

## Rediscovery of *Saponaria syriaca* Boiss. a threatened endemic species in Turkey

Ahmet İLÇİM<sup>1</sup>, Ahmet Zafer TEL<sup>2</sup> and Cihangir UYGUN<sup>3,\*</sup>

1. Mustafa Kemal University, Faculty of Science and Art, Department of Biology, Hatay/Turkey.

2. Adıyaman University Science and Letter Faculty, Department of Biology 02000 Adıyaman/Turkey.

3. Kahramanmaraş Sütçü İmam University Faculty of Science and Art, Department of Biology 4600 Kahramanmaraş/Turkey.

\*Corresponding author, C. Uygun, E-mail: uygunch@gmail.com

Received: 18. May 2016 / Accepted: 16. October 2016 / Available online: 26. November 2016 / Printed: June 2017

**Abstract.** *Saponaria syriaca* Boiss. was described in 1849 from type specimens but not collected again until 2006, when we found it in Derebahçe near Hatay-Belen, Turkey. The population of *S. syriaca* is quite small at that limited location and is vulnerable to human impacts. Therefore, suitable conservation strategies should be developed in order to preserve the species as soon as possible. Here, we discuss its history, morphology, habitat and ecology. Its current conservation status was re-evaluated with respect to last IUCN criterions. Discussions with closely related species are given.

**Key words:** *Saponaria*, endemic, Turkey, Caryophyllaceae, threatened

There are an estimated 270,000 known species of vascular plants, which include ferns, fern allies, gymnosperms (including conifers and cycads), and flowering plants. Of the species assessed, 33,798 species, or at least 12.5 percent of all known vascular plants, are threatened with extinction on a global level. An endemic species is one that is native to or confined to a particular region. Of the species listed in the IUCN Red List, 91 percent are recorded as single-country endemics – meaning that their only known populations exist solely within the boundaries of a single country. This high percentage is partially due to the greater survival risks faced by plants with restricted ranges, compared to risks faced by widely distributed species (Chen, 1998). Besides, TPC (Threatened Plant Committee) The World Conservation Union, WWF (World Wildlife Foundation), OPTIMA (Organization for the Phyto-Taxonomic Investigation of the Mediterranean Area) each country taking some precautions to protect their plant species. The governments are making laws and regulations to conservation of the threatened plant species and besides for important plant areas like as “National Parks” and “Nature Conservation Area” (Ekim *et al.* 2000). But there are some threatened plant species outside of these special regions. Turkey has rather interesting flora. In the country, nearly one in every three plants in Turkey is endemic an astonishingly high percentage for a mainland country. The exceptional diversity in Turkey’s flora is the collective results of extent of a variety of climates, topographical diversity with marked changes in ecological factors over short distances (Celep and Dogan 2007, Davis and Hedge, 1971).

The *Saponaria* L. is one of genus of the Caryophyllaceae family and was represented by 23 taxa (18 species), of which 12 are endemic for Turkey (Davis 1967, Davis *et al.*, 1988). The author collected some *Saponaria* specimens from Belen in Derebahçe 2006. At first glance in the field, one of them looked like *S. viscosa* C.A. Meyer and *S. orientalis* L. After closer examination and consultation with the Flora of Turkey and the East Aegean Islands (Hedge, 1965), it was realised that the specimens were quite different from *Saponaria viscosa* and *S. orientalis*. The specimens were determined as a *S. syriaca* Boiss. The first specimens belonging to *S. syriaca* Boiss. were collected by Boissier from Hatay and published in 1849. Our study indicates that the specimen has not been collected since 1849. It is collected before 1849 by Samuels-



Figure 1. a.) General view; b.) flower of *Saponaria syriaca*.

son, from Belen-Derebahçe and Kırıkhan (Hatay). This is the third collected specimen since from 1849 after 157 years.

The objectives of this paper are to document the rediscovery of *S. syriaca*, to provide its amplified morphological descriptions, distribution and habitat, to report the vegetation where it grows and accurately assess its conservation status.

*Saponaria syriaca* Boiss. Diagn. Ser. 1(8): 73 1849. (Fig. 1 a,b)

Annual herb, stems simple, or dichotomously branched in upper parts, 5.5-12 cm long, cylindrical, grayish green, with a dense mixed indumentum of long (1-1.3 mm long) or short (0.1-0.2 mm long) glandular and short (0.4-0.5 mm) eglandular hairs covering the entire plants. All hairs multicellular. Leaves linear-lanceolate, obtuse at the tip, attenuate or

Table 1. Comparison of the diagnostic characteristics of *Saponaria syriaca* with its allied *S. orientalis* and *S. viscosa*.

Characters	Observation	Flora of Turkey (Davis 1967)	Flora of Syria (Post 1932)	Flora of Turkey (Davis 1967)	Flora of Europaea (Charter 1964)	Flora of Turkey (Davis 1967)
	<i>S. syriaca</i>	<i>S. syriaca</i>	<i>S. syriaca</i>	<i>S. orientalis</i>	<i>S. orientalis</i>	<i>S. viscosa</i>
Leaves	linear-lanceolate	-	oblong, elliptic-linear	oblong-lanceolate	spathulate	linear-lanceolate
Pedicel	shorter than calyx	-	shorter than calyx	as long as rarely shorter than calyx	-	shorter than calyx
capsule	shorter than calyx	shorter than calyx	shorter than calyx	slightly longer than calyx	-	slightly longer than calyx
Calyx (mm)	7-8	9	-	5-8	7-9	9-10
Petal (mm)	9-10	-	-	6-9	-	11

angustatus at the base, with entire margin, 6-18x2-4 mm, lower leaves petiolate, petiole 3-8 mm long, upper leaves sessile, both surface densely black glandular (0.4-0.5 mm long) and eglandular (0.1-0.2 mm long) hairy, midvein evident, Inflorescence dichotomous cyme, sparse, or solitary, 1-5 flowered, pedicels erect, shorter than calyx 1-4.5 mm long, with an indumentum of long (0.5-1 mm long) dark glandular and short (0.1-0.2 mm long) eglandular. Calyx grey, densely covered with long (0.7-1 mm long) and short (0.3-0.4 mm long) dark capitate glandular hairs, narrowly oblong-cylindrical, 7-8 mm, with short acute teeth ca. 2 mm long, Petals rose, 9-10 mm long, oblanceolate, bifid, without coronal scales, capsule oblong, 5-5.5x1.5-1.7 mm, subsessile, shorter than calyx, filaments 8-9 mm long, techa 0.4-0.5 x 0.2 mm, capsule oblong 5-6 mm, shorter than calyx, stylus ± as long as calyx. Seed 8-10.

Flowering time: April

Turkey, C6 Hatay, Belen, Derebahçe, *Pinus brutia* forest, stream side, serpentine soils, 22.iv.2006, 360 m., A. İLÇİM 1625 KSUH.

**Distribution and recommended threat category:** *Saponaria syriaca*, previously known only from two localities since from 1849, was discovered again from Belen Derebahçe village. The area in which *S. syriaca* was discovered is Mediterranean phytogeographical region. This region is situated on the "Anatolian Diagonal" a theoretical line running from the Amanos and Tauros Mountains in southern Turkey to the northeast. This line is considered one of the most important centers of endemism and a hotspot of biodiversity. *S. syriaca* is known from one locality with an area of occupancy estimated to be less 10 km<sup>2</sup> so that it should be classified as "Critically Endangered" (CR) (IUCN, 2001).

**Habitat and ecology:** *Saponaria syriaca* grows on serpentine soils. Serpentine areas have many features in common. In almost cases they: are sterile and unproductive either as farm lands or timber lands possess unusual floras, characterized by narrowly endemic species (Whittaker, 1954). The specimens of *S. syriaca* were collected from 360 m altitude. Other species growing in the same area are *Pinus brutia* Ten., *Eucalyptus camaldulensis* Dehnh, *Nerium oleander* L., *Cistus creticus* L., *Myrtus communis* L., *Iris masia* Stap ex Foster.

**Conservation:** The population of *S. syriaca* is quite small at that limited area and is vulnerable to human impacts. The distribution area is affected by anthropic habitat degradation by recreational activities. Therefore, it is necessary to take steps to conserve the habitat as soon as possible, this species may extinct near future time.

*Saponaria syriaca* is closely related to *S. orientalis*, which is widespread in Turkey, Greece, Caucasia, Iran and Syria and also related to *S. viscosa* which is spread in Turkey and Azerbaijan. *S. syriaca* clearly different from *S. orientalis* with having shorter pedicels from calyx and different from *S. viscosa* in having ± loose inflorescence and having shorter capsule from calyx. Our results were compared with Flora of Turkey (Hedge, 1966), Flora of Syria Palestina and Sinai (Post 1932) and Flora Europaea (Chater, 1964). Detailed comparisons of the *S. syriaca* with relevant species are given at Table 1.

#### References

- Boissier, E. (1849): Diagnoses plantarum orientaliarum novarum. Geneva 18: 73.  
 Celep, F., Dogan, M. (2007): Conservation Priority of the Threatened Plants in the Lower-Tersakan Valley (A5) (Amasya-Turkey) and Its Floristic Diversity, American-Eurasian Journal of Agricultural & Environmental Sciences 2(4): 430-436.  
 Chater, A.O. (1964): *Saponaria* L. pp.184-186. In: Tutin, T.G. (ed.), Flora Europaea vol.1. Cambridge University Press.  
 Chen, P. (1998): International Conservation Newsletter 6(3): 1-8.  
 Davis, P.H. (ed.) (1967): Flora of Turkey and the East Aegean Islands. Vol. 2. Edinburgh University Press, Edinburgh.  
 Davis, P.H., Hedge, I.C. (1971): Distribution patterns in Anatolia with particular reference to endemism. pp. 15-27. In: Plant life of South-West Asia.  
 Davis, P.H., Mill, R.R., Tan, K. (eds) (1988): Flora of Turkey and the East Aegean Islands. Vol.10. Edinburgh University Press, Edinburgh.  
 Ekim, T., Koyuncu, M., Vural, M., Duman, H., Aytaç, Z., Adıgüzel, N. (2000): Türkiye Bitkileri Kırmızı Kitabı, Ankara. Türkiye Tabiatını Koruma Derneği & Yüzüncüyıl Üniversitesi.  
 Hedge, I.C. (1965): *Saponaria* L. pp.138-147. In: Davis, P.H. (ed.), Flora of Turkey and the East Aegean Islands. Vol 2. Edinburgh University Press, Edinburgh.  
 Post, G.E. (1932): Flora of Syria, Palestine, and Sinai. Beirut, Lebanon.  
 Whittaker, R.H. (1954): The Ecology of Serpentine Soils. Ecology 35(2): 258-288.