



Begonia egamii (Begoniaceae), a remarkable new species from Arunachal Pradesh, India

Authors: Borah, Dipankar, Taram, Momang, and Hughes, Mark

Source: *Candollea*, 78(2) : 147-151

Published By: The Conservatory and Botanical Garden of the City of Geneva (CJBG)

URL: <https://doi.org/10.15553/c2023v782a5>

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Begonia egamii (Begoniaceae), a remarkable new species from Arunachal Pradesh, India

Dipankar Borah, Momang Taram & Mark Hughes

Abstract

BORAH, D., M. TARAM & M. HUGHES (2023). *Begonia egamii* (Begoniaceae), a remarkable new species from Arunachal Pradesh, India. *Candollea* 78: 147–151. In English, English abstract. DOI: <http://dx.doi.org/10.15553/c2023v782a5>

The new species *Begonia egamii* D. Borah, Taram & M. Hughes (*Begoniaceae*) is described based on collections made in Leparada District of Arunachal Pradesh, India. It is superficially similar to *B. tamdaoensis* C.I Peng in having hispid hairs on the tepals and ovary and a zygomorphic androecium, but differs in having leaves rugulose above (vs. smooth), two stigmas (vs. three), and anthers retuse at the apex (vs. with an extended connective).

Keywords

BEGONIACEAE – India – Arunachal Pradesh – Morphology – New species – Taxonomy

Addresses of the authors:

DB: Department of Botany, Kaliabor College, Kuwaritol-782137, Assam, India. E-mail: dipankar.borah@rgu.ac.in

MT: Department of Botany, Rajiv Gandhi University, Rono Hills, Doimukh-791112, Arunachal Pradesh, India.

MH: Royal Botanic Garden Edinburgh, 20a Inverleith Row, Edinburgh, EH5 3LR, United Kingdom.

Submitted on May 5, 2023. Accepted on October 5, 2023.

First published online on November 20, 2023.

ISSN: 0373-2967 – Online ISSN: 2235-3658 – *Candollea* 78(2): 147–151 (2023)

© CONSERVATOIRE ET JARDIN BOTANIQUES DE GENÈVE 2023

Introduction

Arunachal Pradesh, commonly referred to as “land of dawn lit mountains”, is the largest state of Northeast India, with a high forest cover of 80% of its area (INDIA STATE OF FOREST REPORT, 2021). Hosting a diversity of habitats and a rich flora, this state has been a paradise for botanists since the 18th century. *Begonia* L. currently has 2,117 species worldwide and the number is still growing each year due to new discoveries (MOONLIGHT et al., 2018; HUGHES et al., 2023). In the state of Arunachal Pradesh 49 species of *Begonia* are known, eight of which were recently described and six species recorded in the region for the first time (TARAM et al., 2020, 2021, 2022, 2023; BORAH et al., 2021a, b, c, d; KRISHNA et al., 2021; WAHLSTEEN & BORAH, 2022). These species fall under four different sections following the sectional treatment of MOONLIGHT et al. (2018).

In recent years, internet based image databases and social media have become an important tool for plant enthusiasts and botanists to share their interest and knowledge of species diversity and taxonomy leading to the discovery of new species (GONELLA et al., 2015). Photographs of an interesting *Begonia* from Leparada District of Arunachal Pradesh were posted on facebook by Egam Basar, Director of State Horticulture, Research and Development Institute, Govt. of Arunachal Pradesh, India in December 2020. After contacting him, the authors of the present contribution collected a few specimens that are here recognized as a new species. It is described and illustrated below and named *B. egamii* after the discoverer.

Material and methods

Morphological observations and measurements of the species were made on both living material and dried specimens. Comparison was made with the protologues of *Begonia* species recorded from India and adjacent countries. Digital images of type specimens deposited at ASSAM, BM, CAL, E, G, K, L, P, and PE were examined.

Taxonomy

Begonia egamii D. Borah, Taram & M. Hughes, **sp. nov.** (Fig. 1, 2).

Holotypus: INDIA. Arunachal Pradesh: Leparada, Basar, EB Project Nature, 27°35'N 94°43'E, 1000 m, 4.I.2023, Taram & Borah 10023 (CAL!).

Begonia egamii D. Borah, Taram & M. Hughes has a very unusual combination of characters, making it hard to find a close ally for taxonomic comparison. It shares some characters with *B. tamdaoensis* C.I Peng such as having hispid hairs on the tepals and ovary and a zygomorphic androecium, but differs in having leaves rugulose above (vs. smooth), two stigmas (vs. three), and anthers retuse at the apex (vs. with an extended connective).

Creeping herb, 15–28 cm long, strigose; rhizome 5–10 × 1–1.5 cm, internodes very short at base, becoming a creeping stem toward apex with internodes 1–4 cm long, mixed with more congested internodes so leaves can appear crowded together, stipules triangular to elliptic-ovate, 1–1.6 × 0.8–1.2 cm, glabrous adaxially, pubescent abaxially, margin ciliate, apex shortly acuminate. Stem decumbent, 8–22 × 0.3–0.5 cm, rooting at nodes, indumentum strigose (trichomes c. 5 mm long), red. Leaves appearing clustered when internodes are close together, on 6–20 × 0.2–0.3 cm petioles; lamina elliptic-ovate, 8–30 × 6–18 cm, rugulose, apex acute to shortly acuminate, base cordate with lobes overlapping, margin subentire, crenate, or serrate, ciliate, densely strigose, veins palmate, 7–9. Inflorescence axillary, cymose; peduncles strigose, primary 7.3–20 cm long, secondary 1.3–7.5 cm long, tertiary 0.5–4.5 cm long; bracts lanceolate to elliptic-ovate, 0.5–1 × 0.3–0.6 cm, acute, entire, pubescent, with a pedicel 1–2 cm long. Staminate flower with 4 tepals; outer tepals 2, broadly ovate to orbicular, 1.3–2 × 1–1.5 cm, glabrous inside, pubescent outside, pink; inner tepals 2, ovate to elliptic ovate, 1–1.3 × 0.5–0.7 cm, glabrescent outside, glabrous inside, pinkish white; stamens 30–60, anthers basifixed, elliptic-obovate, c. 2 mm long, connective retuse, filament c. 1.5 mm long, fused at base into a stout column; pedicel 2.5–4 cm long, strigose. Pistillate flower with 5 tepals, unequal, elliptic ovate to broadly ovate, 1–1.3 × 0.9–1.2 cm, strigose outside, glabrous inside, pink; pistil c. 2–3 mm long, styles 2, c. 1 mm long, persistent, stigma papillose, yellow, ovary 2-locular, placentae bifid; pedicel 1–2 cm long, strigose. Capsule 1.2–1.5 cm long, densely strigose, with 1 oblong central wing and 2 shorter obtuse lateral wings, central wing 1–2 × 0.8–1 cm, lateral wings 1–1.2 × 0.3–0.5 cm.

Etymology. – The species is named after Shri. Egam Basar, a dedicated plant grower who first discovered the species in Leparada District of Arunachal Pradesh, India.

Distribution, ecology and phenology. – *Begonia egamii* is known only from the type locality in the EB Project Nature reserve area, Arunachal Pradesh, northeastern India. This reserve area is spread over 100 hectares dedicated to safeguard the native and threatened plant species of Arunachal Pradesh. It was found growing in two different habitat types: (1) gregariously in a recently cleared patch fully exposed to sunlight along with *Dicranopteris linearis* (Burm. f.) Underw., *Pteridium aquilinum* (L.) Kuhn, *Pseudodissochaeta assamica* (C.B. Clarke) Nayar, *Dimetia scandens* (Roxb.) R.J. Wang, *Carex* sp.; (2) on moist shady cliff faces in association with *Henckelia adenocalyx* (Chatterjee) D.J. Middleton & Mich. Möller, *Begonia handelii* Irmsch., *Hydrocotyle himalaica* P.K. Mukh., *Rhynchochelym parviflorum* Blume, *Boeica fulva* C.B. Clarke, *Alpinia* sp., along with mosses and liverworts.

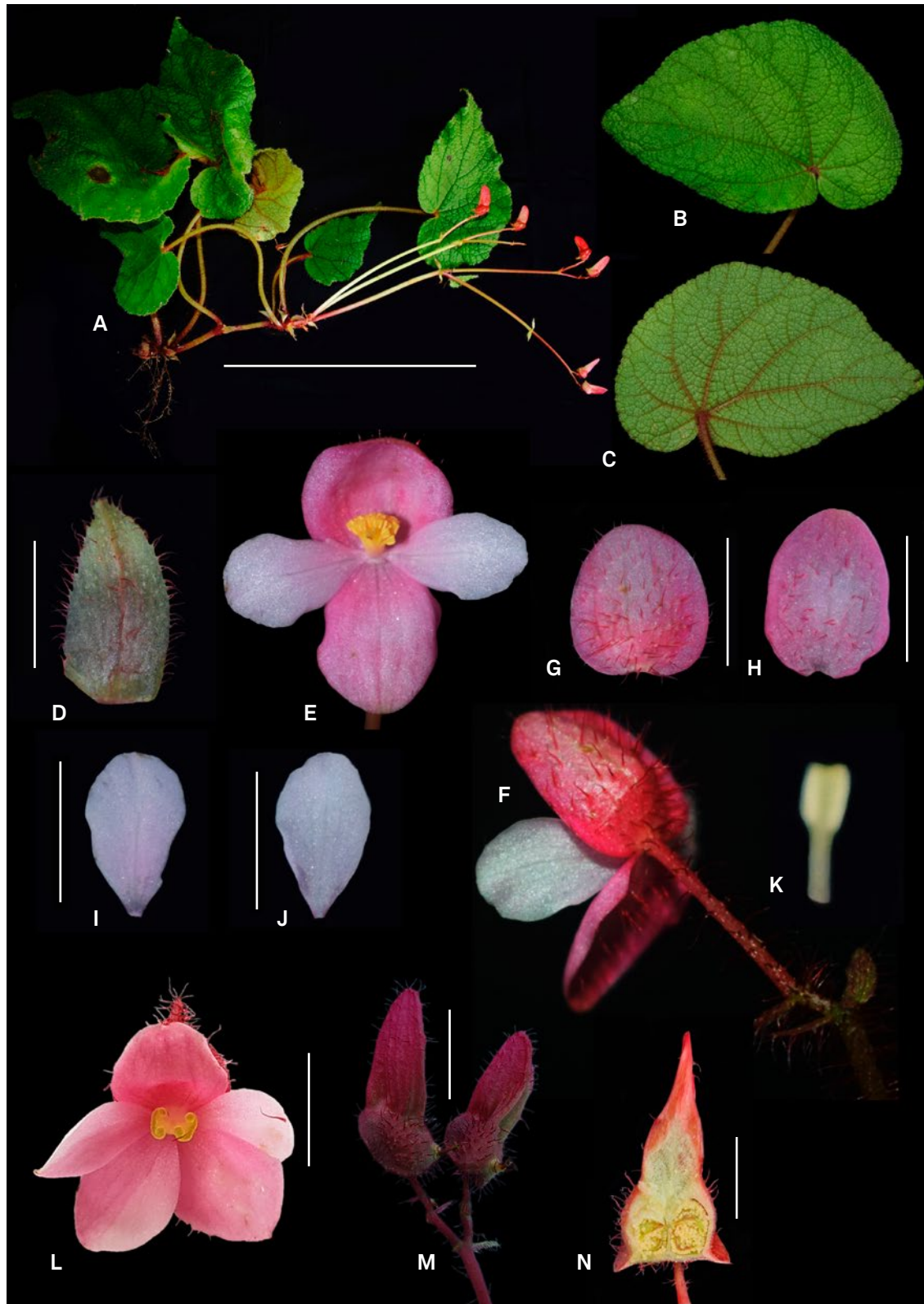


Fig. 1. – *Begonia egamii* D. Borah, Taram & M. Hughes. A. Habit; B. Adaxial leaf surface; C. Abaxial leaf surface; D. Stipule; E. Staminate flower (inner view); F. Staminate flower (outer view); G–H. Outer tepals of a staminate flower; I–J. Inner tepals of a staminate flower; K. Style; L. Pistillate flower; M. Fruit; N. Cross section of a fruit showing locules. [Photos: D. Borah & E. Basar]



Fig. 2. – *Begonia egamii* D. Borah, Taram & M. Hughes. A, B. Habitat; C. Detail of staminate flowers showing the unusual asymmetric androecium. [Photos: D. Borah & E. Basar]

Flowers from November to December, fruiting from December to January.

Notes. – Although the pistillate flowers with two stigmas, two-locular ovaries with axile and bifid placentae conform well with *Begonia* sect. *Platycentrum*, the asymmetric androecium is unusual for the section (Fig. 2C). The elongate creeping habit is also unusual; the geographically closest species with the same habit is *B. repenticaulis* Irmsch. from Yunnan, which considerably differs from *B. egamii* in having acutely lobed leaves. The unusual combination of characters suggests that the species may represent an isolated lineage. For the time being, the sectional placement of the new species remains undefined awaiting further research.

In combination with several other recent discoveries, this new species confirms the status of the montane forests of northeastern India as a region of immense floristic diversity

and endemism. It also highlights the utility of baseline regional taxonomic revisions in supporting and stimulating further taxonomic work.

Acknowledgements

We thank Ojar Taku for his travel assistance, Egam Basar and Tokar Angu for their help in the field and Edinburgh Botanic Garden (Sibbald) Trust, Project No: 2022#19 for the funding.

References

- BORAH, D., M. TARAM & E. WAHLSTEEN (2021a). A new *Begonia* species from Arunachal Pradesh, and some notes on *Begonia scintillans*. *Taiwania* 66: 450–454. DOI: <https://doi.org/10.6166/tai.2021.66.450>

- BORAH, D., M. TARAM & E. WAHLSTEEN (2021b). *Begonia dicressine* (Begoniaceae): a new record for India. *Nat. Conserv. Res.* 6: 110–111. DOI: <https://doi.org/10.24189/ncr.2021.044>
- BORAH, D., M. TARAM & E. WAHLSTEEN (2021c). *Begonia limprichtii* Irmsch. (Begoniaceae) – a new record for India. *Biodivers. Res. Conserv.* 61: 29–33. DOI: <https://doi.org/10.2478/biorc-2021-0002>
- BORAH, D., M. TARAM, L. YAMA & E. WAHLSTEEN (2021d). *Begonia arunachalensis* (Begoniaceae), a new tuberous species of *Begonia* from Arunachal Pradesh, India. *Gard. Bull. Singapore* 73: 475–480. DOI: [https://doi.org/10.26492/gbs73\(2\).2021-17](https://doi.org/10.26492/gbs73(2).2021-17)
- GONELLA, P.M., F. RIVADAVIA & A. FLEISCHMANN (2015). *Drosera magnifica* (Droseraceae): the largest New World sundew, discovered on Facebook. *Phytotaxa* 220: 257–267. DOI: <http://dx.doi.org/10.11646/phytotaxa.220.3.4>
- HUGHES, M., P.W. MOONLIGHT, A. JARA-MUÑOZ, M.C. TEBBITT, H.P. WILSON, K. ZHONG & M. PULLAN (2023). *Begonia Resource Centre*. Royal Botanic Garden Edinburgh. [<http://padme.rbge.org.uk/begonia>]
- INDIA STATE OF FOREST REPORT (2021). *Forest Survey of India*. Ministry of Environment, Forest and Climate Change (MoEF & CC), Government of India, India.
- KRISHNA, N., A. AMRUTHA & T. JAYAKRISHNAN (2021). A new species and a new record of *Begonia* (sect. *Platycentrum*, Begoniaceae) from northeastern India. *Phytotaxa* 482: 261–267. DOI: <https://doi.org/10.11646/phytotaxa.482.3.4>
- MOONLIGHT, P.W., W.H. ARDI, L.A. PADILLA, K.-F. CHUNG, D. FULLER, ... & M. HUGHES (2018). Dividing and conquering the fastest-growing genus: Towards a natural sectional classification of the mega-diverse genus *Begonia* (Begoniaceae). *Taxon* 67: 267–323. DOI: <https://doi.org/https://doi.org/10.12705/672.3>
- TARAM, M., D. BORAH, N. KRISHNA, A.K. PRADEEP, A. AMRUTHA & M. HUGHES (2020). *Begonia oyunia* (*Begonia* sect. *Monophyllon*, Begoniaceae), a remarkable new species from North-east India. *Gard. Bull. Singapore* 72: 109–115. DOI: [https://doi.org/10.26492/gbs72\(1\).2020-10](https://doi.org/10.26492/gbs72(1).2020-10)
- TARAM, M., D. BORAH & M. HUGHES (2021). *Begonia kekarmonyingensis* (Begoniaceae), a new species from Arunachal Pradesh, Northeast India. *Phytotaxa* 494: 268–272. DOI: <https://doi.org/10.11646/phytotaxa.494.3.2>
- TARAM, M., E. WAHLSTEEN & D. BORAH (2022). *Begonia marki-ana* (Begoniaceae), a new species from Lower Dibang Valley of Arunachal Pradesh, Northeast India. *Taiwania* 67: 165–170. DOI: <https://doi.org/10.6165/tai.2022.67.165>
- TARAM, M., D. BORAH & M. HUGHES (2023). Two new records of *Begonia* for the flora of India from Arunachal Pradesh. *Phytotaxa* 584: 115–120. DOI: <https://doi.org/10.11646/phytotaxa.584.2.4>
- WAHLSTEEN, E. & D. BORAH (2022). A checklist with three new species and two new country records of *Begonia* from Dibang Valley, Arunachal Pradesh, India. *Brittonia* 74: 403–418. DOI: <https://doi.org/10.1007/s12228-022-09725-9>