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Novelties in *Bakerella* (Loranthaceae) from Madagascar

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Abstract. Recently it became clear that at least some of the varieties and subspecies that are currently recognised in *Bakerella* Tiegh. (Loranthaceae) from Madagascar are better placed as species. In several cases these taxa were originally already described as species but not yet in *Bakerella*, so new combinations are needed. The first four new combinations are published here.

Keywords: *Bakerella*, endemic, Loranthaceae, Madagascar, mistletoe, taxonomy.

INTRODUCTION

On Madagascar there are currently only two genera of Loranthaceae recognized, *Bakerella* Tiegh. and *Socratina* Balle, both of which are endemic to the island (Callmänder 2014). *Bakerella* can easily be separated from *Socratina* by its glabrous branches and leaves and by its anthers that are longer than their filaments. Balle was the first to use *Bakerella* in its current circumscription (Balle 1964a & b); in the “Flore de Madagascar et des Comores” the genus includes 16 species (Balle 1964b). The key to the species in the “Flore” is not easy to use, and consequently many specimens collected after 1964 remained unidentified or are misidentified. With the emergence of digital cameras, many photos of flowering plants have been made on Madagascar. For *Bakerella* that is important news, when you know the often characteristic colour of the corolla it is much easier to recognize and separate most species. With these photos at hand a new attempt to identify the herbarium specimens of *Bakerella* was made as a start for a new revision of the genus. During this identification work it became clear that some of the varieties and subspecies that were used by Balle in 1964 are better recognised as species. In several cases these taxa were originally described as species but not yet in *Bakerella*, so new combinations are needed. A first selection of these nomenclatural novelties is published here. In the coming year more new combinations, and probably some new species, will be published.

MATERIAL AND METHODS

This publication is the result of a morphological study of the herbarium material kept at BR, K and WAG (Thiers, continuously updated). Online databases used to study scans of more herbarium material and photos of living plants were those facilitated by the Muséum national d'Histoire naturelle in Paris [<https://science.mnhn.fr>], Tropicos from Missouri Botanical Garden [<http://www.tropicos.org>], iNaturalist [<https://www.inaturalist.org/observations>], the African Plant Database [<https://africanplantdatabase.ch/>], Sweden's Virtual Herbarium [<http://herbarium.emg.umu.se>] and the JSTOR Global Plants website [<https://plants.jstor.org/>].

All cited specimens have been seen as a herbarium sheet, scan of a sheet or field photo. A sheet is seen in person when “!” is added to a cited herbarium specimen, in all other cases a detailed scan of a sheet from that herbarium is seen, or a field photo made for that institute.

TAXONOMIC TREATMENT

Bakerella alata (Balle) Jongkind, **comb. nov.** (Figures 1-3).

Bas.: *Bakerella poissonii* (Lecomte) Balle subsp. *poissonii* var. *alata* Balle, *Adansonia*, n.s., 4: 116. 1964a.

Type: Madagascar, Morondava, fl., *Greve 1* [holotype (P barcode P05097155 scan); isotypes K! (barcode K004552875, P barcode P05097154 scan)].

Short description

Leaf blade elliptic to narrowly obovate, 1.8-5 × 0.5-2 cm, with 1-5 just visible parallel veins ascending from base almost to the apex, apex rounded, petiole 3-6 mm. Inflorescences axillary, fascicles of a few or several flowers, pedicel c. 2 mm long. Calyx c. 1 mm long, membranous, collar-shaped, easily falling apart. Corolla 2.5-3.7 cm long, clearly narrowly winged (most easily visible in the upper part of the mature bud), yellow to orange-red, base inflated, lobes slightly reflexed at anthesis. Anthers 4.5-5 mm long.

Comments

Bakerella alata and *B. parvibracteata* were included by Balle (1964a & b) in *B. poissonii* because they all share the same kind of membranous, collar-shaped, calyx, that easily falls apart. The three species have different distributions without overlap (Fig. 3). *B. poissonii*



Figure 1. Flowers of *Bakerella alata* (Balle) Jongkind. (by Ulf Swenson after Swenson 1809).



Figure 2. Flowers of *Bakerella alata* (Balle) Jongkind. (by Christopher Davidson after Rogers 860).

(s.s.) has a pinkish corolla tube, often a bit lilac, while the other two have a bright yellow and/to orange-red corolla. Balle had seen only two specimens of *B. alata* (*B. poissonii* var. *alata*) and from one of those, Humbert 28787, she was not sure it was really this taxon. Today we have more specimens and we also can see the striking colour of the corolla on several photos.

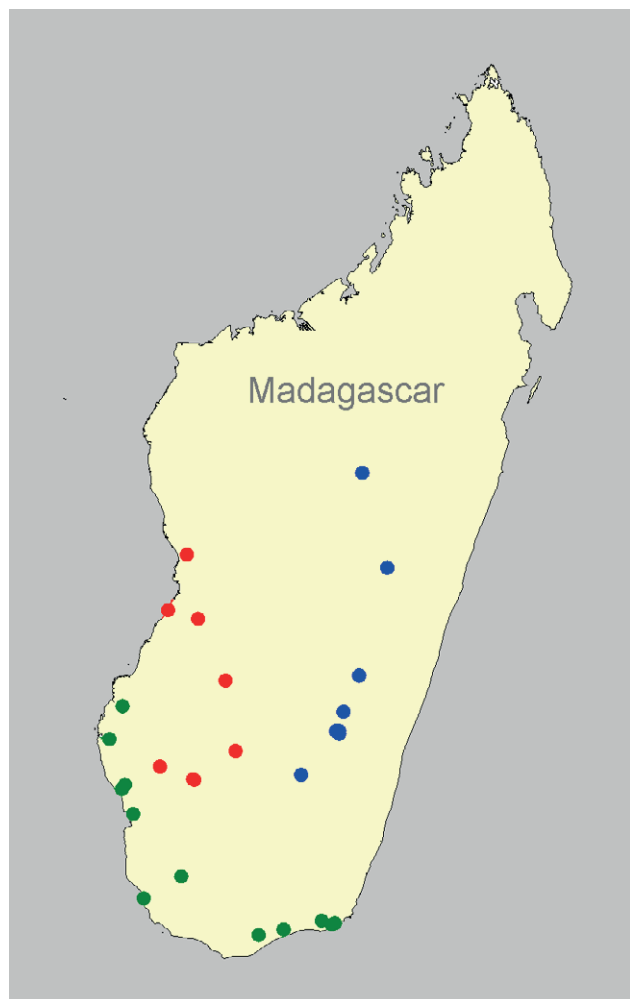


Figure 3. Distribution map. *B. alata* (Balle) Jongkind (red dots). *B. parvibracteata* (Lecomte) Jongkind (blue dots). *B. poissonii* (Lecomte) Balle (green dots).

Other specimens studied

MADAGASCAR. c 36 km NE of Belo sur Tsiribihina, c. 40 m, 31 Mar 1990, fl., *Du Puy* 815 (BR!, K!, P scan); W de Ranohira, Hte vallée de la Malio, 1955, fl., *Humbert* 28787 (P scan); Mahabo, Dabara, 1 km S of the bridge, 98 m, 18 Jun 2016, fl., *Onjalalaina* 1153 (P scan); Beronono-Makay, 395 m, 14 Jan 2010, fl., *Rakotovao* 5083 (P scan); Forêt d'Analavelona, Campement Antanimena, 1093 m, 19 Apr 2012, fl., *Razanatsima* 1043 (P scan); Ambakitany Forest, N of National Route #7, 800-830 m, 13 Jan 2006, fl., *Rogers* 860 (MO photos, P scan); Zombitsy-Vohibasia National Park, eastern forest edge, north of the road, 800 m, 25 Jan 2018, fl., *Swenson* 1809 (P scan, S photos).

***Bakerella amplifolia* (Balle) Jongkind, **comb. nov.** (Figures 4-6).**

Bas.: *Bakerella clavata* (Desr.) Balle subsp. *clavata* var. *amplifolia* Balle, *Adansonia*, n. s., 4: 110 1964a.

(–) *Loranthus amplifolius* Lecomte, *Notul. Syst. (Paris)* 4: 39. 1923, *nom. illegit.* [not *Loranthus amplifolius* Merr., *Philipp. J. Sci.*, C 13: 277 (1918)].

Type: Madagascar, Tsaratanana, 2000 m, Oct 1912, fl., *Perrier de la Bâthie* 10701 [holotype P (barcode P00752520), isotype P (barcode P00752519, scans)].

Short description

Leaf blade 7-18 × 5.5-8.5 cm, coriaceous, most leaves gradually narrowing to an acute apex, venation pinnate, secondary veins ascending from their base, petiole 0–1.5 cm long. Inflorescence one, or a few together, in the axil of a leaf, almost sessile, single flowered or in an umbel with 2-4 flowers. Calyx 1.5-2 mm long. Corolla 4-4.5 cm long, slightly carnose, never inflated at base, mature bud reddish at the base changing to pale dull yellowish higher up, later completely pink-red, lobes 7-8 mm long, slightly reflexed. Anthers c. 3 mm long.



Figure 4. Inflorescence of *Bakerella amplifolia* (Balle) Jongkind. (by Louis Nusbaumer after Nusbaumer 5111 (G)).



Figure 5. Flowers of *Bakerella amplifolia* (Balle) Jongkind. (by Louis Nusbaumer after Nusbaumer 5111 (G)).



Figure 6. New leaves of *Bakerella amplifolia* (Balle) Jongkind. (by Louis Nusbaumer after Nusbaumer 5111 (G)).

Comments

All other taxa included by Balle in *B. clavata* have in common that every plant has the majority of its flowers in two flowered umbels. *Bakerella amplifolia* (as *B. clavata* var. *amplifolia*) is an exception with 1 - 4 flowers in one inflorescence. Balle did not explain why she includ-

ed this former species in *B. clavata*. With its slightly car-nose corolla, and umbels with more than 2 flowers, *B. amplifolia* shares characters with *B. grisea* (Scott Elliot) Balle. *B. amplifolia* differs from *B. grisea* by its reddish and pale dull yellowish corolla, versus a corolla that is mainly bright yellow and orange. The corolla of *B. grisea* is also more car-nose.

Bakerella amplifolia is only known from forests in the north of Madagascar between 880-2000 m elevation.

Other specimens studied

MADAGASCAR. Tsaratanana Massif, southern slopes, Ampanopia, 882 m, 30 Oct 2000, fl., *Antilahime-na* 629 (K!, P scan); Forêt de Sorata, 1410 m, 8 Feb 2022, fr., *Havinga & Iharivolana* 255 (BR!, G photo); Massif du Tsaratanana et Haute Vallée de Sambirano, 1400-1800 m, Nov-Dec 1937, fl., *Humbert* 18228 (P scan); idem, c. 2000 m, *Humbert* 18618 (P scan); Forêt de Sorata, 1410 m, 12 Dec 2021, fl., *Nusbaumer et al.* 5111 (BR!, G pho-tos); Tsaratanana, c. 2000 m, Dec 1922, fr., *Perrier de la Bâthie* 15573 (P scan).

Bakerella marojezensis (Balle) Jongkind, **comb. nov.** (Figures 7, 8).

Bas.: *Bakerella viguieri* (Lecomte) Balle var. *marojezensis* Balle, *Adansonia*, n.s., 4: 117. 1964a.

Type: Madagascar, Pentes orientales de Massif de Marojey, à l'ouest de la rivière Manantenina, 1400 m, 15-25 Dec 1948, fl., *Humbert* 22499 [holotype P (barcode P05066487, scan)].

Short description

Leaf blades very variable (4-18 × 1.5-11 cm), especially between individual plants, apex always acute to acuminate, secondary venation pinnate, usually spreading (not strongly ascending) and midrib raised above and below. Inflorescences usually with a single flower on a short peduncle, with one or more in a leaf axil, often with many together on the old wood. Corolla strongly angular in cross section to slightly winged especially near the top, in bud lower part pinkish, the upper part greenish-yellow, in open flower often completely red and usually clearly inflated at the base and around the middle.

Comments

Bakerella marojezensis is only found in the north of Madagascar in forests at c. 700 – 1500 m elevation. According to Balle, *B. marojezensis* (*B. viguieri* var. *maro-*



Figure 7. *Bakerella marojejensis* (Balle) Jongkind. Flowers and part of leaf showing the raised midrib. (by Charles Rakotovao (Tropicos) after Rakotovao 2683).

jejensis) occurs in the “montagnes du Centre-Nord” and “le Centre moyen” of Madagascar (Balle 1964a) but she cited only one specimen from the south, Humbert 3608 (Haute vallée de la Rienana, bassin du Matitanana), and that one does not belong to this species.

Balle separated *Bakerella vigueiri* (Lecomte) Balle, with its two varieties *vigueiri* and *marojejensis*, from related species by its uniflorous umbels or, in other words, with every single flower on its own (short) peduncle separated by an articulation. Apart from this shared character, the two varieties are conspicuously different in leaves and flowers. The corolla of *B. marojejensis* is strongly angular to narrowly winged from base to top, that of *B. vigueiri* is almost circular in cross-section. The leaves of *B. marojejensis* have an acute or sometimes acuminate apex, a spreading pinnate venation and a raised midrib, whilst the leaves of *B. vigueiri* have a rounded apex, a less conspicuous pinnate venation with ascending secondary veins and a flat or channelled midrib.

Selection of specimens studied

MADAGASCAR. Ambatoledama, Jun 2003, fl., *Antilahimena* 2034 (P scan); Anjanaharibe-Sud Special Reserve, 1520 m, 19/20 May 1999, fl., *Birkinshaw* 594 (P scan); Montagne de Ambosoratra, 3 Jan 1949, fl., *Cours* 3274 (P scan); Marojejy RNI no. 12, path from Mandena to the summit of Marojejy, 1000-1300 m, 29 Sep 1994, fl., *Lewis* 1145 (P scan, WAG!); along trail from Andranomadio to Tsaratanana peak, 2500 m, 18 Oct 2001, fl., *Lowry* 5404 (K!); Parc National de Marojejy,



Figure 8. *Bakerella marojejensis* (Balle) Jongkind. Flowering on the leafless stem or branch. (by Éric Mathieu (Marojejy, Oct 2007)).

11 km NW du village Manantenina, 14°26.2'S 49°44.5'E, 1200 m, 31 Oct 1996, fl., *Messmer* 297 (P scan); along the trail to the summit of Marojejy Est, 700-850 m, 10 Feb 1989, fl., *Miller* 3901 (K!, MO photo, WAG!); 3,32 km E du sommet de Marojejy, 16 Feb 2014, fl., *Onjalalaina* 279 (K!); à 1,5 Km Est du village de Marovato, 710 m, 16 Feb 2006, fl., *Rakotovao* 2683 (MO photo, P scan); à 10 km au Nord-Ouest d'Andranopositra, 1159 m, 18 Nov 2006, fl., *Rakotovao* 3431 (P scan); c. 13 Km à l'Ouest du village d'Andranopositra, 1429 m, 7 Nov 2006, fl., *Ravelonarivo* 1990 (P scan); forêt de Sorata, 1394 m, 1 Oct 2007, fl., *Razakamalala* 3639 (K!, P scan).

***Bakerella parvibracteata* (Lecomte) Jongkind, comb. nov.** (Figures 3, 9).

Bas.: *Loranthus parvibracteatus* Lecomte, Notul. Syst. (Paris) 4: 40. 1923.

Type: Madagascar, Analamananara, 1300 m, Jun 1919, fl., *Perrier de la Bâthie* 12672 [holotype P (barcode P00752422), isotypes P (barcodes P04978506, P04978505, scans)].



Figure 9. *Bakerella parvibracteata* (Lecomte) Jongkind. Flowers and leaves. (By Guy Eric Onjalalaina (Analamanga, Dec 2016)).

Syn.: *Bakerella poissonii* (Lecomte) Balle subsp. *parvibracteata* (Lecomte) Balle, *Adansonia*, n. s., 4: 116. 1964a.

Short description

Leaf blade narrowly obovate, 2.5×0.5 –2 cm, with 1–5 merely visible parallel veins ascending from base almost to the apex, apex rounded, petiole 2–5 mm. Inflorescences axillary, fascicles of a few or several flowers, pedicel c. 2 mm long. Calyx 1.5–2 mm long, membranous, collar-shaped, easily falling apart, sometimes a part left as a small cup on the top of the growing corolla bud. Corolla 2.2–3 cm long, smooth (not winged), first yellow to orange-red, later orange-red to dark red, base inflated, lobes slightly reflexed at anthesis. Anthers 3–5 mm long.

Comments

Bakerella parvibracteata resembles *B. alata* by its flower colour, but its calyx is longer and the corolla is not winged. It is found in forests between 1250 and 2200 m elevation from Ambohitantely in the north to Andringitra in the south.

Other specimens studied

MADAGASCAR. P.K. 376 on Route #7, 34 km N of Fianarantsoa, 1250–1260 m, 31 Jan 1975, fl., *Croat* 30145

(K!, P scan, WAG!); Ambohitantely, 12 Mar 1930, fl., *Decary* 7437 (P scan); Andringitra, 2200 m, Jun 1965, fl., *Morat* 1306 (P scan); Tsinjoarivo, 1400 m, Feb 1925, fl., *Perrier de la Bâthie* 16939 (P scan); S de l'hameau Maharoaka, dans la Réserve Naturelle Intégrale Andringitra, Marositry, 1650 m, 8 Apr 1997, fl., *Rakotovo* 808 (K!, P scan); Andringitra, Belampo, 12 Feb 2007, fl., *Ranarivelo* 474 (K!, P scan); Ambalavao, 5 Jun 1951, fl., *Razafimdrakoto* 3056 (P scan); Andringitra National Park, 1787 m, 25 May 2004, fl., *Rogers* 646 (P scan); Réserve Intégrale Andringitra, c 5 km SE of Antanifotsy, 1500 m, 24 Mar 1989, fl., *Schatz* 2672 (K!, P scan, WAG!).

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