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Taxonomy and IUCN Categories of Two Endemic Scrophularia L. (Scrophulariaceae) Species Cited in the Data Deficient (DD) Category

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ABSTRACT

Scrophularia is represented with 59 species in the Flora of Turkey. This study presents the taxonomy and threatened categories of two endemic Scrophularia L. (Scrophulariaceae) species: *S. erzincanica* R. Mill and *S. capillaris* Boiss. & Bal. These species were previously placed in the Data Deficient (DD) category according to Red Data Book of Turkish Plants. This study provides the re-descriptions of taxa and suggests new IUCN categories according to IUCN 2010 threatened categories. Descriptions, localities, distribution map and images of the species are also given.

Key Words: Scrophularia, Scrophulariaceae, IUCN, Taxonomy, Turkey

1. INTRODUCTION

The genus *Scrophularia* L. (Scrophulariaceae), commonly known as the “figworts (in Turkish, siracaotu)”, is one of the important genera among flowering plants and represented by approximately 300 taxa (species and subspecies categories) in the world. *Scrophularia* has the high endemism ratio (%48) in Turkey, with 37 endemics among 77 taxa according to Flora of Turkey [1, 2, 3, 4]. In the Red Data Book of Turkish Plants, four species named as *S. hyssopifolia*, *S. capillaris*, *S. paphlagonica* and *S. erzincanica* are located in DD (data deficient) threat categories [5]. Since 2013, the revision of the *Scrophularia* has been started by the authors. While the revision study was going on, we collected two endemic species placed in DD as *S. capillaris* and *S. erzincanica*. *S. erzincanica* was collected for the first time in 1890 [1].

S. capillaris was collected by Serdar Makbul and his friends in 2001 but they studied only anatomical features of species [6]. In this study, we present both revised threat categories and description of these species.

2. EXPERIMENTAL

Research materials of these species were collected from Rize and Erzincan region in May 2013, both in the flowering and fruiting period. The descriptions of species were prepared by examining collected specimens. The threat categories of *S. capillaris* and *S. erzincanica* were revised according to the IUCN's Red List Categories [7]. The author's name of each species was written according to Authors of Plant Names [8]. Distribution area of the

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species were shown on the maps. Collected specimens have been preserved in herbarium GAZİ.

3. RESULTS AND DISCUSSION

3.1. *S. capillaris* Boiss. & Bal. Fl. Or. 4:397 (1879). (Figure 1, 3)

Type: [Turkey A8 Rize] in region inferiori Ponti Lazici prope Rhizé, [vi 1866.] Balansa (holo. G!).

Biennial. Stems erect, 30-125 cm, 2-5 mm diam., glabrous-sparsely glandular, lower parts reddish, branched at near base. Leaves thin, opposite. Petiole 1.5-5.5 cm, sparsely glandular. Lower leaves ovate to broadly ovate, lanceolate, 2-9 x 1-6 cm, apex acute, margin crenate-dentate, base truncate-subcordate, ± glabrous. Upper leaves similar to lower leaves. Inflorescence

panicle, (10-) 25-50 x 3-13 cm, cymes 2-7 flowered. Lower bracts leaf like, lanceolate-elliptic, 1-4 x 0.4-2 cm, apex acuminate, margin dentate, base cuneate, glabrous. Upper bracts linear-elliptic, apex acuminate, margin entire, ± glabrous. Bracteoles linear to narrowly linear, glandular. Peduncle 1-3 cm, glandular. Alar pedicel 8-20 mm, much exceeding bracteoles. Pedicels capillary, 5-19 mm, glandular. Calyx lobes glabrous, oblong to broadly ovate, 1.5-3.5 x 0.5-1 mm, apex obtus, scarious margin broad, reddish-brown. Corolla unequal, reddish-green, 6-9 x 4-5 mm. Stamens included; staminode transversely oblong, emarginate. Capsules globose, 4 x 4 mm, apiculate. Seed oblong, dark brown, reticulate-alveolate.

Flowering: 5-6.

Habitat: Mixed forest, roadsides, rocky places, meadows.



Fig 1. *S. capillaris* Boiss. & Bal.

Collected specimens: A8 Rize: Karayemiş village-Güneysu, 282 m, 11.05.2013, mixed forest, ME. Uzunhisarcıklı 2370, B. Bilgili & E. Doğan Güner (GAZİ); ibid, 26.06.2013, ME. Uzunhisarcıklı 2449 & E. Doğan Güner (GAZİ); İkizdere-İyidere, s.l., 11.05.2013, roadsides, ME. Uzunhisarcıklı 2371, B. Bilgili & E. Doğan Güner (GAZİ).

IUCN categories: *S. capillaris* Boiss. & Bal. was placed in DD category according to Red Data Book of Turkish Plants [5], however, we collected this species from the northern parts of Turkey. This species is known from only one locality (criterion B2 a), with an area of occupancy estimated to be less than 10 km² (criterion B2), so that it should be classified as "Critically Endangered (CR)" [7].

3.2. *S. erzincanica* R. Mill Notes R.B.G. Edinb. 36: 13 (1978). (Figure 2, 3)

Type: [Turkey B7 Erzincan] inter Sürek et Albuschik, in herbis, 6 v 1890, Sintenis 2157 (holo. LD!).

Biennial. 2-3 stemmed, erect, 22-45 cm, 2-5 mm. diam., glabrous, lower parts sparsely glandular, purplish, rarely branched at upper part. Petiole 1-2.5 cm, glabrous. Basal leaves fleshy, broadly ovate or orbicular, 2-4.5 x 1-3 cm, apex obtuse, margin crenate, base obtuse, glabrous. Cauline leaves thick, pinnatifid-2-pinnatisect, lamina oblong-lanceolate in outline, 1-6 x 1-4.5 cm, apex obtus-acuminate, margin crenate-serrate, base truncate-obtus, upper surface glabrous, beneath surface sparsely pilose. Inflorescence panicle, 7-40 x 2.5-7 cm, cymes 2-7 flowered. Lower bracts lanceolate, 0.5-2 x 0.3-0.7 cm, apex acuminate, margin entire or toothed, glabrous. Upper bracts linear-lanceolate, apex acute-acuminate, margin entire, glabrous. Bracteoles linear-subulate, 1-2 x 1-0.2 mm, glabrous. Peduncle 1-2.2 cm, sparsely glandular. Alar pedicel 2-4 mm, equal to or slightly longer than bracteoles. Pedicels 2-14 mm, glabrous or sparsely glandular. Calyx lobes glabrous, obovate, 1-3 x 0.5-1 mm, apex obtus, scarious margin 0.2 mm broad, whitish. Corolla subequal, greenish-pink, upper purplish with narrow yellow border, 4-6 x 2.5-4 mm. Stamens shortly exserted; staminode funnel-shaped. Capsules

globose, 3-5 mm diam., apiculate. Seed oblong, dark brown, reticulate-alveolate.

Flowering: 5-6.

Habitat: Limestone cliffs, grassy places.



Fig 2. *S. erzincanica* R. Mill

Collected specimens: B7 Erzincan: Refahiye-Erzincan, 500 m from Sakaltutan Pass, 1980-2116 m, 23.05.2013, limestone cliffs, ME. Uzunhisarcıklı 2373 & E. Doğan Güner (GAZI); ibid, 28.06.2013, ME. Uzunhisarcıklı 2466 & E. Doğan Güner (GAZI).

IUCN categories: *S. erzincanica* was placed in DD category according to Red Data Book of Turkish Plants [5], however, we collected this species from Erzincan region. *S. erzincanica* is known from only one locality (criterion B2 a), it represents a number of specimens in the population of less than 50 (criterion D) so that it should be classified as “Critically Endangered (CR) [7].

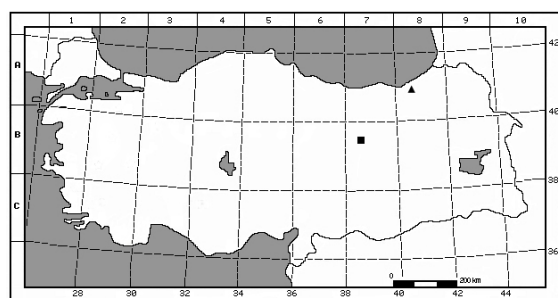


Fig 3. Geographical distributions of *Scrophularia capillaris* (▲) and *Scrophularia erzincanica* (■).

Scrophularia capillaris is a local endemic species known from only small locality in the Rize region. According to Flora of Turkey, this species is Europe-Siberia element. Also *S. erzincanica* is a local endemic species known from only near Erzincan. According to Flora of Turkey, this species is Irano- Turanian element. In case road widening works occurs in these distribution areas, both species will be faced with extinction. Thus, these seeds of these species were collected to protect future generations.

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CONFLICT OF INTEREST

No conflict of interest was declared by the authors.

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