

RESEARCH ARTICLE

Three new additions to Orchid Flora of Assam, India

Khyanjeet Gogoi¹ and Jintu Sarma^{2*}¹TOSEHIM, Regional Orchid Germplasm Conservation and Propagation Centre, Daisa Bordoloi Nagar, Talap, Tinsukia- 786156, Assam, India.²Department of Botany, Guwahati College, Guwahati- 781021, Assam, India.*Corresponding author E-mail: drjintusarma@gmail.com

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Abstract

Three new orchid species viz. *Cyrtosia nana*, *Dendrobium parcum* and *Spathoglottis affinis* are reported first time for the state of Assam from Dima Hasao district. The present paper enumerates all the three species with brief descriptions, habitat, distribution range, photos and illustrations.

Keywords: *Cyrtosia*, *Dendrobium*, *Spathoglottis*, New record, Dima Hasao, Assam

1. Introduction

The Dima Hasao district formerly known as North Cachar Hills is located in the southern part of Assam, India. The district lies within a geographical coordinate of 92°25'30" to 92°42'30"E latitudes and 24°56'30" to 25°51'10" N longitudes and covering a total land area of 4890 km². The eastern part of the district is bounded by Manipur and Nagaland, Meghalaya and Karbi-Anglong district by west, Nagoan and Karbi-Anglong District in north and the southern part of the district is bounded by Cachar (Anonymous, 2022). The district is mainly characterized by hilly ranges with different ecological settings of grassland to high-altitude vegetation. The highest peak of the district is 1932 meters, while the lowest one is 85 meters. The forest cover of the district is 88.71% of which only 187 km² (4.31%) is recorded under very dense forest while open forest occupies 61% of the total forest area. The various types of forests throughout the district have tropical evergreen forests, tropical semi-evergreen forests, tropical moist and dry deciduous forests, sub-tropical monsoon forests, secondary forests and bamboo forests endowed with rich biodiversity (Jarambusa and Baruah, 2023). Due to humid climate and availability of different forest types, the state of Assam including Dima Hasao district range has been reported to be rich in Orchid flora of economics and conservation significance (Gogoi, 2018). Present paper reported three new records of Orchid species collected from Dima Hasao range belonging to the genera *Cyrtosia*, *Dendrobium* and *Spathoglottis*.

2. Materials and methods

During survey of orchids in different places in Dima Hasao district of Assam, we collected three different species of orchids. After consultation of available literatures (King and Pantling, 1898; Hegde, revised, 2017; Pradhan, 1979; Chowdhery, 1998; Pearce and Cribb, 2002; Lucksom, 2007; Chen et al., 2009; Rao, 2010; Gogoi, 2018, 2019; Misra, 2019; Singh et al., 2019) and critical examination of the flowers, all the specimen were identified. Critical review of the relevant literature (Hegde, revised, 2017; Chowdhery, 1998; Rao, 2010; Gogoi, 2018, 2019; Misra, 2019; Singh et al., 2019; Barbhuiya et al., 2021) revealed that among these species, *Cyrtosia nana* (Rolfe ex Downie) Garay, *Dendrobium parcum* Rchb.f. and *Spathoglottis affinis* de Vriese were not found reported in Orchid literatures of Assam, India. The present collection thus forms new records of these species from the state of Assam, India.

Yumkham et al (2013) reported *Cyrtosia nana* (Rolfe ex Downie) Garay from Wainem Forest, Senapati District, Manipur and

Spathoglottis affinis de Vriese was reported by Jalal et al (2021) from Kudenthymmai Village, West Jaintia, Meghalaya for the first time from India.

In the present report, a detailed description, together with illustration, information on habitat, and phenology, is provided to make species determination easy and verifiable. These three species collected from the Dima Hasao range were conserved *ex-situ* in the Orchidarium of the Orchid Society of Eastern Himalaya in the Tinsukia District of Assam and the voucher specimens were deposited at the TOSEHIM Herbarium (The Orchid Society of Eastern Himalaya, Regional Orchid Germplasm Conservation and Propagation Centre, Assam).

3. Result

3.1. Taxonomic treatment

3.1.1. *Cyrtosia nana* (Rolfe ex Downie) Garay, Bot. Mus. Leaflet. 30: 233. 1986. Yumkham et al. in Taiwania, 58 (3): 229. 2013.
Galeola nana Rolfe ex Downie, Bull. Misc. Inform. Kew 1925: 409. 1925. [Figure 1 (A, B) and 2 (A-G)]

Plants small, ± fleshy. Rhizome short, stout. Tuber-like roots pale yellowish white, cylindrical, 2.5–9 cm, 5–8 mm in diameter, fleshy. Stem erect, yellowish white, slightly tinged with red, 10–22 cm tall, glabrous or apical half with sparse rust-coloured, mealy, short hairs, nodes with lanceolate scales; internodes usually 1–3 cm. Inflorescence terminal and lateral, sometimes lateral inflorescence very short or inconspicuous; terminal raceme 6–11-flowered; rachis rusty mealy-puberulent; floral bracts ovate-lanceolate, 2–4 mm, abaxially rusty puberulent; pedicel and ovary 8–10 mm, also with rust-coloured hairs. Flowers pale yellow, lip with orange-red longitudinal stripes. Sepals elliptic, 1–1.2 × ca. 0.6 cm, abaxially rusty mealy-puberulent, apex acute. Petals similar to sepals, slightly narrower, glabrous; lip ± embracing column, broadly ovate, ca. 1 × 1.2 cm, margin somewhat undulate, disk with a thick longitudinal ridge centrally, adaxially white pilose near apex. Column ca. 0.6 cm, apex slightly dilated.

Exsiccate: India, Assam, Dima Hasao district, ca. 500 m, 7 October 2019, Gogoi and Sarma 000102 (TOSEHIM!).

Flowering: September – December.

Habitat: Growing in moist shady places in tropical to sub-tropical forest rich in humus soil at an altitude of 500–1400 m.



Figure 1. A. Natural habitat of *Cyrtosia nana*, B. *Cyrtosia nana* in natural habitat showing inflorescence with fruit and flower, C. Natural habitat of *Dendrobium parcum*, D. *Dendrobium parcum* close up of flower, E. Natural habitat of *Spathoglottis affinis*, F. *Spathoglottis affinis* in natural habitat showing close up of inflorescence.

Status in Assam: Rare.

Distribution: India (Manipur, now in Assam), China, Thailand, Indo-China.

3.1.2. *Dendrobium parcum* Rchb.f. in Gard. Chron. 1866: 1042. 1866; Hook.f., Fl. Brit. India 5: 720. 1890; Grant, Orchids of Burma: 109. 1895; Seidenf. in Opera Bot. 83: 158, fig. 107, pl. XVIIIc. 1985; Kress et al. in Contr. U.S. Natl. Herb. 45: 74. 2003; 2005; Ormerod et

al. in Phytotaxa 481 (1): 113. 2021. [Figure 1 (C, D) and Figure 3 (A-H)]

Epiphytic herbs. Pseudobulbs 5–50 × 0.7–1.0 cm, with many jointed and branched, usually thin, glabrous, brownish purple and furrowed when old. Leaves alternate and distichous, linear oblong-lanceolate, 5.0–6.5 × 0.5–1.0 cm wide, margins entire, tips acute to slightly emarginate, leafless at anthesis. Inflorescence very short terminal and axillary racemes, with 1–5 creamy yellow flowers; floral bracts

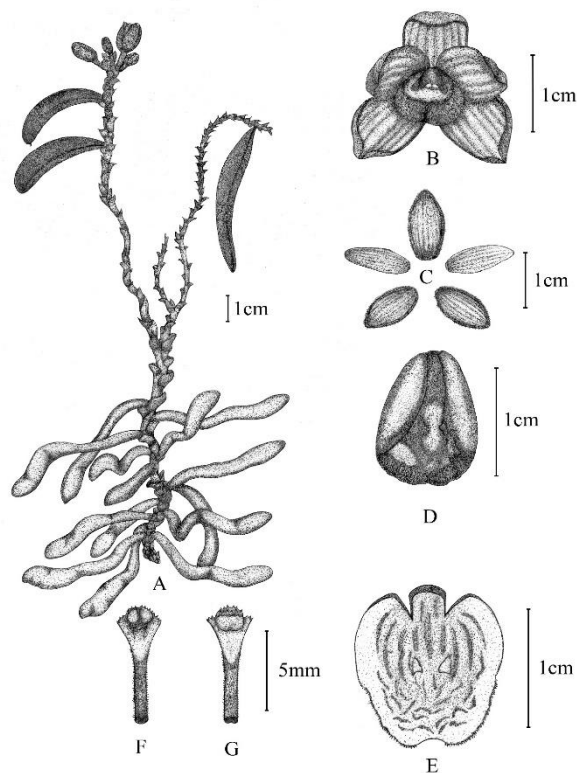


Figure 2. *Cyrtosia nana*, A. Habit, B. Ventral view of flower, C. Ventral view of perianth, D. Ventral view of lip, E. Ventral view of lip after opening, F. Ventral view of column, G. Dorsal view of column.

ovate-lanceolate, 0.1–0.2 × 0.2 cm, membranous, margins entire, tips acute, pale yellowish green, surface glabrous. Flowers 0.4–0.5 cm across, membranous, pale yellowish green; pedicels 0.6–0.7 × 0.1–0.2 cm, pale green, glabrous. Dorsal sepals ovate, concave, 0.3–0.4 × 0.1–0.2 cm, one nerved, margins entire, tips sub-acute to obtuse. Lateral sepals obliquely triangular, 0.5–0.7 × 0.2–0.3 cm, margins entire, tips subacute, glabrous. Petals linear spatulate, 0.3–0.4 × 0.15–0.2 cm, entire, obtuse, glabrous. Lip without side lobes, lip dilated cuneiform 0.8–0.9 cm long and 0.3–0.4 cm, margins entire, tips 2-lobed or emarginate, glabrous; hypochile green with dark purple spots; epichile pure yellow; mentum sac-shaped; Column 0.2–0.25 × 0.2 cm, pale yellowish green, glabrous. Pollinia 4, clavate, waxy, yellow.

Exsiccate: India, Assam, Dima Hasao district, ca. 1050 m, 12 October 2022, Gogoi and Sarma 000133 (TOSEHIM!).

Flowering: March.

Habitat: Epiphytic on trees in subtropical forest at an elevation of 1000–2000 m.

Status in Assam: Rare.

Distribution: India (Manipur, Mizoram, now in Assam), Bangladesh, China, Myanmar, Thailand Vietnam.

3.1.3. *Spathoglottis affinis* de Vriese, Ill. Orchid. Ind. Orient. 3: t. 15. 1855; Holtum, Fl. Malaya, 1: 162, F.27a. 1964; Seidenf., Opera Bot. 89: 58, f.28. 1986. Jalal et al in Nelumbo 63 (2). 90. 2021. *Spathoglottis lobbii* Rchb.f., Ann. Bot. Syst. 6: 455. 1862; Hook.f., Fl. Brit. India 5: 814. 1890. [Figure 1 (E, F) and Figure 4 (A-R)]

Terrestrial or epilithic herbs, 10–20 cm high. Pseudobulbs 3–4 cm across, flattened, irregularly shaped, brownish-green, wrinkled. Leaves 2–4, deciduous, emerging after flowering, lanceolate elliptic, 10–30 × 2–5 cm, papery. Inflorescence arising from base of pseudobulbs, erect or sub-erect, 10–20 cm long, pubescent, purplish-maroon, with 1-sterile, tubular bract, 1–6-flowered. Floral bracts 0.8–0.9 × 0.4–0.5 cm, persistent, triangular-lanceolate, acute, purplish-brown, pubescent. Ovary and pedicel 3–3.4 cm long,

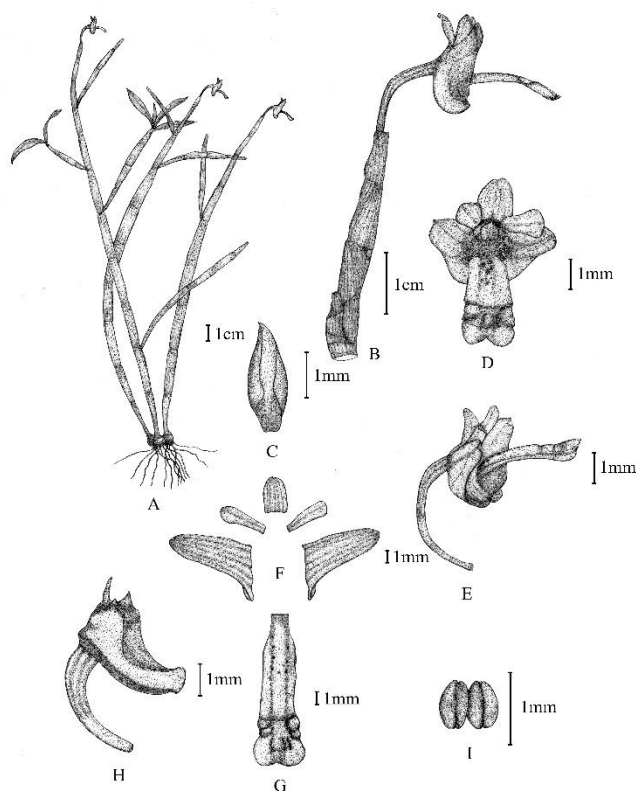


Figure 3. *Dendrobium parcum*, A. Habit, B. Enlarge view of stem and flowers, C. Floral bract, D. Ventral view of flower, E. Side view of flower, F. Ventral view of perianth, G. Ventral view of lip, H. Ovary with pedicel and column, I. Pollinarium.

pubescent, light greenish, ovary ridged. Flowers 4–4.5 cm across, yellow, lateral sepals with two red lines, labellum with reddish-brown markings at base. Sepals sub similar, lanceolate-ovate or elliptic, acute, dorsal surface hairy; dorsal sepal 2.3–2.5 × 1–1.1 cm; lateral sepals 2.3–2.5 × 1.1–1.2 cm, concave. Petals 2.2–2.3 × 1–1.1 cm, elliptic, obtuse, glabrous. Lip 1.9–2 × 2–2.2 cm, 3-lobed, immovably attached to the base of column, shortly clawed at base, spur less, glabrous except for calli; side-lobes 1–1.2 × 0.4–0.6 cm, rectangular, oblong, apically slightly widening, broadly obtuse, erect; mid-lobe 1.4–1.5 × 0.4–0.6 cm, with two lobes, fan-shaped, apex emarginate; neck with small triangular auricle on either side near base; disc with 2 triangular-obovoid, fleshy calli, mottled purple. Column 1.3–1.5 cm long, curved, slender below, winged, yellow, glabrous, foot absent; anther c. 0.3 × 0.2 cm, terminal, obovate, yellow; pollinia 8, in 2 groups, 0.3 cm long, pear-shaped.

Exsiccate: India, Assam, Dima Hasao district, ca. 1100 m, 13 October 2022, Gogoi and Sarma 000134 (TOSEHIM!).

Flowering: November–December.

Habitat: Growing as lithophyte in tropical evergreen forest at an elevation of 470 m.

Distribution: India (Meghalaya, now in Assam); Bangladesh, Cambodia, Laos, Malaysia, Myanmar, Thailand and Vietnam.

4. Conclusion

Hereby, *C. nana*, *D. parcum* and *S. affinis* are reported as new record for the flora of Assam. Along with these three new reports, a total recorded species of *Cyrtosia* will be 2, *Dendrobium* will be 65 and *Spathoglottis* will be 3 in Assam. Further exploration is needed to unveil the more hidden treasures of orchid flora from the biodiversity rich Dima Hasao range of Assam.

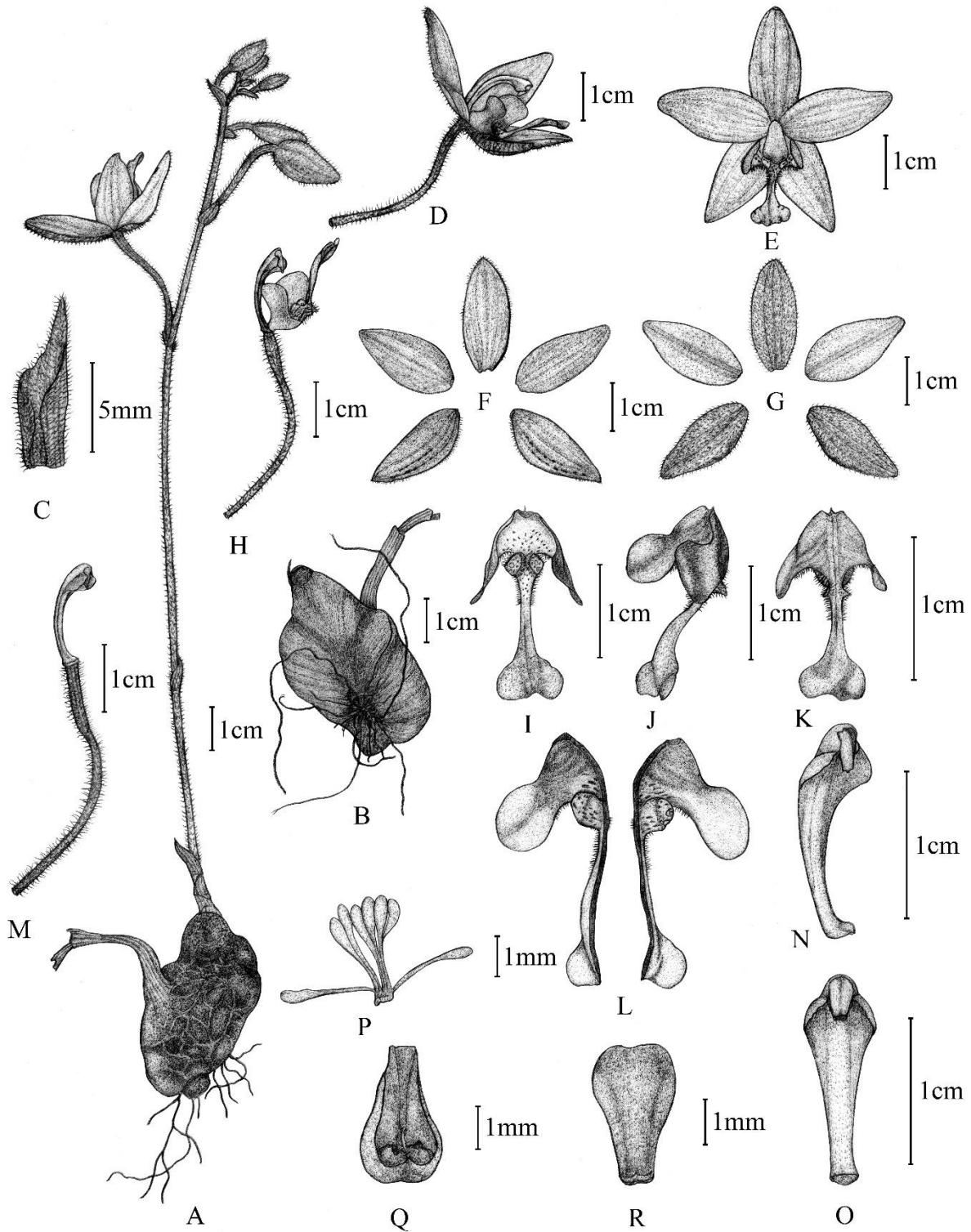


Figure 4. *Spathoglottis affinis*. A. Habit, B. Dorsal view of pseudobulb, C. Floral bract, D. Side view of flowers, E. Ventral view of flower, F. Ventral view of perianth, G. Dorsal view of perianth, H. Lip with ovary and column, I. Ventral view of lip, J. Side view of lip, K. Dorsal view of lip, L. Longitudinal section of lip, M. Ovary with pedicel and column, N. Side view of column, O. Front view of column, P. Pollinarium, Q. Anther cap ventral view, R. Anther cap dorsal view.

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Author's contributions

KG and JS equally contributed in data collection, preparation of the manuscript. KG was responsible for photo plate and line drawing, and JS was responsible for communication and research design.

Conflict of interest

The authors declare that there is no conflict of interest.

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