Taiwania 71(4): 617–620, **2026**
DOI: 10.6165/tai.2026.71.617

Begonia neelamorum (Begoniaceae sect. *Monophyllon*), a remarkable new species from Arunachal Pradesh, Northeast India

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(Manuscript received 31 March 2026; Accepted 30 July 2026; Online published 5 August 2026)

ABSTRACT: *Begonia neelamorum* D.Borah & M.Khanal, sect. *Monophyllon*, is described as a new species from Arunachal Pradesh, India. It closely resembles *B. prolifera* A.DC. in having a globose tuber, a single, sessile, basifixed leaf with a uniformly light-green lamina, an inflorescence which arises from the base of the sessile leaf blade, and white staminate and pistillate flowers, but differs in its glandular-hispid indumentum, terete stem, ovate lamina with double-serrate margins, a dichasial cyme and shorter styles. The species description is accompanied by illustrations and photographs, and information is provided on its distribution, phenology, ecology, preliminary conservation assessment and similarity to other species.

KEY WORDS: Arunachal Pradesh, *Begonia kayinensis*, *Begonia oyuniae*, *Begonia prolifera*, Himalaya, *Monophyllon*, new species.

INTRODUCTION

Begonia L., with approximately 2,200 accepted species, is among the largest angiosperm genera and is distributed throughout the tropical and subtropical regions of the world (Hughes *et al.,* 2015–). Northeast India remains one of the most promising centres of *Begonia* diversity, as evidenced by ongoing studies (Borah *et al.,* 2021, 2023, 2024, 2025; Taram *et al*., 2020, 2021, 2022, 2023; Wahlsteen and Borah, 2022). The number of recorded species has increased from 38 (Camfield and Hughes, 2018) to 53 (Soni *et al.,* 2025). This rise is largely attributable to further exploration in the extensive intact forests covering a broad elevational range, extending from 200 to 5,500 m above sea level. Such a wide elevational gradient, coupled with high moisture availability and diverse topography, creates numerous microhabitats that promote speciation in several plant groups, including *Begonia* L. (Soni *et al.,* 2025).

At present, the genus is divided into 70 sections (Doorenbos *et al*., 1998; Moonlight *et al*., 2018), of which four are represented in Northeast India: sect. *Diploclinium* (Lindl.) A.DC., sect. *Monophyllon* A.DC., sect. *Parvibegonia* A.DC. and sect. *Platycentrum* (Klotzsch) A.DC. (Hughes *et al.,* 2015–; Taram *et al.,* 2023). *Begonia* sect. *Monophyllon* A.DC., until now, included only five species: *B. kayinensis* M.B.Maw & Y.H.Tan, *B. prolifera* A.DC., *B. paleacea* Kurz, *B. lanxangensis* Souvann. & Aver., and *B. oyuniae* M.Taram & N.Krishna (Maw *et al.,* 2023). These species are distributed across China, Northeast India, Myanmar, and Thailand (Taram *et al.,* 2020; Maw *et al.,* 2023; Yue *et al.,* 2023). The section is morphologically well defined, with species bearing one or two leaves and inflorescences arising from the base of the leaf blade or slightly below on the petiole, bifid placentae and an asymmetric androecium (Taram *et al.,* 2020; Maw *et al.,* 2023; Yue *et al.,* 2023).

During an expedition to a remote river valley in Keyi Panyor district of Arunachal Pradesh, the authors encountered an intriguing unifoliate, tuberous *Begonia* species with inflorescences arising directly from the base of the sessile single leaf, and an asymmetric androecium, characteristics indicative of *Begonia* sect. *Monophyllon*. Detailed morphological assessments based on both fresh material and dried specimens, critical evaluation of relevant literature (Clarke, 1879; Gu *et al.,* 2007; Hughes *et al.,* 2015–; Camfield and Hughes, 2018; Taram *et al.,* 2020; Souvannakhoummane *et al*., 2021; Yue *et al.,* 2023; Maw *et al.,* 2023), and comparison with herbarium specimens housed at CAL, ASSAM, ARUN, K, E, P as well as specimens available through the GBIF database, revealed that the material did not correspond to any previously described species. Hence, it is recognized as a species new to science and is described here for the first time. A detailed description, distributional notes, colour photographs, comparative table and a preliminary conservation assessment are provided. The type specimens were prepared following standard herbarium techniques (Jain and Rao, 1977) and deposited at CAL and ASSAM.

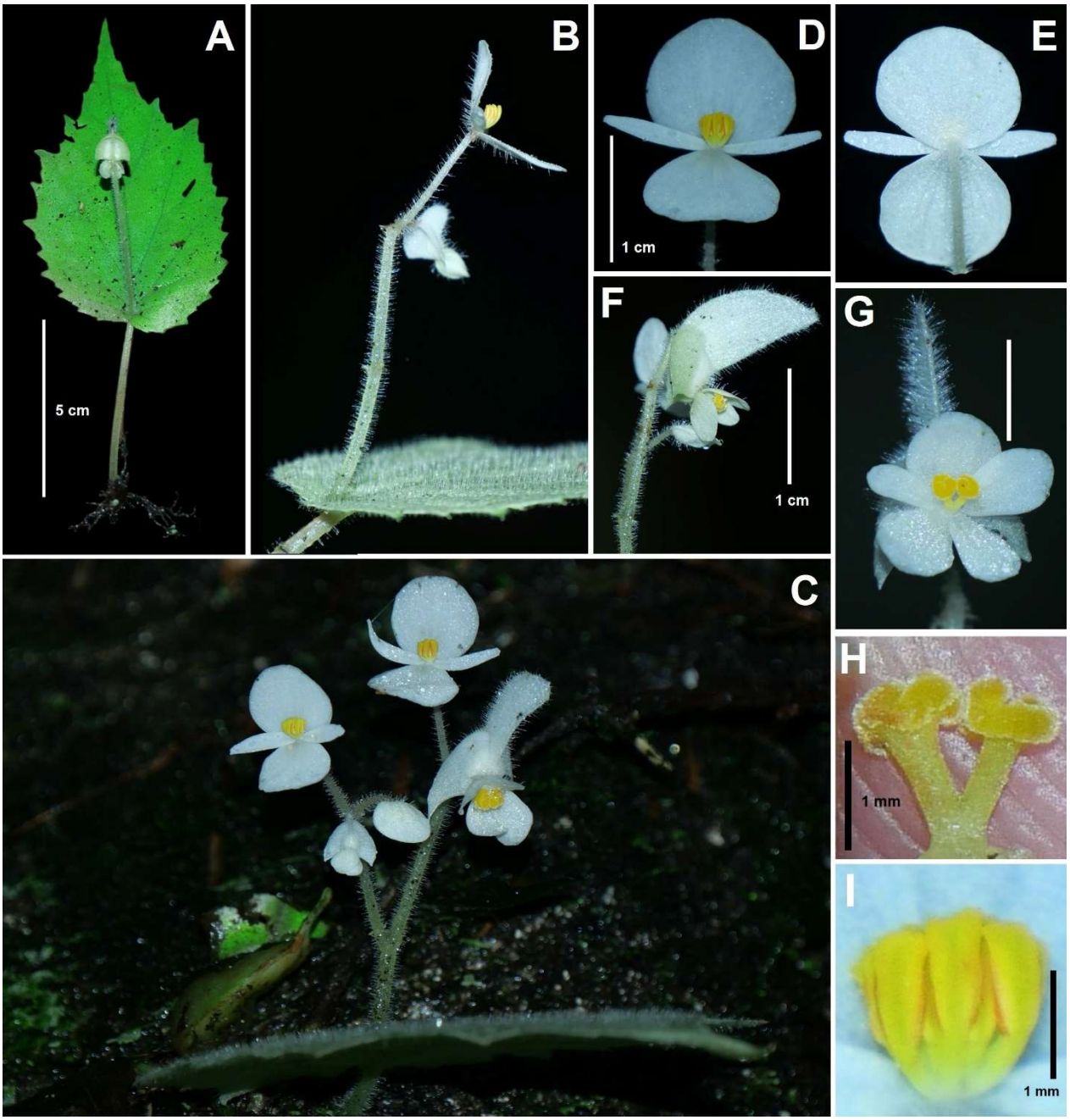

Fig. 1. ***Begonia neelamorum***. **A.** Habit; **B.** Flowering branch; **C. I**nflorescence; **D-E.** Male flowers, front and back views; **F.** Female flower, side view, **G.** Female flower, front view; **H.** Styles; **I.** Androecium. (*D.Borah, M.Khanal and G.Neelam 2267*)

TAXONOMIC TREATMENT

Begonia neelamorum D.Borah & M.Khanal, ***sp. nov***. (sect. *Monophyllon*) **Figs.1 & 2**

Type: INDIA. Arunachal Pradesh, Keyi Panyor District, on steep moist walls along the river Keyi, ca. 1000 m a.s.l., 24 May 2026, *D.Borah, M.Khanal and G.Neelam* 2267 (holotype CAL, isotype ASSAM!).

Diagnosis: *Begonia neelamorum* D.Borah & M.Khanal is most similar to *B. prolifera* A.DC. in having a globose tuber, a single, sessile, basifixed leaf with a uniformly light-green lamina, an inflorescence from the base of the lamina and a symmetric or subsymmetric, cordate leaf bases, but differs in its glandular-hispid indumentum (vs. glabrous to subglabrous), stem terete (vs. adaxially grooved), ovate lamina with double-serrate margins (vs. orbicular-cordate lamina with dentate to slightly incised margins, sometimes tuberculate at the edges), dichasial cymes (vs. thyrsoid cyme), shorter styles, 1 mm long (vs. 3 mm).

Table 1. Diagnostic morphological characters of ***Begonia neelamorum, B. kayinensis, B. oyuniae*** and ***B. prolifera***.

Character	*B. neelamorum*	*B. kayinensis*	*B. oyuniae*	*B. prolifera*
Leaf attachment	sessile	petiolate to subsessile	petiolate	sessile
Leaf margin	double-serrate	repand or undulate-dentate	obtuse-sinuate to acutely lobed	dentate to slightly incised, sometimes with dense, small tubercles along the margin
Leaf lamina	ovate, uniformly light green	broadly ovate to orbicular, bullate, purplish- to brownish-red, often mottled with maroon patches	ovate, uniformly light green	orbicular, adaxially deep green, abaxially light green
Vegetative and reproductive indumentum	densely glandular-hispid	mostly glabrous to sparsely pilose	mostly glabrous	subglabrous, sometimes with sparse white hispid hairs on the adaxial leaf surface
Inflorescence position	arising from the stem apex together with the leaf	arising from the stem apex together with the leaf	arising from the petiole	arising from the stem apex together with the leaf
Inflorescence type	dichasial cyme	panicle	raceme of cymes	thyrsoid cyme
Stamens	8–16	25–30	12	10–13
Ovary	densely glandular-hispid	glabrous	glabrous	subglabrous
Proliferous plantlets	absent	absent	present on the leaf lobes	absent

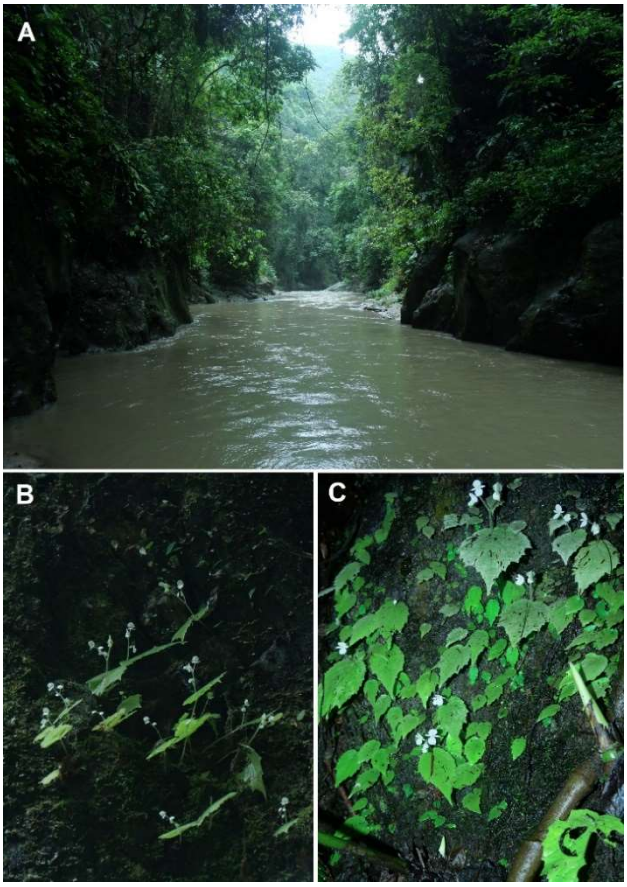

Fig. 2. ***Begonia neelamorum.*** **A-C.** Habitat

Description: Monoecious, tuberous, 10−20 cm tall; tuber globose with numerous fibrous roots, dull white, 2−5 mm in diameter. **Stem** upright, 2−8 cm long, glandular-hispid, succulent, terete. **Stipules** not seen. **Leaf** unifoliate, sessile, lamina ovate, 8−20 × 4−10 cm, basifixed, symmetric to subsymmetric, base cordate, lobes overlapping, apex acuminate, margin double-serrate, light green, glandular-hispid with uniseriate to multiseriate hairs, venation palmate, veins 8−10, prominent abaxially. **Cymes** dichasial, 4−8 cm long, arising from the stem apex together with the leaf, reaching almost three-quarters of the lamina length, peduncle light green or reddish brown, glandular-hispid, branching twice or thrice. **Staminate flower**, pedicel white, glandular-hispid, 10−15 mm long; tepals 4, white, margin entire; outer 2, broadly ovate to orbicular, 5−9 × 5−8 mm, apex rounded, glabrous adaxially, sparsely glandular-hispid abaxially towards base; inner 2, linear-lanceolate, 4.5−5 × 1.5−2 mm, apex obtuse, glabrous on both sides; androecium globose, asymmetric, oriented upwards, stamens 8–16, yellow, filaments fused at base, c. 1 mm long; anthers obovate, yellow, ca. 1 mm long, dehiscing longitudinally, connectives extended, recurved at maturity. **Pistillate flower**, pedicel white, glandular-hispid, tepals 5, white, unequal, narrowly obovate to broadly obovate to orbicular, 4−4.5 ×1.3−1.5 mm, apex rounded, margin entire, glabrous on both sides; styles 2, ca. 1 mm long, fused at base, yellow, stigmatic band crescent-shaped; ovary white, densely glandular-hispid, unequally 3-winged, locules 2, placentation axile, placentae bifid. **Capsule** nodding, pale green, larger wing 8−12 × 5−7 mm; shorter wings 6−7 × 2.5−3.5 mm; wings revolute. **Mature** fruits not seen.

Distribution and habitat: The new species is only known from a single locality in Keyi Panyor District, Arunachal Pradesh, growing on steep moist walls along the river Keyi at an elevation of 1000 m a.s.l. (Fig. 2). The habitat is subtropical forest, where the species grows in association with *Dendrobium gibsonii* Paxton, *Rhaphidophora decursiva* (Roxb.)Schott, *Elatostema* sp. and a few ferns. The range is likely to be wider and will be better known following further exploration in this remote area.

Phenology: Flowering occurs From May to June.

Etymology: The specific epithet honours the Neelam

clan of the Nyishi tribe of Arunachal Pradesh, who assisted in the collection of the species during a particularly treacherous expedition. Neelam is also the name of the village inhabited by members of the clan and is among the nearest villages to the type locality from which the species was collected.

Vernacular name: *Kobiirhopu Baabrai* (Nyishi)

Preliminary conservation assessment: So far, the species has been encountered at a single locality in a remote river valley in Keyi Panyor District, Arunachal Pradesh. Given the presence of several similar remote river valleys in the region, it may be found elsewhere in the future. Until more extensive surveys are conducted to determine the full extent of its distribution and population size, the species should be classified as Data Deficient (DD) as per IUCN (2022). At present, four populations have been recorded within an area of about 3 km², and considering the habitat where the species is located, no immediate threats are expected. It is recommended that monitoring and conservation efforts should be put in place to ensure the species' long-term survival and prevent it from becoming vulnerable or endangered.

Notes: *B. neelamorum* is closely allied to *B. prolifera*, from which it is distinguished in the diagnosis. It is also morphologically similar to *B. kayinensis* M.B.Maw & Y.H.Tan and *B. oyuniae* M.Taram & N.Krishna (the only species of this section is known from India). A detailed comparison of these species is provided in Table 1. With the description of *B. neelamorum*, the number of species in *Begonia* sect. *Monophyllon* increases to six, and the total number of *Begonia* species recorded from Northeast India increases to 54.

ACKNOWLEDGMENTS

We are thankful to the people of Arunachal Pradesh, on whose lands this species thrives. We are also thankful to Neelam Mosi, Toko Lej, Neelam Nikh, Neelam Raja, and Pokzum Rime for guiding us through the deep, dense forests; their courage enabled the collection of this species.

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