

## Type specimens of *Potentilla* L., 1753 (Rosaceae Juss.) preserved in the herbarium of Altai State University (Russian Federation)

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The author provides a list of type specimens of *Potentilla* L. (Rosaceae Juss.) stored in the herbarium of Altai State University (ALTB, Barnaul). The typical collection is represented by 10 taxa described from the territory of North and Central Asia. The original herbarium label data, as well as the information specified in the protologue are cited in detail for each sample.

**Keywords:** ALTB; collections; herbarium; *Potentilla*; type specimens

The herbarium of the Altai State University is one of the youngest in Russia and in the post-Soviet space. In 1995, the Herbarium was registered in the international Index Herbariorum database and was assigned the acronym ALTB. The materials of the main fund comprise about 350 000 storage units represented by lower and higher plants. This work is devoted to the review of typical materials of the Rosaceae Juss. and specifically *Potentilla* L. - one of the large genera of higher plants represented in the Herbarium. The *Potentilla* collection in ALTB has over 8000 herbarium specimens; it is more than in some of the world's largest herbaria. The majority of this collection is represented by taxa collected within the Altai Mountain Country (Kamelin, 2005). In addition, there are materials collected in Europe, the Caucasus and the Crimea, the Southern Urals, the Himalayas and North America. The type collection of *Potentilla* in ALTB, represented by 10 taxa is given below. The taxa were described from Russia (Altai), Kazakhstan and Mongolia. For each sample, a typical status is indicated, the original label is cited and information from the protologue is provided. For some species we give notes. All the taxa are numbered, their names are in alphabetical order.

### Results

**1. *P. × chemalense*** Kechaykin, 2017, Turczaninowia, 20(4): 39.

**Holotype and isotypes:** "Russia, Altai Republic, Chemsalsky district, valley of the Katun river, right bank, 6 km from the mouth up the Biyka river, stepped slopes and mixed forest. N51°11'05", E86°12'18", H=750-820 m a. s. l. 19 VI 2016. Kechaykin A.A., Kopytina T.M."

**According protologue:** "Type: Russia, Altai Republic, Chemsalsky district, the Katun river valley, right bank, 6 km from the mouth up the Biyka river, stepped slopes and mixed forest. N51.1105°, E86.1218°, 750-820 m a. s. l. 19 VI 2016. Kechaykin A.A., Kopytina T.M. (ALTB; iso - ALTB, B, LE, MW)".

**2. *P. × habievii*** Kechaykin, 2015, Turczaninowia 18(4): 49.

**Holotype and isotypes:** "Russia, Altai Republic, Kosh-Agach district, Ukok plateau, Muzdy-Bulak river valley below Muzdy-Bulak lake, N49°18'18", E87°41'29", H=2400 m. 5 September 2001. Shmakov A.I. et al. SAK 239".

**Paratypes:** "Russia, Altai Republic, Kosh-Agach district: Ukok plateau, low stream of Argamdgi river (middle), N49°16'52", E87°49'39", H=2260 m. MKD 863. 28 Jul 2013. Smirnov S.V., Kechaykin A.A."; "ibid., Kara-Chad gorge over Kara-Chad lake, N49°15'57", E87°42'49", H=2400-2500 m. MKD 803. 28 July 2013. Smirnov S.V., Kechaykin A.A."; "ibid., upper reaches of Kalguty, left bank, highland tundra. N49°22', E88°05', H=2450 m. 28 July 2011. German D.A. et al."; "ibid., pass between Usay-Zhumaly rivers, N49°29'16", E88°07'43", H=2700-2800 m. ASHK 1715. July 2014. Shmakov A.I. et al."; "ibid., Kalguty river valley, over Argamdgi river mouth (east), meadow, N49°17'57", E88°02'54", H=2392 m. ASHK 193. 17 July 2014. Shmakov A.I. et al."; "ibid., left bank of river Kara-Chad, NE slope of Bertek mountain, N49°15'12", E87°40'51", H=2600-3000 m. ASHK 234 et 268. 18 July 2014. Shmakov A.I. et al."; "ibid., right bank of Kalguty river, pass southward of Karsulu pass, N49°22'34", E87°45'49", H=2303 m. ASHK 321. 20 July 2014. Shmakov A.I. et al."; "Russia, Altai Republic, Kosh-Agach district, South-Chuya ridge, Elangash river basin, Turoy river valley in middle stream, N49°48', E88°05', H=2650 m. CHAR 2186. 24 July 2008. Shmakov A.I. et al."

**According protologue:** Type: "Russia, Altai Republic, Kosh-Agach district, Ukok plateau, Muzdy-Bulak river valley below Muzdy-Bulak lake, 49°18'18"N, 87°41'29"E, 2400 m, 5 September 2001, A. I. Shmakov et al. SAK 239" (ALTB; iso – ALTB, B, HAL). Additional specimens seen (paratypes): "Russia, Altai Republic, Kosh-Agach district: Ukok plateau, low stream of Argamdgi river (middle), 49°16'52"N, 87°49'39"E, 2260 m, 28 Jul 2013, S.V. Smirnov, A. A. Kechaykin. MKD 863" (ALTB!); "ibid., Kara-Chad gorge over Kara-Chad lake,

49°15'57"N, 87°42'49"E, 2400–2500 m, 28 July 2013, S. V. Smirnov, A. A. Kechaykin. MKD 803" (ALTB!); "ibid., upper reaches of Kalguty, left bank, highland tundra. 49°22'N, 88°05'E, 2450 m, 28 July 2011, D. A. German et al." (ALTB!); "ibid., pass between Usay-Zhumaly rivers, 49°29'16"N, 88°07'43"E, 2700–2800 m, 15 July 2014, A. I. Shmakov et al. ASHK 17" (ALTB!); "ibid., Kalguty river valley, over Argamdgi river mouth (east), meadow, 49°17'57"N, 88°02'54"E, 2392 m, 17 July 2014, A. I. Shmakov et al. ASHK 193" (ALTB!); "ibid., left bank of river Kara-Chad, NE slope of Bertek mountain, 49°15'12"N, 87°40'51"E, 2600–3000 m. 18 July 2014, A. I. Shmakov et al. ASHK 234 et 268" (ALTB!); "ibid., right bank of Kalguty river, pass southward of Karsulu pass, 49°22'34"N, 87°45'49"E, 2303 m. 20 July 2014, A. I. Shmakov et al. ASHK 321" (ALTB!); "Russia, Altai Republic, Kosh-Agach district, South-Chuya ridge, Elangash river basin, Turoy river valley in middle stream, 49°48'N, 88°05'E, 2650 m, 24 July 2008, A. I. Shmakov et al. CHAR 2186" (ALTB!).

**3. *P. × jakovlevii*** Kechaykin et Shmakov, 2014, *Turczaninowia* 17(2): 29.

**Holotype and isotypes:** "Kazakhstan. East Kazakhstan province, Katon-Karagai district, Narymsky range, upper reaches of the river Maymyr, N49°06'07", E85°03'58", H=1330 m. 12 June 2012. Kechaykin A.A., Tyutyunnik P."

**According protologue:** "Kazakhstan. East Kazakhstan province: Katon-Karagai district, Narym Mt. Range, upper reaches of the river Maymyr, 49°06'07" N, 85°03'58" E, 1330 m a.s.l., 12 June 2012, A.A. Kechaykin, P. Tyutyunnik (ALTB!; isotypes – LEI, MW!)".

**4. *P. khanminczunii*** A. Keczaykin et Schmakov, 2011, *Turczaninowia*, 14(4): 5.

**Holotype:** "Altai, Kosh-Agach district, Sailyugem range, upper reaches of the Zhumaly river, H=2700 m, outskirts of the New Kalguty mine. Rocky slope in valley of the brook, 08.8.1982, V. Khanminchun, N. Friesen".

**According protologue:** "Typus: Altai, distr. Kosh-Agach, jugum Sailyugem, ad fontes fluminis Dzhumaly, alt. 2700 m, circa Nov. Kalguty. Decliva saxosa. 12.08.1982, V. Khanminchun, N. Friesen (ALTB)".

**Note.** The authors consider *P. gelida* C.A. Meyer and *P. evestita* Th. Wolf (Kechaykin & Shmakov, 2011) close to *P. khanminczunii*. However, our observations of this taxon in nature suggest its hybrid origin. Most likely, *P. khanminczunii* could originate from breeding *P. gelida* and *P. nivea* L., nom. cons. prop. We consider *P. hubsugulica* Soják. the closest to *P. khanminczunii*.

**5. *P. rudolfii*** A. Keczaykin et Schmakov, 2011, *Turczaninowia*, 14(4): 6.

**Holotype and isotypes:** "Altai Republic, Kosh-Agach district, valley of the Tarkhata river near the outpost, N49°46'34", E88°28'08", H = 2041 m, MEA 1335. 24 August 2009. Shmakov A.I., Smirnov S.V., Vaganov A.V., Belkin D.L., Kechaykin A.A."

**According protologue:** Typus: Republica Altajensis, distr. KoshAgach, in valle fl. Tarhata, ad custodiam, 49°46'34" N, 88°28'08" E, H = 2041 m, MEA № 1335, 24 08 2009, Shmakov A.I., Smirnov S.V., Vaganov A.V., Belkin D.L., Kechaykin A.A. (ALTB, isotypus – LE).

**6. *P. salsa*** Kotuchov, 1992, *Byull. Glavn. Bot. Sada* (Moscow), 164: 49.

**Isotype:** "*Potentilla salsa* Kotuch. sp. nov. Southern Altai, south-eastern foothills of Azutau range, locality Bulgar-Taboty, 600 m a. s. l., salt marshes, salty meadows. Type: (AA)".

**According protologue:** "Typus: Altai Australis, pronontoria austro-orientalia jugi Azutau, locus Bulgartaboty, 600 m.s.m., in salsuginosis et pratis salsuginosis, 2 VIII 1983, Ju. Kotukhov (AA)".

**Note.** In Yu.A. Kotukhov opinion, *P. salsa* is not closely related to known *Potentilla* species (Kotukhov, 1992). However, my review of the herbarium collection and field studies have indicated that the taxon described by Yu.A. Kotukhov is closely related to *P. virgata* Lehm.

**7. *P. schmakovii*** Kechaykin, 2015, *Feddes Repertorium*, 126: 73.

**Holotype and isotypes:** "Mongolia, Kobdo aimak, Mongolian Altai ridge, upper reaches of Bodanchiyn-Gol, pass Tsagaan Hetel, N46°46'372", E92°05'007", H=2893 m. MKD 485. 10.07.2013. Shmakov A.I., Kechaykin A.A."

**Paratypes:** "Mongolia, Bayan-Ulgi aimak: 4 km northeastward of somon Tolbo, N48°25'36", E90°20'23", H=2230 m, 1 Jul 2010, Kechaykin A.A., Gal'kin A.V."; "ibid., eastward of somon Tolbo, near Olon-Nurud lake, N48°29', E90°33', H=2380 m, 4 Jul 2009, Sherin I.A., Shalimov A.P."

**According protologue:** "Type: Mongolia, Kobdo aimak, Mongolian Altai ridge, upper reaches of Bodanchiyn-Gol, pass Tsagaan Hetel, 46°46'372" N, 92°05'007" E, 2893 m, 10 Jul 2013, A. I. Shmakov & A. A. Kechaykin MKD 485 (holotype ALTB; isotypes ALTB, B). Paratypes: Mongolia, Bayan-Ulgi aimak: 4 km northeastward of somon Tolbo, 48°25'36" N, 90°20'23" E, 2230 m, 1 Jul 2010, A. A. Kechaykin & A. V. Gal'kin (ALTB!); ibid., eastward of somon Tolbo, near Olon-Nurud lake, 48°29' N, 90°33' E, 2380 m, 4 Jul 2009, I. A. Sherin & A. P. Shalimov (ALTB!); ibid., Hoch-Serg ridge, western slope, near alpine lake Shar-Nur. Flat (10) slope of north-western exposure at the top of the gully oriented WSW. Herb-grass-sedge-cobresian tundrasteppes, 47°48' N, 90°59' E, 2850 m, 16 Aug 1999, D. A. Petelin № 99–545 (MW!); West Mongolia, Ulan-Daba pass in the origins of Bulugun. Rocky alpine tundra, 22 Jul 1906, V. Sapozhnikov (TK!)".

**8. *P. smirnovii*** Kechaykin, 2015, Feddes Repertorium, 126: 76.

**Holotype and isotypes:** "Russia, Altai Republic, Kosh-Agach district, Dzhumala river valley below the Krasnoye lake, slopes and floodplain. N49°31'08", E88°01'17", H=2270–2300 m. MKD 786. 22.07.2013. Smirnov S.V., Kechaykin A.A."

**Paratypes:** "Russia, Altai Republic, Kosh-Agach district, Ukok plateau, near Kara-Chad lake, N49°17'12", E87°43'06", H=2384 m. ASHK 305. 18 Jul 2014. Shmakov A.I., Kechaykin A.A. et al."

**According protologue:** "Type: Russia, Altai Republic, Kosh-Agach district, Dzhumala river valley below the Krasnoye lake, slopes and floodplain, 49°31'08" N, 88°01'17" E, 2270–2300 m, 22 Jul 2013, S. V. Smirnov & A. A. Kechaykin MKD 768 (holotype ALTB; isotypes ALTB, B). Paratypes: Russia, Altai Republic, Kosh-Agach district, Ukok plateau, near Kara-Chad lake, 49°17'12" N, 87°43'06" E, 2384 m, 18 Jul 2014, A. I. Shmakov et al. ASHK 305 (ALTB)".

**9. *P. tuvinnica*** Artemov, 2005, Turczaninowia, 8(1): 5.

**Paratype:** "No. 45/46. *Potentilla evestita* Th. Wolf × *P. multifida* L. (? × *P. sericea* L. N51°05.11', E91°18.37', H=1200 m. 22.06.02. Tuva Republic, Dzun-Khemchiksky district, 10 km south of settl. Shemi, north. macroslope of Western Tannu-Ola range. Edge of larch forest. Cereals-grass meadow with bushes. Artemov I."

**According protologue:** "Typus: Tuva, distr. Dzun-Chemczik, planities elata Alaschensis, brachia borealia jugi Bai-Taigensis, 51°18' latitudo borealis, 90°12' longitudo orientalis, altitudo supra mare 1130 m, silva lariceta variiherboso-viridimuscosa, 24 VI 2002, № 25/25, I. Artemov (NS)".

**10. *P. × vanzhili*** V. Gundegmaa et Kechaykin, 2018, Turczaninowia, 21(1): 175.

**Isotype:** "Rosaceae Juss. Arkhangai aimak, Tariat somon, Khadat spring, on the edge of the sparse forest. N48°37'61.5", E99°94'24.2", H=2046 m. 20.06.2016. V. Gundegmaa".

**According protologue:** "Type: Arkhangai aimak, Tariat somon, the right bank of the Khunzhiliin gol river (source) 1 km to the north of the Khadat spring near the border with Khubsugul aimak, on the edge of the sparse forest. N48.2220°, E99.5410°, 2046 m a. s. l. 20 VI 2016. V. Gundegmaa (UBA; iso – ALTB, UBA). Paratype: Arkhangai aimak, Tariat somon, Tarbagatai Range, near the Khadat spring, meadows of the river valley, dry river bed. 31 VII 1976. E. Ganbold (UBA!)".

**Note.** In the original labels of type and isotype, coordinates inconsistent with the collection site were indicated. The geographic coordinates of the collections have been specified by the authors of the species and are given in the protologue (Gundegmaa, Kechaykin, 2018).

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