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Aeridinae) - A new epiphytic orchid from Arunachal Pradesh, Northeast India  
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# ***PHALAEENOPSIS ARUNACHALENSIS* SP. NOV. (ORCHIDACEAE: EPIDENDROIDEAE: AERIDINAE) – A NEW EPIPHYTIC ORCHID FROM ARUNACHAL PRADESH, NORTHEAST INDIA**

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**ABSTRACT.** A new epiphytic *Phalaenopsis* is described from tropical evergreen forests of Ziro Valley in Arunachal Pradesh, India, and illustrated with colored photos. It is allied to the similarly colored *P. taenialis* (Lindl.) Christenson & Pradhan in having non-deciduous leaves, larger perianth segments, the shorter and convex (not flat) lip mid-lobe, and the yellowish-green (not purplish) spur. The new species is morphologically most similar to *P. honghenensis* from China, but differs most easily by the light pinkish flowers versus bronzy green to brownish flowers of the latter species. A detailed description with corresponding color photos and information on the habitat is provided. The voucher specimens have been deposited at the Herbarium of the Orchid Research Centre Tippi, Arunachal Pradesh, and the Herbarium of The Orchid Society of Eastern Himalaya (TOSEHIM), Regional Orchid Germplasm Conservation and Propagation Centre (Assam Circle), Assam.

**KEY WORDS:** Flora of India, new *Phalaenopsis*, *Phalaenopsis honghenensis*, *Phalaenopsis* subgen. *Aphyllae*, *Phalaenopsis taenialis*

**Introduction.** The genus *Phalaenopsis* Blume was first described by Carl Ludwig Blume in 1825. The genus is represented by a total of 97 species and is widely distributed across Southeast Asia (South India, Sri Lanka, southern China to Taiwan, Indonesia, Thailand, Myanmar, Malaysia, the Philippines, Papua New Guinea) and northern Australia (Govaerts *et al.* 2020). Whereas Sweet (1980) initially listed 47 species for the genus and Christenson (2001) listed 62 entities. In India the genus is represented by 12 species (Misra 2019) distributed throughout the Himalayas, Peninsular India and Andaman and Nicobar islands and only four of them were recognized in Arunachal Pradesh (Rao 2010) viz. *Phalaenopsis deliciosa* Rchb.f., *P. mannii* Rchb.f., *P. lobbii* (Rchb.f.) Sweet, and *P. taenialis* (Lindl.) Christenson & Pradhan. So far, there have been a much of complexity associated with the subgen. *Aphyllae* where our new species belongs and has been dealt by Dalström *et al.* (2010) where much of the problems involving *P. taenialis* complex were largely resolved.

On 15 October, 2019, during a field trip to the forested area of Ziro Valley of Lower Subansiri district

of Arunachal Pradesh, the first author collected an epiphytic orchid. It was subsequently planted along an orchid trail located in the Tale Wildlife Sanctuary, Ziro Valley of Arunachal Pradesh, and flowered under observation in March, 2020. Comparing it with the available literature (Hooker 1890, 1894, King & Pantling 1898, Pradhan 1979, Chowdhery 1998, Pearce & Cribb 2002, Lucksom 2007, Chen *et al.* 2009, Rao 2010, Dalström & Ormerod 2010, Dalström *et al.* 2010, Hegde 2017, Swami 2017, Gogoi 2019, Gruss 2020) and critical examination of herbarium specimens deposited in ASSAM, ARUN, CAL, as well as with type images present in K, E and PE, it was confirmed that this orchid represented an hitherto undescribed *Phalaenopsis* species. Hence, it is described below as new.

## TAXONOMIC TREATMENT

***Phalaenopsis arunachalensis* K.Gogoi & Rinya sp. nov.**

**TYPE:** India. Arunachal Pradesh: Lower Subansiri, Ziro, 1400 m, 16 October 2019, fl. 15 April 2020, K.

*Gogoi and K. Rinya 00809* (Holotype: OHT; Isotypes: ASSAM, TOSEHIM). (Fig. 1–3).

**DIAGNOSIS:** *Phalaenopsis arunachalensis* differs from the similarly colored *P. taenialis* (Lindl.) Christenson & Pradhan in having non-deciduous leaves, larger perianth segments, shorter and convex (not flat) lip mid-lobe and yellowish-green (not purplish) spur. The new species also differs from the similarly shaped *P. honghenensis* F.Y.Liu by the pinkish flowers versus bronzy green or brownish flowers in the latter species. The differences between *P. arunachalensis* and *P. taenialis* are shown in Table 1.

*Herb* epiphytic. *Roots* flattened, minutely warty, young roots silvery with green and maroon root caps. *Stems* to 1 cm, 2 or 3-leaved. *Leaves* obliquely elliptic, 5–10 × 2.5–3.5 cm, acute at apex, sheathing bases persistent, spotted purple-red. *Inflorescence* suberect to pendent, racemose, to 21.5 cm, laxly 5–6-flowered; peduncle *ca.* 10 cm long; rachis *ca.* 11.5 cm long; floral bracts ovate, to 6 mm. *Flowers* to 3.0–3.2 cm across, sepals and petals rose-pink, lip purple; *pedicel* and *ovary* 3.2–3.5 cm. *Dorsal sepal* oblong-elliptic, 1.5–1.6 × 0.8 cm, obtuse. *Lateral sepals* obliquely elliptic-ovate, *ca.* 1.5 × 0.9 cm,

obtuse. *Petals* spatulate, *ca.* 1.5 × 0.8 cm, obtuse. *Lip* minutely spurred, trilobed; lateral lobes oblong, *ca.* 9 × 2 mm, obliquely truncate; mid-lobe oblong, *ca.* 9 × 4 mm, tapered at both ends, apex obtuse. *Spur* cylindric-conical, 2 mm long. *Callus* biseriate: posterior callus fleshy, bifid, terminating at base of mid-lobe; anterior callus plate like, bifid, extending beyond base of mid-lobe. *Column* to 9 mm long, stout, conspicuously dilated to either side of stigma, foot 2–3 mm. *Pollinia* 4, sub-globose, yellow. *Seed pods* and *seeds* not seen.

**EXAMINED MATERIAL:** India. Arunachal Pradesh: forested area of Ziro Valley of lower Subansiri district, 16 October 2019, fl. 15 April 2020 in the Tale Wildlife Sanctuary, *K. Gogoi and K. Rinya 00809*.

**FLOWERING PERIOD:** March to April.

**HABITAT:** On tree trunks in sub-tropical evergreen forest at 1200–1400 m in Ziro, Arunachal Pradesh.

**DISTRIBUTION:** India (Ziro, Arunachal Pradesh).

**ETYMOLOGY:** The specific epithet refers to the state of Arunachal Pradesh, in Northeast India, from where the new species was collected.

TABLE 1. Diagnostic features of *Phalaenopsis arunachalensis* and *P. taenialis*.

	<i>P. arunachalensis</i>	<i>P. taenialis</i>
<b>Leaves</b>	Persistent at anthesis, obliquely elliptic, 5–10 × 2.5–3.5 cm, acute at apex.	Deciduous at anthesis, narrowly elliptic-oblong, 2–4 × 1.5–1.8 cm, acute, tapering to the sessile base.
<b>Inflorescence</b>	Erect to suberect, unbranched, up to 21.5 cm long, 5–6 flowered.	Erect to pendent, unbranched, 5–12 cm long, 4–8 flowered.
<b>Floral bracts</b>	Ovate.	Triangular.
<b>Flowers</b>	3.0–3.2 cm across, sepals and petals rose-pink, lip purple.	2.0–2.5 cm across, pale pink to rose, lip rose-purple.
<b>Dorsal sepal</b>	Oblong-elliptic, <i>ca.</i> 2 × 0.8 cm, apex obtuse.	Ovate, 1.1 × 0.35–0.40 cm, apex round.
<b>Lateral sepals</b>	Obliquely elliptic-ovate, <i>ca.</i> 1.5 × 0.9 cm, base obtuse.	Obliquely elliptic-ovate, obtuse, 1.0–1.2 × 0.30–0.35 cm, base cuneate.
<b>Petals</b>	Spatulate, <i>ca.</i> 1.5 × 0.8 cm, apex obtuse.	Ovate, 1.1 × 0.35–0.40 cm, apex round.
<b>Lip</b>	Lateral lobes <i>ca.</i> 9 × 2 mm, obliquely truncate; mid-lobe oblong, <i>ca.</i> 9 × 4 mm, tapered at both ends, apex obtuse. Spur nipple like, 2 mm.	Lateral lobes 6 × 1.5 mm, obtuse; mid-lobe, flat, spatulate, 10.0–11.5 × 3.5–4.0 mm the backwall of the spur.
<b>Callus</b>	Posterior callus fleshy, bifid, terminating at base of mid-lobe; anterior callus plate like, bifid, extending beyond base of mid-lobe.	Posterior callus fleshy, bidentate, on back wall of spur; anterior callus ligulate, deeply bifid, attached to front wall at base of mid-lobe.
<b>Column</b>	Up to 9 mm, stout, conspicuously dilated to either side of stigma, foot 2–3 mm.	4–6 mm, strongly dilated at the middle to either side of the anther; pedicel and ovary 14–16 mm long.
<b>Flowering time</b>	March – April.	May.



FIGURE 1. **A.** Distribution map of *Phalaenopsis arunachalensis*. **B.** Natural habitat of *P. arunachalensis*. **C.** *Phalaenopsis arunachalensis* in natural habitat showing close up of inflorescence. Photos by K. Gogoi.

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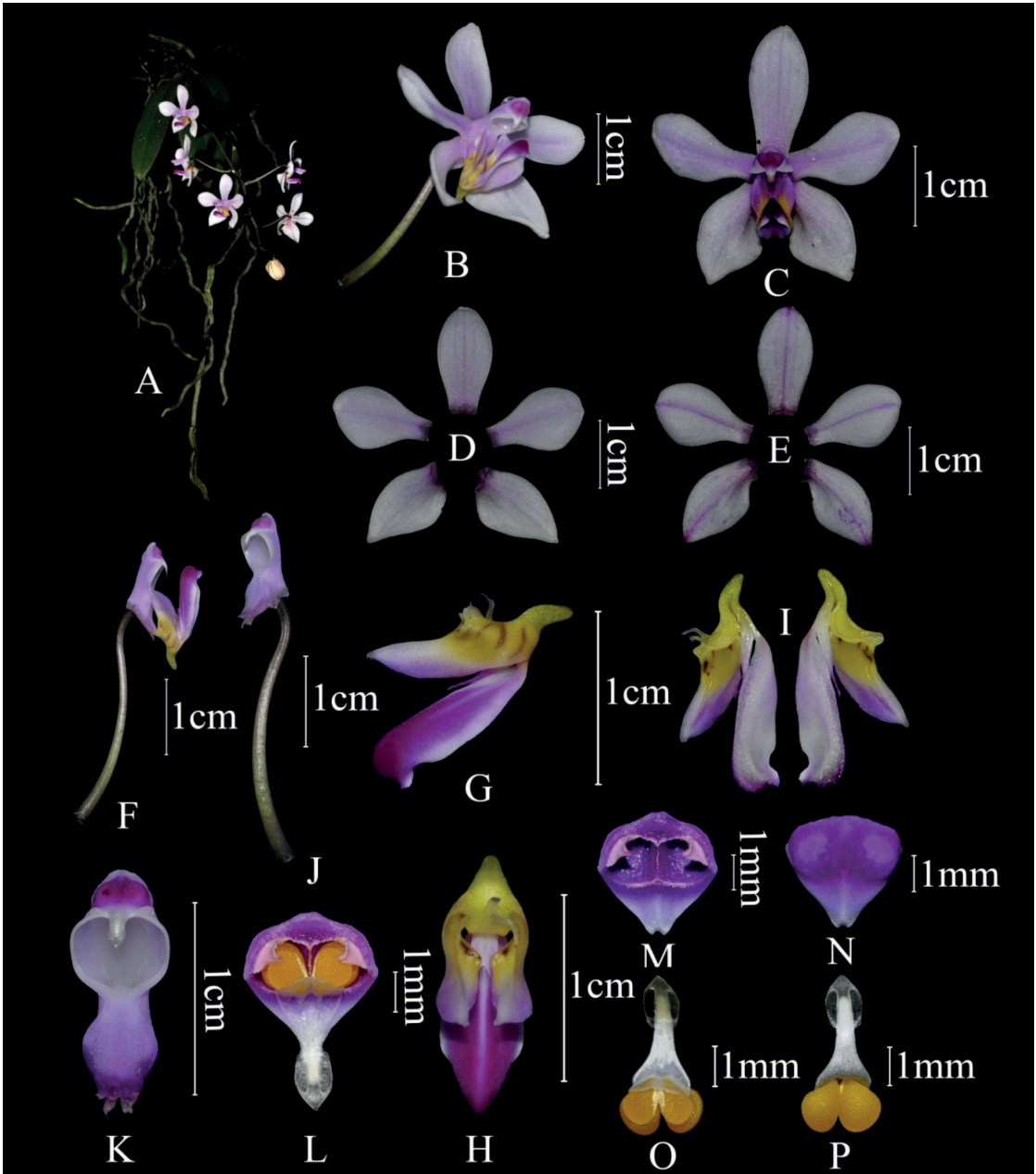
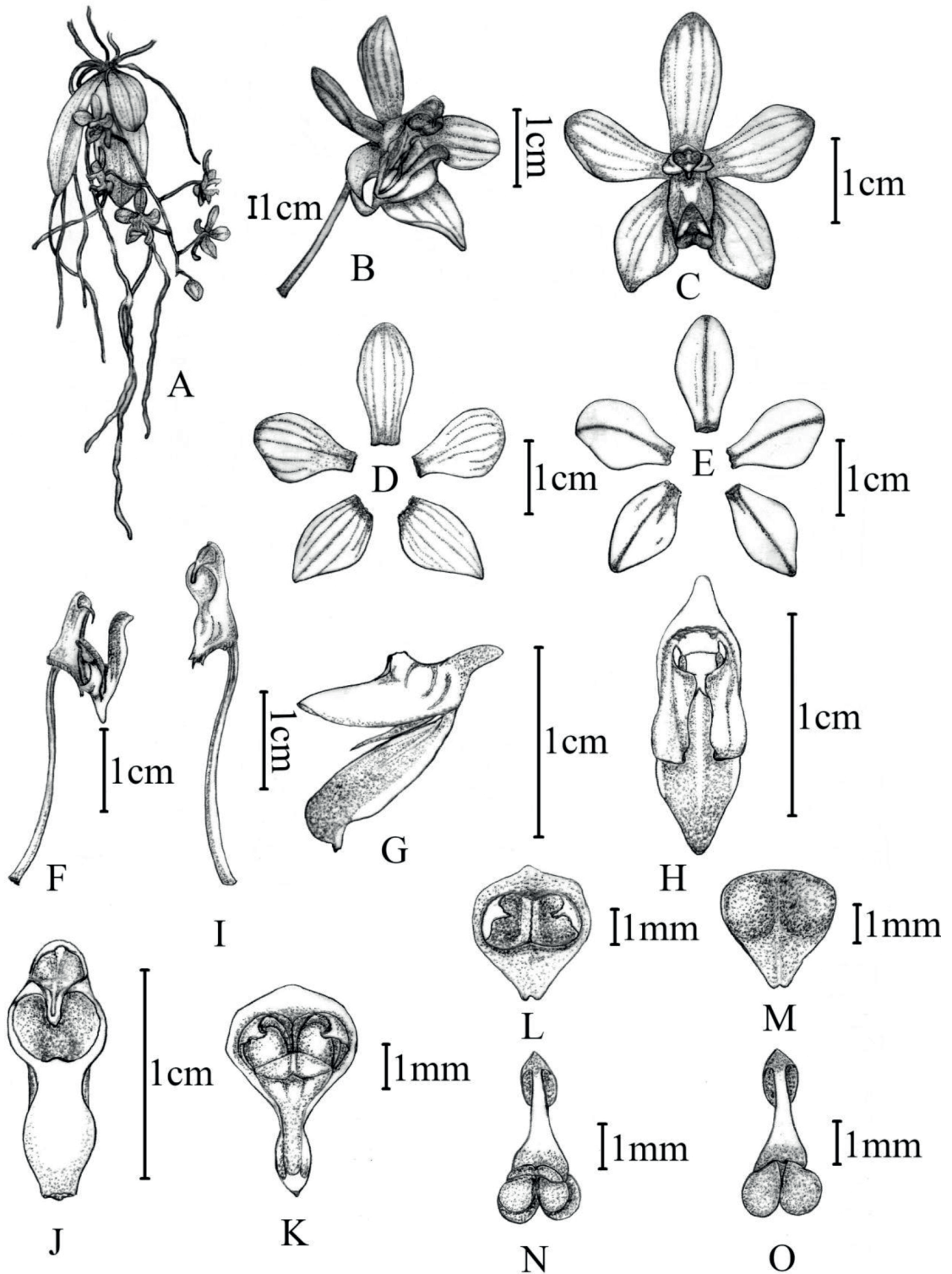


FIGURE 2. *Phalaenopsis arunachalensis*. A. Habit. B. Flower, side view. C. Flower, ventral view. D. Perianth, ventral view. E. Perianth, dorsal view. F. Lip with ovary and column. G. Lip, side view. H. Lip, ventral view. I. Lip, longitudinal section. J. Ovary with pedicel and column. K. Column, front view. L. Anther cap with pollinia, ventral view. M. Anther cap, ventral view. N. Anther cap, dorsal view. O. Pollinarium, ventral view. P. Pollinarium, dorsal view. Photos by K. Gogoi.

Right, FIGURE 3. *Phalaenopsis arunachalensis*. A. Habit. B. Flower, side view. C. Flower, ventral view. D. Perianth, ventral view. E. Perianth, dorsal view. F. Lip with ovary and column. G. Lip, side view. H. Lip, ventral view. I. Ovary with pedicel and column. J. Column, front view. K. Anther cap with pollinia, ventral view. L. Anther cap, ventral view. M. Anther cap, dorsal view. N. Pollinarium, ventral view. O. Pollinarium, dorsal view. Drawing by K. Gogoi.



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