

New combinations in the vascular flora of Finland, in the genera *Spinulum*, *Oxybasis* and *Potentilla*

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In the course of compiling an updated checklist of vascular plants of Finland, a few cases were revealed where nomenclatural changes proved necessary. Four new nomenclatural combinations are proposed: *Spinulum annotinum* (L.) A. Haines subsp. *alpestre* (Hartm.) Uotila (Lycopodiaceae), *Oxybasis salina* (Standl.) Uotila (Chenopodiaceae), *Potentilla neglecta* Baumg. var. *acutifida* (Markl.) Kurtto (Rosaceae) and *Potentilla neglecta* var. *decora* (Markl.) Kurtto (Rosaceae).

Introduction

A checklist of the vascular plants of Finland was published over 30 years ago (Kurtto & Lahti 1987). Later it was updated to some extent (indigenous plants, established aliens and most common casuals) in the Field Flora of Finland (most recent, 4th edition, Hämet-Ahti & al. 1998) and its updates (Hämet-Ahti & al. 2005a,b), as well as in the annually published Atlas of Finnish vascular plants (most recent version, Lampinen & Lahti 2018). In addition to the Floras and Atlas, the checklist is urgently needed for the *Finnish Biodiversity Information Facility* (FinBIF), maintained by the Finnish Museum of Natural History Luomus. Currently, an updated checklist of Finnish vascular plants, with all native and alien (naturalized and casual) plants, is under preparation. Several new nomenclatural combinations are required for the checklist, usually as a result of recently changed taxonomic insights.

Spinulum annotinum

Recently, an attempt at a consensus classification of lycophytes and ferns down to genus level has been proposed by The Pteridophyte Phylogeny Group (2016). This classification will be followed in the new checklist of Finnish plants. In the new classification a narrower generic concept is often adopted, which means, for instance, the splitting of the wide Linnaean genus *Lycopodium* into several small genera. The taxa with unbranched upright shoots were separated into a new genus *Spinulum* A. Haines. Only three species, the widespread *S. annotinum* (L.) A. Haines and *S. canadense* (Nessel) A. Haines, as well as the North-East Asiatic *S. subarcticum* (V. N. Vassil.) A. Haines were originally accepted (Haines 2003); recently a fourth taxon, *S. lioui* Li Bing Zhang & H. He from China, has been added (Chen & al. 2017). However, a wide hybrid zone occurs where *S. annotinum* and *S. canadense*

meet, and recently, the latter was not accepted but *S. annotinum* was treated collectively in Labrador and Newfoundland (Meades & Brouillet 2019).

The widespread Northern Hemisphere lycophytes, *Diphasiastrum complanatum* (L.) Holub, *Huperzia selago* (L.) Bernh. ex Schrank & Mart., *Lycopodium clavatum* L. and *Spinulum annotinum*, each have a more or less distinct south – north pattern of morphological variation, resulting in morphologically recognized northern races. They have been accepted taxonomically as varieties, subspecies or species; recently often as species (e.g., Haines 2011, Elven 2011+). In North Europe the distinctness of the variation differs between the genera, but all these taxa are connected to the corresponding southern races by frequent intermediates. Consequently, the races have been treated mostly as subspecies in North Europe (e.g., Kukkonen 2000) and the subspecies rank seems most appropriate pending further research. The new subspecific combination needed for the northern race of *S. annotinum* is proposed here.

Spinulum annotinum* (L.) A. Haines subsp. *alpestre* (Hartm.) Uotila, **comb. nov.*

- Basionym:** *Lycopodium annotinum* L. var. *alpestre* Hartm., Handb. Skand. Fl., ed. 2: 294. 1832. ≡ *Lycopodium annotinum* subsp. *alpestre* (Hartm.) Á. Löve & D. Löve in Nucleus (Calcutta) 1(1): 7. 1958.
- = *Lycopodium annotinum* var. *pungens* Bach. Pyl. ex Desv. in Mém. Soc. Linn. Paris 6(2): 182. 1827, nom. inval. ≡ *Lycopodium annotinum* var. *pungens* Desv. ex Spring in Nouv. Mém. Acad. Roy. Sci. Bruxelles 15 (Lyc. Monogr. pt. 1): 78. 1842. ≡ *Lycopodium pungens* (Desv. ex Spring) Iljin in Izvestiya Glavnogo Botanicheskogo Sada 22(2): 2. 1923. ≡ *Lycopodium annotinum* subsp. *pungens* (Desv. ex Spring) Hultén in Ark. Bot. n.s., 7(1): 7. 1968, comb. inval.
- = *Lycopodium canadense* Romhild ex Nessel, Bärlappgewächse 284. 1939, nom. inval. ≡ *Lycopodium canadense* Nessel in Rev. Sudam. Bot. 6: 169. 1940. ≡ *Spinulum canadense* (Nessel) A. Haines, Fam. Huperziac. Lycopodiaceae. New England: 86. 2003.

Oxybasis salina

Fuentes-Bazan & al. (2012) re-defined the Linnaean genus *Chenopodium* (Chenopodiaceae) and divided it into several segregate genera. The

genus *Oxybasis* Fuentes, Uotila & Borsch included five species, and after later transfers the number of accepted species has been raised to 11 (Sukhorukov & Uotila 2013, Sukhorukov 2014, Mosyakin & De Lange 2018). The most problematic taxon is *Oxybasis glauca*, which had been traditionally divided into several both morphologically and geographically quite well-defined races or species. Clemants & Mosyakin (2003) treated the North American taxon as *Chenopodium glaucum* var. *salinum* and Verloove (2013) transferred it to *Oxybasis* ‘for convenience’ as a variety, even though he pointed out its distinctness from var. *glauca*. However, later Mosyakin (2013) accepted the subspecific level, as proposed by Aellen (1929), and moved it to *Oxybasis*. Recently, Mosyakin & De Langhe (2018) elevated to species rank three of the taxa of the aggregate, earlier treated as subspecies, but they did not deal with *O. glauca* subsp. *salina*. Because of morphological differences and geographically relatively well-delimited areas in North America and fairly easily recognizable introduced plants in Europe, Uotila (2001, 2005) accepted specific rank for the North American member of the *Chenopodium glaucum* group in North European floras. Accordingly, the following new nomenclatural combination at species rank is proposed.

Oxybasis salina* (Standl.) Uotila, **comb. nov.*

- Basionym:** *Chenopodium salinum* Standl., N. Amer. Fl. 21/1: 29. 1916. ≡ *Chenopodium glaucum* L. subsp. *salinum* (Standl.) Aellen in Repert. Spec. Nov. Regni Veg. 26: 46. 1929. ≡ *Chenopodium glaucum* var. *salinum* (Standl.) B. Boivin in Canad. Field-Naturalist 65: 17. 1951. ≡ *Oxybasis glauca* (L.) S. Fuentes, Uotila & Borsch var. *salina* (Standl.) Verloove in New J. Bot. 3(1): 59. 2013. ≡ *Oxybasis glauca* subsp. *salina* (Standl.) Mosyakin in Phytoneuron 2013–56: 5. 2013.

Potentilla neglecta

The partly apomictic (pseudogamous) and polyploid so-called *Potentilla argentea* group is notorious for its extraordinary taxonomic difficulties. The group has been treated in widely divergent ways by different authors, ranging from the recognition of two or three distinct species possibly with few to many varieties or subspecies to the acceptance of numerous species or only a sin-

gle broadly circumscribed species (for details, see Kurtto & al. 2004). Gunnar Marklund, a Finnish botanist better known as an expert on the *Ranunculus auricomus* complex and *Taraxacum*, was among the first to consider the group to consist of three species, viz. the diploid ($2n = 14$) *Potentilla argentea* L. (s. str.), the hexaploid ($2n = 42$) "*P. impolita* Wahlenb." (= *P. neglecta* Baumg.) and *P. calabra* Ten. (Marklund 1933), of which the last-mentioned has since been shown also to be diploid. However, later he published (Marklund 1940) two new taxa ("Sippen") of the group at different ranks, viz. *P. impolita* subsp. *acutifida* and *P. decora*, of which he regarded the first-mentioned as closely related ("nahe verwandt") to *P. impolita* (sensu Markl.) and the latter as significantly more ("beträchtlich stärker") deviating from it.

In Norden, the *Potentilla argentea* group has recently been treated mainly in two ways. Pedersen & Schou (1997) and, following them, Hämet-Ahti & al. (1998), recognized six species in Norden, apparently following the narrow species concept generally applied in the likewise partly apomictic and polyploid *P. collina* group. For his part, Karlsson (1998) preferred to treat the same six taxa, including *P. neglecta* and its allies, as varieties of *P. argentea*. However, using combined analyses of amplified fragment length polymorphisms (AFLPs), chloroplast DNA sequences, and ploidy Paule & al. (2011) convincingly identified three main evolutionary lineages within the *Potentilla argentea* group. The molecular separation correlated perfectly with karyological differentiation and corresponds with the taxa originally proposed by Marklund (1933): diploid *P. argentea* s.str. and hexaploid *P. neglecta* (= *P. impolita* sensu Markl.). The two observed cytotypes were genetically distinct and appear to be reproductively isolated. Consequently, they are best treated as two distinct species, and the intraspecific variation may then be recognized, basically following Karlsson (1998), at the varietal rank, at least given the present far from complete state of knowledge of the distribution, ecology and even the number of meaningful races, "microtaxa" or apomictic cytotypes/lineages in the total range of the group. Accordingly, the following two new nomenclatural combinations are proposed.

Potentilla neglecta* Baumg. var. *acutifida
(Markl.) Kurtto, **comb. nov.**

Basionym: *Potentilla impolita* Wahlenb. subsp. *acutifida* Markl. in Memoranda Soc. Fauna Fl. Fenn. 16: 56. 1940. ≡ *Potentilla acutifida* (Markl.) A. Pedersen in Urt 21: 130. 1997. ≡ *Potentilla argentea* L. var. *acutifida* (Markl.) Karlsson in Svensk Bot. Tidskr. 91(5): 249. 1998 [1997 publ. 1998].

Potentilla neglecta* Baumg. var. *decora (Markl.)
Kurtto, **comb. nov.**

Basionym: *Potentilla decora* Markl. in Memoranda Soc. Fauna Fl. Fenn. 16: 55. 1940. ≡ *Potentilla argentea* L. var. *decora* (Markl.) Karlsson in Svensk Bot. Tidskr. 91(5): 249. 1998 [1997 publ. 1998].

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