

KOMAROVIA

VOL. 1

1999

BIBL., INST. SYST. BOT., UPPSALA.

Kapsel:

Nummer: 76



Komarovia anisosperma Korovin

5. A new species for the flora of Mongolia

The specimen of *Stellaria filicaulis* new for the flora of Mongolia was found in the Herbarium of the Moscow State University (MW): «Khangai, a humid coast of the mountain stream near Mt. Bomyn on Zain-gegen, N 504, 12 VIII 1926, N. Pavlov».

S. filicaulis Makino, 1901, Bot. Mag. (Tokyo), 15 : 113. – *S. jaluana* Nakai, 1915, Repert. Spec. Nov. Regni Veg. 13 : 269. – *S. filipes* M.Pop. 1957, Not. Syst. (Leningrad), 18 : 4.

6. About «*Arenaria griffithii* Boiss.» in Central Asia

Yu. P. Kozhevnikov (1994) noted *A. griffithii* for Central Asia. But the specimen cited by him («Chanachaibach sudwestl. v. Kuldscha 3–4000', 15 VI 1878, A. Regel») appears to belong to *Minuartia biflora* (L.) Schinz et Thell. The species *A. griffithii* is known from Tadzhikistan (Pamir); its occurrence in the Chinese part of Pamir is probable but there are no specimens of this species from China in LE. In "Claves plantarum Xinjiangensium" (Han, Hazit, 1983) this species is not mentioned, too.

The study was supported by the grant of the Federal program "Biological diversity".

References

- Grubov V. I. 1982. *Key to the vascular plants of Mongolia*. Leningrad: «Nauka». 441 p. (in Russian).
- Kozhevnikov Yu. P. 1983. Genus *Stellaria* L. (*Caryophyllaceae*) in Asia Centralis. *Novit. Syst. Pl. Vasc.* 20 : 94–107. (in Russian).
- Kozhevnikov Yu. P. 1994. Fam. *Caryophyllaceae* Juss. In: *Plantae Asiae Centralis (secus materies Instituti botanici nomine V. L. Komarovi)* 11 : 13–117. St. Petersburg: World and Family.
- Lazkov G. A. 1994. A new species of genus *Silene* L. (*Caryophyllaceae*) from Mongolia. *Bull. Soc. Nat. Moscow, div. biol.* 99 (3) : 93–94. (in Russian).
- Lazkov G. A. 1997. A critical notes on genus *Silene* (*Caryophyllaceae*) in Siberia. *Bot. J. (Saint Petersburg)* 82 (1) : 108–111. (in Russian).
- Han Y.-L., Hazit Y. 1983. *Caryophyllaceae* In: *Claves plantarum Xinjiangensium* 2 : 233–265. Editio popularis Xinjiangensis. (in Chinese).
- Tang C.-L. 1980. Material of *Silene* L. from China. *Acta Bot. Yunn.* 2 (4) : 427–440. (in Chinese).
- Tang C.-L. 1986. Four new taxa from China. *Acta Phytotax. Sin.* 24 (5) : 387–392. (in Chinese).
- Zhou L.-H. 1983. *Caryophyllaceae*. In: *Flora Xizangica* 1 : 656–742. Kunming. (in Chinese).

Phytogeographical analysis of the genus *Gagea* Salisb. (*Liliaceae*)

I. G. Levichev

Igor G. Levichev, Herbarium, Komarov Botanical Institute of the Russian Academy of Sciences, Prof. Popov str. 2, Saint Petersburg 197376, Russia
E-mail: levichev@herb.bin.ras.spb.ru

The area of the genus *Gagea* is outlined in detail. The number of *Gagea* species in five geographical regions and two present-day diversity centres are analysed. A brief checklist illustrates the structure of the genus as well as changes in species number within the genus area.

Representatives of the genus *Gagea* Salisb. are modest-sized or rather small ephemeroïd bulbous geophytes. The plants are dormant in soil throughout most part of the year. A brief period of vegetation (2 to 4 months) starts in early spring and finishes quickly, what hampers the collection of sufficient numbers of specimens for herbaria. The morphological variability on different stages of the life-cycle is poorly investigated, too.

The nomenclature in this genus is overloaded with synonyms, as more than 670 specific and intraspecific combinations were published. Traditionally, *Gagea* is treated as a non-large genus embracing from 70 to 129 distinct species (Stroh, 1937; Uphof, 1958–1960; Melchior, 1964; Willis, 1973; Davlianidze, 1976, 1979; Mordak, 1982; Dahlgren and al., 1985; Tamura, 1998). But actual species diversity in the genus seems to be not less than twice as much (Levichev, 1983, 1990a, 1990b, 1996).

The following analysis of the generic limits is based upon the generalisation of results of long-term research of morphological variability. Morphogenesis was studied on living plants both in culture and nature. More than 130 species of *Gagea* were cultivated *in vivo*. The *Gagea* species investigated in most detail are those from the territory of the former Soviet Union. Numerous new data concerning morphological variation in species were obtained (Levichev, 1999). It allowed us to establish a long list of reliable diagnostic characters and hence to renew the appraisal of the genus volume.

There are 223 (195 + 28?) taxa of specific rank included in the following analysis. These taxa investigated insufficiently are marked with the question mark. Among the accepted taxa there is a lot of synonyms and invalid names («nom. nud.»). The acceptance of their independent status is based upon the presence of the specific diagnostic characters either in the protologue, or in herbaria, or in living plants. Several taxa planned to be described as new species are taken into account, too. The natural-geographical region space values were calculated with no exclusion of marine areas existing within the limits of a region.

The distribution area of *Gagea* is restricted to temperate and subtropical regions of Eurasia and does not cover any areas with either tropical climate or permafrost (see Fig. 1). Within such vast ranges species diversity in *Gagea* is a subject to considerable change. The plain areas are always less rich in species than the mountainous ones. The highest species richness is registered for Western Tien Shan and Pamir-Alai. Undoubtedly, these two mountain systems appear to be the centres of current speciation in *Gagea*.

V.I.Soloviov» (LE!); «Western Tien-Shan, southern spurs of Atoynok ridge, in 2 km westernwards from Tashkumyr, N 33, 9.V.1968, V. Pavlov» (LE!).

Perennial, glabrous, succulent herb. Roots 1–5 (rarely up to 10), tuberously thickened, spherical or fusiform. Rootstock short, simple or 2–3-partite. Basal leaves of flowering stems (if present) few, scaly. Flowering stems annual, 2–5, 0.9–1.1 mm in diameter, erect or ascending near the base, simple, terete, somewhat remotely leafy throughout. Leaves succulent, oblong-linear, acute, 3–4 mm long, 0.1–0.3 mm wide. Inflorescence 5–7-flowered, 0.7–1.2 cm long, 1–1.5 (2) cm wide, corymbose-cymose, densely flowered, condensed. Bracts lanceolate, acute, 1.2–1.5 mm long, ca. 0.15–0.5 mm wide. Pedicels 0.2–0.5 mm long, a little longer in fruits. Flowers 5–8 mm long. Calyx 2–3 times shorter than corolla, lobes lanceolate acute, divided to the base. Corolla bell- or funnel-shaped, with 3–4 lobes. Lobes expanding, in fruits a little shorter than flower tube, oblong-lanceolate, acute, with intensely pink-coloured central veins. Anthers dark-purple or rich brown-violet, oblong, 0.2 mm long, lacking an appendage. Stamens 10–12, 5 or 6 antepetalous, slightly shorter than petals, 5 or 6 epipetalous, in 2/3 times as long as petals. Nectar glands hypogynous, saccate, nearly 0.05 mm long, 0.12–0.15 mm wide, brown-purple when dry. Ovaries 5–6, shorter than corolla lobes. Styles thin, 1.5–2 mm long. Stigmas dot-shaped, terminal on styles. Fruits of 5 or 6 follicles, polyspermous, 5–6 mm long. Seeds small (ca. 1 mm long), fusiform, slightly thickened at the base, longitudinally and obscurely costate, brown.

Affinity. Differs from *P. ferganense* Boriss. s. str. by the smaller size, few-flowered, small inflorescence, shorter leaves and smaller flowers.

Distribution. Endemic to western Tien-Shan, restricted to Atoynok and Chatkal ridges only.

Ecology. On badlands, in cracks, on rock protrusions and stony slopes. Flowers in April – May, fruits in May – June.

Etymology. The epithet refers to the small size of plant, compared to the other species of the genus *Pseudosedum*.

P. ferganense Boriss. 1933, Acta Inst. Bot. Acad. Sci. URSS, Ser. 1, 1: 113, f. 5, s. str.

T.: «Turkestan, Prov. Fergana, distr. Osch, pr. Gulcza 1.VI. 1900, W.Transchel» (LE!).

Note: the type specimen is dated as 1 VI 1900 (not «1 V 1900», as stated in the protologue).

Distribution. Tien-Shan (Chatkal, Atoynok and Fergana ridges), Pamiro-Alay (Alay ridge).

About some species of *Caryophyllaceae* from Central Asia

G. A. Lazkov

George A. Lazkov, Institute for Biology and Pedology of the National Academy of Sciences of Kyrgyz Republic, Tchuj Avenue 265, Bishkek 720071, Kyrgyz Republic.

E-mail: lazkov@sentokg.bishkek.su.

Critical notes on some species of *Caryophyllaceae* from the Central Asia are given. The affinity of *S. divnogorskajae* Kozhev. is cleared; the difference between related species is stated in the key. «*Cerastium cerastoides* (L.) Britton var. *foliosum* Kozhev.» is proved to belong to 4 species; its type specimen refers to *Arenaria stracheyi* Edgew. The section *Graminiformes* Lazkov of the genus *Silene* L. is represented in the Central Asia by 5 species treated formerly as «*S. tenuis* Willd.»; one species is described as new; new name instead of *S. maximowicziana* Kozhev. (non Rohrb.) is proposed. *Silene gubanovii* Lazkov and *Stellaria filicaulis* Makino are noted for the first time for China and Mongolia, respectively. The reference for *Arenaria griffithii* Boiss. for the Central Asia means *Minuartia biflora* (L.) Schinz et Thell.

1. About *Stellaria divnogorskajae* Kozhev. and related species

The species *Stellaria divnogorskajae* Kozhev. was described from Kashgaria (Kozhevnikov, 1983). In the protologue it was compared with *S. depressa* Schmid and *S. dilleniana* Moench which both have 5-merous perianth, 3 styles, capsule opening by 6 valves, and petals divided nearly up to the base. But there are more closely related plants, namely *S. martjanovii* Kryl. (from Siberia), *S. schugnanica* Schischk. and *S. alexeenkoana* Schischk. (from the Middle Asia). All these species have similar habit, 4-merous perianth, petals divided up to 1/2 of their length or more, ovary with 2 styles, and capsule opening by 4 valves. By complex of these characters, all these species should be attributed to the section *Leucostemma* (Benth. ex G. Don f.) Pax. All the species of this section are closely related to each other; unfortunately, their specimens are not numerous in herbaria. The further study of larger material of these species could prove the inconstancy of some interspecific differences and the necessity for a number of species to be united. It especially refers to *S. schugnanica* Schischk. and *S. divnogorskajae* which insignificantly differ from each other by the length of sepals only. At the moment, I can distinguish these species by the following characters given in the key.

1. Pubescence of multicellular eglandular piles; petals equal or little longer than sepals 1. *S. alexeenkoana*.
- + Pubescence of glandular piles or absent; petals in 1.5 time longer than sepals 2.
2. Sepals 5–6 mm long 2. *S. divnogorskajae*.
- + Sepals 3–4 mm long 3.
3. Petals divided at 2/3 3. *S. martjanovii*.
- + Petals divided at 1/2 or little more 4. *S. schugnanica*.

The variety *S. divnogorskajae* var. *pilosa* Kozhev. was described (Kozhevnikov, 1983) on the isotype of *S. alexeenkoana* Schischk. («Tagdumbasch-Pamir (terra chinensis), in angustis

Pistan jugi Sary-Kol (by mistake "Sary-bas"), in lapidosis, 13000', N 586, 15 VII 1901, Alexeenko» (LE)) and is therefore a nomenclatural synonym of the latter species.

2. What is *Cerastium cerastoides* (L.) Britton var. *foliosum* Kozhev.?

This variety was described by Yu. P. Kozhevnikov (1994) from Qinghai. As it was proved by the study of the type specimen of this taxon, it belongs to *Arenaria stracheyi* Edgew. This species from Central Asia is represented in LE by the only sheet (the type specimen of var. *foliosum*). All the other specimens of this variety, cited in "Plants of Central Asia" (Kozhevnikov, 1993), were proved to belong to other taxa: plants from Pamir belong to *Stellaria divnogorskajae* Kozhev., from Dshungaria – to *Cerastium cerastoides* s. str. and *C. pusillum* Ser., from Mongolia – to *Stellaria amblyosepala* Schrenk.

3. About the section *Graminiformes* Lazkov of the genus *Silene* L. in Central Asia

Yu. P. Kozhevnikov (1994) noted the only one species of this group, *Silene tenuis* Willd., for the Central Asia. But as it was recently stated (Lazkov, 1997), this name is a synonym of *S. saxatilis* Sims. The study of herbarium material kept in LE showed that there are 5 species of this group in the Central Asia. The list of these species with brief nomenclatural citation is given below. The species distribution data are given according to the scheme of the floristic districts by V. I. Grubov (1982).

a. *S. graminifolia* Oth., 1824, in DC. Prodr. 1 : 368. – *S. schischkinii* Sobolevsk. 1953, Animadv. Syst. Herb. Univ. Tomsk. 1–2 (75–76) : 2, non Vved. 1953. – *S. sobolevskajae* Czer. 1981, Pl. Vasc. URSS : 171.

Described from Altai («in alpinis Altaicus»).

IA. Mongolia: Khobdo, Mongolian Altai, Depression of Great Lakes.

IIIB. Pamir.

General distribution: Western and Eastern Siberia, Middle Asia, Western Himalayas.

b. *S. jenseensis* Willd. 1809, Enum. Pl. Hort. Berol. : 473. – *S. iche-bogdo* Grub. 1955, Not. Syst. (Leningrad), 17 : 13. – *S. jenseensis* subsp. *popovii* Zuev, 1990, Bull. Soc. Nat. Moscow, div. biol., 95, 1 : 99.

Described from Siberia («in Sibiriae rupestribus ad Jeniseam fluvium»).

IA. Mongolia: Khobdo, Mongolian Altai, Middle Khalkha, Eastern Mongolia, Depression of Great Lakes, Gobi-Altai, East Gobi, Ordos.

General distribution: Western and Eastern Siberia, Russian Far East, Northern Mongolia, Northern and Eastern China.

c. *S. ordossica* Lazkov nom. nov. – *S. foliosa* Maxim. var. *mongolica* Maxim. 1889, Enum. Pl. Mong. : 91. – *S. maximowicziana* Kozhev. 1994, in Pl. As. Centr. 11 : 78, tab. 9, fig. 1, non Rohrb. 1869–70, Linnaea, 36 : 680.

T.: «Mongolia: Ordos, valle fl. Ulan-morin, 22 VIII. 1884, G. N. Potanin» (LE!).

IA. Mongolia: Ordos.

General distribution: Endemic.

d. *S. intramongolica* Lazkov sp. nov. – *S. chamarensis* auct. non Turcz.: Grub. 1982, Key Pl. Vasc. Mong. : 103, p. p.

Plantae perennes plus minusve dense caespitosae. Caudex residuis foliorum rigidis tectus. Caulis floriferi 15–35 cm alt., glabri, superne viciidi. Folia rosularia 20–30 mm lg., 2–3 mm lt., linearia, glabra, ad margines scabra vel ciliata; folia caulina similia, pauca. Inflorescentia racemiformia cymulis oppositis 1–2 floribus composita. Bracteae 3–5 mm lg., triangulares, scariosae, ad margines ciliatae, secus nervos violascentes. Pedicelli 3–10 mm lg. Calyx 8–10 mm

lg., 4–6 mm lt., campanulatus, vix inflatus. Petala 8–10 mm lg., limbo ad 1/2–2/3 bilobo, paracorollae lobi 0.5–0.8 mm lg., unguis apice vix auriculati, ad margines ciliati. Filamenta glabra. Capsula 6–7 mm lg., 4–5 mm lt., ovoidea. Semina 1 mm in diam., orbiculari-reniformia, dorso canaliculata.

T.: «Mongolia, prov. Gobi Australis, distr. Bigor, ad declivia generale m. Burchan-Buda, ad margine angustis aridis ("sair"), alt. 2300 m, N 5115, 18 VI 1973, D. Banzragcz et al.» (LE!).

Affinitas. A *S. graminifolia* Otth residuis foliorum rigidis (non mollibus) differt.

IA. Mongolia: Khobdo, Mongolian Altai, Depression of Great Lakes, Gobi-Altai.

IIA. Songaria: Dzungarian Gobi.

General distribution: Endemic.

Note. This species intermediate between *S. graminifolia* and *S. chamarensis* differs from the former by the hard scales of the caudex, from the latter by the pubescence on petals. The species replaces *S. graminifolia* in the large part of Mongolian and Gobi Altai; it is often misidentified as *S. chamarensis* due to the hard scales on the caudex.

e. *S. gracilicaulis* C.L.Tang, 1980, Acta Bot. Yunnan. 2, 4 : 434. – *S. pterosperma* Maxim. 1889, Acta Hort. Petrop. 11, 1 : 67, p.p., quoad plantas floriferas. – *S. gracilicaulis* C.L.Tang var. *longipedicellata* C.L.Tang, 1980, Acta Bot. Yunnan., 2, 4 : 437, tab. 6, fig. 1–7. – ? *S. tenuis* Willd. var. *dentata* Y.W.Cui et L.H.Zhou, 1980, Bull. Bot. Lab. North-East Forest Inst. 9 : 58, tab. 3, fig. 1–3. – ? *S. sericata* C.L.Tang, 1986, Acta Phytotax. Sin. 24, 5 : 389, tab. 2, fig. 1–5.

Described from China. T.: «Sichuan: Kangding Xian, Xinduqiao, alt. 3800 m, calycibus purpureis, petalorum limbis supra cinereis subtus nigro-purpureis, N 1873, 29 VIII 1975, C.L.Tang et Y.H.Go» (WUK).

IB. Qaidam.

IIIA. Qinghai: Nanschan.

IIIB. Tibet: Weitzan.

General distribution: China (Sichuan).

Note. The pubescence on calyx, noted in the protologue of *S. sericata* (Tang, 1986), is probably an inconstant character. The calyces of plants in my study have lacking pubescence.

One more species from the Central Asia, *S. pubistyla* L.H.Zhou, was compared with «*S. tenuis*» in its protologue (Zhou, 1983). But there is no material on this species in LE.

S. pterosperma Maxim. was described on mixed material appearing to belong to two different species. Plants with flowers refer to the species named in this article as *S. gracilicaulis* C.L.Tang. Fruiting plant mounted on the same sheet surely was used to name the species in question because of having specific seeds. No other names exist for this species so that I think better to select the fruiting plant as lectotype of *S. pterosperma* Maxim.

Typification proposal

S. pterosperma Maxim. 1889, Acta Hort. Petrop. 11, 1 : 67.

Lectotypus (Lazkov, h.l.): «China borealis: prov. Kansu orientali, trajectu inter Tachitu et Schindshitan, [fruiting plant], 25 VII 1885, G.N.Potinin» (LE).

4. A new species for the flora of China

A specimen of *Silene gubanovii* new for the flora of China was found in LE: «Xinjiang, Altai, Qinghe, N 730, 29 VIII 1956, R. C. Ching».

S. gubanovii Lazkov, 1994, Bull. Soc. Nat. Moscow, div. biol., 99, 3 : 94. – *S. altaica* auct. non Pers.: Grub. 1982, Key Pl. Vasc. Mong. : 104, tab. XLIV, fig. 208; Kozhev. 1994, Pl. As. Centr., 11 : 74, p. p. – *S. lithophila* auct. non Kar. et Kir.: Kozhev. 1994, l. c. : 77, p. p.

This species was described from Mongolia (Lazkov, 1994).