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# New species of *Baroniella* and *Pentopetia* (Apocynaceae) from Madagascar

Jens Klackenberg

## Abstract

KLACKENBERG, J. (2007). New species of *Baroniella* and *Pentopetia* (Apocynaceae) from Madagascar. *Candollea* 62: 231-236. In English, English and French abstracts.

Two new species in subfamily *Periplocoideae* of the *Apocynaceae*, *Baroniella linearifolia* Klack. and *Pentopetia astephana* Klack. from Madagascar, are described, illustrated and compared to related species.

## Key-words

APOCYNACEAE – PERIPLOCOIDEAE – *Baroniella* – *Pentopetia* – Madagascar – Taxonomy

## Résumé

KLACKENBERG, J. (2007). Nouvelles espèces des genres *Baroniella* et *Pentopetia* (Apocynaceae) de Madagascar. *Candollea* 62: 231-236. En anglais, résumés anglais et français.

Deux nouvelles espèces de la sous-famille *Periplocoideae* des *Apocynaceae*, *Baroniella linearifolia* Klack. et *Pentopetia astephana* Klack. de Madagascar, sont décrites, illustrées et comparées aux espèces affines.

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While preparing a treatment of subfamily *Periplocoideae* (*Apocynaceae*) for the “Flore de Madagascar et des Comores”, two new species were encountered among recently collected material from the herbaria of Missouri Botanical Garden and Conservatoire et Jardin botaniques de la Ville de Genève. These specimens proved to belong to *Baroniella* Costantin & Gallaud and *Pentopetia* Decne., respectively, both genera endemic to Madagascar, except for the single species *P. androsaemifolia* Decne., which is also known from the Comoros and the Seychelles.

*Baroniella* is a small genus of suffrutescent twiners with small dull red to violet flowers endemic to the eastern part of Madagascar. It is characterized by the pollen carriers being exposed on small knobs between the anthers, as well as by having an annular corolline corona with the largest lobes between the stamens, not opposite to them which is the usual state in *Periplocoideae*. *Baroniella* was monographed by KLACKENBERG (1997) with a phylogenetic analysis based on morphological as well as anatomical characters. Seven taxa were accepted in this revision. An additional species was described five years later (KLACKENBERG, 2002).

KLACKENBERG (1999) presented a taxonomic revision of *Pentopetia*. In contrast to the homogeneous *Baroniella*, the genus *Pentopetia* is more difficult to circumscribe, and is possibly not monophyletic as presently delimited. Most certainly, however, the new species described below belongs to the informal *P. albicans* species group within this genus, characterized by white to yellow flowers, usually long staminal filaments, corolla lobes with a longitudinal ridge or boss at the base, and by winged follicles (KLACKENBERG, 1999).

***Baroniella linearifolia* Klack., spec. nova** (Fig. 1)

**Typus:** MADAGASCAR. Prov. de Fianarantsoa: Fivondronana Farafangana, Fokontany Mahabo, Commune rurale Mahabo - Mananivo, 23°10'12"S, 047°41'54"E, 5.II.2001, Rabevohitra & Rabenantoandro 3803 (holo-: S!; iso-: MO, TEF).

*Species haec foliis angustis ad Baroniellam linearem accedens sed corolla minori, corollae tubo brevi, coronae lobis usque ad thecas productis et connectivo ultra loculus valde dilatato necnon ab ea recedens.*

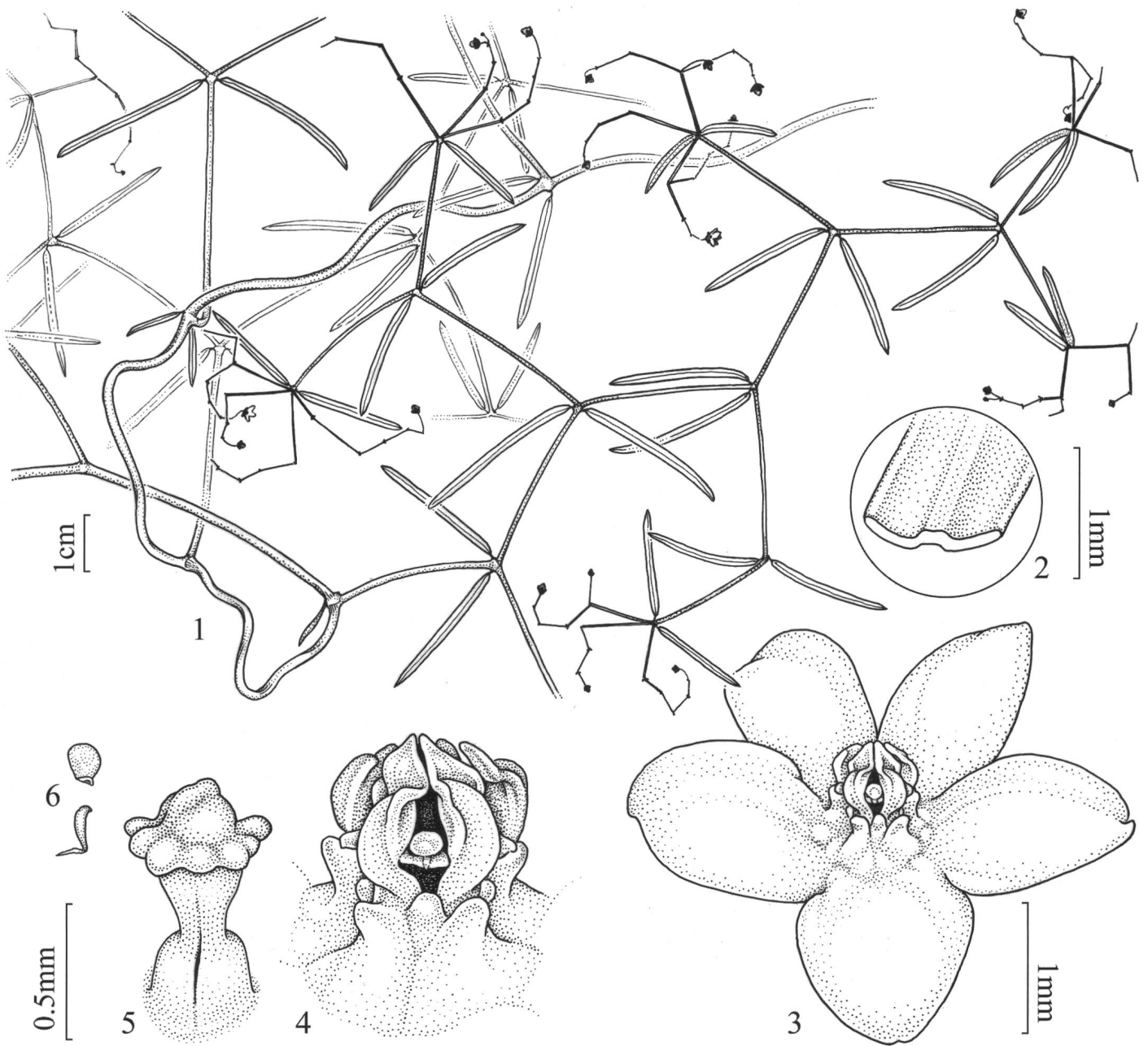
Suffrutescent glabrous twiner. *Leaves* herbaceous, decussate; blade 20-35 × 1-2 mm, linear, truncate to rounded with margins folded upwards at the very base, acute to shortly acuminate at the apex; venation with only the midrib visible, distinctly raised above, impressed below when dry; petiole 0.3-0.7 mm long. *Inflorescences* about as long as to longer than the adjacent leaves, 2-3.5 cm long; cyme di- and monochasially branched, with basal internodes 1-1.5 cm long, with 1 to few

flowers open at the same time; pedicels 1.3-2.7 mm long; bracts minute, <0.5 mm long. *Flowers* pentamerous, actinomorphic. Calyx lobes 0.7-0.9 × 0.7-0.9 mm, about as long as the corolla tube, broadly ovate, rounded at the apex; margin sometimes ciliate. Corolla rotate with the lobes fused for 1/3-1/4 of their length into a short tube, red; tube ca 0.6 mm long; lobes ca 1.6 × 1.4 mm, broadly elliptic, rounded at apex. Corona forming an undulating short ring at base; interstaminal lobes minute, <0.1 mm high, reaching about half way to style head; lobes opposite the staminal filaments distinct, reaching almost to the base of the thecae. Stamens forming a cone inserted at the mouth of the corolla tube; staminal cone ca 1 mm high; anthers ± elliptic, with much prolonged connectives above the thecae; filaments ca 0.2 mm long, filiform, slightly arched; prolongation of connectives about as long as the thecae. Pollen carriers ca 0.1 mm long; spoon obovate or almost rounded; stalk missing. Ovary semi-inferior, with numerous ovules. Styles 2, united below the style head, together with style head ca 0.5 mm long; style head thinly discoid, with 5 indistinct lobes opposite the anthers and 5 larger interstaminal lobes; lobes divaricate to slightly deflexed; upper part distinctly protruding. *Fruits and seeds* unknown.

*Distribution and habitat.* – *Baroniella linearifolia* is known only from the type collected in flower in February in the sub-littoral forest on sand near Farafangana at the Malagasy east coast.

*Baroniella linearifolia* is morphologically similar to *B. linearis* (Choux) Bullock, a species found in the moist montane forest between 800 and 1200 m altitude (KLACKENBERG, 1997). *Baroniella linearifolia* differs from this species, however, by having smaller flowers and shorter tube (ca 0.6 mm long versus >1 mm in *B. linearis*). The filaments are short and curved (versus 0.3-0.4 mm long ± straight) and the corona lobes reach almost to the thecae (versus less than halfway in *B. linearis*). The connective appendages are about as long as the thecae (versus less than half). The petal lobes are papillate inside.

In addition to *B. linearifolia*, two other species of the genus are found in the Malagasy eastern coastal forest, viz *B. campocarpoides* Costantin & Gallaud and *B. collaris* Klack. Both of these taxa have much broader elliptic or obovate leaves, as well as larger flowers, about 1 cm or more in diameter (versus linear leaves and flowers ca 0.5 cm in diameter in *B. linearifolia*).



**Fig. 1.** – *Baroniella linearifolia* Klack. **1.** Habit; **2.** Cross section of leaf; **3.** Flower; **4.** Gynostegium; **5.** Style head with style and portion of ovary; **6.** Pollen carriers. [Rabevohitra & Rabenantoandro 3803, S] [Drawn by Andrea Klintbjer, Stockholm]

***Pentopetia astephana* Klack., spec. nova** (Fig. 2)

**Typus:** MADAGASCAR. Prov. de Diego-Suarez/Antsiranana: Sous-préfecture de Vohemar, commune rurale de Daraina, forêt d'Ambohitsitondroina, 13°08'S, 49°27'E, 271 m, 9.I.2006, Nusbaumer & Ranirison LN 1877 (holo-: S!; iso-: G, MO, P, TAN).

*Species haec a Pentopetia androsaemifolia corona nulla, staminibus ad orem tubi corollae insertis, et stylo longistrorsum porcato differt, tubo corollae longo etiam dignoscenda; a P. ovalifolia differt corollae lobis angustioribus et carina corollae ad tubum destituta.*

Suffrutescent twiner 2 m high, youngest parts with short hairs, glabrescent. *Leaves* herbaceous, decussate; blade elliptic to ovate, 3–4 × 1.5–2 cm, cuneate to truncate at base, acute to acuminate at the apex, hairy on both sides, more densely so below and when young, pale below and darker above when dry but with a distinct pale and entire margin; venation pinnate, arched to looped, with veinlets finely reticulate below when dry, faint above; midrib impressed near base above when dry, midrib and primary veins raised below; petiole 5–7 mm long, hairy. *Inflorescences* short, extra-axillary, much shorter than adjacent leaves; cyme sessile with few and short internodes, 2–3 flowered; pedicels 6–8 mm long, shortly hairy; bracts linear, up to 1 mm long. *Flowers* pentamerous, actinomorphic. Calyx lobes triangular, 2–2.3 × 0.6–0.8 mm, acute at apex, about as long as the corolla tube, glabrous inside, with sparse hairs outside and along the margin, with colleters at each sinus. Corolla with lobes fused for ca 1/4 of their length into a tube, white; aestivation not seen; tube 1.7 mm long, with long straight hairs inside along 5 ridges below the stamens and at 5 pads inbetween the filaments just below the mouth, glabrous near base; lobes ca 5.2 × 1.4 mm, oblong, subacute at apex, hairy at the very base and with sparse shorter hairs along the margins, recurved. Staminal corona absent. Stamens forming a cone inserted at the mouth of the corolla tube slightly below the lobe sinuses, distinctly exserted; staminal cone 1.6 mm high, pale brown; filaments 0.5 mm long, filiform, slightly arched, hairy inside towards base; thecae 1.1 mm long, triangular, dorsally hairy, with slightly protruding flat connective. Pollen carriers 1 mm long; spoon elliptic, 0.5 mm long, recurved, truncate and notched at apex, tapering at base into a distinct stalk. Ovary semi-inferior, with numerous ovules. Styles 2, distinct, united only just below the style head, each with 3 longitudinal ridges, 1.3 mm long, glabrous; style head like a wrinkled hat. *Fruits and seeds* unknown.

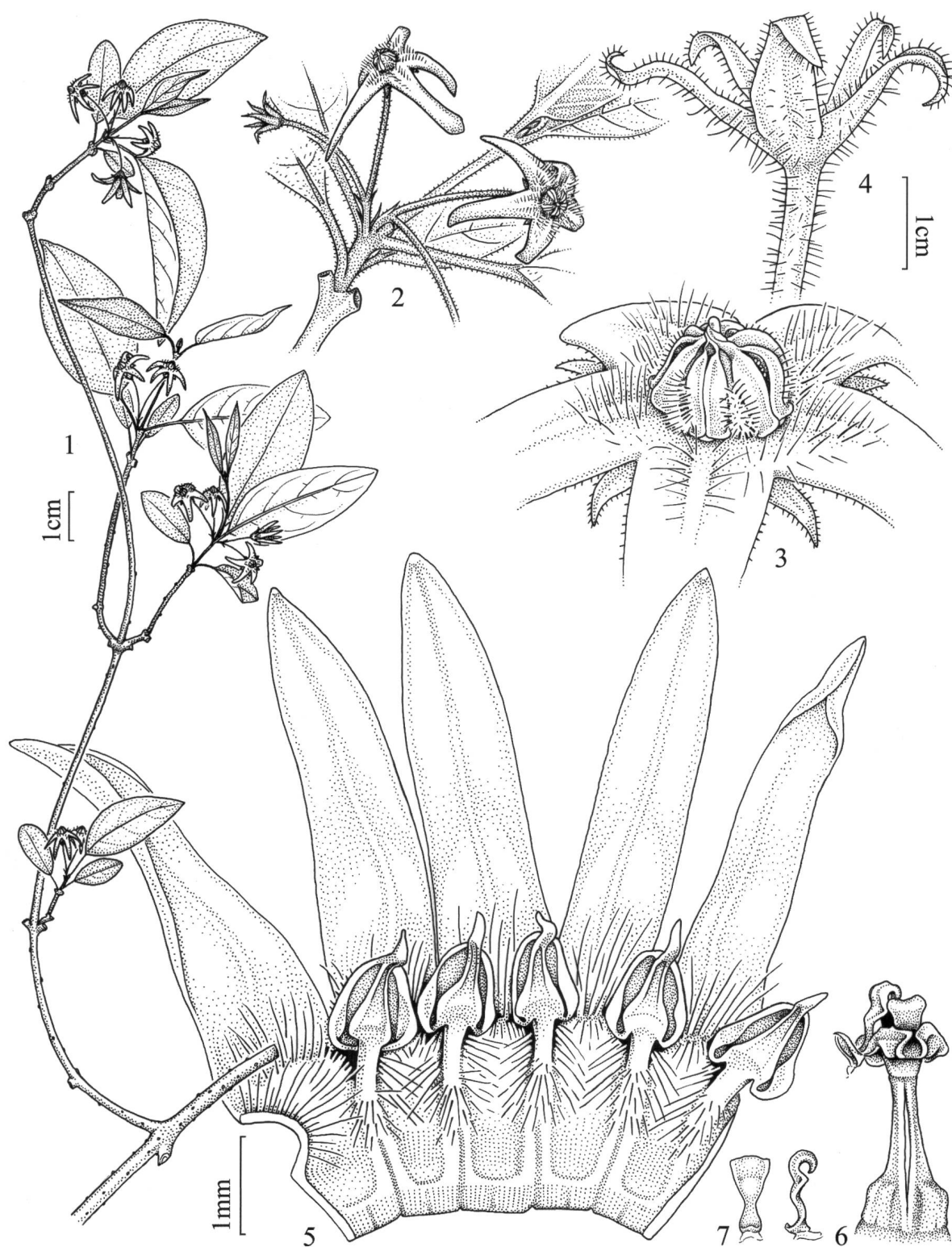
*Distribution and habitat.* – *Pentopetia astephana* is known only from the type locality at Daraina in the northeastern part of Madagascar, found in dense dry forest at about 270 m altitude. It was collected in flower in January.

*Pentopetia astephana* is characterized by its white corolla being distinctly hairy at mouth and with a relatively long tube, the missing staminal corona lobes, and by a broad anther cone that is exserted. These characters place *P. astephana* near *P. albicans* (Jum. & H. Perrier) Klack. and *P. ovalifolia* (Constantin & Gallaud) Klack. from the southwestern and western parts of Madagascar. Furthermore, the style and ovary are ridged as in *P. ovalifolia*, and thus it could be supposed that *P. astephana* has the same kind of ridged or winged follicles that are characteristic for *P. albicans* and *P. ovalifolia* (KLACKENBERG, 1999). This new species, however, differs from both these taxa by its narrower (almost 4 times as long as broad versus 2–3 times) and subacute corolla lobes that lack a subapical notch on the right (seen from inside) of the tip. The corolla tube is about as long as the calyx lobes, being shorter in *P. albicans* and *P. ovalifolia*. *Pentopetia astephana* is furnished with 5 distinctly hairy pads at the upper part of the corolla tube inside. In contrast, *P. albicans* and *P. ovalifolia* are characterized by having a keel or ridge at the corolla lobe bases running into the upper portion of the tube. In these species the tube is distinctly hairy on both sides of these ridges, although the ridge itself is glabrous.

*Pentopetia ecoronata* Klack. from the Toliara region also completely lacks staminal corona. *Pentopetia astephana*, however, is easily distinguished from this species by its longer tube (ca 2 mm versus 1 mm long in *P. ecoronata*) and by its hairy anthers and corolla mouth (versus glabrous). *Pentopetia androsaemifolia*, a species found in almost all areas of Madagascar, sometimes has longer tubes, rather short corona lobes and anthers hairy at the dorsal side. However, the corona lobes in *P. androsaemifolia*, although sometimes short, are always present and at least about as long as the anthers; it furthermore lacks the five hairy pads at the bases of the corolla lobes. The exserted stamens distinguish *P. astephana* from *P. urceolata* Klack., another species with a long corolla tube. In *P. urceolata* the anthers are at least partly included in the tube, and five filiform corona lobes are always present.

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**Fig. 2.** – *Pentopetia astephana* Klack. **1.** Habit; **2.** Inflorescence; **3.** Central part of flower; **4.** Calyx; **5.** Corolla from within; **6.** Style head with one pollen carrier in situ, style and portion of ovary; **7.** Pollen carriers.

[Nusbaumer & Ranirison LN 1877, S] [Drawn by Andrea Klintbjer, Stockholm]

