

## A new species of *Begonia* (Begoniaceae) from the Moluccas, Indonesia

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**ABSTRACT.** A new species of *Begonia*, *Begonia mufidakhallae* Ardaka & Ardi, is described from Sawai, Seram Utara District, Seram Island, Indonesia. The species is endemic to Seram Island and belongs to *Begonia* section *Petermannia*.

**Keywords.** *Begonia* section *Platycentrum*, *Begonia* section *Sphenanthera*, limestone, lithophytic

### Introduction

*Begonia* is one of the largest genera of angiosperms, comprising 1944 accepted species which are distributed across the tropics (Hughes *et al.*, 2015, continuously updated). Among the regions of Indonesia, the *Begonia* flora of the Moluccas is one of the most poorly known due to the lack of collections from the islands. In recent years, four new species have been described, raising the total number of accepted species from the Moluccas to nine (Wiriadinata, 2012; Ardi *et al.*, 2014; Ardi & Thomas, 2015; Ardaka *et al.*, 2016; Undaharta & Ardi, 2016) (see Table 1).

In order to improve our understanding of *Begonia* from the Moluccas, several expeditions to the archipelago have been carried out by Bali Botanic Gardens during 2011–2014. These expeditions have resulted in collections of undescribed species which are now cultivated in the Bali and Bogor Botanic Gardens. Here we report the discovery of another new species, which we are calling *Begonia mufidakhallae*, from material collected on Seram Island. Like the majority of *Begonia* species from the Moluccas, this new species is included in *Begonia* section *Petermannia* as it has the typical characters of the section: protogynous inflorescences, male flowers with two tepals, anthers with unilaterally positioned slits, five-tepaled female flowers, two-flowered female inflorescences or solitary female flowers, three-locular ovaries with axile placentation and bilamellate placentae, and fruits with equal or subequal wings (Doorenbos *et al.*, 1998; Moonlight *et al.*, 2018). All available specimens from BO, E, K, L and SING have been consulted, and hence it must be assumed, at least until more intensive collecting in the Moluccas reveals otherwise, that the species described here has a very restricted distribution range.

**Table 1.** *Begonia* species from the Moluccas.

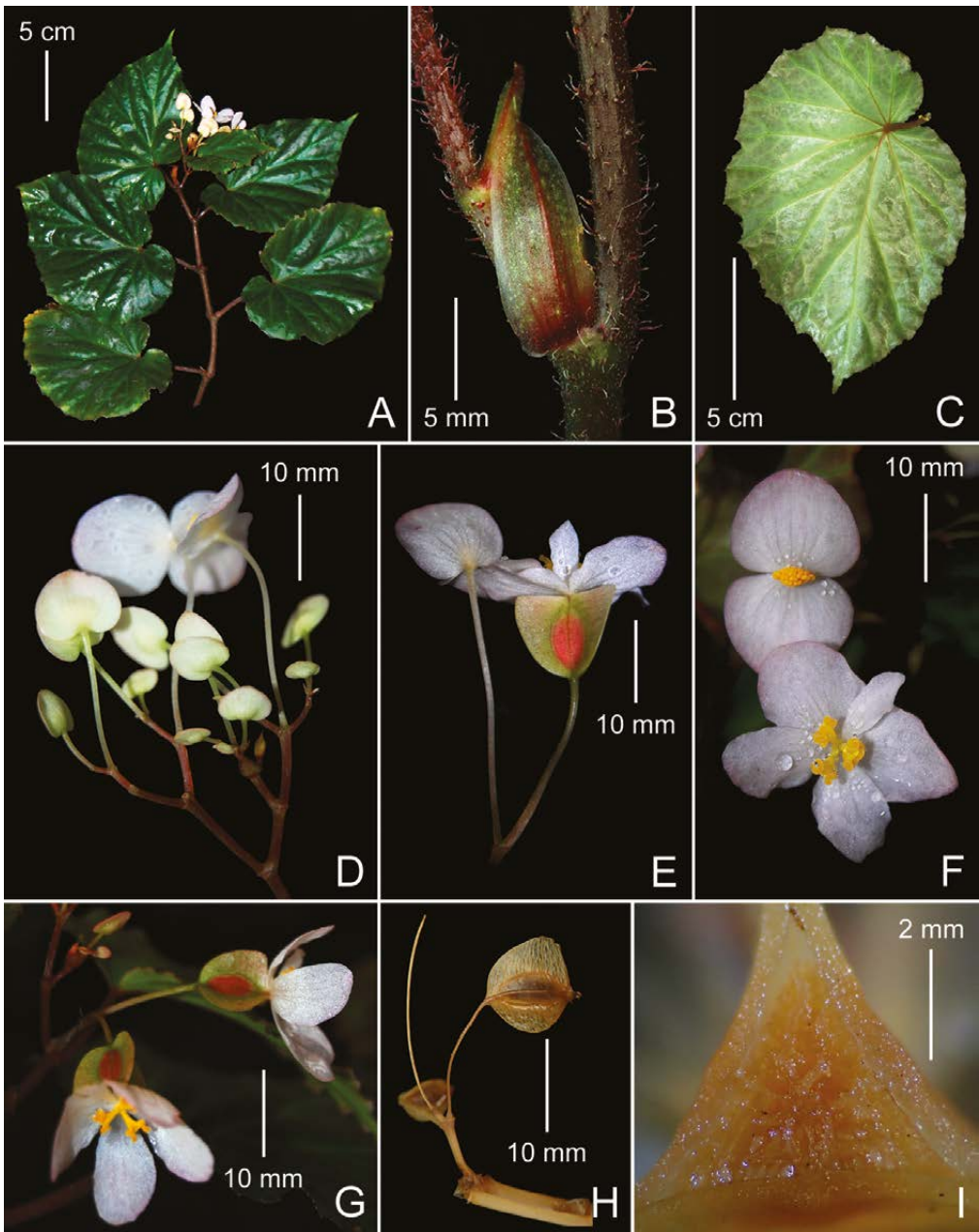
Section	Species
<i>Petermannia</i>	<i>Begonia aketajawensis</i> Ardi & D.C.Thomas
	<i>Begonia galeolepis</i> Ardi & D.C.Thomas
	<i>Begonia holosericea</i> (Teijsm. & Binn.) Teijsm. & Binn.
	<i>Begonia holosericeoides</i> Ardi & D.C.Thomas
	<i>Begonia manuselaesis</i> Ardhaka & Ardi
	<i>Begonia nephrophylla</i> Undaharta & Ardi
	<i>Begonia sageaensis</i> Wiriad.
<i>Platycentrum</i>	<i>Begonia aptera</i> Blume
<i>Sphenanthera</i>	<i>Begonia longifolia</i> Blume

### Species description

***Begonia mufidahkallae*** Ardaka & Ardi, **sp. nov.** (§*Petermannia*)

*Begonia mufidahkallae* is similar to *Begonia flacca* Irmsch. in the habit (semi-erect or appressed to substrate at the base and distally erect) but differs in having red multicellular hairs on the stem, petioles and lower surface of leaves (vs white), shorter petioles (2–6 cm vs 6–17 cm); denticulate to serrulate leaf margins (vs serrate to biserrate or shallowly lobed), paniculate-cymose male inflorescences (vs simple monochasia) and fruits on hanging, 10–20 mm long pedicels (vs fruit not pendulous, pedicels 3–8.5 mm long). – TYPE: Cultivated from material collected in the wild in Indonesia, Sawai, Seram Utara district, Seram Island, S 02°58.088'E129°12.093', 22 February 2016, vouchered and selected as type as *Wisnu Ardi WI 104* (holotype BO; isotypes KRB). (Fig. 1).

Perennial, monoecious herb, semi-erect or appressed to substrate at the base and distally erect, to c. 30 cm tall. **Stem** branched; internodes 2–6 cm long, brownish-reddish, with microscopic glandular hairs and a sparse indumentum of multicellular red hairs, c. 0.5–1.5 mm long. **Stipules** caducous, 8–12 × 4–5.5 mm, elliptic, slightly anisophyllus, with an abaxially slightly prominent midrib, apex narrowed into a bristle projecting up to 1.5 mm, reddish greenish, translucent at the margin, abaxially glabrous. **Leaves:** petioles 2–6 cm long, adaxially shallowly channelled, reddish, moderately covered with red hairs, denser on the younger parts, c. 1.5 mm long; lamina 9.5–14 × 7–9.5 mm, asymmetric, ovate to elliptic, base cordate and lobes not or just slightly overlapping, apex acuminate, margin denticulate to serrulate, adaxial surface green-reddish, with reddish veins toward the base and pale green towards the margin, glabrous, abaxially pale green-reddish, sparsely hairy on the veins only; venation palmate-pinnate, primary veins 6–7, actinodromous, secondary veins craspedodromous. **Inflorescences**



**Fig. 1.** *Begonia mufidakhallae* Ardaka & Ardi. **A.** Habit. **B.** Stipule. **C.** Lamina abaxial surface. **D.** Male inflorescence. **E.** Female and male flower side view. **F.** Female and male flower front view. **G.** Female inflorescence. **H.** Infructescence. **I.** Ovary cross section (middle part). (Photos: W.H. Ardi).

protogynous; female inflorescences 2-flowered, sometimes associated with a single male flower in between, or single female flower with single male flower, peduncles c. 5 mm long, glabrescent to glabrous; male inflorescences paniculate-cymose with 3–4 dichasial-monochasial partial inflorescences on up to 2 cm long peduncles in the basal part, each with up to 8 flowers, bracts caducous. **Male flowers:** pedicels 1.5–3.5 cm long, white, greenish or reddish, glabrous; tepals 2, white tinged pink, 9–12 × 11–14 mm, broadly ovate, base slightly cordate, apex rounded, outer surface glabrous; androecium of c. 26–27 stamens, yellow, filaments up to c. 0.3–0.8 mm long, slightly fused at the very base, anthers up to c. 0.7–1 mm long, oblong to narrowly obovate, dehiscing through unilaterally positioned slits that are c. ½ as long as the anthers. **Female flowers:** pedicels 1–2 cm long, reddish, glabrous; tepals 5, white tinged pink, unequal, one smaller 8–10 × 4–5 mm, elliptic, the four larger 11–12 × 8–10 mm, ovate, outer surface glabrous; ovary (excluding wings) 8–10 × 4.5–5 mm, ellipsoid, pink to red, glabrous, locules 3, placentation axile, placentae bilamellate, wings 3, subequal wing slightly larger than two others to unequal, pale green-reddish, base rounded, apex subtruncate to truncate, up to 5–7 mm at widest point (apically or subapically); style c. 6 mm long, basally fused, 3-branched, each styloidium bifurcate in the stigmatic region, stigmatic surface a spirally twisted papillose band, orange. **Fruits:** peduncles c. 5 mm long; pedicels 1.5–2 cm long, pendulous; seed-bearing part ellipsoid, 8–11 × 4.5–5 mm (excluding the wings), glabrous, dehiscent, splitting along the wing attachment, wings as for ovary, up to 8 mm at the widest point (apically or subapically). **Seeds** barrel-shaped, c. 0.2–0.6 mm long.

*Distribution.* Indonesia, Seram Island, Sawai, Seram Utara District.

*Habitat.* Growing lithophytically on limestone rock, half shade in the lowland limestone forest at 53 m elevation.

*Etymology.* The specific epithet is in honour of Mrs Mufidah Jusuf Kalla, the wife of the Vice President of the Republic of Indonesia, Jusuf Kalla.

*Provisional IUCN conservation assessment.* Data Deficient (DD). *Begonia mufidahkallae* is known from a single locality in an unprotected area, Sawai, Seram Utara district. Further exploration is required to assess the species' current range.

*Notes.* The semi-erect habit is a rare character in *Begonia* section *Petermannia* from Wallacea, only being known in several species from Sulawesi and Moluccas. These include *Begonia galeolepis* Ardi & D.C. Thomas, *B. holosericea* (Teijsm. & Binn.) Teijsm. & Binn., *B. holosericeoides* Ardi & D.C. Thomas and *B. sageaensis* Wiriad. *Begonia mufidahkallae* can be easily differentiated from all these species by the slender stem (diameter 4–6 mm) with simple red trichomes, while all other species have thicker stem (diameter 10–12 mm) with an indumentum of branched hairs (*B. holosericea*, *B. holosericeoides* and *B. sageaensis*) or fleshy, red, flattened scales (*B. galeolepis*). The male inflorescence of *Begonia mufidahkallae* can also distinguish

it from these other species: in *B. mufidahkallae* the male partial inflorescences are arranged dichasially, whilst in the *B. holosericea*, *B. holosericeoides*, *B. galeolepis* and *B. sageansis* they are arranged monochasially. The pedicel length of female flower is a further difference, in *B. mufidahkallae* the pedicel is glabrous and the shortest among (1–2 cm) of three species (*B. holosericea* is 3–4 cm and hairy; *B. holosericeoides* is 2.2–3.1 cm and sparsely hairy; *B. galeolepis* is up to 4 cm and sparsely hairy), whereas *B. sageansis* has similar length with *B. mufidahkallae*, however it can be differentiated by sparse indumentum of red hairs on the ovary and equal wings ( vs. ovary glabrous and unequal wings).

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