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Short Report

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New record for the flora of Türkiye: *Allium montelburzense* R.M. Fritsch, Y. Salmaki & SH. Zarre *Allium* sect. *Scorodon* (Amaryllidaceae)

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Abstract

Background and Aims: *Allium montelburzense* R.M. Fritsch, Y. Salmaki & SH. Zarre was introduced to the scientific world as a sect. *Scorodon* 2006 in Iran. Now it is given as a new record for the flora of Türkiye.

Methods: The specimens collected during the field studies carried out between July and September in the high mountainous regions of Hakkari and Van provinces between 1999 and 2023 were identified by comparison with the flora of the country and neighbouring countries.

Results: This species has been known from Iran until now, but for the first time a record is given from Türkiye. A detailed morphological picture, its photographs in its natural distribution area and the updated map of the distribution area are presented in the study.

Conclusion: In my 25 years of fieldwork and herbarium research, most of the specimens identified as *Allium anacoleum* Hand.-Mazz. have been misidentified (except the specimens from the type locality and from the vicinity of Elazığ). While writing about the flora of Türkiye, all of the high mountain specimens collected from Hakkari and Van are *Allium montelburzense*.

Keywords *Allium montelburzense* · Hakkari · Van · New record · Türkiye

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INTRODUCTION

Allium L. is a highly polymorphic and taxonomically difficult genus, naturally distributed only in the Northern Hemisphere. The main centre of diversity is southwest and central Asia, with a smaller second centre in North America (Friesen et al., 2006). *Allium* is one of the largest genera in the family Amaryllidaceae (Friesen et al., 2006; Li et al., 2010; Herden et al., 2016) and comprises more than 1000 species (Friesen et al., 2022). The genus is characterised by bulbs (some species rhizomes) surrounded by membranous (sometimes eventually fibrous) tunics; terminal umbels; free or nearly free, 1-veined tepals; a usually sub-gynobasic style and a loculicidal capsule containing 1 or 2 seeds per loculus (Kollmann, 1984; Friesen et al., 2006;). In recent years, numerous new *Allium* taxa have been described, and the current number of species in Türkiye is around 227. Almost half of them are endemic to the country, making Turkey an important centre of *Allium* diversity in SW Asia (Koyuncu et al., 2023; Fırat, 2024; Koçyiğit et al., 2024; Yıldırım et al., 2024). *Allium* is one of the largest genera in Türkiye, and 120 species are endemic to the country (Fırat at al., 2018; Fırat, 2015, 2017, 2023 and 2024; Koçyiğit et al., 2023; Koyuncu et al., 2023). *Allium* sect. *Scorodon*, the third largest and taxonomically most complex section in Türkiye, contains 47 taxa, 33 of which are endemic (Koçyiğit et al., 2014, 2023, 24; Fırat, 2015, 2017, 2023, 2024 a-b; Koyuncu et al., 2023; Yıldırım et al., 2024).

MATERIALS AND METHODS

During floristic surveys in the high alpine mountain region of eastern Anatolia (Kavuşşahap mountain/Van and Cilo-Sat mountains/Hakkari) (Figure 1) in late July and early September between 1999 and 2023, unidentified specimens from the genus *Allium* were collected; therefore, the author of the study decided to analyse morphological characters of the species. Herbariums where identified or unidentified specimens of this species were examined during this period are AEF, ANK, BM, E, HUB, ISTE, K, VANF, VHLV and W. Then, some other specimens were collected and examined using a wide range of literature for identification (Wendelbo, 1971, 1985; Kollmann, 1984; Özhatay and Tzanoudakis, 2000; Fritsch, et al., 2006; Koyuncu et al., 2023). Because of this effort and with the light of new characters observed, the specimens identified as *Allium montelburzense*, which is a new record for the Flora of Türkiye. Specimens of the *Allium montelburzense* were held in VHLV and the personal herbarium of the author (Herb. Fırat).

RESULTS

Allium montelburzense **R.M. Fritsch, Y. Salmaki and SH. Zarre**, (Figure 2–4)

Rostaniha. Botanical Journal of Iran, 7(Suppl. 2): 261 (264; fig. 4, map), 2007.

Holotype: Iran, Prov. Mazandaran, Central Alborz protected area, 2 km after Kandavan tunnel to Siah-Bisheh, N 51° 19′ 49′ ′, E 36° 12′ 11′′, 2780 m, 17.07.2005 leg. SH. Zarre & H. Moazzeni 36583 (TUH!), isotypes: (B!, M!, TARI!).

Description: Bulb single, ovoid, ca. 2 × 1.5 cm; outer tunics greyish brown to black, collum 2–2.5 cm long; inner tunic papery to hyaline, white. Scape erect, ca. 15–20 cm × 2 mm, greyish green, glabrous. Leaves 1–2, fistulous, circinate, 10–13 cm × 2 mm, glabrous or on the nerves finely covered with short scabrid hairs. Spathe ± membranous, divided into two ovate-lanceolate acuminate parts, pink to purplish with darker veins, ca. 5 mm long. Inflorescence semi-globose, 15–30-flowered. Pedicels unequal in length, pink, thin, 5–10 mm long. Tepals narrowly lanceolate-oblong, obtuse at tip, 3–3.2 ×1.2–1.5 mm, basally 1–2 mm united, slightly deflexed and involute, pink to purple with darker veins. Filaments 7–8 mm long, about two times longer than tepals, basally for 1.5–2 mm connate to each other and for the same length adnate to tepals, lanceolate-linear, pink to purple. Anthers 2.5 mm long, purplish. Ovary obovate to globose, finely tuberculate, sessile. Style filiform, 4.5 mm. Capsules obovate, 3–5 mm diam. Seeds black, convex, elliptic in outline, ca. 4 × 2–2.5 mm.

Habitat: Subhumid pastures, dry rocky slopes, 2600–3500 m.

Phenology: Flowering from late July to early September and fruiting from September to October.

Distribution in Türkiye: Van and Hakkari

General distribution: Iran and new to Türkiye

Other locality in Iran: Iran: Prov. Mazandaran: Kelardasht, Kuh-e Takht-e Suleyman, 3620 m, July 12, 1973, *M. Fotovat 10195* (TARI); approximately 10 km after tunnel-e Kandavan, mountains above Pol-e Zanguleh, about 2400 m, August 12, 2006, *SH. Zarre & H. Moazzeni 36584* (TUH, TARI).

New localities in Türkiye: *Allium montelburzense*: Türkiye: B9 Van: Bahçesaray district, Vari krapit pass, rocky, 3000-3200 m, 22 July 2000, *M. Fırat 2952* (VHLV and Herb. M. Fırat) (det. by Prof. Dr. Mehmet Koyuncu as *Allium anacoleum* Hand.-Mazz.); B9 Van: Bahçesaray district, Arnos mountain, subhumid pastures, 3300-3500 m, 24 July 2000, *M. Fırat 3164* (VHLV and Herb. M. Fırat) (det. by Prof. Dr. Mehmet Koyuncu as *Allium anacoleum* Hand.-Mazz.); B9 Van: Bahçesaray district, Kavuşşahap mountain, subhumid pastures, 3100 m, 18 August 2001, *M. Fırat 3801* (Herb. M. Fırat); Çatak district, Kavuşşahap mountain, dry rocky slopes, 3100 m, 16 August 2002, *M. Fırat 4400* (Herb. M. Fırat); Gevaş district, Artos mountain, subhumid pastures, 3100 m, 12 August 2006, *M. Fırat 8726* (Herb. M. Fırat); Gürpınar

district, Güzeldere pass, dry rocky slopes, 2730 m, 8 August 2007, *M. Fırat 9105* (Herb. M. Fırat); C10 Van: Başkale district, Mor mountain, dry rocky slopes, 2812 m, 2 August 2008, *M. Fırat 9904* (Herb. M. Fırat); Bahçesaray district, Kavuşşahap

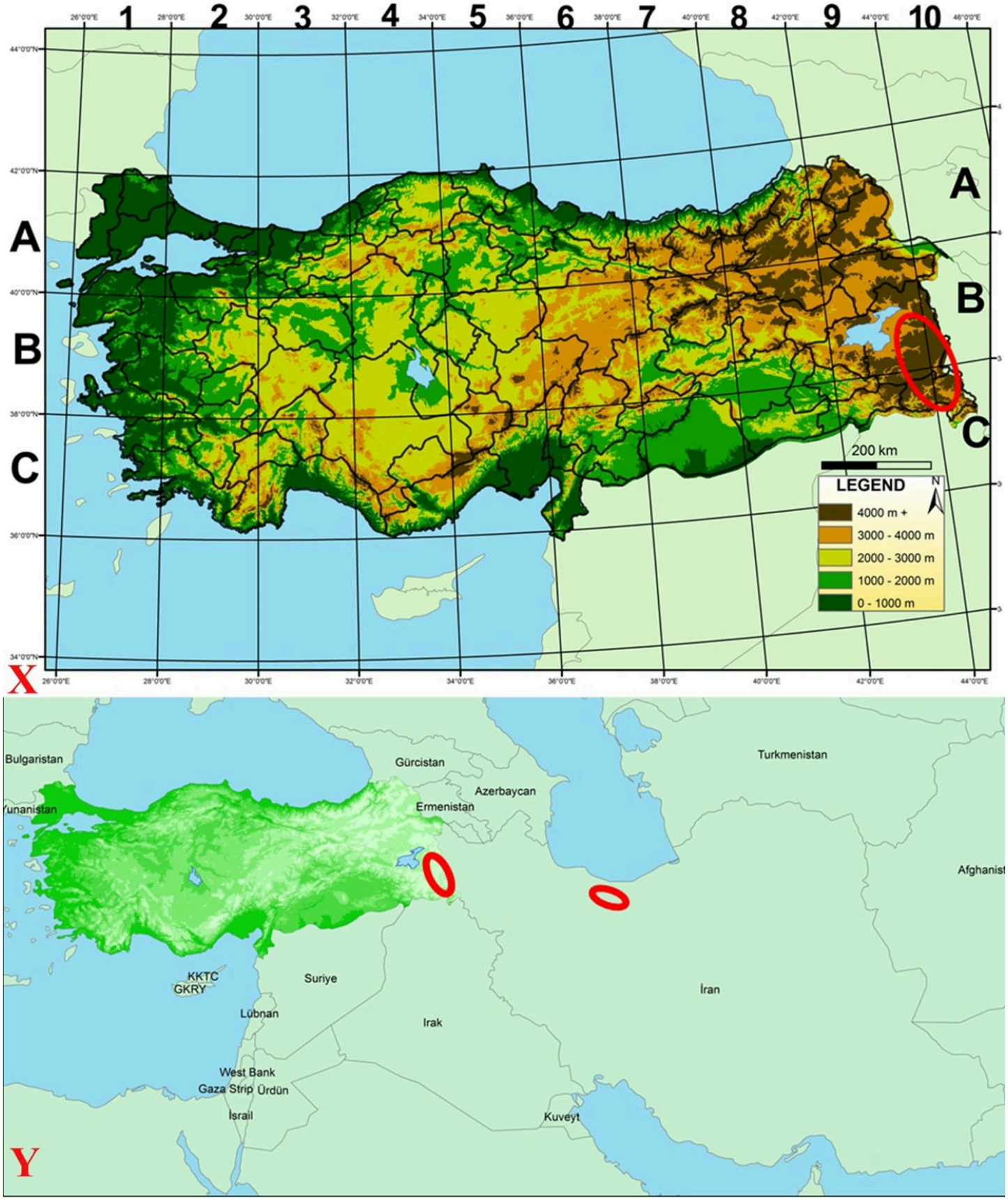

Figure 1. Distribution map *Allium montelburzense* (red ellipse); **X** in Türkiye, **Y**. in Türkiye and Iran.

Figure 2. Habitat of *Allium montelburzense;* **A.** Sat mountains (Hakkari), **B.** Kavuşşahap mountains (Van)

Figure 3. A-B Habitat and habit of *Allium montelburzense (M. Fırat 40122).*

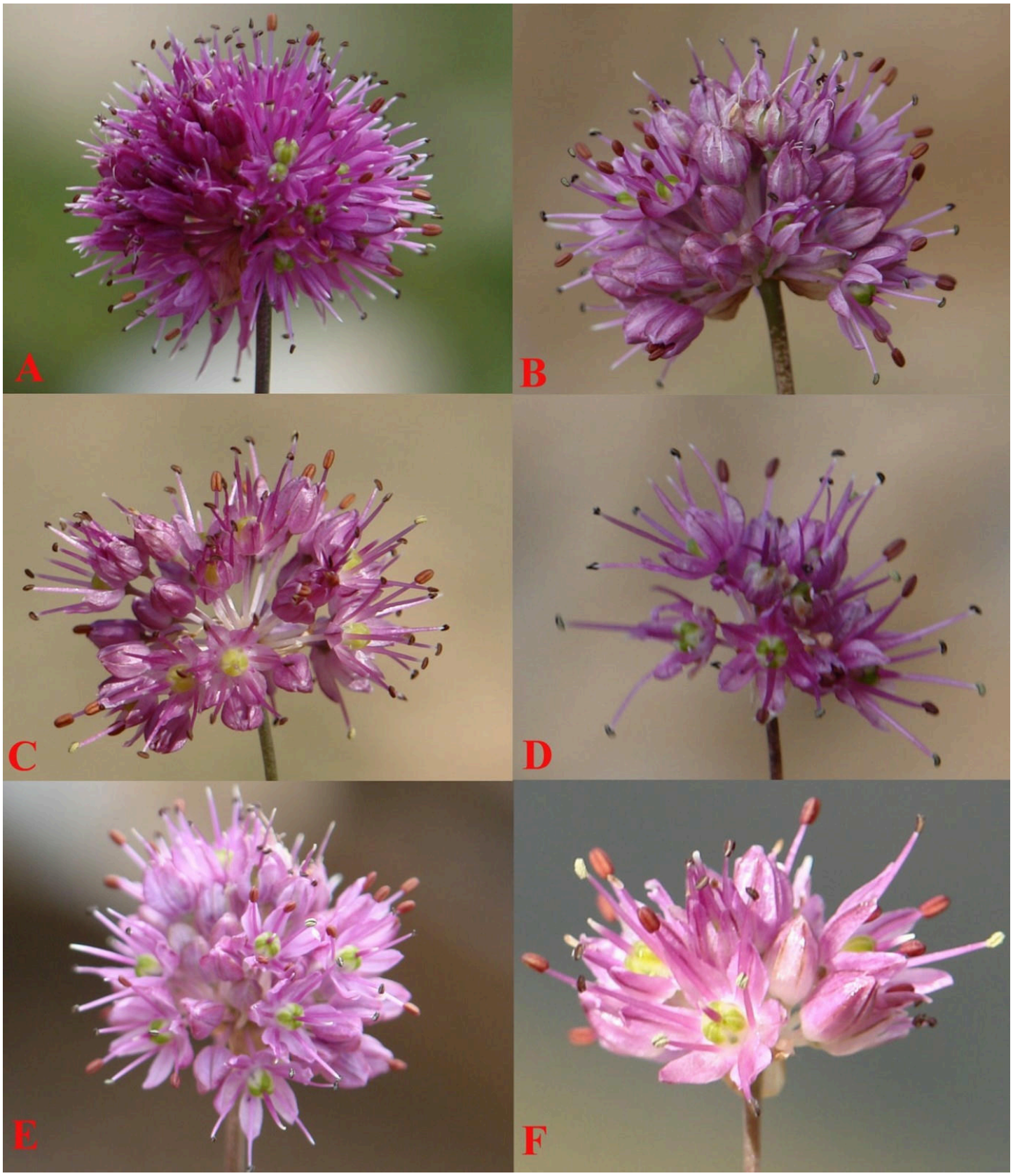

Figure 4. A-F. Inflorescence variations in the same locality of *Allium montelburzense (M. Fırat 40122).*

mountain, subhumid pastures, 3100 m, 15 August 2023, *M. Fırat 40122* (Herb. M. Fırat); C9 Hakkari: Berçelan plateau, subhumid pastures, 3400 m, 28 August 2003, *M. Fırat 5011* (Herb. M. Fırat); Yüksekova district, Sat mountain, dry rocky slopes, 3400 m, 23 August 2004, *M. Fırat 7101* (Herb. M. Fırat); Hakkari, Cilo mountain, dry rocky slopes, 3200 m, 18 August 2005, *M. Fırat 8061* (Herb. M. Fırat); Yüksekova district, above Meydan Belek

Table 1. Morphological comparison between *Allium montelburzense* and *A. anacoleum*.

Characters	***Allium montelburzense***	***Allium anacoleum*** (Handel-Mazzetti, 1914)
Bulb	ovate, ca. 1.5 cm	globose-ovate ± 2 cm
Scape	15–20 cm	8–25 mm
Leaves	1–2	2–3
Tepals	narrowly lanceolate-oblong, obtuse at tip, 3.0–3.2 mm slightly deflexed	ovate lanceolate, acute, 3.5 mm
Stamens	about two times longer than tepals	long tepals
Anthers	purple	yellow

plateau, Deriye Cafer, subhumid pastures, 2900 m, 12 August 2012, *M. Fırat 28071* (Herb. M. Fırat).

Other collector samples were examined: B9 Van: Gürpınar district, Sarıyaprak mezrası ile Gülaçlar köyü arası, step, 2400 m, 18 July 2001, *Murat Ünal 6218* (VANF 8059) (det. by Prof. Dr. Mehmet Koyuncu as *Allium anacoleum* Hand.-Mazz.); Gürpınar district, Güzelsu Başkale arası, Güzeldere geçidi, step, 2730 m, 02 August 2001, *Metin Armağan 1736* (VANF 4522) (det. by Prof. Dr. Mehmet Koyuncu as *Allium anacoleum* Hand.-Mazz.); Gevaş district, Artos mountain, Nasip Demirkuş 19.07.98 (VHLV) (det. by Prof. Dr. Nasip Demirkuş as *Allium anacoleum* Hand.-Mazz.).

DISCUSSION

In my 25 years of fieldwork and herbarium research, most of the specimens identified as *Allium anacoleum* Hand.-Mazz. have been misidentified (except the specimens from the type locality and from the vicinity of Elazığ) (Table 1). While writing about the flora of Türkiye, all of the high mountain specimens collected from Hakkari and Van are *Allium montelburzense* R.M. Fritsch, Y. Salmaki & SH. Zarre.

Diagnostic key to *Allium montelburzense* and *Allium anacoleum*

- leaf sheath bulging at the base, anthers yellow.....***A. anacoleum***
- leaf sheath not bulging at the base, anthers purple..... ***A. montelburzense***

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