

## A contribution to the genus *Allium* L. (Sect. *Codonoprasum*) in Turkey

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**Abstract:** *Allium dentiferum* Webb & Berthel and *Allium dodecanesii* Karavokyrou & Tzanoudak were collected during a floristic study of South Anatolia. *A. dodecanesii* is reported as a new record for the flora of Turkey. Although collected earlier by Aznavour, Bothmer, and Brullo, specimens of *A. dentiferum* were misinterpreted and the species was thus not recorded for the flora of Turkey. We provide drawings and photographs of the species, and maps of their distribution in Turkey.

**Key words:** *Alliaceae*, *Allium*, *Codonoprasum*, new record, South Anatolia, Turkey

### Türkiye florasına *Allium* L. (sect. *Codonoprasum*) cinsi ile ilgili katkılar

**Özet:** Güney Anadolu'da yapılan floristik çalışma sırasında *Allium dentiferum* Webb & Berthel and *Allium dodecanesii* Karavokyrou & Tzanoudakis türleri toplanmıştır. *A. dodecanesii* Türkiye florası için yeni kayıttır. *A. dentiferum* türü ise Aznavour, Bothmer ve Brullo tarafından daha önce toplanmış, ancak örnekler yanlış tayin edildiği için Türkiye florasında yer almamıştır. Bu çalışmada türlerin çizimleri ve fotoğrafları ile Türkiye'deki yayılışlarını gösteren harita verilmiştir.

**Anahtar sözcükler:** *Alliaceae*, *Allium*, *Codonoprasum*, yeni kayıt, Güney Anadolu, Türkiye

### Introduction

The genus *Allium* L. is the largest genus of petaloid monocotyledons, comprising about 750 species naturally distributed only in the northern hemisphere. It is represented by 183 taxa in Turkey and it is grouped into 14 sections. Sect. *Codonoprasum* Reich. is the largest and the most complicated section in Turkey, where 44 taxa are represented, of which 18 are endemic to the country (Kollman, 1984; Özhatay &

Tzanoudakis, 2000; Özhatay & Kültür, 2006; Özhatay et al., 2009).

Two additional species were recorded during a floristic study of South Anatolia, increasing the number of taxa of the sect. *Codonoprasum* occurring in the flora of Turkey to 46. *Allium dentiferum* Webb & Berthel. (Sect. *Codonoprasum*) is a synanthropic species distributed throughout the Mediterranean area (Brullo et al., 2008). A second species, *A.*

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*dodecanesii* Karavokyrou & Tzanoudakis, is endemic to the Dodecanese Islands (Karavokyrou & Tzanoudakis, 1994).

### Materials and methods

During field studies in South Anatolia in June 2008, some *Allium* specimens were collected (Figure 1). Preliminary identifications were made using the *Flora of Turkey*, (Kollman, 1984; Özhatay & Tzanoudakis, 2000), *Flora Orientalis* (Boissier, 1884), *Flora of Syria, Palestine and Sinai* (Post, 1933), *Flora Iranica* (Wendelbo, 1971), *Flora of the USSR* (Komorov, 1935), *Flora of Iraq* (Wendelbo, 1985), and *Flora Europaea* (Tutin et al., 1980), and related papers (Karavokyrou & Tzanoudakis, 1994; Brullo et al., 2008), followed by comparison with specimens kept in various herbaria (AEF, BM, E, EGE, G, HUB, ISTE, ISTF, K). The specimens were identified as *A. dentiferum* Webb & Berthel and *A. dodecanesii* Karavokyrou & Tzanoudakis.

### Results

*Allium dentiferum* Webb & Berthel., Hist. Nat. Iles Canaries (Phytogr.) 3: 345. (1848). [Sect. *Codonoprasum* Reichb.].

Type: Les champs los Saucos, La Palma, 27 July 1845, *Despreaux 1003* [FI-W, lecto., selected by Brullo et al. in Bot. Chronika 10: 786 (1991)] (Figure 2).

Syn. *A. monspessulanum* Willd., Enum. Pl. Suppl.: 16. (1814), non Gouan (1773); *A. parnassicum* (Boiss.)

Halácsy subsp. *minoicum* Zahar. in Biol. Gallo-hellen. 6: 50. (1975). *A. amansii* Boreau, Fl. Centre France, ed. 3, 2: 631 in obs. 1857.

Bulb ovoid, 1.5-2.5 × 1-2 cm, with many bulbils, inner tunics brown, outer tunics dark brown and long decurrent in the lower part of the stem. Stem rigid, 40-90 cm long, covered by leaf sheaths up to ½ of its length. Leaves 5-6, 20 × 2-4 cm, semicylindrical and fistulous, with ribs on abaxial surface. Inflorescence compact, fastigiate-ovoid, many-flowered; pedicels unequal 1.5-4.0(-6.0) cm long. Spathe valves unequal, long appendiculate, larger 9-12 nerved, 5-18 cm long, smaller 7-9 nerved, 4-10 cm long. Perigon campanulate with tepals yellow-greenish or rarely purple-greenish, suffused with brown, 5.5-6.0 mm × 2.5-3.0 mm, obtuse, usually apiculate. Stamens included or anthers slightly exerted; filaments white, linear-subulate, outer 2.0-2.5 mm long, inner 2.8-3.0 mm long, connate below in annulus 1.2-1.5 mm high with entire or bifid interstaminal teeth. Anthers yellowish, ovate to ovate-elliptic, 1.3-1.4 × 1.0-1.1 mm, obtuse. Ovary cylindrical, narrowed at apex, papillose in distal part, 4.0-4.5 × 2.0 mm. Capsule obovoid, 5-6 × 4.5 mm. Flowering: June-July.

**Habitat:** Ruderal places, road sides, cultivated fields, and meadows.

**General Distribution:** Mediterranean element. Well distributed throughout the Mediterranean.

**Distribution in Turkey:** A2 (A) İstanbul; A2 (E) İstanbul, C3 Antalya; C2 Muğla, Fethiye; C1 Muğla, Datça.

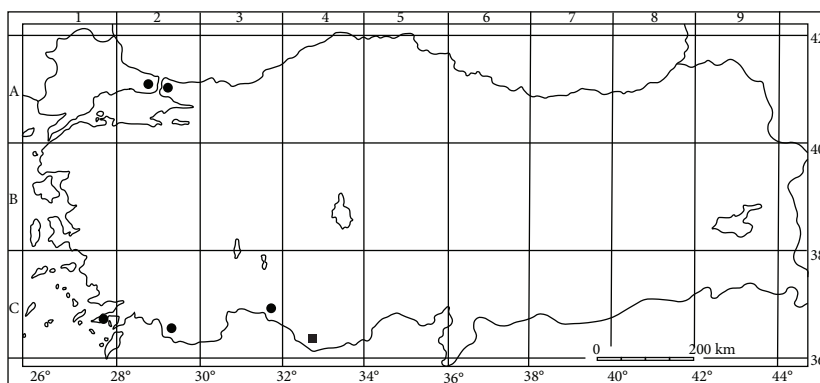


Figure 1. Distribution map of the species: ● *Allium dentiferum*, ■ *Allium dodecanesii*

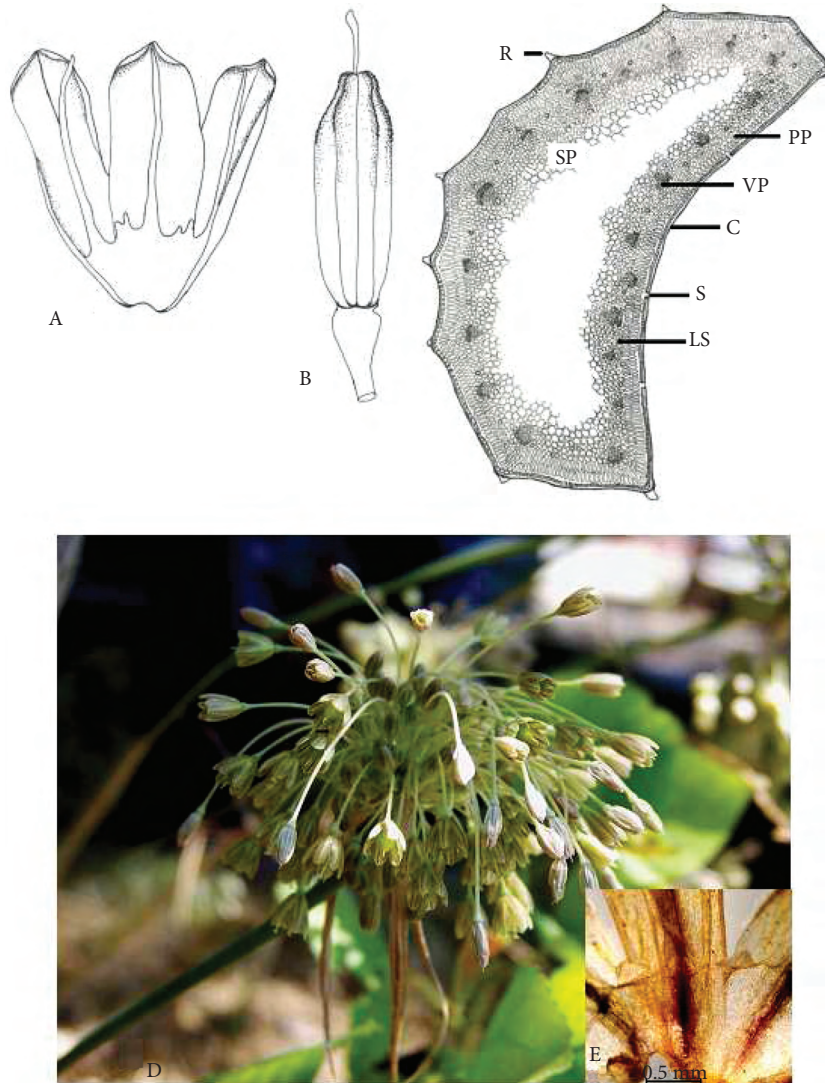


Figure 2. A; Perigon segments and filaments ( $\times 10$ ), B; Ovary ( $\times 10$ ), C; Leaf cross section ( $\times 40$ ), D; Habit, E; Interstaminal teeth ( $\times 20$ ). (C; Cuticle, LS; Laticifer system, PP; Palisade Parenchyma, R; Ribs, SP; Spongy Parenchyma, S; Stomate, VB; Vascular Bundle). [*A. dentiferum* ISTE 86053].

**Specimens examined:** A2 (A): İstanbul: *Maltepe*, ISTE 18096; C3 Antalya: Side, 9 m, ISTE 86053.

*Allium dentiferum* resembles *A. paniculatum* subsp. *fuscum* (Waldst. & Kit.) Soó, *A. paniculatum* L. subsp. *paniculatum*, and *A. pallens* L. subsp. *pallens*, but *A. paniculatum* subsp. *fuscum* differs in having bulbs with pale brown to blackish-brown outer tunics and whitish inner ones, a scape up to 40 cm high, flat and longer leaves, a lax hemispheric umbel, and no interstaminal teeth; *A. paniculatum* subsp. *paniculatum* has whitish tunics, fewer leaves, globose

and spreading umbel, pink-purplish flowers, and no interstaminal teeth; and *A. pallens* subsp. *pallens* differs in having whitish bulb tunics, a very compact and globose inflorescence, no interstaminal teeth and a smooth ovary.

***Allium dodecanesii*** Karavokyrou & Tzanoudakis in Ann. Muse. Goulandris 9: 141, f. 1 (1994). [Sect. *Codonoprasum* Reichb.].

Type: Greece: Prov. Dodekanisos. Ins. Lipsos: on the way to Monodendri, *Panitsa 2466* (UPA, syn.); Ins. Kalymnos: Myli *Karavokirou 4* (UPA, syn.); Therma,

*Karavokirou* 3 (UPA, syn.); Potami, *Karavokirou* 51 (UPA, syn.). (Figure 3).

Bulb ovoid-globose, 0.8-1.5 cm, outer tunics membranous, brown. Scape 20-40 cm, long, terete, covered by leaf sheaths up to 1/2-1/3 of its length. Leaves 2-5, linear, ±1 mm wide. Spathe valves unequal, persistent, opposite, larger 8-11 cm long, smaller 6-8 cm long. Umbel diffuse, lax, many-flowered; pedicels unequal, flowering pedicels 10-25 mm long, fruiting pedicels erect and 50 mm long. Perigon ovate-campanulate, tepals equal, 4-5 × 2 mm, obtuse, irregularly toothed, yellowish-brown. Stamens exserted, anthers yellow, filaments purple.

Ovary obovate, sessile, apex truncate, style white, longer than stamens, ±5 mm long, stigma inconspicuous. Capsule globose, ±4 mm diameter. Flowering: June-July.

**Habitat:** Rocky coastal areas, *Pinus* sp. forests.

**General Distribution:** Mediterranean element, restricted to the Decanese Islands of Lipsos and Kalimnos and Mersin on the Turkish mainland.

**Distribution in Turkey:** C4 Mersin.

**Specimens examined:** C4 Mersin: Kuzucubelen, 671 m, *ISTE* 86054.

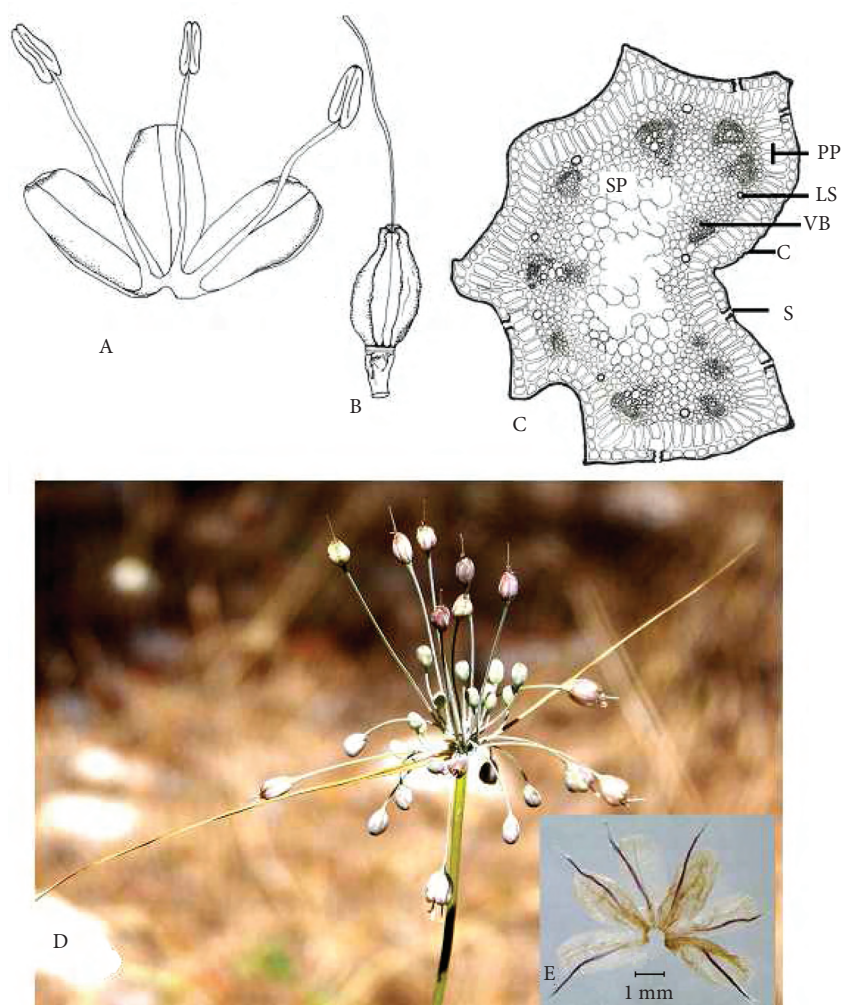


Figure 3. A; Perigon segments and filaments (×6), B; Ovary (×10), C; Leaf cross section (×70), D; Habit, E; Stamens (×5). (C; Cuticle, LS; Laticifer System, PP; Palisade Parenchyma, SP; Spongy Parenchyma, S; Stomate, VB; Vascular Bundle). [*A. dodecanesii*, *ISTE* 86054].



*A. dodecanesii* resembles *A. stamineum* Boiss. and *A. pseudoflavum* Vved. but is well distinguished from both by its lax, ±spherical inflorescence, yellowish-brown perigon segments (*A. stamineum* has purplish-pink perigon segments) and glabrous leaf-sheaths (*A. pseudoflavum* has velutinous or scabrid leaf sheaths).

## Discussion

The taxonomy of *A. dentiferum* is poorly understood and the species is frequently misinterpreted in the literature and herbarium collections, and confused with other taxa. The first Turkish record that we have traced is one by Aznavour from İstanbul in 1904 (Aznavour G!), at which time it was identified as *A. paniculatum* var. *fuscum* Boiss, and a second record by A. Baytop from İstanbul, Maltepe (ISTE 18096!) was identified as *A. paniculatum* subsp. *paniculatum*. The presence of interstaminal teeth on the specimens was identified and thus the previous identification was revised

(Brullo et al., 1996, 2008). The species was also collected by Bothmer from Marmaris in 1966, Jatlison-Dunes from İstanbul in 1907 (coll. ?), and by Brullo and Pavone from Fethiye in 1988 (Brullo et al., 1991). Although widespread in the Mediterranean area the species was not recorded for the flora of Turkey.

*Allium dodecanesii* was previously reported only from the Islands Lipsos and Kalimnos in the flora of Turkey. The Aegean Islands are considered parts of Anatolia and so the new locality on the nearby Turkish mainland is not surprising.

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