Ann. Bot. Fennici 39: 153–158 ISSN 0003-3847
Helsinki 24 June 2002

Two new taxa of *Silene* (Caryophyllaceae) from Turkey

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Received 28 July 2001, accepted 12 October 2001

Vural, M. & Dönmez, A. A. 2002: Two new taxa of *Silene* (Caryophyllaceae) from Turkey. — *Ann. Bot. Fennici* 39: 153–158.

Silene koycegizensis Dönmez & Vural *sp. nova* and *S. cariensis* Boiss. subsp. *muglae* Vural & Dönmez *subsp. nova* (sect. *Behenantha* Othh.) are described from Turkey. Diagnostic characters, description, detailed illustrations and taxonomic comments on the taxa are given. Their relationships with the allied species *S. cretica* L., *S. tenuiflora* Guss. and *S. cariensis* are discussed. Geographic distributions of the new taxa and other related species are shown on maps.

Key words: Caryophyllaceae, *Silene*, taxonomy

Introduction

Silene L. is the largest genus of the Caryophyllaceae and comprises ca. 700 species (Judd *et al.* 1999), many of which are distributed in the Mediterranean region. Coode and Cullen (1967) cited 119 species for Turkey but after the revision of the Turkish species, twelve new species were described and included in the supplement of the Flora of Turkey (Davis & Tan 1988). Thus the total number of Turkish species of *Silene* is currently 131.

The specimens reported here were collected during a study of the flora and vegetation of the Specially Protected Area in Köyceğiz and Dalyan in the Muğla province in SW Turkey. They were first identified as *S. cretica* L. and *S. cariensis* Boiss. respectively. However, some differences from the descriptions given in Coode and Cullen (1967) were noted on the herbarium sheets. After detailed study of the specimens we concluded that the taxa are in fact new to science. One of them is described as a new species and the other as a new subspecies of *S. cretica*.

It should also be noted that the descriptions in Coode and Cullen (1967) are more or less deficient, but Greuter (1997) gives more de-

Fig. 1. *Silene koycegizensis* (A. Güner 9535). — **a**: Habit. — **b**: Flower (partly dissected).

tailed specific descriptions for *Silene*. The detailed description of *S. cretica* in Greuter's work was very useful in order to understand the morphology.

Silene koycegizensis Dönmez & Vural, *sp. nova* (Figs. 1 and 2).

Affinis S. creticae L., sed ramis flore alari salt-

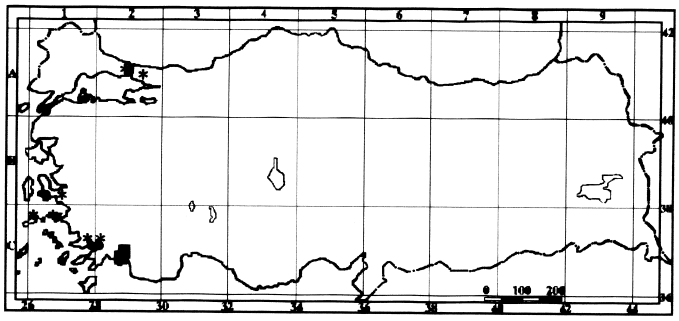

Fig. 2. Distribution of *Silene koycegizensis* (■), *S. cretica* (✻) and *S. tenuifolia* (●) in Turkey.

em duplo longioribus, calyce diaphano et ampullaceo, anthophoro breviore et villoso differt.

TYPE: Turkey. C2 Muğla: Köyceğiz, Çandır village, Horozlar district, 20 m, fallow field, 19.VI.1991 *A. Güner 9535*, *M. Vural, H. Duman, A. A. Dönmez & H. Şağban* (holotype HUB, isotype GAZI!). Paratypes: Turkey. C2 Muğla: Köyceğiz, between Hamitköy and Kersele bay, 80–130 m, macchia, serpentine, 18.V.1992 *A. Güner 10553*, *M. Vural, H. Duman, N. Adıgüzel & H. Şağban* (HUB); C2 Muğla: Marmaris National Park, Nimara Island, macchia, 100 m, 11.V.1997 *H. Şağban 1616* (HUB).

Annual herb. Stems slender, erect, 50–70 cm long, simple or branched at base, lower and middle parts retrorsely pilose-hairy, upper parts glabrous but internodes viscide. Basal leaves spathulate, cauline leaves similar to lower leaves but smaller, upper cauline leaves sessile, linear, grading into leaf-like linear-subulate 1-veined bracts. Inflorescence a dichasium, pedicel/intermode ratio two or more. Pedicels slender, erect, 5–10 mm long. Calyx short, oblanceolate, slightly green in anthesis, ampullate; narrow along the anthophore, abruptly widened in calyx, membranaceous, 10–12 mm, veins joined by weak reticulations, teeth triangular, 1 mm long, ciliate at margins. Petals 10–12 mm long, claw equaling calyx, limb bipartite, pinkish, with oblong entire lobes, coronal scales ca. 1–2 mm, lanceolate. Stamens 6–8 mm, anthers 1 mm, slightly protruding from calyx. Anthophore 4–5(–6) mm, retrorsely long-pilose. Capsule 4–6 × 4–6 mm, included in calyx. Seeds 1–1.2 mm, brown, slightly papillate.

DISTRIBUTION: Endemic, Mediterranean element. IUCN category CR (IUCN 1994).

Ramification of *Silene koycegizensis* is variable. Those specimens branched at base have an appearance of a biennial. However, there are no remnants of previous year's leaves or any other characters of biennials.

The ratio of the pedicel lenght of alar flowers to the internode was used as a diagnostic feature in description of *S. cretica* by Greuter (1997). It is a useful diagnostic character also between *S. koycegizensis* and the related taxa (Table 1).

The membranaceous calyx of *S. koycegizensis* is an interesting feature and similar to *S. alba* L. (Sect. *Elisanthe*); in both species, the ovary is visible from outside due to the membranaceous calyx in anthesis. However, *S. koycegizensis* differs from *S. alba* by other characters. *Silene koycegizensis* is tentatively placed in the sec-

Table 1. Diagnostic characters of *Silene koycegizensis*, *S. cretica* and *S. tenuiflora*.

Character	*S. koycegizensis*	*S. cretica*	*S. tenuiflora*
Pedicel/internode ratio	2 or more	nearly equal	nearly equal
Texture of calyx	membranaceous	leafy	leafy
Petal limb	1.5–2 mm wide	2.5–3.5 mm wide	to 6 × 3 mm
Anthophore	5–6 mm	1.5–3 mm	(2.5–)3–4 mm
Indumentum of anthophore	villose	glabrous	glabrous

Fig. 3. *Silene cariensis* subsp. *muglae* (A. Güner 10553). — **a**: Habit. — **b**: Flower (partly dissected). — **c**: Petal. — **d**: Seed (lateral and dorsal view).

tion *Behenantha*, because it resembles *S. cretica*. However, the former is a distinct species in the section because of its calyx texture and its sectional placement probably needs further elaboration.

Silene tenuiflora is a close relative of *S. cretica* and some authors treat them as a single species (Pignati 1982) or recognize the former as a subspecies of the latter. The anthophore length of *S. koycegizensis* is closer to *S. tenuiflora* than *S. cretica*, while the width of petal limb is closer to *S. cretica*. *Silene koycegizensis* seems to be more closely related to *S. cretica* than to *S. tenuiflora* (Table 1).

Near the type locality *Silene koycegizensis* is distributed in an area ca. 20 km across and it is not abundant there. There is also a collection from Marmaris, ca. 70 km away.

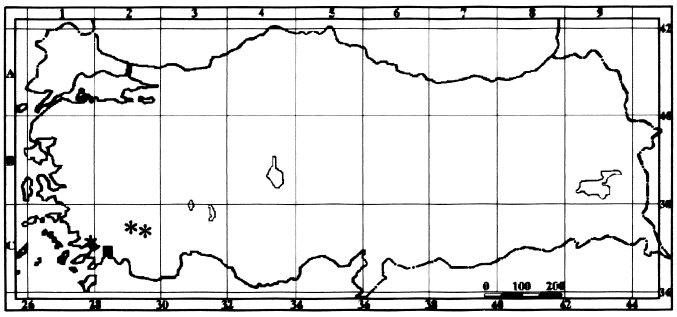

Fig. 4. Distribution of *Silene cariensis* subsp. *muglae* (■) and *S. cariensis* (✻) in Turkey.

Silene cariensis Boiss. subsp. ***muglae*** Vural & Dönmez, *subsp. nova* (Figs. 3 and 4).

Affinis S. cariensi Boiss. sed anthophoro longiore differt.

Type: Turkey. C2 Muğla: Köyceğiz, Sultaniye, Kersele stream, 15–30 m, in stream bed, metamorphic, 21.V.1991 *A. Güner 9178*, *M. Vural & H. Şağban* (holotype HUB, isotype GAZI!). Paratype: Turkey. C2 Muğla: Köyceğiz, between Hamitköy, Domuzdireği hill and Kersele bay, 80–130 m, macchia, serpentine, 18.V.1992 *A. Güner 10553*, *M. Vural, H. Duman, N. Adıgüzel & H. Şağban* (HUB).

Annual herb. Stems 40–50 cm, slender, erect, simple or branched at base, monochasial, lower parts retrorsely pilose-hairy, upper parts glabrous but internodes viscide. Basal leaves 12–15 mm long, narrowly spathulate, few, cauline and upper leaves linear, grading into leaf-like, linear, subulate, 1-veined bracts. Inflorescence a monochasium. Pedicels (20–)30–40(–50) mm long, erect. Calyx (18–)20–25 mm long, narrowly tubular, widened on capsules, 10-veined, veins not joined by reticulations, rarely joined in capsule, upper part with few anastomous veins, teeth triangular to lanceolate, 2 mm, scarious at margin, glabrous. Petals 15–16 mm, claw equal to limb, 7–8 mm, ciliate at margins, obovate in outline, cuneate at base, divided at upper 1/3, pink, with oblong entire lobes, coronal scales two pairs, 3 mm, subulate to narrowly lanceolate, entire. Stamens 26–27 mm, anthers 0.6–0.7 mm, slightly protruding from calyx. Anthophore (12–)14–15(–16) mm, glabrous. Capsule 8–10 × 3–3.5 mm, included in calyx. Seeds 1.2 × 1 mm, laterally flat, brown, slightly papillate.

DISTRIBUTION: Endemic, Mediterranean element. IUCN category CR

Silene cariensis subsp. *muglae* is described as a new subspecies based on its shorter calyx and anthophore (Table 2). There is also an ecological and geographical isolation between the subspecies of *S. cariensis*: *S. cariensis* subsp. *cariensis* grows at 650–1100 m, but *S. cariensis* subsp. *muglae* thrives at 15–130 m.

The distribution area of the *Silene cariensis* subsp. *muglae* covers nearly 30 km^2. The specimens come from two localities. Due to tourism and other environmental causes the CR category of IUCN is proposed for the taxon (IUCN 1994).

SPECIMENS EXAMINED of *S. cariensis* subsp. *cariensis*. — **Turkey.** C2 Burdur: Yeşilova-Denizli 4 miles from Yeşilova by Salda Lake, 1100 m, wet rocks by shore of Lake, 1962 *Davis 35319*, *Dudley* (E). C2 Denizli: Kızılhisar-Yeşilova, 72 km from Denizli, 2 km before Sırçalık, *Quercus coccifera* maquis, 1030 m, 16.VI.1954 *H. Demiriz 1877* (E). C1 Muğla: Muğla to Kale, 35 km from Muğla, 650 m, by edge of dried-up stream, 27.V.1962 *Davis 35047*, *Dudley* (E). Muğla to Kale, 35 km from Muğla, 850–870 m, steepest descend serpentine outcrop, 28.V.1962 *Davis 35129, Dudley* (E).

Table 2. Diagnostic characters of *Silene cariensis* subsp. *muglae* and *S. cariensis* subsp. *cariensis*.

Character	*S. cariensis* subsp. *muglae*	*S. cariensis* subsp. *cariensis*
Anthophore	15 mm	8–11 mm
Calyx	22–27 mm	15–22 mm

Acknowledgements

The authors thank *Deutsche Gesellschaft für Technische Zusammenarbeit* (GTZ) and *The Authority for the Protection of Special Areas* (APSA) of Turkey for their joint financial support (project no: 89.2112.4–03.100). We also thank Dr. R. R. Mill for improving the Latin diagnosis and Dr. Hayri Duman for checking the specimens of *S. cariensis* subsp. *muglae* at K and E. We are thankful to Gülnur Ekşi for the illustrations.

References

Coode, M. J. E & Cullen J. 1967: *Silene* L. — In: Davis, P. H. (ed.), *Flora of Turkey and The East Aegean Islands* 2: 231–232. Edinburgh University Press, Scotland.

Greuter, W. 1997: *Silene* L. — In: Strid, A. & Tan, K. (eds.), *Flora Hellenica* 1: 303—305. Koeltz Sci. Books, Königstein.

Güner, A., Vural, M., Duman, H., Dönmez, A. A. & Şağban, H. 1996: The flora of the Köyceğiz-Dalyan Specially Protected Area (Muğla-Turkey). — *Turkish J. Bot.* 20: 329–371.

IUCN Species Survival Commission 1994: *IUCN Red List Categories, approved by the 40th meeting of the IUCN Council*. — Gland, Switzerland, 21 pp.

Judd, W.S., Campbell, C. S., Kellogg, E. A. & Stevens, P. F. 1999: *Plant systematics. A phylogenetic approach*. — Sinauer, Massachusetts. 464 pp.

Pignatti, S. (ed.) 1982: *Flora d'Italia*. Edagricole. 1: 238–258. Edagricole, Bologna, Italy, 790 pp.