resedaceae

Reseda armena Boiss. var. *scabridula* Abdullah & De Wit (EN)

Erzurum: Oltu to Balkaya, 10 km. N.W. of Balkaya, chalk slopes, 1200 m, 25.8.1996, A.6520, Ir.-Tur. element.

Known only from the type-gathering in A8 (Erzurum) square, it is threatened by erosion.

Caryophyllaceae

Minuartia umbellulifera (Boiss.) Mc Neill subsp. *umbellulifera* var. *kurdica* Mc Neill (EN)

Van: From Çatak to Bahçesaray pass, rocks and scree, 2200 m, 26.7.1995, A.6012, Ir.-Tur. element.

Known from the type-gathering in B9 square, this species is under the threat due to its limitation to a very small area.

***Silene cartilaginea* Hub.-Mor. (cd)**

Van: 40 km. from Hoşap to Güzeldere Tepe, steppe, 2800 m, 8.8.1993, A.5474, Ir.-Tur. element.

Known from the type-gathering in C9 (Van) square. It is under the threat due to the fact that it is very uncommon and that animals eat its herbaceous stems.

Hypericaceae

***Hypericum fissurale* Woron. (EN)**

Artvin: Yusufeli, Sarıgöl to Yaylalar Köyü, Akçayır vicinity, rock fissures, 1500 m, 11.8.1996, A.6334.

Known only from the type-gathering in A8 square. It is under the threat of overgrazing and very small distribution range.

Aceraceae

***Acer divergens* Pax var. *divergens* (VU)**

Erzurum: 17 km. N.E. of Oltu, scree slopes, 1400 m, 4.8.1996, A.6244, Ir.Tur. element

***A. divergens* Pax var. *trilobum* Yalt. (VU)**

Erzurum: Tortum to Dikyar Köyü, rocky slopes, 1500 m, 12.8.1996, A.6347, Ir.-Tur. element.

Both varieties of this species are known from A8 square. Both taxons are collected as toptype and they are under the threat because of the fact that they are very uncommon in the area and that local people use them for firewood.

Fabaceae

***Chesneya elegans* Fomin (EN)**

Erzurum: Oltu between Günlüce Köyü, on shale, 1750 m, 17.7.1993, A.5368, Ir.-Tur. element.

Extending only in Oltu bassin, this species is under threat of erosion and overgrazing.

***Astragalus macrouoides* Hub.-Mor. (CR)**

Malatya: Pötürge to Gözlüce Köyü, Yirmitepe vicinity, Quercus scrub, 2000 m, 26.6.1992, A.1836, Ir.-Tur. element.

Known from the type-gathering in B7 (Malatya) square, it is under the threat of erosion and being close to Atatürk Dam Lake.

***Astragalus altanii* Hub.-Mor. (CR)**

Malatya: Pötürge to Argoçe Ormanı, open Quercus cerris, 1450 m, 2.6.1992, A.1504, Ir.-Tur. element.

Known only from the type-gathering in B7 (Malatya) square, it is under the threat due to erosion extending to very small area, being close to Atatürk Dam Lake and eaten by insects.

***Astragalus trifolium* Hub.-Mor.& Matthews (VU)**

Van: Toprak Kale to Erçek, steppe, 1800 m, 10.10.1992, A.4730, Ir.-Tur. element.

It is known from the type-gathering in B9 (Van) square. It is under the threat of overgrazing and due to the fact that its seeds are eaten by ants.

***Astragalus gymnalopecias* Rech.fil. (EN)**

Van: From Bahçesaray to Ýslam Mahallesi vicinity, upland districts, 2800 m, 27.7.1995, A.6019, Ir.Tur. element.

Known only from the type-gathering in B9 (Bitlis) square, this species was collected as topotype. It is under the threat of overgrazing and that it is very uncommon in the area.

***Lathyrus karstanus* P.H.Davis (cd)**

Erzurum: Þenkaya to Deðirmenli Ky, under *Pinus sylvestris* forest, 2200 m, 7.9.1993, A.5754, Euro-Sib. element.

Known from the type-gathering in A9 (Kars) square, this species is under threat of overgrazing in the area it extends.

***Lathyrus woronowii* Bornm. (CR)**

Erzurum: Between Tortum and near Dikyar Ky, schistose screes, 19.7.1993, 1400 m, A.5380.

Collected originally in 1908, this species is known only from the type-gathering in A8 (Çoruh) square. It is collected as topotype from 500 m² area. Although its height is 18 cm in the Flora of Turkey, our samples are 60 cm high. In the flora, the fruit characteristics are not known. The mature fruits in the samples collected are of 3.5x0.6 cm.

Rosaceae***Potentilla discipulorum* Davis (EN)**

Van: Between Çatak and S. foot of Kavuşbahap Dağ, rocky crevices, 2300 m, 24.7.1995, A.5993, Ir.Tur. element.

Known from the type-gathering in B9 square, this species is under the threat of overgrazing and the fact that its fruits are eaten by insects.

Crassulaceae***Rosularia davisii* Muirhead (nt)**

Van: Bahçesaray, 25 km. N.E. of Bahçesaray pass, rocky crevices, 2800 m, 24.7.1995, A.5994, Ir.-Tur. element.

Known from the type-gathering in C10 (Hakkari) square, this species has been collected again in the area close to the place where it was first collected. It is observed under the threat of overgrazing.

***Sempervivum staintonii* Muirhead (VU)**

Artvin: Yusufeli, Sarygl to Hevek Ky, rocky crevices, 1600 m, 11.8.1996, A.6333.

Known from the type-gathering in A8 (Çoruh) square, this species is under the threat of overgrazing.

***Sempervivum brevipetalum* Kit Tan & Sorger (VU)**

Erzurum: Oltu to Uzunoluk vicinity, rocky slopes, 1800 m, 4.8.1996, A.6244, Ir.-Tur. element.

Known from the type-gathering in A9 (Kars) square, it is under threat because of the fact that it is uncommon in the area and its rosette form leaves are extensively eaten by animals.

***Sempervivum glabrifolium* Boriss. (nt)**

Artvin: Artvin to Boçka, 7 km. W. of Artvin. granite crevices, 700 m. 20.8.1996, A.6427.

Known from the type-gathering in A8 (Çoruh) square, this species extends to a very small area.

Apiaceae***Rhabdoscladlum microcalycinum* Hand.-Mazz. (VU)**

Malatya: Pütürge, Kubbe Dađý to Valiçeşmesi vicinity, rocky slopes, 2000 m, 16.8.1992, A.3713, Ir.-Tur. element.

Known from the type-gathering in B7 square, this species is described by three incomplete samples. Therefore, mature fruit measurements are not known in Flora of the Turkey. Fruit measurements in the collected samples were 13x12mm. The species is very uncommon in the area and under the threat of overgrazing and erosion.

***Heracleum sphondylium* L. subsp. *artvinense* (Manden.) Davis (CR)**

Erzurum: İenkaya to Deđirmenli Köyü, rocky slopes, 2000 m, 7.9.1993, A.5671, Euro-Sib. element.

Known only from the type-gathering, this species is under the threat because of the fact that it extends to a very small area and that there is overgrazing.

Morinaceae***Morina persica* L. var. *decussatifolia* S. Erik & N. Demirkuş (nt)**

Erzurum: Tortum to Yukarı Sivri Köyü, steppe, 1200 m, 30.7.1996, A.6167, Ir.-Tur. element.

Known from the type-gathering in A8 (Erzurum) square, this taxon extends to a very small area and is under the threat of erosion.

Dipsacaceae***Cephalaria anatolica* Schchian (EN)**

Erzurum: 8 km. from Tortum to Oltu, rocky slopes, 1350 m, 9.8.1996, A.6299.

Known from the type-gathering in A8 (Erzurum) square, it extends to a very small area and is under the threat of overgrazing.

Asteraceae***Anthemis calcarea* Sosn. var. *discoidea* Grierson (EN)**

Erzurum: Tortum to Oltu, 10 km. S.E. of Oltu, on limestone rocks, 1000 m, 30.7.1996, A.6154, Ir.-Tur. element.

Known from the type-gathering in A8 (Erzurum) square, is under the threat of erosion and overgrazing.

***Cirsium aduncum* Fisch. & Mey. ex. DC. subsp. *bashkalense* Davis & Paris (VU)**

Van: Erciş to Karahan Köyü, steppe, 1800 m, 24.10.1992, A.4755.

Known from the type-gathering in B9 (Van) square, this species is under the threat due to overgrazing and that its fruits are deliciously eaten by insects.

***Centaurea taochia* Sosn. (CR)**

Erzurum: Olur to Norpet Köyü, calcereous rocks, 1400 m, 8.8.1996, A.6275, Ir.-Tur. element.

Collected and described by Russian Botanician Sosnovsky in 1912, this species is known only from the type-gathering in A9 (Erzurum) square. It extends to a very small area that is now an operating quarry site.

***Centaurea hedgei* Wagenitz (VU)**

Erzurum: Oltu about 10 km. S. of Oltu, clay hills, 1600 m, 20.7.1993, A.5390, Ir.-Tur. element.

The place from where the samples of this species were collected is an operating coal mine at the moment, therefore very few samples are found. The species is 25 cm high in Flora of the Turkey, but the samples which we collected are 75 cm high.

***Centaurea karduchorum* Boiss. (VU)**

Van: Toprak Kale above Van, limestone crevices, 2100 m, 10.10.1992, A.4727, Ir.-Tur. element.

Known from type-gathering in B9 square, this species is rarely encountered in rock fissures. It is under the threat due to the fact that its fruits are consumed extensively by insects.

***Centaurea straminecephala* Hub.-Mor. (CR)**

Erzurum: Oltu between Ayvalı Köyü, steppe, 1400 m, 18.7.1993, A.5372, Ir.-Tur. element.

This species is known only from the type-gathering in B8 (Erzurum-Tortum) square. The area from where the samples were collected is rested under of Tortum Dam Lake. Very few forms of this species were encountered and nearly absent around this area.

***Centaurea leptophylla* (C.Koch) Tchihat (CR)**

Artvin: 23 km. from Yusufeli to Sarıgöl, rocky slopes, 900 m, 11.8.1996, A.6329.

No collection of this plant has been recorded since 1843. It is known from the type-gathering in A8 (Çoruh) square. It extends to an area of 500 m². Although the species is 25 cm high in Flora of the Turkey, the samples we collected are 80 cm high.

***Hieracium radiatellum* (Woronow & Zahm) Juxip (EN)**

Artvin: Kafkasor Dağı, Dağ Evleri vicinity, coniferous woodland, 2000 m, 21.8.1996, A.6439, Euro-Sib. element.

Known only from the original type-gathering in A9 (Çoruh) square, it is under the threat of overgrazing and overmowing with seythe.

***Hieracium diaphanoidiceps* (Woronow & Zahm) Juxip (EN)**

Erzurum: Oltu to Uzunoluk vicinity, woodland margins, 1800 m, 4.8.1996, A.6258, Euro-Sib. element.

Known only from the original type-gathering in A8/9 (Çoruh) square, it extends to a very small area and is under the threat of overgrazing.

***Taraxacum anatolicum* Van Soest (nt)**

Van: Erciþ to Karahan Ky, damp places, 1700 m, 17.10.1992, A.4738, Ir.-Tur. element.

Known from the type-gathering in B9 (Ar) square, it is under the threat of overgrazing.

Campanulaceae***Campanula choruhensis* Kit Tan & Sorger (nt)**

Erzurum: Oltu to Uzunoluk vicinity, rock crevices, 2000 m, 4.8.1996, A.6243, Euro-Sib. element.

Known from the type-gathering in A8 (Erzurum) square, it is under the threat being uncommon in the area.

***Campanula trogerae* Damboldt (EN)**

Artvin: 15 km. from Yusufeli to Sargl, south of main road, rock crevices, 750 m, 11.8.1996, A.6326, Euro-Sib. element.

Known only from the type-gathering in A8 (oruh) square, it was collected as topotype. It extends to a very small area and therefore it is under the threat of extinction.

***Campanula akgulii* Altan (CR)**

Bitlis: Hizan, Karbast Ky, 3 km. above southeast of Karbast, limestone crevices, 1550 m, 1.7.1992, A.4671, Ir.-Tur. element.

Known from the type-gathering in B9 (Bitlis) square, it extends to a very small area and therefore it is under the threat of extinction.

Boraginaceae***Paracaryum artvinense* R.Mill (EN)**

Artvin: Ardanu to Ttnl Yatly Blge Ýlkretim Okulu, on limestone rocky, 1100 m, 22.8.1996, A.6458.

Known only from the type-gathering in A9 (oruh) square, this species was collected as topotype and is under the threat of wind erosion.

Scrophulariaceae***Verbascum gracilescens* Hub.-Mor. (EN)**

Artvin: Yusufeli to Ýþhan Ky, 2 km. above main road, limestone slopes, 1200 m, 10.8.1996, A.6305, Ir.-Tur. element.

Known only from the type-gathering in B8 (Erzurum) square, this species is under threat due to erosion and being extended in a very small area.

***Verbascum decursivum* Hub.-Mor. (nt)**

Artvin: Kafkasor Day, Da Evleri vicinity, volcanic rocks, 1800 m, 21.8.1996, A.6443, Ir.-Tur. element.

Only known from the type-gathering in A8 (Erzurum), it is under the threat of overgrazing.

***Verbascum vanense* Hub.-Mor. (nt)**

Van: Edremit to Gevaş, pastures, 1800 m, 24.10.1992, A.4748, Ir.-Tur. element.

Known from the type-gathering in B9 (Van-Bitlis) square, this species is under the threat of overgrazing and overmowing. Local people use the plant for firewood.

***Verbascum murbeckianum* Hub.-Mor. (VU)**

Van: Bahçesaray to Bahçesaray pass, field margins, 1500 m, 25.7.1995, A.6000, Ir.-Tur. element.

Known only from the type-gathering in B9 square, it is under the threat because of the fact that local people use this species for firewood and animal feeding like they do with other *Verbascum* species.

Lamiaceae***Salvia kronenburgii* Rech.fil. (EN)**

Van: Kurubaş pass, shale hills, 1900 m, 20.8.1992, A.4701, Ir.-Tur. element.

Known from the type-gathering in B9 (Van) square, it is under the threat of overgrazing and erosion in the region.

Plantaginaceae***Platago anatolica* Tutel & R.Mill (cd)**

Bitlis: Adilcevaz, Süte Yaylası, alpin meadows, 2000 m, 11.8.1993, A.5495, Ir.-Tur. element.

Known only from the type-gathering in B9 square, this species grows in meadows. Therefore it is under the threat of extensive overmowing and overgrazing.

Liliaceae***Allium microspatum* Ekberg (CR)**

Van: 40 km. N.E. of Hoşap, Güzeldere Tepe, in coarse herbage, 2800 m, 8.8.1993, A.5458, Ir.-Tur. element.

Known only from the type-gathering in B9 (Van-Güzeldere hill) square, this species collected as topotype are found rarely among dwarf bushes and spiny plants, sheltering in them to survive.

Poaceae***Elymus sosnowskyi* (Hackel) Melderis (nt)**

Erzurum: Oltu to Balkaya, steppe, 1600 m, 25.8.1996, A.6513, Ir.-Tur. element.

Known from the type-gathering in A9 (Erzurum) square, it was collected as topotype. Taxon is under the threat of overgrazing, overmowing with seythe and erosion.

Results and Discussion

In this study, 48 interesting endemic plants collected from the east and the northeast of Turkey are presented with their threatened categories.

If we exemplify some taxa with their numbers and names of species under the title of interesting plants: 18 species collected after only the type-gathering, 3 species collected long

years ago (in 1848 *Centaurea leptophylla* (C. Koch) Tchihat, in 1908 *Lathyrus woronowii* Bormm, in 1912 *Centaurea taochia* Sosn.), 4 species with distribution area up to 500 m² (*Thlaspi watsonii* P. H. Davis, *Lathyrus woronowi* Bormm, *Centaurea straminecephala* Hub-Mor., *C. leptophylla* (C. Koch) Tchihat). The lack of knowledge about the 6 species, which were known for the lack of their morphological characteristics, was completed (*Isatis bitlisica* Davis, *Thlaspi valerianoides* Rech. fil., *Lathyrus woronowii* Bormm., *Rhabdosciadium microcalycinum* Hand.-Mazz., *Centaurea hedgei* Wagenitz, *Centaurea leptophylla* (C.Koch) Tchihat), 7 species collected as toptype.

The following references were examined to evaluate the latest situation of populations of species and to spot their new distribution areas: Altan, Y. *et al.*, (1986), Altan, Y. and Behçet, L. (1995), Altan, Y. (1998), Donner, J. (1985, 1990), Gümüþ, I. (1992). Huber-Morath, A. (1987.1988), Kaya, Y. (1996), Ocakverdi, H. (1986), Oğün, E. and Altan, Y. (1992), Tatlı, A. (1989), Yýldýz, B. and Aktoklu, E. (1996), Yurdakulol, E. and Altan, Y. (1984).

The number of plant taxa according to their threatened categories is as follows:

CR (Critically endangered):	11
EN (Endangered):	16
VU (Vulnerable):	10
cd (Conservation Dependent):	3
nt (Near Threatened):	8

Our research area is within the Irano-Turanian and Euro-Siberian phytogeographic region (Davis,1965-1985). The number of collected plants to their phytogeographic regions was distributed as follows:

Irano-Turanian (Ir.-Tur.):	34
Euro-Siberian (Euro-Sib.):	6

Phytogeographic regions of the remaining 8 species are unknown.

After having taken the threatened categories of the above taxons into consideration, it is obvious that we have to protect all plant species carefully in order to leave the following generation a country which has rich and natural resources of the plant species.

Acknowledgement

I would like to thank TÜBÝTAK (Scientific and Technical Research Council of Turkey) and DPT (State Planning Agency) that supported financially field work with its TBAG-DPT /, Sec.4D project. I also thank Professor Tuna Ekim, who was the project director.

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(Received for publication 18 April 2000)