

## Six new taxa (Caryophyllaceae) from Turkey

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Six new taxa are described and illustrated from Turkey as new to science: *Arenaria yunus-emrei* Aytaç & H. Duman, *A. mcneillii* Aytaç & H. Duman, *Minuartia dianthifolia* (Boiss.) Hand.-Mazz. subsp. *elmalia* Aytaç, *Dianthus crinitus* Sm. var. *argaeus* Aytaç & H. Duman, *Bolanthus mevlanaea* Aytaç, and *Silene caramanica* Boiss. & Heldr. var. *ilarslani* Aytaç & Dural. Their taxonomic positions are discussed and they are compared with the closely related taxa.

Key words: *Caryophyllaceae*, taxonomy, Turkey

During the course of the *Endemic Plants of Turkey* Project, which was supported by TÜBİTAK, between 1993 and 1998, the authors collected many Caryophyllaceae specimens from different regions of Turkey. We compared the specimens with the species descriptions in Boissier (1867), Chowdhuri (1956), McNeill (1961, 1963, 1966), Tutin *et al.* (1964), Zohary (1966), Reeve (1966), Huber-Morath (1966), Coode and Cullen (1966), Huber-Morath *et al.* (1968), Meikle (1977), Davis *et al.* (1988), Rechinger (1988), Greuter (1995), Simon (1997), and Güner *et al.* (2000). The first author also visited E and K in 1999 to study Caryophyllaceae specimens, and we also examined those in GAZI, E, K, HUB and ANK. The conclusion was that our new material contained six taxa new to science.

After publication of *Flora of Turkey* in 1967, 1988 and 2000, five species have been added by Aytaç (2001), Menemen and Hamzaoglu (2000), Vural and Dönmez (2002), and Duran and Menemen (2003). After the present contribution the total number of taxa of the family Caryophyllaceae is 492 in Turkey.

***Arenaria yunus-emrei* Aytaç & H. Duman, sp. nova** (Fig. 1)

*Affinis* *A. angustifoliae*, sed planta glandulosa, foliis basalibus revolutis. Ab *A. deflexa* foliis linearibus et linearibus-lanceolatis distinctissima differt.

TYPE: Turkey. C4 Karaman: Ermenek-Hadim, Başyayla, 1500 m, on rocks, 30.VII.1998 Güner 12652 *et al.* (holotype GAZI; isotype ANK).

Perennial herb, caespitose, densely glandular. Stems 10–15 cm long and 0.5–0.75 mm in diameter, fragile, much branched from base. Basal leaves 3–5 mm, ovate-lanceolate, strongly revolute; stem leaves 8–12 × 0.7–1 mm, linear to linear-lanceolate, slightly revolute, glandular, midrib distinct. Inflorescence cyme, 1.5–4 cm long, 1–10 flowered. Bracts leaf-like, 2–3 mm, lanceolate, herbaceous, green. Pedicels 10–20 mm, densely glandular, very thin. Sepals 2.5–3.5 mm, ovate-lanceolate, acuminate, 3-nerved, carinate, membranous at margin, glandular.

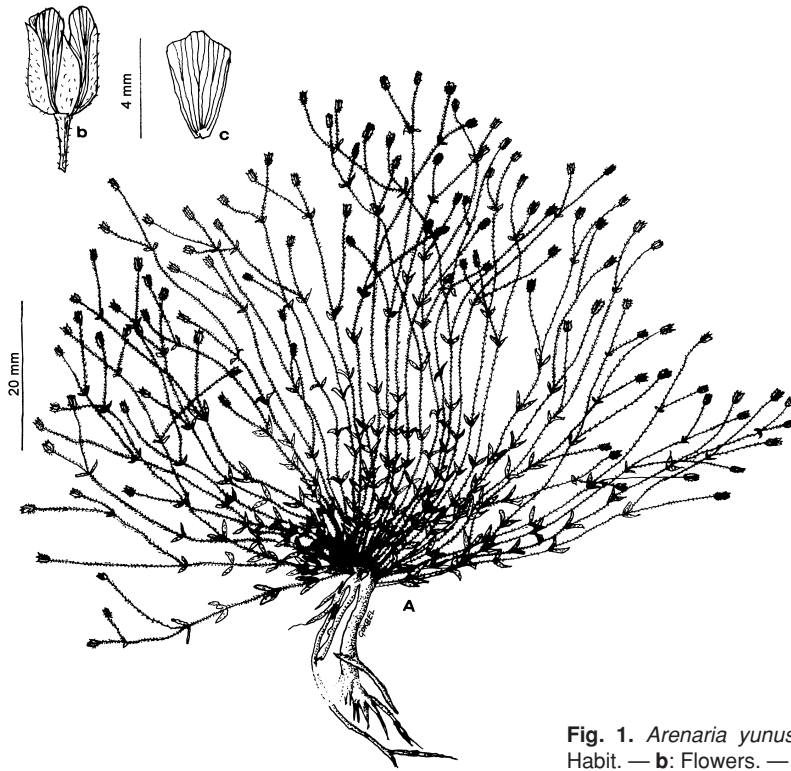


Fig. 1. *Arenaria yunus-emrei* (from holotype). — A: Habit. — b: Flowers. — c: Petal.

Petals 4–5 mm, obovate, cuneate, white, persistent at maturity. Stamens 10; filaments 3.5–4 mm, not exceeding corolla, inflated at base; anthers reniform, 0.25–0.5 mm. Ovary globose, ovules numerous; styles 1.5–2 mm, 3. Capsule as long as or slightly shorter than sepals, with 6 valves, dehiscent. Seeds reniform to oblong, papillose, blackish.

Flowering and fruiting July, 1500 m, on mossy and dry rocks.

ETYMOLOGY. The new taxon is named in honour of Yunus Emre, who is one of the most revered philosophers in Turkish literature.

DISTRIBUTION. South Anatolia, endemic, E Mediterranean element.

STATUS SUGGESTION. It is known only from the type locality, which contains rocky places. The population is small, however there is no “biological” threat. It should be classified as *Critically Endangered* (CR) (IUCN 2001).

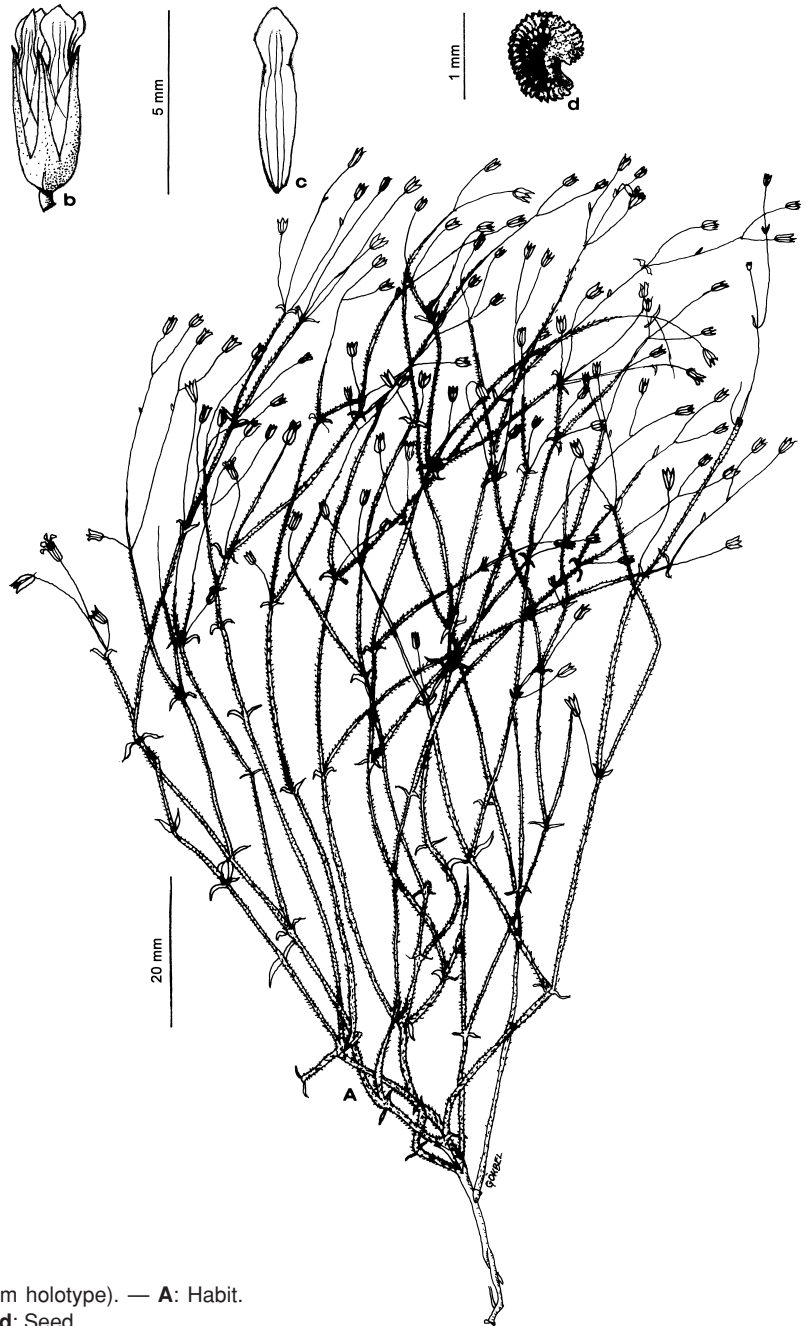
This species is close to *Arenaria angustifolia*, which grows in the same area, but differs by its densely glandular (not glabrous) revolute leaves, which have a distinct midrib; sepals with three

veins; many-flowered inflorescence; capsule, which is as long as or slightly shorter than the petals. *Arenaria yunus-emrei* is probably closely related also to *A. deflexa*, from which it differs only in its linear to linear-lanceolate leaves and shorter capsules.

SPECIMENS EXAMINED (all from Turkey). — *A. angustifolia*: C4 Konya: Ermenek (Cilicia Trachea), Hamitseydi Boğaz between Sarıvadi and Beşkuyu, 1500–1700 m, mossy rocks, 1949 *Davis 16227* (E, type); *Davis 16182* (E). — *A. deflexa* subsp. *deflexa*: *Davis 6371* (E), *Davis 9847* (E). — *A. deflexa* subsp. *microcephala*: C2 Denizli: Boz Dağ, near Geyran Yayla, 1370 m, 1947 *Davis 13352* (E, type), *Davis 35481* (E), *Strid 23578 et al.* (E); *Peşmen 4706*, *Güner & Kaplan* (E); *Khan 140 et al.*; *Davis 15354 & Dudley* (E). — *A. deflexa* subsp. *pseudofragillima*: *Strid 23428 et al.* (E). — *A. deflexa* subsp. *pubescens*: — C3 Antalya: Tahtalı dağ (Kemer) below Çukur Yayla, 1525 m, sand by rocks, 1947 *Davis 14148* (E, type), *Gatharne-Hardy 469* (E), *Balls 608* (E), *Davis 13889* (E), *Haradın 2350* (E).

***Arenaria mcneillii*** Aytaç & H. Duman, *sp. nova* (Fig. 2)

*Affinis A. pamphylicae s. lato, sed caulibus longioribus et puberulis non glandulosis, pedicellis*



**Fig. 2.** *Arenaria mcneillii* (from holotype). — **A:** Habit. — **b:** Flowers. — **c:** Petal. — **d:** Seed.

*et calycibus glabris non glandulosis differt.*

TYPE: Turkey. C4 Konya: Hadim–Alanya, Gevne Valley, 1400–1500 m, on humid rocks, 17.VII.1998 Güner 12633 *et al.* (holotype GAZI; isotypes ANK, E).

Annual, erect, stems 15–25 cm, terete, fragile

and pubescent. Leaves oblong to oblanceolate, 5–15 × 0.5–1 mm, acute, usually deflexed at base of stem, gradually narrowed at base. Inflorescence lax, dichotomous or irregularly branched, cymes with erect or spreading branches. Bracts similar to leaves but much smaller, with hyaline margin

at base. Pedicels slender, filiform, 5–25 cm long, glabrescent. Sepals narrowly ovate or lanceolate, 4–6 × 1–1.5 mm, acuminate, greenish, with narrow and distinctly membranous margins, glabrous, 3-veined. Petals narrowly obovate or oblanceolate, longer than sepals, white. Filaments slender; anthers oblong to elliptic, yellow, ± 0.75 mm. Ovary ovoid, 2 × 1 mm; styles ± 2 mm. Capsule narrowly ovoid, 3.5–4 × 1–1.5 mm, inserted in calyx; teeth triangular, obtuse. Seeds reniform, sharply papillose-tuberculate, blackish. Flowering and fruiting in July.

ETYMOLOGY. This species is named in honour of John McNeill (Edinburgh), a well-known expert of Caryophyllaceae.

DISTRIBUTION. S Anatolia, endemic, Eastern Mediterranean element.

ECOLOGY. It grows under *Pinus nigra* forest on humid rocks together with *Potentilla isaurica* and *Campanula myrtifolia*, which are endemic and known from very restricted localities.

SUGGESTED CONSERVATIONAL STATUS. For the same reasons as *A. yunus-emrei*, this should be classified as *Critically Endangered* (CR) (IUCN 2001).

*Arenaria mcneillii* is related to *A. pamphylica* s. lato, but differs from it in the stem being pubescent rather than glandular-hairy, and also the pedicels and calyx are glabrous. The new species also has a longer stem (15–25 cm) and pedicels (5–25 mm) as well as shorter (5–15 mm), usually recurved leaves. The sepals are longer than in *A. pamphylica* (3.5–5 mm vs. 2.5–3.5 mm). *Arenaria pamphylica* var. *pamphylica* and var. *turcica* grow near the seashore, while subsp. *alpestris* and *A. mcneillii* thrive above 1400 m on mountains. There are also many clear differences between *A. mcneillii* and *A. rhodia*: stems are not glandular, leaves are smaller and with an oblong to oblanceolate rather than suborbicular to broadly ovate lamina. In comparison with *A. tremula*, the petals of *A. mcneillii* are longer than sepals and the seeds are tuberculate and papillose (not apapillose).

SPECIMENS EXAMINED (all from Turkey): — *A. pamphylica* var. *pamphylica*: C3 Antalya: Sur les pierres de murs de l'Amphitheatre de Perge, 1845 *Helderich* 490 (type, K and

E); *Hepper & Viney* 9702 (K); *Townsend* 71 / 71, *Davis* 25829, 25871 (E). — *A. pamphylica* subsp. *alpestris*: C4 İçel: Anamur, Çamurlu Yayla to Ermenek, 2000 m, 1949 *Davis* 16316 (type, E); *Little* 142 (E); *Truman* 190 (E); *Sümbül* 1234 (HUB). — *A. pamphylica* subsp. *kyrenica* var. *kyrenica*: *Davis* 2990 (type, E). — *A. rhodia* var. *macropetala*: *Davis* 25543 & *Polunin* (E); *Davis* 41408 (E). — *A. tremula*: *Samuelsson* 5160, *Dinsmore* 14459, *Zohary* 425, *Bornm.* 11473 (all E).

***Minuartia dianthifolia* (Boiss.) Hand.-Mazz.**  
subsp. ***elmalia* Aytaç, subsp. nova.** (Fig. 3)

*Affinis* subspecie *dianthifoliae*, sed caulibus longioribus, foliis longis. sparsim glandulosis, nodulose glanduloso-hirtis; subspeciei *kurdica* foliis et caulibus longis, plantis non caespitosis differt. Insuper affinis *M. peztalozzae* sed habito non robustos et pulvinatos, sepalis 6–7 mm (non 15–20 mm) longus differt.

TYPE: Turkey. C2 Antalya: Elmalı-Korkuteli, between Beğiş-Avdan villages, 2 km, 1500 m, near agricultural fields, 27.VII.1997 *Aytaç* 7777 (holotype GAZI; isotypes ANK, E, HUB).

Perennial, 20–30 cm. Internodes glabrous, nodes glandulose-hirsute. Basal leaves 15–50 × 2 mm, linear to linear-lanceolate. Cauline leaves 20–40 × 2 mm, linear-lanceolate, usually falcate, all leaves sparsely glandular. Inflorescence 6–15-flowered, densely glandular-puberulent. Sepals 6–7 mm, ovate-lanceolate, acute. Petals ovate-elliptic, 2/3 of sepal length. Capsule 3/4 of sepal length. Flowering and fruiting in July.

DISTRIBUTION. South Anatolia, endemic, Eastern Mediterranean element.

ECOLOGY. It grows between agricultural fields and steppe with narrow endemics such as *Ebenus bourgaei*, *E. plumosa* var. *plumosa*, *E. boissieri*, *Centaurea pestalozzae*, and *Saturea cilicica*.

SUGGESTED CONSERVATIONAL STATUS. Known only from type locality, which is near agricultural fields. The population is small and under threat from agricultural activities. Therefore it should be classified as *Critically Endangered* (CR) (IUCN 2001).

*Minuartia dianthifolia* subsp. *dianthifolia* has a very restricted distribution, being known only from five mountains. The type specimens were collected in Antalya (Lyciae) Ak Dağ in 1846 by *Pestalozza*; this is close to the type locality of our

new subspecies. Subsp. *catonica* was described from Maraş and subsp. *kurdica* from Van (for specimen details, see below). Type material of all of these taxa (except subsp. *dianthifolia*) were examined at E and K. Subsp. *elmalia* has longer stems and leaves than the other subspecies. The habitus is similar to *M. pestalozzae*, which grows in the same area, but the leaves are longer (15–50 vs. 15–25 mm).

SPECIMENS EXAMINED (all from Turkey): — *M. dianthifolia* subsp. *dianthifolia*: Pichler 121 (K); Davis 13841, 13773 (E). — *M. dianthifolia* subsp. *catonica*: B6 Maraş: Göksun, Binboğa Dağ in ravine above Yalak, 2000 m, rocks, rare, 17.VII.1952, Davis 20129 (type, E); Station & Henderson 5610, 5687, Davis 20143, Dodds & Çetik s. n. (all E). — *M. dianthifolia* subsp. *kurdica*: B9 Van: Distr. Gevaş, Artos Dağ, 2590 m, 14.VII.1954 Davis 22716 & Polunin (type, E); McNeill 770 (E). — *M. pestalozzae*: Davis 15282, Bornm. 4207 (both E).

The subspecies of *Minuartia dianthifolia* can be identified as follows:

1. Sepals 8.5–12 mm, usually glabrous; leaves densely glandular pubescent ..... subsp. *catonica*
1. Sepals 6–8(–9 mm) ..... 2
2. Leaves glabrous or minutely ciliate; sepals glabrous or sparsely glandular-pubescent; petals without a claw ..... subsp. *dianthifolia*
2. Leaves and sepals glandular-pubescent; petals with a claw ..... 3
3. Leaves to 10 mm, cauline leaves plain ... subsp. *kurdica*
3. Leaves 15–50 mm; cauline leaves falcate ..... subsp. *elmalia*

***Dianthus crinitus* Sm. var. *argaeus* Aytaç & H. Duman, var. *nova*. (Fig. 4)**

*Affinis* var. *crossipetalos*, *sed caulibus, calycibus et pedicellis brevibus differt.*

TYPE: Turkey. B5 Kayseri: Erciyes Dağı, 3000–3200 m, alpine steppe, 8.VIII.1996 Duman 6317 & Aytaç (holotype GAZI; isotypes ANK, E, HUB).

Perennial, erect, up to 10 cm. Leaves flat, 10 × 1–1.2 mm, linear, acute. Flowering shoot leaves 1–3 pairs, shorter than internodes. Flowers solitary; pedicel to 15 mm. Bracteoles 4, 1/3 length of calyx. Calyx 20–25 mm, cylindrical; teeth 5–7 mm, linear-lanceolate, with membranous, finely ciliate margins. Petals 10–14 mm,

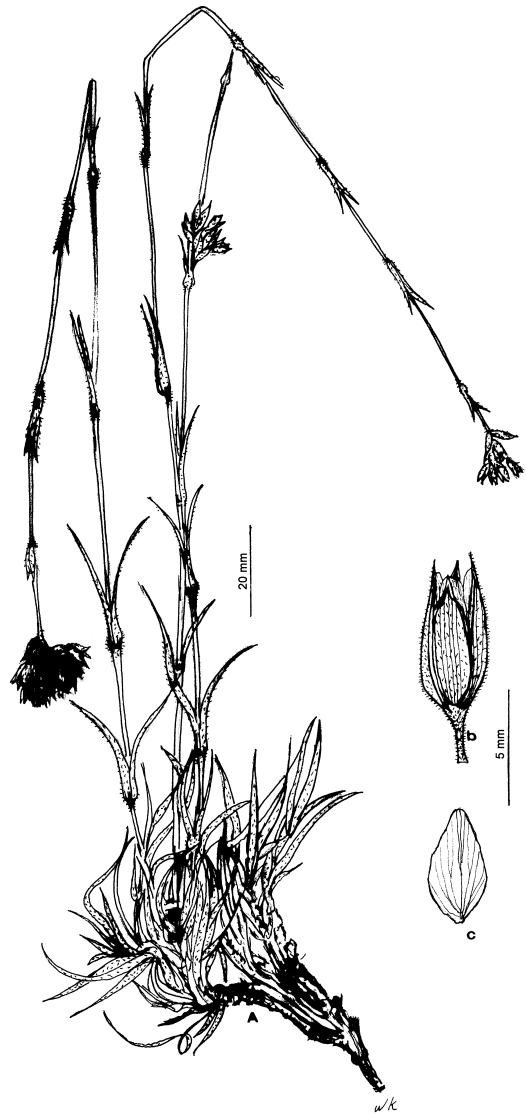


Fig. 3. *Minuartia dianthifolia* subsp. *elmalia* (from holotype). — A: Habit. — b: Flowers. — c: Petal.

fimbriate, pale pink to white, ebarbulate, claw exerted. Flowering and fruiting in July–August.

DISTRIBUTION. Central Anatolia, endemic, Irano-Turanian element.

SUGGESTED CONSERVATIONAL STATUS. It is known only from the type locality in high mountain steppe. The population is small, but there is no direct “biological” threat. It should be classified as *Critically Endangered* (CR) (IUCN 2001).

*Dianthus crinitus* var. *argaeus* differs from var. *crossipetalus* in having a smaller calyx and





Fig. 4. *Dianthus crinitus* subsp. *argaeus* (from holotype). — A: Habit.

smaller pedicels. The leaves of flowering shoots are few-paired, when it grows above 3000 m.

SPECIMENS EXAMINED (all from Turkey): — *Dianthus crinitus* var. *crinitus*: C2 Antalya: Elmalı, *Bourgau* 35 (E). — *D. crinitus* var. *crossopetalus*: Davis 13097, *Montbret s.n.*, *Siehe* 525 (all E).

The Turkish subspecific taxa in *Dianthus crinitus* can be identified as follows:

1. Calyx 20–25 mm; pedicels shorter than 20 mm .....  
..... var. *argaeus*
1. Calyx 25–40 mm; pedicels at least 20 mm ..... 2
2. Stem more than 20 cm long; calyx 25–35 mm .....  
..... var. *crinitus*
2. Stem 5–20 cm; calyx 30–40 mm ..... var. *crossopetalus*

***Bolanthus mevlanaea* Aytaç, sp. nova (Fig. 5)**

*Affinis B. huber-morathii, sed procumbens, inter-*

*nodia per folia tegens, foliis et internodiis brevibus. A B. spergulifolio folio glabro et caulibus puberulis differt.*

TYPE: Turkey. C3 Antalya: Between Akseki and Bozkır, 45 km, Gölçük, 1780 m, steppe, 16.VII.1997 Aytaç 7733 (holotype GAZI; isotypes ANK, E, HUB).

Perennial, woody, rhizomatous with many several ascending-erect branches from base, forming compact cushions 20–50 cm diam. Stems 3–5 cm, sometimes zig-zag shaped with short puberulent hairs. Internodes always shorter than 5 mm, covered by densely imbricate leaves. Leaves 2–5 × 0.2–0.4 mm, setaceous, acute, adpressed to stems, densely fasciculate, glabrous, ciliate at base. Bracts leaf-like, 3–5 mm, adpressed to calyx, as long as or shorter than calyx, with dense long-glandular hairs. Inflorescence 5–10-flowered, puberulent below, glandular above. Flowers sessile, congested in terminal or subterminal clusters. Calyx tubular, 4–5 mm, glandular-hairy, with 5 projecting ribs; teeth lanceolate, acute, 1.5–2 mm. Petals white, lamina completely purple, 5.5–6 × 1 mm, linear-oblong, emarginate. Stamens 10, anthers 2–3 mm long. Ovary ovoid; styles as long as or shorter than petals. Capsule ovate-oblong, 3 mm, dehiscent with 4 valves. Seeds tuberculate with a prominent radicle.

Flowering and fruiting in July.

ETYMOLOGY. This species is named in honour of Mevlana Celaleddin Rumi, who is one of the most revered Turkish philosophers.

DISTRIBUTION. South Anatolia, endemic, Eastern Mediterranean Element.

SUGGESTED CONSERVATIONAL STATUS. It grows in steppe and is known from two localities. The populations are in good condition in a protected area. Therefore it should be classified as *Endangered* (EN) (IUCN 2001).

*Bolanthus mevlanaea* is related to *B. huber-morathii*, from which it differs in its shorter leaves and internodes (internodes covered by leaves). The stem is procumbent and has a compact inflorescence. *Bolanthus mevlanaea* resembles also *B. spergulifolius*, described from Kütahya and Uşak (Phrygia), but differs from it in the glabrous, shorter leaves, puberulent stems, and shorter internodes.

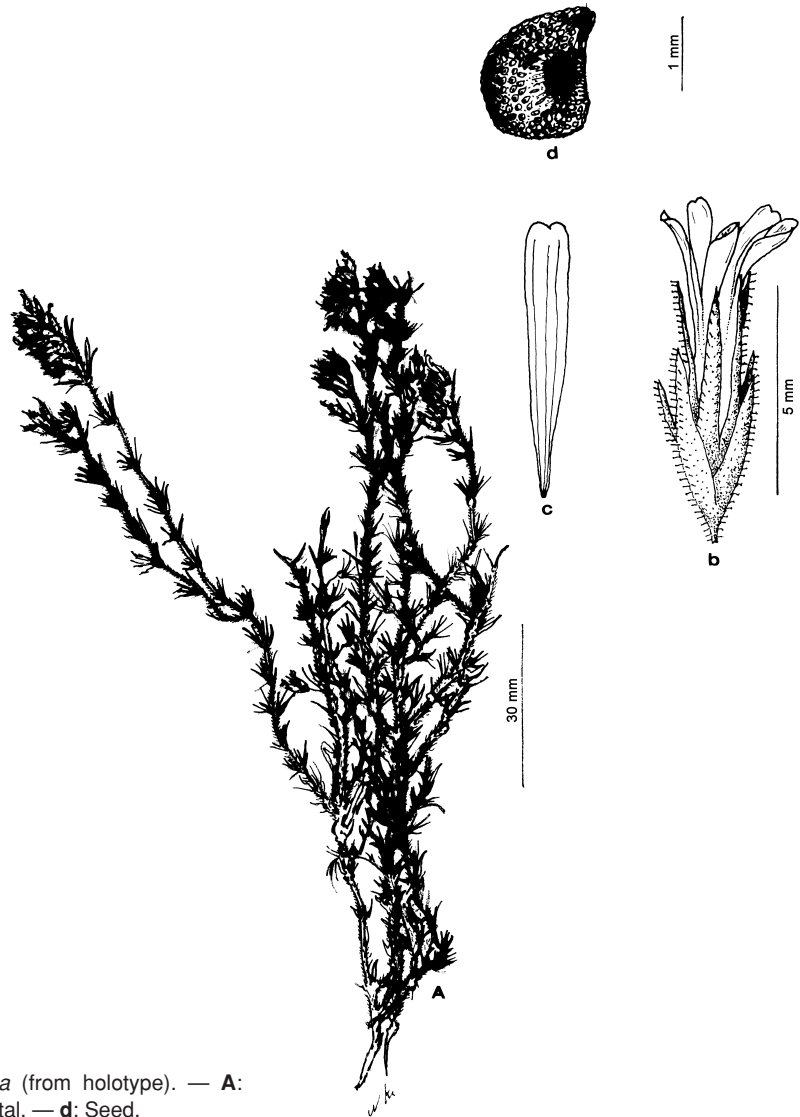


Fig. 5. *Bolanthus mevlanaea* (from holotype). — A: Habit. — b: Flowers. — c: Petal. — d: Seed.

SPECIMENS EXAMINED (all from Turkey): — *Bolanthus mevlanaea* (paratype): Antalya: Akseki-Beyşehir yolu, Çamlık-Bakaran village, Şakiroğlu district, 1450 m, steppe, 15.VII.1997 Aytaç 7721 (GAZI). — *B. huber-morathii*: Nydegger 14130 (GAZI, E, K). — *B. spergulifolius*: Davis 36563, *Bal.* 1294 (both E).

***Silene caramanica* Boiss. & Heldr. var. *ilarslanii* Aytaç & Dural, var. *nova* (Fig. 6)**

*Affinis* var. *caramanici*, sed foliis basalibus et caulibus oblanceolatis vel lanceolatis ultra 5 mm lati; calycibus 25–30 mm longis, dentibus ciliatis distinctis differt.

TYPE: Turkey. C3 Antalya: Gündoğmuş, Geyik Dağı, steppe, 2300–2500 m, *İlarslan 3916 & Dural* (holotype GAZI; isotypes ANK, E, HUB).

Perennial, 30–50 cm; stems sparsely puberulous below. Basal leaves oblanceolate to lanceolate, 20–50 × 5–10 mm, acute, puberulent. Bracts linear-anceolate, not enclosing flower buds. Flowers solitary. Calyx 25–30 mm. Petals whitish, with two distinct appendages; anthophore 7–15 mm, slightly puberulent. Capsule slightly exserted from calyx at maturity. Flowering in July.

ETYMOLOGY. This new species is named in honour of Reşit İlarslan, who collected the type specimen.

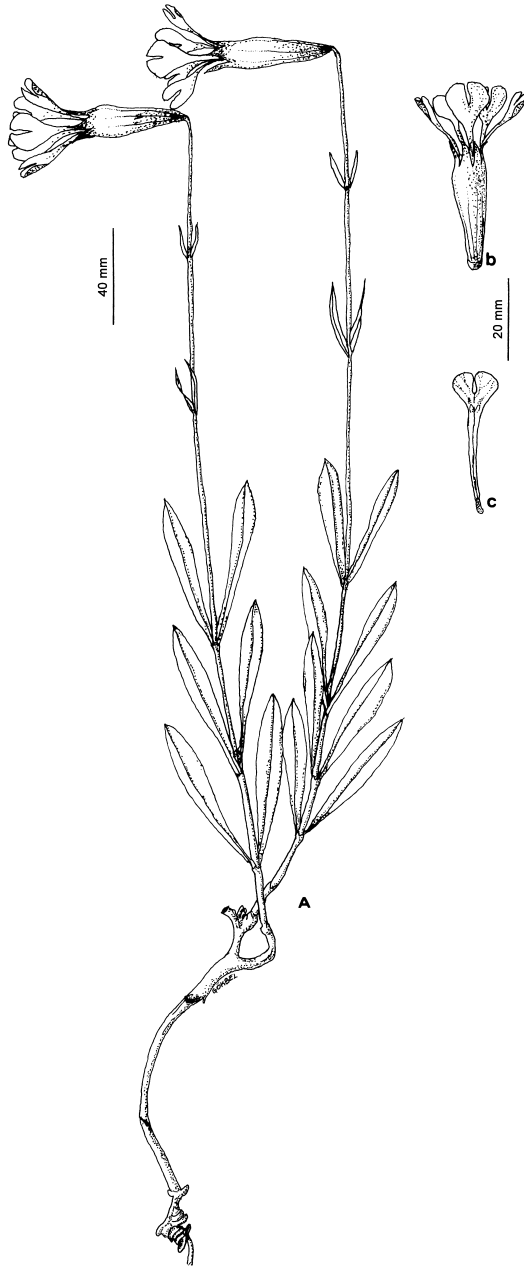


Fig. 6. *Silene caramanica* var. *ilarslanii* (from holotype). — A: Habit. — b: Flowers. — c: Petal.

DISTRIBUTION. South Anatolia. Endemic. Ir. Tur. element.

SUGGESTED CONSERVATIONAL STATUS. It is known only from type locality in high mountain steppes and the population is very small. There is no direct “biological” threat. It should be classified as *Critically Endangered* (CR) (IUCN 2001).

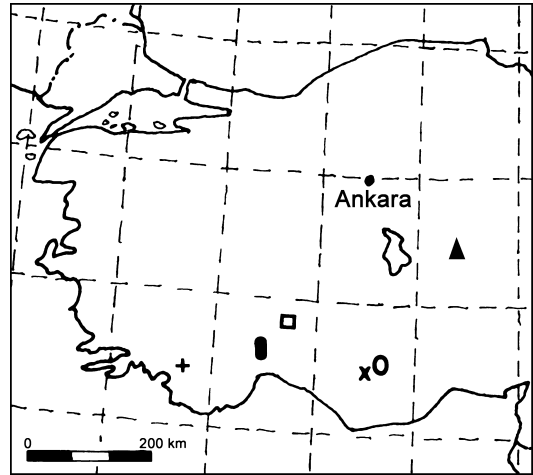


Fig. 7. Distribution map of *Arenaria yunus-emrei* (0), *A. mcneillii* (X), *Minuartia dianthifolia* subsp. *elmalia* (+), *Dianthus crinitus* subsp. *argeus* (▲), *Bolanthus mevlanæa* (□), *Silene caramanica* var. *ilarslanii* (●).

This variety is similar to *S. caramanica* var. *caramanica* but differs in having basal and cauline leaves more than 5 mm wide; also, the calyx is longer (25–30 mm vs. 22–24 mm). When other specimens (paratypes, cited below) of this new variety collected from near the type locality, are compared with each other, one (2899) has narrower lanceolate leaves and the other (4097) has much narrower (4–5 mm wide) leaves. However, the calyx length of the two specimens is between 27–30 mm.

SPECIMENS EXAMINED (all from Turkey): — *Silene caramanica* var. *ilarslanii*: Antalya, Akseki, Çukurköy yaylası, Topbaş distrit, 2050 m, Duran 2899, 4097 (GAZI). — *S. caramanica* var. *caramanica*: C4 Konya: Karaman & Ermenek, Isauriae, Heldreich s.n. (isotype, K); Hardj. 2511, 2325 (E).

The geographic distributions of the taxa described here are presented in Fig. 7.

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## References

- Aytaç, Z. 2001: A new species of *Acanthophyllum* (Caryophyllaceae) from central Anatolia Turkey. — *Nordic J. Bot.* 21: 263–266.
- Boissier, E. 1867: *Flora Orientalis*. Vol. 1. — Reg. Acad. Scient., Apud. H. Georg Bibliopolam, Lugduni, Genevae et Basel.
- Chowdhuri, M. N. 1956: Studies in the genus *Silene*. — *Notes R. Bot. Garden* 22: 2, 235.
- Coode, M. J. E. & Cullen, J. 1966: *Silene* L. — In: Davis, P. H. (eds.), *Flora of Turkey and the East Aegean Islands* 2: 179–242. Edinburgh Univ. Press, Edinburgh.
- Davis, P. H., Mill, R. & Tan, K. (eds.) 1988: *Flora of Turkey and the East Aegean Islands* 10, Suppl. I: 65–81. — Edinburgh Univ. Press, Edinburgh.
- Duran, A. & Menemen, Y. 2003: A new species of *Silene* (Caryophyllaceae) from south Anatolia, Turkey. — *Bot. J. Linn. Soc.* 143: 109–113.
- Greuter, W. 1995: *Silene* (Caryophyllaceae) in Greece: a subgeneric and sectional classification. — *Taxon.* 44: 443–581.
- Güner, A., Ekim, T., Özhatay, N. & Başer, H. (eds.) 2000: *Flora of Turkey and the East Aegean Islands* 11, Suppl. II: 44–53. — Edinburgh Univ. Press, Edinburgh.
- Huber-Morath, A. 1966: *Bolanthus* (Ser.) Reichb. — In: Davis, P. H. (ed.), *Flora of Turkey and the East Aegean Islands* 2: 171–174. Edinburgh Univ. Press, Edinburgh.
- Huber-Morath, A., McNeill, J. & Reeve, H. 1968: Materials for Flora of Turkey XIV: Caryophyllaceae.— *Notes R. Bot. Garden* 28: 17–23.
- IUCN Species Survival Commission 2001: *IUCN Red List Categories*. — Gland, Switzerland.
- McNeill, J. 1961: New species of *Arenaria* and *Minuartia*. — *Notes R. Bot. Garden* 23: 507–513.
- McNeill, J. 1963: Taxonomic studies in the Alsinoideae II. A revision of the species in the Orient. — *Notes R. Bot. Garden* 24: 277–284.
- McNeill, J. 1966: *Arenaria* L. — In: Davis, P. H. (ed.), *Flora of Turkey and the East Aegean Islands* 2: 17–38. Edinburgh Univ. Press, Edinburgh.
- McNeill, J. 1966: *Minuartia* L. — In: Davis, P. H. (ed.), *Flora of Turkey and the East Aegean Islands* 2: 38–67. Edinburgh Univ. Press, Edinburgh.
- Meikle, R. D. 1977: *Flora of Cyprus* 1: 261–262. — Royal Bot. Gardens, Kew.
- Menemen, Y. & Hamzaoglu, E. 2000: A new species of *Dianthus* (Caryophyllaceae) from Salt Lake, Central Anatolia Turkey. — *Ann. Bot. Fennici* 37: 285–287.
- Rechinger, K. C. (ed.) 1988: *Caryophyllaceae. Flora Iranica II*: 163: 35. — Akad. Druck- u. Verlagsanstalt, Graz.
- Reeve, H. 1966: *Dianthus* L. — In: Davis, P. H. (ed.), *Flora of Turkey and the East Aegean Islands* 2: 99–131. Edinburgh Univ. Press, Edinburgh.
- Simon, C. 1997: *Bolanthus huber-morathii*, nov. spec. aus Kleinasien. — *Bauhinia* 6: 83–84.
- Strid, A. & Tan, K. 1997: *Caryophyllaceae*. — In: *Flora Hellenica* 1: 156–373. Koeltz Sci. Books, Königstein.
- Tutin, T. G., Heywood, V. H., Burges, L. A., Valentine, D. H., Walters, S. M. & Webb, D. A. (eds.) 1964: *Flora Europaea* 1. — Cambridge Univ. Press, Cambridge.
- Vural, M. & Dönmez, A. 2002: Two new taxa of *Silene* (Caryophyllaceae) from Turkey. — *Ann. Bot. Fennici* 39: 153–158.
- Zohary, M. 1966: *Flora Palestina* 1: 112–113. — Israel Acad. Sci., Jerusalem.