

1-1-2009

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### Recommended Citation

DİNÇ, MUHİTTİN and BAĞCI, YAVUZ (2009) "Taxonomical and Chorological Notes on the Turkish Endemic *Scorzonera amasiana* Hausskn. & Bornm. (Asteraceae)," *Turkish Journal of Botany*: Vol. 33: No. 2, Article 7. <https://doi.org/10.3906/bot-0805-18>

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## Taxonomical and Chorological Notes on the Turkish Endemic *Scorzonera amasiana* Hausskn. & Bornm. (Asteraceae)

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Received: 23.05.2008

Accepted: 24.03.2009

**Abstract:** *Scorzonera amasiana* Hausskn. & Bornm. is a stenoendemic species known from a few localities in Amasya Province. After the rediscovery of *S. amasiana*, it has been recorded from a new locality in Amasya. Using chorological and ecological data, morphological study of the collected specimens suggest that the recently described *Scorzonera ekimii* A.Duran is synonymous with *S. amasiana*. The conservation status of *S. amasiana* is also reviewed, based on the present distribution data.

**Key Words:** *Scorzonera amasiana*, taxonomy, chorology, Turkey

### Türkiye Endemiği *Scorzonera amasiana* Hausskn. & Bornm. (Asteraceae) Üzerine Taksonomik ve Korolojik Notlar

**Özet:** *Scorzonera amasiana* Hausskn. & Bornm. Amasya ili civarında birkaç lokaliteden bilinen dar yayılışlı endemik bir türdür. Bu tür, yeniden keşfinden sonra, Amasya ilindeki başka bir lokaliteden daha kaydedilmiştir. Korolojik ve ekolojik verilerle beraber, toplanan örnekler üzerinde yapılan morfolojik çalışmalar, son zamanlarda tanımlanan *Scorzonera ekimii* A.Duran'ın *S. amasiana*'nın sinonimi olduğunu göstermiştir. Ayrıca, *S. amasiana*'nın tehdit kategorisi mevcut yayılış verilerine dayanarak gözden geçirilmiştir.

**Anahtar Sözcükler:** *Scorzonera amasiana*, taksonomi, koroloji, Türkiye

### Introduction

The *Flora of Turkey and the East Aegean Islands* (Chamberlain, 1975; Davis et al., 1988; Güner, 2000) lists 42 species of the genus *Scorzonera* L. Subsequently, *Scorzonera ekimii* A.Duran, *S. adilii* A.Duran, *S. ulrichii* Parolly & N.Kilian, *S. karabelensis* Parolly & N.Kilian, *S. gokcheoglui* O.Ünal & R.S.Göktürk, *S. yildirimlii* A.Duran & Hamzaoğlu, and *S. aytatchii* A.Duran & Sağıroğlu were described (Duran, 2002a, 2002b; Duran & Sağıroğlu, 2002; Kilian & Parolly, 2002; Parolly & Kilian, 2003; Ünal & Göktürk,

2003; Duran & Hamzaoğlu, 2004). Two of these—*S. gokcheoglui* and *S. aytatchii*—are considered to be conspecific with *S. ulrichii* and *S. rigida* Aucher, respectively (Parolly & Kilian, 2003). The total number of *Scorzonera* species in Turkey has reached 47.

*Scorzonera amasiana* was first collected by Bornmüller from Amasya in 1889 and was subsequently described as a new species by Haussknecht and Bornmüller in 1904 (Chamberlain, 1975). Since then, it had not been recollected until it was rediscovered (Cansaran & Aydoğdu, 1998; Karaer & Celep, 2007).

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Some *Scorzonera* specimens were collected from Amasya Province during the Taxonomic Revision of the Genus *Johrenia* DC. in Turkey Project in 2007. After a comparison with the protologue of *Scorzonera amasiana* Hausskn. & Bornm. and an examination of images of the isotype (B!), their identity was confirmed as *S. amasiana*. Moreover, as there are no characters to differentiate *S. amasiana* from the recently described *S. ekimii*, based on examination of the collected specimens, observation of their type specimens, and comparison of the 2 descriptions (Chamberlain, 1975; Duran, 2002a; Karaer & Celep, 2007) they are synonymised here under *S. amasiana*.

#### Taxonomic Treatment

*Scorzonera amasiana* Hausskn. & Bornm. in Mitt. Thür. Bot. Ver. 20: 24 (1904).

**Type:** [Turkey, A5 Amasya] Amasya in rupibus regionis calidae (Mt. Logman), 360-800 m, 18.5.1889 & 26.5.1889, *Bornmüller* 699 (iso. JE, K, B photo!).

= *S. ekimii* A.Duran in Israel J. Pl. Sci. 50: 155-159 (2002), **syn. nov.**

**Type:** [Turkey, A5 Yozgat] Aydıncık, Kazankaya town, Kazankaya Canyon passes, 750 m, crevices of limestone rocks, *A.Duran* 5409 (holo. ADO, iso. GAZI, ANK, HUB).

Endemic. A5 Amasya: Kırklar Mountain, SW slopes, calcareous rocks, 500-650 m, 15.05.1993, *F.Karaer* 5510; *ibid.* 590 m., 20.05.1994, *Cansaran* 293; *ibid.* 30.06.1996, *F.Karaer* 6658; *ibid.* 15.05.2000, *F.Karaer* 11200; Yeşilirmak Valley, around Kızılca Village, Şahinkaya, 440 m, 2.6.2003, *F.Karaer* 14550; Amasya city centre, Yazı Bağları, rocky slopes, 500 m, 21.06.2007, *Y.Bağcı* 3695 & *M. Dinç*.

#### Taxonomic Discussion

Although Duran (2002a) compared *Scorzonera ekimii* with *S. elata* Boiss., the characters given in the description of *S. ekimii* are similar to those observed in the *S. amasiana* specimens collected by us. The author stated that *S. ekimii* looks like *S. amasiana*, but that its leaves are narrower (0.1-0.5 cm) than those of *S. amasiana*; however, in our *S. amasiana* specimens leaf width varies from 0.1 to 1.2 cm and the margins are undulate, as recorded by the author (Figure 1).

In contrast to the 2-3-capitulate stems indicated in *Flora of Turkey* (Chamberlain, 1975), *S. amasiana* with single capitulum stems were observed by Cansaran & Aydoğdu (1998). There are 2-4-capitulate stems in the Kazankaya Valley (Canyon) population (Duran, 2002a), whereas both single and 2-4-capitulate stems were observed in the presently studied population.

Achene features are some of the most important characters for classifying *Scorzonera* species (Chamberlain, 1975; Parolly & Kilian, 2003). The achenes are narrowly cylindrical and glabrous in the populations of *S. amasiana* and the population previously treated as *S. ekimii*; however, while achene length is given as 9-11 mm by Chamberlain (1975) and Karaer & Celep (2007), and as 7-9 mm by Duran (2002a), it varies from 6 to 11 mm among our specimens.

*Scorzonera amasiana* and the herein re-evaluated *S. ekimii* grow in areas somewhat distant from each other, but in similar habitats with regard to ecology, geology, and climate. *S. amasiana* is distributed in Yeşilirmak Valley and its surroundings in Amasya (Cansaran & Aydoğdu, 1998; Karaer & Celep, 2007). *S. ekimii* is reported only from the Kazankaya Valley (Canyon) in Yozgat-Aydıncık and from a tributary of the Yeşilirmak River (Duran, 2002a). The 2 valleys are situated in square A5 and are interconnected. Both areas also include limestone rocks that are continuously affected by humidity. The dominant bioclimate in these areas is semi-arid Mediterranean, and mean annual temperature is 13-14 °C and annual precipitation is ca. 430-440 mm (Cansaran & Aydoğdu, 1998; Duran & Hamzaoğlu, 2002; Karaer & Celep, 2007). In conclusion, the synonymy of *S. ekimi* with *S. amasiana* is supported by chorological, geological, climatic, and ecological data.

The total number of *Scorzonera* taxa in Turkey was previously 47 (Chamberlain, 1975; Davis et al., 1988; Güner, 2000; Duran, 2002b; Kilian & Parolly, 2002; Parolly & Kilian, 2003; Duran & Hamzaoğlu, 2004); based on the results of the present study, the number is decreased to 46.

#### Habitat and Ecology

*Scorzonera amasiana* grows in the crevices of limestone rocks affected by humidity at elevations between 360 and 1000 m. It grows in the sun, together with *Teucrium chamaedrys* L. subsp. *syspirensis* (C.Koch) Rech. fil., *Inula anatolica* Boiss., *Draba rigida* Willd. var.



Figure 1. Herbarium specimens of *Scorzonera amasiana* and *S. ekimii*. (a) Topotype of *S. ekimii* (A. Duran 5130 & E. Hamzaoğlu); (b) *S. amasiana* (Y. Bağcı 3695 & M. Dinç).

*rigida*, *Micromeria myrtifolia* Boiss. & Hohen., *Micromeria cristata* (Hampe) Griseb. subsp. *cristata*, *Scrophularia libanotica* Boiss. subsp. *libanotica* var. *pontica* R.Mill., *Melica ciliata* L. subsp. *ciliata*, *Rhamnus petiolaris* Boiss., *Cotoneaster nummularia* Fisch. & Mey., *Pistacia terebinthus* Mill. subsp. *palaestina* (Boiss.) Engl., *Arabis caucasica* Willd. subsp. *caucasica*, *Sedum album* L., *Pterocephalus plumosus* (L.) Coulter, *Salvia aethiopsis* L., and *Phleum exaratum* Hochst. ex Griseb. subsp. *exaratum*, according to the present study's observations.

#### Chorology and Conservation Status

*Scorzonera amasiana* was assessed for the first time as critically endangered (CR), based on only its type locality in Turkey (Ekim et al., 2000). Later, it was discovered at 3 other locations (Kırklar, Enderun Mountain, and the vicinity of Kızılca village) in Yeşilirmak Valley near Amasya Province, and was placed in the endangered (EN) category (Karaer & Celep, 2007).

*Scorzonera amasiana* is known from 5 locations in Yeşilirmak Valley near Amasya Province and from 1 location in Kazankaya Valley (Canyon) in Yozgat Province, according to the available distributional data (Figure 2). The distance between the terminal populations shows that the occupancy area of *S. amasiana* exceeds 500 km<sup>2</sup> (criterion B1a); however, as *S. amasiana* is known only from 6 locations, it is estimated that there are other populations between the terminal populations along the valley where favourable ecological conditions prevail. Moreover, the area is rocky and not affected by human activity (criterion D); therefore, *S. amasiana* should be classified as vulnerable (VU) based on IUCN Red List criteria (IUCN, 2001).

#### Specimens Examined

Turkey A5 Amasya: Amasya in rupibus regionis calidae (Mt. Logman), 360-800 m, 18.5.1889 & 26.5.1889, *Bornmüller* 699 (iso. B, photo!); Amasya city centre, Yazı



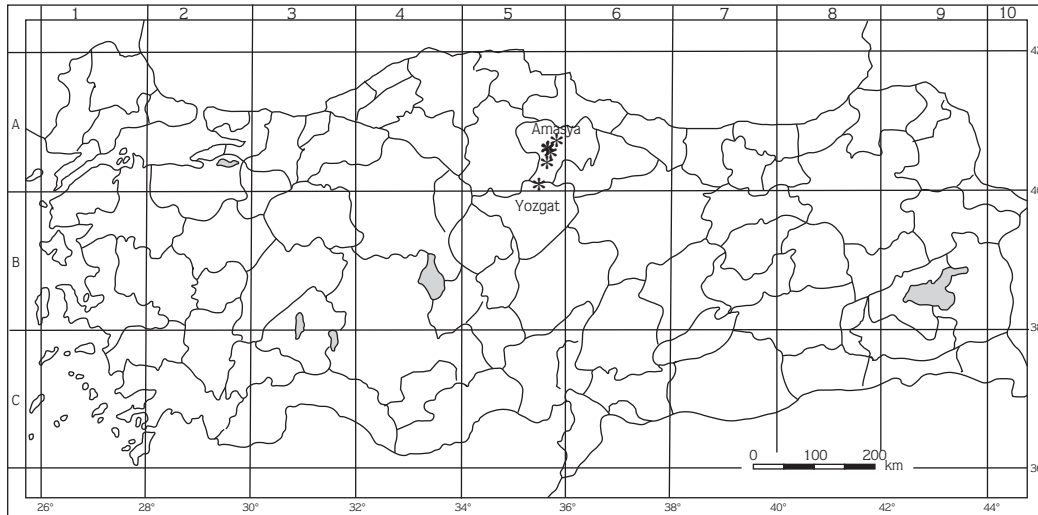


Figure 2. Distribution of *S. amasiana*.

Bağları, rocky slopes, 500 m, 21.06.2007, *Y.Bağcı* 3695 & *M.Dinç* (KNYA); Yozgat: Aydıncık, Kazankaya town, Kazankaya Canyon passes, 750 m, crevices of limestone rocks, 16.07.1999, *A.Duran* 4914 (paratype of *S. ekimii*, S.Ü. Eğt. Fak. Herb.); *ibid.*, 13.05.2000, *A.Duran* 5130 & *E.Hamzaoğlu* (topotype of *S. ekimii*, S.Ü. Eğt. Fak. Herb.).

### Acknowledgements

The specimens used in this study were collected during field trips made for the Revision of the Genus *Johrenia* DC. (Umbelliferae) in Turkey Project, which was supported by the Selçuk University Scientific Research Fund (BAP project no. 06401052). We thank the university for its financial support.

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