

## Two endemic new species of *Begonia* (Begoniaceae) from Palawan, Philippines

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**ABSTRACT.** On recent expeditions, two endemic new species of *Begonia* sect. *Baryandra*, *Begonia obscuribracteata* Y.P.Ang, Cabanillas & M.N.Tamayo and *Begonia tandikan* Pranada, L.M.Camangeg, Cabanillas & Y.P.Ang, were discovered and are hereby described and illustrated. *Begonia obscuribracteata* is similar to *B. cabanillasii* Y.P.Ang et al. in having suborbicular leaves that are adaxially hairy, five conspicuous wings on the ovary, and tepals that are hairy on the outside. However, it can be easily distinguished by features of its leaves, stipules, and bracts. A key to similar *Begonia* species with a conspicuous 5-winged ovary is provided. *Begonia tandikan* morphologically resembles *B. beijnenii* Y.P.Ang et al. but differs by having a broadly ovate (vs subrhomboid) lamina with a villous (vs glabrous) upper surface, shorter and wider stipules with aristate (vs cuspidate) apices, and minutely pilose (vs glabrous) bracts. Following IUCN guidelines, *Begonia obscuribracteata* is assessed as Endangered (EN) and *Begonia tandikan* as Critically Endangered (CR).

**Keywords.** *Begonia beijnenii*, *Begonia cabanillasii*, *Begonia quinquealata*, Cucurbitales, Malesia, taxonomy

### Introduction

The province of Palawan is the largest island-province in the archipelagic Philippines based on land area. It is found on the Sunda Plate and has a different geological history compared to other Philippine islands (Revel, 2006). The unique geological history and biogeographical location of Palawan has led to many unique and endemic species. Palawan is also famously referred as the Philippines' Last Ecological Frontier (Revel, 2006) and, through the years, botanical expeditions have been conducted in this area of high biodiversity resulting in numerous discoveries and rediscoveries.

The species of *Begonia* L. sect. *Baryandra* A.DC. (De Candolle, 1859: 122), as currently understood, are generally rhizomatous herbs that lack an erect stem,

have persistent stipules, boat-shaped bracts, staminate flowers with 4 free perianth segments, carpellate flowers with 4 (rarely 5) perianth segments, 3 equal or unequal wings on 2–3 locular ovary, bifid placenta in each locule, and a pendulous or recurved fruit at maturity (Rubite et al., 2013). The Philippines is known as a centre of diversity for this section with 70 species from the country described thus far. In Palawan, the majority of the known species are in *Begonia* sect. *Baryandra* (22 out of 25) while the remaining three belong to *Begonia* sect. *Petermannia* (Klotzsch) A.DC. The species of *Begonia* sect. *Baryandra* are distributed throughout Palawan, while those of *Begonia* sect. *Petermannia* are so far known only in the southern half of the island.

Continued exploration of botanically unexplored areas of this island has previously led to the discovery and description of three new species of *Begonia*, viz., *B. cabanillasii* Y.P.Ang et al., *B. truncatifolia* R.Bustam. et al. and *B. beijnenii* Y.P.Ang et al. (Ang et al., 2020a,b; Bustamante et al., 2020). All 25 known species of *Begonia* found in Palawan are endemic to the island except *B. mindorensis* Merr. (Merrill, 1911: 396) and *B. nigritarum* Steud. *Begonia nigritarum* has not previously been recorded from Palawan but in our surveys, we have observed that this species thrives across various localities in Southern Palawan.

Fieldwork to document noteworthy plants in the Municipality of Dumarán (Fig. 1), a largely botanically unexplored region of Palawan, led to the discovery of an unknown *Begonia* species characterised by having an ovary with six wings. This unknown *Begonia* closely resembles a small group of *Begonia* species from *B. sect. Baryandra* which possesses five conspicuous ovary wings, namely *B. cabanillasii*, *B. suborbiculata* Merr., and *B. quinquealata* C.I Peng et al. (Merrill, 1911; Hughes et al., 2018). The character of bearing more than three ovary wings within *Begonia* sect. *Baryandra* is unique to the island of Palawan. Further examination of the Dumarán specimen revealed distinct morphological attributes that distinguish it from these other species. The new species is named *Begonia obscuribracteata* Y.P.Ang, Cabanillas & M.N.Tamayo.

While conducting a plant taxonomic inventory within the vicinity of Mt Pulgar, Puerto Princesa City (Fig. 1), Palawan, an unknown species of *Begonia* with mottled leaves was encountered along a nearby body of water. With its distinctive morphology, it was concluded that it is undescribed, though the species is closely allied to the other 2-locular *Begonia* species of Palawan, especially *B. beijnenii*. The new species is named *Begonia tandikan* Pranada, L.Camangeg, Cabanillas & Y.P.Ang.

The discovery of these species highlights the uniqueness and rich diversity of *Begonia* on the island of Palawan. It also suggests that further botanical expeditions on the island will lead to the discovery of more new plant species.

## Materials and methods

At least eight individuals of each species were examined during multiple field surveys conducted to document and monitor the populations. Measurements were taken with a vernier caliper or measuring tape in situ. Additional measurements were obtained from

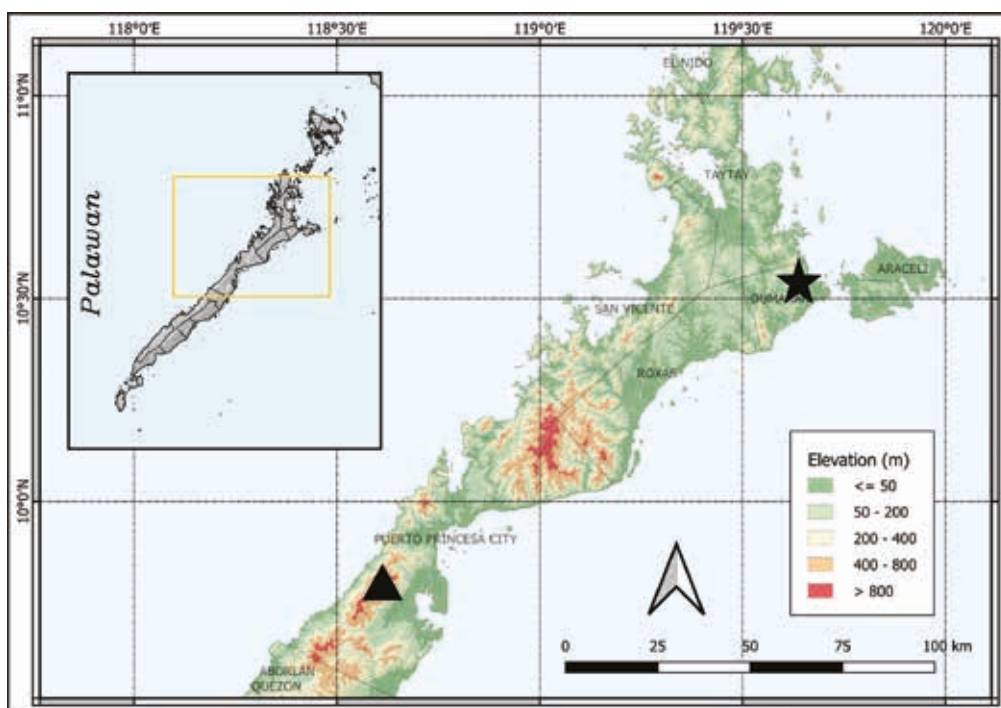


Fig. 1. Distribution map of *Begonia obscuribracteata* (star) and *B. tandikan* (triangle).

the specimens and from close-up photographs with scales of the fresh material. All collections were made under the Gratuitous Permit (GP) number 2018-28 (R1) issued by the Palawan Council for Sustainable Development Staff institution. Comparisons to protologues and herbarium specimens of similar *Begonia* species were conducted. The distribution map was prepared using QGIS v. 3.12 București (QGIS Development Team, 2020). Herbarium specimens were prepared using standard protocols.

## Taxonomy

### 1. *Begonia obscuribracteata* Y.P.Ang, Cabanillas & M.N.Tamayo, **sp. nov.** (§ *Baryandra*)

*Begonia obscuribracteata* is distinctive among Philippine species by having an ovary with 6 wings. It is similar to *Begonia cabanillasii* which also has suborbicular leaves that are adaxially hairy, bearing at least 5 conspicuous wings on the ovary, and flowers with tepals that are hairy outside. However, it can be distinguished from *Begonia cabanillasii* in its leaves adaxially red to white hirsute (vs white pilose), abaxially hirsute with indumentum 0.5 mm long (vs appressed hirsute on veins and sparsely puberulous on interveins, indumentum 1–2.5 mm long), comparatively smaller bracts at c.  $2.5 \times 1.5$  mm (vs  $4\text{--}5 \times 2\text{--}3$  mm), triangular stipules (vs lanceolate), shallowly keeled (vs strongly), abaxially tomentose (vs white pilose) with an apiculate apex (vs

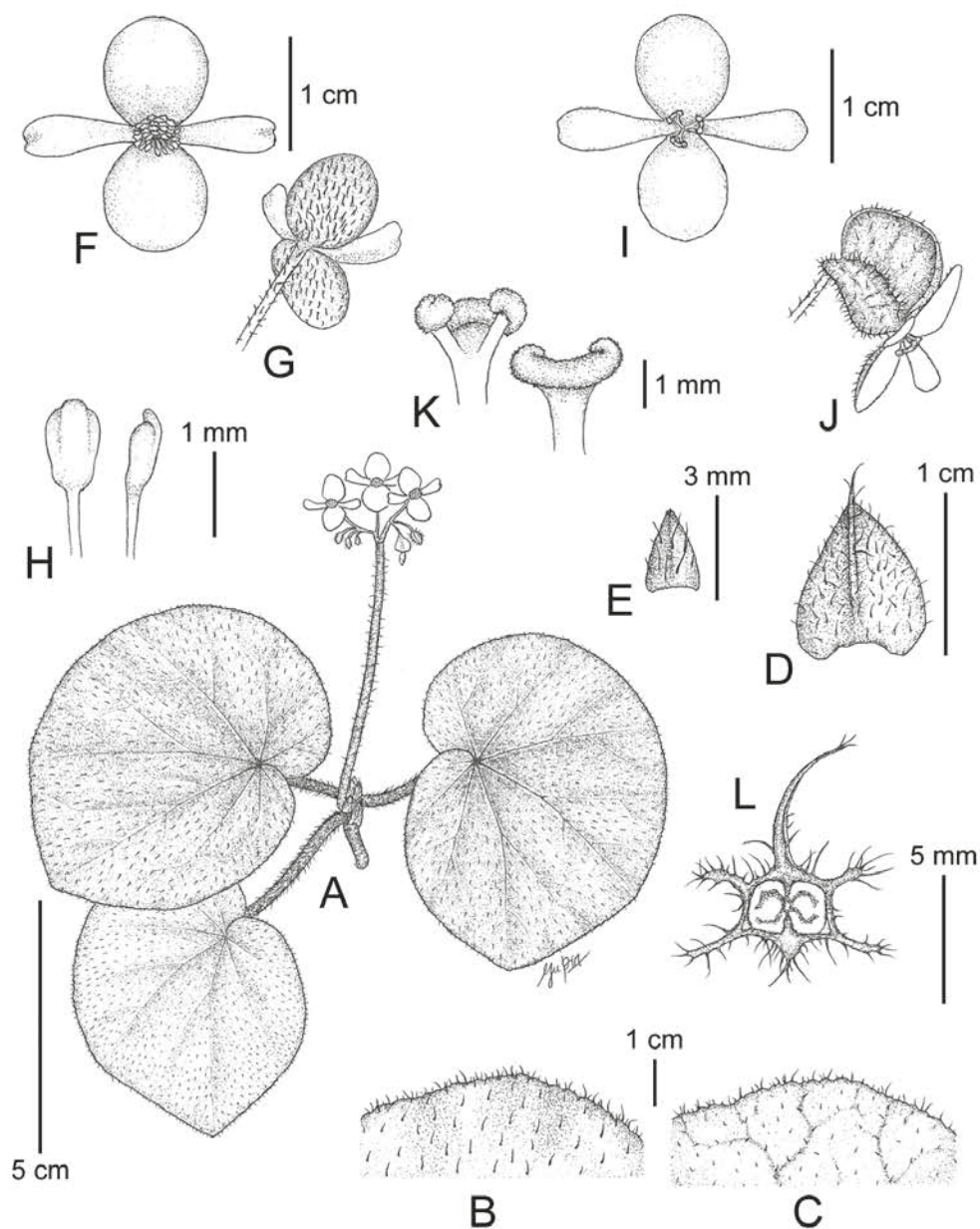
aristate), tip c. 1 mm long (vs 6–7 mm). Detailed morphological differences between the species are presented in Table 1. – TYPE: Philippines, Palawan Island, Brgy. Sta. Teresita, Municipality of Dumarán, 50–300 m, 14 September 2020, *L.M. Camangege & W.P. Cabanillas PTI-5* (holotype PNH; isotypes FEUH, PPC). (Fig. 2–4)

Herb, lithophytic, monoecious, rhizomatous. **Rhizome** creeping, c. 6 cm long, 3–4 mm in diam., internodes c. 2.5–6 mm long. **Stipules** persistent, triangular, c.  $10 \times 7$  mm, shallowly keeled, margins entire, apex apiculate with tip c. 1 mm long, adaxially glabrous, abaxially white tomentose (hairs c. 2 mm long). **Leaves** alternate; petiole terete, maroon, white to red tomentose (hairs 0.5–3 mm), 2.5–6.9 cm long, 2–3 mm in diam.; lamina basifixed, suborbicular to broadly ovate, asymmetrical,  $6.2\text{--}7.6 \times 6\text{--}6.5$  cm, broadside 3.5–5.5 cm wide, base shallowly cordate to cordate, sinus sometimes overlapping slightly, apex rounded to acute, margins crenate, shallowly undulating, ciliate (hairs 0.5 mm long), non-glossy, adaxial surface citrine, red to white hirsute (hairs 1–2.5 mm long), abaxially red hirsute, trichomes slightly more concentrated on veins (hairs c. 0.5 mm long), venation palmate, c. 8 veins, abaxially raised, branching dichotomously or nearly so, tertiary veins reticulate. **Inflorescences** axillary, protandrous, cymosely branching panicles, 7.3–8.4 cm long; peduncle 6.7–11 cm long, red, sparsely red pilose, branching up to 3 times. **Bracts** red, triangular-ovate, apex acute, caducous, red hirsute, margins fimbriate; lowest bracts c.  $2.5 \times 1.5$  mm. **Staminate flower**: pedicel 1.4–2.1 cm long, sparsely red hirsute; tepals 4, pale pink, outer 2 widely ovate to suborbicular, apex rounded, abaxially red hirsute (hairs 0.5–1 mm),  $8\text{--}10 \times 6\text{--}11$  mm, inner 2 narrowly to broadly obovate, glabrous, apex slightly retuse,  $9\text{--}10 \times 3\text{--}5$  mm; androecium zygomorphic, c. 4 mm wide, stamens 24–28, 2–2.5 mm long, filaments free, anthers yellow, c. 1 mm long, oblong-elliptic, slits lateral, connective extended to apex and bluntly protruding. **Pistillate flower**: pedicel 1.6–1.8 cm long, sparsely red hirsute, tepals 4, pale pink, outer 2 widely ovate to orbicular, apex rounded,  $7.5\text{--}11 \times 7.5\text{--}11$  mm, abaxially red hirsute (hairs 0.5–1 mm long), inner 2 narrowly to broadly obovate, apex rounded,  $7\text{--}10 \times 3\text{--}4.5$  mm, glabrous; ovary pinkish red, sporadically and sparsely red hirsute (hairs 1–2.5 mm long), trigonous-ellipsoidal, locules 2, one bifid placenta per locule, 6–7 mm long, 2–3 mm thick (wings excluded), wings 6, largest wing lunate, markedly cucullate, distally truncated, proximally rounded, margins red fimbriate, c. 5 mm wide, lateral wings narrowly oblong, slightly increasing in width towards apex, distally bluntly truncated, margins fimbriate, c. 2 mm wide, 2 wings running between the largest wing and the lateral wings, narrowly crescent-shaped, margins fimbriate, c. 2 mm wide, a much narrower wing runs between the lateral wings, margins red fimbriate, c. 1 mm wide; styles 3, shortly fused at base, c. 2.5 mm long; stigma spirally twisted and papillose all around. **Fruit** pendent, recurved such that the largest wing faces down, 2 lateral wings slightly cucullate, forming a splash cup; the sixth wing runs down the middle and divides the splash cups into 2 basins.

*Distribution and ecology.* *Begonia obscuribracteata* is endemic to the Municipality of Dumarán. It grows in a mixed dipterocarp forest, in deep shade on rocks near a water body, at an altitude of about 300 m.

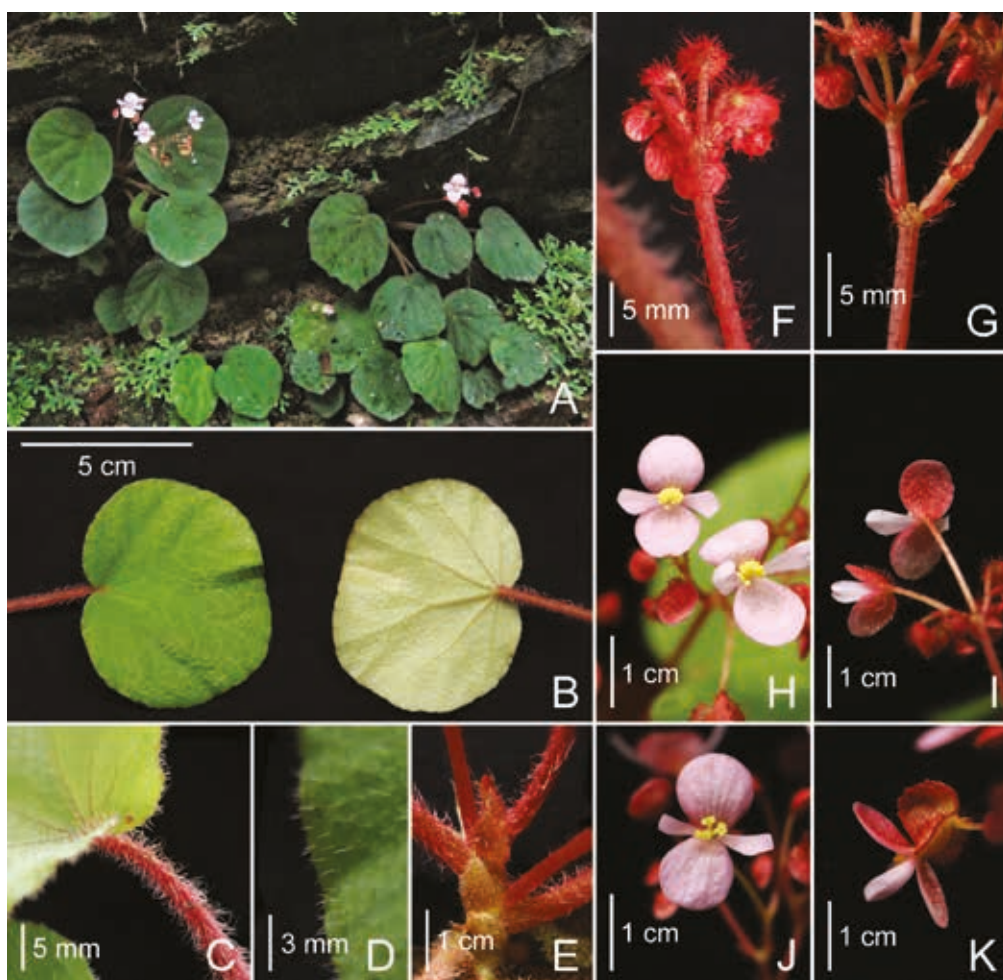
**Table 1.** Comparison of *B. obscuribracteata* with *B. quinquealata* and *B. cabanillasii*.

Character	<i>B. obscuribracteata</i> (Fig. 2–4)	<i>B. quinquealata</i>	<i>B. cabanillasii</i>
<b>Rhizome</b>			
Length (cm)	c. 6	> 40	c. 5
Internodes (mm)	2.5–6	15–50	2–4
<b>Stipules</b>			
Shape	Triangular	Triangular	Lanceolate
Dimension (mm)	c. 10 × 7	6–10 × 4–8	11–14 × 6–7
Abaxial vestiture	Shallowly keeled, white tomentose	Strongly keeled, densely hirsute	Strongly keeled, white pilose
Apex	Apiculate	Aristate	Aristate
Apex length (mm)	c. 1	3–5	6–7
<b>Leaves</b>			
Dimension (cm)	6.2–7.6 × 6–6.5	6.5–10.2 × 4.7–7.8	6.5–13 × 6.5–12.8
Adaxial vestiture	Red to white hirsute, 1–2.5 mm long	Densely hirsute, c. 2.5 mm long	White pilose, 2–2.5 mm long
Abaxial vestiture	Red hirsute, trichomes slightly more concentrated on veins (c. 0.5 mm long)	Hirsute on all veins	Sparsely appressed red hirsute (1–2 mm long), between veins sparsely red puberulous (1–2 mm long)
<b>Inflorescence</b>			
Bract shape	Triangular-ovate	Ovate to lanceolate	Lanceolate
Bract dimension (mm)	c. 2.5 × 1.5	3–4 × 1.5–2.5	4–5 × 2–3
<b>Staminate flower</b>			
Pedicel length (cm)	1.4–2.1	0.5–0.6	1.5–2.5
Stamen count	24–28	25–30	35–45
<b>Pistillate flower</b>			
Pedicel length (cm)	1.6–1.8	0.5–0.8	1–1.5
Ovary size (wings excluded)	6–7 mm long, 2–3 mm thick	c. 7 mm long, 4 mm thick	7–8 mm long, 3–4 mm thick
Wings	6	5	5
Largest wing	Cucullate, c. 5 mm wide	Cucullate, c. 5 mm wide	Cucullate, 6–8 mm wide



**Fig. 2.** *Begonia obscuribracteata* Y.P. Ang, Cabanillas & M.N. Tamayo. **A.** Habit. **B.** **C.** Close up of leaf adaxial and abaxial surfaces respectively. **D.** Stipule abaxial side. **E.** Bract abaxial side. **F.** **G.** Staminate flower face and back view respectively. **H.** Stamen top and side view respectively. **I.** Pistillate flower face view. **J.** Pistillate flower side view showing ovary. **K.** Style front and back view. **L.** Ovary cross section. Drawn by Y.P. Ang.

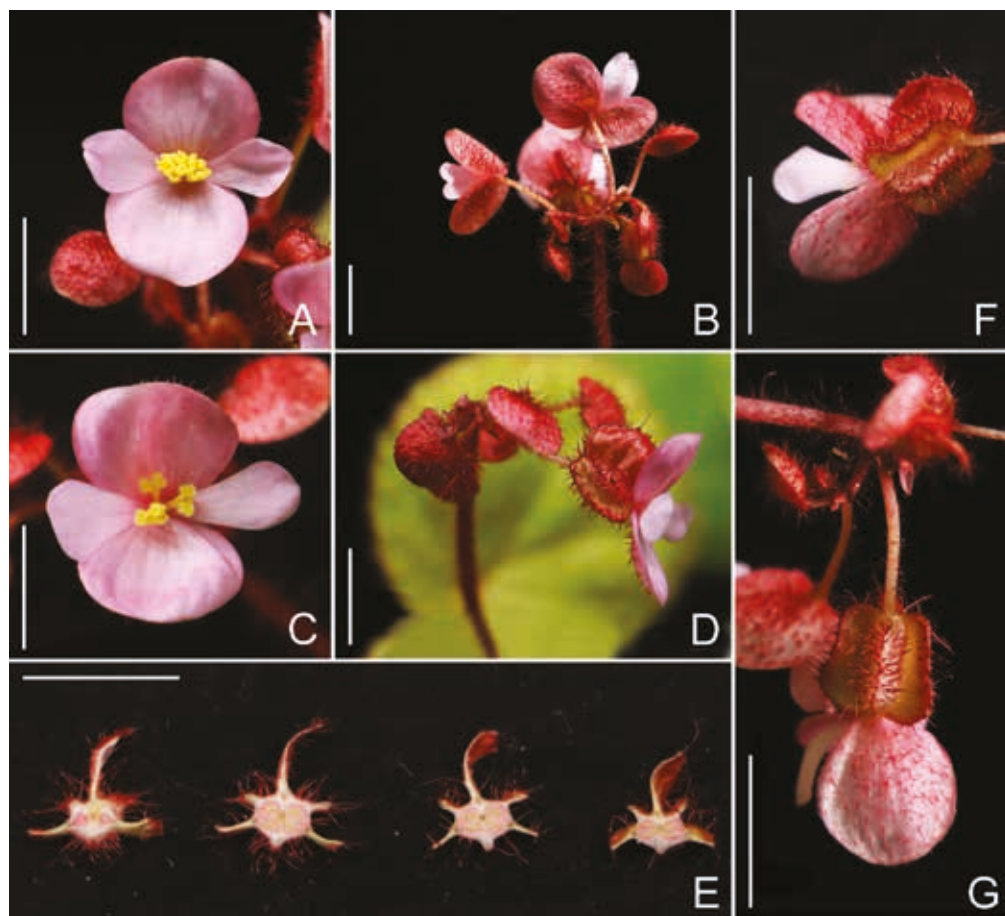




**Fig. 3.** *Begonia obscuribracteata* Y.P.Ang, Cabanillas & M.N.Tamayo. **A.** Habitat and habit. **B.** Leaf adaxial and abaxial surfaces. **C.** Close-up of petiole showing vestiture. **D.** Close up of leaf adaxial surface showing margins. **E.** Stipule. **F.** Emerging inflorescence, showing vestiture of panicle. **G.** Bracts. **H.** Staminate flower face view. **I.** Staminate flower back view. **J.** Pistillate flower face view. **K.** Pistillate flower side view showing ovary. (Photos: A, W. Cabanillas; B–K, Y.P. Ang)

*Etymology.* The epithet pertains to its miniscule and obscure bracts, a feature which is rather unique among Palawan *Begonia* species.

*Provisional IUCN conservation assessment.* There are only two known populations of *Begonia obscuribracteata* at Barangay San Jose De Joro and Barangay Santa Maria. *Begonia obscuribracteata* is not locally abundant at either site and occurs only near a body of water. There is an estimate of < 100 mature individuals in total across the localities. Due to the unprotected status of the forest, the species is vulnerable to any



**Fig. 4.** *Begonia obscuribracteata* Y.P.Ang, Cabanillas & M.N.Tamayo. A variant with broader tepals. **A.** Staminate flower face view. **B.** Staminate flowers back view. **C.** Pistillate flower face view. **D.** Pistillate flower side view. **E.** Ovary cross sections. **F, G.** Ovary's angled and bottom view respectively, showing the sixth ovary wing between the two lateral wings. Scale bars: 1 cm. (Photos: Y.P. Ang)

disturbance and rampant poaching. Following IUCN guidelines, we assess this species as Endangered (EN/D) (IUCN Standards and Petitions Committee, 2019), as there are < 250 mature individuals across the populations.

*Notes.* *Begonia obscuribracteata* is the fourth known species in *Begonia* sect. *Baryandra* to possess at least five conspicuous ovary wings, the other three being *B. cabanillasii*, *B. quinquealata*, and *B. suborbiculata*. The advantage of a 5-winged ovary, if any, is not yet known. In the case of *Begonia obscuribracteata*, a ridge-like protrusion on the underside of the ovary (between the lateral wings) was noticed consistently across the populations, forming a sixth wing. Compared to the other 5 wings, the width of the sixth wing is much smaller and less conspicuous at c. 1 mm wide (vs. 2–5 mm



wide on the other wings). The distribution of *Begonia obscuribracteata* is restricted and does not overlap with the other species with five ovary wings. Such is also seen for *Begonia cabanillasii* and *B. quinquealata* which are known to be local endemics. Variation in tepal shape and dimensions was observed within the population from the same location but the characteristics of the stipule, leaf vestiture, together with the bract dimensions, are key to identifying this species. For example, Fig. 4 A–D show a plant that has a slightly broader tepal. A key to the group of *Begonia* species bearing five or six conspicuous ovary wings is presented below.

- 1a. Rhizome internodes visibly elongated (reaching 3 cm or more) ..... 2
- 1b. Rhizome internodes compact (< 1 cm) ..... 3
  
- 2a. Lamina broadly-ovate, thickly chartaceous, adaxially dense hirsute, apex acuminate ..... *B. quinquealata*
- 2b. Lamina suborbicular, coriaceous, adaxially glabrous to subglabrous, apex rounded ..... *B. suborbiculata*
  
- 3a. Lamina adaxially red to white hirsute; stipule triangular, shallowly keeled, abaxially tomentose, apex apiculate and c. 1 mm long ..... *B. obscuribracteata*
- 3b. Lamina adaxially white pilose; stipule lanceolate, strongly keeled, abaxially white pilose, apex aristate and 6–7 mm long ..... *B. cabanillasii*

**2. *Begonia tandikan*** Pranada, L.Camange, Cabanillas & Y.P.Ang, **sp. nov.** (§ *Baryandra*)

*Begonia tandikan* is most similar to *B. beijnenii* among the species of *Begonia* sect. *Baryandra* in its variegated lamina with a cordate base, 4-tepalled pistillate flower, bilocular ovary, and cucullate abaxial wing. However, *Begonia tandikan* differs in its broadly ovate lamina (vs subrhomboid in *B. beijnenii*) with villous upper surface (vs glabrous), villous petiole (vs tomentose), shorter and wider stipules (6.5–8 × 5–8 mm vs 11–14 × 4–5 mm), and minutely pilose, rounded to obtuse bracts (vs glabrous, acute). – TYPE: Philippines, Palawan Island, City of Puerto Princesa, Barangay Iwahig, Balsahan river, c. 75 m, 27 July 2020, *L.M. Camange & W.P. Cabanillas PTI-3* (holotype PNH; isotypes FEUH, PPC). (Fig. 5, 6)

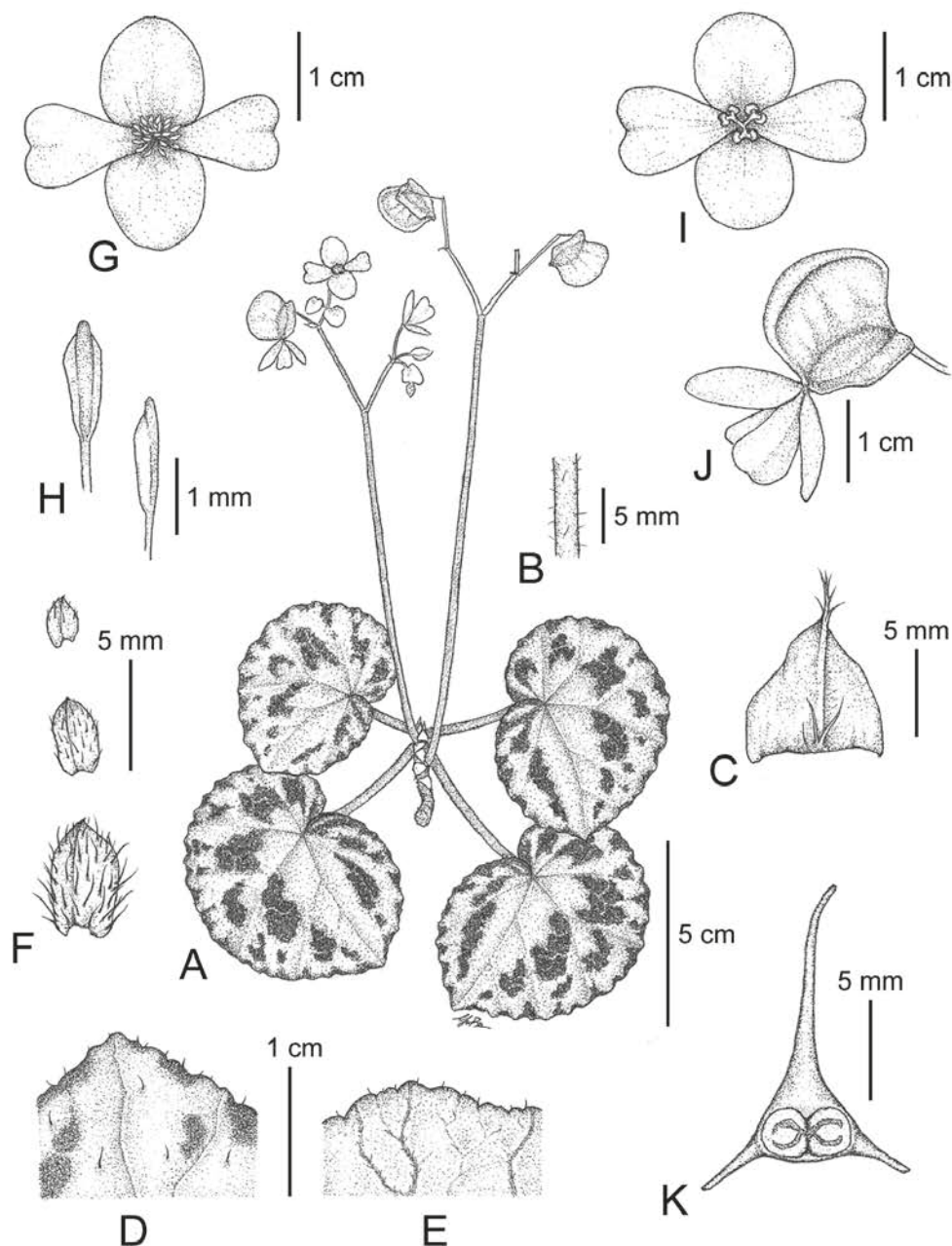
Herb, lithophytic, monoecious, rhizomatous, perennial. **Rhizome** creeping, red, c. 2.5 cm long, 5–7 mm wide, pubescent, internodes 2–3 mm long. **Stipules** persistent, pale green to pale brown, widely ovate to triangular, 6.5–8 × 5–8 mm, herbaceous, glabrous, strongly keeled, keel with few hairs at the base and fimbriate on upper half, margins entire, aristate with tip 1–2 mm long. **Leaves** alternate, succulent; petiole terete, pale red, 2–9.5 cm long, 2–4 mm in diam., villous; lamina asymmetric, broadly ovate, c. 64 × 52 mm, broad side c. 35 mm wide, basal lobes cordate, apex obtuse, margins crenate to shallowly serrate, villous, adaxially green with prominent dark green spots at the interveins, sparsely villous, abaxially green or pale red, minutely

villous on veins, venation basally 6–7 palmate, midrib distinct, primary and secondary veins prominent, secondary veins branching dichotomously or nearly so, reticulations faint. **Inflorescences** axillary, protandrous, dichasial cymes, 15–26.4 cm long, white pubescent on axes; peduncle dark red to light red, 14.6–22.4 cm long. **Bracts** boat-shaped, pale green, deciduous, ovate,  $3\text{--}5 \times 2\text{--}3$  mm, apex rounded to obtuse, margins entire, minutely pilose. **Staminate flower:** pedicel c. 12 mm long, pubescent; tepals 4, pale pink to white, outer 2 widely elliptic,  $10\text{--}14 \times 10\text{--}14$  mm, apex rounded, glabrous, inner 2 obovate,  $8\text{--}14 \times 2\text{--}4$  mm, apex retuse, glabrous; androecium zygomorphic, c. 4 mm across, stamens yellow, c. 35–37, c. 2.5 mm long for lower stamens to c. 1.5 mm long in upper stamens, filaments slightly fused at base, anthers yellow, oblong to elliptic, 2-locular, dehiscing through laterally positioned slits, apex slightly extended, c. 1 mm long, connective extended. **Pistillate flower:** pedicel 30–35 mm long, pubescent; tepals 4, adaxially pink to light pink, abaxially white, outer 2 widely ovate to elliptic,  $8\text{--}12 \times 2\text{--}5$  mm, apex rounded, glabrous, inner 2 obovate,  $10\text{--}14 \times 3\text{--}5$  mm, apex truncate, glabrous; ovary pale green to pink, body trigonous-ellipsoidal, locules 2, placenta bilamellate, c.  $9 \times 5$  mm, pubescent when young, glabrescent, unequally 3-winged, abaxial wing much larger, lunate, markedly cucullate, 10–11 mm wide, rounded proximally, truncate distally, lateral wings equal, narrowly oblong, 2.5–3 mm wide, proximally rounded, distally bluntly truncate, margin entire; styles 3, slightly fused at the base, yellow, c. 3.5 mm long; stigma kidney-shaped, spirally twisted and papillose all around. **Fruit** pendent, 8–10 mm long, recurved with age; abaxial wing facing downwards, forming a splash cup, tepals deciduous, green to red when fresh, brown when mature, dehiscing along the attachment of the lateral wings; wings unequal, lateral wings equal, 8–10 mm long, 3–4 mm wide, abaxial wing 9.5–13 mm long, 9–12 mm wide.

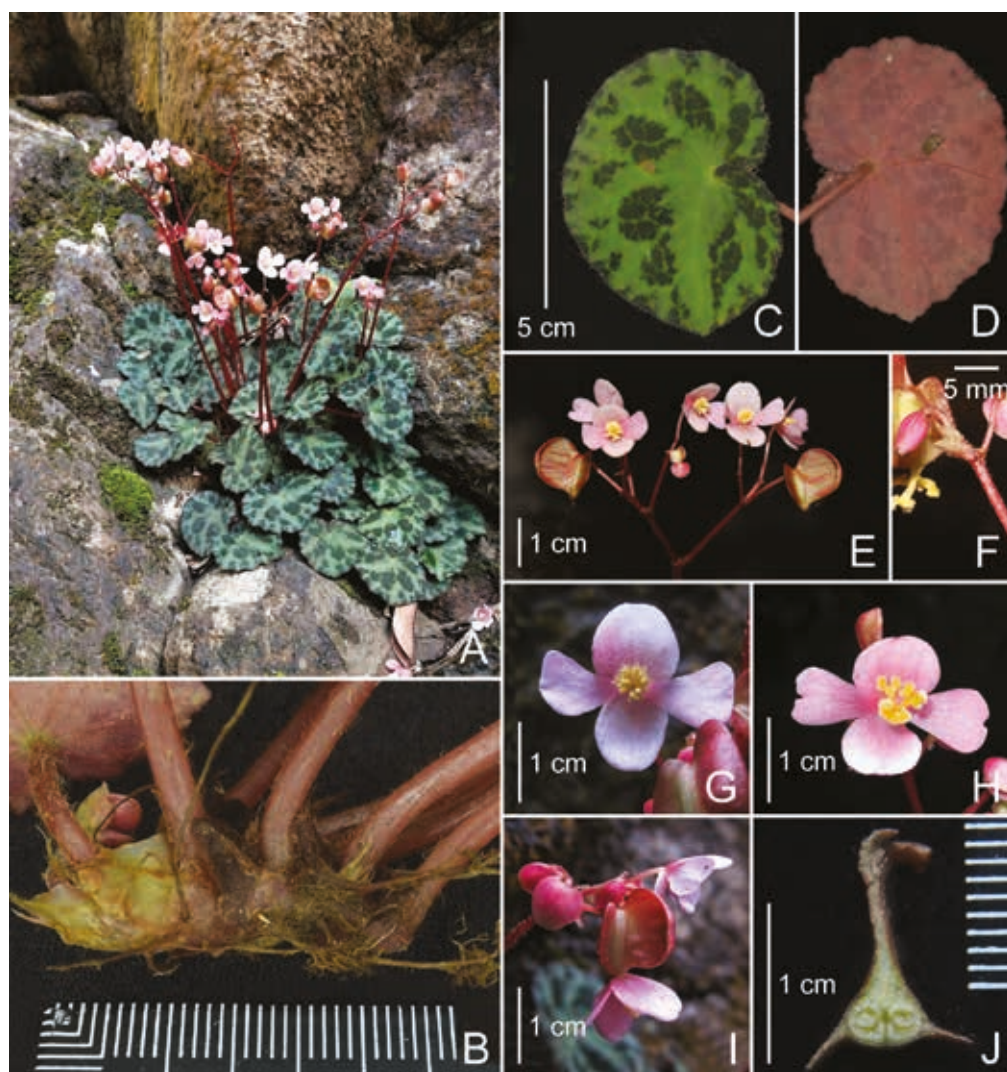
*Distribution and ecology.* *Begonia tandikan* is only known from the type locality. The majority of the population is located at an elevation of c. 75 m, thriving all year round due to a habitat with high humidity from the river and shade from the forest canopy. Some individuals located at slightly higher elevations are exposed to sunlight and lower humidity and shed their leaves during the dry season, leaving only the rhizome attached to the substrate. They revive during the wet season when there is sustained water necessary for their survival. Such adaptation to overcome this occasional dry spell is also observed in other Palawan endemic species such as *Begonia gironellae* C.I Peng et al. and *B. woodii* Merr. (Merrill, 1925: 478).

*Phenology.* Observed flowering and fruiting in the months of June and July.

*Etymology.* The epithet is inspired by the colourful plumage of the (male) Palawan peacock-pheasant (*Polyplectron napoleonis*), locally known as “*tandikan*”, which resembles the variegation in the foliage of the new species.



**Fig. 5.** *Begonia tandikan* Pranada, L.Camange, Cabanillas & Y.P.Ang. **A.** Habit. **B.** Close-up of peduncle showing vestiture. **C.** Stipule abaxial view. **D, E.** Close up of leaf adaxial and abaxial surfaces respectively. **F.** Bracts. **G.** Staminate flower face view. **H.** Stamen top and side views. **I.** Pistillate flower face view. **J.** Pistillate flower side view, showing ovary. **K.** Ovary cross section. Drawn by Y.P. Ang.



**Fig. 6.** *Begonia tandikan* Prunada, L. Camange, Cabanillas & Y.P. Ang. **A.** Habitat and habit. **B.** Stipules. **C, D.** Leaf adaxial and abaxial surfaces respectively. **E.** Inflorescence. **F.** Bract. **G.** Staminate flower face view. **H.** Pistillate flower face view. **I.** Pistillate flower side view showing ovary. **J.** Ovary cross section. (Photos: A, W. Cabanillas; B–D, F, H, J, V.C. Mangussad; E, G, I, L.M. Camange)

*Provisional IUCN conservation assessment.* The known population of the new species is found in a lowland secondary forest which makes it an easy target for poachers. Although the Balsahan river is not located within a protected area, the site is still largely free from other disturbances. Human activities are limited as it is found within the vicinity of the Iwahig Penal Colony. In multiple assessments of the population at Balsahan river, a total of < 100 mature individuals were found. *Begonia tandikan*



has already largely been extirpated by poachers from the lower stretch of the river which is much more accessible. Under the IUCN Red List categories and criteria (IUCN Standards and Petitions Committee, 2019), the new species is assessed here as Critically Endangered (CR B2ab(v)), as the species is found only along a single river, has an area of occupancy (AOO) of  $< 10 \text{ km}^2$ , and there is an observed decline in the number of mature individuals.

*Notes.* *Begonia tandikan* is morphologically similar to a few other *Begonia* sect. *Baryandra* species from the island of Palawan by having 2-locular ovaries with a cucullate abaxial wing, such as *B. acclivis* Coyle, *B. beijnenii*, *B. blancii* M. Hughes & C. I Peng, *B. cabanillasii*, *B. gironellae*, *B. hughesii* Rubite & C. I Peng, *B. quinquealata*, *B. suborbiculata* and *B. truncatifolia*.

In overall morphology, *Begonia tandikan* closely resembles *B. beijnenii*, a species that is also endemic to the island of Palawan. The two species resemble each other in their rhizomatous habit and variegated lamina with a cordate base, 4-tepaled pistillate flower, and bilocular ovary with cucullate adaxial wing. *Begonia tandikan* can be readily distinguished by its broadly ovate lamina (vs subrhomboid in *B. beijnenii*) with villous upper surface (vs glabrous), and shorter and wider stipules ( $6.5\text{--}8 \times 5\text{--}8 \text{ mm}$  vs  $11\text{--}14 \times 4\text{--}5 \text{ mm}$ ). The petioles are hairy in both species but the indumentum of *Begonia tandikan* is villous while that of *B. beijnenii* is tomentose. Additionally, one of the most distinguishing characters of *Begonia tandikan* is crenate to shallowly serrate margins in mature leaves. This character, however, is supposedly shared with *Begonia beijnenii* as the species is described as being ‘shallowly crenate’ in the protologue but the degree of crenation in *B. tandikan* is more pronounced than in *B. beijnenii*, which also appears to be more subentire than crenate. In the inflorescence, *Begonia tandikan* differs in its pubescent peduncle and pedicels (vs glabrescent or totally glabrous in *B. beijnenii*) and pilose bracts with rounded to obtuse apex (vs glabrous with acute apex) (Table 2).

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### Appendix 1. *Begonia* specimens examined for morphological comparison.

***Begonia cabanillasii*** Y.P.Ang et al. PHILIPPINES: Palawan, El Nido, Barangay Maligaya, Biodiversity Assessment Management System (BAMS), c. 30 m, Dec 2018, *RAAB 0001* (holotype PNH [PNH257805]; isotypes PPC, USTH).

***Begonia beijnenii*** Y.P.Ang et al. PHILIPPINES: Palawan, Municipality of San Vicente, Barangay Bigaho, Bigaho Falls, c. 30 m, 19 Jan 2020, *Camangeg*, & *Bustamante 2* (holotype PNH [PNH258383]; isotypes PPC, USTH).