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## ***Rhynchoechum nirijuliense* (Gesneriaceae), a new species from Northeast India**

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**ABSTRACT.** A new species of *Rhynchoechum* (Gesneriaceae), *Rhynchoechum nirijuliense* Taram & D.Borah, is described from Nirijuli of Papum Pare district in Arunachal Pradesh, Northeast India. The new species is compared to *Rhynchoechum ellipticum* and *R. calycinum*. A detailed description, colour photographs and notes on the distribution and ecology of the new species are provided.

**Keywords.** Eastern Himalaya, Flora of Arunachal Pradesh, *Rhynchoechum ellipticum*

### **Introduction**

*Rhynchoechum* Blume in the Gesneriaceae comprises 16 species distributed across India to China, Japan, the Philippines, the Malay Peninsula, Sumatra and Papua New Guinea (Anderson & Middleton, 2013; Möller et al., 2017; Roy et al., 2019). It has opposite or alternate leaves, cymose inflorescences with small white to pink flowers and characteristic white indehiscent berries (Anderson & Middleton, 2013). The plants are mostly found in tropical forests, preferring moist shady places near streams and river banks (Anderson & Middleton, 2013). The genus is also known to have ethnobotanical importance and is used by many tribes residing in Northeast India (Kayang, 2007; Ozah & Borah, 2018). In India, a total of nine species are found: *R. alternifolium* C.B.Clarke, *R. calycinum* C.B.Clarke, *R. ellipticum* (Wall. ex D.Dietr.) A.DC., *R. gracile* B.M.Anderson, *R. hookeri* (C.B.Clarke) B.M.Anderson, *R. obovatum* (Griff.) B.L.Burt, *R. parviflorum* Blume, *R. permolle* (Nees) B.L.Burt and *R. vestitum* Wall. ex C.B.Clarke (Anderson & Middleton, 2013; Sinha & Datta, 2016; Möller et al., 2017; Taram et al., 2020).

During ongoing floristic exploration of the tropical forests of Nirijuli of Papum Pare district, Arunachal Pradesh, India, the authors collected some interesting specimens of a *Rhynchoechum*. On critical examination of the specimens and comparison with specimens present in ARUN, ASSAM, K and PE, and after perusing the relevant literature, it was found to differ from known taxa and is hence described here as a new species.

***Rhynchotechum nirijuliense* Taram & D.Borah, sp. nov.**

*Rhynchotechum nirijuliense* is most similar to *R. ellipticum* in plant height, arrangement and shape of leaves, young parts woolly pubescent, reduced or absent peduncle and narrowly triangular calyx lobes, and to *R. calycinum* in overall leaf shape, denticulate lamina margin, inflorescence length and villous branches, but differs from both in the generally shorter petiole, more numerous secondary veins, more villous calyx lobes, longer style and larger berries (see Table 1). – TYPE: India, Arunachal Pradesh, Papum Pare district, Nirijuli, Bage Hills, tropical bamboo forest, 27°7'19"N, 93°43'56"E, 166 m, 1 May 2019, *M. Taram & D. Borah 0157* (holotype CAL; isotypes ASSAM, ARUN, E). (Fig. 1)

**Stems** to 2 m tall, 1–1.8 cm diameter, internodes 4–16 cm. **Leaves** opposite; almost sessile, petiole if present 0.5–1.2 cm long; blade broadly lanceolate to obovate, (28–)30–38(–45) × (11.5–)12–16(–19.4) cm, apex acute to shortly acuminate, base narrowly cuneate, margin undulate, denticulate, teeth to 1 mm long, lateral veins (26–)27–32(–39) on each side, adaxially green, glabrous, abaxially pale green, villous along veins, later glabrescent, young ones densely villous on both surfaces. **Inflorescence** axillary, including from nodes of fallen leaves; **peduncle** reduced or absent, branches 4–6 from each node, oppositely arranged 2–3 from each side, up to 6.5 cm long, twice to thrice branched, first branch 1–1.5 cm long, second branch 1–1.5 cm long, third branch 0.3–0.5 cm long, axes densely villous; **bracts** ovate to ovate lanceolate, navicular, undulate, deeply grooved along the midvein, paired, each at the axil of the first branches, 10–12 × 4–6 mm; **bracteoles** paired, one per branch, pale pink, ovate, entire, membranous, midvein prominent, 1–1.2 × 0.8–1 cm; **pedicels** 0.3–1.5 cm long, silky villous. **Calyx** divided to near the base, tube 1–2 mm long, lobes ovate lanceolate, with broadly acuminate apices, 7–10 × 1.8–2.2 mm, equal to or longer than the corolla, villous outside, glabrous inside. **Corolla** pink, exterior glabrous; **tube** 2–3 mm long; **upper lip** 5–7 mm, upper lobes orbicular, 2–3 × 5–6 mm, apices rounded to obtuse; **lower lip** 8–10 mm, lower lobes ovate oblong, 3–5 × 3–4 mm, apices obtuse to rounded. **Stamens** inserted near the base of the corolla tube; **filaments** c. 1 mm long; **anthers** c. 1.5 mm diameter, glabrous; **staminode** inconspicuous. **Ovary** ovoid, 1–1.5 × 1–1.2 mm, glabrous; **style** 8–9 mm long; stigma apex globose/rounded to truncate. **Fruit** fleshy, white, ovoid, 1.2–1.5 × 0.7–0.9 cm, glabrous.

**Distribution and ecology.** *Rhynchotechum nirijuliense* is known from a single locality, the Bage Hills of Nirijuli. It occurs in damp and shady areas alongside streams and grows in association with *Bambusa* sp. (Poaceae), *Begonia aborensis* Dunn (Begoniaceae), *Impatiens laevigata* Wall. ex Hook.f. & Thomson, *Impatiens marianae* Van Geert, *Impatiens porrecta* Wall. ex Hook.f. & Thomson (Balsaminaceae), *Litsea lancifolia* (Roxb. ex Nees) Fern.-Vill. (Lauraceae), *Musa* sp. (Musaceae), *Peliosanthes* sp. (Asparagaceae), *Phrynium pubinerve* Blume (Marantaceae), *Pseuderanthemum latifolium* (Vahl) B.Hansen, *Strobilanthes secunda* T.Anderson (Acanthaceae), *Stauranthera umbrosa* (Griff.) C.B.Clarke (Gesneriaceae) and *Stuednera assamica* Hook.f. (Araceae).

**Table 1.** Distinctive characters of *Rhynchotechum nirijuliense*, *R. ellipticum* and *R. calycinum*.

Character	<i>R. nirijuliense</i>	<i>R. ellipticum</i>	<i>R. calycinum</i>
Petiole length	0.5–1.2 cm	1–4 cm	5–6.5 cm
Number of lateral veins of leaves	(26–)27–32(–39)	1–25	14–15
Indumentum of calyx lobes	Villous	Scabrous	Glabrous
Style length	8–9 mm	5.5 – 7.5 mm	3 mm
Shape and size of berry	Sharply ovoid, 12–15 × 8–10 mm	Widely ovoid, 3–4.5 × 3–4.5 mm	Ellipsoid, 2.5–2.75 × 2–2.25 mm

*Phenology.* *Rhynchotechum nirijuliense* flowers from April to May, fruiting is from May onwards.

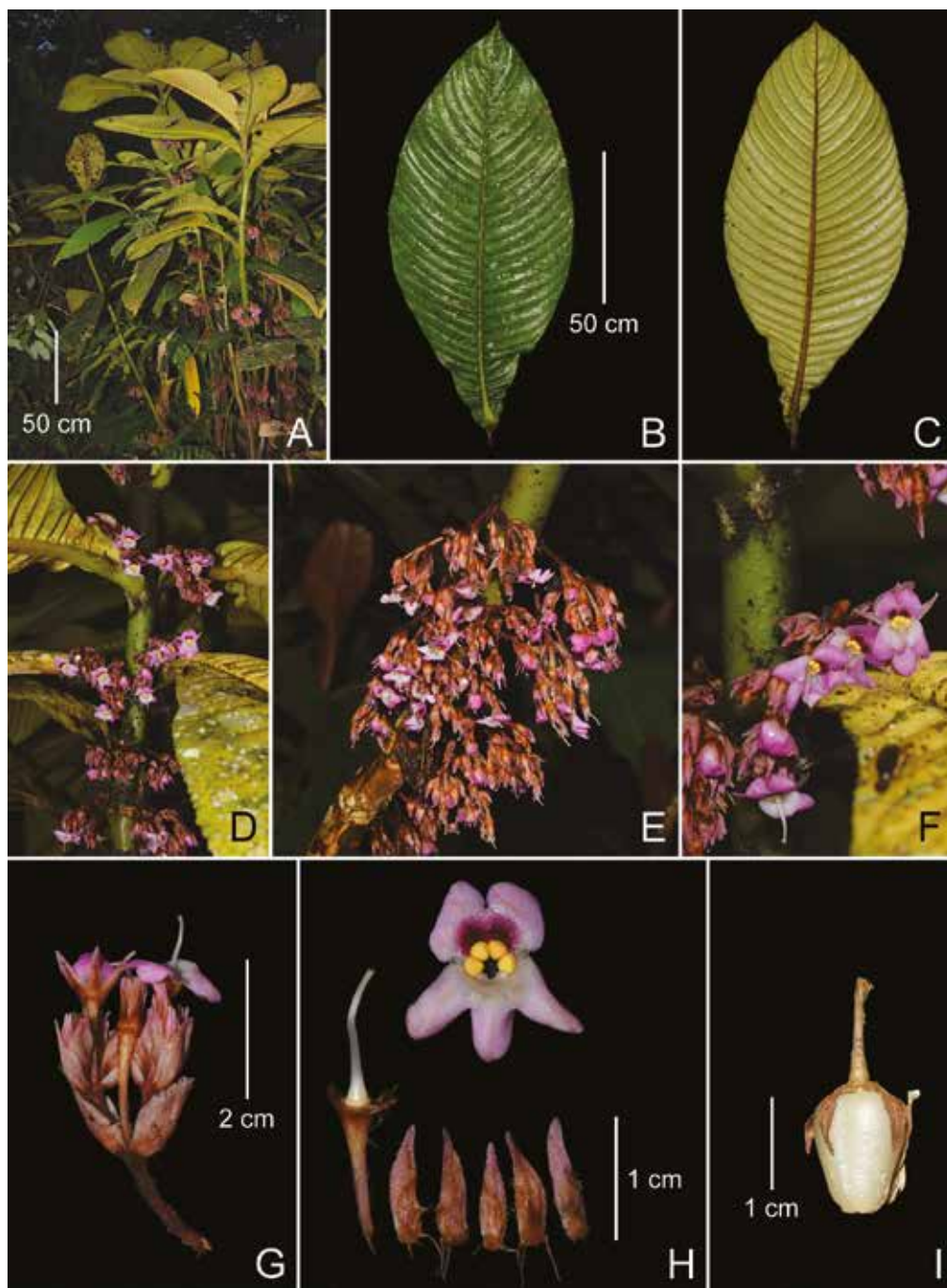
*Etymology.* The specific epithet refers to the place where the new species was found.

*Provisional IUCN conservation assessment.* Despite several investigations throughout the whole district, only two populations with nearly 100 individuals each (total < 200, AOO < 5 km<sup>2</sup>) were found. With potential threats including human settlement and other development activities, the species could be assessed as Endangered (EN B2ab(iii), D) based on current data (IUCN Standards and Petitions Subcommittee, 2017). However, similar habitats exist in many other regions of the state and in view of the limited fieldwork presently possible, an assessment of Data Deficient (DD) may be a more suitable current assessment.

*Additional specimens examined.* INDIA: **Arunachal Pradesh:** Papum Pare district, Nirijuli, Bage Hills, near a perennial stream, 27°7'13"N, 93°43'48"E, 166 m, 06 May 2019, *Taram & Borah 0169, 0170* (ASSAM)

*Notes.* *Rhynchotechum* is an Asian genus and half of the species are distributed in India (mostly Northeast India). Characters such as inflorescence size, style length and shape of the berries are very useful in the delimitation of species (Anderson & Middleton, 2013). Apart from the new species described here, the other species of *Rhynchotechum* found in the state are *R. ellipticum*, *R. calycinum*, *R. parviflorum*, *R. vestitum* and *R. obovatum*.

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**Fig. 1.** *Rhynchotechum nirijuliense* Taram & D.Borah. **A.** Habitat and habit. **B.** Adaxial surface of leaf. **C.** Abaxial surface of leaf. **D–F.** Inflorescences, showing the axillary arrangement of the cymes. **G.** Side view of a branch of the inflorescence. **H.** Dissected floral parts. **I.** Fruit. (Photos: D. Borah)

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