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The genus *Allium* L. in the flora of Mongolia

With 15 Figures

Summary

A taxonomic revision of the genus *Allium* in Mongolia is presented including a key, complete synonymy and distribution for all taxa with distribution maps. A total of 44 species is recognized and grouped into two subgenera and 11 sections. Most of the species (96%) belong to the subgenus *Rhizirideum*.

Zusammenfassung

Eine taxonomische Revision der Gattung *Allium* in der Mongolei einschließlich eines Bestimmungsschlüssels, der gesamten Synonymie und der Verbreitungskarten für alle Arten wird vorgelegt. 44 Arten aus zwei Untergattungen und 11 Sektionen werden akzeptiert. Die meisten Arten (96%) gehören zur Untergattung *Rhizirideum*.

Introduction

In the last floristic work (GRUBOV 1982) 31 species of *Allium* were reported from all over Mongolia. However, this number does not represent the full diversity of this genus in Mongolia. During studies made on the Siberian onions the present author described some new species which are also common in the Mongolian flora (FRIESEN 1985b, 1987, 1988a, b; FRIESEN and NAMZALOV 1985). During the last eighties years the Soviet and Mongolian botanists have made many joint expeditions in Mongolia. As a result of these missions some more *Allium* species were added to the Mongolian flora (GUBANOV and KAMELIN 1988, 1992; GUBANOV et al. 1990; KAMELIN et al. 1991, 1992). Moreover, as a result of the joint expeditions by the Institute of Plant Genetics and Crop Plant Research (IKP), Gatersleben and Mongolian botanists (Institute of Botany, Ulan Bator) especially for *Allium* a detailed description of ecology, distribution and practical uses of many Mongolian species were made (HANELT 1985; HANELT et al. 1986; PISTRICK et al.

1988; SANČIR et al. 1989). In 1992 SANČIR published a short list of Mongolian *Allium* species in which 40 taxa were listed (35 species and five subspecies). In the opinion of the present author the Mongolian flora has 44 *Allium* species. These species form a single phytogeographical and taxonomic unit in Mongolia and South Siberia, out of which more than half are endemic to this region (FRIESEN et al. 1993); 96% of the Mongolian species belong to the subgenus *Rhizirideum* and within this subgenus 50% belong to the two sections: *Rhizirideum* s. str. (eight spp.) and *Reticulato-Bulbosa* (13 spp.). Furthermore, in the Mongolian region, the number of species increases from North to South and from West to East. For example, 22 species were found in Mongolian Altai, 20 species in Khangaj, 16 species in Khentej and in East Mongolia occur only 12 species.

The Eastern Asian species *Caloscordum neriniflorum* HERBERT is often included in the genus *Allium* L. as *A. neriniflorum* (HERBERT) BAKER (XU 1980; GRUBOV 1982; and other). In my opinion (FRIESEN et al. 1986) it belongs to the

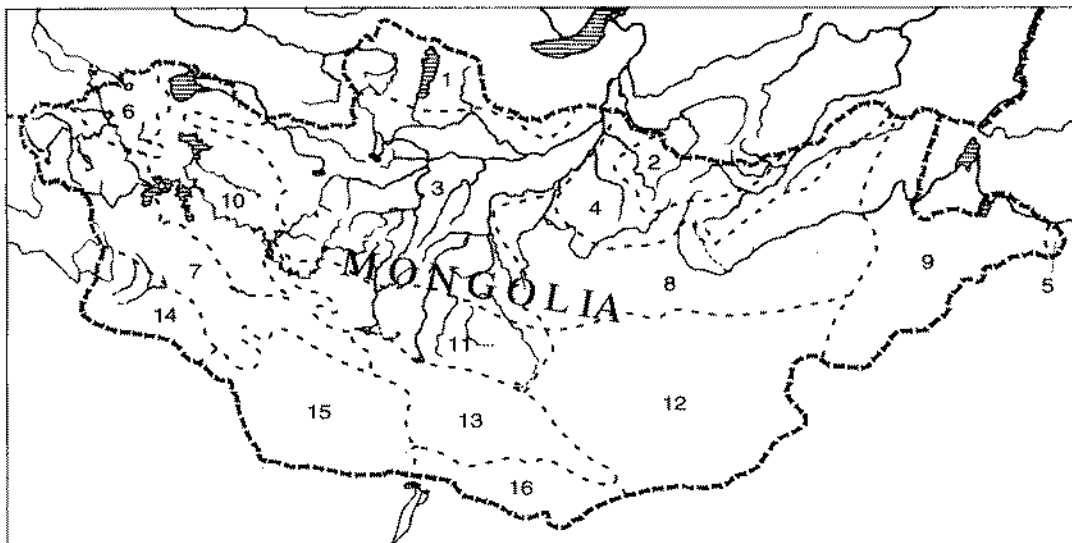


Fig.1
Botanical-geographic regions of Mongolia (GRUBOV 1982)

1 - Khubsugul; 2 - Khentej; 3 - Khangaj; 4 - Mongolian Daurian; 5 - Great Khingan; 6 - Khobdo; 7 - Mongolian Altai; 8 - Middle Khalkha; 9 - East Mongolia; 10 - Depression of Great Lakes; 11 - Valley of Lakes; 12 - East Gobi; 13 - Gobi Altai; 14 - Dzungarian Gobi; 15 - Transaltai Gobi; 16 - Alashan Gobi

independent genus and therefore has been excluded from the Mongolian *Allium* species in the present paper.

Material and methods

Herbarium material was studied from the following herbaria: B; GAT; LE; MNA; NS; M. Popov Herbarium from the Central Siberian Botanical Garden, Novosibirsk; TK.

The nomenclatural part is based on main floristic works of Mongolia and the neighbouring countries (LEDEBOUR 1852; REGEL 1875, 1887; KRYLOV 1929; AIRY SHAW 1931; VVEDENSKY 1935, 1971; PAVLOV and POLJAKOV 1958; EGOROVA 1977; KITAGAWA

1979; XU 1980; KHANMINCZUN 1984; BARKALOV 1987; FRIESEN 1987, 1988; GUBANOV and GANBOLD 1989; SANCIR et al. 1992; and others).

The synonymy is followed in each case by the Mongolian name.

Chromosome number for most of the species were determined by the present author (FRIESEN 1985, 1986b, 1991). Supplementary data about chromosome number has also been taken from the last chromosome atlas of the Soviet territory (AGAPOVA et al. 1990). In the case of unpublished chromosome numbers, the author and the origin of the studied specimen were indicated.

The phytogeographic regions of Mongolia for showing the distribution of each species adopted were from GRUBOV (1982).

Key for determination of Mongolian *Allium* species

- | | |
|--|-------------------------------|
| 1a. Bulbs usually several, or 1-3, rhizome distinctly developed | 2 |
| 1b. Bulb usually solitary, rhizome indistinct | 44 |
| 2a. Leaves several, lorate, linear, semicylindric or cylindric, not narrowed into a petiole at base | 3 |
| 2b. Leaves usually 2, ovate 2-6(8) cm broad, narrowed into a petiole | <i>A. microdictyon</i> PROKH. |
| 3a. Leaves fistulose (cylindric and robust) | 4 |
| 3b. Leaves flat, semicylindric or canaliculate | 11 |
| 4a. Bulb ovoid-cylindric, thick (1.5) 3-4(6) cm diam., tunic red-brown. Leaves and scape with thickened base | 5 |

- 4b. Bulb cylindric to ovoid-cylindric, 0.6–1.5 cm diam., tunic black-white, membranous. Leaves and scape with-out thickened base 6
- 5a. Scape robust. Leaves 8–20 mm thick. Bulbs 2–4(6) cm in diam. Flowers whitish-cream, pedicels 1.5–2 times longer than tepals *A. altaicum* PALL.
- 5b. Scape solid. Leaves 5–10 mm thick. Bulbs 1.5–2.5 cm in diam. Flowers white, pedicels 3–4 times longer than tepals *A. galanthum* KAR. et KIR.
- 6a. Filaments connate only at base, flowers white, pale purple to purple-red 7
- 6b. Filaments 1/3–3/4 of their length connate into a tube. Flowers purple *A. monadelphum* LESS. ex KUNTH
- 7a. Pedicels unequal, shorter than tepals, sometimes interior ones almost as long as tepals. Filaments 1/3–1/2 of tepal length 8
- 7b. Pedicels subequal, 1.5–3(4) times longer than tepals. Filaments equalling tepals, slightly shorter or longer 9
- 8a. Scape and sheaths smooth, green *A. schoenoprasum* L.
- 8b. Scape and sheaths scabrous-denticulate along the edges, dove-coloured *A. karelinii* POLJAK
- 9a. Umbel hemiglobose or almost fasciculate. Pedicels green. Filaments nearly equalling or slightly shorter than tepals. Tepals 5–6(7) mm long 10
- 9b. Umbel fasciculate, many flowered. Pedicels black. Filaments longer or equalling tepals. Tepals 7–8(9) mm long *A. ledebourianum* SCHULT. et SCHULT. f.
- 10a. Umbel hemiglobous, many flowered, dense. Bulbs cylindric-biconic, bulb tunic greyish, papery *A. maximowiczii* REGEL
- 10b. Umbel almost fasciculate, scanty, lax. Bulbs ovoid, bulb tunic brown, membranous *A. oliganthum* KAR. et KIR.
- 11a. Bulb tunic coriaceous, thin coriaceous, membranous, papery, unbroken or breaks up into parallel fibrous parts, not reticulate 12
- 11b. Bulb tunic reticulate-fibrous 31
- 12a. Bulb tunic membranous, breaking up into loosely parallel fibrous stripes 24
- 12b. Bulb tunic membranous or thin-coriaceous, mostly unbroken 13
- 13a. Bulb ovoid-conical to ovoid 14
- 13b. Bulb thin cylindric, almost undistinguished, scarcely developed 22
- 14a. Leaves flat or sometimes keeled, linear, smooth 15
- 14b. Leaves semicylindric, canaliculated, smooth or scabrous 19
- 15a. Leaves relatively broad, always broader than scape. Bulbs 1–2 cm in diam. *A. senescens* L.
- 15b. Leaves narrow, or equalling to the broad of the scape 16
- 16a. Leaves 1–3 mm broad, shorter than middle scape 17
- 16b. Leaves 2–4 mm broad, longer than middle scape, often reaching the umbel 18
- 17a. Bulbs several in rhizome. Umbel hemiglobose. Pedicels green *A. austrosibiricum* FRIESEN
- 17b. Bulbs 1–2 in rhizome. Umbel hemiglobose to fasciculate. Pedicels often violet *A. dauricum* FRIESEN
- 18a. Pedicels 1.5–2 times longer than tepals. Bulb tunic violet *A. burjaticum* FRIESEN
- 18b. Pedicels equal to or slightly longer than tepals. Bulb tunic white *A. tythocephalum* SCHULT. et SCHULT. f.
- 19a. Tepals pink or pink-violet 20
- 19b. Tepals yellow, usually with pink-violet midvein 21
- 20a. Umbel hemiglobose to suglobose, dense. Pedicels equal or to slightly longer than tepals. Scape semierect *A. prostratum* TREV.
- 20b. Umbel fasciculate to subglobose, friable. Pedicels 3–5 times longer than tepals. Scape straight *A. rubens* SCHRAD.
- 21a. Bulbs several in rhizome. Leaves thin, 1–1.5 mm broad, semicylindric, equal half of the scape *A. tuvinicum* (FRIESEN) FRIESEN
- 21b. Bulbs 1–3 in rhizome. Leaves 1.5–3 mm broad, in lower part semicylindric, in upper part canaliculate, up to 2/3 of the scape length *A. stellerianum* WILLD.

- 22a. Pedicels subequal, 1.5-3 time longer than tepals 23
- 22b. Pedicels unequal, 3-8 times longer than tepals *A. anisopodium* LEDEB.
- 23a. Pedicels drooping. Leaves soft, spreading from scape *A. vodopjanovae* FRIESEN
- 23b. Pedicels straight. Leaves hard, erect to scape *A. tenuissimum* L.
- 24a. Bulb usually one or rarely several on vertical or ascent rhizome, very well developed.
Bulb tunic thin-or usually dense-coriaceous, red-brown 27
- 24b. Bulbs several in horizontal rhizome, scarcely developed caespitose. Bulb tunic fibrous or
subreticulate only at base 25
- 25a. Tepals pink, 4-6 mm longer. Inner filaments oblong, broadened at base in 1/2-2/3 of
their total lengths, toothed 26
- 25b. Tepals pink to purple-red, 7-8 mm long, elliptic. Inner filaments broadened at base, with-
out teeth *A. mongolicum* REGEL.
- 26a. Bulb tunic fibrous, coriaceous. Inner filaments broadened at base up to 2/3 of their total
lengths *A. bidentatum* FISCH. ex PROKH.
- 26b. Bulb tunic subreticulate fibrous. Inner filaments broadened at base up to 1/2 of their total
lengths. *A. polyrhizum* TURCZ. ex REGEL
- 27a. Leaves broad linear, flate, 5-20 mm broad 28
- 27b. Leaves narrow linear, semicylindric canaliculate or flat, 1-6 mm broad 29
- 28a. Leaves narrowed to the base and the tip, obtuse. Bulb tunic thin-coriaceous to papery,
outside black to dark brown. Tepals pink to pink-purple
. *A. platyspathum* subsp. *amblyophyllum* (KAR. et KIR) FRIESEN
- 28b. Leaves cuneate, tip acute. Bulb tunic membranous, red-brown. Tepals yellowish-green to
pale yellow *A. obliquum* L.
- 29a. Leaves semicylindric, smooth 1-2 mm broad. Spathe with a beak of equal length in the
base of spathe 30
- 29b. Leaves flat, linear, scabrous, 4-6 mm broad. Spathe with shorter beak
. *A. hymenorrhizum* LEDEB.
- 30a. Plants 10-18 cm high. Tepals pink or pink-purple *A. subtilissimum* LEDEB.
- 30b. Plants 30-80 cm high. Tepals pale-yellow *A. condensatum* TURCZ.
- 31a. Bulb long, rarely shorter, conical, conic-cylindric or narrowly cylindric on oblique rhi-
zome 32
- 31b. Bulb short, conic on thick horizontal rhizome. Flowers star shaped *A. ramosum* L.
- 32a. Tepals white or yellow, sometimes at the tip and mid-vein reddish-violet 33
- 32b. Tepals pink, pink-lilac or purple 35
- 33a. Leaves semicylindric or narrow cylindric, smooth or scabrous. Tepals white, often with
violet mid-vein 34
- 33b. Leaves flat, 3-6 mm broad, long edge scabrous *A. flavidum* LEDEB.
- 34a. Leaves narrowly cylindric, fistular, 1-5 mm broad. Bulb ovoid-conical, 3-5 cm high.
Tepals white *A. leucocephalum* TURCZ. ex LEDEB.
- 34b. Leaves semicylindric, solid, scabrous, 1.5-2 mm broad. Bulb long and conical, 5-8 cm
high. Tepals white, at the tip and mid-vein pink-violet *A. schischkinii* K. SOBOL.
- 35a. Leaves semicylindric, 1-2 mm broad 36
- 35b. Leaves flat, 2-8(10) mm broad 38
- 36a. Leaves sheathing 1/3-1/2 of the scape 37
- 36b. Leaves sheathing only at the base of the scape. Flowers dark-red *A. eduardii* STEARN
- 37a. Leaves smooth. Umbel globose or usually narrowly hemiglobose. Pedicels 1.5-2 time
longer than tepals. Scape erect, 25-45 cm high *A. claratum* LEDEB.
- 37b. Leaves scabrous. Umbel hemiglobose, dense. Pedicels equal to or shorter than tepals.
Scape short, semierect, not more than 20 cm high *A. subsiculum* REGEL
- 38a. Pedicels 1.5-2 times longer than tepals 39
- 38b. Pedicels somewhat or 2 times shorter than tepals 41

- 39a. Tepals pink or pink-lilac, with a strong dark-purple mid-vein. Inner filaments often with several acute teeth at each side 40
- 39b. Tepals pink or pale-red, with faint mid-veins. Inner filaments with one obtuse tooth at each side *A. strictum* SCHRAD.
- 40a. Inner tepals pale-lilac, outer with dark-purple mid-vein. Inner filaments with one acute tooth at each side *A. chamarense* M. IVANOVA
- 40b. All tepals pink-lilac, with dark-purple mid-veins. Inner filaments with several acute teeth at each side *A. splendens* WILLD. ex SCHULT. et. SCHULT. f.
- 41a. Leaves sheathing 1/3–1/2 of the scape. Inner filaments with one short tooth of each side or undentate 42
- 41b. Leaves sheathing scape only at base. Inner filaments with one, often bifurcate tooth at each side *A. malyshevii* FRIESEN
- 42a. Leaves narrowed to the base and the tip, crescent curved. Inner filaments undentate . . . 43
- 42b. Leaves linear, straight. Inner filaments with one short acute tooth at each side *A. amphibolum* LEDEB.
- 43a. Scape 25–40 cm high. Leaves 2 times shorter than scape. Inner filaments at base broadened, 2 times broader than outer ones *A. bogdoicum* REGEL
- 43b. Scape 10–15 cm high. Leaves somewhat shorter than scape. Filaments equal *A. pumilum* VVED.
- 44a. Umbels with flowers and sometimes also with bulbils, globose. Pedicels bracteolate *A. macrostemon* BUNGE
- 44b. Umbels only with flowers, hemiglobose. Pedicels ebracteolate or only with a few bracteoles *A. pallasii* MURRAY

Genus *Allium* L. – Songino

1753, Sp. Pl. 294

Lectotypus: *A. sativum* L.

Subgenus *Rhizirideum* (G. DON ex KOCH)

WENDELBO

1969, Bot. Not. 122 (1): 25 – sect. *Rhizirideum* G. DON 1826

Monogr. *Allium*: 55 et KOCH 1837 Syn. Fl. Germ: 714.

Sectio *Anguium* G. DON ex KOCH

1837, Syn. Fl. Germ.: 715

Typus: *A. victorialis* L.

1. *A. microdictyon* PROKH. 1930 in: Tr. prikl. bot. gen. sel. 24 (2): 174; FRIESEN 1987 in Fl. Sib.: Araceae – Orchidaceae (4): 61; FRIESEN 1988 Lukovye Sibiri: 90 – *A. victorialis* auct. non L.; VVEDENSKY 1935 in Fl. SSSR 4: 141; EGOROVA 1977 in Rast. Centr. Asii 7: 29; GRUBOV 1982 Opred. sosud. rast. Mongolii: 69; GUBANOV and GANDBOLD 1989 in: Fl. Khangaja: 94; SANČIR et al. 1989 in Kulturpflanze 37: 135; SANČIR 1992

in HANELT et al.: The genus *Allium* – Taxonomic problems and genetic resources: 294.

Mongolian name: Chaliar.

Typus: Ad ripam fl. Konovalovka, prope pagum Michailovski skit (LE).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Khangaj (Burun-Nuru, Butelijn-Nuru, Khantaj), Khentej. – In *Larix*- and *Betula*-forests, in forest meadows (Fig. 2).

Distribution generale: Russia (Ural, Siberia); Kasachstan (West Altai).

Sectio *Cepa* (MILL.) PROKH.

1930, Bull. appl. Bot. Pl. Breed. (Leningrad) 24: 176.

Typus: *A. cepa* L.

Subsectio *Cepa* (MILL.) KAMEL.

1973, Florogen. anal. estestv. fl. gorn. Sredn. Asii: 238. Typus: *A. cepa* L.

2. *A. galanthum* KAR. et KIR. 1842 in Bull. Soc. Nat. Mosk. 15: 508; VVEDENSKY 1935 in Fl. SSSR 4: 197; EGOROVA 1977 in Rast. Centr. Asii 7: 60; XU 1980 in Fl. reipubl. popul. Sinicae 14:

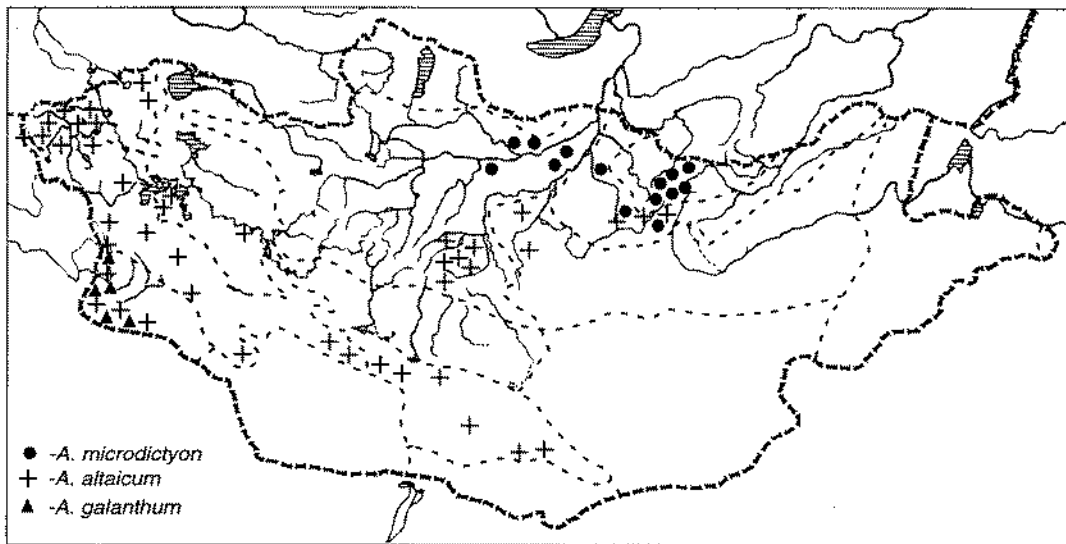


Fig. 2
Allium microdictyon; *A. altaicum*; *A. galanthum* – distribution in Mongolia

258; GRUBOV 1982; Opređ. sosud. rast. Mongolii: 64; HANELT 1985 in Flora 176: 105; SANČIR 1992 in HANLET et al. (eds.) Genus *Allium* – Taxonomic problems and genetic resources: 294.

Mongolian name: Zagaan zezegt S.
 Typus: Dzung. Alatau, ad fl. Lepsa (LE!).
 Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Mongol. Altai (r. Bulgan-Gol, r. Uljasutajin-Gol); Dzung. Gobi (Baitag-Bogdo-Nuru, Omigijn-Ula). – In dry rocky and stony slopes (Fig. 2).

Distribution generale: Kasachstan (Yuzhnyi Altai, Dzung. Altai, Tarbagatai, Kasach. hilland); Middle Asia (Tjan-Shan); China (Dsungaria, Kashgar).

Subsectio *Phyllodoton* (SALISB.) KAMEL.

1973, Florogen. anal. estestv. fl. gorn. Sredn. Asii: 238.
 Typus: *A. fistulosum* L.

3. *A. altaicum* PALL. 1773, Reise 2: 737; VVEDENSKY 1935 in Fl. SSSR 4: 196; EGOROVA 1977 in Rast. Centr. Asii 7: 60; KITAGAWA 1979, Neolin. Fl. Mansh.: 165; XU 1980 in Fl. reipubl. popul. Sinicae 14: 256; GRUBOV 1982 Opređ. sosud. rast. Mongolii: 64; FRIESEN 1987 in Fl. Sib.: Araceae–Orchidaceae (4): 62; FRIESEN 1988 Lukovye Sibiri: 92; GUBANOV and GAND-

BOLD 1989 in Fl. Khangaja: 94; SANČIR et al. 1989 in Kulturpflanze 37: 134 – *A. fistulosum* auct. non L.; KRYLOV 1929 Fl. Zap. Sib. 3: 609 – *A. microbulbum* PROKH. 1930 in Tr. prikl. bot. gen. sel. 24 (2): 180.

Mongolian name: Altajn S., Zerleg Songino.
 Typus: Altai (LE!).
 Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Khubsugul, Khentej, Khangaj, Khobdo, Mongol. Altai, Depres. Great Lakes (mt. Dzun-Dzargalant), Gobi-Altai, Dzung. Gobi (Baitag-Bogdo-Nuru). – In rocky and stony places (Fig. 2).

Distribution generale: Russia (South Siberia); Kasachstan (Altai, Tarbagatai); China (Dzungaria, Manshuria).

Sectio *Schoenoprasum* DUMORT.

1827, Fl. Belg.: 140 p.p.; KOCH 1837, Syn. Fl. Germ.: 720.
 Typus: *A. schoenoprasum* L.

4. *A. schoenoprasum* L. 1753 Sp. Pl.: 301; REGEL 1875 in Acta Horti Petrop. 3 (2): 77 pro max. p.; VVEDENSKY 1935 in Fl. SSSR 4: 190, p.p.; EGOROVA 1977 in Rast. Centr. Asii 7: 56; XU 1980 in Fl. reipubl. popul. Sinicae 14: 253; GRUBOV 1982 Opređ. sosud. rast. Mongolii: 65; FRIESEN 1987 in Fl. Sib.: Araceae–Orchidaceae (4):

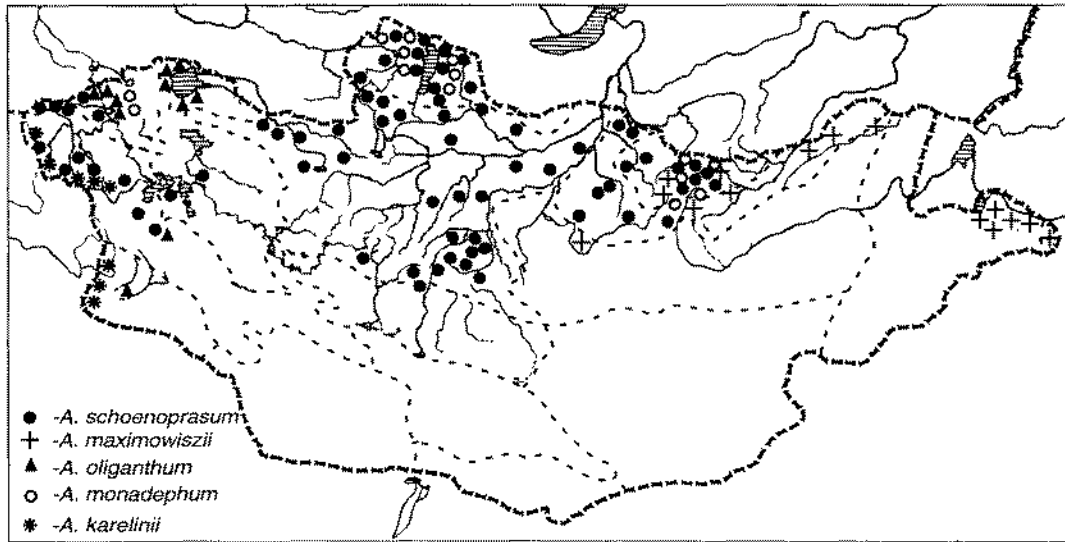


Fig. 3
Allium schoenoprasum; *A. maximowiczii*; *A. oliganthum*; *A. monadelphum*; *A. karelinii* – distribution in Mongolia

64; FRIESEN 1988 Lukovye Sibiri: 97; GUBANOV and GANDBOLD 1989 in Fl. Khangaja: 94; SANČIR et al. 1989 in Kulturpflanze 37: 135 – *A. raddeanum* REGEL 1875 in Acta Horti Petrop. 3 (2): 155.

Mongolian name: Chümcheel.

Typus: in alpestribus Sibiriae, Oelandiae (LINN).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Khubsugul, Khentej, Khangaj, Khobdo, Mongol. Altai (North West), Depres. Great Lakes (Dsergen-Gol, Dsabchan). – In damp meadows along rivers, in alpine meadows, in lakeshores and in stony slopes in alpine belt (Fig. 3).

Distribution generale: Europe; Russia (Siberia; Middle Asia (Saur-Tarbagatai)); China (Dzungaria); North America.

As in other regions, *A. schoenoprasum* is also polymorphic in Mongolia. A rather small form of this species grows in limestone rubbles in alpine region of Mongolian Altai, which has been described as var. *pumilum* BUNGE.

In M.G. Popov-Herbarium (Novosibirsk) some specimens of this species are identical with the type of *A. raddeanum* REGEL. These are very tall 50–80 cm, with leaves 1.5 mm broad and um-

bel upto 8 cm in diameter. However, all these forms differ only quantitatively and the qualitative differences could not be observed in the herbarium material.

5. *A. maximowiczii* REGEL 1875 in Acta Horti Petrop. 3 (2): 153; VVEDENSKY 1935 in Fl. SSSR 4: 194; KITAGAWA 1979 Neo-Lin. Fl. Mansh.: 167; GRUBOV 1982 Opred. sosud. rast. Mongolii: 65; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 63; BARKALOV 1987 in Sosud. rast. sov. Dal'nego Vostoka 2: 391; FRIESEN 1988 Lukovye Sibiri: 94 – *A. ledebourianum* auct. non SCHULT. et SCHULT. f.; XU 1980 in Fl. reipubl. popul. Sinicae 14: 254.

Mongolian name: Maksimowijzjin S.

Typus: In regione amurense et ussuriense (LE!).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Khentej, East Mongolia. – In meadows along rivers and streams (Fig. 3).

Distribution generale: Russia (East Siberia, Far East); China (Manshuria); Japan; Korea.

6. *A. karelinii* POLJAKOV 1950 in: Bot. mat. herb. Bot. (Leningrad) 12: 70; PAVLOV and POLJAKOV 1958 in Fl. Kasachst. 2: 168; VVEDENSKY 1971 in Opred. rast. Sredn. Asii 2: 68; EGOROVA 1977

in Rast. Centr. Asii 7: 56; GRUBOV 1982 Opred. sosud. rast. Mongolii: 65 – *A. schoenoprasum* f. *scaberrimum* KAR. et KIR. 1842 in Bull. Soc. Nat. Mosk. 15 (3): 507; XU 1980 in Fl. reipubl. popul. Sinicae 14: 254.

Mongolian name: Karelinyin S.

Typus: Dzung. Alatau (LE).

Chromosome number: $2n = 16$ (orig.) Mongol. Altai, Delun Somon, 15 km NE Delun.

Distribution and habitat in Mongolia: Mongol. Altai (North-West). – In damp meadows in alpine belt (Fig. 3).

Distribution generale: Kasachstan (Dzungarskij Alatau, Saur-Tarbagatai, South Altai); China (Dzungaria).

7. *A. ledebourianum* SCHULT. et SCHULT. f. 1830 SYST. 7: 1029; LEDEBOUR 1852 Fl. Ross. 4 (1): 168; REGEL 1875 in Acta Horti Petrop. 3 (2): 152; KRYLOV 1929 Fl. zapadn. Sib. 3: 607, p.p., excl. var. *intermedium*; VVEDENSKY 1935 in Fl. SSSR 4: 194, p.p.; PAVLOV and POLJAKOV 1958 in Fl. Kasachst. 2: 169; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 62.

Mongolian name: Ledeburinym S.

Typus: In paludibus ad fl. Belaja Uba et Koksum (LE!).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Mongol. Altai (North-West?). – In damp and swampy meadows in subalpine belt.

Distribution generale: Russia (West Altai); Kasachstan (Altai).

SANČIR (1992) listed this species for the Mongolian flora the first time, however, without any details of distribution. GUBANOV et al. (1990) indicated also this species from Mongolian Altai. But a study of this herbarium material by the present author showed that it did not *A. ledebourianum*, but belong to *A. platyspathum* subsp. *amblyphyllum* (KAR. et KIR.) FRIESEN (KAMELIN et al. 1991). However, true *A. ledebourianum* can be found in the north-west part of Mongolian Altai and therefore it may be included in Mongolian flora.

8. *A. oliganthum* KAR. et KIR. 1841 in Bull. Soc. Nat. Mosk. 14: 856; REGEL 1875 in Acta Horti Petrop. 3(2): 115; VVEDENSKY 1935 in Fl. SSSR 4: 195; EGOROVA 1977 in Rast. Centr. Asii

7: 56; GRUBOV 1982 Opred. sosud. rast. Mongolii: 66; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 63; FRIESEN 1988 Lukovye Sibiri: 95.

Mongolian name: Zoon zezegt S.

Typus: Hab. in herbosis humidiusculus inter Aja-gus et rivulum Donsyk (LE!, isotypus MW!).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Khobdo, Depres. Great Lakes (Ubsu-Nur), Dzung. Gobi (r. Bodoncin-Gol). – In saline meadows along the river and on lakeshores (Fig. 3).

Distribution generale: Kasachstan, Russia (South-East Altai, Tuva); China (Dzungaria).

Sectio *Annuloprason* EGOR.

1977, Rast. Centr. Asii 7: 57, in adnot.

Typus: *A. fedtshencoanum* REGEL.

9. *A. monadelphum* LESS. ex KUNTH 1843, Enum. pl. 4: 393; REGEL 1875 in Acta Horti Petrop. 3 (2): 85, p.p.; VVEDENSKY 1935 in Fl. SSSR 4: 189, p.p. excl. *A. fedtshencoanum* REGEL et *A. atrosanguineum* KAR. et KIR.; EGOROVA 1977 in Rast. Centr. Asii 7: 58; GRUBOV 1982 Opred. sosud. rast. Mongolii: 65; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 64 – *A. atrosanguineum* auct. non KAR. et KIR.: XU 1980 in Fl. reipubl. popul. Sinicae 14: 235, p.p.

Mongolian name: Heg bul S.

Typus: West Sajan, Sabin-Daban (LE!).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Khobdo (r. Kharchira), Khubsugul, Khentej. – In damp meadows and stream banks in the alpine belt (Fig. 3).

Distribution generale: Russia (East and West Sajan, Khentej).

GRUBOV (1982) indicated this species for the Mongol. Altai, but I did not see herbarium material from this region.

Sectio *Rhizirideum* L.

Typus: *A. senescens* L.

10. *A. austrosibiricum* FRIESEN 1987 in Fl. sib.: Araceae-Orchidaceae (4): 66; FRIESEN 1988 Lukovye Sibirii: 109 – *A. senescens* var. *serotinum* REGEL 1875 in Acta Horti Petrop. 3 (2): 139; GUBANOV and GANDBOLD 1989 in Fl. Khangaja: 94 – *A. senescens* auct. non L.: VVEDENSKY 1935 in Fl. SSSR 4: 170 p.p.; EGOROVA 1977 in Rast.

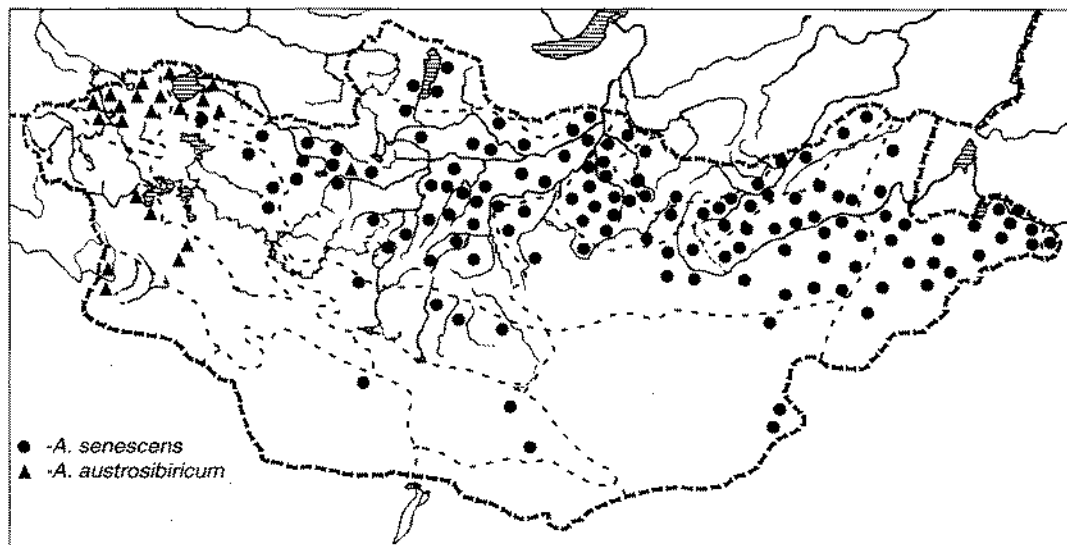


Fig. 4
Allium senscens; *A. austrosibiricum* – distribution in Mongolia

Centr. Asii 7: 45, p.p.; GRUBOV 1982 Opred. sosud. rast. Mongolii: 66, p.p.

Mongolian name: Omnod sibirija S.
Typus: Tuva, pag. Kysyl-Chaja, (LE!, isotypus NS!).

Chromosome number: $2n = 16$.
Distribution and habitat in Mongolia: Khangaj (r. Ider, r. Barun-Burul-Gol), Khobdo, Depres. Great Lakes, Dzungar. Gobi (r. Bulgan-Gol). In stony steppes (Fig. 4).

Distribution generale: Russia (South-East Altai, Tuva).

11. *A. burjaticum* FRIESEN 1987 Fl. Sib.: Araceae-Orchidaceae (4): 68; FRIESEN 1988 Lukovye Sibiri: 109; GUBANOV and KAMELIN 1992 in: Bull. MOIP, otd. biol. 97 (2): 122 – *A. prostratum* TREV. subsp. *burjaticum* (FRIESEN) SANČIK, nomen nudum – 1992 in HANELT et al. (eds.): The genus *Allium* – Taxonomic problems and genetic resources: 294.

Mongolian name: Buriad S.
Typus: Burjatia, ad 20 km septentrionales op. Turuntacvo (LE!, isotypus NS!).

Chromosome number: $2n = 32$.
Distribution and habitat in Mongolia: Khangaj, Mongol. Daur. (East), Middle Khalkha (North-West). – In steppes, stony slopes and in steppe pine forest (Fig. 5).

Distribution generale: Russia (Tuva, South Burjatia).

12. *A. dauricum* FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 68; FRIESEN 1988 Lukovye Sibiri: 111 – *A. angulosum* auct. non L.: BARKALOV 1987 in Sosud. rast. sov. Dal'nego Vostoka 2: 386 – *A. senscens* auct. non L.: GRUBOV 1982 Opred. sosud. rast. Mongolii: 66, p.p.; *A. spirale* auct. non WILLD.; GUBANOV et al. 1990 in Bull. MOIP, otd. biol. 95 (1): 119.

Mongolian name: Daguur S.
Typus: Transbaicalia Orientalis, pag. Kyra in valle fl. Bukukun (LE!, isotypus NS).

Chromosome number: $2n = 32$.
Distribution and habitat in Mongolia: Mongol. Daur. (East), East Mongolia. – In damp meadows along rivers and in shrubs (Fig. 5).

Distribution generale: Russia (South Siberia, Far East); China (Manshuria).

13. *A. prostratum* TREV. 1822 in Ind. Sem. Horti Vratisl.: 16; VVEDENSKY 1935 in Fl. SSSR 4: 166; EGOROVA 1977 in Rast. Centr. Asii 7: 45, p.p.; XU 1980 in Fl. reipubl. popul. Sinicae 14: 329; GRUBOV 1982 Opred. sosud. rast. Mongolii: 66 p.p.; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 72; GUBANOV and GANDBOLD 1989 in Fl. Khangaja: 94 – *A. satoanum* KITAGAWA

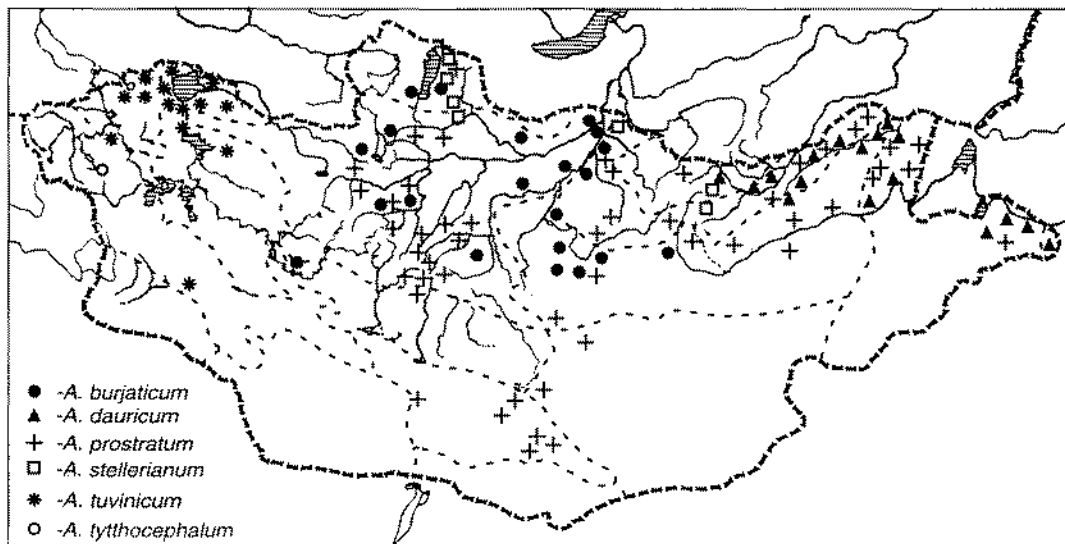


Fig. 5

Allium burjaticum; *A. dauricum*; *A. prostratum*; *A. stellerianum*; *A. tuvinicum*; *A. tythocephalum* – distribution in Mongolia

1934 in Bot. Mag. Tokyo 48: 92; KITAGAWA 1979 Neo-Lin. Fl. Mansh.: 168.

Mongolian name: Delchee S., Mangina.

Typus: In Transbaicalense (?).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Khubsugul, Khentej, Khangaj, Mongol. Daur., Great Khingan, Khobdo, Depres. Great Lakes (East), East Gobi, Gobi Altai (Gurvan-Bogdo, Gurvan-Saikhan). – In stony steppe slopes, in rocks (Fig. 5).

Distribution generale: Russia (South Siberia, Far East); China (Manshuria).

14. *A. senescens* L. 1753 Sp. Pl.: 299; REGEL 1875 in Acta Horti Petrop. 3 (2): 139 p.p. excl. var. *serotinum* REGEL et var. *brevipedunculatum* REGEL; VVEDENSKY 1935 in Fl. SSSR 4: 169, p.p.; EGOROVA 1977 in Rast. Centr. Asii 7: 45, p.p.; KITAGAWA 1979 Neo-Lin. Fl. Mansh.: 168, p.p.; XU 1980 in Fl. republ. popul. Sinicae 14: 241, p.p.; GRUBOV 1982 Opred. sosud. rast. Mongolii: 56, p.p.; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 73; FRIESEN 1988 Lukovye Sibiri: 107; SANČIR et al. 1989 in Kulturpflanze 37: 137 – *A. senescens* subsp. *glaucum* (SCHRAD.) FRIESEN 1987 in l.c.

Mongolian name: Chisheel S., Mangir.

Typus: In Siberia (LINN).

Chromosome number: $2n = 32, 40, 48$.

Distribution and habitat in Mongolia: Khubsugul, Khentej, Khangaj, Mongol. Daur., Great Khingan, Khobdo, Middle Khalkha, East Mongol. Depres. Great Lakes (East), Val. Lakes, East Gobi, Gobi Altai (Gurvan-Saikhan). – In meadow steppes, stony and rocky slopes (Fig. 4).

Distribution generale: Russia (South Siberia, Far East); China (Manshuria).

15. *A. stellerianum* WILLD. 1799 Sp. Pl. 2 (1): 82; REGEL 1875 in Acta Horti Petrop. 3 (2): 149, p.p., excl. syn. *A. rubens* SCHRAD. et var. *prostratum* (TREV.) REGEL; VVEDENSKY 1935 in Fl. SSSR 4: 165, p.p.; GRUBOV 1982 Opred. sosud. rast. Mongolii: 66, p.p.; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 75; FRIESEN 1988 Lukovye Sibiri: 116

Mongolian name: Stellerijn S.

Typus: In Siberia (B!).

Chromosome number: $2n = 32$.

Distribution and habitat in Mongolia: Khubsugul, Khentej, Mongol. Daur. (North). – In dry stony slopes, in rocks, in steppe pine forest (Fig. 5).

Distribution generale: Russia (South Siberia – east from Enisej river).

16. *A. tuvinicum* (FRIESEN) FRIESEN 1987 in Fl. Sib. – Araceae-Orchidaceae (4): 75; FRIESEN

1988 Lukovye Sibiri: 117 – *A. stellerianum* WILLD. subsp. *tuvanicum* FRIESEN 1985 in Nov. system. vyssh. rast. Leningrad 22: 75; SANČIR 1992 in HANELT et al. (eds.): The genus *Allium* – Taxonomic problems and genetic resources: 294 – *A. stellerianum* WILLD.: EGOROVA 1977 in Rast. Centr. Asii 7: 46; GRUBOV 1982 Opred. sosud. rast. Mongolia: 66, p.p.; KHANMINCZUN 1984 in Opred. rast. Tuvinskij ASSR: 265, pro max. p.

Mongolian name: Tuva S.

Typus: Tuva, m. Eren-Karagach (LE!; Isotypus NS).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Khobdo, Mongol. Altai (Tamshi-Daba), Depres. Great Lakes. – In mountain steppe slopes (Fig. 5).

Distribution generale: Russia (Khakasia, Tuva).

17. *A. tythocephalum* SCHULT. et SCHULT. f. 1830 Syst. 7 (2): 1133; VVEDENSKY 1935 in Fl. SSSR 4: 169; FRIESEN 1987 in Fl. sib.: Araceae-Orchidaceae (4): 77; FRIESEN 1988 Lukovye Sibiri: 111; KAMELIN et al. 1992 in Bull. MOIP, otd. biol. 97 (5): 61 – *A. senescens* L. var. *brevipedunculatum* REGEL 1875 in Acta Horti Petrop. 3 (2): 140.

Mongolian name: Baga tolgoj S.

Typus: Siberia (B!).

Chromosome number: $2n = 32$.

Distribution and habitat in Mongolia: Mongol. Altai (Khailag-Ula). – In stony slopes in the alpine belt (Fig. 5).

Distribution generale: Russia (Mountains of South Siberia).

Sectio *Tenuissima* (TZAG.) HANELT

1994, Kew Bull. 49 (3): 560 – Subsect. *Tenuissima* (TZAG.) FRIESEN 1988 Lukovye Sibiri: 119 – Ser. *Tenuissima* TZAG. 1974 in Bot. mat. Herb. Inst. Bot. Akad. Nauk Kas. SSSR 8: 18.

Typus: *A. tenuissimum* L.

18. *A. anisopodium* LEBED. 1852 Fl. Ross. 4 (1): 183; TURCZANINOV 1854 in Bull. Soc. Nat. Mosk. 27 (2): 126; MAXIMOWICZ 1859 Prim. Fl. Amur.: 283; AIRY SHAW 1931 in Notes Roy. bot. Gard. Edinb. 16: 144; VVEDENSKY 1935 in Fl. SSSR 4: 174; EGOROVA 1977 in Rast. Centr. Asii 7: 41, p.p.; KITAGAWA 1979 Neo-Lin. Fl. Mansh.: 165; XU 1980 in Fl. reipubl. popul. Sinicae 14: 237; GRUBOV 1982 Opred. sosud. rast. Mongolii: 66; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae

(4): 75; BARKALOV 1987 in Sosud. rast. sov. Dal'nego Vostoka 2: 386; GUBANOV and GANDBOLD 1988 in Fl. Khangaja: 93 – *A. tenuissimum* L. var. *anisopodium* (LEBED.) REGEL 1875 in Acta Horti Petrop. 3 (2): 157 – *A. tchefouense* O. DEB. 1878 in Acta Soc. Linn. Bord. 32: 25.

Mongolian name: Sagvuun S., Shuvuun Chol.

Typus: In campis Transbaicalensis (LE!).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Khentej, Khangaj, Mongol. Daur., Great Khingan, Khobdo, Mongol. Altai (North), Middle Khaikha, East Mongol., Depres. Great Lakes, Val. Lakes, East Gobi, Gobi Altai. – In steppe, stony and rocks slopes, in dry steppes, in sand and pebbles (Fig. 6).

Distribution generale: Russia (South Siberia, Far East); China; Korea; Japan.

19. *A. tenuissimum* L. 1753 Sp. Pl.: 30; REGEL 1875 in Acta Horti Petrop. 3 (2): 157, p.p. excl. var. *anisopodium* (LEBED.) REGEL et 1887 in Acta Horti Petrop. 10(1): 341 quoad var. *typicum*, p.p.; VVEDENSKY 1935 in Fl. SSSR 4: 173; p.p.; KITAGAWA 1979 Neo-Lin. Fl. Mansh.: 168; XU 1980 in Fl. reipubl. popul. Sinicae 14: 237; GRUBOV 1982 Opred. sosud. rast. Mongolii: 66, p.p.; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4) 75; FRIESEN 1988 Lukovye Sibiri: 120; GUBANOV and GANDBOLD 1989 in Fl. Khangaja 94 – *A. elegantulum* KITAGAWA 1935 in Rep. First Sci. Exped. Mansh. 4 (2): 28 – *A. anisopodium* auct. non LEBED.: EGOROVA 1977 in Rast. Centr. Asii 7: 41, p.p.

Mongolian name: Turikhan S.

Typus: In Siberia (LINN).

Chromosome number: $2n = 16, 32$.

Distribution and habitat in Mongolia: Khentej, Khangaj, Mongol. Daur., Great Khingan, Middle Khaikha, East Mongol., East Gobi, Gobi Altai (East): – In stony steppes (Fig. 7).

Distribution generale: Russia (East Siberia); China (Manshuria).

20. *A. vodopjanovae* FRIESEN 1985 in Bot. Zhurn. (Leningrad) 70 (9): 1247; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 77; GUBANOV and GANDBOLD 1989 in Fl. Khangaja: 94 – *A. tenuissimum* auct. non L.; LEBEDOUR 1852 Fl. Ross. 4 (1): 183; AIRY SHAW 1931 in Notes Roy. bot. Gard. Edinb. 16: 144; VVEDENSKY 1935 in Fl. SSSR 4: 183, p.p.; PAVLOV and POLIAKOV 1958 in Fl. Kasachst.: 156; EGOROVA 1977 in Rast. Centr. Asii 7: 47, p.p.; GRUBOV 1982 Opred.

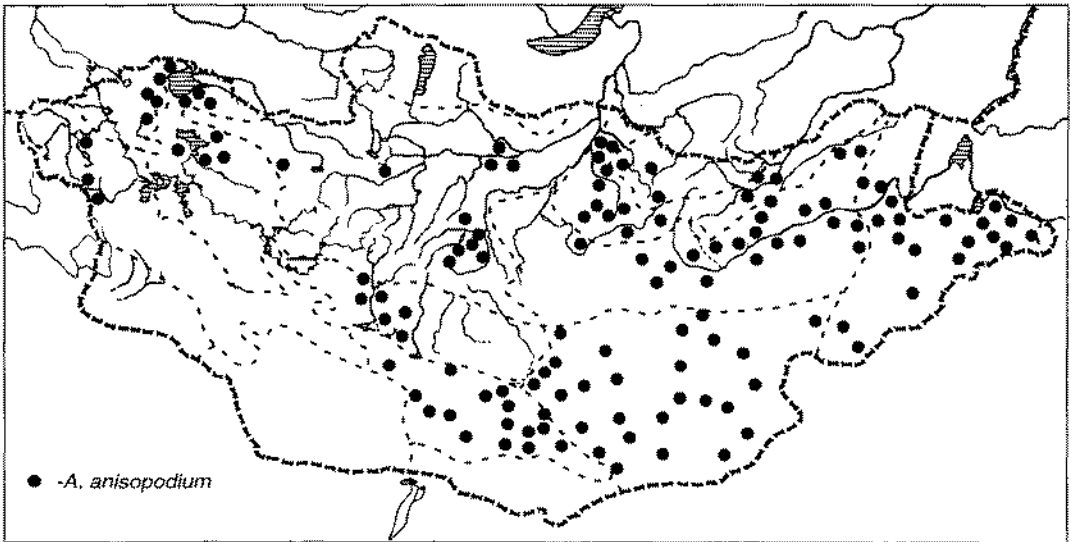


Fig. 6
Allium anisopodium – distribution in Mongolia

sosud. rast. Mongolii: 66, p.p.; *A. tenuissimum* var. *typicum* REGEL 1875 in Acta Horti Petrop. 3 (2): 175, p.p.

Mongolian name: Vodopjanovaany S.

Typus: Tuva, m. Eren-Karagach (LE!).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Khangaj, Mongol. Daur. (West), Khobdo, Mongol. Altai, Middle Khalkha (West), Depres. Great Lakes, Val. Lakes, East Gobi, Gobi Altai, Dzung. Gobi, Trans-altai Gobi. – In dry stony steppes (Fig. 7).

Distribution generale: Russia (South Siberia – to Enissej river); East Kasachstan; China (Dzungaria).

Sectio *Caespitosoprason* FRIESEN

1987, Fl. Sib.: Araceae-Orchidaceae (4): 78.

Typus: *A. polyrrhizum* TURCZ. ex REGEL.

21. *A. bidentatum* FISCHER ex PROKH. 1929 in Mater. Komissii po issled. Mongolii i Tuvy 2: 83, in adnot.; VVEDENSKY 1935 in Fl. SSSR 4: 172; EGOROVA 1977 in Rast. Centr. Asii 7: 42; KITAGAWA 1979 Neo-Lin. Fl. Mansh.: 166; XU 1980 in Fl. reipubl. popul. Sinicae 14: 226; GRUBOV 1982 Opred. sosud. rast. Mongolii: 66; KHANMINCZUN 1984 Opred. rast. Tuvinskoi ASSR: 265; FRIESEN 1987 in Fl. Sib.: Araceae-Orchi-

daceae (4) 79; BARKALOV 1987 in Sosud. rast. sov. Dal'nego Vostoka 2: 388 – *A. polyrrhizum* TURCZ. ex REGEL var. *potaninii* REGEL 1987 in Acta Horti Petrop. 10 (1): 340 – *A. omiostema* AIRY SHAW 1931 in Notes bot. Gard. Edinb. 16: 144; GUBANOV et al. 1990 in Bull. MOIP, otd. biol., 95 (1): 118.

Mongolian name: Shullig S., Taana.

Typus: In Transbaikalia (LE!).

Chromosome number: $2n = 32$.

Distribution and habitat in Mongolia: Khentej, Khangaj, Mongol. Daur., Great Khingan, Khobdo (Aczit-Nur), Middle Khalkha, East Mongol., Val. Lakes (West), East Gobi (North). – In dry steppes, in stony and rocky slopes (Fig. 8).

Distribution generale: Russia (South Siberia – Middle and East); Kasachstan (South-East); China (Dzungaria, Manshuria).

22. *A. mongolicum* REGEL 1875 in Acta Horti Petrop. 3 (2): 162 et 1887 10 (1): 340; EGOROVA 1977 in Rast. Centr. Asii 7: 43; XU 1980 in Fl. reipubl. popul. Sinicae 14: 224; GRUBOV 1982 Opred. sosud. rast. Mongol.: 66; KHANMINCZUN 1984 in Opred. rast. Tuvinskoi ASSR: 264; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 79; SANČIR et al. 1989 in Kulturpflanze 37: 139

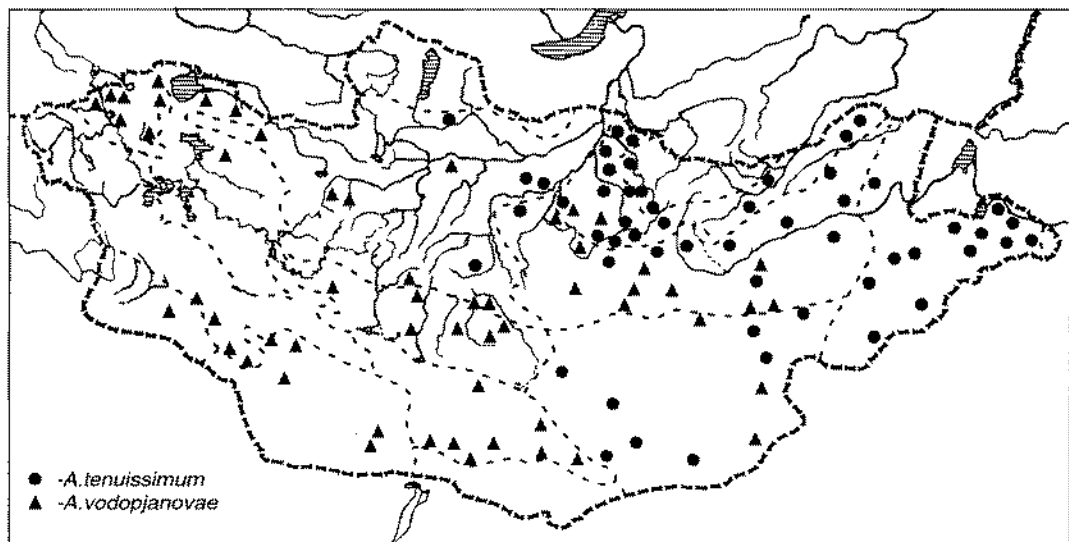


Fig. 7
Allium tenuissimum; *A. vodopjanovae* – distribution in Mongolia

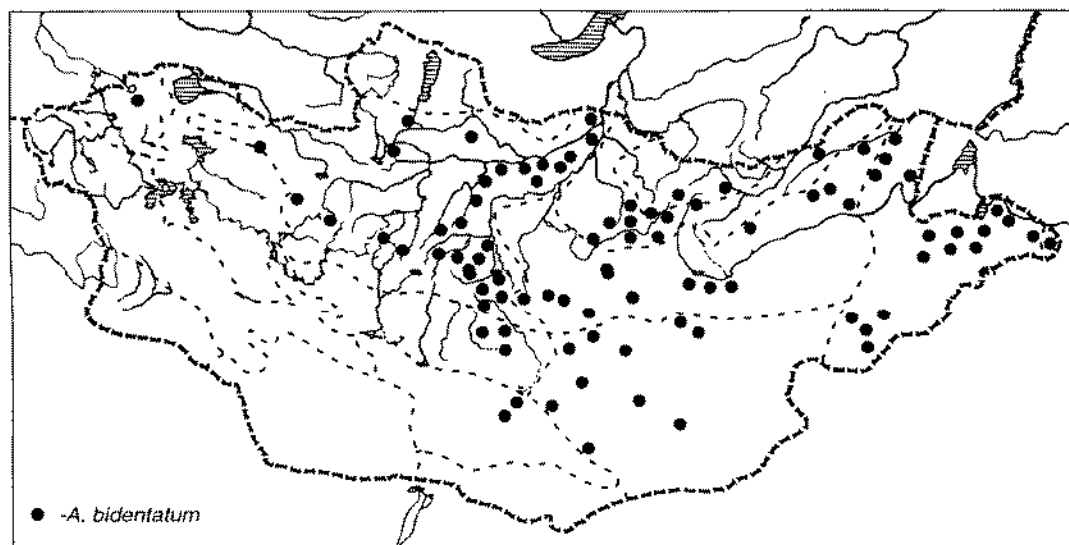


Fig. 8
Allium bidentatum – distribution in Mongolia

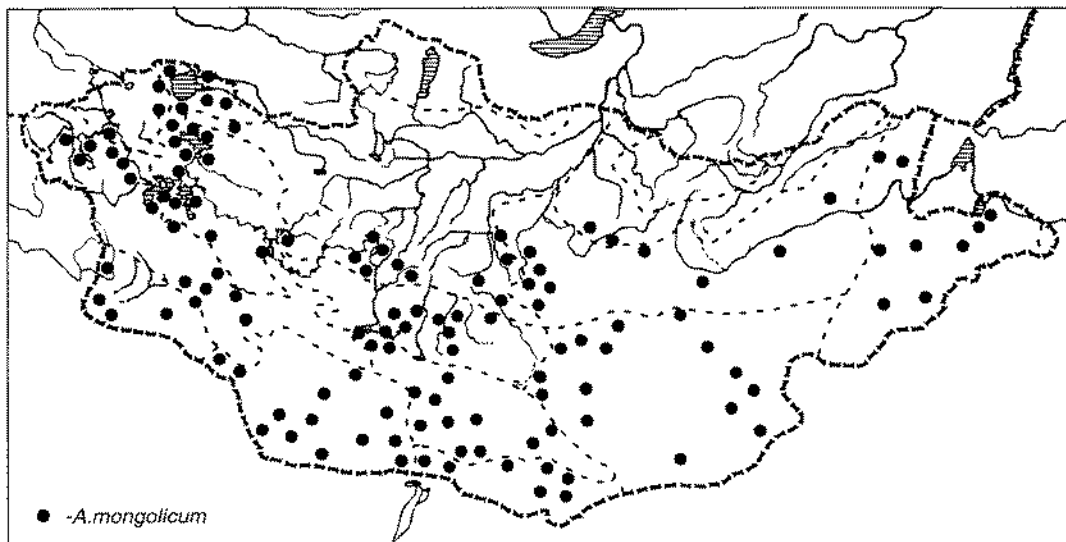


Fig. 9
Allium mongolicum – distribution in Mongolia

– *A. Krylovii* K. SOBOL. 1949 in Syst. sam. Herb. Tomsk Univ. 1 (2): 9.

Mongolian name: Khemol, Mongol S.

Typus: In Mongolia austro-occidentali in prov. Ordos ad fl. Hoangho (LE!).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Khangaj (South), Mongol. Daur., Khobdo, Mongol. Alai, Middle Khalkha, East Mongol., Depres. Great Lakes, Val. Lakes, East Gobi, Gobi Altai, Dzung. Gobi, Transaltai Gobi, Alashan Gobi. – In sandy semideserts, stony steppes (Fig. 9).

Distribution generale: Russia (Tuva); China.

1887 in Acta Horti Petrop. 10 (1): 340, Taf. 5, Fig. 1.

Mongolian name: Taana, Balalgar S., Tan.

Typus: In Dauria ad fl. Argun (LE!).

Chromosome number: $2n = 32$, Mongolia, Dzered, Tax. No. 1692 (H. OHLE, not published).

Distribution and habitat in Mongolia: Khentej (South), Khangaj (South), Mongol. Daur., Mongol. Altai, Middle Khalkha, East Mongol., Depres. Great Lakes, Val. Lakes, East Gobi, Gobi Altai. – In desert steppes, in stony slopes, in dry solonczak (Fig. 10).

Distribution generale: Russia (Dauria); China; East Kasachstan.

23. *A. polyrrhizum* TURCZ. ex REGEL 1875 in Acta Horti Petrop. 3 (2): 162; VVEDENSKY 1935 in Fl. SSSR 4: 172; PAVLOV and POLJAKOV 1958 in Fl. Kasachst. 2: 154; EGOROVA 1977 in Rast. Centr. Asii 7: 35; KITAGAWA 1979 Neo-Lin. Fl. Mansh.: 167; PESHKOVA 1979 in Fl. Centr. Sib. 1: 220; XU 1980 in Fl. reipubl. popul. Sinicae 14: 223; GRUBOV 1982 Opređ. sosud. rast. Mongolii: 64; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 79; GUBANOV and GANDBOLD 1989 in Fl. Khangaja: 94; SANČIR et al. 1989 in Kulturpflanze 37: 139 – *A. subangulatum* REGEL.

Sectio *Oreiprason* F. HERMANN

1939, Feddes Rept. 46: 57.

Typus: *A. saxatile* BIEB.

24. *A. condensatum* TURCZ. 1855 in Bull. Soc. Nat. Mosk. 27(2): 121; REGEL 1875 in Acta Horti Petrop. 3 (2): 105; VVEDENSKY 1935 in Fl. SSSR 4: 182; EGOROVA 1977 in Fl. Centr. Asii 7: 49; KITAGAWA 1979 Neo-Lin. Fl. Mansh.: 166; PESHKOVA 1979 in Fl. Centr. Sib. 1: 219; XU 1980 in Fl. reipubl. popul. Sinicae 14: 248; GRUBOV 1982 Opređ. sosud. rast. Mongolii: 66; FRIE-

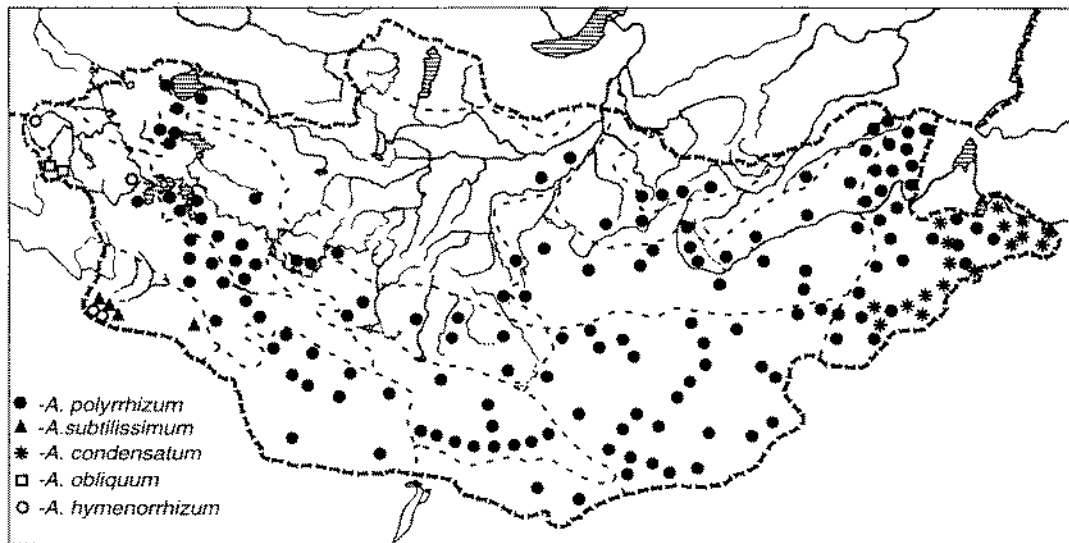


Fig. 10
Allium polyrrhizum; *A. subtilissimum*; *A. condensatum*; *A. obliquum*; *A. hymenorrhizum* — distribution in Mongolia

SEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 80; SANČIR et al. 1989 in Kulturpflanze 37: 140.

Mongolian name: Njagt S.; Emgen S.

Typus: In pratis Dauriae inter Chailassatui et Sochtui (LE!).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Great Khingan, East Mongol. — In steppe slopes (Fig. 10).

Distribution generale: Russia (Dauria, Far East); China (Manshuria).

25. *A. hymenorrhizum* LEDEB. 1830 Fl. Alt. 2: 12; LEDEBOUR 1852 Fl. Ross. 4 (1): 184; REGEL 1875 in Acta Horti Petrop. 3 (2): 131, excl. var. *tjanschanicum* (RUPR.) REGEL; VVEDENSKY 1935 in Fl. SSSR 4: 176; PAVLOV and POLJAKOV 1958 in Fl. Kasachst. 2: 160; EGOROVA 1977 in Rast. Centr. Asii 7: 50; XU 1980 in Fl. reipubl. popul. Sinicae 14: 244; GRUBOV 1982 Opređ. sosud. rast. Mongolii: 66; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 80.

Mongolian name: Khalsan undest S.

Typus: In pratis humidis ad fl. Koksum et Uba (LE!).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Mongol. Altai, Dzung. Gobi. — In shrubby slopes, in forests and subalpine meadows (Fig. 10).

Distribution generale: Russia (Altai); Kasachstan; Middle Asia; China (North-West); Afghanistan; Iran.

26. *A. platyspathum* SCHRENK subsp. *amblyophyllum* (KAR. et KIR.) FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 81; FRIESEN 1988 Lukovye Sibiri: 134; KAMELIN et al. 1991 in Bot. Zhurn. (Leningrad) 76 (4): 610 — *A. amblyophyllum* KAR. et KIR. 1842 in Bull. Soc. Nat. Mosk. 15: 510; PAVLOV and POLJAKOV 1958 in Fl. Kasachstan 2: 159; SANČIR 1992 in HANELT et al. (eds.): The genus *Allium* — Taxonomic problems and genetic resources: 294; — *A. platyspathum* auct. non SCHRENK: VVEDENSKY 1935 in Fl. SSSR 4: 175, p.p.; EGOROVA 1977 in Rast. Centr. Asii 7: 53, p.p.; XU 1980 in Fl. reipubl. popul. Sinicae 14: 242.

Mongolian name: Mochar navchit S.

Typus: Kasachstan, Dzungarskij Alatau, ad fl. Lepsa (MW!).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Mongol. Altai (r. Ölt-Gol), Dzung. Gobi (Baitag Bogdo). — In subalpine meadows (Fig. 11).

Distribution generale: Russia (Altai); Kasachstan (Altai, Saur-Tarbagatai), Dzung. Alatau; Middle Asia; China (Dzungaria, Tjan-Shan).

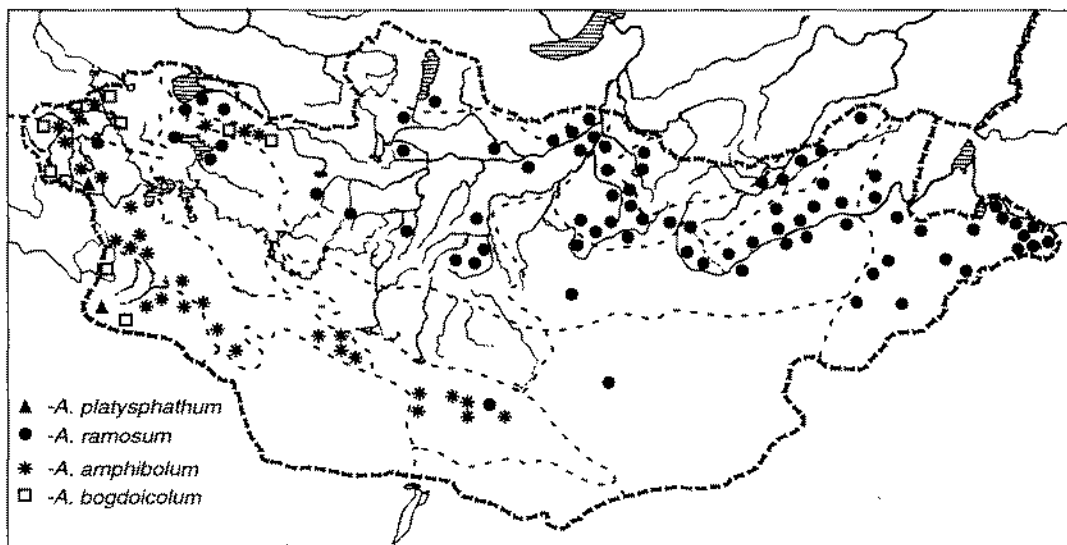


Fig. 11

Allium platyspathum subsp. *amblyophyllum*; *A. ramosum*; *A. amphibolum*; *A. bogdoicolum*

SANČIR (1992) reported for Mongolia also the typical subspecies *A. platyspathum* SCHRENK s. str. which has not been found in Mongolia. All specimens which are examined from Mongolia belong to subsp. *amblyophyllum*.

27. *A. subtilissimum* LEDEB. 1830 Fl. Alt. 2: 22; LEDEBOUR 1852 Fl. Ross. 4 (1): 173; REGEL 1875 in Acta Horti Petrop. 3 (2): 103; PAVLOV and POLJAKOV 1958 in Fl. Kasachst. 2: 161; EGOROVA 1977 in Rast. Centr. Asii 7: 54; XU 1980 in Fl. reipubl. popul. Sinicae 14: 246; GRUBOV 1982 Opred. sosud. rast. Mongolii: 269; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 83.

Mongolian name: Natiynavczit S.

Typus: East Kasachstan, in campestris trans. fl. Irtysch (LE!).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Dzung. Gobi. – In dry stony slopes (Fig. 10).

Distribution generale: Russia (Altai); Kasachstan; China (Dzungaria).

Sectio *Petroprason* F. HERMANN

1939, Feddes Repert. 46: 57.

Typus: *A. obliquum* L.

28. *A. obliquum* L. 1753 Sp. Pl.: 296; LEDEBOUR 1852 Fl. Ross. 4 (1): 173; REGEL 1875 in Acta Horti Petrop. 3 (2): 126 et 1887 10 (1): 327; VVEDENSKY 1935 in Fl. SSSR 4: 175; EGOROVA 1977 in Rast. Centr. Asii 7: 55; XU 1980 in Fl. reipubl. popul. Sinicae 14: 246; GRUBOV 1980 Opred. sosud. rast. Mongolii: 66; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 80; SANČIR et al. 1989 in Kulturpflanze 37: 140.

Mongolian name: Daliu S., Sarmisan S.

Typus: In Siberia (LINN).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Mongol. Altai (rr. Ölt-Gol and Sanginin-Gol). – In meadows in mountain forest slopes (Fig. 10).

Distribution generale: Russia (South Ural, South-West Siberia); Kasachstan; Middle Asia; China (Dzungaria); Ukraina; Hungaria.

Sectio *Butomissa* (SALISB.) KAMEL.

1973, Florogen. anal. fl. gorn. Sred. Asii: 239.

Typus: *A. ramosum* L.

29. *A. ramosum* L. 1753 Sp. Pl.: 296; STEARN 1946 in Herbertia 11: 227, 263; XU 1980 in Fl. reipubl. popul. Sinicae 14; KHANMINCZUN 1984 in Opred. rast. Tuvinskoi ASSR: 262; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 83;

BARKALOV 1987 in Sosud. rast. sov. Dal'nego Vostoka 2: 385; GUBANOV and GANDBOLD 1989 in Fl. Khangaja: 94 – *A. odorum* L. 1757 Mant. 1: 62; REGEL 1875 in Acta Horti Petrop. 3 (2): 175; FORBES and HEMSLEY 1905 Index Fl. Sini-cae 3: 123; VVEDENSKY 1935 in Fl. SSSR 4: 163; PAVLOV and POLJAKOV 1958 in Fl. Kasachst. 2: 151; EGOROVA 1977 in Rast. Centr. Asii 7: 33; GRUBOV 1982 Opred. sosud. rast. Mongolii: 64 – *A. potaninii* REGEL 1879 in Acta Horti Petrop. 6: 295 – *A. weichanicum* PALIBIN 1895 in Acta Horti Petrop. 14: 143 – *A. kerulenikum* DASCHNJAM 1974 Fl. i rast. stepei Vost. Mongol.: 48, nomen invalidum.

Mongolian name: Anchil S., gogod.

Typus: In Siberia (LINN).

Chromosome number: $2n = 32$.

Distribution and habitat in Mongolia: Khubsugul (Khatgal), Khentej, Mongol. Daur., Great Khingan, Khobdo (Ulegej), Middle Khalkha, East Mongol., Depres. Great Lakes, East Gobi (North), Gobi Altai, Dundu-Sajkhan. – In steppes, in dry saline meadows, in stony steppe slopes (Fig. 11).

Distribution generale: Russia (South Siberia, Far East); Kasachstan (South-East); China; Korea.

Some authors have determined the taller specimens of *A. ramosum* from East Mongolia as *A. tuberosum* ROTTL. ex SPRENGEL. Possibly, these belong to the cultivated *A. tuberosum* which have become naturalized gone wild. However, except for large dimensions these specimens are not different morphologically from *A. ramosum*.

Sectio *Reticulato-Bulbosa* KAMEL.

1973, Florogen. anal. fl. gorn. Sredn. Asii: 239.

Typus: *A. lineare* L.

30. *A. amphibolum* LEDEB. 1830 Fl. Alt. 2: 5; REGEL 1875 in Acta Horti Petrop. 3 (2): 166; KRYLOV 1929 Fl. Zap. Sib. 3: 625, p.p.; VVEDENSKY 1935 in Fl. SSSR 4: 152, p.p.; PAVLOV and POLJAKOV 1958 in Fl. Kasachst. 2: 146; EGOROVA 1977 in Rast. Centr. Asii 7: 29; GRUBOV 1982 Opred. sosud. rast. Mongolii: 65, p.p.; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 84.

Mongolian name: Taumal S.

Typus: In Siberia altaica, ad fl. Charysch (LE!).

Chromosome number: $2n = 48$.

Distribution and habitat in Mongolia: Khangaj (Khan-Khukhijn, Tarbagatai), Khobdo, Mon-

gol. Altai, Altai Gobi, Dzung. Gobi. – In rocks, in stony slopes in alpine belts (Fig. 11).

Distribution generale: Russia (Altai, Tuva); Kasachstan (Altai); China (?Mongol. Altai).

The inclusion of *A. amphibolum* within *A. splendens* sensu lato by SANČIR (1992) is not correct. This latter species shows distinct morphological features and belongs to a related, but different group (FRIESEN 1992). They can be distinguished rather easily by the filaments of their inner stambus: The *A. splendens* group has several teeth on each side of the inner filaments whereas the *A. amphibolum* group does not have any one on the inner stamens or only one short tooth on each side.

31. *A. bogdoicum* REGEL 1880 in Acta Horti Petrop. 6: 530 et 1887, 10 (1): 348; VVEDENSKY 1935 in Fl. SSSR 4: 151 et 1971 in Opred. rast. Sredn. Asii 2: 56; PAVLOV and POLJAKOV 1958 in Fl. Kasachst. 2: 145; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 84 – *A. schrenkii* auct. non REGEL; EGOROVA 1977 in Rast. Centr. Asii 7: 39; KHANMINCZUN 1984 in Opred. rast. Tuvinsskoj ASSR 263 – *A. strictum* SCHRAD. subsp. *schrenkii* (REGEL) SANČIR 1992 in HANELT et al. (eds.): The genus *Allium* – Taxonomic problems and genetic resources: 295, nomen nudum.

Mongolian name: Bogd-Uulyn S.

Typus: China, Dzungaria, in m. Bogdo (LE!).

Chromosome number: $2n = 32$.

Distribution and habitat in Mongolia: Khangaj (Khan-Khukhijn), Khobdo, Mongol. Altai, Dzung. Gobi (Baitag-Bogdo). – In dry alpine meadows (Fig. 11).

Distribution generale: Russia (South-East Altai, West Tuva); South-East Kasachstan; China (Dzungaria).

32. *A. chamarense* M. IVANOVA 1965 in Nov. syst. vyssh. rast. (Leningrad) 2: 296; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 85; GUBANOV and GANDBOLD 1989 in Fl. Khangaja: 93 – *A. flavidum* auct. non LEDEB.; PESHKOVA 1979 in Fl. Centr. Sib. 2: 219; GRUBOV 1982 Opred. sosud. rast. Mongolii: 64, p.p. – *A. leucocephalum* TURCZ. ex LEDEB. subsp. *chamarense* (M. IVANOVA) SANČIR 1992 in HANELT et al. (eds.): The genus *Allium* – Taxonomic problems and genetic resources: 295, nomen nudum.

Mongolian name: Khamardavaany S.

Typus: In Transbaikalia, Chamar-Daban, fl. Dsun-Baiga (LE!, isotypus NS!).

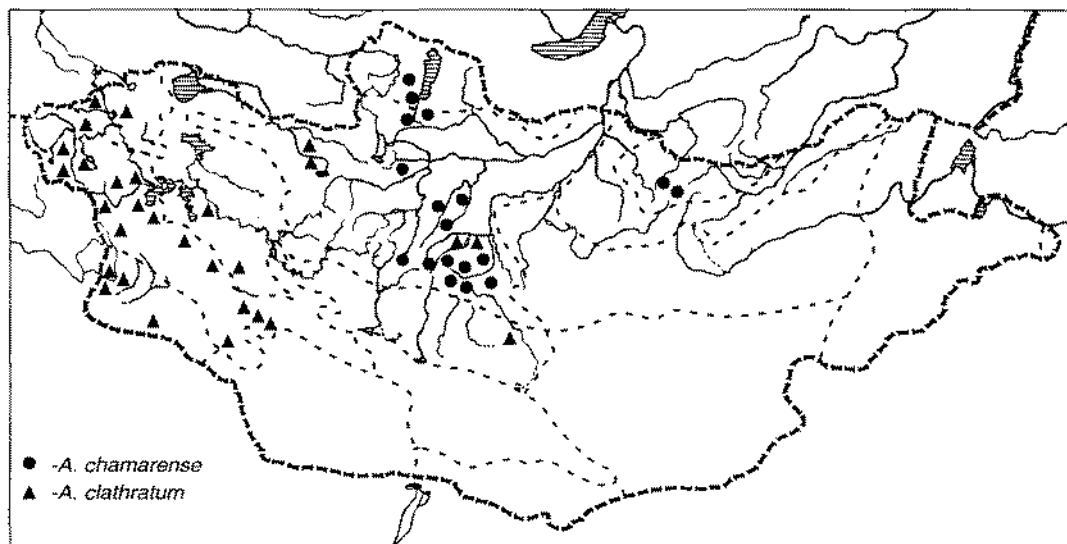


Fig. 12

Allium chamarense; *A. clathratum* – distribution in Mongolia

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Khubsugul, Khentej, Khangaj. – In rocks and stony slopes in forest and subalpine belts (Fig. 12).

Distribution generale: Russia (East Siberia).

The inclusion of *A. chamarense* in *A. leucocephalum* (SANČIR 1992) is erroneous. This diploid species belong to the polyploid complex of *A. splendens* sensu lato, because the stamens of the inner circle have several teeth on both each side.

33. *A. clathratum* LEDEB. 1830 Fl. Alt. 2: 18; REGEL 1875 in Acta Horti Petrop. 3 (2): 173; VVEDENSKY 1935 in Fl. SSSR 4: 145; EGOROVA 1977 in Rast. Centr. Asii 7: 30, p.p.; GRUBOV 1982 Opred. sosud. rast. Mongolii: 65, p.p.; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 85; FRIESEN 1988 Lukovye Sibiri: 151; GUBANOV and GANDBOLD 1989 in Fl. Khangaja: 94.

Mongolian name: Totlig S.

Typus: Altai, ostium fl. Kerlyk ad fl. Charysch (LE).

Chromosome number: $2n = 16, 32$.

Distribution and habitat in Mongolia: Khankaj (North-East), Khobdo, Mongol. Altai, Depres. Great Lakes, Val. Lakes (Tugreg). – In stony steppes and rocks, in lower and middle mountain belts (Fig. 12).

Distribution generale: Russia (Altai, Tuva); Kasachstan (Altai).

34. *A. eduardii* STEARN 1944 in Herbertia 11: 102, in adnot.; VVEDENSKY 1971 in Opred. rast. Sredn. Asii 2: 56; EGOROVA 1977 in Rast. Centr. Asii 7: 31; XU 1980 in Fl. reipubl. popul. Sinicae 14: 216; GRUBOV 1982 Opred. sosud. rast. Mongolii: 64; KHANMINCZUN 1984 in Opred. rast. Tuvinskoi ASSR: 262; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 86; GUBANOV and GANDBOLD 1989 in Fl. Khangaja: 94 – *A. fischeri* REGEL 1875 in Acta Horti Petrop. 3 (2): 161, non BESSER 1830; VVEDENSKY 1935 in Fl. SSSR 4: 145; PAVLOV and POLJAKOV 1958 in Fl. Kasachst. 2: 144.

Mongolian name: Eduardjin S., Schuvun khol.

Typus: Altai (LE!).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Khangaj, Khobdo, Mongol. Altai, Middle Khalkha (South-West), Depres. Great Lakes, Val. Lakes, East Gobi (West), Gobi Altai, Dzung. Gobi, Transaltai Gobi (Atas-Bogdo), Alashan Gobi. – In limestone slopes and rocks (Fig. 13).

Distribution generale: Russia (Altai, Tuva); Kasachstan (Altai); China (Dzungaria).

35. *A. flavidum* LEDEB. 1830 Fl. Alt. 2: 7; REGEL 1875 in Acta Horti Petrop. 3 (2): 168; VVEDENSKY 1935 in Fl. SSSR 4: 146; PAVLOV et

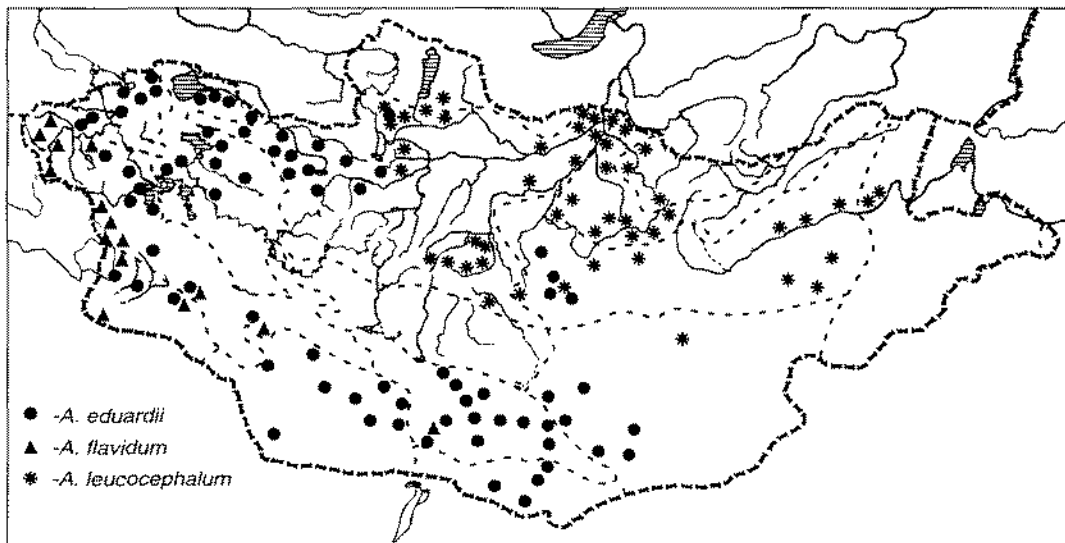


Fig.13
Allium eduardii, *A. flavidum*; *A. leucocephalum* – distribution in Mongolia

POLJAKOV 1958 in Fl. Kasachst. 2: 144; EGOROVA 1977 in Rast. Centr. Asii 7: 31; XU 1980 in Fl. reipubl. popul. Sinicae 14: 219; GRUBOV 1982 in Opređ. sosud. rast. Mongolii: 65, p.p.; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 86.

Mongolian name: Sharlanguj S.

Typus: Altai, in pratis subalpinus ad fl. Belaja Uba (LE!).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Mongol. Altai, Dzung. Gobi (Baitag-Bogdo), Gobi Altai (Gurban-Saichan). – In forest and subalpine meadows (Fig. 13).

Distribution generale: Russia (Altai); Kasachstan (Altai); China (Dzungaria).

36. *A. leucocephalum* TURCZ. ex LEDEB. 1852 in Fl. Ross. 4 (1): 179; TURCZANINOW 1854 in Bull. Soc. Nat. Mosk. 27 (2): 123; VVEDENSKY 1935 in Fl. SSSR 4: 146; EGOROVA 1977 in Rast. Centr. Asii 7: 32, p.p., quoad pl. Mongol. orient.; PESHKOVA 1979 in Fl. Centr. Sib. 1: 219; KITAGAWA 1979 Neo-Lin. Fl. Mansh.: 167; XU 1980 in Fl. reipubl. popul. Sinicae 14: 218; GRUBOV 1982 Opređ. sosud. rast. Mongolii: 64, p.p.; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 88 – *A. flavovirens* REGEL 1887 in Acta Horti Petrop. 10 (1): 344.

Mongolian name: Buural S., gogod.

Typus: In Transbaicalis, ad fl. Dshida (LE!).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Khubsugul, Khentej, Khangaj, Mongol. Daur., Middle Khalkha, East Mongol., East Gobi (Bajan Dsag). – In sandy steppes, in stony slopes (Fig. 13).

Distribution generale: Russia (Transbaikalia); China (Manshuria).

37. *A. malyshevii* FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 89; FRIESEN 1988 Lukovce Sibiri: 149 – *A. amphibolum* auct. non LEDEB.: VVEDENSKY 1935 in Fl. SSSR 4: 152 p.p.; GRUBOV 1982 Opređ. sosud. rast. Mongolii: 65, p.p.; GUBANOV and GANDBOLD 1989 in Fl. Khangaja: 93.

Mongolian name: Malyshevyn S.

Typus: East Sajan, Jugum Munku-Sardyk, planities Nuchu-Daban (LE!, isotypus NS!).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Khubsugul, Khentej, Khangaj. – In alpine meadows, in grassy stony slopes, in alpine belts (Fig. 14).

Distribution generale: Russian (Tuva-Sengilen, Burjatia-East Sajan).

38. *A. pumilum* VVED. 1934 in Bull. Univ. Asiae Centr. 19: 121; VVEDENSKY 1935 in Fl. SSSR 4: 171; FRIESEN and NAMZALOV 1984 in Bot. Zhurn.

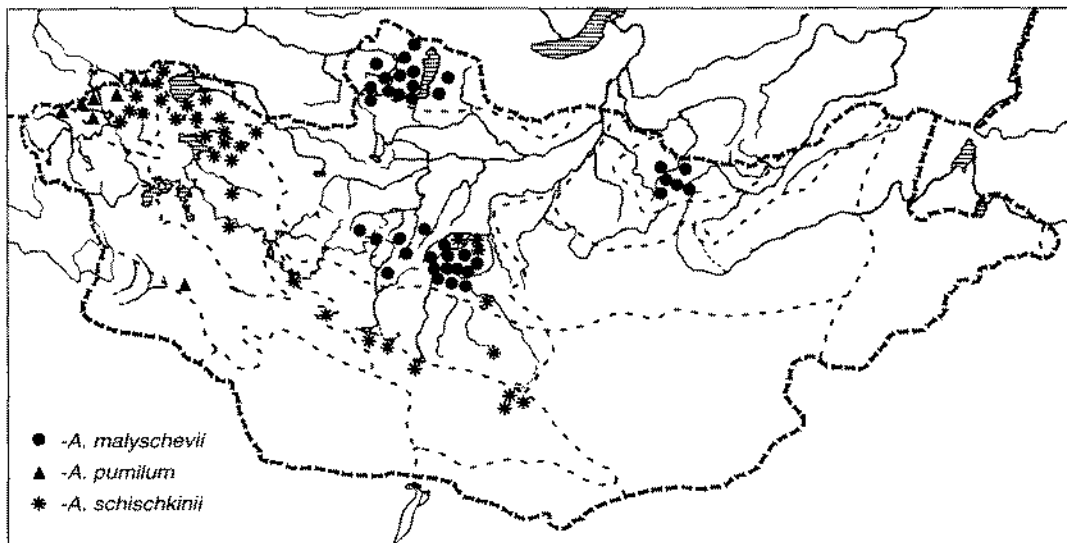


Fig. 14
Allium malyschevii; *A. pumilum*; *A. schischkinii* – distribution in Mongolia

(Leningrad) 70: 1126; KHANMINCZUN 1984 in Opred. rast. Tuvinskoi ASSR: 263; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 89; FRIESEN 1988 Lukovye Sibiri: 147.

Mongolian name: Baga S.

Typus: Altai, planities Ukok (LE!).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Khobdo, Mongol. Altai. – In dry tundras and in alpine grasslands in upper part of alpine belt (Fig. 14).

Distribution generale: Russia (East Tuva, Altai).

39. *A. schischkinii* K. SOBOL. 1949 in Syst. sam. Herb. Tomsk. Univ. 1-2: 10; SOBOLEVSKAJA 1953 Konsp. Fl. Tuvy: 54; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 90; FRIESEN 1988 Lukovye Sibiri: 155 – *A. leucocephalum* auct. non TURCZ. ex LEDEB.: EGOROVA 1977 in Rast. Centr. Asii 7: 32; GRUBOV 1982 Opred. sosud. rast. Mongolii: 64, p.p.; KHANMINCZUN 1984 in Opred. rast. Tuvinskoi ASSR: 262.

Mongolian name: Schischkinij S.

Typus: Tuva, fl. Eleges (TK!).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: Khangaj, Khobdo, Depres. Great Lakes, Val. Lakes, Gobi Altai. – In steppes, in stony slopes (Fig. 14).

Distribution generale: Russia (Tuva).

40. *A. splendens* WILLD. ex SCHULT. et SCHULT. f. 1830 in ROEMER and SCHULTES, Syst. Veg. 7 (2): 1023; LEDEBOUR 1852 Fl. Ross 4 (1): 179; REGEL 1875 in Acta Horti Petrop. 3 (2): 168; VVEDENSKY 1935 in Fl. SSSR 4: 150; EGOROVA 1977 in Rast. Centr. Asii 7: 39; PESHKOVA 1979 in Fl. Centr. Sib.: 222; KITAGAWA 1979 Neo-Lin. Fl. Mansh.: 168; GRUBOV 1982 Opred. sosud. rast. Mongolii: 65; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 91; BARKALOV 1987 in Sosud. rast. sov. Dal'nego Vostoka 2: 385; GUBANOV and GANDBOLD 1989 in Fl. Khangaja: 94.

Mongolian name: Gjalgar S.

Typus: In Siberia (B!).

Chromosome number: $2n = 32, 40, 48$.

Distribution and habitat in Mongolia: Khubsugul, Khentej, Mongol. Daur, Great Khingan, Middle Khalkha (North-East), East Mongolia. – In light forests, shrubs, in meadows, in stony slopes (Fig. 15).

Distribution generale: Russia (East Siberia, Far East); China (Manshuria); Korea; Japan.

41. *A. strictum* SCHRAD. 1809 in Hort. Goett.: 7, Taf. 1; REGEL 1875 in Acta Horti Petrop. 3 (2): 164, p.p.; VVEDENSKY 1935 in Fl. SSSR 4: 151; PAVLOV and POLJAKOV 19589 in Fl. Kasachst. 42: 145; EGOROVA 1977 in Rast. Centr. Asii 7: 40; XU 1980 in Fl. reipubl. popul. Sinicae 14: 220 p.p., excl. *A. bogdoicolum* REGEL.; GRUBOV 1982

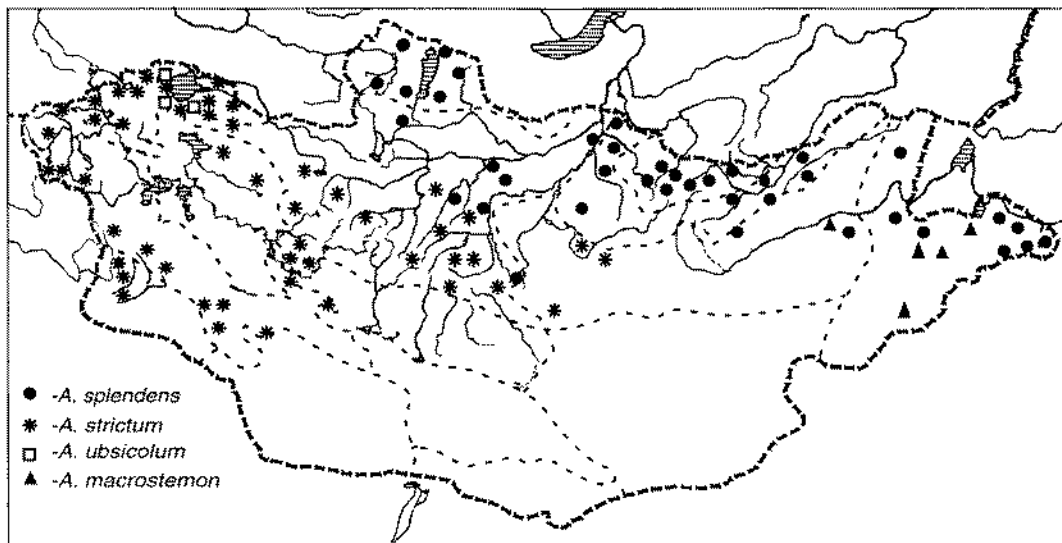


Fig. 15
Allium splendens; *A. strictum*; *A. ussolicum*; *A. macrostemon* – distribution in Mongolia

Opred. sosud. rast. Mongolii: 65; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 92; GUBANOV and GANDBOLD 1989 in Fl. Khangaja: 94 – *A. lineare* auct. non L.: EGOROVA 1977 in Rast. Centr. Asii 7: 33; GRUBOV 1982 Opred. sosud. rast. Mongolii: 65.

Mongolian name: Orovgor S.

Typus: In Siberia (?).

Chromosome number: $2n = 32, 40, 48$.

Distribution and habitat in Mongolia: Khangaj, Mongol. Daur. (South-West), Khobdo, Mongol. Altai, Middle Khalkha (West), Depres. Great Lakes, Dzung. Gobi. – In stony slopes, in steppes, in shrubs (Fig. 15).

Distribution generale: Russia (Ladoga Lake, West and Middle Siberia, Ural, Transvolga); China (Dzungaria); Central Europe; Scandinavia.

42. *A. ussolicum* REGEL 1887 in Acta Horti Petrop. 10 (1): 342; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 93; FRIESEN 1988 Lukovye Sibiri: 152; SANČIR 1992 in HANELT et al. (eds.): The genus *Allium* L. – Taxonomic problems and genetic resources: 295 – *A. clathratum* auct. non LEDEB.: EGOROVA 1977 in Rast. Centr. Asii 7: 30, p.p.

Mongolian name: Ubs-Nuurn S.

Typus: In Mongolia borealis montibus Tenmyk circa Lacus Ubsa (LEB.).

Chromosome number: $2n = 32$.

Distribution and habitat in Mongolia: Depres. Great Lakes (around lake Ubsa-Nur). – In pebbles in dry river-bed and in stony steppes (Fig. 15).

Distribution generale: Russia (South-East Altai, Tuva).

Subgenus *Allium*

Lectotypus: *A. sativum* L.

Sectio *Scorodon* C. KOCH

1837, Syn. Fl. Germ.: 855.

Typus: *A. moschatum* L.

43. *A. macrostemon* BUNGE 1832 Enum. pl. China bor.: 65; REGEL 1875 in Acta Horti Petrop. 3(2): 105; VVEDENSKY 1935 in Fl. SSSR: 221; EGOROVA 1977 in Rast. Centr. Asii 7: 63; KITAGAWA 1979 Neo-Lin. Fl. Mansh.: 167; XU 1980 in Fl. reipubl. popul. Sinicae 14: 265; GRUBOV 1982 Opred. sosud. rast. Mongolii: 64; BARKALOV 1987 in Sosud. rast. sov. Dal'nego Vostoka 2: 378; SANČIR et al. 1989 in Kulturpflanze 37: 141 – *A. uratense* FRANCH. 1884 in Nouv. Arch. Mus. Hist. Nat. 7: 114; GUBANOV and KAMELIN 1992 in Bull. MOIP., otd. biol. 97 (5): 61 – *A. macrostemon* BUNGE var. *uratense* (FRANCH.)

AIRY SHAW 1931 in Not. Roy. bot. Gard. Edinb. 16: 136.

Mongolian name: Urt dokhiurt S., zerleg sarmis.

Typus: China, ad vias prope Pekinum (LE!).

Chromosome number: $2n = 32$.

Distribution and habitat in Mongolia: Middle Khalkha (East), East Mongolia. – In meadow slopes (Fig. 15).

Distribution generale: Russia (Far East); China; Korea; Japan.

44. *A. pallasii* MURRAY 1775 in Comment. Goett. 6: 31, Taf. 3; LEDEBOUR 1852 Fl. Ross. 4 (1): 170; REGEL 1875 in Acta Horti Petrop. 3 (2): 101 et 1887 10 (1): 313, p.p.; VVEDENSKY 1935 in Fl. SSSR 4: 220; PAVLOV and POLJAKOV in Fl. Kasachst. 2: 177; EGOROVA 1977 in Rast. Centr. Asii 7: 64; XU 1980 in Fl. reipubl. popul. Sinicae 14: 264; FRIESEN 1987 in Fl. Sib.: Araceae-Orchidaceae (4): 159 – *A. tenue* G. DON 1827 Monogr. All.: 34 – *A. caricifolium* KAR. et KIR. 1841 in Bull. Soc. Nat. Mosk. 14: 854 – *A. semiretschensianum* REGEL 1878 in Acta Horti Petrop. 5: 63 – *A. albertii* REGEL 1878 in Acta Horti Petrop. 5: 632.

Mongolian name: Pallasijn S.

Typus: In Siberia (MW!).

Chromosome number: $2n = 16$.

Distribution and habitat in Mongolia: SANCİR (1992) listed this species for the first time for Mongolian flora but without any details of its distribution. I did not see herbarium material of this species from Mongolia. However, true *A. pallasii* can be found in the Dzungarian Gobi and therefore it may be expected also in the Mongolian flora.

Distribution generale: Russia (Altai); Kasachstan (Middle Asia); China (Dzungaria).

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