

***Argentina* Hill, a genus distinct from *Potentilla* (Rosaceae)**

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Abstract: The *Argentina* group of the genus *Potentilla* is classified here as a distinct genus, supported by results of molecular studies, on the basis of an until recently unused morphological difference (ventral stipular auricles). Species of this group formerly included in *Potentilla* sect. *Anserina* are transferred to the separate genus *Argentina*.

Keywords: *Potentilla*, *Argentina*, transfer.

Introduction

The genus *Argentina* was separated from *Potentilla* already by HILL in 1756, but a proper justification for it was brought about as late as 1898 and 1908 by RYDBERG. RYDBERG (1908) based his generic classification of the tribe *Potentilleae* mainly on differences in the insertion of styles. *Potentilla* s. str. has subterminal styles, whereas *Argentina* has lateral ones. Later authors rarely accepted Rydberg's concept. The present author initially regarded the separation of *Argentina* as doubtful (SOJÁK 1989), later rejected it (SOJÁK 1994), accepted it (SOJÁK 2004) and finally raised the question once again (SOJÁK 2008). The reason is that the insertion of styles, the sole differential character between *Potentilla* s. str. and *Argentina*, can be difficult to observe in some species. Besides, over ten Asian species of the *Argentina* group have more or less subterminal styles.

Recently, the situation has changed. Any doubts were removed by the discovery of an until recently unused differential character as well as results of molecular studies.

Regarding morphological characters, it has turned out that the insertion of styles is not the only and principal difference between *Potentilla* and *Argentina*. The main difference is found in the stipules. *Potentilla* s. str. has lateral stipular auricles; *Argentina* has ventral ones. This difference is constant. Even though it is a conspicuous feature, stipular margins in some species of *Potentilla* s. str., which tend to have very wide auricles or a grooved petiolar base, are somewhat approximated (Fig. 1C). This can potentially confuse less experienced botanists. Even in such cases, however, a small gap is present between the insertion of both auricles (often with a dark swelling), while their bases are adjacent in members of the genus *Argentina*. Besides *Argentina*, ventral stipular auricles are also found in *Dasiphora* and *Fragaria*.

DOBEŠ & PAULE (2010), who studied 14 species of the subtribe *Fragariinae* together with more than 80 species of *Potentillinae* using molecular methods (chloroplast DNA), have found that the subtribe *Potentillinae* consists of two evolutionary branches. One comprises species of *Potentilla* s. str. as well as members of American genera *Ivesia* and *Horkelia*. The second branch includes *Potentilla anserina* L., *Potentilla leuconota* D. DON, *Piletophyllum micropetalum* (D. DON) SOJÁK and *Tylosperma lignosa* (WILLD. in D. F. K. SCHLTDL.) BOTSCH. These four species seem to be ill-sorted, but in fact they are not. The former two have ventral stipular auricles and lateral styles, thus being typical members of the *Argentina* group. Surprisingly, it has turned out that *Tylosperma lignosa* and its close relative *T. sericophylla* PARKER [both species formerly placed in *Potentilla* sect. *Xylorrhizae* (TH. WOLF) SCHIMAN-CZEIKA or into the separate genus *Tylosperma* BOTSCH.] have not only lateral styles but ventral stipular auricles as well. The same auricles and styles are also shared by *Piletophyllum micropetalum* s. l., alternately assigned to *Potentilla* and *Sibbaldia* in history. Both species mentioned need not inevitably be placed in separate genera (*Tylosperma*, *Piletophyllum*) and can be assigned to the genus *Argentina* despite their rather isolated position therein due to their articulate petiolar and scapal base or due to their flowers with 5 stamens. It appears that basal swellings or ventral appendages on achenes, on which these genera are based, are not necessarily as grave a difference as previously thought. The cladogram in Fig. 5 in DOBEŠ & PAULE (2010) shows very persuasively that *Argentina* (incl. *Tylosperma* and *Piletophyllum*) is isolated and generically distinct. On one branch of the tree there are 4 species of *Argentina*; on another there are 69 species of *Potentilla* s. str. and 4 species of the *Horkelia-Ivesia* group. The tree in Fig. 2 is similar, containing also several species of the *Horkelia/Ivesia* group.

The finding of DOBEŠ & PAULE (2010) concurs with the results of ERIKSSON et al. (2003:205). The latter authors have published a phylogeny of the *Rosoideae* concerning, besides members of the subtribe *Fragariinae*, also 14 species of *Potentillinae*. The cladogram shows two distinct evolutionary branches within the latter subtribe. One contains species of seven sections of *Potentilla* s. str. and two species of the *Horkelia-Ivesia* group. The other branch comprises *Potentilla anserina* L., *P. stenophylla* (FRANCHET) DIELS and *P. peduncularis* D. DON, that is, species of the *Argentina* group. The isolated position of the *Argentina* group in

their cladograms is less apparent than in DOBEŠ & PAULE (2010) because ERIKSSON et al. (2003) studied a smaller number of species from a larger number of tribes and subtribes.

It may be concluded that the morphological and phylogenetic method are in full agreement and that both support the acceptance of *Argentina* as a distinct genus.

According to a revision by the present author, *Argentina* comprises 64 species. Except the *A. anserina* complex they are all distributed in Asia (mainly in the Sino-Himalayan part) and on islands north of Australia. Only taxa of the *P. anserina* complex have been transferred to the genus *Argentina* so far. The remaining members of the genus are transferred to *Argentina* herein. The author studied the type specimens of 60 species classified herein as members of the genus *Argentina*, but has not seen the type specimen of *A. emodi*.

Argentina Hill

***A. achillea* (Soják) Soják, comb. nova**

bas. *Potentilla sumatrana* var. *achillea* Soják, Willdenowia 33: 414. 2003.

***A. adinophylla* (Merr. & L. M. Perry) Soják, comb. nova**

bas. *Potentilla adinophylla* Merr. & L. M. Perry, J. Arnold Arbor. 21: 190. 1940.

***A. archboldiana* (Merr. & L. M. Perry) Soják, comb. nova**

bas. *Potentilla archboldiana* Merr. & L. M. Perry, J. Arnold Arbor. 21: 185. 1940.

***A. aristata* (Soják) Soják, comb. nova**

bas. *Potentilla aristata* Soják, Candollea 43: 159. 1988.

***A. assimilis* (Soják) Soják, comb. nova**

bas. *Potentilla assimilis* Soják, Feddes Repert. 117: 488. 2006.

***A. baliemensis* (Danet) Soják, comb. nova**

bas. *Potentilla baliemensis* Danet, Bull. Mens. Soc. Bot. Lyon 72: 31. 2003.

***A. bidentula* (Soják) Soják, comb. nova**

bas. *Potentilla bidentula* Soják, Willdenowia 33: 409. 2003.

***A. biloba* (Danet) Soják, comb. nova**

bas. *Potentilla biloba* Danet, Adansonia, ser. 3, 25: 240. 2003.

***A. borneensis* (Stapf) Soják, comb. nova**

bas. *Potentilla leuconota* var. *borneensis* Stapf, Trans. Linn. Soc. London, Bot., 4: 146. 1894.

***A. brassii* (Merr. & L. M. Perry) Soják, comb. nova**

bas. *Potentilla brassii* Merr. & L. M. Perry, J. Arnold Arbor. 21: 185. 1940.

***A. cardotiana* (Hand.-Mazz.) Soják, comb. nova**

bas. *Potentilla cardotiana* Hand.-Mazz., Acta Horti Gothob. 13: 322. 1939.

***A. commutata* (Lehm.) Soják, comb. nova**

bas. *Potentilla commutata* Lehm., Nov. Stirp. Pug. 3: 16. 1831.

- A. curta (Soják) Soják, comb. nova**
bas. *Potentilla curta* Soják, Bot. Jahrb. Syst. 116: 50. 1994.
- A. decemjuga (Soják) Soják, comb. nova**
bas. *Potentilla decemjuga* Soják, Bot. Jahrb. Syst. 116: 43. 1994.
- A. emodi (H. Ikeda & H. Ohba) Soják, comb. nova**
bas. *Sibbaldia emodi* H. Ikeda & H. Ohba, J. Jap. Bot. 71: 188. 1996.
- A. fallens (Cardot) Soják, comb. nova**
bas. *Potentilla fallens* Cardot, Notul. Syst. (Paris) 3: 232. 1916.
- A. festiva (Soják) Soják, comb. nova**
bas. *Potentilla festiva* Soják, Candollea 43: 166. 1988.
- A. glabriuscula (T. T. Yü & C. L. Li) Soják, comb. nova**
bas. *Sibbaldia glabriuscula* T. T. Yü & C. L. Li, Acta Phytotax. Sin. 19: 516. 1981.
- A. gombalana (Hand.-Mazz.) Soják, comb. nova**
bas. *Potentilla gombalana* Hand.-Mazz., Acta Horti Gothob. 13: 324. 1939.
- A. gorokana (Kalkman) Soják, comb. nova**
bas. *Potentilla gorokana* Kalkman, Blumea 34: 155. 1989.
- A. habbemana (Merr. & L. M. Perry) Soják, comb. nova**
bas. *Potentilla habbemana* Merr. & L. M. Perry, J. Arnold Arbor. 21: 186. 1940.
- A. hooglandii (Kalkman) Soják, comb. nova**
bas. *Potentilla hooglandii* Kalkman, Blumea 16: 339. 1969.
- A. indivisa (Kalkman) Soják, comb. nova**
bas. *Potentilla indivisa* Kalkman, Blumea 34: 155. 1989.
- A. interrupta (T. T. Yü & C. L. Li) Soják, comb. nova**
bas. *Potentilla interrupta* T. T. Yü & C. L. Li, Acta Phytotax. Sin. 18: 8. 1980.
- A. irianensis (Kalkman) Soják, comb. nova**
bas. *Potentilla irianensis* Kalkman, Blumea 34: 156. 1989.
- A. kinabaluensis (Stapf) Soják, comb. nova**
bas. *Potentilla mooniana* var. *kinabaluensis* Stapf, Trans. Linn. Soc. London, ser. 2, 4: 146. 1894.
- A. leuconota (D. Don) Soják, comb. nova**
bas. *Potentilla leuconota* D. Don, Prodr. Fl. Nepal. 230. 1825.
- A. lignosa (Willd. in D.F.K. Schltl.) Soják, comb. nova**
bas. *Potentilla lignosa* Willd. in D.F.K. Schltl., Ges. Naturf. Freunde Berlin Mag. 7: 293. 1816.
- A. lineata (Trevir.) Soják, comb. nova**
bas. *Potentilla lineata* Trevir., Ind. Sem. Horto Bot. Wratislaw. 1822.
- A. linilaciniata (P. Royen) Soják, comb. nova**
bas. *Potentilla linilaciniata* P. Royen, Alpine Fl. New Guinea 4: 2455. 1983.
- A. luteopilosa (T. T. Yü & C. L. Li) Soják, comb. nova**
bas. *Potentilla luteopilosa* T. T. Yü & C. L. Li, Acta Phytotax. Sin. 18: 9. 1980.

- A. mangenii (Kalkman) Soják, comb. nova**
 bas. *Potentilla mangenii* Kalkman, Blumea 34: 158. 1989.
- A. micropetala (D. Don) Soják, comb. nova**
 bas. *Potentilla micropetala* D. Don, Prodr. Fl. Nepal. 231. 1825.
- A. microphylla (D. Don) Soják, comb. nova**
 bas. *Potentilla microphylla* D. Don, Prodr. Fl. Nepal. 231. 1825.
- A. mieheorum (Soják) Soják, comb. nova**
 bas. *Potentilla mieheorum* Soják, Bot. Jahrb. Syst. 116: 38. 1994.
- A. millefoliolata (Soják) Soják, comb. nova**
 bas. *Potentilla millefoliolata* Soják, Feddes Repert. 117: 490. 2006.
- A. oxyodonta (Soják) Soják, comb. nova**
 bas. *Potentilla oxyodonta* Soják, Candollea 43: 162. 1988.
- A. papuana (Focke) Soják, comb. nova**
 bas. *Potentilla papuana* Focke, Abh. Naturwiss. Vereine Bremen 13: 162. 1895.
- A. parvula (Stapf in Hook.) Soják, comb. nova**
 bas. *Potentilla parvula* Stapf in Hook., Ic. Pl., ser. 4, 3: t. 2294. 1894.
- A. peduncularis (D. Don) Soják, comb. nova**
 bas. *Potentilla peduncularis* D. Don, Prodr. Fl. Nepal. 230. 1825.
- A. philippinensis (Merr.) Soják, comb. nova**
 bas. *Potentilla philippinensis* Merr., Philipp. J. Sci. 29: 480. 1926.
- A. polyphylla (Wall. ex Lehm.) Soják, comb. nova**
 bas. *Potentilla polyphylla* Wall. ex Lehm., Nov. Stirp. Pug. 3: 13. 1831.
- A. pycnophylla (Soják) Soják, comb. nova**
 bas. *Potentilla pycnophylla* Soják, Willdenowia 33: 411. 2003.
- A. scorpionis (Soják) Soják, comb. nova**
 bas. *Potentilla scorpionis* Soják, Feddes Repert. 117: 487. 2006.
- A. sericophylla (Parker) Soják, comb. nova**
 bas. *Potentilla sericophylla* Parker, Bull. Misc. Inf. 1921: 217. 1921.
- A. shweliensis (H. R. Fletcher) Soják, comb. nova**
 bas. *Potentilla shweliensis* H. R. Fletcher, Notes Roy. Bot. Gard. Edinburgh 20: 215. 1950.
- A. simulans (Merr. & L. M. Perry) Soják, comb. nova**
 bas. *Potentilla simulans* Merr. & L. M. Perry, J. Arnold Arbor. 21: 187. 1940.
- A. smithiana (Hand.-Mazz.) Soják, comb. nova**
 bas. *Potentilla smithiana* Hand.-Mazz., Acta Horti Gothob. 13: 325. 1939.
- A. stenophylla (Franch.) Soják, comb. nova**
 bas. *Potentilla peduncularis* var. *stenophylla* Franch., Pl. Delavay. 3: 214. 1890.
- A. sumatrana (Soják) Soják, comb. nova**
 bas. *Potentilla sumatrana* Soják, Preslia 64: 221. 1993 ("1992").

A. taliensis (W. W. Sm.) Soják, comb. nova

bas. *Potentilla taliensis* W. W. Sm., Notes Roy. Bot. Gard. Edinburgh 8: 199. 1914.

A. tapetodes (Soják) Soják, comb. nova

bas. *Potentilla tapetodes* Soják, Čas. Nár. Muz., Odd. Přír. 152: 160. 1983.

A. taronensis (C. Y. Wu ex T. T. Yü & C. L. Li) Soják, comb. nova

bas. *Potentilla taronensis* C. Y. Wu ex T. T. Yü & C. L. Li, Acta Phytotax. Sin. 18: 9. 1980.

A. tatsienluensis (Th. Wolf) Soják, comb. nova

bas. *Potentilla tatsienluensis* Th. Wolf, Biblioth. Bot. 16 (71): 680. 1908.

A. tristis (Soják) Soják, comb. nova

bas. *Potentilla tristis* Soják, Preslia 63: 333. 1992 ("1991").

A. tugitakensis (Masam.) Soják, comb. nova

bas. *Potentilla tugitakensis* Masam., J. Soc. Trop. Agric. 4: 77. 1932.

A. turfosa (Hand.-Mazz.) Soják, comb. nova

bas. *Potentilla turfosa* Hand.-Mazz., Symb. Sin. 7: 518. 1933.

A. victorialis (Soják) Soják, comb. nova

bas. *Potentilla papuana* var. *victorialis* Soják, Willdenowia 33: 413. 2003.

A. vittata (Soják) Soják, comb. nova

bas. *Potentilla vittata* Soják, Candollea 43: 164. 1988.

A. wilhelminensis (P. Royen) Soják, comb. nova

bas. *Potentilla wilhelminensis* P. Royen, Alpine Fl. New Guinea 4: 2440. 1983.

A. yonoweana (Danet) Soják, comb. nova

bas. *Potentilla yonoweana* Danet, Adansonia, ser. 3, 25: 242. 2003.

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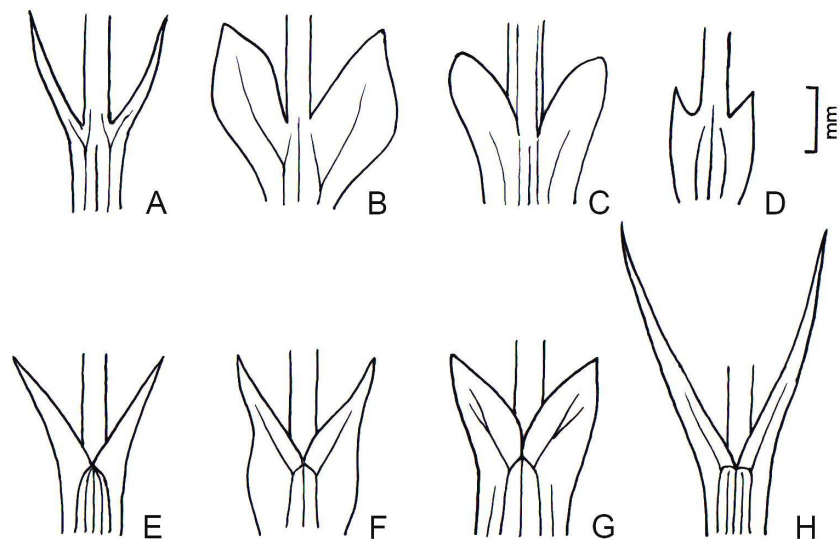


Fig. 1. Stipular auricles of basal leaves: A–D, lateral; E–H, ventral. A, *Potentilla incana* P. Gaertn., B. Mey. & Scherb.; B, *P. flabellata* Regel & Schmalh.; C, *P. matsumurae* Th. Wolf; D, *P. limprichtii* J. Krause; E, *Argentina tapetodes* (Soják) Soják; F, *A. peduncularis* (D. Don) Soják; G, *A. lignosa* (Willd.) Soják; H, *P. tatsienluensis* (Th. Wolf) Soják. The indumentum is not depicted.

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