



Begonia phouchomvoyensis (Begoniaceae), a new species from Lao PDR

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ABSTRACT: *Begonia phouchomvoyensis*, a new species from Phou Chom Voy Provincial Protected Area, Bolikhamxai province, Lao PDR, is described and illustrated. It is placed in *Begonia* sect. *Platycentrum*, and is assessed as belonging to the Vulnerable IUCN Category.

KEY WORDS: *Begonia phouchomvoyensis*, Begoniaceae, biodiversity, Laos, new taxon, Phou Chom Voy, plant taxonomy.

INTRODUCTION

The Provincial Protected Area “Phou Chom Voy”, in Bolikhamxai Province, is a diversity hotspot home to high montane evergreen forests, ranging from 18°23'–18°25' N and 105°02'–105°03'E, at elevations 1000–1550 m a.s.l. It extends over two districts and is exposed to varying climatic conditions from east to west, bordering Vietnam in its northwestern part. Based on its peculiar ecosystem, i.e. clouded moist evergreen forest with a main watershed area that provides a natural water source, as well as an important refuge for biodiversity, this area probably contains many endemic species but until now scientific data on its flora are insufficient (V. Lamxay pers. comm.). Through plant surveys from 2018 to 2019, many interesting plant species were found in this unique habitat.

The genus *Begonia* L. is a large genus, including about 2000 species with tropical to warm temperate distribution (Moonlight *et al.* 2018, Hughes *et al.* 2015–). In 2008, 12 species belonging to 6 section of *Begonia* were reported in Lao PDR (Hughes, 2008), prior to the discovery and description of *Begonia viscosa* Aver. & H.Q.Nguyen (Averyanov and Nguyen, 2012), *B. lamxayiana* Souvann. (Souvannakhoummane *et al.*, 2016), *B. namkadingensis* C.-J. Yang, Souladeth & Tagane (Yang *et al.*, 2018), *B. hinnamnoensis* Souvann. & Lanors., *B. khammouanensis* Souvann. & Lamxay (Souvannakhoummane *et al.*, 2018), *B. quadripetiolata* Aver. & H. Q. Nguyen and *B. tatarica* Aver. (Averyanov *et al.*, 2019a, b). In Lao PDR there are now 19 species and 8 section recorded. Here we describe a new species, collected in Phou Chom Voy Provincial Protected Area. Specimens from this population were compared with herbarium collections in HNL, FOF, E and NUoL and studied on the basis of taxonomic literature online in the Begonia Resource Centre (Hughes *et al.*, 2015).

TAXONOMIC TREATMENT

Begonia phouchomvoyensis Lanors., Lamxay & Souvann., *sp. nov.* **Figs 1 & 2**

Begonia Sect. *Platycentrum* (Klotzsch) A. DC.

Similar to *Begonia tamdaoensis* C.-I Peng in habit, leaf shape, and having three styles, but differing in the glabrous stipules (vs. sparsely hispid), adaxial leaf surface strigose (vs. glabrous to subglabrous), pistillate flowers with three tepals (vs. five) and three-locular ovaries (vs. two-locular). Also similar to *Begonia sinovietnamica* C.Y.Wu in habit, but differing in the pistillate flowers with three tepals (vs. five) and outer tepals sparsely villous (vs. glabrous).

Type: LAOS, Bolikhamxai province, Khamkeut district, Nahueng village, Phou Chom Voy Provincial Protected Area, 18°25'10.7"N 105°02'29.3"E, 28 Dec. 2017, Lamxay, L., PCV 1 (Holotype HNL! [HNL0009933], isotypes HNL, FOF, E, KKKU, alcohol collection at Biology herbarium of National University of Laos).

Monoecious rhizomatous herb, up to 35 cm tall. *Rhizomes* stout, 7–10 cm long, 5–9 mm in diam., dark green to reddish-brown, villous. *Petioles* 12–30 cm long, green, fleshy, villous with red hairs. *Leaves* lamina succulent, asymmetrical, ovate-orbiculate, 8–11 × 6.5–9 cm, base oblique cordate, apex acute, margin sinuate; adaxial surface green, strigose; abaxial surface pale green, sparsely villous, densely villous along veins; venation palmate, veins 6–8, prominent beneath. *Stipules* persistent, succulent, broadly triangular, 4–6 × 3–5.5 mm, reddish, apex acuminate, margin entire, both surface glabrous. *Inflorescences* compound cymes, axillary near the apex of the rhizomes, branched up to 4 times, bisexual, 7–18 cm long, staminate flowers distal and pistillate flowers basal, protandrous. *Peduncles* 6–14 cm long, lightly green, terete, red villous. *Bracts* narrowly elliptic to triangular, 10–15 × 5–10 mm, pale green to reddish, apex acuminate, margin strigose, outer

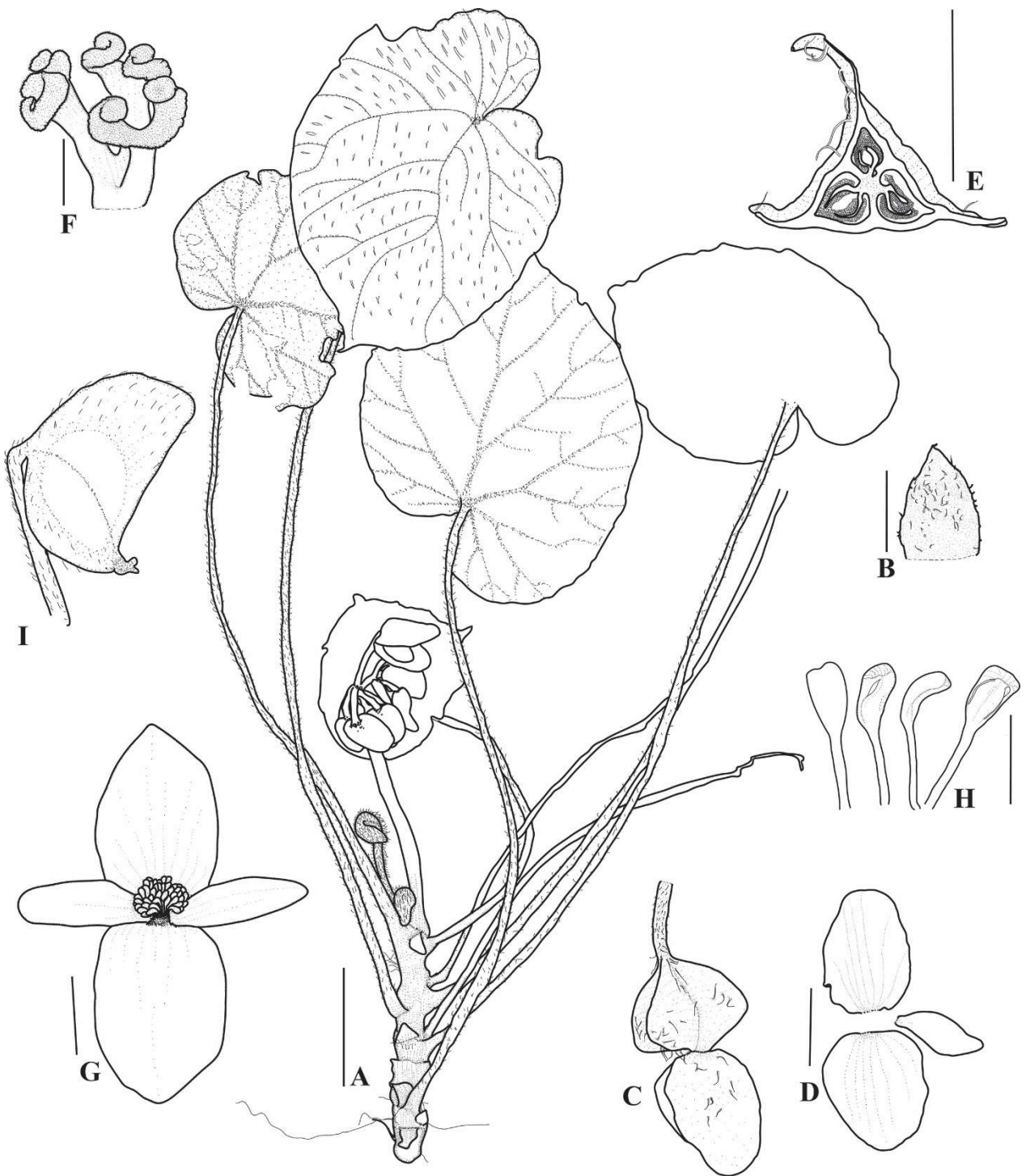


Fig. 1. *Begonia phouchomvoyensis* Lanors., Lamxay & Souvann. **A**, habit; **B**, bract; **C**, pistillate flower; **D**, tepals of pistillate flowers; **E**, cross section of an ovary; **F**, style and stigmatic band; **G**, staminate flower, face view; **H**, anthers dorsal, face and lateral view; **I**, fruits lateral view. Scale bars: A, 3 cm; B-E, G and I, 1 cm; F, H, 1 mm. Line drawing by K. Souvannakhoummane.

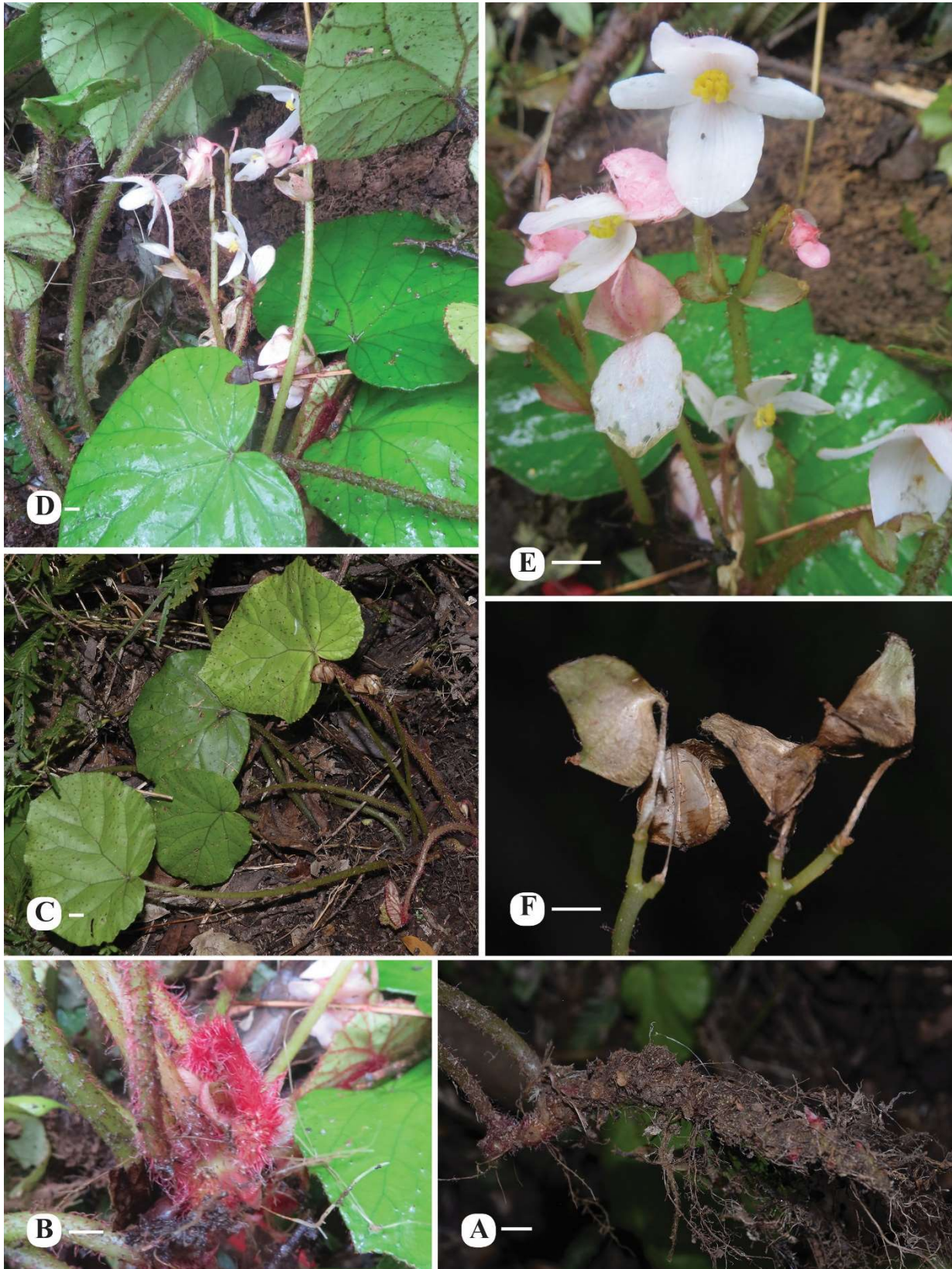


Fig. 2. *Begonia phouchomvoyensis* Lanors., Lamxay & Souvann. **A**, rhizome; **B**, red hairs on young shoot; **C**, fruiting plant; **D**, flowering plant; **E**, inflorescences with staminate flowers and pistillate flowers; **F**, ripe fruit. Scale bar, 1 cm. photos, A, C & F by Soulivanh Lanorsavanh; B, D-E, by Vichith Lamxay.



surface villous, inner surface glabrous. *Staminate flowers*: pedicels 20–25 mm long, pale green to red, erect or ascending, sparsely villous; tepals 4, white, outer pair elliptic-oblong, 20–24 × 12–15 mm, apex obtuse to rounded, outside surface sparsely villous, inner surface glabrous, inner pair narrowly elliptic, 12–15 × 2.8–4 mm, apex rounded, glabrous; stamens c. 45, bright yellow, filaments cluster, 1.8–2 mm long, free c. 0.4 mm long, anthers obovate, 1–1.2 mm long, dehiscent by longitudinal slits. *Pistillate flowers*: pedicels 4–10 mm long, lightly green, villous; tepals 3, white, outer 2, broadly elliptic-oblong, 14–16 × 8–12 mm, apex rounded, outside surface sparsely villous, inner narrowly elliptic, 7–10 × 3–6 mm, apex rounded, glabrous; ovary pale pink, sparsely reddish-villous, with 3 subequal wings; 3-locular, placentation axillary, two branches per locule; styles 3, connate near the base into a short stalk, deep yellow, stigmatic band U-shaped, spiral with minutely papillose. *Fruits* pale green to reddish (dry brown), capsules elliptic-subglobose, 1.2–2.2 × 1.5–1.8 mm; locules subglobose, 2–3.5 × 1.9–2.2 mm, dorsal wing trigonous-globose, 4–5 mm long, lateral wings 2.6–3 mm wide at base, sparsely villous. *Seeds* numerous, brown, ovoid-ellipsoid, 0.1–0.2 × c. 0.1 mm, testa reticulate.

Distribution. Only known from Phou Chom Voy Provincial Protected Area, Bolikhamxai Province, Lao PDR.

Ecology and phenology. Grows in evergreen montane forest near the summit of the range, 1200–1350 m a.s.l., in wet soil and rocks near streams. Flowering from November to December, fruiting January to March.

Vernacular name. Som Koung Phou Chom Voy (suggested here).

Additional specimens examined. Lao PDR, Bolikhamxai province, Khamkeut district, Nahueng village, Phou Chom Voy Provincial Protected Area, 18°25'10.7"N 105°02'29.3"E, 24 Apr. 2019, Lanorsavanh, S. & Lamxay, V., *SL 1606* (Biology herbarium of the National University of Laos).

Notes. The three species *B. phouchomvoyensis*, *B. sinovietnamica* and *B. tamdaoensis* appear to be closely allied, although they currently differ in sectional placement, with *B. sinovietnamica* being in sect. *Diploclinium*, and the other two species being in sect. *Platycentrum* (Moonlight *et al.* 2018). The placement of the rhizomatous species *B. sinovietnamica* is aberrant as sect. *Diploclinium* is composed of tuberous species, and it may fit better in sect. *Platycentrum*. The placement of *B. phouchomvoyensis* and *B. tamdaoensis* is somewhat aberrant for sect. *Platycentrum* as both possess three styles (not two as is usual for the section), and *B. phouchomvoyensis* has three-locular fruit; however, the combination of rhizomatous habit and axial placentation fit well for the section. The specific epithet '*phouchomvoyensis*' is derived from the name of the type locality.

Proposed IUCN category. *Begonia phouchomvoyensis* is found only in the type locality, which belongs to a provincial protected area status of which may be upgraded to a national protected area in the future. Only five individuals were observed in the studied location,

but they are not under immediate threat. However, given the very small area of occupancy (<4 km²), we consider *B. phouchomvoyensis* to be Vulnerable under the VUD2 criterion (IUCN, 2012).

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