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New findings in the flora of Mongolia. Part 1

Новые находки во флоре Монголии. Часть 1

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Ключевые слова: флора, Монголия, новые таксоны, новые местонахождения.

Summary. For several plant families, we record some species new for Mongolia, and for several others new localities are documented broadening knowledge about distribution areas. The material was collected during a joint Mongolian-German-Russian botanical expedition in summer 2013. The vouchers are deposited in ALTB, OSBU, UBU and in Khovd Herbarium.

Аннотация. В статье представлены новые данные о видовом разнообразии и распространении видов из нескольких семейств растений в Монголии. Материал был собран в ходе совместной монгольско-немецко-российской экспедиции летом 2013 года и хранится в гербариях ALTB, OSBU, UBU и Ховдского университета.

In June–July 2013 a joint Mongolian-German-Russian botanical expedition was undertaken to further study and document plant biodiversity in middle and western Mongolia. The expedition covered a route from Ulaanbaatar to the southern slopes of the Khangai mountains, the Gobi Altai, the Dzungarian Gobi and Baytag-Bogd, the Great Lake Depression and the Mongolian Altai (Fig. 1). Participants were scientist from the National University of Mongolia, Ulaanbaatar and the University of Khovd, Mongolia; from the University of Osnabrück, Germany, and the Leibniz Institute of Plant Genetics and Crop Research (IPK), Gatersleben, Germany; and from the Altai State University Barnaul, Russia. The collected plant material is stored and documented in the Herbaria ALTB, OSBU, UBU and in Khovd Herbarium. Main collectors for ALTB: A.I. Shmakov and A.A. Kechaykin from the South Siberian Botanical Garden of the Altai State University, Barnaul, Russia; for OSBU: B. Neuffer, H. Hurka, and N. Friesen from the Botany Department and Botanical Garden of the University of Osnabrück,

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Germany; for UBU and the Herbarium of Khovd University: B. Oyuntsetseg from the Botany Department of the National University of Mongolia, Ulaanbaatar, and D. Darichand of the University of Khovd, Khovd, Mongolia.

A first scientific evaluation of the collected material revealed, that some species were new records for the whole Mongolia, and others were new findings for certain regions of Mongolia. References are Grubov (1982) and Gubanov (1996) if not stated otherwise. The present article covers the families: Amaryllidaceae, Aspleniaceae, Asteraceae pro parte, Boraginaceae, Caryophyllaceae, Crassulaceae, Lamiaceae, Papaveraceae, Rosaceae, Saxifragaceae and Scrophulariaceae. In a second part, other families will be treated.

New species for the flora of Mongolia

Caryophyllaceae

Silene sibirica Pers.

Khovd Aimag, Baytag-Bogd, northern foothills, the river valley Naryyn Chargaytin Gol, floodplain, 45°19’868” N, 90°54’209” E, 1818 m, 08. 07. 2013 (ALTB).

Papaveraceae

Glaucium elegans Fisch. et C.A. Mey.

Khovd Aimag, Bulgan Sum, Dzungarian Gobi, 100 km SSW of Bulgan, 45°18’04,1” N, 90°56’56,9” E, 1880 m, 08. 07. 2013 (OSBU 22896); Khovd Aimag, Baytag-Bogd, northern foothills between the rivers Baruuk Chargaytyn Gol and Naryyn Chargaytyn Gol, 3 km north-west of parking space Tegshee Davaadorj, steppe, 45°18’067” N, 90°56’943” E, 1880 m, 08. 07. 2013 (ALTB).

Rosaceae

Potentilla pamiroalaica Juz.

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, Mt. Altan Obo, north-eastern slope (near the border), 45°12’20” N, 90°52’30” E, 2800–3200 m, 06. 07.2013 (ALTB).

The distribution area is similar to *P. pamirica* Th. Wolf. Previously, *P. pamiroalaica* has been reported for Russian Altai Mountains (Kurbatskyi, Ebel, 2011).

Potentilla regeliana Th. Wolf

Khovd: Bayan-Ulgii Aimag, Karalahti Ridge, the pass Obortyn Daba, 49°19’143” N, 89°47’370”

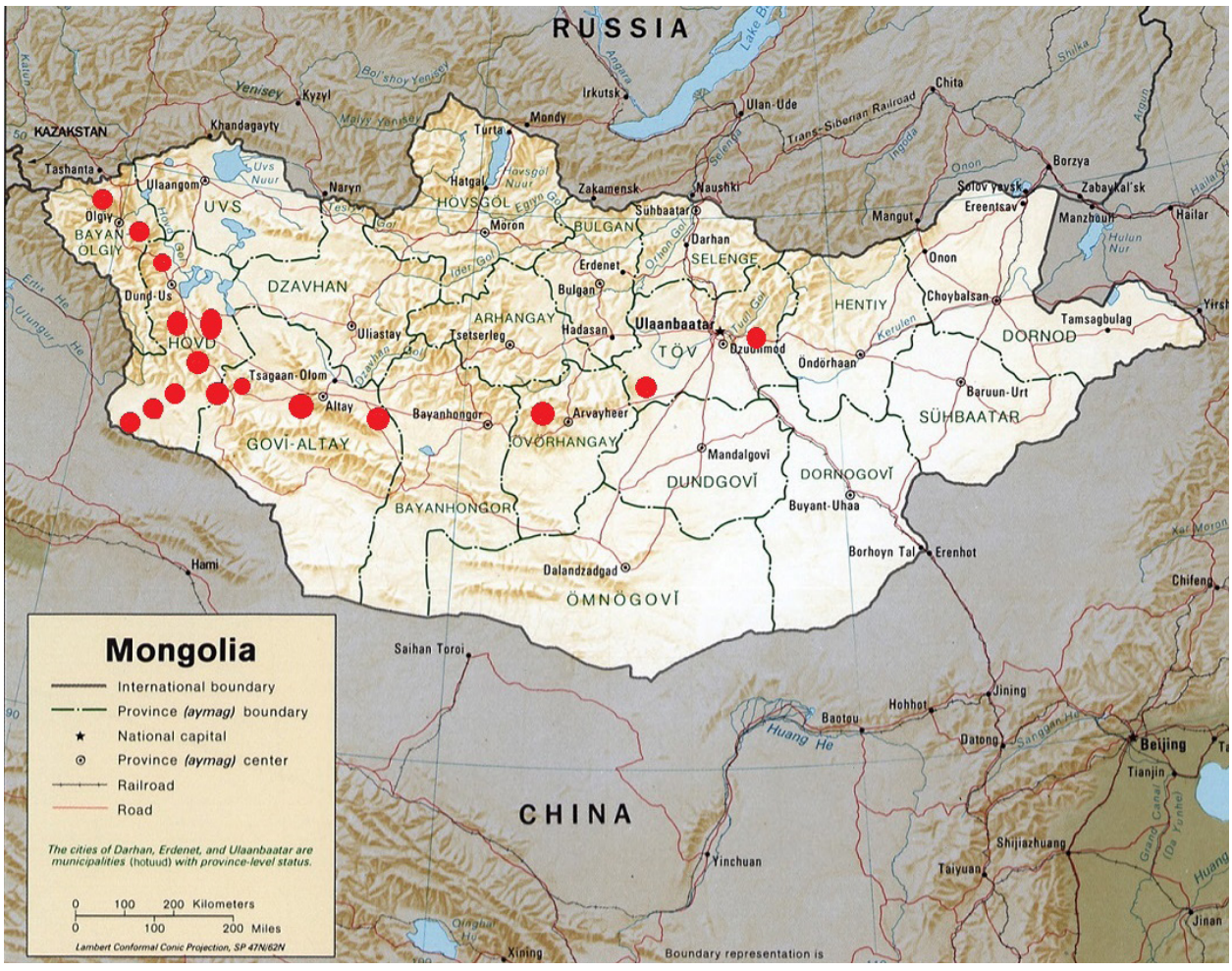

Fig. 1. Collecting sites of the Mongolian-German-Russian botanical expedition in summer 2013.

E, 2632 m, 18. 07. 2013 (ALTB).

This plant was mentioned by Grubov (1982) with the only locality "Mongolian Altai, left tributary of the river Uljasutay-Gol". The corresponding specimen is in LE, but in fact it corresponds to *Potentilla evestita* Th. Wolf. Description and illustration of *P. regeliana* Th. Wolf is given in Wolf (1908). Wolf assigned it to the group *Rivales* (= sect. *Rivales* (Th. Wolf) Juz.). Currently, many authors merged *P. regeliana* with *P. evestita*. However, R. Kamelin (1998) considers this two species as independent and pointed out a relationship of *P. evestita* with the *P. nivea* group (and not with the *Rivales* group).

Potentilla regeliana is described from West China (Borohoro ridge), and is distributed mainly in Dzungaria. It is characterized by the following features: terminal leaflets of all basal and most of the lower stem leaves with prominent petioles up to 1 cm long (in *P. evestita*, petiolate terminal leaflets can be reraly found in some basal leaves); leaflets with 4–6 unequal teeth on each side (vs. 5–9 more or less identical teeth in *P. evestita*); plant pubescent with simple soft hairs and numerous sessile glands (*P. evestita* on the underside of the leaves is often wooly with silky hairs, glands are developed primarily in the upper part of the plant).

Potentilla turczaninowiana Stschegl.

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, Mt. Altan Obo, north-eastern slope (near the border), 45°12’20” N, 90°52’30” E, 2800–3200 m, 06. 07. 2013 (ALTB).

Together with *P. turczaninowiana*, some plants similar to *P. saposhnikovii* Kurbatsky grew. The latter is treated by Soják (2004, 2012) as a synonym of *P. turczaninowiana*. Indeed, *P. saposhnikovii* may be a juvenile (2–3-year-old) form of *P. turczaninowiana*. These taxa require special studies in order to clarify their relationship and status.

New floristic finding for certain phytogeographical regions of Mongolia

Amarillydaceae

Allium amphibolum Ledeb.

Depression of Great Lakes: Khovd Aimag: Manhan Sum, western flank of Jargalant Mt. Chain, 65 km SE of Khovd, 40 km NNE of Manhan, 47°44’31,5” N, 92°25’55,8’’ E, 1970–2700 m, 12. 07. 2013 (OSBU 23009).

The new collecting points broaden the hitherto known distribution area (Gubanov 1996, Friesen 1995) to the east.

Allium bidentatum Fisch. ex Prokh.

Mongolian-Altai: Khovd Aimag: Tsetseg Sum, Mongolian Altai, 140 km E of Bulgan, Byangol Byag at the river Bayan Gol, 46°13’58,5” N, 93°22’22,3” E, 2381 m, 03. 07. 2013 (OSBU 22619).

Allium bogdoicolum Regel

Depression of Great Lakes: Khovd Aimag: Manhan Sum, western flank of Jargalant Mt. Chain, 65 km SE of Khovd, 40 km NNE of Manhan, 47°44’31,5” N, 92°25’55,8’’ E, 1970–2700 m, 12. 07. 2013 (OSBU 23008).

Allim pumilum Vved.

Dzungarian Gobi: Khovd Aimag, Bulgan Sum, Dzungarian Gobi, 105 km SW of Bulgan, Baytag-Bogd, border area to China, at arm of the river Budiin Chargaytin Gol, 45°15’00,4” N, 90°56’08,1” E, 2143 m, 07. 07. 2013 (OSBU 22829).

Allium pallassii Murray

Dzungarian Gobi: Khovd Aimag, 8 km north of Uench. Nanophyte steppe, 46°08’ N, 92°02’ E, 19. 06. 1999. Smirnov S.V. (ALTB)

This is the first proof for this species for the Dzungarian Gobi. Sanchir (1992) mentioned this species for the first time for the Mongolian flora but without giving locations, nor any details of its distribution. Friesen (1995) suggested possible distribution of this species in the Dzungarian Gobi.

Allium ubsicolum Regel

Khovd: Bayan Ulgii Aimag: Tsagaanuur Sum, Mongolian Altai, 75 km NNW of Ulgii, close to Mongolian/Russian border near Tashanta, 49°33’32,2” N, 89°27’41,9’’ E, 2276 m, 18. 07. 2013 (OSBU 23131).

This new point for *Allium ubsicolum* is not too surprising, as it was found previously on the Russian side of the ridge Sailyugem (Friesen, 1988).

Aspleniaceae

Asplenium altajense (Kom.) Grub.

Depression of Great Lakes: Khovd Aimag, ridge Dzun Jargalant, the river valley Ar Shaatan Gol, 47°44’442” N, 92°26’965” E, 2000–2500 m, 12. 07. 2013 (ALTB).

The species was reported for the Depression of Great Lakes by Revushkin et al. (2001) from the single locality (SW vicinities of Khovd) on the border between this region and Mongolian Altai. The present finding undoubtedly belongs to the Depression of Great Lakes.

Asplenium nessii Christ

Depression of Great Lakes: Khovd Aimag,

ridge Dzun Jargalant, the river valley Ar Shaatan Gol, 47°44’442” N, 92°26’965” E, 2000–2500 m, 12. 07. 2013 (ALTB).

Earlier, this species was recorded for the same ridge, but from other river valleys (Shmakov, 2005).

Asteraceae

Crepis multicaulis Ledeb.

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, basin of the river Baruuk Chargaytin Gol valley, left tributary originating in the mountain Altan Obo, 45°15’005” N, 90°56’195” E, 2132 m, 05. 07. 2013 (ALTB).

Erigeron eriocalyx (Ledeb.) Vierh.

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, basin of the river Baruuk Chargaytin Gol valley left tributary originating in the mountain Altan Obo, 45°15’005” N, 90°56’195” E, 2132 m, 05. 07. 2013 (ALTB).

Pyrethrum changaicum Krasch. ex Grub.

Depression of Great Lakes: Khovd Aimag, ridge Dzun Jargalant, the river valley Ar Shaatan Gol, 47°44’442” N, 92°26’965” E, 2000–2500 m., 12. 07. 2013 (ALTB).

Boraginaceae

Cynoglossum divaricatum Steph.

Dzungarian Gobi: Khovd Aimag, Bulgan Sum, Dzungarian Gobi, 105 km SW of Bulgan, Baytag-Bogd, border area to China, at arm of the river Baruuk Chargaytin Gol, 45°15’00,4” N, 90°56’08,1” E, 2143 m, 05. 07. 2013 (OSBU 22737); Khovd Aimag, Baytag-Bogd, basin of the river Baruuk Chargaytin Gol valley left tributary originating in the mountain Altan Obo, 45°15’005” N, 90°56’195” E, 2132 m, 05. 07. 2013 (ALTB).

Eritrichium villosum (Ledeb.) Bunge

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, Mt. Altan Obo, northeastern slope near border to China, 45°12’20” N, 90°52’30” E, 2800–3200 m, 06. 07. 2013 (ALTB).

Myosotis suaveolens Waldst. et Kit.

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, Mt. Altan Obo, northeastern slope near border to China, 45°12’20” N, 90°52’30” E, 2800–3200 m, 06. 07. 2013 (ALTB).

Stenoselenium saxatile (Pall.) Turcz.

Depression of Great Lakes: Khovd Aimag, Manhan Sum, western flank of Jargalant Mt. Chain, 65 km SE of Khovd, 40 km NNE of Manhan, 47°44’31,5” N, 92°25’55,8” E, 1967 m, 12. 07. 2013 (OSBU 22987).

Caryophyllaceae

Cerastium arvense L.

Dzungarian Gobi: Khovd Aimag, Bulgan Sum, Dzungarian Gobi, 105 km SW of Bulgan, Baytag-Bogd, border area to China, at arm of the river Baruuk Chargaytin Gol, 45°15’00,4” N, 90°56’08,1” E, 2143 m, 05. 07. 2013 (OSBU 22687).

Cerastium dahuricum Fisch. ex Spreng.

Dzungarian Gobi: Khovd Aimag, Bulgan Sum, Dzungarian Gobi, 105 km SW of Bulgan, Baytag-Bogd, border area to China, at arm of the river Baruuk Chargaytin Gol, 45°15’00,4” N, 90°56’08,1” E, 2143 m., 07. 07. 2013 (OSBU 22840).

Cerastium lithospermifolium Fisch.

Depression of Great Lakes: Khovd Aimag, ridge Dzun Jargalant, the river valley Ar Shaatan Gol, 47°44’442” N, 92°26’965” E, 2000–2500 m., 12. 07. 2013 (ALTB).

Melandrium apetalum (L.) Fenzl

Dzungarian Gobi: Khovd Aimag, Bulgan Sum, Dzungarian Gobi, 105 km SW of Bulgan, Altan Obo, summit region of Baytag-Bogd, 45°12’09,8” N, 90°52’04,0” E, 3286 m, 07. 07. 2013 (OSBU 22788).

Melandrium triste (Bge.) Fenzl

Khovd: Bayan Ulgii Aimag, Bugat Sum, Mongolian Altai, 40 km N of Ulgii, mountain pass between Ulgii and Mongolian/Russian border station, 49°19’10,0” N, 89°47’19,7 E, 2635 m, 18. 07. 2013 (OSBU 23093).

Minuartia verna (L.) Hiern

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, basin of the river Baruuk Chargaytin Gol valley left tributary originating in the mountain Altan Obo, 45°13’320” N, 90°55’221” E, 2500–2600 m, 07. 07. 2013 (ALTB).

Silene graminifolia Otth

Dzungarian Gobi: Khovd Aimag, Bulgan Sum, Dzungarian Gobi, 105 km SW of Bulgan, Baytag-Bogd, border area to China, at arm of the river Baruuk Chargaytin Gol, 45°15’00,4” N, 90°56’08,1” E, 2143 m, 05. 07. 2013 (OSBU 22681).

Crassulaceae

Rhodiola rosea L.

Dzungarian Gobi: Khovd Aimag, Bulgan Sum, Dzungarian Gobi, 105 km SW of Bulgan, Baytag-Bogd, border area to China, at arm of the river Baruuk Chargaytin Gol, 45°15’00,4” N, 90°56’08,1” E, 2143 m, 05. 07. 2013 (OSBU 22739); Khovd Aimag, Baytag-Bogd, Mt. Altan Obo, north-eastern

slope (near the border), 45°12’20” N, 90°52’30” E, 2800–3200 m, 06. 07. 2013 (ALTB).

Lamiaceae

Lagochilus ilicifolius Bge.

Dzungarian Gobi: Khovd Aimag, Bulgan Sum, Dzungarian Gobi, 100 km SSW of Bulgan, 45°18’04,1” N, 90°56’56,9” E, 1880 m, 08. 07. 2013 (OSBU 22890).

Lophanthus chinensis Benth.

Depression of Great Lakes: Khovd Aimag, ridge Dzun Jargalant, the river valley Ar Shaatan Gol, 47°44’442” N, 92°26’965” E, 2000–2500 m, 12.07.2013 (ALTB).

Schizonepeta multifida (L.) Briq.

Mongolian-Altai: Govi-Altai Aimag, Aguyn Boom Sum, 170km W of Altai City, 46°10’26,5” N, 94°03’10,4” E, 1975 m, 03. 07. 2013 (OSBU 22570).

Papaveraceae

Papaver pseudotenellum Grub.

Depression of Great Lakes: Khovd Aimag, ridge Dzun Jargalant, the river valley Ar Shaatan Gol, 47°44’442” N, 92°26’965” E, 2000–2500 m, 12. 07. 2013 (ALTB).

Rosaceae

Potentilla agrimonioides M. Bieb.

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, basin of the river Baruuk Chargaytin Gol valley left tributary originating in the mountain Altan Obo, 45°15’005” N, 90°56’195” E, 2132 m, 05. 07. 2013 (ALTB).

Depression of Great Lakes: Khovd Aimag, ridge Dzun Jargalant, the river valley Ar Shaatan Gol, 47°44’442” N, 92°26’965” E, 2000–2500 m, 12. 07. 2013 (ALTB).

Mongolian-Altai: Khovd Aimag, Mongolian Altai, valley Barlagiyn Gol above the mouth of the river Hiagtyn Gol, 45°58’566” N, 93°13’636” E, 2177 m., 03. 07. 2013 (ALTB); Khovd Aimag, upper river Bodonchiyn Gol, the pass Tsagaan-Hetel, 46°46’372” N, 92°05’007” E, 2893 m, 10. 07. 2013 (ALTB); Khovd Aimag, Mongolian Altai, pass Nam-Daba, 46°08’603” N 93°21’863” E, 2800 m, 03. 07. 2013 (ALTB); Khovd Aimag, Mongolian Altai, basin of the river Bayan Sayryn Gol tract Tahiltyn-Hooley, 46°54’136” N, 91°57’653” E, 2419 m, 10. 07. 2013 (ALTB); Khovd Aimag, Mongolian Altai, upper river Bodonchiyn Gol, right bank above the mouth Dansatyn Gol, 46°37’537” N, 92°12’978” E, 2577 m, 10. 07. 2013 (ALTB); Tsetseg Sum, Mongolian Altai, 140 km E of Bulgan, mountain pass between Tsetseg and Üench, 46°08’36,2” N, 93°21’51,8” E, 2774 m, 03. 07. 2013 (OSBU 22579, 22604).

Khovd: Bayan-Ulgii Aimag, Karalahti Ridge, 8 km south of the pass Obortyn Daba, 49°14’47” N, 89°50’46” E, 2285 m, 18. 07. 2013 (ALTB); Bayan-Ulgii Aimag, 6 km northeast. City of Ulgii, 49°01’38” N, 90°01’19” E, 1850 m, 17. 07. 2013 (ALTB); Bugat Sum, Mongolian Altai, 40 km N of Ulgii, south of the mountain pass between Ulgii and Mongolian/Russian border station, 49°17’45,8” N, 89°47’21,4” E, 2449 m, 18. 07. 2013 (OSBU 23086).

Potentilla angustiloba T.T Yü et C.L. Li

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, basin of the river Baruuk Chargaytin Gol valley left tributary originating in the mountain Altan Obo, 45°15’005” N, 90°56’195” E, 2132 m, 05. 07. 2013 (ALTB); Khovd Aimag, Baytag-Bogd, the northern spurs, valley Huzhirtyn Gol at Town Gate, 45°21’196” N, 90°51’335” E, 1774 m, 04. 07. 2013 (ALTB).

Mongolian-Altai: Khovd Aimag, Mongolian Altai, Valley Bayan Gol at the exit out of the mountains, 46°13’975” N, 93°22’369” E, 2382., 03. 07. 2013 (ALTB); Khovd Aimag, Mongolian Altai, valley Barlagiyn Gol above the mouth of the river Hiagtyn Gol, 45°58’566” N, 93°13’636” E, 2177 m, 03. 07. 2013 (ALTB).

This species described by Yü and Li (1980) from China (Gansu, Qinghai and Xinjiang), is a hybrid between *P. multifida* L. and *P. virgata* Lehm. Without specifying the locations for Mongolia in several of his publications J. Soják (1986a; 1988, 2012) indicated it as "rare in Mongolia and Southern Siberia".

Potentilla aphanes Soják

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, basin of the river Baruuk Chargaytin Gol valley left tributary originating in the mountain Altan Obo, 45°15’005” N, 90°56’195” E, 2132 m, 05. 07. 2013 (ALTB); Khovd Aimag, Baytag-Bogd, Mt. Altan Obo, north-eastern slope (near the border), 45°12’20” N, 90°52’30” E, 2800–3200 m, 06. 07. 2013 (ALTB).

Additional locations in Mongolian Altai: Khovd Aimag, Mongolian Altai, upper river Bodonchiyn Gol, right bank above the mouth Dansatyn Gol, 46°37’537” N, 92°12’978” E, 2577 m, 10. 07. 2013 (ALTB); Tsetseg Sum, Mongolian Altai, 140 km E of Bulgan, mountain pass between Tsetseg and Üench, 46°08’36,2” N, 93°21’51,8” E, 2774 m, 03. 07. 2013 (OSBU 22587).

Khovd: Bayan-Ulgii Aimag, Karalahti Ridge, 8 km south of the pass Obortyn Daba, 49°14’47” N, 89°50’46” E, 2285 m, 18. 07. 2013 (ALTB). Bayan-Ulgii Aimag, pass Buratyn Daba, 48°27’31” N, 90°25’500” E, 2650 m, 16. 07. 2013 (ALTB); Bayan-Ulgii Aimag, Karalahti Ridge, the pass Obortyn Daba, 49°19’143” N, 89°47’370” E, 2632 m, 18. 07. 2013 (ALTB).

Until now this species was only known from locus classicus, described by J. Soják (1986a) and listed in Gubanov (1996).

Potentilla arenosa (Turcz.) Juz.

Mongol-Daurian region: Vicinity of Ulaanbaatar, the western end branch of Bogd Han Uul mountain range, Bogd Han Uul, 5 km south-east airport, temporary stream valley, 47°49’670” N, 106°49’096” E, 1530 m, 30. 06. 2013 (ALTB).

Khovd: Bayan-Ulgii Aimag, Karalahti Ridge, 8 km south of the pass Obortyn Daba, 49°14’47” N, 89°50’46” E, 2285 m, 18. 07. 2013 (ALTB). Bayan-Ulgii Aimag, Karalahti Ridge, the pass Obortyn Daba, 49°19’143” N, 89°47’370” E, 2632 m, 18. 07. 2013 (ALTB).

Grubov (1982) suspected possible presence of *Potentilla arenosa* in the northern part of Mongol-Daurian botanical-geographical region, but Gubanov (1996) did not include this species in his check-list. Yuzepchuk (1941), Kamelin (2001), and Soják (1986a, 1989, 2012) indicated the species for Mongolia but without specifying locations.

Potentilla chamaeleo Soják

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, Mt. Altan Obo, north-eastern slope (near the border), 45°12’20” N, 90°52’30” E, 2800–3200 m, 06. 07. 2013 (ALTB).

Khovd: Bayan-Ulgii Aimag, Karalahti Ridge, the pass Obortyn Daba, 49°19’143” N, 89°47’370” E, 2632 m, 18. 07. 2013 (ALTB).

Gubanov (1996) made reference to Soják (1986a), who recorded this species for Mongolia but without giving any specific locations. Later, Ebel and Rudaya (2002) found *P. chamaeleo* on the ridge of Jargalant mountain range, Khovd Aimag, Manhan Sum, and recorded it as a new species for Mongolia. However, *P. chamaeleo* and its several variations were already reported by Soják (1986b) for the Mongolian Gobi and Mongolian Altai. Highly variable taxon, requires further studies.

Potentilla chionea Soják

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, basin of the river Baruuk Chargaytin Gol valley left tributary originating in the mountain Altan Obo, 45°15’005” N, 90°56’195” E, 2132 m., 05. 07. 2013 (ALTB) Khovd Aimag, Baytag-Bogd, basin of the river Baruuk Chargaytin Gol valley left tributary originating in the mountain Altan Obo, 45°13’320” N, 90°55’221” E, 2500–2600 m, 07. 07. 2013 (ALTB).

Depression of Great Lakes: Khovd Aimag, ridge Dzun Jargalant, the river valley Ar Shaatan Gol, 47°44’442” N, 92°26’965” E, 2000–2500 m., 12. 07. 2013 (ALTB); Manhan Sum, western flank of Jargalant Mt. Chain, 65 km SE of Khovd, 40 km NNE of Manhan, 47°44’31,5” N, 92°25’55,8’’ E, 1967–2700 m, 12. 07. 2013 (OSBU 22993).

Potentilla chionea is distributed mainly in the northern parts of Mongolia, but one location was known also in the south Gobi-Altai (Měsíček, Soják, 1992).

Potentilla crebridens Juz.

Depression of Great Lakes: Khovd Aimag, ridge Dzun Jargalant, the river valley Ar Shaatan Gol, 47°44’442” N, 92°26’965” E, 2000–2500 m., 12. 07. 2013 (ALTB).

This species was observed previously only in northern Mongolia.

Potentilla evestita Th. Wolf

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, Mt. Altan Obo, northeastern slope near border to China), 45°12’20” N, 90°52’30” E, 2800–3200 m, 06. 07. 2013 (ALTB); Khovd Aimag, Baytag-Bogd, basin of the river Baruuk Chargaytin Gol valley left tributary originating in the mountain Altan Obo, 45°13’320” N, 90°55’221” E, 2500–2600 m, 07. 07. 2013 (ALTB).

Highly variable species, distributed in several regions of Mongolia, often forming hybrids with other *Potentilla* taxa. See comments on *Potentilla regeliana*.

Potentilla exuta Soják

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, Mt. Altan Obo, north-eastern slope (near the border), 45°12’20” N, 90°52’30” E, 2800–3200 m, 06. 07. 2013 (ALTB); Bulgan Sum,Dzungarian Gobi, 105 km SW of Bulgan, Altan Ovoo, summit region of Baytag-Bogd, 45°12’09,8” N, 90°52’04,0” E, 3286 m, 07. 07. 2013 (OSBU 22817).

Until now only one location for this species in Mongolia (Changaj, Mongolskij Altai, Gobi-Altai) is reported (Soják, 1986a).

Potentilla gelida C.A. Meyer subsp ***boreo-asiatica*** Jurtzev et Kamelin

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, Mt. Altan Obo, north-eastern slope near the border

to China, 45°12’20” N, 90°52’30” E, 2800–3200 m, 06. 07. 2013 (ALTB).

Highly variable Asian taxon widely distributed from subalpine to nival zone.

Potentilla jenissejensis Polozhij et W.A. Smirn.

Mongolian-Altai: Khovd Aimag, Mongolian Altai, pass Nam-Daba, 46°08’603” N 93°21’863” E, 2800 m, 03. 07. 2013 (ALTB); Khovd Aimag, Mongolian Altai, basin of the river Sayryn Bayan Gol, the tract Tahiltyn-Hooloy, 46°54’136” N, 91°57’653” E, 2419 m, 10. 07. 2013 (ALTB); Khovd Aimag, Mongolian Altai, valley Dund Tsenher Gol somon above Munhhayrhan, 46°58’854” N, 91°51’960” E, 2192 m, 10. 07. 2013 (ALTB).

Previously, only known from one location in Mongolia, "Kirghiz-nor, Potanin, 1879" (Soják, 2012).

Potentilla kryloviana Th. Wolf

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, Mt. Altan Obo, north-eastern slope (near the border), 45°12’20” N, 90°52’30” E, 2800–3200 m, 06. 07. 2013 (ALTB).

Gubanov (1996) recorded this species only for the Khangai botanical geographical area, Soják (1986a) reported a location from western part of Mongolia.

Potentilla nivea L.

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, Mt. Altan Obo, north-eastern slope near the border to China, 45°12’20” N, 90°52’30” E, 2800–3200 m, 06. 07. 2013 (ALTB).

Highly variable species tending to hybridize. In Asian high mountain regions (3000 m and above), many apomictic taxa occur, which in our opinion are not prone to hybridization.

Potentilla ozjorensis Peschkova

Mongolian-Altai: Khovd Aimag, upper river Bodonchiyn Gol, the pass Tsagaan-Hetel, 46°46’372” N, 92°05’007” E, 2893 m., 10. 07. 2013 (ALTB).

Mongol-Daurian region: Vicinity of Ulaanbaatar, the western spurs of Bogd Han Uul, 5 km south-east of airport, temporary stream valley, 47°49’670” N, 106°49’096” E, 1530 m, 30. 06. 2013 (ALTB); Ulaanbaatar District, near Airport, slopes of Bogd Han Uul, 47°49’40”N, 106°49’6”E, 1530 m, 30. 06. 2013. (OSBU 23211).

Potentilla pamirica Th. Wolf

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, basin of the river Baruuk Chargaytin Gol valley left tributary originating in the mountain Altan Obo, 45°15’005” N, 90°56’195” E, 2132 m, 05. 07. 2013 (ALTB); Bulgan Sum, Dzungarian Gobi, 105 km SW of Bulgan, Altan Ovoo, summit region of Baytag-Bogd, 45°12’09,8” N, 90°52’04,0” E, 3286 m, 07. 07. 2013 (OSBU 22809).

Depression of Great Lakes: Khovd Aimag, the ridge Dzun Jargalant, eastern slopes of the north-western Chandman village, 47°41’626” N, 92°37’421” E, 2472 m, 13. 07. 2013 (ALTB).

Mongolian-Altai: Khovd Aimag, upper river Bodonchiyn Gol, the pass Tsagaan-Hetel, 46°46’372” N, 92°05’007” E, 2893 m, 10. 07. 2013 (ALTB); Möst Sum, Mongolian Altai, pass Zagaan Chetel, mountain plateau between valley of the river Bodonch Gol and Mönhhayrhan, 145 km S of Khovd, 46°45’24,9” N, 92°05’14,7” E, 2976 m, 10. 07. 2013 (OSBU 22948).

Khovd: Bayan-Ulgii Aimag, Karalahti Ridge, the pass Obortyn Daba, 49°19’143” N, 89°47’370” E, 2632 m, 18. 07. 2013 (ALTB).

Widespread species in the highland areas of the Middle East and Central Asia. Soják (2007) mentioned it from the Gobi-Altai and Mongolian Altai without giving specific locations.

Potentilla* × *stepposa Soják

Depression of Great Lakes: Khovd Aimag, ridge Hurmiyn Nuruu, northwestern. extremity of the ridge, near the well Hetel-Us, 47°29’429” N, 92°47’860” E, 1759 m, (ALTB).

Mongolian-Altai: Gobi-Altai aimag, the ridge Dartsagtyn Huren Nuruu, south eastern slopes top of 2124, 46°10’443” N, 94°03’176” E, 1976 m, 03. 07. 2013 (ALTB).

Widespread in central and eastern Mongolia, as well as according to Soják (2004), also in southeastern Siberia. *P.* × *stepposa* is supposed to be a stable hybrid between *P. conferta* Bunge and *P. sericea* L.

Potentilla turkestanica Soják

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, Mt. Altan Obo, north-eastern slope (near the border), 45°12’20” N, 90°52’30” E, 2800–3200 m, 06. 07. 2013 (ALTB); Bulgan Sum, Dzungarian Gobi, 105 km SW of Bulgan, Altan Ovoo, summit region of Baytag-Bogd, 45°12’09,8” N, 90°52’04,0” E, 3286 m, 07. 07. 2013 (OSBU 22816).

Very rare species, previously known only for Mongolian Altai.

Another quite rare species endemic to the Mongolian Altai, is ***Potentilla laevipes*** Soják. We collected this species: Khovd Aimag, upper river

Bodonchiyn Gol, pass Tsagaan-Hetel, 46°46’372“ N, 92°05’007” E, 2893 m, 10. 07. 2013 (ALTB). This species was also collected by Rudoy and Ebel (2002) close to our collecting point. However, only non-flowering specimens were collected until now. We collected flowering specimens and report for the first time flower characteristics: petals pale yellow, spatulate, rounded on the top, 3–4 mm long, equal to or slightly exceeding the calyx.

Hitherto known locations of another rare species for Mongolia, ***Potentilla rigidula*** Th. Wolf, recorded by Kechaykin (2013), were confirmed by us, and in addition, a few more locations were registered: Bayan-Ulgii Aimag, 6 km northeast of City Ulgii, 49°01’38” N, 90°01’19” E, 1850 m, 17. 07. 2013 (ALTB); Khovd Aimag, Mongolian Altai, valley Dund Tsenher Gol somon above Munhhayrhan, 46°58’854” N, 91°51’960” E, 2192 m, 10. 07. 2013 (ALTB); Khovd Aimag, Mongolian Altai, valley Dund Tsenher Gol River below the mouth of Alag-Meh-Gol, pebbles, 47°11’779” N, 91°52’458” E, 1892 m, 10. 07. 2013 (ALTB).

Schistophyllidium bifurcum (L.) Ikonn. subsp. ***orientale*** Juz. ex Soják

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, basin of the river Baruuk Chargaytin Gol valley left tributary originating in the mountain Altan Obo, 45°15’005” N, 90°56’195” E, 2132 m, 05. 07. 2013 (ALTB); Bulgan Sum, Dzungarian Gobi, 105 km SW of Bulgan, Baytag-Bogd, border area to China, at arm of the river Baruuk Chargaytin Gol, 45°15’00,4” N, 90°56’08,1” E, 2143 m, 05. 07. 2013 (OSBU 22696).

We also found some the new location in the Mongolian-Altai: Möst Sum, Mongolian Altai, 160 km S of Khovd, 45km W of Möst, river flood plain of the Bodonch Gol, 46°37’11,8” N, 92°13’08,5 E, 2562 m, 10. 07. 2013 (OSBU 22956).

At the ridge of Baytag-Bogd we collected several specimens of this taxon approaching *S. bifurcum* subsp. *semiglabrum* Juz. ex Soják. However, all this plants were glandular, at least sparsely covered with glands, whereas subsp. *semiglabrum* never has glands.

Saxifragaceae

Saxifraga macrocalyx Tolm.

Dzungarian Gobi: Khovd Aimag, Bulgan Sum, Dzungarian Gobi, 105 km SW of Bulgan, Altan Obo, summit region of Baytag-Bogd, 45°12’09,8” N, 90°52’04,0” E, 3286 m, 07. 07. 2013 (OSBU 22784); Khovd Aimag, Baytag-Bogd, Mt. Altan Obo, north-eastern slope near the border to China, 45°12’20” N, 90°52’30” E, 2800–3200 m, 06. 07. 2013 (ALTB); Khovd Aimag, Baytag-Bogd, basin of the river Baruuk Chargaytin Gol valley left tributary originating in the mountain Altan Obo, 45°13’320” N, 90°55’221” E, 2500–2600 m, 07. 07. 2013 (ALTB).

Scrophulariaceae

Linaria altaica Fisch.

Dzungarian Gobi: Bulgan Sum, Dzungarian Gobi, 105 km SW of Bulgan, Baytag-Bogd, border area to China, at arm of the river Baruuk Chargaytin Gol, 45°15’00,4” N, 90°56’08,1” E, 2143 m, 05. 07. 2013 (OSBU 22748).

Depression of Great Lakes: Khovd Aimag, Manhan Sum, western flank of Jargalant Mt. Chain, 65 km SE of Khovd, 40 km NNE of Manhan, 47°44’31,5” N, 92°25’55,8 E, 1967–2700 m, 12. 07. 2013 (OSBU 22991).

Linaria pedicellata Kuprian.

Khovd: Bayan-Ulgii Aimag, 6 km northeast of City Ulgii, 49°01’38” N, 90°01’19” E, 1850 m, 17. 07. 2013 (ALTB).

Pedicularis abrotanifolia Bieb. ex Stev.

Khovd: Bayan-Ulgii Aimag, Karalahti Ridge, 8 km south of the pass Obortyn Daba, 49°14’47” N, 89°50’46” E, 2285 m, 18. 07. 2013 (ALTB); Bayan-Ulgii Aimag, Bugat Sum, Mongolian Altai, 40 km N of Ulgii, mountain pass between Ulgii and Mongolian/Russian border station, 49°19’10,0” N, 89°47’19,7’’ E, 2635 m, 18. 07. 2013 (OSBU 23128).

Pedicularis achillefolia Steph.

Depression of Great Lakes: Khovd Aimag, ridge Dzun Jargalant, the river valley Ar Shaatan Gol, 47°44’442” N, 92°26’965” E, 2000–2500 m, 12. 07. 2013 (ALTB).

Pedicularis amoena Adams ex Stev.

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, Mt. Altan Obo, north-eastern slope (near the border), 45°12’20” N, 90°52’30” E, 2800–3200 m, 06. 07. 2013 (ALTB).

Pedicularis moschata Maxim.

Depression of Great Lakes: Khovd Aimag, ridge Dzun Jargalant, the river valley Ar Shaatan Gol, 47°44’442” N, 92°26’965” E, 2000–2500 m, 12. 07. 2013 (ALTB); Khovd Aimag, Manhan Sum, western flank of Shargalant Mt. Chain, 65 km southeast of Khovd, 40 km north-northeast of Manhan, 47°44’31,5” N, 92°25’55,8’’ E, 1970–2700 m (OSBU 22989).

Veronica sapozhnikovii Kosachev

Dzungarian Gobi: Khovd Aimag, Baytag-Bogd, basin of the river Baruuk Chargaytin Gol valley left tributary originating in the mountain Altan Obo, 45°15’005” N, 90°56’195” E, 2132 m, 05. 07. 2013 (ALTB); Khovd Aimag, Baytag-Bogd, basin of the river Baruuk Chargaytin Gol valley left tributary originating in the mountain Altan Obo, 45°13’320” N, 90°55’221” E, 2500–2600 m, 07. 07. 2013 (ALTB).

New location for the recently described species from northwestern Mongolia (Kosachev, 2003).

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