

## *Gypsophila osmangaziensis* (Caryophyllaceae), a new species from Central Anatolia, Turkey

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*Gypsophila osmangaziensis* E. Ataşlar & A. Ocak *sp. nova* (Caryophyllaceae) from Central Anatolia, Turkey is described and illustrated. It belongs in sect. *Capituliformes* and is endemic to Turkey. Diagnostic and morphological characteristics, as well as a full description and a detailed illustration are provided. Its seed ultrastructure was examined by means of SEM. The new species is compared with *G. leucochlaena* Hub.-Mor.

Key words: Caryophyllaceae, *Gypsophila*, taxonomy

*Gypsophila* is a predominantly Eurasian genus. It is not just among the largest genera of the subfamily Silenoideae, but also one of the most polymorphic ones. It occurs in the north-temperate part of the old world, mainly between the latitudes of 30° and 60°. Most *Gypsophila* species are concentrated in quite a small part of the geographic area of distribution. This part of the area, which may rightly be called the main variation centre of the genus, includes Turkey, Caucasia, northern Iraq and northern Iran. Of the 126 *Gypsophila* species, 75 are represented in this region, and 49 of them are endemic there. Each of the three subgenera and all eight sections of the genus are represented in this centre of diversity (Barkoudah 1962).

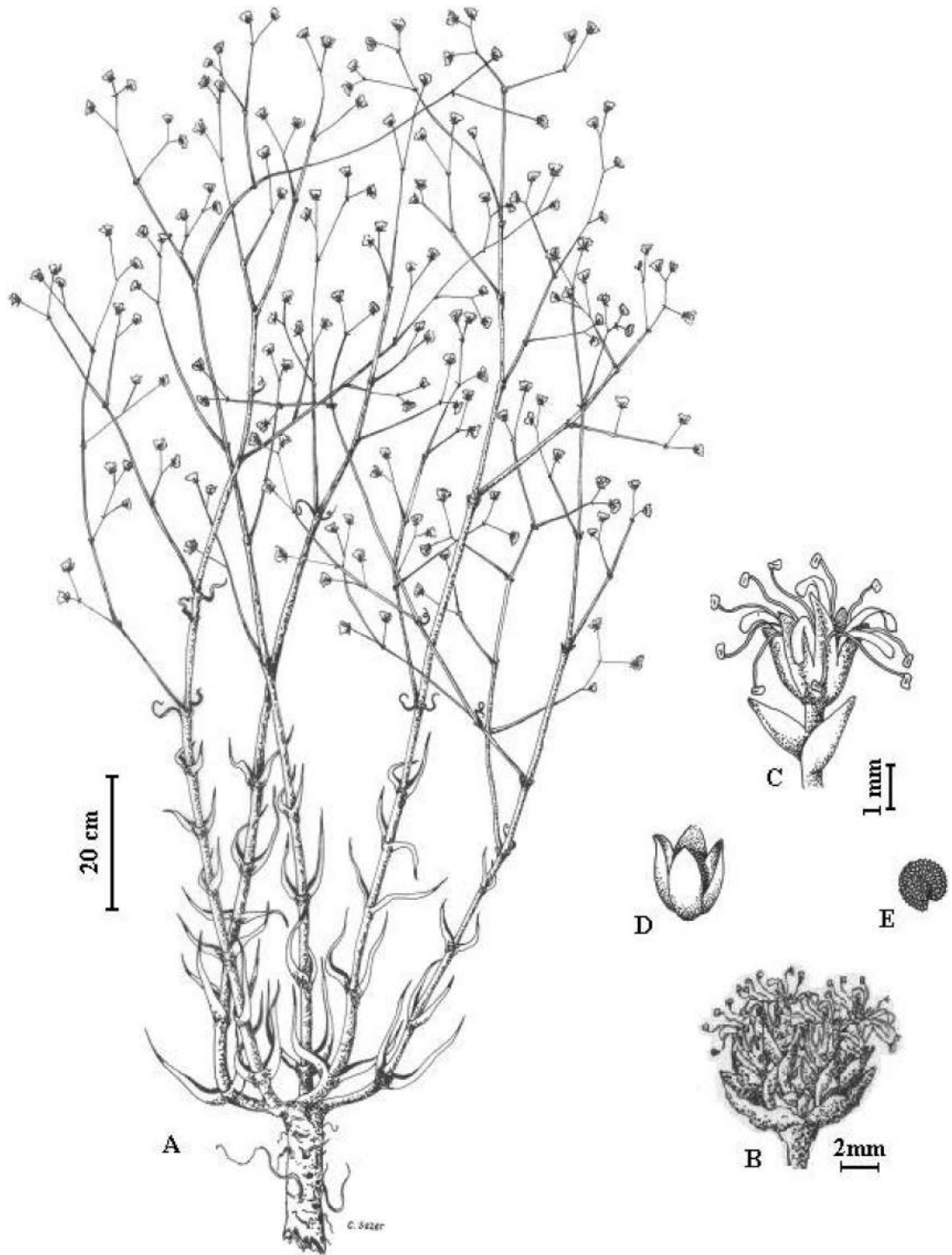
In Turkey, *Gypsophila* has 54 species in ten sections (Huber-Morath 1967, Davis *et al.* 1988, Ataşlar 2000). *Gypsophila* sect. *Capituliformes* has five species in Turkey. The section includes perennial species with very narrow leaves and

with flowers in dense, globose clusters. The new species described here belongs in the section *Capituliformes* and raises the number of *Gypsophila* species in Turkey to 55.

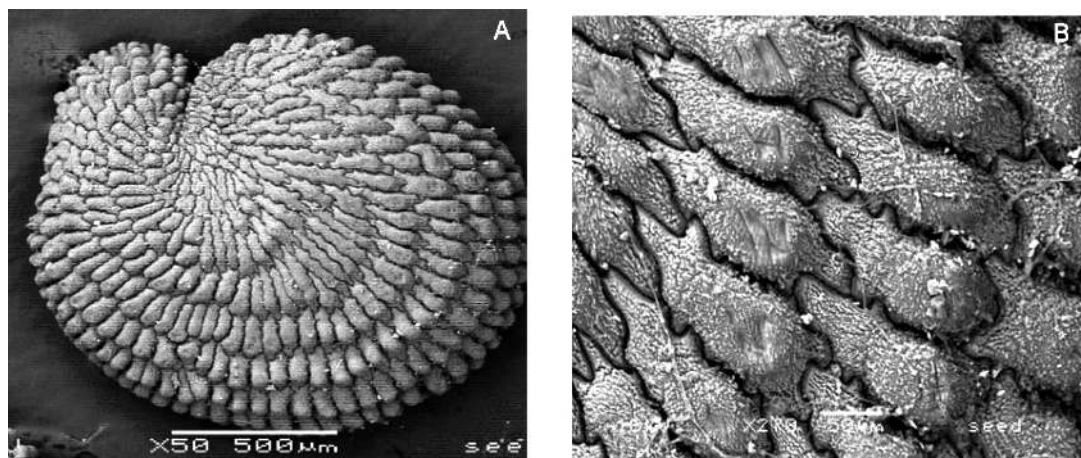
### ***Gypsophila osmangaziensis* E. Ataşlar & A. Ocak, *sp. nova* (Figs. 1 and 2)**

*Affinis* *G. leucochlaena* Hub.-Mor. *sed caulibus ascendentibus, numerosus, minutus glandulosus, 100–180 cm longa, folia 10–140(–160) × 0.5–5 mm longa, inflorescentia 3–10 mm longa, pedunculus 4–42 mm longus. Bractee deltatae, acuminatae, calyx fissus 1/2, acuminatus dentatus, petala 3–(3.5) mm longa, oblongi-spathulata, semina 2 in capsula.*

HOLOTYPE: Turkey. B3 Eskişehir: Osmangazi University Meşelik Campus area, 810 m, steppe, open rocky places, 28.VIII. 2002 E. Ataşlar & A. Ocak (OUFE 9567).



**Fig. 1.** *Gypsophila osmangaziensis* (from holotype). — **A:** Habit. — **B:** Cluster. — **C:** Flower. — **D:** Capsule. — **E:** Seed. Scale bars: 20 cm for **A**, 2 mm for **B**, 1 mm for **C–E**.



**Fig. 2.** Scanning electron micrographs of *Gypsophila osmangaziensis* seed. — **A:** General view of seed. — **B:** Close-up of seed surface.

Perennial, with a woody rhizome,  $\pm$  glaucous. Stems numerous, with a thick stock and ascending-erect, 100–180 cm, 6–10 mm diam., glabrous below, branches of inflorescence minutely glandular-hairy above nodes. Leaves fleshy, glabrous, linear with prominent nerves, triquetrous, 10–140(–160)  $\times$  0.5–5 mm, acute, spiny. Inflorescence globose cluster, 3–10 mm diam., (6–)10–16(–20) flowered; peduncles 4–42 mm. Bracts deltate, acuminate, scarious with a brownish midrib, entire to minutely undulate, scabrid, 2–4 mm. Inner bracts deltoid to oblong acuminate. Pedicels 0.8–1.1(–1.5) mm. Calyx campanulate-turbinate, cleft to 1/2 into acuminate teeth with scarious margins, scabrid, 2–2.5 mm. Petals white, oblong-spathulate, obtuse, 3–3.5 mm. Capsule globose. Seeds 2 in each capsule, tubercles obtuse, ca. 1.5  $\times$  2 mm. Flowering August.

**SEED MORPHOLOGY** (Fig. 2): A detailed examination of the seed ultra-structure morphological features of *G. osmangaziensis* was carried out by scanning electron microscopy (Jeol 5600 LV). The seeds were dull dark-brown or dull black in colour. They were reniform and with a prominent hilum. The seed surface has obtuse tubercles and the cell walls of testa were undulated.

The ultra-structure of the seeds of *Gypsophila* has been little studied. Fedotova and Ardjanova (1992) and Kovtonyuk (1994) studied seed morphologies and seed surfaces of some species

of *Gypsophila*. The seed ultrastructure of *G. osmangaziensis* has similarities with the species studied by the authors cited above.

*Gypsophila osmangaziensis* is closely allied to *G. leucochlaena*, which is endemic to Central Anatolia. The differences between them are presented in Table 1.

*Gypsophila osmangaziensis* is endemic to Turkey and represents the Irano-Turanian element. We collected the new species from only one locality in Osmangazi University Meşelik Campus, in Eskişehir province in Central Anatolia. *Gypsophila osmangaziensis* grew together with *Glaucium leiocarpum*, *Alyssum sibiricum*, *Silene dichotoma* subsp. *sibthorpiana*, *Melilotus alba*, *Medicago lupulina*, *Onobrychis hypargyrea*, *Eryngium campestre* var. *campestre*, *Anthemis tinctoria* var. *discoidea*, *Crupina crupinastrum*, *Convolvulus arvensis*, *Linaria corifolia*, and *Teucrium polium* at the altitude of 810 m. The population includes roughly 70–80 individuals, distributed over an area of approximately 5 hectares. Buildings are being constructed and gardening practised in the area. Therefore, we suggest that *G. osmangaziensis* should be placed in the IUCN category of *Critically Endangered* (CR) (IUCN 2001).

**REPRESENTATIVE SPECIMENS EXAMINED** of species in *Gypsophila* sect. *Capituliformes*: — *G. leucochlaena*: **Turkey**. B6 Malatya: Gürün–Darende 2 km W of Darende, 1200 m, 21.VII.1979 Nydegger 14417 (HUB). — *G. sphaerocephala*

**Table 1.** Differences between *Gypsophila osmangaziensis* and *G. leucochlaena*.

Characters	<i>G. osmangaziensis</i>	<i>G. leucochlaena</i>
Stems	Numerous, 100–180 cm minutely glandular hairy	Few, 60–80 cm entirely glabrous
Leaves	Triquetrous, spiny 10–140 (–160) × 0.5–5 mm	Semicircular, not spiny 30–100 × 1–2 mm
Bracts	Deltate, acuminate	Obovate, obtuse
Calyx	Cleft to 1/2 acuminate teeth	Cleft to 1/3 emarginate obcordate teeth
Petal	Oblong-spathulate	Oblong-cuneate
Seed	2 in each capsule	One in each capsule
Flowering	August	June–July

*var. sphaerocephala*: **Turkey**. B9 Bitlis: Adilcevaz, 1900 m, 25.VIII.1954 Davis 24605 (K); **Turkey**. C4 Karaman: Mut-Karaman 16 km around Yeniköy, 1450 m, 10.VIII.1997 *Ataşlar 108* (OUFE). — *G. sphaerocephala var. cappadocica*: **Turkey**. Cappadoce regium montagneuse supirieure de l'aslan-Dach, 1857, *Feurien* (holotype K). — *G. pilulifera*: **Turkey**. C3 Antalya: in apricis pinetorum ad littora maris in Pamphylia ad orientem urbis Adalia, 25.VII.1845 *Heldreich 1107* (holotype K). — *G. olympica*: **Turkey**. A2 Bursa: ad rupes calcareas regionis alpinae Olympi Bithyni (Ulu Dag), meridiem versus, 1842 *Boissier* (holotype K). — *G. pinifolia*: **Turkey**. B6 Malatya: Gürün–Malatya, 65 km from Malatya, rocky slope, 1400 m, 7.VIII.1956 *Mc Neill 446* (K).

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