

## *Silene aydosensis* (Caryophyllaceae), a new species from Anatolia, Turkey

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*Silene aydosensis* K. Yıldız & S. Erik *sp. nova* (Caryophyllaceae, *S.* sect. *Sclerocalycinae*) is described and illustrated from S and SW Anatolia, Turkey. Diagnostic morphological characters for distinction from the similar *S. caramanica* and *S. doganii* are given. Distribution of the new and the morphologically similar species are mapped. Ultrastructure of seed and pollen grains of *S. aydosensis* was examined by SEM.

Key words: Caryophyllaceae, new species, *Silene*, taxonomy

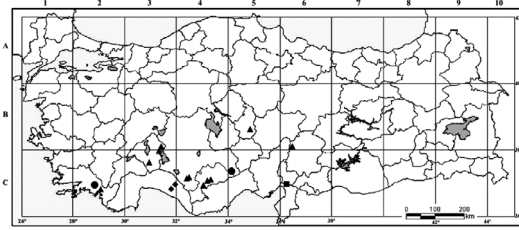
*Silene* is one of the largest genera of flowering plants in the world, consisting of ca. 750 species, with the majority of them distributed in the Mediterranean region (Greuter 1995). Since 1967, 29 new taxa have been described from Turkey. Thus, the total number of *Silene* taxa in Turkey is 164 and the endemism percentage is approximately 48% (Coode & Cullen 1967, Davis *et al.* 1988, Aytaç 1998, Güner *et al.* 2000, Vural & Dönmez 2002, Duran & Menemen 2003, Aytaç & Duman 2004, Deniz & Düşen 2004, Özgökçe *et al.* 2005, Genç *et al.* 2007, Bağcı *et al.* 2007, Bağcı 2008, Tugay & Ertuğrul 2008, Aksoy *et al.* 2008, Yıldız & Dadandı 2009, Kandemir *et al.* 2009, Aksoy *et al.* 2009).

The specimens reported here were collected from the Aydos mountain, Aktoprak (C5 Konya, Ereğli) in 1978 by S. Erik (stored at HUB) and between Köyceğiz and Ağla (C2 Muğla) villages in 1992 by A. Güner, M. Vural, A. Dönmez and

H. Şağban (stored at ANK). These two specimens were provisionally identified as *S. caramanica*.

The specimens were compared with *S. caramanica* (var. *caramanica*, var. *ilarslanii*) and *S. doganii* stored at EGE, ISTE, MUFU, ADO, GAZI, ANK and HUB, and with descriptions in different floras (Chowdhuri 1957, Hegi 1959–1979, Chater & Walters 1964, Zohary 1966, Hayek 1970, Meikle 1977, Melzheimer 1988, Greuter 1997).

After morphological research, consulting the relevant literature and checking the numerous herbarium specimens, it was concluded that the Aydos and Sandras mountain specimens represent a species new to science, belonging in *Silene* sect. *Sclerocalycinae*. The section includes 17 taxa distributed in Anatolia, reaching disjunctly from central Europe to Russia, central Iran and north Iraq.



**Fig 1.** Distribution map of *Silene aydosensis* (●), *S. caramanica* var. *caramanica* (▲), *S. caramanica* var. *ilarslanii* (◆) and *S. doganii* (■).

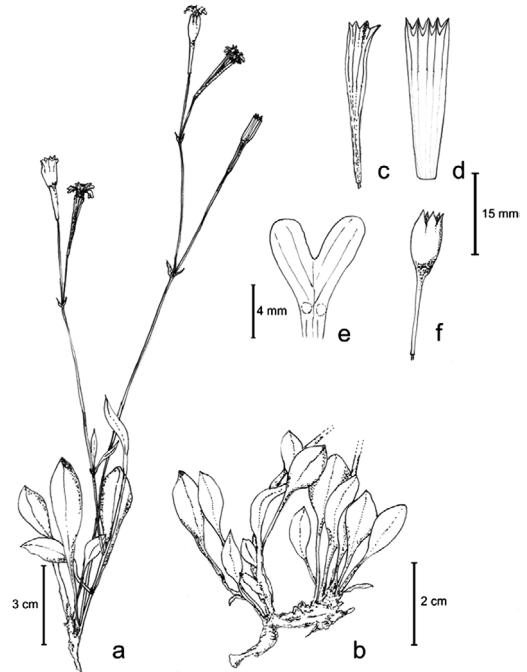
***Silene aydosensis*** K. Yıldız & S. Erik, *sp. nova* (Figs. 1–4)

*Species nova S. doganii et S. caramanicæ proxima, a quibus imprimis differt tuberculis paracorollae brevioribus et foliis basaliis spatulatis. Differt praeterea a S. doganii foliis caulinis linearibus et gynophoro evidenter longiore (15–20 cm); a S. caramanica gynophoro aliquantum longiore.*

**HOLOTYPE:** Turkey. C5 Konya, Ereğli, Aydos mountain, Aktoprak, damaged *Quercus*, *Pinus* forest, 1700 m, 28.VIII.1973 *S. Erik* 2614 (HUB 3630). — **PARATYPE:** Turkey. C2 Muğla, between Köyceğiz and Ağla villages, 1400 m, 3.IX.1992 *A. Güner* 10890 (ANK).

**ETYMOLOGY:** The epithet *aydosensis* refers to the Aydos mountain, a part of Bolkar range.

**PERENNIALS.** Stem erect, upper glabrous, below hairy or glabrous, 18–30 cm. Basal leaves spatulate, 28–65 × 7–20 mm, glabrous. Cauline leaves 5–25 × 0.5–3 mm, linear. Inflorescence racemose, frequently 2–3 flowered, sometimes solitary. Pedicel erect, 20–67 mm. Calyx tubular, glabrous, 25–32 mm, inflated in fruit, 10 veined, veins prominent thick reddish, with 5 long teeth, teeth margins hyaline. Petals 5, glabrous, cream-coloured, not auriculate, petal limb bipartite to

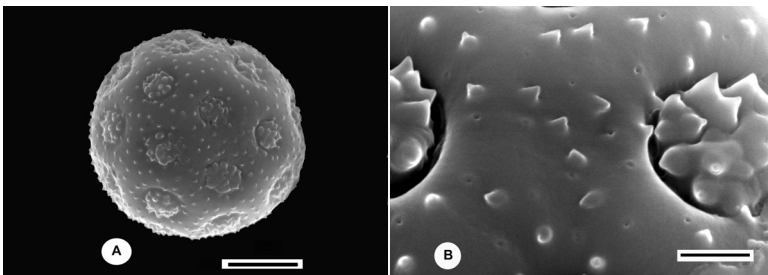


**Fig. 2.** *Silene aydosensis* (from the holotype). — **a:** Habit. — **b:** Basal leaves. — **c:** Calyx (in flower). — **d:** Calyx (opened). — **e:** Petal. — **f:** Capsule. — Scales: **a** = 3 cm, **b** = 2 cm, **c, d, f** = 15 mm, **e** = 4 mm.

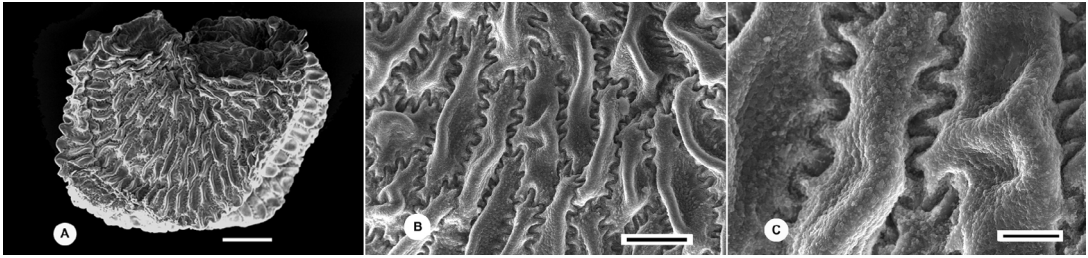
middle into oblong lobes, not coronal scales, two small bulges present, exerted from calyx. Stamens 10, filament glabrous. Styles 3. Gynophore glabrous, 15–20 mm. Capsule 10–12 × 6–7 mm, ovoid, included in or exerted from calyx. Seeds reniform, surface flat-concave, back concave, surface granulation medium, hylar zone type recessed, suture outline sinuate-serrate. Pollen grains spheroidal, microechinate-microperforate, eutectate porate. Flowering in July–August.

**HABITAT:** Disturbed *Quercus*, *Pinus* forest, serpentine area, 1400–1700 m.

*Silene aydosensis* is restricted to the Aydos



**Fig. 3.** SEM micrographs of pollen morphology in *Silene aydosensis* (from the holotype). — **A:** General appearance. — **B:** Pore and ornamentation. Scales: **A** = 10 μm, **B** = 2 μm.



**Fig. 4.** SEM micrographs of seed morphology in *Silene aydosensis* (from the holotype). — **A:** General appearance. — **B:** Plates (testa cells). — **C:** Surface granulation and suture outline. — Scales: **A** = 200  $\mu\text{m}$ , **B** = 60  $\mu\text{m}$ , **C** = 20  $\mu\text{m}$ .

and Köyceğiz-Ağla (Sandras mountain), S and SW Anatolia (C5 Konya and C2 Muğla, and it represents the Mediterranean mountain element. Aydos mountain is located in the middle of Toros (Taurus) mountain range, which belongs to the Mediterranean phytogeographical region. The distribution of *S. aydosensis*, *S. caramanica* var. *caramanica* and *S. caramanica* var. *ilarslanii* based on literature and herbarium sources is shown in Fig. 1.

Morphologically *S. aydosensis* resembles *S. caramanica* and *S. doganii*, but it can be distinguished by the following key and several other characters (Table 1).

#### Key to *S. aydosensis* and related taxa:

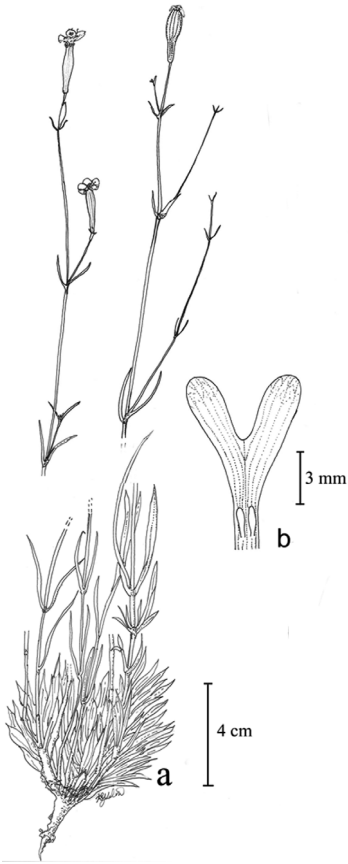
1. Coronal scales missing (only 2 small bulges); basal leaves spatulate; gynophore 15–20 mm long ..... *S. aydosensis*

1. Distinct coronal scales present; basal leaves linear to lanceolate or oblanceolate; gynophore 7–17 mm long ..... 2
2. Cauline leaves, lower narrowly oblanceolate to linear, upper lanceolate to subulate ..... *S. doganii*
2. Cauline leaves not as above ..... 3
3. Basal leaves more than 5 mm wide ..... *S. caramanica* var. *ilarslanii*
3. Basal leaves to 5 mm wide ..... *S. caramanica* var. *caramanica*

**SPECIMENS EXAMINED:** — *Silene caramanica* var. *caramanica*. **Turkey.** C4 Konya, in vineis prope Bounarpatschi inter Karaman et Ermenek Isauriae, 1846, *Heldreich* (holotype G, photo); B3 İsparta, *B. Mutlu 723* (HUB); İsparta, *B. Mutlu 1071* (HUB); B5 Nevşehir, *K. Yıldız & M.Y. Dadandı* (MUFE 12005, 12008); B6 Kahramanmaraş, *K. Yıldız & M.Y. Dadandı* (MUFE 12035); Kahramanmaraş, *Z. Aytaç 5332 & H. Duman* (GAZİ); C2 Muğla, 1968, *P. Quézel et al.* (ANK); C3 İsparta, *N. & E. Özhatay, E. Tuzlacı* (ISTE 45119); İsparta, *H. Özçelik 7506* (GAZİ); C4 Karaman, *K. Yıldız & M.Y. Dadandı* (MUFE 12321); Karaman, *A. Çirpıcı, K. Yıldız & M.Y. Dadandı* (MUFE 12392); Karaman, *M.Y. Dadandı* (MUFE 12435); Konya, *K. Yıldız & M.Y. Dadandı*

**Table 1.** Morphological comparison of *Silene aydosensis* and the similar taxa (Figs. 2, 5–7).

	<i>S. aydosensis</i>	<i>S. caramanica</i> var. <i>caramanica</i>	<i>S. caramanica</i> var. <i>ilarslanii</i>	<i>S. doganii</i>
Stem	18–30 cm	30–50 cm	30–50 cm	30–60 cm
Basal leaves	28–65 × 7–20 mm, spatulate	20–67 × 1–4 mm, linear to lanceolate	20–50 × 5–10 mm, oblanceolate to lanceolate	10–15 × 4–6 mm ± fleshy, oblanceolate
Cauline leaves	0.5–3 mm wide, linear	1–5 mm, linear to lanceolate	like basal leaves	0.6–3 mm, below narrowly oblanceolate to linear, upper lanceolate to subulate
Inflorescence	racemose, 2–3 flowered., sometimes solitary	racemose and reduced terminal flower	solitary	racemose to reduced terminal flower
Calyx	25–32 mm	22–35 mm	25–30 mm	22–27 mm
Petal	no coronal scales, two bulges present	two coronal scales present	two coronal scales present	two coronal scales present
Gynophore	15–20 mm, glabrous	7–17 mm, glabrous	7–15 mm, slightly puberulent	8–11 mm, glabrous

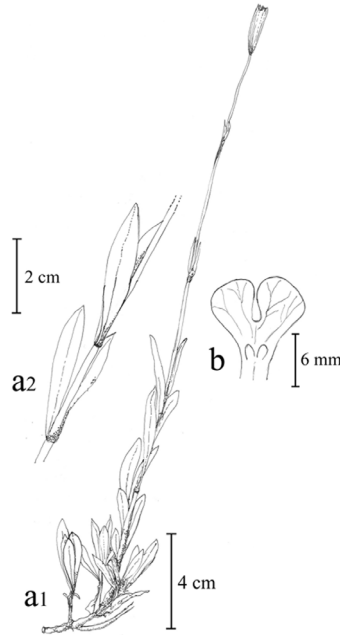


**Fig. 5.** *Silene caramanica* var. *caramanica* (MUFE 12069). — **a:** Habit. — **b:** Petal.

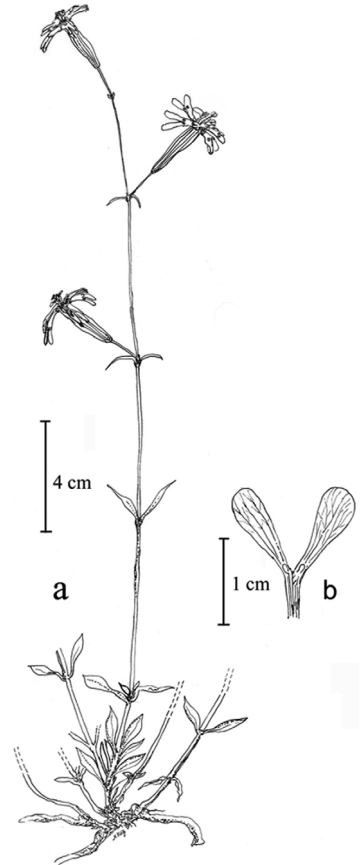
(MUFE 12069); Konya, *M. Serin 903* (MUFE); Konya, *K. Yıldız & M.Y. Dadandı* (MUFE 12068). — *Silene caramanica* var. *ilarslanii*. **Turkey.** C3 Antalya: Gündoğmuş, Geyik mountain, steppe, 2300–2500 m, *R. İlarslan 3916* (holotype GAZI, isotype GAZI); C3 Antalya, *Duran 2888* (GAZI); Antalya, *Duran 4090* (GAZI). — *Silene doganii*. **Turkey.** C6 Osmaniye: Amanos mountain, Zorkun plateau, Keldazi hill, 1750 m, 36°58'95"N, 36°24'22"E, 5.VII.2001 A. *Duran 5759* & *Y. Menemen* (holotype ADO; isotypes ANK, GAZI!, HUB!). C6 Osmaniye, *K. Yıldız & M.Y. Dadandı* (MUFE 12307); Osmaniye, *K. Yıldız & M.Y. Dadandı* (MUFE 12378).

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**Fig. 6.** *Silene caramanica* var. *ilarslanii* (Duran 2888, GAZI). — **a1:** Habit. — **a2:** Cauline leaf position. — **b:** Petal.



**Fig. 7.** *Silene doganii* (MUFE 12307). — **a:** Habit. — **b:** Petal.

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