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JIRÍ SOJÁK[1]

Argentina recognita (Rosaceae, Potentilleae), a new species from New Guinea, with a key to the species known from the island

Abstract

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A new species of *Argentina* from Mt Jaya in the Indonesian part of New Guinea is described, illustrated and compared with related species occurring on the island. It is characterised by having patent hairs on the rachides, almost rounded leaflets that are silvery or greyish green beneath, all stems terminated by flowers, and five stamens. An up-to-date identification key to all currently known *Argentina* species of New Guinea is provided.

Additional key words: *Potentilla*, taxonomy, Indonesia, Irian Jaya, Mt Jaya

The tribe *Potentilleae* of *Rosaceae* is represented in New Guinea by a single group of species, which is usually classified in *Potentilla* L., either as a section [*P.* sect. *Pentaphylloides* Tausch, *P.* sect. *Anserina* (Gaudin) Pfeiffer, *P.* sect. *Leptostylae* (Th. Wolf) Raja] or a subgenus [*P.* subg. *Chenopotentilla* (Focke) Juz.]. Rarely it is treated as member of a separate genus. The author of the present paper is convinced that it is appropriate to treat this group in a distinct genus under the name *Argentina* Hill, based on morphological differences corroborated by results of molecular phylogenetic analyses (Eriksson & al. 2003; Dobeš & Paule 2010, *Piletophyllum* (Soják) Soják and *Tylosperma* Botsch. are members of the genus *Argentina,* see Töpel & al. 2011). *Argentina* and *Potentilla* s.str. are morphologically clearly separated and not a single transitional species exists.

Argentina is characterised by ventral stipular auricles and lateral styles, whereas *Potentilla* s.str. has lateral stipular auricles and subterminal styles (Soják 2010).

So far, 23 species of *Argentina* have been found in New Guinea. Of these, 20 are endemic, i.e. 87 %, while the distribution of three species extends to Borneo, Sulawesi and the Philippines, respectively. Further 45 species of *Argentina* (as treated by the present author) are distributed in continental Asia from Pakistan to SE China and Vietnam, and southwards to Sri Lanka, Sumatra and Java. In other parts of the Old World and in America, only species of the *Argentina anserina* (L.) Rydb. complex can be found.

Argentina in New Guinea is very polymorphic, much more so than in any other part of the world, including the main evolutionary centre of the genus, which lies in the Sino-Himalayan region. The polymorphism manifests itself, for example, in the number, shape and indumentum of leaflets, stem length and the number of stamens. Some species have leaflets that are silvery beneath (the surface is not visible even under a magnifier); leaflets of other species are green or grey, glabrous or slightly hairy beneath (the surface is well visible under a magnifier). Some species have leaflets shaped as usual; in other species, however, the shape of leaflets is striking and unparallelled in continental species of *Argentina* (e.g. leaflets entire, 2–3-fid, bisect, palmatisect, etc.). Stems of some species are of usual size; in other species they are 1–2 cm or even only a few millimetres tall. The number of stamens varies, too. Nine New Guinean spe-

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cies have 5 stamens; three species have between 5 and 13 stamens. In eleven species, the number ranges from 10 to 20(–30).

Among herbarium material from New Guinea recently studied, plants were noticed by the author that are characterised by a patent indumentum of the rachides, abaxially silvery or greyish green leaflets combined with the absence of runners terminated by leaves and five stamens. No other *Argentina* from New Guinea possesses such a combination of characters, which justifies its recognition of a separate species.

Argentina recognita Soják, **sp. nov.**
Holotypus: Indonesia, Irian Jaya: Mount Jaya. Head of Carstensz Meadow, 4.05°S, 137.1°E, 22.8.1992, *H. A. Miller 23725* (MU; isotypus: K) – Fig. 1A–D.

Ab *Argentina yonoweana,* cui foliolorum forma convenit, species nova praesertim foliis 14–18-jugis, pilis rhachidum horizontaliter patentibus et staminibus 5 bene distinguitur. Ab *A. hooglandii,* quam vestitu rhachidum admonet, *A. recognita* praesertim foliolorum forma alia, caulibus brevioribus, semper floribus terminatis et staminibus 5 discrepat.

Caudex eramosus, 0.5–18 cm longus, crassus (saepe ± 1 cm in diam.), residuis stipularum cano-albide appresse pilosis dense obtectus. *Caules* decumbentes vel e basi arcuata ascendentes, (5–)8–17(–25) cm alti, foliis basalibus aequilongi, interdum paulo breviores vel longiores, ± 1–2-phylli (folia ea pinnata), 2–3(–6)-flori, pilis plerumque horizontaliter patentibus, flexuosis, longis et saepe item brevibus vestiti. *Rhaches* pilis rectis (1–)1.5–2(–2.5) mm longis, horizontaliter patentibus indutae. *Auriculae stipularum* omnino connatae. *Folia* matura (4–)8–15(–23) cm longa, 14–18-jugo-pinnata (in parte superiore interdum nonnulla foliolis interpositis parvis, 2–4 mm longis praedita). *Foliola foliorum maturorum in medio lateris* (5.5–)7–9(–15) × (5–)6–9(–13) mm magna, fere rotundata, marginibus non vel moderate tegentia, dentibus utrinque 4–6(–8), brevibus, saepe obtusis, supra pilis oblique patentibus mediocriter densiusculis tecta, subtus argentea vel cana (usque cano-viridula), pilis appressis (vel subappressis) dense vel densissime induta (superficies folioli infra indumentum sub lente non visibilis vel visibilis), nervis lateralibus plerumque insigniter prominentibus. *Foliola jugi summi* e basi truncata breviter [0.3–2(–3) mm], late decurrentia. *Episepala* lata, (2–)2.5 mm longa, interdum trifida. *Sepala* (2–)2.5 mm longa. *Petala* ± 3 mm longa. *Stamina* 5; filamenta (saltem inferne) dilatata, plana; antherae 0.4–0.5 mm longae. *Stylus* lateralis, 0.5–0.8 mm longus, basi attenuatus, deinde saepe aequicrassus, stigmate dilatato. *Nuculae* maturitate nigrae, glabrae, laeves, (0.9–)1–1.1(–1.4) mm longae; carpophorum crassum, patenter pilosum; receptaculum insigniter latum; calyx ad basin interdum cum bracteolis episepala immitativis. *Stock* unbranched. *Stems* (5–)8–17(–25) cm high, as long as or a little shorter or longer than basal leaves, with 1–2 leaves, 2–3(–6)-flowered. *Rachides* with horizontally patent hairs. *Stipular auricles* fused. *Adult leaves* (4–)8–15(–23) cm long, with 14–18 pairs of leaflets. *Leaflets in middle of leaf* 5.5–15 × 5–13 mm, almost rounded, with 4–6(–8) pairs of obtuse teeth, beneath silvery or greenish grey, with ± appressed, usually dense hairs. *Uppermost leaflet pair* 0.3–2(–3) mm decurrent. *Episepals* and *sepals* (2–)2.5 mm long. *Stamens* 5; filaments flat, dilated below. *Mature achenes* black, smooth.

Distribution. — Argentina recognita is known so far only from Mt Jaya in Irian Jaya, the Indonesian part of New Guinea.

Additional specimens examined. — Indonesia, Irian Jaya: Mount Jaya, Mimika Regency, PT-Freeport Indonesian Concession Area, W of Carstensz Meadow, 4°2'S, 137°6'E, 7.8.1998, *R. J. Johns 9527* (K); Mount Jaya, E of Carstensz Meadow, 4°3'S, 137°6'E, 4.8.1998, *M. J. S. Sands 7089* (K); Mount Jaya, 4.8.1998, *R. J. Johns 9462* (K); Mount Jaya, DOM, 19.3.1999, *P. Paradyatmika 10471A* (K).

Delimitation and affinities. — In 2003, Johns marked three herbarium sheets of *Argentina recognita* with revision labels with the name *P. hooglandii* Kalkm. and published them correspondingly (Johns & al. 2006). This is understandable, since according to the identification keys in Royen (1983) as well as in Flora Malesiana (Kalkman 1993) the material cannot otherwise be identified. *A. recognita* and *A. hooglandii* (Kalkm.) Soják share two taxonomically important features, the indumentum of the rachides and the indumentum of the leaflet underside. This combination of characters is not present in any other species from New Guinea. The differences between the two species are, however, significant: *A. recognita* has 5 stamens and stems terminated by a flower ('axis determinata'), while *A. hooglandii* has 10–12(–20) stamens, crawling stems (runners) that are usually terminated by a bud and a leaf ('axis indeterminata'), and its flowers tend to grow on lateral branches of the creeping main stem.

Argentina recognita is also somewhat similar to *A. yonoweana* (Danet) Soják. Both species share the same shape of the base of the uppermost pair of leaflets (shortly and broadly decurrent) and a somewhat similar shape of leaflets. They are separated by a different number of stamens, a different number of leaflet pairs and their teeth, and a different indumentum of the rachides and stems. A similar habit is also found in some forms of *A. papuana* (Focke) Soják, but their rachides are covered with appressed hairs and their flowers have 15–20 stamens.

Table 1 summarises the differential characters of species of *Argentina* in New Guinea with a very dense indumentum of the leaflet underside, except those with an unusual leaflet shapes, which preclude any confusion

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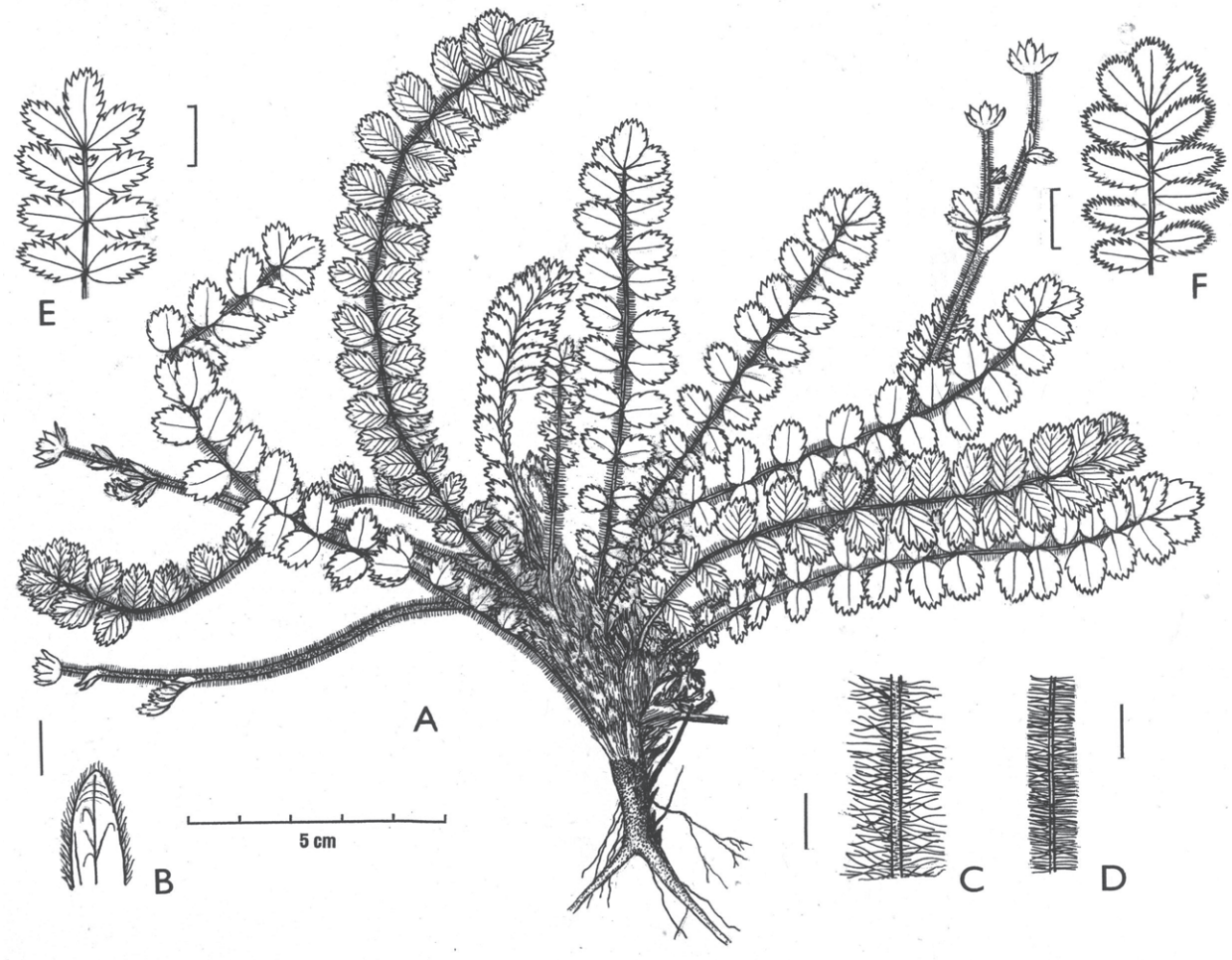


Fig. 1 A–D: *Argentina recognita* – habit (A); stipular auricle (B); indumentum of pedicel (C) and rachis (D); all after *Miller 23725*. – E–F: distal leaf portion of similar species – *A. papuana* (E), after *Hoogland & Pullen 5680; A. hooglandii* (F), after *Barker 66984*. – Scale bars: A = 5 cm, B = 5 mm, C = 2 mm, D = 4 mm, E–F = 1 cm.

with *A. recognita*. An up-to-date identification key to the currently known species of *Argentina* on New Guinea, also including all novelties published since Soják (1994), is given in the following.

Key to the species of *Argentina* in New Guinea

1. All or most lateral leaflets divided as far as the base into two separate, entire, unequal segments 2
– Lateral leaflets not divided to the base into two segments 3
2. Leaflet segments linear or linear-elliptic, acute, to 0.6 mm wide, all lateral leaflets divided, leaves with 1–8 pairs of leaflets ..... ***A. brassii*** (Merr. & L. M. Perry) Soják
– Leaflet segments broadly elliptic or ovate-elliptic, rounded at the tip, usually 0.7–0.9(–1.5) mm wide, some leaflets sometimes undivided, leaves sometimes with 8 or more pairs of leaflets ..... ***A. simulans*** (Merr. & L. M. Perry) Soják
3. Lateral leaflets palmatisect, divided up to their base ..... ***A. habbemana*** (Merr. & L. M. Perry) Soják
– Lateral leaflets not palmatisect 4
4. Terminal leaflet 2–3-fid 5
– Terminal leaflet with 5 or more incisions 12
5. Lateral leaflets all entire or some entire and some with a small lateral tooth 6
– Lateral leaflets all toothed 7
6. Leaves to 1 cm long, with 2–3 pairs of leaflets; stems 0.5–1.3 cm tall, cushion-like plant .... ***A. archboldiana*** (Merr. & L. M. Perry) Soják
– Leaves 9–10 cm long, with 10–12 pairs of leaflets; stems up to 16 cm tall, rosette plant .... ***A. indivisa*** (Kalkman) Soják
7. Leaflet underside green, surface visible through the indumentum 8
– Leaflet underside grey or white, ± densely sericeous, surface not visible through the indumentum ... 10
8. Leaves 0.5–1.5(–2) cm long, with 3–6 pairs of leaflets; stems 0.5–1(–1.5) cm tall; petals 2 mm long . ..... ***A. irianensis*** (Kalkman) Soják
– Leaves 2–10(–25) cm long, with 6–21 pairs of leaflets; stems 2–20(–38) cm tall; petals 5–11 mm long 9

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Table 1. Differential characters of *Argentina* species in New Guinea with usual leaf shape and a very dense indumentum of the leaflet underside.

	A. recognita	***A. yonoweana***	***A. papuana***	***A. pycnophylla***	***A. adinophylla***	***A. gorokana***	***A. wilhelminensis***	***A. mangenii***
Length of stem [cm]	(5–)8–17(–25) as long as basal leaves	(15–)20–30(–40) longer than basal leaves	3–20(–45?) longer than or as long as basal leaves	(4–15–30(–50) longer than basal leaves	4–12 longer than basal leaves	0.8–1.5(–3) much shorter than basal leaves	1–3 shorter than basal leaves	1–2
Length of adult leaves [cm]	(4–)8–15(–23)	(4.5–)8–12	3.5–15(–20)	(4–)10–25	3–6	5–11	3–8	1–2.5
Number of leaflet pairs	14–18	(7–)9–13	(5–)7–9(–10)	6–8(–11) (plus 4–10 small, interposed pairs)	12–18	14–18	12–18	4–5
Length of upper leaflets in addult leaves [cm]	(0.5–)0.7–0.9(–1.5)	0.5–1.3	(0.7–)1–2	1.3–2.6 (leaflets of first order)	(0.3–)0.4–0.5 (–0.8)	0.5–1	0.4–0.6	0.4–0.7
Number of tooth pairs (of leaflets in the middle of leaf)	4–6(–8)	1–4(–5)	5–8(–9)	8–16	3–8	(2–)3–4	(2–)3–4(–5)	1–3(–5)
Uppermost pair of leaflets	with truncate base shortly decurrent	sessile or shortly widely decurrent	not decurrent or very shortly decurrent	decurrent, rarely ± sessile	gradually long-decurrent	gradually long-decurrent	gradually long-decurrent	not decurrent or shortly widely decurrent
Number of flowers	2–3(–6)	4–15(–18)	2–3	1–10(–20)	1–2	1–4	1–4	1
Length of petals [mm]	unknown (3?)	3–5	5–8	5–7	unknown	5–7(–8)	3–3.5	3.5
Number of stamens	5	9–21	15–18(–20)	20–22(–25)	10–20	(7–)10–15	5	5

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9. Lateral leaflets 2-fid or mixed 2-fid and 3-fid . . . . . ***A. biloba*** (Danet) Soják
– Leaflets never 2-fid . . . . . ***A. parvula*** (Stapf) Soják
10(7). Stems 4–18-flowered, 15–30(–40) cm tall; leaflets with 1–4(–5) pairs of teeth . . . . . ***A. yonoweana*** (Danet) Soják
– Stems 1–2-flowered, 4–9 cm tall; leaflets 2–3-fid 11
11. Stolons present; all or at least lower lateral leaflets 2-fid . . . . . ***A. bidentula*** (Soják) Soják
– Stolons absent; all lateral leaflets 3-fid . . . . . ***A. scorpionis*** (Soják) Soják
12(4). Leaflets divided up to the midrib (i.e. their middle undivided part along the midrib only 0.2–0.4 mm wide) . . . . . ***A. linilaciniata*** (P. Royen) Soják
– Leaflets not divided to the midrib 13
13. Leaflet underside green, surface visible through the indumentum 14
– Leaflet underside grey or white, ± densely sericeous, surface not visible through the indumentum . . . 17
14. Carpels apically hairy; petals 8–10 mm long . . . . . ***A. balimiensis*** (Danet) Soják
– Carpels glabrous; petals 2–8 mm long 15
15. Surface of leaflet underside glabrous or only on veins hairy 16
– Surface of leaflet underside hairy in the range of the teeth but glabrous near the midrib . . . . . ***A. philippinensis*** (Merr. & L. M. Perry) Soják
16. Petals 2 mm long; leaves 0.5–1.5 cm long; stems to 1.5 cm tall . . . . . ***A. irianensis*** (Kalkman) Soják
– Petals more than 3 mm long; leaves 2–10(–25) cm long; stems 2.5–20(–38) cm tall . . . . . ***A. parvula*** (Stapf) Soják
17(13). Petioles and rachides with patent hairs . . . 18
– Petioles and rachides with appressed or ± erect hairs 19
18. Plant with prostrate stems (runners, terminating usually by leaf instead flower) bearing erect leaves and lateral flowering branches; stamens 10 or more . . . . . ***A. hooglandii*** (Kalkman) Soják
– Stems different, ± as long as the basal leaves; stamens 5 . . . . . ***A. recognita*** Soják
19. Stems distinctly longer than basal leaves 20
– Stems as long as or shorter than basal leaves . . 24
20. Leaflets deeply (to 2/3–3/4 towards the midrib) divided, middle undivided part along midrib only 1–2 mm wide . . . . . ***A. victorialis*** (Soják) Soják
– Leaflets with shallow incisions 21
21. Leaves in upper part of blade doubly interruptedly pinnate, leaflets with 8–16 pairs of incisions . . . . . ***A. pycnophylla*** (Soják) Soják
– Leaves not or simply interrupted, leaflets with (1–) 3–9 pairs of incisions 22
22. Stems 4–15(–18)-flowered; leaflets with 1–4(–5) pairs of teeth (in the same individual) . . . . . ***A. yonoweana*** (Danet) Soják
– Stems 1–3-flowered; leaflets with 3–9 pairs of incisions 23
23. Leaves with (5–)7–9(–10) pairs of leaflets, leaflets (0.7–)1–2 cm long, not or slightly crowded; episepals 3–6 mm long . . . . . ***A. papuana*** (Focke) Soják
– Leaves with 12–18 pairs of leaflets, leaflets (0.3–) 0.4–0.5(–0.8) cm long, strongly crowded, often folded; episepals 2–3.5 mm long . . . . . ***A. adinophylla*** (Merr. & L. M. Perry) Soják
24(19). Leaves with 4–5 pairs of leaflets . . . . . ***A. mangenii*** (Kalkman) Soják
– Leaves with 12–23 pairs of leaflets 25
25. Carpels apically hairy; petals 8–10 mm long . . . . . ***A. balimiensis*** (Danet) Soják
– Carpels glabrous; petals 3–7 mm long 26
26. Stamens 10–15; petals 5–7 mm long; leaves not densely hairy above . . . . . ***A. gorokana*** (Kalkman) Soják
– Stamens 5; petals 3–3.5 mm long; leaflets very densely hairy above . . . . . ***A. wilhelminensis*** (P. Royen) Soják

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