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***ALLIUM CAROLINIANUM* DC., A NEW SPECIES TO THE OUTER MONGOLIA**

***ALLIUM CAROLINIANUM* DC. – НОВЫЙ ВИД ДЛЯ ВНЕШНЕЙ МОНГОЛИИ**

Аннотация. В статье сообщается о новом для флоры Монголии виде *Allium carolinianum* DC., обнаруженном на западе страны.

Дается краткая морфологическая характеристика, номенклатура, приводится число хромосом и описание кариотипа.

Ключевые слова: *Allium carolinianum*, Западная Монголия, Джунгария, Байтаг-Богдо.

Summary. The article reports on the new species for the flora of Mongolia *Allium carolinianum* DC. found in the west part of the country. A short morphological characteristics, nomenclature, the number of chromosomes and description of the karyotype are given.

Key words: *Allium carolinianum*, West Mongolia, Dzungaria, Baitag-Bogdo.

In summer 2012, the first author have collected within the project “WATERCOPE” in West Mongolia near the border to China on Baitag-Bogdo Mountain *Allium carolinianum* DC., which was not known before for Mongolian flora. First time these plants was collected yet in summer 2010 by Davaajav Darikhand from Khovd University, but were wrongly determined as *Allium obliquum* L. In the last taxonomic revision of the genus *Allium* L. in Mongolia (Friesen, 1995), 45 *Allium* species (including *Caloscordum neriniflorum* Herb.) were recognized. Ivan A. Gubanov (1996) reported already 49 *Allium* species for the country. With the present addition of *A. carolinianum*, the genus *Allium* has fifty species in Mongolia.

According to the new classification of the genus *Allium* (Friesen et al., 2006), *Allium carolinianum* belong to the subgenus *Polyprason* Radić, section *Falcatifolia* N. Friesen.

Allium carolinianum DC. 1804, in Redoute, Liliac. 2: t. 101; Nasir 1975, Fl. West Pakistan, 83: 9; Wendelbo, 1971, Fl. Iranica, 76 (1): 14; Egorova, 1977, Pl. Centr. As. 7: 48; Xu, Kamelin, 2000, Fl. China, 24: 188. – *Allium polyphyllum* Kar. et Kir. 1842, Bull. Soc. Imp. Nat. Moscou, 15: 509; Vvedensky, 1935, Fl. URSSR, 4: 176; Vvedensky,

1971, Consp. Fl. As. Med. 3: 63. – *Allium platystylum* Regel, 1887, Trudy Imp. S.-Peterburgsk. Bot. Sada, 10: 328; Egorova, 1977, Pl. Centr. As. 7: 54. – *Allium platyspathum* var. *falcatum* Regel, 1875, Trudy Imp. S.-Peterburgsk. Bot. Sada, 3 (2): 135. – *Allium thomsonii* Baker, 1874, Journ. Bot. 12: 294; Hooker, 1894, Fl. British India, 6: 340.

Morphology. Bulb cylindrical to ovoid, outer coats coriaceous, dull brown, inner membranous. Scapes 15–50 cm tall, base covered with leaf bases. Leaves 5–7, broadly linear to lanceolate, falcate, not fistular, apex obtuse. Umbel many-flowered, dense, 2–3 cm across. Tepals pink to red coloured, lanceolate, 6–7 mm long. Filaments longer than tepals, entire, connate at the base. Style exserted, stigma capitate. Fig. 1a, b.

Distribution in Mongolia: Chovd Aimak, Bulgan, Baitag Bogdo. N 45°17.38; E 90°48.24, 2550 m. It is a relatively small population of about 400 plants in the approximately 0.5 acres in west slope of the mountain Baitag-Bogdo.

Ecology: Gravely and stony slopes on the subalpine and alpine zone, 2200–4000 m.

General Distribution: Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, China (Xinjiang, NW Xizang), Afghanistan, Pakistan, India, West Nepal.

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Fig 1a. *Allium carolinianum* in Baitag Bogdo, West Mongolia.

Karyology. The karyology of *Allium carolinianum* has been investigated previously by several authors. The diploid chromosome number ($2n=16$) was reported by Huang et al. (1996, north-east of Qinghai-Xizang Plateau), Yang and Wu (1993, Hohxil region, Qingan), Ohri and Pistrick (2001, Tajikistan) and Tang et al. (2005, for plants from Maduoi, Qinghai). Zakirova and Nafanailova (1990) for first time reported the tetraploid number ($2n=32$) for *Allium carolinianum* from south Kazakhstan.



Fig. 1b. Mature umbel of *Allium carolinianum*.

We have studied the karyotype of West Mongolian plants. Root tips have been used for the study of chromosomes in mitosis. The roots were treated with 8-hydroxyquinoline for 3 hours. The Haematoxylin staining after Ju.A. Smirnov (1968) was used as a stain. For chromosome morphology, the classification of Levan et al. (1964) has been followed. The karyotype was studied on five metaphase plates.

Material: Chovd Aimak, Bulgan, Baitag Bogdo. N 45°17.38; E 90°48.24, 2550 m. B. Oyuntsetseg. 22 VII 2012. (OSBU 22267 and UBU)

Table 1

Morphometric data of chromosomes in tetraploid *Allium carolinianum*

Number of chromosome pairs	Size of the longer arms, μm	Size of the shorter arms, μm	Chromosome length, μm	Centromere index, %
1	6,7	5,8	12,5	46,4
2	6,3	5,7	12,0	47,5
3	6,3	5,5	11,8	46,6
4	6,0	5,5	11,5	47,8
5	6,3	5,0	11,3	44,2
6	5,8	5,3	11,1	48,2
7	5,7	5,3	11,0	48,2
8	5,5	5,3	10,8	49,1
9	5,6	5,0	10,6	47,2
10	5,4	5,2	10,6	49,0
11	5,2	5,1	10,3	49,5
12	5,3	4,8	10,1	47,5
13	5,1	4,8	9,9	48,5
14	4,8	4,1	8,9	46,1
15	6,5	1,1	7,6	14,5
16	5,5	1,1	6,6	20,0

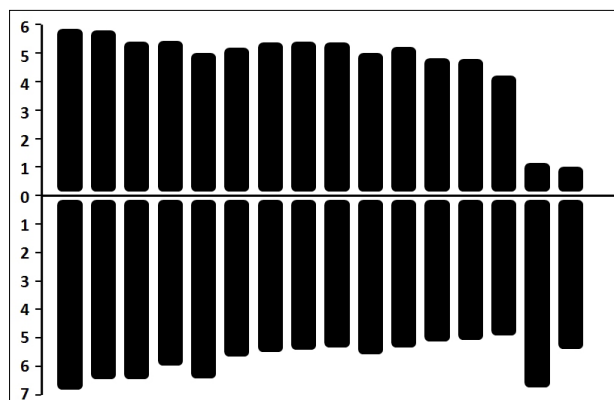


Fig. 2a. Metaphase chromosomes of *Allium carolinianum*.

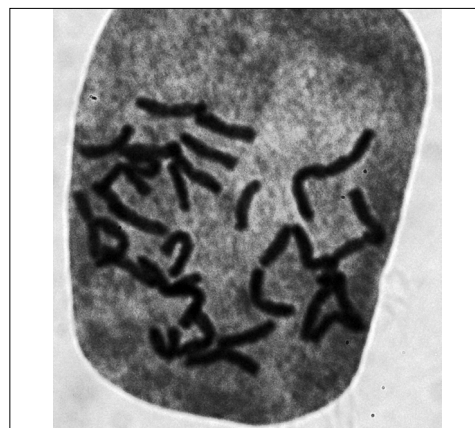


Fig 2b. Karyotype of *Allium carolinianum*.

The plants are tetraploids. The length of the chromosomes ranges from 6,6 to 12,5 μm . Most of the chromosomes are metacentric and two pairs are subacrocentric with very small diffuse satellite

(Table 1, Fig. 2a)

$2n=32$, $L_{2n} = 333,2 \mu\text{m}$, $\text{TI}^{\text{C}} = 41,7\%$, $\text{K}_{2n} = 28 \text{ m} + 4\text{sa}$ (Fig. 2b).

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