



## *Gagea antakiensis*, a new species from Southern Anatolia, Turkey and the new finding of *Gagea lojaconoi* (Liliaceae)

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### Abstract

*Gagea antakiensis* (Liliaceae) is described and illustrated as a new species from Hatay province in South Anatolia, Turkey. The new species belongs to the section *Didymobulbos*, based on morphological features, and it is close to *G. lojaconoi*. The samples belonging to *G. chrysantha* species group in the Flora of Turkey were confirmed as *G. lojaconoi*. A taxonomic description, an illustration of the new species, geographical distribution, habitat and ecology, conservation status of the new species and its affinity to *G. lojaconoi* and *G. chrysantha* species group are given in this study. In addition, the anatomical features of *G. antakiensis* and *G. lojaconoi* are given.

**Key words:** taxonomy, *Didymobulbos*, Antakya

### Introduction

*Gagea* Salisbury (1806: 555) (incl. *Lloydia* Salisb. ex Reichenbach (1830: 102) is one of the 15 genera currently included in the family Liliaceae (Tribe Tulipeae) and is represented by approximately 280 (Peruzzi 2012a) to 300 species worldwide (Tison *et al.* 2013). The members of the genus are largely distributed across the temperate and subtropical regions of Eurasia, Europe, and Western Asia, with a few species in North Africa and North America (Zarrei *et al.* 2007, 2010a, 2010b, Peruzzi 2012a). Mediterranean species represent about 25% of the existing species from all *Gagea* sections (Peruzzi 2008a). In Turkey, this genus has 26 species and one subspecies, two of which are endemic (Rix 1984, Hamzaoglu *et al.* 2008, Tison *et al.* 2013).

In the recent years, many researchers have contributed to taxonomy within the genus (Ali & Levichev 2007, Levichev 1999, 2006, Levichev & Ali 2006, Peruzzi 2003, 2008a, 2012b, Peruzzi *et al.* 2007, 2008a, 2008b, 2009a, 2009b, 2011, Peruzzi & Bartolucci 2006, Peterson *et al.* 2004, 2008, 2009, 2010, 2011, Schnittler *et al.* 2013, Tison *et al.* 2013, Zarrei *et al.* 2007, 2009, 2010a, 2010b, 2010c, 2011). Currently, the genus *Gagea* includes 15 sections, mainly distinguished according to the morpho-anatomic and ontogenetic features of the basal and cauline leaves, peduncle, pedicels, tepals, and seeds (Peterson *et al.* 2008, Peruzzi 2012a).

*Gagea* has not been studied well worldwide because it is a taxonomically very problematic genus (Townsend & Guest 1985, Levichev 1999, Peruzzi 2003, 2008a, Peterson *et al.* 2004, Zarrei *et al.* 2007, 2011). The range of variation in morphological characters is limited, making species recognition more difficult. Polyploidy, hybridization, and convergent evolution make species boundaries unclear (Levichev 1990, Gutierrez Esteban *et al.* 2009, Peruzzi *et al.* 2009a, 2011, Peruzzi 2008a, 2008b, 2012b, Peterson *et al.* 2009, 2011). Their short habit and inconspicuous appearance mean that they have often been ignored by collectors so that there is a shortage of herbarium specimens (Zarrei *et al.* 2011).

*Gagea longifolia* Lojacono (1908: 133) was published and was named contrary to the rules (nom. illeg.) by Lojacono, and was typified by Peruzzi & Tison (2005), who also published a photo of the lectotype. Hence, a replaced synonym was proposed, namely *Gagea lojaconoi* (Peruzzi 2008: 145). These authors also stated that the *G. chrysantha* group needs further study (Peruzzi & Tison 2005, Peruzzi *et al.* 2009b). Tison *et al.* (2013) exclude the presence in Turkey of *G. chrysantha* (endemic to Sicily: Peruzzi & Tison 2005, 2007, Peruzzi *et al.* 2008a, 2009b, Tison *et al.* 2013), and state that Turkish populations might be referred to *G. amblyopetala* Boissier (1846: 107) or *G. lojaconoi*.

*G. antakiensis* is distributed in South Anatolia, while *G. lojaconoi* is distributed in North West Turkey. Flowering time of *G. antakiensis* is late January and February, and possible fruiting time is late February and early March. Nevertheless, flowering time of *G. lojaconoi* is March and early May, and fruiting time is late May and June. *G. lojaconoi* has been until now confused with *G. chrysantha* in the Flora of Turkey (Rix 1984).

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## APPENDIX 1. Specimens investigated of *Gagea chrysantha* species group.

*G. lojaconoi*:—ITALY: Sicily, Ficuzza nella via che da Godrano conduce al Gurgo Lungo—vicino a *Quercus fontanesii* negli aperti sopra la strada, 22 March 1829, *Tineo* (Lectotypedesignated by Peruzzi & Tison 2005, PAL photo!); TURKEY: Kırklareli, above Kastros, 20 March 1974, *A. Baytop 27248* (E!); Taşagıl–Babaeski, steppe, 95 m, 6 April 2011, *M. Tekşen 2766* & *S. Karaman* (GAZI!); Taşagıl–Babaeski, steppe, 106 m, 7 April 2011, *M. Tekşen 2768* & *S. Karaman* (GAZI!); Edirne: Babaeski to Havsa, nr. Sinit, 25 March 1974, *A. Baytop 27260* (E!); İstanbul: Nezahat Gökyiğit Botanic Garden, scrubs, wet places, 67 m, 5 April 2011, *M. Tekşen 2765* & *S. Karaman* (GAZI!); ibidem, 7 June 2011, *M. Tekşen 2865* & *S. Karaman* (GAZI!); Çamlıca, 4 April 1974, *A. Baytop 27334* (E!); Heybeli Ada (Halki), ca. 30 m, 24 March 1957, *Davis 26235* & *Hedge* (E!, ANK!); Kayışdağ, 5 March 1952, *A. Berk 2597* (HUB!); Eyüp, 2 February 1936, *Gassner 186* (ANK!); Bursa: Uludağ, Kirazlı, 14 May 1955, *M. Heilbornn ISTF 14154* (ISTF!); Uludağ, Kirazlıyayla, 17 May 1944, *M. Heilbornn ISTF 2908* (ISTF!); Uludağ, Elmaçukuru, 13 May 1944, *M. Başarman ISTF 2849* (ISTF!); Uludağ, 16 May 1944, *M. Başarman ISTF 2867* (ISTF!); Halkalı, meadows and hills, 3 April 1965, *B. Tutel ISTF 19136* (ISTF!); Bakırköy, Ispartakule train station–Ömerli Boğaz, cultivated fields, 15 March 1978, *İ. Delice, R. Öztürk ISTF 31235* (ISTF!); Adalar, Kınalıada, machie, 6 April 1967, *H. Demiriz, B. Tutel, ISTF 21946* (ISTF!); Belgrat forest, ca. 105 m, 15 March 1935, *Balls 2071* (ANK!); Balıkesir: Simav to Sındırgı, 42 km to Sındırgı, 31 March 1973, *T. Baytop 23994* (E!).

*G. chrysantha*:—Italy, Sicily, Ficuzza, 1829, *Jan* (lectotype designated by Peruzzi & Tison 2007, G!).

*G. amblyopetala*:—Greece in montibus Atticae Parnes, s.d., *Heldreich* (lectotype designated by Stroh 1937, B photo!)