

***GASTROCHILUS PECHEI* (ORCHIDACEAE), A NEW ADDITION TO THE FLORA OF INDIA**

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ABSTRACT. *Gastrochilus pechei* was recently documented in Vijoynagar, Changlang district, Arunachal Pradesh, India. Identification was based on the spathulate sepals and petals; the acute, sub-triangular, slightly irregularly erose margin of the epichile with a central cushion, and the subglobose hypochile. The species belongs to the section *Brachycaules*. This report represents a new distribution record for India. An updated description and detailed photographs based on Indian material are provided.

KEYWORDS/PALABRAS CLAVE: Aeridinae, Arunachal Pradesh, *Gastrochilus*, new record, nuevo registro, Vijoynagar

Introduction. The genus *Gastrochilus* was established by D.Don in 1825 (Don, 1825). It is a monopodial orchid genus comprising 72 to 77 species (POWO, 2024; Zhang *et al.*, 2024) widely distributed in tropical, subtropical and temperate Asia. This genus is characterised by a short axillary inflorescence, often with brightly coloured flowers, a distinct epichile on the front of the saccate hypochile, and two porate, globose pollinia that are borne on a slender stipe (Christenson, 1985; Seidenfaden, 1988; Tsi, 1996).

According to Pridgeon *et al.* (2014) this genus belongs to the subtribe Aeridinae because of its high species richness in East Asia and the Himalayas (Tsi, 1996). So far, 22 species have been recorded from India (Misra, 2019) of which 14 species viz. *Gastrochilus acutifolius* (Lindl.) Kuntze; *G. affinis* (King & Pantl.) Schltr.; *G. arunachalensis* A.N.Rao; *G. calceolaris* (Buch-Ham ex J.E.Sm.) D.Don; *G. changjiangensis* Q.Liu & M.Z.Huang; *G. dasypogon* (Sm.) Kuntze; *G. distichus* (Lindl.) Kuntze; *G. inconspicuus* (Hook.f.) King & Pantl.; *G. intermedius* (Griff. ex Lindl.) Kuntze; *G. obliquus* (Lindl.) Kuntze; *G. platycalcaratus* (Rolfe) Schltr.; *G. pseudodistichus* (King & Pantl.) Schltr.; *G. rutilans* Seidenf.; *G. sessanicus* A.N.Rao are found in Arunachal Pradesh (Nyorak, 2023).

During a field trip to Vijoynagar, in the Changlang district of Arunachal Pradesh on 11 September 2024,

the first author collected an unidentified epiphytic orchid with its flower. After critical examination of the flowers and based on available literature (Chen *et al.*, 2009; Chowdhery, 1998; Gogoi, 2017, 2019; King & Pantling, 1898; Liu *et al.*, 2020; Lucksom, 2007; Nyorak, 2023; Pearce & Cribb, 2002; Pradhan, 1979; Rao, 2009, 2010; Singh *et al.*, 2019; Swami, 2017) and, it was identified as *Gastrochilus pechei* (Rchb.f.) Kuntze based on yellow sepals and petals and white labellum, all densely covered with purplish spots, spathulate; epichile sub-triangular, slightly irregularly erose margin, apex acute; hypochile subglobose, with central cushion. It is known only from Myanmar in the Naungmeng town, Putao County, Kachin state (Liu *et al.*, 2020). Therefore, the present report of its occurrence from Arunachal Pradesh forms a new distributional record for India. A detailed description, illustration, and information on habitat and distribution have been provided in the present manuscript.

This species belongs to *Gastrochilus* D.Don, characterized by its epiphytic habit, monopodial growth with a short stem. It has many leathery, flat leaves that sheathe at the base, with an unequally bilobed apex. The inflorescence is lateral, relatively short, sub-umbellate, and bears a few to many flowers. The flowers are small to medium-sized and fleshy. Sepals and

petals are free, similar, and spreading. The lip features a subglobose, saccate hypochile; the epichile is fan-shaped with fimbriate margins. The column is short and thick; there are 2 pollinia that are subglobose.

Materials and methods. Fresh plant material was collected during a botanical excursion on 11 September 2024 in the Vijoyanagar of Changlang district of Arunachal Pradesh, India. It was identified based on available literature and critical examination of the flowers and the type specimens accessed from K and W. The measurements and species descriptions of vegetative and reproductive characters were made from living plants following the terminology for morphological descriptions by Beentje (2012). All the photos were taken with a Canon EOS 700D fitted with an EF 100 mm f/2.8L Macro USM lens. The voucher specimen has been deposited at the TOSEHIM (Herbarium of The Orchid Society of Eastern Himalaya), Regional Orchid Germplasm Conservation and Propagation Centre (Assam Circle), Assam.

TAXONOMIC TREATMENT

Gastrochilus pechei (Rchb.f.) Kuntze in Revis. Gen. Pl. 2: 661. 1891; *Saccolabium pechei* Rchb.f. in Gard. Chron., ser. 3, 5: 447. 1889. (Fig. 1, 2).

TYPE: Myanmar, Moulmein. Rchb.f., 40811(W!), W0021485 (holotype); s.coll. s.n. (K!), K000891600 (isotype).

Plant epiphytic, pendent; roots clustered. *Stem* 1.0–1.5 cm long, erect or pendent, covered with overlapping leaf sheaths, stout, with 4–5 leaves. *Leaves* 15–20 × 3–5 cm, nearly basal, distichous, oblong, dark green above, pale green below, fleshy, apex obtuse and unequally 2-lobed, shortly sheathed at base. *Inflorescence* leaf opposed, umbel or sub-umbellate, 1–4, from the base of stem; peduncle 1.5–2.5 cm, straight, terete, stout, glabrous, with 2 cupular sheaths; rachis 0.5–0.8 cm long, with 4–12 pedicellate flowers; pedicellate-ovary 1.0–1.5 cm long, slightly ribbed, glabrous; floral bracts broad, obtuse, 0.5–0.5 × 0.2–0.3 cm. *Flower* 1.2–1.5 cm across, sepals and petals yellow with white lip, all densely covered with dark purplish spots; pedicel and ovary slender, 1.2–1.4 cm long. *Sepals* 1.2–1.3

× 0.4–0.5 cm, similar, spatulate, base contracted, obtuse, glabrous. *Petals* 1.1–1.1 × 0.3–0.4 cm, spatulate, obtuse. *Lip* with an epichile and a saccate hypochile; epichile 0.5–0.6 × 1.5–1.6 cm, subtriangular, fleshy on the center, adaxially glabrous, with a central cushion with a yellow blotch, margin irregularly fimbriate and erose, acute; hypochile 0.8–0.9 × 0.8–0.9 cm, subglobose, white tinged with yellow at bottom, outside with 5 ridges. *Column* 0.25–0.30 cm long, stout; rostellum deeply 2-lobed; pollinia 2, 0.08–0.12 cm across, grooved, ovoid, yellow; caudicle *ca.* 0.15 cm long, elongate; viscidium *ca.* 0.07 cm, oblong, grooved, apex bilobed; anther cap nearly subglobose, apex narrowed into a beak. *Fruit* 5–6 × 0.8–1.0 cm, cylindric, ridged, distinctly ribbed, pale green, glabrous, sparsely spotted with dark purple.

SPECIMEN EXAMINED: India. Arunachal Pradesh: Changlang district, Vijoyanagar, 11 September 2024, V.K. Sahani 0001 (TOSEHIM!).

FLOWERING: September–October.

HABITAT: Epiphytic in moist, evergreen rainforest on small trees near riverbanks at an elevation of 1200 m.

DISTRIBUTION: Myanmar, and India (Arunachal Pradesh).

Discussion. According to recent molecular and morphological data, *Gastrochilus pechei* belongs to the sect. *Brachycaules* Q.Liu & J.Y.Gao ex Jun Y.Zhang & H.He (Zhang *et al.*, 2024). Ten species are included in this section are distributed mainly in India, S and SW China, Nepal, Bhutan, Myanmar, Laos, Vietnam, and Thailand (Zhang *et al.*, 2024). Out of 10 species, six species are documented from India, including: *Gastrochilus acaulis* (Hook.f.) Kuntze, *G. bigibbus* (Rchb.f. ex Hook.f.) Kuntze, *G. dasypogon* (Lindl.) Kuntze, *G. flabelliformis*, *G. obliquus* and *G. suavis* Seidenf. (Misra, 2019; Singh *et al.*, 2019). As a result, with the present collection of *Gastrochilus pechei*, there are now seven species in this section within India, and there are now 23 species found in India, including 16 species from Arunachal Pradesh.

Morphologically, this species is closely similar to *G. arunachalensis*, *G. obliquus* and *G. somai*



FIGURE 1. *Gastrochilus pechei*. **A.** Plants in natural habitat. **B.** Close-up of the inflorescence in its natural habitat. **C.** Plants with fruits. Photographs and plate by Vinay Kumar Sahani and Khyanjeet Gogoi.

(Hayata) Hayata, but distinct from these having the spatulate, yellow sepals and petals and white lip, all densely covered with purplish spots; epichile sub-triangular, slightly irregularly erose margin,

apex acute; hypochile subglobose, with central cushion. The differences between *Gastrochilus arunachalensis*, *G. obliquus*, *G. pechei* and *G. somai* are shown in Table 1.

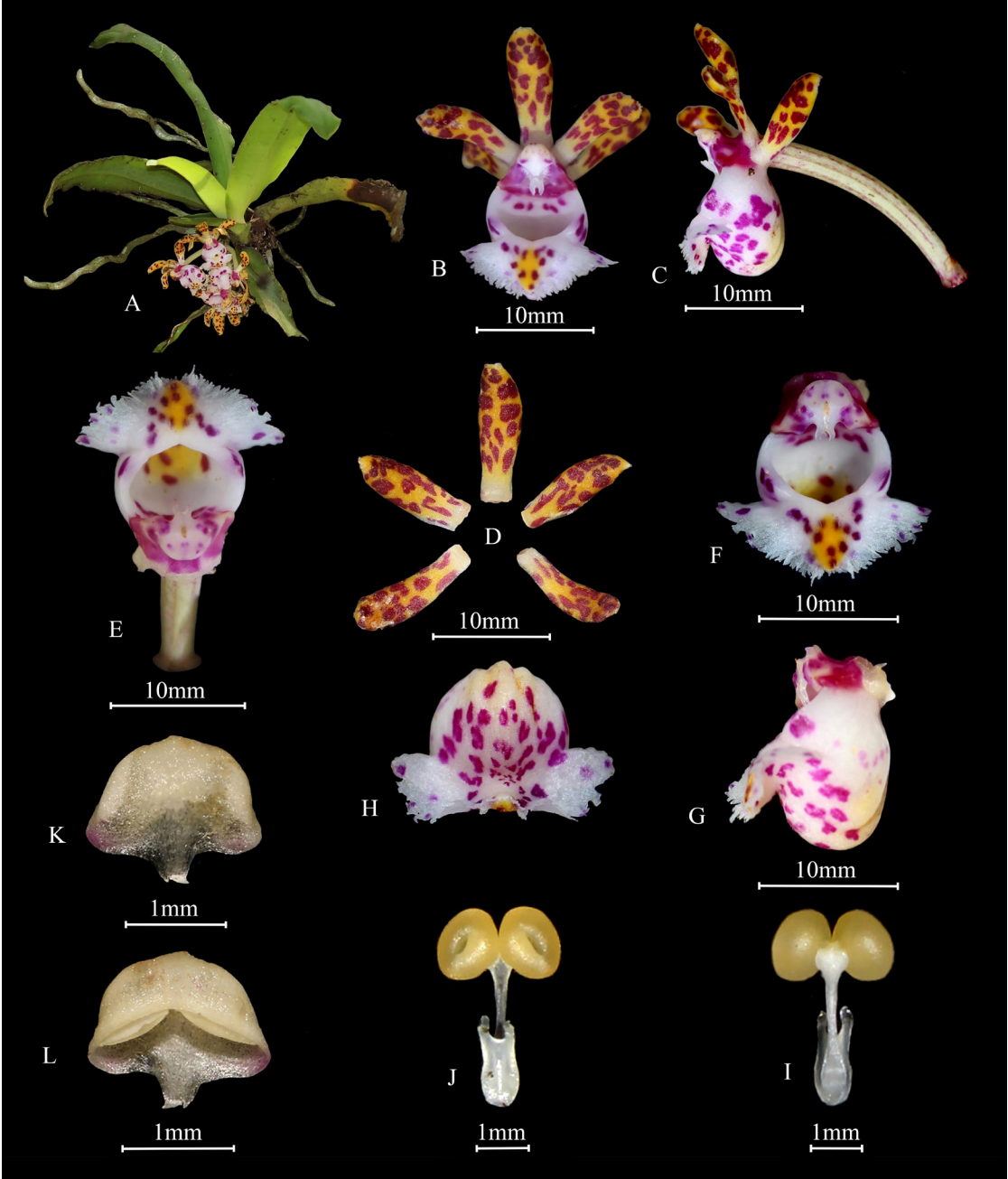


FIGURE 2. *Gastrochilus pechei*. A. Habit. B. Flower, ventral view. C. Flower, side view. D. Perianth, ventral view. E. Lip with ovary and column. F. Lip, ventral view. G. Lip, side view. H. Lip, dorsal view. I. Pollinarium, ventral view. J. Pollinarium, dorsal view. K. Anther cap, dorsal view. L. Anther cap, ventral view. Photographs and plate by Vinay Kumar Sahani and Khyanjeet Gogoi.

Conclusions. *Gastrochilus* is a small genus, but it is easy to be confused with other *Aeridinae* taxa without flowers. So, many species may be mis-

identified as other taxa. The record of *Gastrochilus pechei* in Arunachal Pradesh provides significant evidence that the two regions Myanmar and

TABLE 1. Differences between *Gastrochilus arunachalensis*, *G. obliquus*, *G. pechei*, and *G. somai*.

Character	<i>G. arunachalensis</i> (Rao, 1992)	<i>G. obliquus</i> (Chen <i>et al.</i> , 2009)	<i>G. pechei</i>	<i>G. somai</i> (Jin <i>et al.</i> , 2010)
Stem	1–4 cm, with 3–4 leaves.	1–2 cm, stout, with 3–5 leaves.	1.0–1.5 cm, stout, with 4–5 leaves.	2–5 cm with 3–5 leaves.
Leaves	8–15 × 1.7–2.3 cm, oblong.	8–20 × 1.7–6.0 cm, oblong to oblong-lanceolate.	15–20 × 3–5 cm, oblong.	5–16 × 1.0–2.5 cm, linear, falcate or linear-lanceolate.
Inflorescence	8–10-flowered.	5–8-flowered.	4–12-flowered.	4–7-flowered.
Flowers	Yellow or yellow-green, with dark brown or purplish spots.	Sepals and petals yellow with white lip, all with brownish-purplish spots.	Sepals and petals yellow with white lip, all densely covered with dark purplish spots.	Sepals and petals yellowish green without purplish spots.
Sepal	Oblanceolate, 0.68–7 × 0.32–0.35 cm.	Subelliptic, 0.6–1.2 × 0.4–0.6 cm.	Spatulate, 1.2–1.3 × 0.4–0.5 cm.	Elliptic-obovate, 0.7–0.9 × 0.3–0.5 cm.
Petals	Oblanceolate, 0.62–0.65 × 0.23–0.25 cm.	spatulate, smaller than sepals.	Spatulate, 1.1–1.1 × 0.4 cm.	Similar to sepals or narrower.
Lip	Epichile 0.25–0.30 × 0.54–0.60 cm; hypochile cupular, 0.6 × 0.4 cm.	Epichile 0.5 × 0.8–1.0 cm; hypochile nearly subglobose-cucullate, 0.5–0.6 × 0.6–0.7 cm.	Epichile 0.5 × 1.5–1.6 cm; hypochile subglobose, ca. 0.80 × 0.84 cm.	Epichile 0.2–0.4 × 0.5–0.8 cm; hypochile laterally compressed, 0.5–0.7 × 0.4–0.6 cm.

Arunachal Pradesh are linked due to floristic similarities. Therefore, we believe that more species of *Gastrochilus* as well as other orchid species should be found if we undertake further field investigations and systematic studies.

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CONFLICT OF INTEREST. No conflict of interest to declare.

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