

Linum ertugrulii (Linaceae), a new species from central Anatolia, Turkey

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Linum ertugrulii O. Tugay, Y. Bağcı & Uysal *sp. nova* (Linaceae) from Cihanbeyli (B4 Konya, Turkey) is described and illustrated. It is closely similar to *L. flavum*, *L. pamphylicum* and *L. ciliatum*, from which it differs mainly in having a stoloniferous stem, and in the leaf and floral features. Notes are presented on its habitat ecology and biogeography.

Key words: *Linum*, new species, *Syllinum*, taxonomy

Linum (Linaceae) is represented by about 200 species in the Mediterranean region, temperate or subtropical regions of Asia and SW and N America (Rendle 1937, Meikle 1977, Hickey & King 1982, Zohary 1987). It is mainly centered in the Balkans and Anatolia (Davis 1967a, 1967b). In Turkey there are about 52 taxa (Davis 1967, Güner *et al.* 1996, Güner *et al.* 2000, Yılmaz *et al.* 2003, Yılmaz & Kaynak 2008). The rate of endemism of *Linum* species in the flora of Turkey is 42.3%.

The authors collected some interesting plant specimens from the Cihanbeyli province during the Endemic Plants of Konya (Turkey) Project in 2005. One of the collected species belonged to *Linum*. The specimens were compared with supposedly related species in the herbaria of KNYA, ANK, BULU, EGE, GAZI and HUB, and with records in the literature (cf. Yılmaz & Kaynak 2006). It was concluded that the specimens represented a species new to science.

***Linum ertugrulii* O. Tugay, Y. Bağcı & Uysal, *sp. nova* (Figs. 1–2)**

Affinis Lino flavo sed caulibus 5–15 cm (non 20–35 cm); foliis succulentis, 3–5-nervis sine glandibus stipularibus (non foliis succulentis, 1-nervis cum glandibus stipularibus); et habitat in solo salso differt.

TYPE: Turkey. B4 Konya, Cihanbeyli, Tuz Gölü, Gölyazı-Eskil arası, step, 920 m, 38°32.543'N, 33°12.240'E, 9.VII.2005 O. Tugay 3500, Y. Bağcı & Uysal (holotype KNYA; isotypes GAZI, K).

ETYMOLOGY: The new species is named in honour of Prof. Dr. Kuddisi Ertuğrul, who is an eminent Turkish botanist from the Biology Department of Selçuk University in Turkey.

Herbaceous, stoloniferous, glaucous, perennial plants. Flowering stems erect, 5–15 cm, with glabrous ridges and persistent sterile shoots. Leaves fleshy, 3–5-nerved (lateral

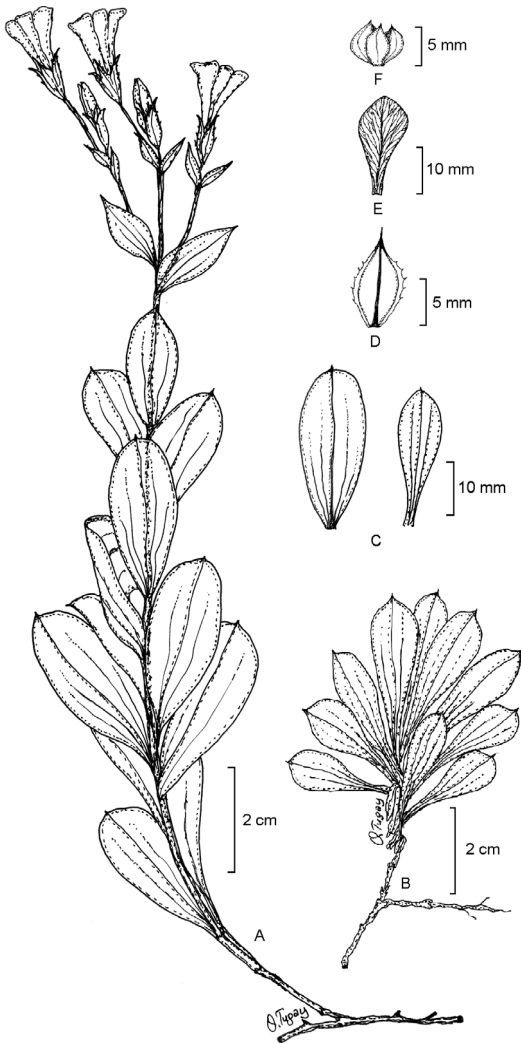


Fig. 1. *Linum ertugrulii* (from the holotype). — **A:** Habit. — **B:** Leaves of sterile shoot. — **C:** Median cauline leaves. — **D:** Sepal. — **E:** Petal. — **F:** Capsule.

nerves obscure); leaves of sterile shoots obovate to widely spatulate, subpetiolate, 10–20 × 4–12 mm, minutely mucronate or mucronulate; median cauline leaves oblanceolate to lanceolate, acute, 20–35 × 7–12 mm, without stipular glands; upper leaves similar to median leaves but smaller, 10–25 × 5–12 mm, acuminate, with scarious margins. Cymes 2–10-flowered (rarely 1-flowered), ending in two flowered cymules. Flowers homostilous; sepals lanceolate, 8–10 × 2–3 mm, keeled, with narrow membranous glandular-ciliate margins; petals yellow, 19–22 mm long; stamens 9–11 mm; anther 2 mm long.



Fig. 2. *Linum ertugrulii* flowering in the wild.

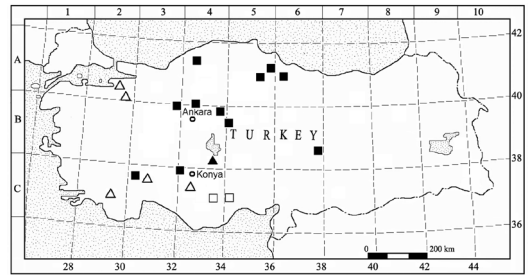


Fig. 3. Distribution of *Linum ertugrulii* (▲), *L. flavum* (■), *L. pamphylicum* (△) and *L. ciliatum* (□) in Turkey.

Capsule orbicular, 6 × 5–6 mm; beak 1 mm; seeds 3–2.5 mm. Flowering in July, fruiting in August.

DISTRIBUTION AND HABITAT ECOLOGY: *Linum ertugrulii* is only known from the type gatherings from a single location (Fig. 3), and it represents the Irano-Turanian element. It grows at 920 m in salty soils in steppe and arid places with species such as *Centaurea pterocaula*, *Gladiolus halophilus*, *Hypericum salsugineum*, *Limonium anatolicum*, *Microcnemum coralloides* subsp. *anatolicum*, *Onosma halophilum*, *Salvia halophila*, *Silene salsuginea* and *Teucrium polium*.

Linum ertugrulii is included in the section *Syllinum*, in which the stems have ridges; alternate leaves, without stipular glands; glabrous pedicels and sepals, the latter often keeled and with a fringed membranous margin; yellow petals, cohering by the claws; and a glabrous ovary. Therefore it is separated easily from the other species of the section.

Linum ertugrulii is allied especially to *L. flavum*, which is known mostly from central

Table 1. Morphological comparison of *Linum ertugrulii*, *L. flavum*, *L. pamphylicum* and *L. ciliatum*.

Characters	<i>Linum ertugrulii</i>	<i>L. flavum</i> s. lato	<i>L. pamphylicum</i> s. lato	<i>L. ciliatum</i>
Height	5–15 cm	20–35 cm	15–20 cm	15–20 cm
Stem	glabrous ridges	scabrid ridges	scabrid ridges	smooth
Basal leaves	fleshy, obovate to spatulate	not fleshy, lanceolate-oblong	not fleshy, orbicular to spatulate	not fleshy, oblong-lanceolate
Cauline leaves	oblanceolate to lanceolate, 3–5-nerved, 20–35 × 7–12 mm	oblong, oblong-oblanceolate or linear, 3–5(7)-nerved, 25–45 × 5–14 mm	oblong-lanceolate, 1–3-nerved, 10–30 × 2–6 mm	oblong-lanceolate, 1-nerved, 12–20 × 4–6 mm
Leaf margin	entire	entire	entire	ciliate
Stipular glands	absent	present	present	present
Ecology	salty soils	calcareous steppe, hillsides, fallow fields	dry hills, rocky slopes	rocky slopes, fallow fields

Anatolia (Fig. 3), but also to *L. pamphylicum* and *L. ciliatum*. A morphological comparison of the four taxa is provided in Table 1.

There are two species without stipular glands in the section *Syllinum*: *L. aretioides* and *L. persicum*. The former is known from West Anatolia and differs from *L. ertugrulii* in that the plant forms a dense, caespitose mat; the leaves are linear-setaceous or linear and 6 × 0.5–1.5 mm (not oblanceolate to lanceolate and 20–35 × 7–12 mm); the flowers are solitary, sessile (not 1–4, stalked); the sepals are ovate, 5–6 mm, broad membranous (not lanceolate, 8–10 × 2–3 mm, narrow membranous); and the petals are 10 mm long (not 19–22 mm).

Linum ertugrulii clearly differs from *L. persicum* in having the flowering stems 5–15 cm long (not 15–30 cm); the leaves oblanceolate to lanceolate and 20–35 × 7–12 mm, with 3–5 nerves (not linear-oblong, 10–15 × 1.5–3 mm, with 1 nerve); the sepals lanceolate and 8–10 × 2–3 mm (not ovate-lanceolate and 6–8 mm); and the petals yellow (not white).

REPRESENTATIVE SPECIMENS EXAMINED. **Turkey.** — *Linum ertugrulii*: See holotype, and (paratype): B4 Konya: Cihanbeyli, Tuz Gölü, Gölyazı-Eskil arası, step, 920 m, 17.VII.2008 *O. Tugay 5485* (KNYA). — *L. flavum* subsp. *scabrinerve*: A4 Ankara: Dikmentepe, *Krause 4619* (ANK!); A5 Çorum: İskilip, *M. Kılınç*, Herb. no. 3293 (ANK!); B4 Ankara: Ayaşbeli, *M. Vural*, Herb. no. 4161 (GAZI!); Ankara: Mamak, *S. Aslan 2114* (GAZI!); Ankara: Polatlı, *A. Güner 5085*, *K. Sorkun* (HUB!); B6 Kayseri: Geverek, *T. Ekim*, Herb. no. 5099 (ANK!); C4 Konya: Başarakavak Kasabası, *O. Tugay 4698* (KNYA). — *L. pamphylicum* subsp. *pamphylicum*: C4 Konya: Bozkır, *O. Tugay 2963* (KNYA). — *L. pamphylicum* subsp. *olympicum*: A2 Bursa: Uludağ,

Ö. Yılmaz, Herb. no. 11994 (BULU). — *L. pamphylicum* subsp. *papilliferum*: C2 Muğla: Fethiye-Altınyayla (Dirmil) *Ö. Yılmaz & E. Erdoğan*, Herb. no. 19968 (BULU). — *L. ciliatum*: C5 Karaman: Ayrancı, *O. Tugay 4845* (KNYA); Ereğli, Aydos Dağı, *S. Erik 1753* (HUB!). — *L. mucronatum* subsp. *mucronatum*: A4 Kırkkale: Delice, *A. A. Dönmez 2366 & A. Güner* (HUB!); B4 Ankara: Polatlı-Sarıoba, *M. Vural 6247*, *N. Adıgüzel*, *F. Karavelioğulları* (GAZI!); B7 Erzincan: Kemah, *Ş. Yıldırım 1798* (HUB!); C6 Gaziantep, *Davis 28027*, *Hedge* (ANK!); Kahramanmaraş: *Z. Aytaç*, *H. Duman*, Herb. no. 4630 (GAZI!); Kahramanmaraş: *H. Duman*, Herb. no. 2918 (GAZI!); Malatya: *E. Aktoklu 1302*, *B. Yıldız* (ÜH!); C7 Şanlıurfa: *Davis 27977*, *Hedge* (ANK!); Şanlıurfa: Ceylanpınar, *Z. Aytaç*, *N. Adıgüzel 2085* (GAZI!); C8 Mardin: Kızıltepe, *Davis 28665*, *Hedge* (ANK!). — *L. mucronatum* subsp. *orientale*: B9 Bitlis: Beyran, *Davis 22167* (ANK!); Bitlis: Nemrut Dağı, *Davis 23534* (ANK!); C5 Adana: *H. Peşmen*, *S. Erik* (HUB!). — *L. mucronatum* subsp. *armenum*: A8 Bayburt: *Ö. Bahadır*, *İ. Bahadır* (AEF!); Gümüşhane: *Coşkunçelebi 445* (KTUB!); B5 Aksaray: *F. Ertuğ 39* (GAZI!); Nevşehir: Çavuş, *M. Vural*, Herb. no. 5331 (GAZI!); Nevşehir: Zelve, *M. Vural*, *Ü. Kol*, *N. Adıgüzel* Herb. no. 4830 (GAZI!); B6 Kayseri: Sarız, *Z. Aytaç* Herb. no. 2496 (GAZI!); B7 Elazığ: *T. Ekim* Herb. no. 7180 (GAZI!); Erzincan: *K. P. Buttler 21797* (ANK!); B9 Van: Çoravani Köyü, *A. Güner 1710* (HUB!); C4 Konya: Hadim, *O. Tugay 1309* (KNYA); Bozkır, *O. Tugay 1653* (KNYA); C5 Konya: Ereğli, *S. Erik 2003* (HUB!); C8 Mardin: Mardin-Nusaybin arası, *Davis 28453*, *Hedge* (ANK!). — *L. mucronatum* subsp. *gypsicola* var. *gypsicola*: A3 Ankara: Beypazarı-Ankara yolu, *Z. Aytaç*, *M. Ekici* (GAZI!); A4 Çankırı: Ilgaz yolu, *M. Sağroğlu 1321* (GAZI!). — *L. aretioides*: B2 İzmir: Ödemiş, *L. Bekat* Herb. no. 31495 (EGE!). — *L. pamphylicum*: C4 Konya: Bozkır, *O. Tugay 2963* (KNYA). **Iran.** — *L. persicum*: Denna Mountain, *I. Mehrepan* (photo SFPH!).

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