

Notes on *Potentilla*

XIII. Further new taxa from Asia¹

Poznámky k rodu *Potentilla*

XIII. Další nové taxony z Asie

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Ten new taxa are described: *Potentilla spoliata* (sect. *Comocarpa*), *P. galantha* (*Comocarpa*), *P. oxyota* (*Ranunculoides*), *P. asterotricha* (*Aureae*) from China, *P. coreana* (*Fragarioides*) from Korea, *P. bactriana* (*Pensylvanicae*) from Afghanistan, SE Tadzhikistan and W Pakistan, *P. stepposa* (*Pensylvanicae*) from Mongolia and S. Siberia, *P. alluvialis* (*Niveae*) from Yakutia and Chukotka, and *P. sumatrana* (*Pentaphylloides* = *Anserina*) from Sumatra. *P. tanacetifolia* var. *shantungensis* is described from China (Shantung).

1. *Potentilla spoliata* Soják, spec. nova

(sect. *Comocarpa* Torr. et Gray)

Frutex ± 50-80 cm altus, cortice opaco, juventute fusco vel rubroviolaceo, in adulto cano vel dilute fusco. Auriculæ stipularum parvae, basi excepta dilute stramineae, connatae, pilosae. Petioli 0.1-0.5 (-1.0) cm longi, pilis sparsis subappressis vel oblique patentibus tecti.

Folia omnia ternata. Foliola elliptica, oblongo-elliptica vel interdum cuneato-obovata, apice rotundata vel obtusa et saepe apiculata, foliolum medium 0.4-1.4 x 0.2-0.6 cm magnum, ± 2.5 x longius quam latum; foliola supra viridia, subtus dilutius viridia vel glauca, reticulo ± concolori parum denso non prominulo, utrinque pilis aut oblique subpatentibus mediocriter numerosis tecta aut saepius ad marginem et costam pilosa (ceterum glabra), raro omnino glabra.

Flores (1.5-) 2 (-2.8) cm in diam. Sepala ovato-lanceolata, 3.5-6.5 x 3-5 mm, ± dense patenter pilosa, rubroviolacea. Episepala ovata, elliptica vel ovato-lanceolata, ± acuta, 2.5-5.0 x 1.2-2.5 mm, sepalis breviora. Petala lutea, 8-12 mm longa. Antherae 0.9-1.5 mm longae. Stylus clavatus, 1.6-2.2 mm longus. Nuculae maturae ignotae.

P. rigida Wall. ex Lehm. stipulis magnis ferrugineis vel intense fuscis, petiolis dense pilosis, foliis supra dense longe sericeo-pilosis ca 2x latitudine longioribus, subtus reticulo densissimo praeditis et stylis brevibus a specie nostra differt.

Typus: China, Qinghai - jugum S. a fl. Tetung [Datong He], Przewalski 673, 1880, LE.

Specimens examined: China: N.W. Gansu: Nan Shan, ad. fl. Don-ho [Dang He], Przewalski 264, LE.

Qinghai: khr. Gumboldt [Ulan Daban], ad fl. Kuku-usu, Roborowski 99a, LE; khr. Burkhan-Budda, Khatu, Ladygin s.n., LE; Burkhan-Budda, Alyk-noringol, Ladygin 136, LE; Anguy, Przewalski s.n., LE; ozero Russkoye [Ngoring Nor], Ladygin 132, LE; Sarlyk-ula, Kuku Bulak, Roborowski 39, LE; Dulan-khit [Dulan-kit], Ladygin 132, LE; jugum S. a fl. Tetung [Datong He], Przewalski 39, LE.

Chinese material of the section *Comocarpa* makes an impression of an extremely intricate complex of forms with almost chaotic structure, a complex where characters are found in independent, seemingly random combinations. However, it is probable that the section comprises a scanty number of basic species and the whole assemblage of forms is a result of a considerable variation of the species and their capability to hybridise. It has turned out that Juzepczuk (1941) was right in selecting number of leaflets and flower colour as principal criteria for the species classification within the section. Size and indumentum of leaflets, i.e. features that significantly determine a

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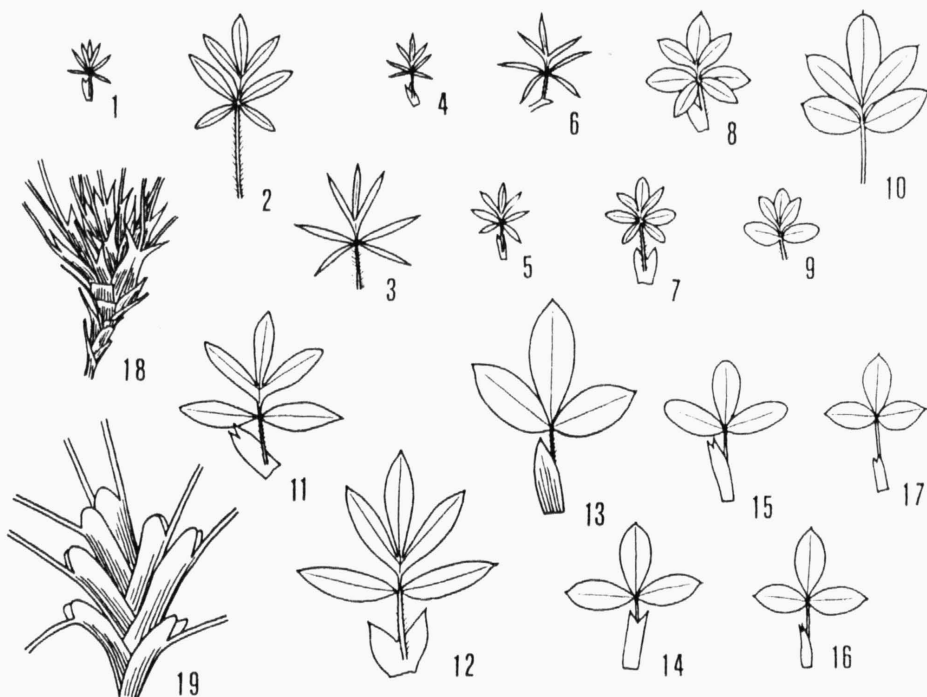


Fig. 1. - Leaves of: 1.-6. *Potentilla parvifolia*; 7.-9. *P. dryadanthoides*; 10. *P. glabrata*; 11.-12. *P. fruticosa*; 13. *P. rigida*; 14.-15. *P. spoliata*; 16.-17. *P. galantha*. - Basal leaf stipule posture: 18. *P. oxyota*; 19. *P. matsumurae*.

general habit of these plants, proved to vary according to the habitat type and represent intraspecific variability.

The following taxa should, in my opinion, be regarded as separate species: *P. parvifolia* Fisch. ex Lehm. (incl. *P. ochreatea* Lindl.; leaflets 7, stipules straw-yellow, branches erect), *P. dryadanthoides* (Juz.) Vir. (leaves 7-foliolate or 5-7-foliolate, stipules broad, brown, branches prostrate, creeping) and *P. fruticosa* L. (incl. *P. arbuscula* D. Don; leaflets 5). White-flowered taxa can be included in a single species, *P. glabrata* Willd. ex Schlecht. (*P. davurica* Nestl., incl. *P. veitchii* Wils. et *P. fruticosa* var. *mandshurica* Maxim.; leaflets 5). Populations of plants having ternate leaves obviously are specifically distinct as well.

Up to now, only one species of the section *Comocarpa* having ternate leaves has been described. It is the Himalayan *P. rigida* Wall. ex Lehm. which occurs in the territory from Kashmir to Arunachal Pradesh. It has been neglected for a long time and only recently has become accepted by Indian and Pakistani experts (Panigrahi et Dikshit 1985, Shah et Wilcock 1991). *Potentilla rigida* has large leaflets silvery long hairy above, often rusty below when dry, with extremely dense reticulate veins, stipules large and broad (rusty even when fresh), and yellow flowers. In the mountains of SW China, a similar species was found also having ternate leaves but differing by white flowers. I name it *P. galantha* (*P. fruticosa* var. *davurica* f. *ternata* Cardot non

P. ternata C. Koch). Its leaflets are small, usually glabrous on both sides, with dense discolour veins; stipules are small, narrow, pale straw-yellow when fresh. In the mountain ranges along the northeastern margin of the Tibetan Plateau and in Nan Shan, a third species is distributed having ternate leaves. It is classified as *P. spoliata* (*P. fruticosa* var. *tangutica* Wolf non *P. tangutorum* Soják) here and characterised by yellow flowers, small leaflets often rounded at the apex, often glabrous, with concolorous not very dense veins; stipules are small, straw-yellow.

2. *Potentilla galantha* Soják, spec. nova

(sect. *Comocarpa* Torr. et Gray)

Frutex 30-90 cm altus, valde ramosus, cortice opaco stramineo, cano vel atrofusco. Auriculae stipularum parvae, angustae, dilute stramineae vel dilute fuscescentes, connatae, glabrae vel pilosae. Petioli 0.1-1.0 (-1.7) cm longi, appresse vel arcte pilosi.

Folia omnia ternata. Foliola $\pm$ elliptica, apice breviter apiculata; foliolium medium 0.5-1.5 x 0.3-0.7 cm magnum, ca 2.5x latitudine longius; foliola supra viridia, disperse (raro densiuscule) appresse pilosa, subtus glauca, reticulo $\pm$ densiusculo discolori non prominulo, plerumque ad costam appresse pilosa ceterum glabra, interdum utrinque omnino glabra.

Flores 1.8-2.5 (-3) cm in diam. Sepala triangularia vel ovato-lanceolata, extus ad nervum pilis longis appressis rigidulis vestita, saepe rubroviolacea, 3-6 (-9) x 2.5-4 mm. Episepala lanceolato-elliptica vel spatulata, interdum subrotundata, basi petiolulata, apice apiculata, 3-6 (-8) x 1.2-5 mm magna, sepalis $\pm$ breviora. Petala alba, 7-12 mm longa. Antherae 0.7-1.7 mm longae. Stylus clavatus, (1.0-) 1.2-2.0 mm longus. Nuculae maturae ignotae.

Species in sectione *Comocarpa* albiflora unica, cui folia ternata sunt.

Typus: China, SW Sichuan - mountains between the Litang and Yalong rivers, between Muli Gomba and Baurong and Wa-Erh-Dje, Rock 16628, 1928, E.

Specimens examined: SE Xizang (near its boundary with Yunnan): W of the Kaakerpo, Dokerla and Yundshi, Rock 23190, E; Tjonatong, Rock 22337, E.

Yunnan: without precise locality, Yü 6555, A, Yü 6797, A, Yü 7405, A, Yü 9171, A, Yü 12104, A; Fuchuan range, Rock 22734, E; Wei-si Hsien, Yeh-Chih, Wang 68487, A; Lao-chun shan, S.W. of Shi-ku, Rock 25098, E; Lidjiang (Likiang), Yülung-shan, Handel-Mazzetti 3932, W et WU; ibid. Handel-Mazzetti 3936, W et WU; Sila, Yü 22183, A; Tsekou, Soulio 104, E; A-tun-tze, Huann/fu/ping, Wang 68733 et 69004, A; A-tun-tze, Bai-mar-shan, Wang 69435, A; Chungtien Plateau, Feng 1467, A; Dschungien (Chungtien), inter Bödo et Alo, Handel-Mazzetti 4522, LE; Yungning, mt. Waha, Handel-Mazzetti 7119, W et WU.

SW Sichuan: Mutirong, Muti Konka, Rock 23678, E.

About 30 additional specimens were examined in BM, K, CUN and PE.

Potentilla galantha represents the only white-flowered species of the section *Comocarpa* possessing ternate leaves. The other species have either yellow flowers or quinate leaves.

3. *Potentilla oxyota* Soják, spec. nova

(sect. *Ranunculoides* (Wolf) Juz.)

Caudex tenuis, ramosus, residuis stipularum pluriseriatis (non distichis) tectus.

Caulis 5-10 cm alti, ascendentes, foliis 1-3 (-4) praediti, 1-3-flori, pilis crassis $\pm$ patentibus vel flexuosis dispersis et item tenuissimis mollibus flexuoso-subcrispatis densis vestiti.

Stipulae dorso $\pm$ glabrae; auriculae 4-6 x 1-2 mm, apice sensim attenuatae, acutae, pilosae. Petioli pilis 1-2 mm longis arrectis usque horizontaliter patentibus modice rigidulis rectis vel flexuosis et item brevibus (0.15-0.5 mm) mollibus flexuosis usque subcrispatis (in petiolis aliquibus numerosis, in aliis dispersis vel nullis) tecti, saepe parviglandulosi.

Folia radicalia ternata. Foliolum medium cuneato-ellipticum vel -obovatum, 0.6-1.2 x 0.5-0.9 cm magnum, dentibus utrinque 4-5 $\pm$ obtusis vel rotundatis (ca 1.5-2.0 x 0.8-1.6 mm magnis); foliola supra viridia, opaca, pilis appressis vel subpatentibus rigidulis longioribus vel brevibus $\pm$ rectiusculis $\pm$ numerosis tecta, subtus dilutius viridia, opaca, ad nervos et marginem pilis tenuibus mollibus flexuosis vel rectis brevibus $\pm$ obtus subpatentibus vestita, plerumque glandulis subsessilibus insignis $\pm$ numerosis sordide albidis opacis (non hyalinis) praedita.

Flores $\pm$ 1.5 cm in diam. Sepala pilis dispersis rectis longis et item brevibus et glandulis subsessilibus bene visibilibus induta, 3-4 x 2-2.3 mm. Episepala oblonga vel saepius spatulata, elliptica vel obovata, apice rotundata, 2.0-2.8 x 1.0-1.5 mm magna, sepalis $\pm$ breviora. Petala lutea, sinuata, 6-7 mm longa, sepalis

superantia. Antherae 0.5-0.6 mm longae. Stylus 2.0-2.3 mm longus, subterminalis, basi leviter intumescens, stigmatem $\pm$ dilatato. Nuculae maturae ignotae.

Potentilla matsumurae Wolf, quae speciei nostrae fortasse affinis est, praesertim foliis radicalibus distichis, auriculis stipularum latioribus apice obtusis usque rotundatis et vestitu caulium, petiolorum foliolorumque diverso clare differt.

Typus: China, Hubei [Hupeh] - Fang, E. H. Wilson 2059, K; isotypus W.

Both type specimens of *P. oxyota* were labelled as *P. gelida* C. A. Mey. by Handel-Mazzetti. The latter, however, has short styles and belongs to the section *Aureae*. Long styles of *P. oxyota* more probably indicate its relations to *P. matsumurae* Wolf (sect. *Ranunculoides*). Both *P. gelida* and *P. matsumurae* have distichous basal leaves while *P. oxyota* is characterized by polystichous basal leaves; this represents an important difference. Moreover, there are other diacritical features: *P. matsumurae* has broad, apically rounded stipular auricles, and petioles with homotrichous indumentum, *P. oxyota* possesses narrow acute auricles and at least some petioles with both long straight (or flexuose) hairs and short strongly flexuose hairs.

Two species described by Hayata from Taiwan were suggested to be related to *P. matsumurae*. I have revised types of both species (TI). It turned out that *P. morii* is identical with *P. freyniana* Bormm. (sect. *Fragarioides*) and *P. morissonensis* is synonymous with *P. matsumurae*.

4. *Potentilla asterotricha* Soják, spec. nova

[sect. *Aureae* (Wolf) Juz.]

Caudex ramosus. Caules $\pm$ 5 cm alti, foliis $\pm$ 2 reductis utrinque stellato-pilosis instructi, pauciflori, pilis arrectis rigidulis longis et item brevibus tenuibus curvatis densis vestiti.

Stipulae pilis appressis longis et brevibus tectae; auriculae subulatae, 3-4 mm longae. Petioli pilis longis (0.6-1.05 mm) rectis rigidulis oblique arrectis modice numerosis et item brevibus (0.1-0.3 mm) mollibus rectis vel curvato-flexuosis $\pm$ patentibus densis induti.

Folia radicalia subpinnata, bijuga, 2-4 cm longa, jugis approximatis (1-3 mm), foliolis jugi inferioris tridentatis parvis (3-5 mm). Foliolum terminale cuneato-ellipticum, 0.9-1.3 x 0.5-0.6 cm magnum, crenato-dentatum crenis utrinque 3-4 obtusis parvis (1.0-1.5 x 1.0-1.7 mm); foliola omnia supra cana, opaca, pilis densis subappressis (simplicibus et item substellatis vel stellatis immixtis) tenuibus insigniter brevibus (0.1-0.2 mm et item $\pm$ 0.5 mm) vestita, subtus cano-albida, opaca, ad nervos pilis longiusculis subappressis rigidulis, ceterum pilis brevibus tenuibus rectiusculis vel curvato-flexuosis densis tomentosa (superficie infra tomentum non visibili).

Flores $\pm$ 1 cm in diam. Calyx pilis longis et brevibus, nonnullis distincte stellatis (ramus centralis ramulis ceteris multo longior) dense indutus. Sepala $\pm$ triangularia, ca 2.5 x 2.0 mm magna. Episepala oblongo-elliptica, 2 x 0.7-0.9 mm magna, sepalis breviora. Petala $\pm$ 5 mm longa, sepalis longiora. Antherae 0.5-0.7 mm longae. Stylus subterminalis, basi modice intumescens, 1.1-1.2 mm longus. Nuculae ignotae.

Habitu *P. tangutorum* Soják et *P. potaninii* Wolf similis, sed foliis caulinis et calycibus distincte stellato-vel substellato-pilosis, foliolis supra pilis simplicibus et substellatis mixtis tectis, subtus pilis crispis deficientibus diversa. A *P. acaulis* L. foliis 2-jugo-subpinnatis et pilis simplicibus numerosis primo obtutu differt.

Typus: China, Gansu - sine collectore et loco propiore, PR.

Potentilla asterotricha is the only hybrid species with *P. acaulis* L. as one of the parental species. The second parent is some representative of the section *Pensylvanicae* (perhaps *P. potaninii* Wolf). Stellate hairs of *P. asterotricha* are most easily visible in the places with the lowest indumentum density, i.e. in calyces and cauline leaves; in the upper surface of basal leaves, they can be observed by normal stereomicroscope. This type of indumentum approaches that of the European *P. collina* Wibel (= *P. arenaria* Borkh. x *P. argentea* L.).

The type specimen of *P. asterotricha* (PR) does not have any more detailed locality identification. However, another specimen of *P. asterotricha* (from Gansu), deposited as *P. acaulis* in Beijing, is provided with a complete label.

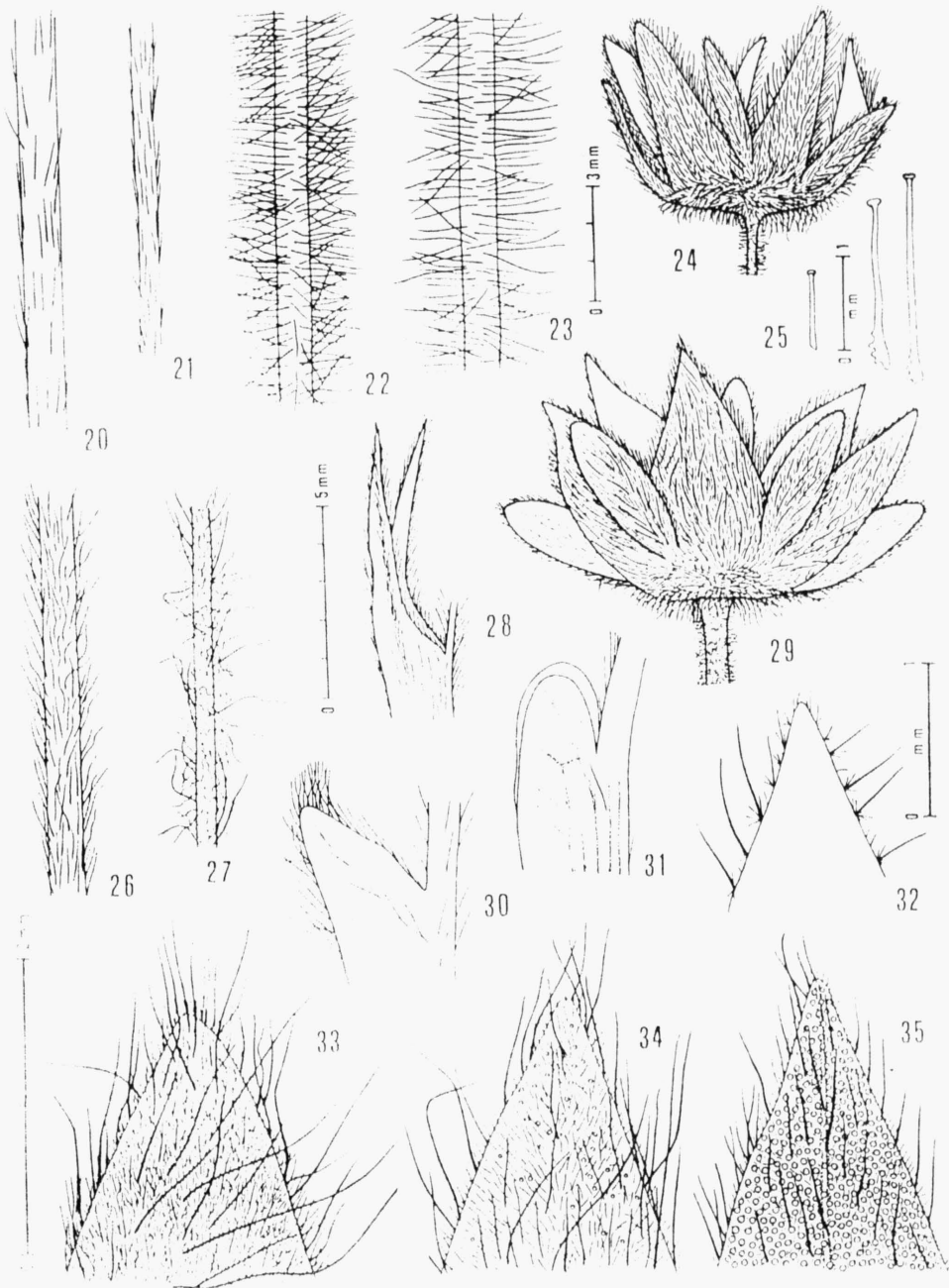


Fig. 2. - Petiole indumentum: 20.-21. *P. coreana* (20. summer leaf; 21. spring leaf); 22.-23. *P. fragarioides* (22. spring leaf; 23. summer leaf); 26. *P. matsumurae*; 27. *P. oxyota*. - Calyx: 24. *P. alluvialis*; 29. *P. anjuica*. - 25. Styles (from left to right): *P. pamirica*, *P. bactriana* var. *bactriana*, *P. bactriana* var. *bamianica*. - Stipular auricle: 28. *P. oxyota*; 30.-31. *P. matsumurae*. - Upper part of sepal (adaxial side): 32. *P. asterotricha*. - Upper parts of sepals (abaxial side): 33. *P. sericeae*; 34. *P. stepposa*; 35. *P. conferta*

5. *Potentilla coreana* Soják, spec. nova

[sect. *Fragarioides* (Wolf) Juz.]

Caudex tenuis ($\pm$ 1-2 mm), repens, pauciramosus, appresse pilosus, brunneus, inferne internodiis $\pm$ longiusculis $\pm$ exstipulatis formatus, superne residuis stipularum modice densiusculis ferrugineis tectus.

Caules 10-15 cm alti vel recti, viriduli, inferne pilis rectis appressis vel subappressis 0.5-1.5 mm longis, superne pilis longis et item brevibus arcuato-curvatis vestiti.

Stipulae appresse pilosae, mediocriter latae, auriculis $\pm$ 4-5.5 mm longis, pilosis. Petioli pilis rectis modice densiusculis 0.5-1.5 mm longis appressis vel nonnullis oblique subpatentibus induti.

Folia radicalia 2-3-jugo-pinnata jugis valde remotis, foliolis tribus terminalibus ceteris multo majoribus, omnibus sessilibus, crenato-dentatis. Folia tempore florendi 4-8 cm longa, caulibus breviora; foliolum terminale rhomboideum vel cuneato-oboatum, 0.7-1.2 x 0.5-0.8 cm magnum, basi longe integerrimum, dentibus utrinque 7-14 parvis (0.5-1.3 x 0.7-1.5 mm magnis), foliola jugi infimi 0.2-0.6 cm longa, dentibus utrinque 2-4. Folia aestivalia (3-)10-25 cm longa; foliolum terminale cuneato-oboatum vel rhomboideum, (1-)2-6 x (0.7-) 1.5-2 (-3) cm, dentibus utrinque 7-14, ca 1.2-3.5 x 1.5-4.0 mm magnis; foliola jugi infimi 0.8-2.0 (-3.0) x 0.3-1.5 cm magna, dentibus utrinque 3-8. Foliola omnia supra laete viridia (autumnalia violacea), opaca, pilis rectis $\pm$ appressis $\pm$ 0.5 mm longis parum vel mediocriter densis tecta, subtus pallidius viridia, opaca, pilis rectis subappressis modice longis ad nervos numerosis ceterum dispersis vestita. Folia caulina $\pm$ 1-2, ternata, petiolata, parva, stipulis mediocriter magnis integris.

Inflorescentia 2-5-flora, laxa. Flores tenuiter pedicellati $\pm$ 1.5 cm in diam. Calyx pilis rectis appressis modice longis dense obtectus. Sepala anguste triangularia, 3.0-3.5 x 1.2-2.0 mm. Episepala $\pm$ lanceolata, 2.2-3.2 x 0.9-1.2 magna, sepalis breviora. Petala lutea, sinuata, $\pm$ 7 mm longa, sepalis distincte longiora. Antherae (0.5-) 0.7-1.0 mm longae. Stylus subterminalis, basi modice attenuatus $\pm$ 0.9 mm longus. Nuculae ignotae.

A *P. fragarioides* L. caudice repente tenui modice ramoso et vestitu petiolorum, caulium calycumque appresso vel subappresso clare dicognoscitur.

Typus: Korea - prov. Rjangan [Ryangan], Changpayschan, planities Paektu: prope collem Mubong inter lacum Samjion et oppidum Taehongdan, ca 1320 m s.m., ca 41°50' N, 128°20' E, J. Dostálek s.n., 1984, PR (isotypi K, LE).

Specimens examined: Korea: province of Ryangan, Changpayschan-Mts., Plateau Paektu [Paekdu]: forest boundary ca 25 km NW village Samjiyon, Kolbek s.n., PR; taiga-forest, ca 21 km NNW from village Samjiyon, Kolbek s.n., PR; around Lake Samji, ca 5 km N. village Samjiyon, Kolbek s.n., PR; pine-wood-taiga, ca 19 km N from village Samjiyon, Kolbek s.n., PR; ca. 10 km NNE from village Samjiyon, Kolbek s.n., PR; between Samjion and Taehongdan, Dostálek et Kolbek s.n., PR.

Potentilla coreana is remarkable in having an appressed indumentum on the petioles. A similar species, *P. fragarioides* L., always has patent hairs. Upon closer examination, additional important differences are found in the character of rootstock.

P. fragarioides has a short thick rootstock densely covered with the rests of stipules, not branched or seldom with congested short apical branches. *P. coreana* has a long thin branched caudex, sparsely or moderately densely covered with stipules rests. Both differences (the indumentum and the caudex features) are constant.

P. coreana was detected in North Korea by the Czech botanist Jiří Dostálek in 1984. In 1986, he collected this species (on my request) again in the summer stage (which was important due to seasonal heterophylly) and at the same time revealed another distribution area about 50 km from the type locality. Further material has been collected by J. Kolbek in 1988.

6. *Potentilla bactriana* Soják, spec. nova

(sect. *Pensylvanicae* Poeperl.)

Caudex valde ramosus, residuis stipularum ferrugineis polystichis tectus. Caules (3-) 5-15 (-25) cm alti, ascendentes, 1-4 (-8)-flori, pilis longis rectis appressis vel arrecte patentibus et item brevibus curvato-flexuosis induti.

Petioli pilis appressis vel arrecte subpatentibus rectis 0.5-1.5 mm longis obtecti.

Folia radicalia 3-6-jugo-pinnata, ca (1.5-) 2-5 (-19) cm longa, jugis remotis, foliolis superioribus saepe pseudovercillatis (quaternis), rarius folia interrupte pinnata. Foliolum terminale 0.5-1 (-2) x 0.35-1 cm magnum, pinnatisectum, segmentis utrinque 3-4 (-7) oblongo-linearibus (saepe basi versus paulo attenuatis), sese approximatis, 2-6 x 0.5-1.7 mm magnis, apice subacutis vel obtusiusculis, margine $\pm$ planis; foliola supra pilis appressis rectis longiusculis vel brevibus $\pm$ dense tecta, subtus cana, subsericea, pilis rectis modice

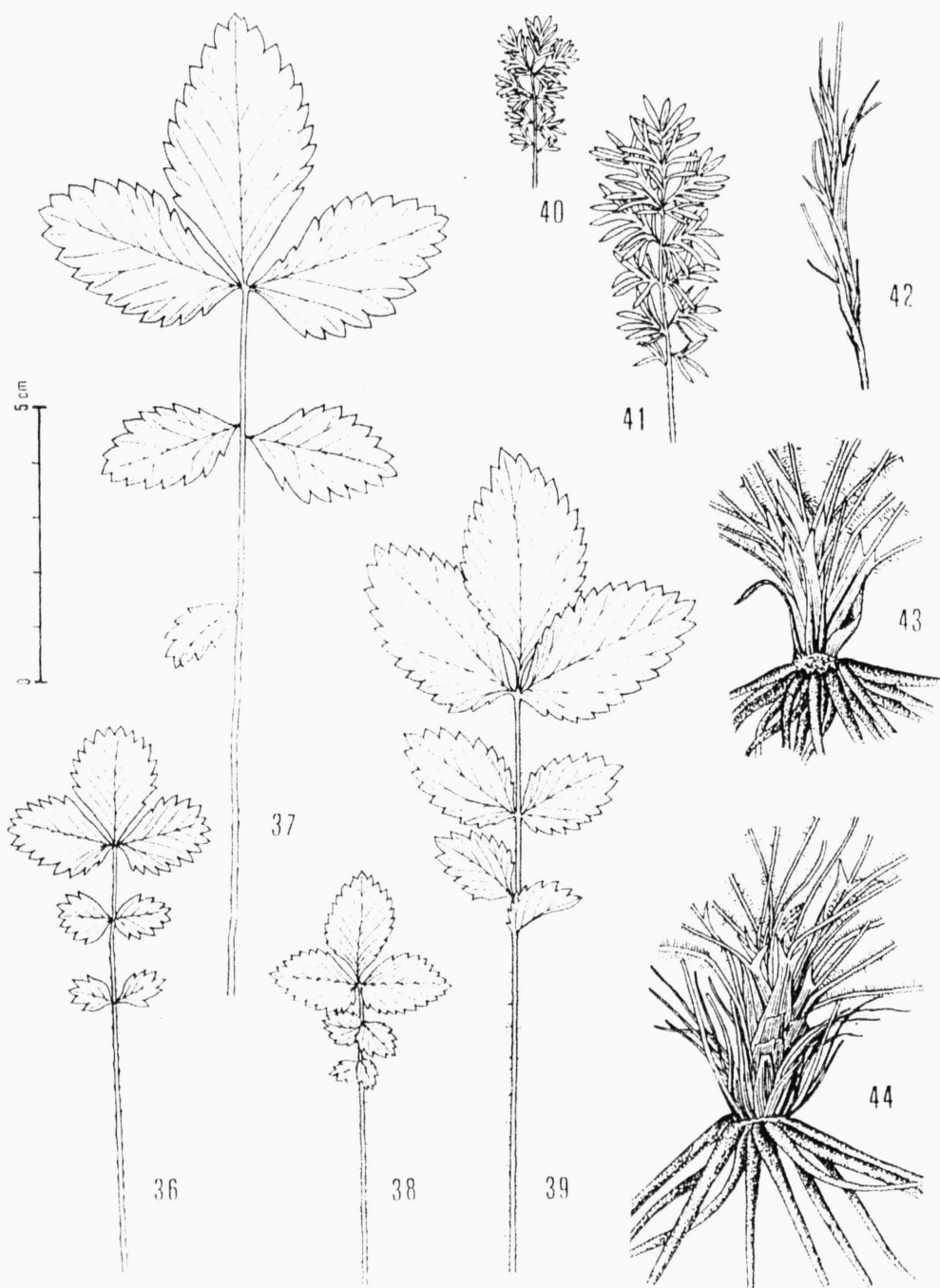


Fig. 3. - Basal leaves: 36.-37. *P. coreana* (36. spring leaf; 37. summer leaf); 38.-39. *P. fragarioides* (38. spring leaf; 39. summer leaf); 40.-41. *P. bactriana*. - Basal part of a plant (rootstock): 42. *P. coreana*; 43.-44. *P. fragarioides*.

longiusculis ($\pm$ 0.5-1 mm) appressis, densis, tomentum falsum formantibus (interdum dispersis, tunc saepe item pilis brevibus $\pm$ rectiusculis tecta); pili crispatis deficientes.

Inflorescentia laxa. Flores 1.2-1.5 cm in diam. Sepala triangularia, pilis longis et brevibus tecta, (2.5-) 3.5-4.5 (-6.0) $\times$ 2.0-2.5 (3.0) mm magna. Episejala oblongo-lanceolata, (2.0-) 3.0-3.5 (-5.5) $\times$ 0.7-1.4 mm magna, sepalis breviora. Petala lutea, 4-6 mm longa. Antherae 0.5-0.8 mm longae. Stylus subterminalis, basi insigniter vel paulo incrassatus, ibidem saepe papillosus, (1.5-) 1.7-2.2 (-2.4) mm longus, stigmata non vel parum dilatato. Nuculae $\pm$ 1.5-1.7 mm longae.

P. pamirica Wolf similima, a qua praesertim stylis distincte longioribus, basi incrassatis papillosisque distat. A *P. pamiroalaica* Juz. pilis crispatis in pagina foliolorum inferiore deficientibus satis differt.

Typus: NO Afganistan, Prov. Takhar - Khost-o-Fereng, Echani-Tal, 3300 m s.m., Podlech 11811, 1965, M.

Specimens examined: Tadzhikistan: Schugnan, in valle fl. Togus-bulak, Koy-te-sek - Dzhilandy, Fedtschenko s.n., LE; Vakhn, Yamchinskoye ushch., Tuturin et Bessedin 204, LE.

Afganistan: Kabul: in decl. austr. jugi Salang, Rechinger 31557, W. Paghman: Kotal-i-Kotandar, Gilli 1861, W. Takht-i-Torkman, Thesiger 225, BM. Panjshir: Darrah Rastagal, Mukeni, Hedge et Wendelbo 5165, E, M, PR. Munjan: Weraan, Edelberg 1250, W. Kataghan: Salang, Gibbons 616, K; Sar-i-Hauz, Salang, Rechinger 37505, M; Darrah-i-Til, Doab-i-Til, Podlech 11177, M. Bamian: Koh-i-Baba, Sard darra, Gilli 1862 et 1863, W.

Pakistan: Chitral: Ojhor, Bowes Lyon 857, E et BM. Kurram: Kurram Valley, Aitchison 967, PR.

Variat:

a) Stylus 1.5-2.2 mm longus - *P. b.* var. *bactriana*

b) Stylus 2.2-2.4 mm longus - *Potentilla bactriana* var. *bamianica* Soják, var. *nova* (typus: Afghanistan, Koh i Baba, Griffith 2123, K)

Potentilla bactriana belongs among close relatives of *P. pamirica* Wolf. These two species can be primarily distinguished by their styles. *P. pamirica* has short (usually up to 1 mm) styles not thickened at the base, not papillose. *P. bactriana* most often has (1.5-) 1.7-2.2 mm long styles thickened and papillose at the base. Not rarely, leaves with pseudoverticillate leaflets are found in it, and some specimens even have styles up to 2.4 mm long. Both these features are typical of the members of the section *Persicae* (e.g. *P. coelestis* Gilli and *P. argaea* Boiss.), and they are exceptionally found in the section *Pennsylvanicae* (*Multifidae*) that harbours *P. pamirica*.

Potentilla bactriana is distributed in Afghanistan (and in the border zones of Tadzhikistan and Pakistan), i.e. in the territories where *P. pamirica* does not occur. It is morphologically homogeneous and discrete. This distinctiveness is presumably caused by total absence of interspecific hybridization. *P. pamirica*, on the other hand, has considerably blurred limits because of great affinity for hybridization with the members of the section *Niveae* (*P. nervosa* Juz., *P. sino-nivea* Hult., *P. crebridens* Juz.) and particularly with *P. pamiroalaica* Juz. If *P. bactriana* were distributed in the range of *P. pamirica* and that of polymorphic *P. pamiroalaica*, I would doubt of its specific status. As a matter of fact, *P. pamiroalaica* may also have styles thickened at the base and longer than *P. pamirica* (thus, it approaches *P. bactriana* in this feature) but all its leaflets are densely white tomentose by crispate hairs beneath (in *P. bactriana* the crispate hairs are lacking).

7. *Potentilla stepposa* Soják, spec. nova

(sect. *Pennsylvanicae* Poevrl.)

Caudex eramosus. Caules (5-) 10-25 (-30) cm alti, e basi arcuata ascendentes, patenter pilosi.

Folia radicalia 4-6-jugo-pinnata, (2-) 3-10 (-14) cm longa. Foliola oblonga vel elliptica, juxta eorum 1 (-2) supra breviter decurrentia, cetera sessilia, subtus pilis rectiusculis et item flexuosis vel subcrispatis tomentosa. Foliolum terminale 1-2.5 (-4) $\times$ 0.4-1 (-1.5) cm magnum, segmentis utrinque 6-8, ca. 2.5 (-7) $\times$ 0.5-1.5 (-2) mm magnis, oblongo-linearibus obtusis sese approximatis; pars folioli media indivisa 1-2 (-3) mm lata. Folia caulina 2-3, plerumque (2-) 3-4 (-5)-jugo-pinnata. Inflorescentia conferta vel rarius laxa. Sepala pilosa et glandulis minutis ($\pm$ 0.4 mm) sparsis vel dispersis vel modice numerosis praedita, 3-4 (-4.5) $\times$ 1.5-2.5

mm magna. Petala 4-6 mm longa. Antherae 0.5-0.7 mm longae. Stylus subterminalis, basi modice incrassatus, 0.8-1.0 mm longus.

A *P. sericea* L. sepalis glandulosis, caulibus bene foliatis et inflorescentia saepe $\pm$ contracta, a *P. conferta* Bunge glandulis sepalorum multo minoribus et minus numerosis et foliolis saepe profundius divisis differt.

Typus: Mongolia - vallis Zajsan ad declivia bor. montium Bogd-ül versus merid. ab oppido Ulan-Bator, declivia stepposa et saxosa, Soják s. n., 1965, PR.

About 45 additional specimens from Mongolia and southern Siberia were studied in LE, MHA, MW and PR.

A species of hybrid origin occupying an intermediate position between *P. conferta* Bunge and *P. sericea* L., scattered in Mongolia (where it spreads independently of the parental taxa) and in the southern part of Central Siberia. *Potentilla stepposa* usually approaches *P. sericea* in the shape of leaves but it differs from the latter in having glandulose sepals, more numerous cauline leaves and denser inflorescence. From *P. conferta* it differs by conspicuously smaller and sparser glands on the sepals, and often by more deeply divided leaflets. Sepal glandulosity is decisive for safe identification of the three close taxa: *P. sericea* has sepals eglandulose, *P. conferta* has dense and large glands, and *P. stepposa* possesses rare or relatively sparse glands of much smaller size.

In the shape of leaflets, indumentum of sepals and its general habit, *P. stepposa* is very close to *P. serrata* Soják. However, the latter is distinct in having a different indumentum of the leaflets' undersides. It is composed of markedly thicker and sparser hairs so that the leaf surface is visible to a certain extent because the thin flexuose hairs (typical for both *P. stepposa*, *P. conferta* and *P. sericea*) are not present in *P. serrata*. *Potentilla serrata* is a hybrid species derived from the *P. sericea* $\times$ *P. tanacetifolia* combination. Forms with broad, shallowly dentate leaflets (e.g. Pisarev 1922, PR) represent a convincing evidence of this origin.

8. *Potentilla alluvialis* Petrovsky et Soják, spec. nova

[sect. *Niveae* (Rydb.) Juz.]

Caudex eramosus vel 2-3-ceps. Caules 12-40 cm alti, e basi arcuata erecti, saepe $\pm$ flexuosi et a dimidio virgato-ramosi, foliis caulinis bracteisque paucis et valde remotis, pilis rectis vel subflexuosis $\pm$ oblique patentibus longiusculis et item brevioribus tenuibus curvatis (interdum fere subcrispatis) parum vel modice densiusculis, plerumque item glandulis minimis sessilibus dispersis praeditis.

Stipulae angustae, appresse pilosae, auriculis angustis, 4-7 mm longis. Petioli pilis $\pm$ rectis, 0.7-1.0 (-1.5) mm longis arrecte oblique patentibus (pilis appressis et item $\pm$ horizontalibus saepe immixtis); pili breves ($\pm$ 0.1 mm) aut deficientes aut dispersi; glandulae minutae sessiles interdum praesentes.

Folia radicalia quinato-digitata (ternatis immixtis), 2-12 cm longa. Foliolum intermedium ellipticum vel obovatum, 0.7-4.0 $\times$ 0.5-1.5 (2.0) cm magnum, brevipetiolulatum, basi longa integra saepe convexa, interdum cuneata, crenato-dentatum, crenis utrinque (3-) 4 (-5) brevibus latis ca. (1-) 1.5-3 (-4) $\times$ (1-) 2-3 (-4) mm magnis (ad $\pm$ 2/7 laminae attingentibus); foliola supra viridia, pilis rectis $\pm$ appressis modice longis et modice numerosis, subtus cana, cano-viridia vel cano-albida, tota opaca, ad nervos pilis rectis appressis 0.5-1.0 mm longis, inter nervos tomento vero $\pm$ sparso tecta, eglandulosa.

Folia caulina 1-2, ternata, brevipetiolata, insigniter parva; bractae integrae vel paucidentatae, stipulis ovato-lanceolatis, extus canis.

Inflorescentia insigniter laxa [pedicelli sub fructu 2-7 (-9) mm longi], (1-) 4-10 (-20) - flora. Flores $\pm$ 1.5 cm in diam. Calyx pilis oblique patentibus longis et brevibus densiuscule tectus. Sepala anguste triangularia, 3-5 $\times$ 2-3 mm magna. Episepala lineari-oblonga vel lanceolata, (2-) 3-4 $\times$ 0.6-1.4 mm magna, sepalis breviora. Petala lutea, sinuata, 6-7 mm longa, calyce distincte longiora. Antherae 0.35-0.7 mm longae. Stylus subterminalis, basi modice intumescens, ibidem brevi- vel longipapillosus, 0.8-1.0 mm longus. Nuculae fusciscentes, 1.3-1.4 mm longae, laeves.

P. anjuica Petrovsky, quae speciei nostrae similis est, foliolis subtus ad costam pilis longioribus (1.0-1.5 mm) tectis, inflorescentia 1-4-flora, calycibus (praesertim episepalis) majoribus differt. *P. macrantha* Ledeb. foliis ternatis et vestitu petiolorum (pili longi rectiusculi et item breviores curvati usque flexuosi, glandulae sessiles numerosae et item stipitatae dispersae evolutae) et notis aliis a *P. alluviali* discrepat.

Typus: Russia, Yakutskaya A.S.S.R., nizhn. tekheniye r. Leny, bass. r. Nyoyokyuleekh, k yugu ot sela Chekurovka, Petrovskiy i Pliyeva 84-34, 1984, LE.

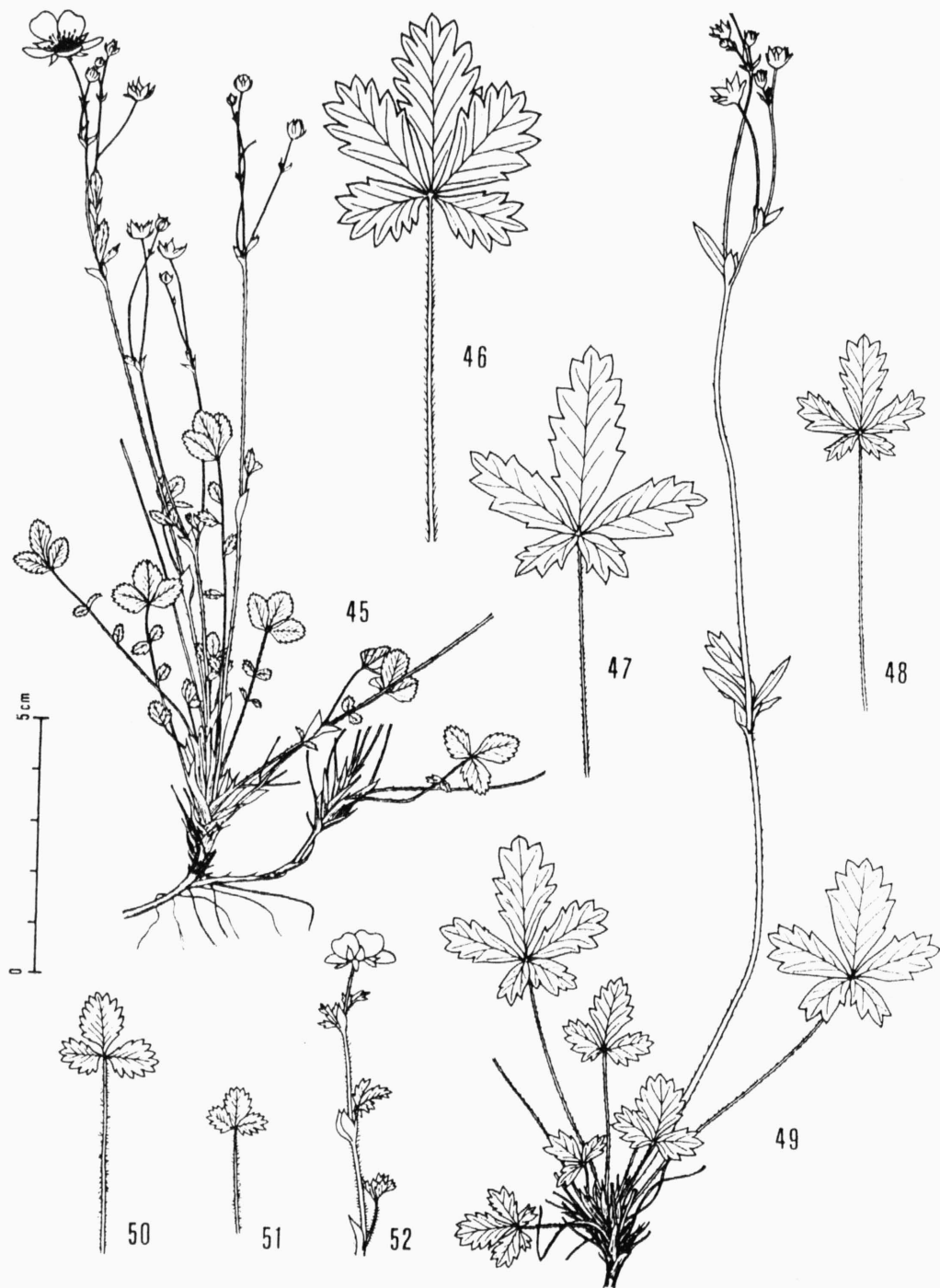


Fig. 4. - 45. *P. coreana*, habit. - 46.-49. *P. alluvialis*, basal leaves and habit. - 50.-52. *P. oxyota*, basal leaves and stem.

Specimens examined: Yakutia, r. Nyoyokyuleekh, Chekurovka, Petrovskiy i Pliyeva 84-31, PR; ibid. 84-32, PR; ibid. 84-33, PR. Zap. Chukotka, okrestn. pos. Mandrikovo, bass. r. Kuryachan, Petrovskiy s.n., LE et PR.

The first impression made by *P. alluvialis* is that of Chukotkan *P. anjuica* Petrovsky. However, the former has smaller calyces with narrow epicalyx-segments and short indumentum of the leaflet underside veins.

Potentilla anjuica matches *P. hyparctica* Malte or *P. pulchella* R. Br. in the shape of calyx but this need not indicate any closer relationship to these species. *P. anjuica* is a hybrid species of an unknown parentage. If we accept a hypothesis that *P. rubella* Sorensen is one of the parental taxa, *P. uniflora* Ledeb. might be the other one. Not only long indumentum of leaflet underside venation but also heterotrichous indumentum of some petioles (in some individuals in a population) with both numerous long hairs and sparse short (about 0.2-0.4 mm long) strongly curved to flexuose hairs support the above hypothesis.

Potentilla alluvialis is undoubtedly derived from the hybrid combination of *P. stipularis* x *P. nivea* sensu orig. (= *P. arenosa*). That is why its epicalyx segments are small and narrow, and the underside leaflet vein indumentum is short. When, in addition to long hairs, also short (0.1-0.2 mm) hairs are developed on the petioles they are straight or only slightly curved.

Potentilla anjuica and *P. alluvialis* are similar to each other in their general habit but they surely came into being through different parentage. This is also the case with the South Siberian *P. mujensis* Kurbatsky whose broad epicalyx segments have their likely origin in *P. gelida*. *P. alluvialis* not only differs from *P. mujensis* in the calyx shape but also in the indumentum of the leaflet undersides (presence of tomentum) and petioles (shorter hairs).

9. *Potentilla tanacetifolia* Willd. ex Schlecht. var. *shantungensis* Soják var. *nova*

Caules 12-40 cm alti. Folia radicalia 6-7-jugo-pinnata. Foliola subtus ad nervos pilis longis rectis rigidulis et item brevissimis rectis tenuibus, inter nervos pilis modice longiusculis tenuibus rectis vel curvatis ± patentibus densiuscule obiecta. Folia caulina 3-8, stipulae foliorum superiorum et bractearum plerumque integrae, insigniter latae (i.e. stipulae bractearum in parte inflorescentiae inferiore ± 3-5 mm latae). Inflorescentia ± 20-40-flora, initio contracta. Flores 1-1.5 cm in diam. Episepala omnia vel saltem in floribus inferioribus ovato-lanceolata.

A varietatibus aliis stipulis foliorum caulinarum superiorum et bractearum latioribus, episepalia latioribus, interdum calycibus majoribus differt.

Typus: China, Shantung - Chefoo, Debeaux s.n., PR

Specimens examined: China: Shantung: without precise locality, Maingay 105 et 141, K; Weihawei [Weihai], Dunn 1432, K; Chefoo [Yantai] Cowdry 722, K; ibid. Faber 2190, K.

Potentilla tanacetifolia is distributed more or less continuously in the large territory from Tomsk and the Altai to Central Amur region and eastern Manchuria, in the south extending from Gansu to Shanxi and the mountains in the vicinity of Beijing. Populations isolated in the Shantung Peninsula differ from those in the main part of the distribution range in having conspicuously broad stipules to the upper cauline leaves and bracts. I regard this local type as a distinct variety.

10. *Potentilla sumatrana* Soják, spec. *nova*

(sect. *Pentaphylloides* Tausch)

Caudex ± eramosus, aut superne aut longe residuis stipularum emortuarum densis magnis tectus, inferne laevis (ibi ± 1 cm crassus); residua dorso argenteo-tomentosa, margine scarioso glabra, atrofusca vel atroferruginea.

Caules 5-35 cm alti, superne (1-)-2-7-flori, 1-1.5 mm crassi, pilis appressis vel patentibus tenuissimis longis rectis (vel flexuosis) et item brevibus flexuosis induti.

Stipulae dorso pilis 6-8 mm longis sordide albis mollibus rectis (non implexis) dense tomentosae. Auriculae connatae. Rhachides appresse vel oblique subpatenter pilosae pilis tenuissimis 2-3 mm longis rectis.

Folia radicalia 9-12-jugo-pinnata, interdum in parte superiore interrupte pinnata, 4.5-13 cm longa. Foliola oblongo-elliptica, jugorum 1-3 supremorum decurrentia, cetera sessilia, in medio lateris 1-2 x 0.4-0.8 cm magna, dentibus utrinque 6-9 acutis $\pm$ densis ca. 0.7-2.0 x 0.7-1.3 mm magnis. Foliola supra viridia, pilis rectis modice numerosis vel sparsis crassis appressis vel oblique subpatentibus tecta, subtus pilis tenuissimis rectis dense tomentosa, argentea, rarius melleo-suffusa.

Folium caulinum unum, reductum (i.e. simplex vel 1-2-jugo-pinnatum), stipulis magnis, laceratis.

Inflorescentia interdum subumbellata. Flores 1.5 cm in diam. Calyx dense appresse pilosus. Sepala $\pm$ 4 x 2.5 mm magna. Episepala oblongo-lanceolata, $\pm$ 3.5 x 1 mm magna, sepalis aequilonga. Petala lutea, 6-8 mm longa. Stamina $\pm$ 20. Antherae 0.4-0.5 mm longae. Stylus $\pm$ lateralis, glaber, aequicrassus, 1.5-1.8 mm longus. Nuculae ad apicem sparse vel densiuscule pilosae, 1.5-1.7 mm longae.

A *P. borneensi* (Stapf) Kalkm. auriculis stipularum connatis, foliis supra pilis sparsioribus rigidulis tectis, foliis caulinis reductis, pedicellis tenuibus, sepalis pilis tenuibus et item crassis vestitis, stylis longioribus et nuculis tantum apice pilosis bene distinguitur. Ab affini *P. pedunculari* D. Don praesertim foliis supra pilis crassis tectis, petalis minoribus et nuculis pilosis differt; a *P. cardotiana* Hand-Mazz. praesertim stipulis longe pilosis, auriculis connatis et stylis longioribus discrepat.

Typus: N Sumatra, Atjeh, Gunung Leuser Nature Reserve: Climbing of Gunung Bandahara, track from kampung Seldok N.E. to large "blang" S. of the summit, c. 25 km N, NW. of Kutatjane, de Wilde et de Wilde-Duyfjes 13264, 1972, K.

Specimens examined: Sumatra, Atjeh, Gunung Leuser Nature Reserve: 10 km NE of kampung Seldok (Alas valley), de Wilde et de Wilde-Duyfjes 15216, A; Atjeh, Gunong Kemer, Iwatsuki, Murata, Dransfield et Saerudin 1278, K.

Potentilla sumatrana has hairy achenes, which is a feature being shared with *P. borneensis* (Stapf) Kalkm. That is the reason why Kalkman (1968) failed to recognize this species. *Potentilla sumatrana*, however, is not a relative of *P. borneensis* but belongs to the *P. peduncularis* complex. This fact is indicated by straight stems with a single, more or less reduced leaf, thin pedicels, long styles (1.5-1.8 mm) and calyx covered with both thin and thicker hairs. *P. sumatrana* has stipular auricles of the basal leaves connate, leaflets with disperse thick hairs above, and achenes with indumentum confined to the apical part. *P. borneensis* has free auricles, leaflets with dense, very thin hairs above, and achenes apically and dorsally hairy. Stems of the latter bear 2-3 well developed pinnate leaves.

Potentilla sumatrana is closely allied to the Himalayan *P. peduncularis* D. Don s. str. but differs from it in having hairy achenes, leaflets with thick hairs above and smaller petals. The hairy achenes are sometimes found in the related *P. cardotiana* Hand.-Mazz. from Yunnan which species, however, possesses free stipular auricles, pale yellow-brown tinged leaflets below, short indumentum of the basal leaf stipules, and shorter styles (0.8-1.3 mm).

Potentilla sumatrana combines some features of *P. peduncularis* and *P. cardotiana*, in other characters it is intermediate between the two, and differs from both species by smaller petals and stiff indumentum of the leaflets above.

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