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Atlas Florae Europaeae notes. 15. Generic delimitation and nomenclatural adjustments in Potentilleae (Rosaceae)

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In the *Atlas Florae Europaeae*, *Comarum*, *Dasiphora*, *Drymocallis* and *Sibbaldianthe*, which are commonly included in *Potentilla*, are recognized as independent genera. Due to the generic delimitation adopted and some taxonomic remodellings, the following new nomenclatural combinations are proposed and discussed: *Drymocallis corsica* (Soleir. *ex* Lehm.) Kurtto, *D. halacsyana* (Degen) Kurtto & Strid, *D. longisepala* (Strid) Kurtto & Strid, *D. longisepala* subsp. *epirotica* (Soják) Kurtto & Strid, *D. malacophylla* (Borbás) Kurtto, *Sibbaldianthe bifurca* (L.) Kurtto & T. Eriksson, and *S. bifurca* subsp. *orientale* (Juz.) Kurtto & T. Eriksson. *Potentilla aspegrenii* Kurtto is proposed as a replacement name (*nomen novum*) for the illegitimate name *P. sordida* Fries *ex* Aspegren. Alternative names published by Wolf in his monograph of *Potentilla* in 1908 are discussed and listed.

Key words: *Comarum*, *Dasiphora*, *Drymocallis*, European flora, nomenclature, *Potentilla*, Rosaceae, *Sibbaldianthe*, taxonomy

Generic delimitation and new nomenclatural combinations

Circumscription of the genus *Potentilla* (and *Sibbaldia*) has varied widely among authors (for comprehensive summaries, *see* Kalkman 1968, Eriksson *et al.* 1998 and Kamelin 2001). However, in the 20th century the rather broad circumscription adopted by Wolf (1908) was commonly followed as such or with minor deviations (esp. regarding the distinctness of *Comarum*, *Dasiphora*/*Pentaphylloides* and *Duchesnea*), as also in *Flora Europaea* (Ball *et al.* 1968), in which the only exception to Wolf's generic concept was the recognition of *Duchesnea* as a separate genus. In the latter half of the 20th century narrower generic concepts mainly proposed in the 1800s and early 1900s began to regain support (e.g. Löve 1954, Löve & Ritchie 1966, Soják 1969, 1989). Lotova and Timonin (2001) concluded that according to the anatomy of the cortex and secondary phloem, "*Pentaphyl-*

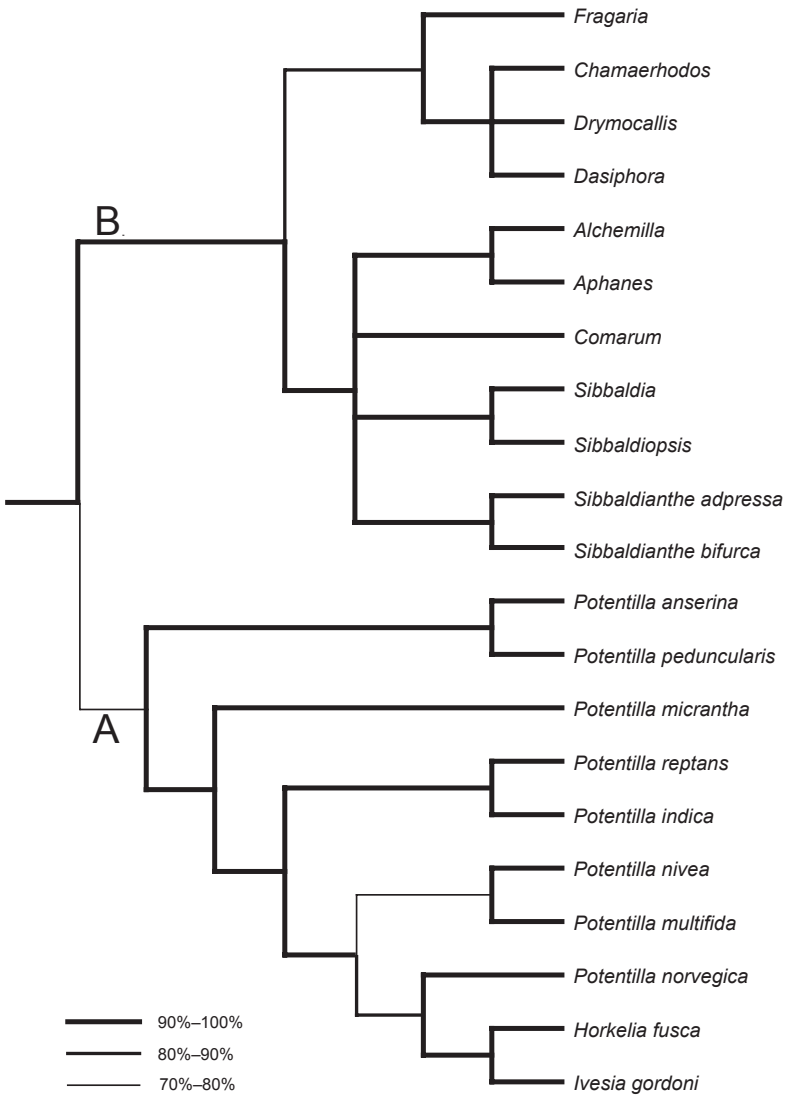

Fig. 1. Simplified tree (70% parsimony bootstrap majority rule consensus tree) from combined analysis of nuclear ITS data with chloroplast trnL/F data (T. Eriksson & P. Östensson unpubl.). The tree shows the *Potentilleae* portion of the phylogeny; some mainly Asian species have been pruned. Clade A corresponds to the part of the sample recognized as *Potentilla*; clade B is the sister clade to *Potentilla*. The thickness of branches indicates level of bootstrap support.

loides and, perhaps, *Schistophyllidium* should be considered separate genera".

Phylogenetic analyses of DNA sequences of nuclear ribosomal internal transcribed spacers (ITSs) by Eriksson *et al*. (1998) strongly suggest that *Potentilla*, as circumscribed by Wolf (1908), is not monophyletic. The authors suggested that in this and parallel cases phylogenetic nomenclature may be a better solution than "the traditional rank-based taxonomic system", but they also considered several possible solutions under the latter and concluded that to minimize nomenclatural change and name only well-supported clades, *Potentilla* should be split into several genera, while other previously recognized genera are best included in *Potentilla*. Analyses of a new combined molecular dataset (nrDNA ITS and cpDNA trnL/F) with increased sampling of species strengthen support for this conclusion (Eriksson *et al*. 2003; T. Eriksson & P. Östensson unpubl.), since the parts of *Potentilla sensu lato* here treated as separate genera, together with *Fragaria*, *Alchemilla* and others, are all well-supported as parts of a sister clade of *Potentilla* in the strict sense (Fig. 1).

Accordingly, and contrary to *Flora Europaea* (Ball *et al*. 1968), the segregate genera *Comarum*,

Dasiphora, *Drymocallis* and *Sibbaldianthe* are recognized in the current volume (13) of *Atlas Florae Europaeae* (AFE). In consequence of this and some taxonomic remodellings, several new nomenclatural combinations are needed. For the sake of completeness, all the European species and subspecies of the segregate genera accepted in the AFE are listed (in alphabetical order) in the following. For previously published names, only abridged synonymy is given.

***Comarum* L.**

Sp. Pl.: 502. 1753.

***Comarum palustre* L.**

Sp. Pl.: 502. 1753. — *Potentilla palustris* (L.) Scop., Fl. Carn. ed. 2, 1: 359. 1772.

***Dasiphora* Rafin.**

Autikon Bot.: 167. 1840.

Pentaphylloides Duh., Traité Arbres Arbust. 2: 99 (1755), *nomen illeg*. (*Potentilla* L. *pro syn*.).

***Dasiphora fruticosa* (L.) Rydb.**

Mem. Dept. Bot. Columbia Coll. 2: 188. 1898. — *Potentilla fruticosa* L., Sp. Pl.: 495. 1753.

***Drymocallis* Fourr. *ex* Rydb.**

N. Amer. Fl. 22: 367. 1908. — *Drymocallis* Fourr., Ann. Soc. Linn. Lyon, Nov. ser. 16: 371 (1868), *nomen nudum*

Potentilla L. sect. *Closterostyles* Torrey & A. Gray, Fl. N. Amer. 1: 445. 1840. — *P.* subgen. *Closterostyles* (Torrey & A. Gray) Juz. *in* Komarov, Fl. URSS 10: 93. 1941.

***Drymocallis geoides* group**

In *Flora Europaea* (Ball *et al*. 1968), the group was treated as an undivided entity, *Potentilla geoides* (including *P. jailae*; *see* below under *Drymocallis rupestris*). Strid (1986) divided *P. geoides* into four subspecies, viz. subsp. *geoides*, subsp. *halacsyana*, subsp. *regis-borisii* and subsp. *longisepala*. Soják (1993) elaborated the classification by recognizing two of Strid's subspecies as independent species. Following Strid's later advice (A. Strid, pers. comm.), they are all treated as such in the AFE. Furthermore, the Greek plants referred by Strid (1986) to *P. geoides* subsp. *geoides* are given subspecific status under *Drymocallis longisepala* in accordance with Soják (1993).

Drymocallis geoides (Bieb.) Soják

Čas. Národ. Muz., řada přír., 154: 118. 1989 ("1985"). — *Potentilla geoides* Bieb., Fl. Taur.-Cauc. 1: 404. 1808.

The species is confined to the Crimea and northwestern Caucasus.

Drymocallis halacsyana (Degen) Kurtto & Strid, *comb. nova*

Basionym: *Potentilla halacsyana* Degen, Österr. Bot. Zeitschr. 41: 293. 1891. — *P. rupestris* L. var. *halacsyana* (Degen) T. Wolf, Biblioth. Bot. 16 (Heft 71) [= Monogr. Pot.]: 125. 1908. — *P. geoides* Bieb. subsp. *halacsyana* (Degen) Strid, Mountain Fl. Greece 1: 407. 1986.

The species is endemic to rock crevices in the summit area of Mt. Fengari on the island of Samothraki, Greece. It is a fairly distinct taxon characterized by low stature and solitary, open flowers with snow-white petals distinctly longer than the sepals (*see* colour picture on the cover of Strid & Tan 1998).

Drymocallis longisepala (Strid) Kurtto & Strid, *comb. nova*

Basionym: *Potentilla geoides* Bieb. subsp. *longisepala* Strid, Mountain Fl. Greece 1: 408. 1986. — *P. longisepala* (Strid) Soják, Preslia (Praha) 65: 127. 1993.

The species is endemic to serpentine areas of mountains of northern central and northwestern Greece. It is characterized by an erect, 1–3-flowered stem, large cup-shaped flowers that do not open fully and pale yellowish petals somewhat shorter than the sepals.

Drymocallis longisepala (Strid) Kurtto & Strid subsp. *epirotica* (Soják) Kurtto & Strid, *comb. nova*

Basionym: *Potentilla longisepala* (Strid) Soják subsp. *epirotica* Soják, Preslia (Praha) 65: 127. 1993.

Potentilla geoides subsp. *geoides sensu* Strid, Mountain Fl. Greece 1: 407. 1986.

The subspecies is confined to high altitudes (2000–2400 m) in northwestern Greece. It differs from subsp. *longisepala* in the shorter sepals and other quantitative details.

Drymocallis longisepala subsp. *longisepala*

The subspecies is endemic to rocky slopes of Mt. Vourinos at 1400–1800 m in northern central Greece.

Drymocallis regis-borisii (Stoj.) Soják

Čas. Národ. Muz., řada přír., 154: 118. 1989 ("1985"). — *Potentilla regis-borisii* Stoj., Izv. Carsk. Prir. Inst. Sofija 3: 249. 1930.

The species is a woodland plant occurring at low to moderate altitudes in northeastern Greece and southern Bulgaria. Its much-branched stems are generally 20–50 cm high having small, cup-shaped, not fully opening flowers with dull yellowish petals equalling the sepals.

Drymocallis malacophylla (Borbás) Kurtto, *comb. nova*

Basionym: *Potentilla malacophylla* Borbás, Österr. Bot. Zeitschr. 36: 293. 1886. — *P. mollis* Pančić, Dodatak Flori Kneževine Srbije: 139 (1884), *nomen illeg*., *non* Borbás, Fl. Budap.: 162 (1879). — *P. rupestris* L. var. *mollis* Ascherson & Graebner, Syn. Mitteleur. Fl. 6(1): 697. 1904.

In *Flora Europaea* (Ball *et al*. 1968), the taxon was discussed as *Potentilla rupestris* var. *mollis* "(Pančić) Ascherson & Graebner" in a note under *P. geoides* (= *Drymocallis geoides*) among those plants that, according to the authors, are either referable to *P. geoides* or are intermediate between it and *P. rupestris* (= *Drymocallis rupestris*). Niketić and Diklić (1990) showed that *P. mollis*, as they called the taxon, indeed shares many characteristics with *D. geoides*, *D. rupestris* or both, but also has such diagnostic features (dense almost velvety indumentum, nearly smooth achenes) that do not readily allow its inclusion in either species. Consequently, and judged against the commonly adopted criteria for species boundaries in *Potentilleae*, the taxon appears to deserve specific rank, as also concluded by Niketić and Diklić (1990). The species is endemic to serpentine rocks of western Serbia.

Drymocallis rupestris group

Drymocallis corsica (Soleir. *ex* Lehm.) Kurtto, *comb. nova*

Basionym: *Potentilla corsica* Soleir. *ex* Lehm., Del. Sem. Hort. Hamb.: 9. 1849. — *Drymocallis rupestris* (L.) Soják subsp. *corsica* (Soleir. *ex* Lehm.) Soják, Čas. Národ. Muz., řada přír., 154: 118. 1989 ("1985").

In *Flora Europaea* (Ball *et al*. 1968), *Potentilla corsica* was mentioned only as a synonym for *P. rupestris* (= *Drymocallis rupestris*). Pignatti (1982) mentioned *P. corsica* in a note under *P. rupestris*, stating that it is commonly growing together with plants of normal appearance ("ad altre di statura normale"). However, according to Ö. Nilsson (pers. comm.) and specimens in H, the taxon retains its diagnostic characters in cultivation, which together with chorology (endemic to Corse and Sardegna), appears to justify specific rank.

Drymocallis rupestris (L.) Soják

Čas. Národ. Muz., řada přír., 154: 118. 1989 ("1985"). — *Potentilla rupestris* L., Sp. Pl.: 496. 1753.

Potentilla jailae Juz. *in* Komarov, Fl. URSS 10: 609. 1941. — *Drymocallis jailae* (Juz.) Soják, Čas. Národ. Muz., řada přír., 154: 118. 1989 ("1985"). — *Potentilla rupestris* L. subsp. *jailae* (Juz.) Soják, Preslia (Praha) 65: 126. 1993.

Throughout its total range, which includes many disjunct populations, *Drymocallis rupestris* shows more or less clear differentiation into variants. The taxonomic relevance of this

variation as a whole is still in need of thorough elucidation.

On the basis of its postulated unique indumentum (all eglandular hairs appressed or almost so) and disjunct range, Soják (1993) suggested subspecific rank for the Crimean population. However, Kamelin (2001) mentioned *Potentilla jailae* only as a synonym for *P. rupestris*. In *Flora Europaea* (Ball *et al*. 1968), *P. jailae* was included in the yellow-flowered *P. geoides* (= *Drymocallis geoides*) despite the fact that Juzepczuk's accurate original description of the taxon clearly indicates its close affinity with the white-flowered *Drymocallis rupestris*.

***Sibbaldianthe* Juz.**

Juz. *in* Komarov, Fl. URSS 10: 615. 1941.

Potentilla subgen. *Schistophyllidium* Juz. *in* Komarov, Fl. URSS 10: 81 (1941), *nomen inval*. (description in Russian). — *P.* subgen. *Schistophyllidium* Juz. *ex* Fedorov, Fl. Armenii 3: 87. 1958. — *Schistophyllidium* (Juz. *ex* Fedorov) Ikonn., Opred. rast. Badachsch.: 210. 1979.

Recent molecular phylogenetic analyses indicate that the Asian species *Sibbaldianthe adpressa* (Bunge) Juz. is closely related to the taxon usually known as *Potentilla bifurca* (T. Eriksson & P. Östensson, unpubl.; Fig. 1). Considerable morphological similarity corroborates congenericity of the taxa.

Sibbaldianthe bifurca (L.) Kurtto & T. Eriksson, *comb. nova*

Basionym: *Potentilla bifurca* L., Sp. Pl.: 479. 1753. — *Schistophyllidium bifurcum* (L.) Ikonn., Opred. rast. Badachsch.: 210. 1979.

In *Flora Europaea* (Ball *et al*. 1968), *Sibbaldianthe bifurca* was treated as an undivided entity, *Potentilla bifurca*. However, the species includes two variants differing in regard to the indumentum on the stems and petioles and showing a reasonably clear large-scale geographical separation deserving of taxonomic recognition. The western variant with appressed hairs and the mainly Asian variant with patent hairs are connected by a range of intermediates in their contact zone. Consequently, the rank of subspecies appears to be the most appropriate for the variants, as repeatedly inferred by Soják (1970, 1988, 1993). The lectotype designated for *Potentilla bifurca* by Soják (1988) represents the eastern variant.

Sibbaldianthe bifurca subsp. *bifurca*

Sibbaldianthe bifurca subsp. *orientale* (Juz.) Kurtto & T. Eriksson, *comb. nova*

Basionym: *Potentilla orientalis* Juz., Sorn. rast. SSSR 3: 124. 1934. — *P. bifurca* L. subsp. *orientalis* (Juz.) Soják, Folia Geobot. Phytotax. (Praha) 5: 113. 1970. — *Schistophyllidium orientale* (Juz.) Ikonn., Opred. rast. Badachsch.: 210. 1979.

Potentilla glauca Camb. *in* Jacquem., Voy. Inde 4: 54 (1844), *nomen illeg*., *non* Moris, Stirp. sard. elench. 1: 18 (1827).

Potentilla bidens Bertol., Misc. Bot. 24: 16. 1863.

Potentilla semiglabra Juz., Sorn. rast. SSSR 3: 124 (1934). — *P. bifurca* L. subsp. *semiglabra* (Juz.) Vorosch. *in* Skvortsov, Flor. issl. raz. raj. SSSR: 176. 1985.

New name for a member of the *Potentilla collina* group

As pointed out by Gregor and Henker (2001), *Potentilla sordida* Fries *ex* Aspegren 1823 is an illegitimate name, since *P. guentheri* Sprengel 1813 was cited as a synonym in the protologue (as '*P. Gyntheri* Lehm.'). Consequently, no legitimate name for the northwesternmost member of the *P. collina* group apparently exists at the species level, and a replacement name is published here. Due to the existence of *P. friesiana* Lange (= *P. crantzii*), it seems appropriate to dedicate the replacement name to Georg Casten Aspegren, who validated the name *P. sordida*.

Potentilla aspegrenii* Kurtto*, nomen novum

Replaced synonym: *Potentilla sordida* Fries *ex* Aspegren, Försök Blekinsk. Fl.: 38 (1823), *nomen illeg*. (*P. guentheri* Sprengel 1813 *pro syn*.). — *P. argentea* L. var. *sordida* Fries, Novit. fl. suec. 6: 89. 1823. — *P. collina* Wibel var. *sordida* (Fries) Fries, Summa veg. Scand.: 171. 1845. — *P. collina* subsp. *sordida* (Fries) K. Bertsch & F. Bertsch, Fl. Württ. Hohenzollern: 162. 1933. — *P. inaperta* Jordan subsp. *sordida* (Fries) O. Schwarz, Mitt. Thür. Bot. Ges., N. F., 1(1): 105. 1949.

Note on Wolf's nomenclature

In the monograph of *Potentilla* by Wolf (1908), several names of taxa appearing as headlines of the corresponding descriptions are of the form **Potentilla* [epithet]. At the end of the monograph, the same form is used in the *Systematische Zusammenstellung*, but, evidently for practical reasons, not in the *Alphabetisches Register*. The use of the asterisk is described on pp. 35–36 of the monograph as follows:

"Die Subspezies benenne ich, wie die Spezies, binär und unterscheide sie in der Behandlungsweise von dienen bloß dadurch, daß ich sie mit einem Asteriscus bezeichnet unmittelbar den Hauptspezies anreihe. Wer sich daran stößt, daß ich die Subspezies binär benenne, weil dies durch die neuesten Nomenklaturregeln (Art. 28) verboten ist, der nenne sie einfach Spezies oder 'kleine Spezies', die sich eng an die vorhergehende größere oder Hauptspezies anschließt, was durch den Asteriscus angedeutet wird. Ich bewerte meine Subspezies hoch und habe nichts dagegen, daß man sie Spezies benenne."

The rather original use of words, as well as the application of such terms as *Spezies*, *Hauptspezies*, *Arten, kleine Spezies, schwache Spezies, Subspezies* and *geographische Rasse* in the descriptions proper justify the interpretation that Wolf in fact published the names concerned both at the subspecies and species levels, i.e. as so-called alternative names, which are all considered valid. The varietal combinations under both levels are likewise regarded as valid, since their final epithets are definitely associated with the names of the *kleine Spezies* in the *Alphabetisches Register*.

The peculiarities of Wolf's nomenclature may be essential for the correct authorship and selection of correct final epithets of infraspecific taxa. Therefore, all pairs of names at the species, subspecies and varietal levels concerned are listed below, with indication of the relevant page(s) in Wolf (1908) and the name used for each taxon in the AFE (taxa in square brackets are not members of the European flora).

[Pp. 87, 88, 707 *Potentilla speciosa* Willd. subsp. *oweriniana* (Rupr. *ex* Boiss.) T. Wolf; *P. oweriniana* Rupr. *ex* Boiss.; *P. speciosa* subsp. *oweriniana* var. *elata* (Sommier & Levier) T. Wolf; *P. oweriniana* var. *elata* (Sommier & Levier) T. Wolf]

P. 89 *Potentilla apennina* Ten. subsp. *deorum* (Boiss. & Heldr.) T. Wolf; *P. deorum* Boiss. & Heldr. (AFE: *P. deorum*)

P. 90 *Potentilla apennina* Ten. subsp. *kionaea* (Halácsy) T. Wolf, *comb. superfl.* (earlier published by Maire & Petitmengin, Matér. Étude Fl. Géogr. Bot. Orient. 2: 17. 1907.); *P. kionaea* Halácsy (AFE: *P. kionaea*)

[P. 187 *Potentilla pensylvanica* L. subsp. *glabrella* (Rydb.) T. Wolf; *Potentilla glabrella* Rydb.]

P. 325 *Potentilla pimpinelloides* L. subsp. *visianii* (Pančić) T. Wolf; *P. visianii* Pančić (AFE: *P. visianii*)

Pp. 356–358, 704 *Potentilla recta* L. subsp. *laciniosa* (Waldst. & Kit. *ex* Nestler) T. Wolf, *comb. superfl.* (earlier published by Nyman, Consp. Fl. Eur. 1: 224. 1878.); *P. laciniosa* Waldst. & Kit. *ex* Nestler (AFE: *P. recta* subsp. *laciniosa* (Waldst. & Kit. *ex* Nestler) Nyman); *P. recta* subsp. *laciniosa* var. *subsericea* (Griseb.) T. Wolf; *P. laciniosa* var. *subsericea* (Griseb.) T. Wolf (AFE: included in *P. pedata* Willd. *ex* Sprengel); *P. recta* subsp. *laciniosa* var. *samothracica* Degen *ex* T. Wolf; *P. laciniosa* var. *samothracica* Degen *ex* T. Wolf (AFE: *P. recta* subsp. *laciniosa*)

Pp. 358 and 359 *Potentilla recta* L. subsp. *transcaspia* T. Wolf; *P. transcaspia* T. Wolf (AFE: *P. transcaspia*)

[P. 372 *Potentilla hirta* L. subsp. *gilanica* T. Wolf (1906); *Potentilla gilanica* (T. Wolf) T. Wolf]

P. 373 *Potentilla hirta* L. subsp. *adriatica* (Murb.) T. Wolf; *P. adriatica* Murb. (AFE: *P. adriatica*)

[P. 496 *Potentilla millefolia* Rydb. subsp. *hickmanii* (Eastw.) T. Wolf; *P. hickmanii* Eastw.]

[Pp. 508, 509, 705 *Potentilla flabellifolia* Hooker *ex* Torrey & A. Gray subsp. *matsumurae* T. Wolf;

P. *matsumurae* T. Wolf; *P. flabellifolia* subsp. *matsumurae* var. *sublucida* T. Wolf; *P. matsumurae* var. *sublucida* T. Wolf]

P. 567 *Potentilla aurea* L. subsp. *ternata* (C. Koch) T. Wolf; *P. ternata* C. Koch (AFE: *P. aurea* subsp. *chrysocraspeda* (Lehm.) Nyman)

Pp. 573–575, 707 *Potentilla opaca* L. subsp. *opaciformis* T. Wolf; *P. opaciformis* T. Wolf; *P. opaca* subsp. *opaciformis* var. *umbellata* T. Wolf; *P. opaciformis* var. *umbellata* T. Wolf (AFE: *P. humifusa* Willd. *ex* Schlecht.)

P. 626 *Potentilla arenaria* Borkh. subsp. *tommasiniana* (F.W. Schultz) T. Wolf ("*P. arenaria* subsp. (oder var.) *tommasiniana* Th. W. Pot.-Stud. II. 53 (1903)" given as a synonym); *P. tommasiniana* F.W. Schultz (AFE: *P. tommasiniana*)

Pp. 631, 632, 713 *Potentilla cinerea* Chaix. *ex* Vill. subsp. *velutina* (Lehm.) T. Wolf, *comb. superfl.* (earlier published by Nyman, Consp. Fl. Eur. 1: 226. 1878.); *P. velutina* Lehm.; *P. cinerea* subsp. *velutina* var. *clementii* (Jordan) T. Wolf ("clementii"); *P. velutina* var. *clementii* (Jordan) Rouy & Camus (AFE: included in *P. cinerea* [*s. str.*])

[Pp. 639, 640, 701 *Potentilla fragarioides* L. subsp. *freyniana* (Bornm.) T. Wolf; *P. freyniana* Bornm.; *P. fragarioides* subsp. *freyniana* var. *grandiflora* T. Wolf; *P. freyniana* var. *grandiflora* T. Wolf]

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