

Limonium gueneri (Plumbaginaceae), a new species from Turkey

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Limonium gueneri Dogan, Duman & Akaydın *sp. nova* (Plumbaginaceae) is described and illustrated from Patara (C2 Antalya, Turkey), where it grows on calcareous slopes on the coast. It is probably closely related to *L. ocymifolium* (Poir.) Kuntze, an East Mediterranean species. The diagnostic morphological characters are discussed. A taxonomic key for the coastline species of Turkish *Limonium* without sterile branches is also presented along with some notes on the ecology and biogeography of the new species.

Key words: *Limonium*, new species, Plumbaginaceae, taxonomy

The family Plumbaginaceae has been subject to a few studies since it was established as a sister group of Polygonaceae (Chase *et al.* 1993). A detailed historical summary concerning the generic grouping of the Statioideae was given by Karis (2004), who also emphasised many uncertainties concerning the classification of the family (Lledó *et al.* 2001). Most of these problems are linked to delimitation and circumscription of the large genera, *Acantholimon* and *Limonium*, from which many small genera have been segregated (Lincevski 1985, Lledó *et al.* 2003, 2005).

In Turkey, the family Plumbaginaceae was considered to be represented by six genera (Bokhari & Edmondson 1982), namely *Plumbago* (1 sp.), *Limonium* (17 spp.), *Goniolimon* (1 sp.), *Limoniopsis* (2 spp.), *Acantholimon* (25 spp.) and *Armeria* (4 spp.). From 1982 to 1988

some new taxa of Plumbaginaceae were also described from Turkey (Davis *et al.* 1988).

Since 2000 as a part of a revision of Plumbaginaceae in Turkey, the authors have carried out extensive field surveys and laboratory studies along with examining the previously collected specimens deposited in various herbaria, and have described 12 new species of *Acantholimon* (Akaydın & Doğan 2002, Akaydın 2004, Doğan & Akaydın 2001, 2002a, 2002b, 2003a, 2003b, 2004, 2005).

Among the material of *Limonium* borrowed from Gazi University (GAZI), Ankara, a specimen collected by Prof. H. Duman, Dr. A. Güner and S. S. Çağlar from the coast of Patara, C2 Antalya (C2 *sensu* Davis 1965) appeared rather interesting. The specimen was cross-checked with some of the floras, such as *Flora of Turkey*

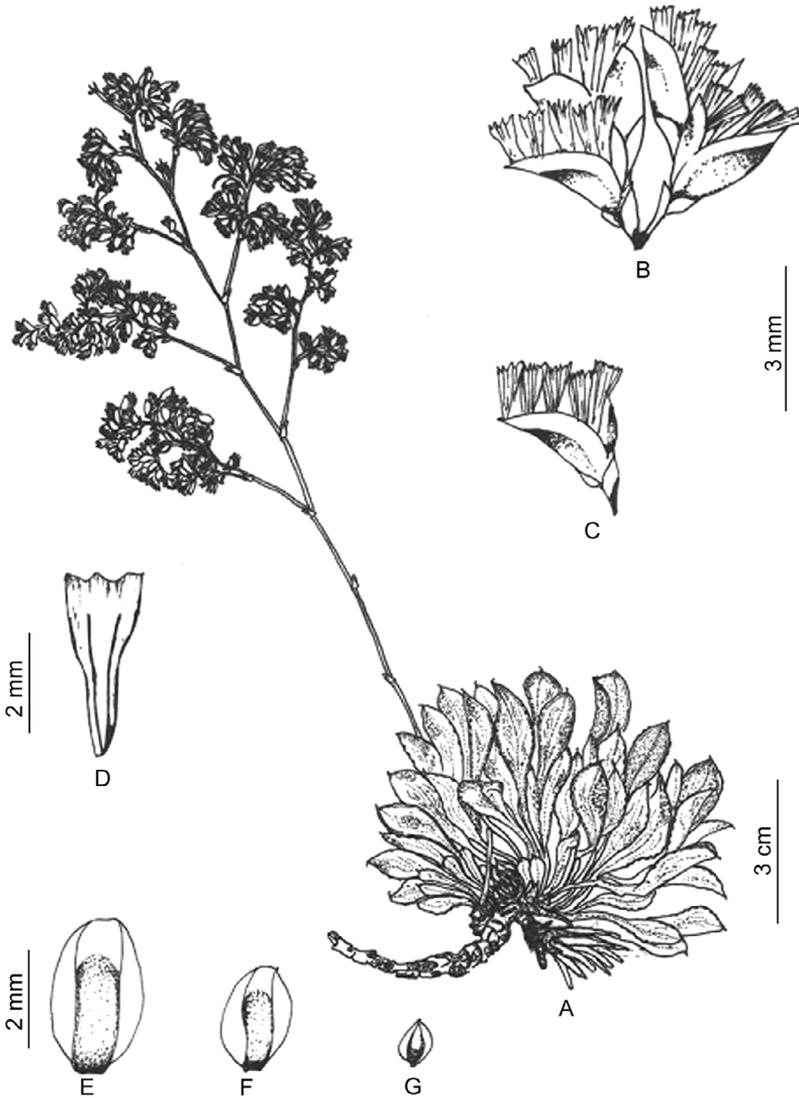


Fig. 1. *Limonium gueneri*. (from the holotype). — **A:** Habit. — **B:** Spike. — **C:** Spikelet. — **D:** Calyx. — **E:** Second inner bract. — **F:** First inner bract. — **G:** Outer bract.

(Davis 1982), *Flora Orientalis* (Boissier 1879), *Flora of Syria, Palestine and Sinai* (Post 1933), *Flora Europaea* (Tutin et al. 1972), *Flora d'Italia* (Pignatti 1982), *Flora Aegaea* (Rechinger 1943) and *Flora Iberica* (Castroviejo et al. 1993). The new records given in the supplement of the *Flora of Turkey and East Aegean Islands* were also consulted (Davis et al. 1988).

In 2004, an expedition was organised by the authors in southwest Anatolia for collecting more material of this interesting taxon as well as studying its population size. During this expedition another specimen of the taxon was collected from the same locality by the authors. The

specimens were then compared with the material either cited in the *Flora of Turkey* or kept at various herbaria (E, G, K, ANK, GAZI, HUB, ISTF, ISTE, EGE, FUH and KNYA).

Limonium gueneri Dogan, Duman & Akaydin, *sp. nova* (Figs. 1 and 2)

Affinis L. ocymifolio sed inflorescentia corymbosa ad paniculata (non omnino paniculata), spica brevior et compactior (non dense disticha vel imbricata), spiculis 4–5 mm et 4–5-floribus (non 6–7 mm et 1–3-floribus), bracteis exterioribus

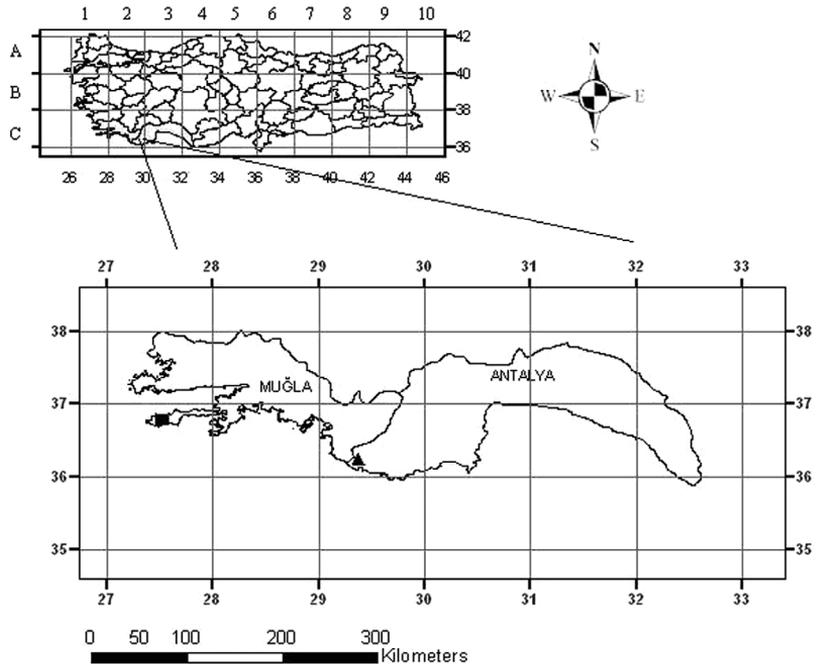


Fig. 2. Distribution of *Limonium gueneri* (▲) and *L. ocymifolium* (■) in Turkey.

1–1.5 mm (non 1.8–2.3 mm), *secunda calycibus* 4–5 mm et *anguste infundibularibus* (non 4.8–5.8 mm et *obconicis*) *differt*.

HOLOTYPE: Turkey. [C2] Antalya: Kaş, Patara, steep calcareous coastal slopes, ca. 30 m, 17.VIII.1996 A. Güner 12329-H. Duman and S. S. Çağlar (GAZI). — **PARATYPE:** [C2] Antalya: Kaş, Patara, steep calcareous coastal slopes, ca. 20 m, 30.VII.2004 Akaydm 9920 & Doğan (GAZI).

ETYMOLOGY: This new species is named after Professor Adil Güner, who collected the type specimen from Patara, Antalya for the first time with Professor H. Duman and Mr. S. S. Çağlar.

Perennial herbs, 12–22 cm, with strongly thickened, few-branched caudex with numerous petiolar remains. Leaves fleshy 2–4 × 0.7–1 cm, spatulate, obtuse to acute, with a terminal, recurved, fine mucro, tapering into flattish petiole, margins slightly hyaline. Scapes branching in the upper ¼. Inflorescence corymbose to paniculate. Spikes rather short and compact, dense in upper part of branches. Spikelets 4–5 mm, 4–5-flowered. Bracts rusty-brown; outer bract 1–1.5 mm, ovate, acute, hyaline-margined; first inner bract 1.5–2 mm, oblong-ovate, obtuse to rounded, broadly hyaline margined; second inner bract 3–3.5 mm, broadly obovate, rounded, largely hyaline-margined. Calyx 4–5 mm, nar-

rowly infundibular, glabrous; limb 5-lobed, lobes acute-obtuse; veins ending well below margin. Petals pale violet.

DISTRIBUTION AND ECOLOGY. *Limonium gueneri* grows on dry calcareous mountain slopes on the coast and it seems to represent the East Mediterranean flora element. It grows with *Pistacia lentiscus*, *Echinops viscosus* subsp. *viscosus*, *Phagnalon graecum*, *Inula heterolepis* and *Teucrium brevifolium*, all of which belong in the East Mediterranean element.

Key to the coastline species of *Limonium* without sterile branches in Turkey

1. Leaves sinuate-margined; scapes broadly winged
..... *L. sinuatum*
1. Leaves entire (rarely denticulate); scapes not winged .. 2
2. Annual; calyx veins excurrent as hooked barbs
..... *L. echioides*
2. Perennial; calyx veins terminating below margin 3
3. Leaves up to 2–5 × 1.5 cm 4
3. Leaves more than 6 × 3 cm 5
4. Spikelets 6–7.5 mm, with 1–3 flowers ... *L. ocymifolium*
4. Spikelets 4–5 mm, with 4–5 flowers *L. gueneri*
5. Spikelets 5–6.5 mm, vein of outer bract usually excurrent
..... *L. narbonense*
5. Spikelets 3–4 mm, vein of outer bract not excurrent ... 6
6. Spikelets 2–3-flowered, ± congested with 7–9 spikelets per cm
..... *L. gmelinii*

Table 1. A morphological comparison of *Limonium gueneri* and *L. ocymifolium*.

	<i>Limonium gueneri</i>	<i>Limonium ocymifolium</i>
Scape	Branching in the upper ¼, with strongly thickened few-branched caudex, with numerous petiolar remains	Dichotomously branched almost from base, sterile branches few or none, flexuose
Leaves	Fleshy, 2–4 × 0.7–1 cm, spatulate, obtuse to acute, with a terminal recurved fine mucro, tapering into flattish petiole, margins slightly hyaline	Fleshy, 2–6.5 × 0.3–2 cm, cuneate-spatulate, obtuse, rounded or acute, petiolate
Inflorescence	Corymbose to paniculate	Paniculate
Spike	Rather short and compact, dense in the upper part of branches	Densely distichous or imbricate
Spikelets	4–5 mm, 4–5-flowered	6–7.5 mm, (1–)2–3-flowered
Outer bract	1–1.5 mm, ovate, acute, hyaline-margined	1.8–2.3 mm, ovate-triangular, with narrow hyaline margin
First inner bract	1.5–2 mm, oblong-ovate, obtuse to rounded, broadly hyaline-margined	similar to outer bract, but hyaline
Second inner bract	3–3.5 mm, broadly obovate, rounded	4.8–5.8 mm, oblong-obovate
Calyx	4–5 mm, narrowly infundibular, glabrous; limb 5-lobed, lobes acute–obtuse; veins ending well below margin	4.8–5.8 mm, obconical; glabrous or covered by long hairs; limb 5-lobed, lobes semi-elliptic
Habitat	Maritime calcareous rocks	Sandy shores, calcareous and schistose littoral rocks
Altitude	10–30 m	0–5 m
Phytogeography	Mediterranean element	Mediterranean element

6. Spikelets 1(–2)-flowered, remotely spaced with 7–9 spikelets per cm *L. effusum*

Limonium gueneri belongs to *L.* sect. *Limonium* because of its perennial habit, a basal rosette formed by entire leaves, terete scapes without repeatedly forked sterile branches, and infundibular calyces with 5-lobed narrow limbs. Bokhari and Edmondson (1982) placed eleven species in this section and divided them further into two subgroups on the basis of presence or absence of sterile branches. *Limonium gueneri* is related to the maritime species (*L. ocymifolium*, *L. narbonense* and *L. gmelinii*) without sterile branches. *Limonium ocymifolium* seems to be the closest species to *L. gueneri*. These two are compared in Table 1.

From a phytogeographical point of view, *L. gueneri* and *L. ocymifolium* are both eastern Mediterranean endemics and grow at sea level in southwestern Anatolia, where their distributions overlap (Fig. 2). While *L. gueneri* is a local endemic growing on calcareous dry slopes in the east of Patara Beach, *L. ocymifolium* is found on

sandy shores, calcareous and schistose littoral rocks on the shore of Kinidos near Datça (C1 Muğla); it is also distributed in mainland Greece as well as in the Aegean (including Crete).

Limonium sinuatum and *L. echioides* are two other coastal species included in the key because they have no sterile branches. These species are quite different from *L. gueneri* and belong to different sections.

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