



Pilea brasiliensis: a new species of *Pilea* (Urticaceae) from Central Brazil

A.L. GAGLIOTTI¹, S. ROMANIUC¹ & A.K. MONRO²

¹Instituto de Botânica, CP 3005, 01031-970, São Paulo, SP, Brazil, E-mail: agagliotti@gmail.com, sromaniuc@gmail.com

²Departement of Botany, The Natural History Museum, London, SW75 BD, United Kingdom, E-mail: alm@nhm.ac.uk

Abstract

During the course of floristic studies on Urticaceae in Distrito Federal, Brazil, we encountered a species of *Pilea* that was not described until now. *Pilea brasiliensis* is here described and illustrated, its affinities are discussed and its position in Weddell & Killip's subdivisions of the genus is indicated. A Conservation Assessment determines *P. brasiliensis* to be Critically Endangered (CE) with the possibility that it may be Extinct in the Wild (EW).

Key words: Critically Endangered, *Elatostemateae*, *Fallaces*, Species Conservation Assessment, systematics, taxonomy

Introduction

Pilea currently includes between 600–715 taxa (Adams 1970, Burger 1977, Monro 2004, 2006) and is probably the largest genus in Urticaceae. It is distributed throughout the tropics, subtropics and warm temperate regions (with the exception of Australia and New Zealand). *Pilea* is easily distinguished from other Neotropical Urticaceae by the combination of opposite leaves and ligulate intrapetiolar stipules in each leaf axil. Most of the species are small herbs, many of which are facultatively epiphytic or epipetric.

The genus was first described by Lindley (1821), and subsequently Weddell (1869) recognized 159 species, which he classified into three groups: *Integrifoliae*, *Heterophyllae* and *Dentatae*, based on leaf isomorphy and margin morphology. Killip (1936) subdivided *Pilea* into 12 groups based largely on Weddell's (1856, 1869) studies. Currently the genus is being studied by A.K. Monro (1999, 2000, 2001, 2004, 2006, 2009). In 2006, Monro proposed a phylogenetic framework for the strategic revision of *Pilea* (Urticaceae) based on *cpDNA*, *nrDNA*, and morphology. As part of Monro's studies, a survey of neotropical *Pilea* was carried out. During the course of Urticaceae floristic studies in Distrito Federal, Brazil, a new species of *Pilea* was recognised among herbarium specimens. The specimens were only identified to the genus level. The affinities of this species are discussed and its subgeneric placement following classifications of Weddell (1869) and Killip (1936) is indicated.

Material and method

Approximately 1200 specimens of *Pilea* were studied, including type material, from the following herbaria: BOTU, ESA, GUA, HEPH, HRCB, IAC, IBGE, INPA, P, PMSP, RB, SP, SPF, SPSF, UB, UEC and UPCB. The localities where specimens of our new species were found (four in total) were surveyed to assess the conservation status of the new taxon.

Taxonomy

Pilea brasiliensis Gaglioti, Romaniuc & A.K. Monro, *sp. nov.* (Fig. 1)

A Pilea lippoides similis, sed foliis et petiolis eadem node aequalis aut subaequales longitudine, inflorescentiis staminalibus in panicula, seminibus minoribus, differt.

Type:—BRAZIL. Distrito Federal: Rio Maranhão, Via DF-2 Fazenda Maranhão, 27 February 1979, *Heringer et al. 1039* (holotype IBGE!, isotype UEC!).

Perennial herb to 30 cm, terrestrial, epipetric, monoecious. *Stem* erect, sparsely branched to unbranched, drying brown-green to grey-green, glabrous; cystoliths elliptic; rooting at the base; internodes 8–45 mm, woody stems striate, hollow at 5 mm in diameter. *Stipules* persistent, 0.8–1.5 × 0.5–1.0 mm, deltate, drying brown-green, membranous, base triangular, apex obtuse. *Leaves* petiolate, petiole 4–30 mm, of equal or subequal length at the same node, glabrous; laminas of leaves equal or subequal at the same node, 15–55 × 1.5–40.0 mm, ovate to narrowly ovate, elliptic, smaller leaves, 4–10 × 4–8, frequently deltoid to suborbicular, membranous to chartaceous; upper surface drying dark green, green to yellowish green and often translucent, glabrous, lower surface drying dark green, green to yellowish green and often translucent, glabrous, cystoliths fusiform, occasionally appearing V- or Y-shaped, scattered; primary venation pinnate, secondary veins 4–11 pairs, 55°–75° to the midrib, weakly curved to curved; base obtuse to rounded; margin serrate or entire; apex acute. *Inflorescences* 4–12 per stem, unisexual, peduncular bracts 0.8–1.2 mm, narrowly ovate. *Staminate inflorescences* 1 or 2 per axil, 6–24 mm, bearing 6–28 flowers in an asymmetrical panicle; peduncle ¼–½ of the inflorescence length, glabrous; flowers 1.2–2.5 mm immediately prior to anthesis, drying cream, apically green; pedicels 0.8–1.2 mm, glabrous; tepals 4, 1.5–2.8 mm, glabrous, the subapical appendage 0.5 mm, corniculate. *Pistillate inflorescences* 1 or 2 per axil, 5–25 mm, bearing 22–85 flowers in an asymmetrical panicle, ¼–½ of the inflorescence length, glabrous; pedicels 0.25–0.5 mm, glabrous; tepals 3, unequal, dorsal tepal 0.5–1.0 mm, oblong, lateral tepals 0.25–0.5 mm, narrowly ovate. Infructescences 10–35 mm, tepals persistent; achenes 0.75–1.00 × 0.50–0.75 mm, compressed, narrowly ovoid to elliptic, greenish brown, glabrous.

Distribution:—Central Brazil. Distrito Federal, Mato Grosso, Minas Gerais and Goiás. Using Google Earth (accessed 13 June 2011) we calculated an Extent of Occurrence of ca 52,000 km², at 400 to 1200 m in semi-deciduous forest on limestone outcrops.

Etymology:—Named for the country in which the species is known to occur.

Additional specimens examined:—BRAZIL. Distrito Federal: Brasília, Rio Maranhão, Via DF-2 Fazenda Maranhão, 15°37'20"S, 47°40'38"W, fl. ♂ ♀, 27 February 1979, *Heringer et al. 1039* (IBGE, UEC); Catetinho, 15°56'08"S, 48°00'35"W, fl. ♂ ♀, 8 March 1965, *Smith A-2* (UB); Fercal, 15°38'01"S, 47°49'01"W, fr., 5 March 1965, *Smith 15022* (P). Mato Grosso: Nobres, about 42 km NE (straight) of Nobres, area of Lago Azul, 14°35'00"S, 56°12'00"W, fl. ♂ ♀, 24 May 1997, *Souza et al. 17155* (ESA). Minas Gerais: Januária, river valley Peruaçu, Boqueirão da Onça, 15°07'35"S, 44°15'17"W, fr., 24 May 1997, *Salino 3086* (RB). Goiás: 50 km N of Corumbá on road to Niquelândia, in valley of Rio Maranhão, 800 m, 15°25'14"S, 48°19'50"W, fl. ♂ ♀, 24 January 1968, *Irwin et al. 19106* (MBM).

Discussion:—*Pilea brasiliensis* belongs to the *Dentatae*-group of Weddell (1869) and the *Fallaces*-group of Killip (1936). It represents the first record of the *Fallaces*-group in Brazil. It is characterised by being glabrous, with toothed pinnately veined leaves, petioles of up to 3 cm long and paniculate inflorescences. *Pilea brasiliensis* closely resembles *P. lippoides* Killip (1925: 296), which occurs in the eastern and central Cordillera of Colombia, at elevations between 2400 and 3000 m. The two species may be readily distinguished by leaf and petiole morphology, staminate inflorescence arrangement and achene size as summarized here:

	<i>Pilea brasiliensis</i>	<i>Pilea lippoides</i>
Leaf and petiole length	equal or subequal at the same node	unequal by ratio 1.0:1.5–3.0 at the same node
Staminate inflorescence	flowers borne in a panicle	flowers borne in a compact head
Achenes	0.75–1.00 mm	1.20–1.50 mm



FIGURE 1. *Pilea brasiliensis*. **A** habit; **B** leaf (adaxial surface); **C** pistillate inflorescence; **D** staminate flower (at bud); **E** fruit (with persistent tepals). A–E from *Heringer et al.* 1039. (Drawn by K. Souza).

Conservation status

Pilea brasiliensis is known from six collections in the states of Brasília, Goiás, Mato Grosso and Minas Gerais, in Central Brazil, made between 1965 and 1997. A recent survey of these localities in 2010, located no remaining natural populations of *P. brasiliensis* and areas of natural habitat appeared to have been heavily impacted by man. Using IUCN Criteria A2, 'Population reduction, observed, estimated, inferred, or suspected in the past where the causes of reduction may not have ceased or may not be understood or may not be reversible, ...' (UNESCO 2001) and the above observations, we estimate a decline of >80% and likely close to 100%. *Pilea brasiliensis* is therefore assessed as **Critically Endangered (CE)**, possibly nearly extinct. A more complete field survey may enable us to assess if this species still survives somewhere in its range or if this species has to be reassessed as **Extinct in the Wild (EW)**.

References

- Adams, C.D. (1970) Notes on Jamaican Flowering Plants 1. *Mitteilungen der Botanischen Staatssammlung München* 8: 99–110.
- Burger, W.C. (1977) Urticaceae. In: Burger, W.C. (ed.), *Flora Costaricensis. Fieldiana, Botany* 40: 218–283.
- Killip, E.P. (1925) New tropical American species of Urticaceae. *Journal of the Washington Academy of Sciences* 15: 289–297.
- Killip, E.P. (1936) New species of *Pilea* from the Andes. *Contributions from the United States National Herbarium* 26(8): 367–394.
- Lindley, J. (1821) *Collectanea botanica, or figures and botanical illustrations of rare and curious exotic plants*. Richard and Arthur Taylor, Shoe-Lane, London.
- Monro, A.K. (1999) Seven new species of *Pilea* Lindley (Urticaceae) from Mesoamerica. *Novon* 9: 390–400.
- Monro, A.K. (2000) Tree new species of *Pilea* (Urticaceae) from Costa Rica and Panama. *Bulletin of the Natural History Museum London, Botany* 30: 7–11.
- Monro, A.K. (2001) Synopsis of Mesoamerican *Pilea* (Urticaceae), including eighteen typifications and a key to the species. *Bulletin of the Natural History Museum London, Botany* 31: 9–25.
- Monro, A.K. (2004) Three new species, and three new names in *Pilea* (Urticaceae) from New Guinea. *Kew Bulletin* 59: 573–579.
- Monro, A.K. (2006) The revision of species-rich genera: a phylogenetic framework for the strategic revision of *Pilea* (Urticaceae) based on *cpDNA*, *nrDNA*, and morphology. *American Journal of Botany* 93: 426–441.
- Monro, A.K. (2009) A new species of *Pilea* (Urticaceae) from the Talamanca Mountains, Costa Rica. *Phytotaxa* 2: 24–28.
- Weddell, H.A. (1856) Monographie de la famille des Urticacées. *Archives du Muséum d'Histoire Naturelle* 9: 1–591.
- Weddell, H.A. (1869) *Pilea*. In: De Candolle, A. (ed.), *Prodromus, systematis naturalis regni vegetabilis* 16(1). Paris. pp. 104–163.