

# Taxonomic revision of *Allium* L. sect. *Allium* s. l. in Central Asia

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**Abstract:** Taxonomic revision of Central Asian taxa of sect. *Allium* s. l. showed their originality. *Allium ravenii* F.O. KHASS., SHOMURADOV & KADYROV is newly described. Its relationship to other Iran-Turanian species within two newly described sections is discussed. A new determination key for sections is given.

**Zusammenfassung:** Taxonomische Revision der Gattung *Allium* L. sect. *Allium* s. l. in Zentralasien. — Die taxonomische Revision der Gattung *Allium* sect. *Allium* s. l. in Zentralasien hat die Eigenständigkeit der Arten dieser Region ergeben. Neben der neuen Art *Allium ravenii* F.O. KHASS., SHOMURADOV & KADYROV, werden zwei neue Sektionen beschrieben und ihre Beziehungen zu anderen Iran-Turanischen Arten diskutiert. Ein neuer Bestimmungsschlüssel für die Sektionen wird präsentiert.

**Key words:** Taxonomy, section, subgenus, *Allium*, Turan, Fergan depression.

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## Introduction

The famous monographer for “Flora Iranica” (WENDELBO 1971) critically revised sect. *Allium* s. l. and included into this group the very original species *A. turkestanicum* REGEL. MATHEW (1996) included this species into sect. *Allium* as a probably allied one. Subinfrageneric grouping in subgenus *Allium* has been done by the senior author (KHAASSANOV 2000). The splitting of several monotypic and oligotypic sections (*Brevidentia*, *Multicaulea*, *Crystallina*, *Spathulata*) was widely supported by molecular data, whereas the informal groups proposed by MATHEW (1996) were not reflected in molecular analysis. Later on, a new section *Mediasia* F.O. KHASS., IENGAL. & N. FRIESEN (FRIESEN et al. 2000) with central Asian *A. turkestanicum* and probably Chinese *A. juchuanense* Y.Z. ZHAO & J.Y. CHAO was described. During the numerous botanical collecting missions to Central Asia and Iran more than 20 new *Allium* taxa from Central Asia have been described (KHAASSANOV 2000).

## Results and discussion

During a collecting mission on plateau Ustjurt (nearby old western bank of Aral Lake) 2 small populations (about 50 plants) of a very small *Allium* species belonging to sect. *Allium* s. l. have been found. In a revision of the genus *Allium* from Central Asia made by the senior author (KHAASSANOV 1997) this section was divided into 6 sections (*Allium* s. str., *Crystallina* F.O. KHASS. & IENGAL., *Filidentia* F.O. KHASS. & IENGAL., *Brevidentia* F.O. KHASS. & IENGAL., *Spathulata* F.O. KHASS. & R.M. FRITSCH and *Multicaulea* F. O. KHASS. & IENGAL.). All species belonging to the last section can be characterized by several scapes, as well as leaves longer than scapes. Most of the species have cilia on the base of the filaments, but 2 of them (*A. lehmannianum* MERCKL. and *A. ferganicum* VVED.) belonging to the last mentioned section *Multicaulea* are characterized by smooth filaments. The plants we collected were resembling *A. lehmannianum* especially by absence of bulblets and tepals with



Fig. 1.: Plant of *A. ravenii* sp. nov.



Fig. 2: Inflorescence of *A. ravenii* sp. nov.

**Determination key for sections of subgen. *Allium* L.**

- 1 Inner filaments simple or cuspidate with cusps based in lower ½. Outer filaments simple or slightly denticulate ..... **2**
- Inner filaments tricuspidate (rare 5-7 cuspidate) with cusps based in upper ½. Outer filaments usually simple or tridentate ..... **12**
- 2 Leaves extending to inflorescence nectary canals wide (up to ½ of the ovary) ..... **sect. *Longivaginata* (KAMELIN) F.O. KHASS.**
- Leaves extending 2/3 length of stem nectary canals small and located in basal part of the ovary ..... **3**
- 3 Spathe 2-valved (into 2 subequal parts), narrowed to a long beak, much longer than the basal part .. ..... **sect. *Codonoprasum* RCHB.**
- Spathe 1-2-valved, narrowed to a short or somewhat elongated beak, shorter than the basal part .... **4**
- 4 Spathe in the basal part tubular, surrounding the pedicels ..... **sect. *Brevispatha* VALCECCHI**
- Spathe in the basal part wide, not tubular ..... **5**
- 5 Outer tunics distinctly coriaceous, split with longitudinal anastomoses or crests ..... **sect. *Eremoprasa* (KAMELIN) F.O. KHASS.**
- Outer tunics membranous or reticulate-fibrous, or weakly coriaceous without any sculptures ..... **6**
- 6 Spathe caducous with retained basal part “collar” ..... **sect. *Avulsea* F.O. KHASS.**
- Spathe persistent or caducous without “collar” ..... **7**
- 7 Bulblets with keel, filaments and ovary purple ..... **sect. *Haneltia* F.O. KHASS.**
- Bulblets without keel, filaments and ovary white or pink ..... **8**
- 8 Stem 50-100 cm, leaves flat 5-20 mm wide, perianth wide campanulate, nearly star-shaped..... **sect. *Mediasia* F.O. KHASS., IENGAL. & N. FRIESEN**
- Stem 10-40 cm, leaves cylindrical, canaliculated, or linear 1-3 mm wide, perianth campanulate .... **9**
- 9 Tepals compressed in the basal part ..... **sect. *Minuta* F.O. KHASS.**
- Tepals not compressed in the basal part ..... **10**
- 10 Spathe without beak ..... **sect. *Kopetdagia* F.O. KHASS.**
- Spathe with short or elongated beak ..... **11**
- 11 Ovary pinkish, sphaerical, tepals thin, delicate ..... **sect. *Pallasia* (TSAG.) F.O. KHASS.**
- Ovary bluish, conical, tepals fleshy ..... **sect. *Caerulea* (OMELCZ.) F.O. KHASS.**
- 12 Spathula numerous (2-4) ..... **sect. *Spathulata* F.O. KHASS. et R.M. FRITSCH**
- Spathula absent ..... **13**
- 13 Bulblets with shiny protuberances, leaves cylindrical and fistulose without any ribs ..... **sect. *Crystallina* F.O. KHASS. et IENGAL.**
- Bulblets glabrous or reticulate, leaves flat or semicylindrical, either with the ribs or filiform ..... **14**
- 14 Stem solitary, usually taller than leaves, ovary without corona-like structure at the apex ..... **sect. *Allium* L. (including sect. *Filidentia* F.O. KHASS. et IENGAL.)**
- Stem solitary or 2-3-5, usually shorter than leaves ..... **15**
- 15 Bulblets absent, pedicels without bracts, inflorescence compact ..... **sect. *Unicaulea* F.O. KHASS.**
- Bulblets present, pedicels with bracts, inflorescence lax ..... **sect. *Multicaulea* F.O. KHASS.**

purple midveins, but the flowers were smaller and bracts were absent. This species was described from an area north of Aral Lake belonging to Kazakhstan (Betpakdala desert). There is one more relative – *A. kotschyi* BOISS. occurring in Iran, but the main character is solitary leaf.

***Allium ravenii* F.O. KHASS., SHOMURADOV & KADYROV sp. nov. (*Unicaulea* sect. nov.)**

Bulbus solitarius ovatus 10-15 mm altus, Planta non recticaulis. Bulbi rotundati, ca 1 cm crassi, tunicis nigriscenti vel-rufescenti-

brunneis, coriaceis. Bulbuli nulli. Caules 1, 5-10 cm altus. Folia in numero 3-7, laevia, fistulosa, quam scapum longiora. Spatha persistence, violaceo-nervosum. Umbella hemisphaerica, pauciflora. Pedicelli violaceo colorati ca 7-10 mm longi (quam perigonio longiora), basi non bracteolati. Perigonii late campanulati phylla albidum violaceo-nervosum. Tepala obtusa, ca 4-5 mm longa, laevia. Filamenta quam tepala breviora vel aequilongi, basi connata et tepalis adnata, basi non ciliata, exteriora late triangularia, interiora tricuspidata, cuspidate laterale tepala aequilonga. Antherae violaceae. Stylus inclusus. Ovarium coronifera. Capsula glabra, 4 mm lata.

Ab *A. lehmannianum* MERCKL. bractei nullis, spatha persistens, tepala minoribus et obtusibus differt.

Habitat ad planities Ustjurtensis orientalis.

T y p u s : Planities Ustjurtensis orientalis, N 43°57'46.3" E 58°21'16.4", Khassanov, Shomuradov, 12.05.2010 (TASH, Isotypus LI).

Species in honorem Prof. Dr. Peter Raven denominata est.

Plants nearly rising. Bulbs globose, about 1 cm wide. Outer tunics reddish-brownish-blackish. Bulblets absent. Scape 1, 5-10 cm long. Leaves 3-7, longer than scape, fistular. Spathe not deciduous with violet midvein. Inflorescence semiglobose, few-flowered. Pedicels violet, 7 - 10 mm long, without bracts. Perianth widely campanulate, whitish with dark violet midvein. Tepals obtuse, 4-5 mm long, smooth. Filaments basally connate without cilia, distinctly shorter than tepals, outer ones narrowly triangular, inner ones tricuspidate, lateral cusps the same long as tepals. Anthers violet. Style included. Ovary with crown. Capsule smooth, 4 mm wide.

#### *Unicaulea* F.O. KHASS. sect. nov.

Bulbuli nulli, pedicelli quam perigonio subaequilongi, basi non bracteolati, inflorescentia compacta.

T y p u s : *A. kotschyi* BOISS.

Geographically this section with 3 species (*A. kotschyi*, *A. ravenii* and *A. lehmannianum*) is stretching from Iran, via Ustjurt up to Northern Kazakhstan. Another desert Iran-Turanian section *Multicaulea* (*A. borszczowii*, *A. boissierii*, *A. rinae* and *A. ferganicum*) shows in the eastern part of its distribution unique yellow, reticulated bulblets. The last mentioned species was described from the Fergan depression (1500 km E of Ustjurt) and it can be characterized by original yellow bulblets with keel. Another original species (*A. haneltii* F.O. KHASS. & R. M. FRITSCH) was described from this area as well, having also bulblets with keel. Originally, this species was included into sect. *Brevidentia*, but molecular data showed (FRIESEN et al. 2000) its correct position between sections *Codonoprasum* RECHB. and *Caerulea* (OMELCH.) F.O. KHASS. on one hand and rhizomatous sections of subgenus *Rhizirideum* s. l. on the other hand.

#### *Haneltia* F.O. KHASS. sect. nov.

Bulbuli bini triangulari carinati, filamenta simplicia edenticulata.

T y p u s : *A. haneltii* F. O. KHASS. ET R. M. FRITSCH

The same intermediate position shows monotypical sect. *Mediasia* F.O. KHASS., IENGAL. ET N. FRIESEN with type species *A. turkestanicum* REGEL. This species was placed by WENDELBO (1971) into sect. *Allium* s. l. MATHEW (1996) mentioned it as a species that could belong to this group because of the toothed inner filaments. Also, molecular data showed that this section is rather close to sect. *Scorodon* s. l.

Subinfrageneric grouping in subgen. *Allium* L. was made by the senior author (KHASHANOV 2000) and now needs several corrections and additions. Molecular data showed (FRIESEN et al. 2000) that sect. *Scorodon* KOCH belongs to rhizomatous subgen. *Polyprason* RADIĆ sect. *Vvedenskya* KAMELIN and must be separated as a monotypic primitive subgenus between subgenera *Porphyrprason* (EKBERG) R.M. FRITSCH and *Caloscordum* (HERB.) R.M. FRITSCH. Thus, subgen. *Allium* s. l. consists of 16 sections and can be determined by the help of the key given on p. 173.

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