



## *Allium marmoratum* (Amaryllidaceae), a new species of section *Falcatifolia* from Chimgan Massif, Eastern Uzbekistan

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The former Soviet republics of Middle Asia are an important area of *Allium* Linnaeus (1753: 294) diversity. The latest checklist by Khassanov (2008) recorded 244 species and subspecies. At least 18 new species were described from Kazakhstan, Kyrgyzstan, Uzbekistan, and Tajikistan afterwards (Lazkov 2008, Fritsch 2009, Fritsch & Friesen 2009, Khassanov & Tojibaev 2009, 2010, Khassanov *et al.* 2009, 2011, 2013, Sennikov & Lazkov 2013, Tojibaev *et al.* 2014, Seregin *et al.* 2015). Due to the high number of extremely rare local endemics, *Allium* species of this region are still underexplored. For instance, some collections in many herbaria are still remaining unnamed or bear provisional identifications.

The Leibniz-Institut für Pflanzengenetik und Kulturpflanzenforschung (IPK) in Gatersleben, Germany is one of the leading centres of *Allium* studies. According to IPNI, ca. 50 species were described by IPK staff members in the last two decades. The Gatersleben herbarium holds voucher specimens of 6000+ accessions of huge living *Allium* collection from Asia and Europe, including many types of newly described species.

During my short visit to the herbarium of IPK (GAT) I studied some collections of *Allium* species in line with a revision of *A. sect. Oreiprason* Hermann (1939: 57) from the subgenus *Polyprason* Radić (1990: 250). Several different species of various affinities were filed under the name *A. talassicum* Regel (1878: 628) in GAT. Three of them I determined as *A. petraeum* Karelín & Kirilow (1842: 511), a species from *A. sect. Oreiprason* s.s. (Seregin *et al.* 2015, Seregin & Friesen 2015). Two specimens fit well the description of *A. talassicum* by Vvedensky (1935, 1941), but not the original protologue by Regel (1878).

Two other specimens are representing a species new to science with distinct red-and-white patterns on leaf sheaths. The description below is based on herbarium specimens of plants cultivated in Gatersleben, which are probably more robust under the favourable conditions of cultivation than in nature.

### Description of the new species

#### *Allium marmoratum* Seregin *sp. nov.* (Fig. 1)

It is distinct from all related species for the red-and-white pattern of leaf sheaths. It differs from *A. talassicum* sensu Vvedensky for the yellow dehiscent anthers (not dark-violet); from *A. clausum* for the attenuate inner tepals (not rounded), and the presence of distinct veins on tepals; from *A. cisferganense* for the canaliculate leaves (not flat), the shorter filaments and spathe, and tepal colour.

**Type**.—GERMANY, cultivated in Gatersleben: TAX 5884, 6 Jul 2005, *anonymous s.n.* (Origin: UZBEKISTAN, northern slope of Chimgan Massif, the Aksay River [ca. 80 to ENE from Tashkent], perennials and shrubs community on the creek terrace, rarely on drier sites, May 2001, *R. Fritsch & M. Hoffmann 1758*) (holotype GAT 20127!).

Stems 30–50 cm high, 1.0–1.5 mm in diameter in upper part, rounded. Bulb-like base of the stem (false bulb, or “bulb”) 2.0–2.5 cm in diameter, 7–10 cm long, almost cylindrical; outermost tunics brown, coriaceous. Leaves 3–4, canaliculate, hollow, up to 3 mm wide (usually less), sheathing the lower 2/5 to 1/2 part of the stem; leaf sheaths with a distinct marble-like pattern, which is a combination of red and white patches. Top leaves dry in anthesis. Spathe bivalved, persistent; valves unequal, the longer 13–23 mm long with a filiform beak, equaling or slightly longer than umbel; the shorter 5–7 mm long with a wanted beak, considerably shorter than umbel. Umbel lax, globose in anthesis,

28–30(–34) mm in diameter in anthesis (Fig. 1). Number of flowers ca. 100(–200). Pedicels subequal in anthesis, very slender, almost filiform, up to 10–12 mm long in anthesis; flowers 2.0–3.0(–3.5) times shorter than pedicels. Perigone apparently ovoid (or cup-shaped?); tepals rose in buds, greenish in anthesis (almost white when dry) with green vein, dull rose after anthesis, unequal, inner ca. 3.5 mm long, 1.6–2.0 mm wide, distinctly attenuate, outer ca. 3.0(–3.2) mm long, 1.4–1.6 mm wide, somewhat acute. Stamens shortly exerted; filaments filiform, whitish, very gradually widened at base, (1.2–)1.3 times longer than tepals. Anthers 0.9–1.2 mm long, yellow, showy; dehiscent anthers still yellow; old empty anthers dark yellow to brownish. Style exerted. Seeds not studied.

**Etymology:**—The species name refers to the marble-like pattern of leaf sheaths.

**Habitats:**—Xeric shrub communities and open *Betula tianschanica* stands, on rocks and stony ground.

**Distribution:**—Uzbekistan, slopes of Chimgan Massif.

**Flowering period:**—June–July (in culture).

**Additional specimen examined (paratype):**—GERMANY, cultivated in Gatersleben: TAX 5886, 29 Jun 2005, *anonymous s.n.* (Origin: UZBEKISTAN, northern slope of Chimgan Massif, the Aksay River, rock terraces on the south-facing slope, steep granite slopes in the *Betula tianschanica* stand, May 2001, *R. Fritsch & M. Hoffmann 1763*) (GAT 20128!).

**Taxonomic relationships:**—*Allium cisferganense* R.Fritsch in Fritsch *et al.* (2002: 382) is somewhat similar to my new species. The author compared it with *A. tianschanicum* Ruprecht (1869: 33) and *A. hymenorrhizum* Ledebour (1830: 12), although he clearly indicated later that *A. cisferganense* is a member of the *A. talassicum* group (Fritsch 2008). The same author (Fritsch 2008, Fritsch & Friesen 2009) also had mentioned that *A. talassicum* needs special attention, because this name was misapplied by Vvedensky (1935, 1941, 1971), whose descriptions and keys clearly contradict the original description by Regel (1878) in some important details. For instance, Vvedensky (1941) indicated a plant height of (15–)30–75 cm, and pedicels 1.5–3.0 times longer than the flowers (i.e. 6–12 mm long), whereas Regel (1878) stated that *A. talassicum* is a dwarf plant 15–25 cm high with pedicels 4–5 mm long, slightly longer than the flowers. Specimens identified as *A. talassicum* after Vvedensky usually have a bivalved spathe with a beak considerably longer than the umbel, whereas Regel (1878: 628) indicated that his species has one short valve. When describing *A. filifolium* Regel (1887: 352), another dwarf species of high altitudes, the author compared it with *A. talassicum*. Taking *A. clausum* Vvedensky (1971: 313) and *A. cisferganense* for comparison, *A. marmoratum* is the third tall morph distinct from *A. talassicum* sensu Vved., but there are still some other unnamed units in this group. *Allium oreotadzhikorum* Fritsch in Fritsch & Friesen (2009: 225), is apparently more similar to the dwarf *A. talassicum* Regel, rather than to the robust *A. talassicum* sensu Vved. (Fritsch & Friesen 2009).



**FIGURE 1.** Umbels of *Allium marmoratum*: (left) accession TAX 5884 in Gatersleben live collection (source of holotype), (right) accession TAX 5886 in Gatersleben live collection (source of paratype). Pictures by Reinhard Fritsch.

**Phylogenetic position:**—Results of molecular analysis recently published by Seregin & Friesen (2015) suggest that *A. marmoratum* is actually a member of *A. sect. Falcatifolia* N.Friesen in Friesen *et al.* (2006: 390). This section was introduced for *A. carolinianum* DC. ex Redouté (1804: t. 101) and *A. platyspathum* Schrenk in Fischer & Meyer (1841: 7), both showing large, flat, falcate leaves. Later on, Fritsch & Friesen (2009) transferred to the section *Falcatifolia* tall species such as *A. hymenorrhizum* and *A. kaschianum* Regel (1887: 338). Species like *A. filifolium*, *A. kokanicum* Regel (1875: 104), *A. caricoides* Regel (1879: 532), *A. alexandrae* Vvedensky (1924: 95), and *A. marmoratum* are similar to species of the section *Oreiprason* in their gross-morphology, but show similar ITS and plastid DNA fragments with abovementioned species from the section *Falcatifolia*. Those plants known as *A. talassicum* sensu Vved. (including *A. marmoratum*) are forming an early diverging clade within the section *Falcatifolia* (Seregin & Friesen 2015).

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