

Synopsis of *Pholidota* Lindley ex W.J.Hooker (Orchidaceae) in Manipur, India, with a newly recorded species^a

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Keywords/Mots-clés : India, Manipur, new record/nouvel enregistrement, *Pholidota*, taxonomy/taxinomie.

Abstract

The article deals with six species of the genus *Pholidota* so far reported from Manipur including one new addition: *Pholidota convallariae*. For five of them (*Pholidota articulata*, *P. convallariae*, *P. imbricata*, *P. pallida* and *P. pygmaea*) description and illustrations are given. Furthermore an identification key for these species is added.

Résumé

Synopsis du genre *Pholidota* (Orchidaceae) dans l'état de Manipur, Inde, et addition d'une espèce, nouvellement découverte – L'article traite des six espèces de *Pholidota* enregistrées à ce jour à Manipur, dont une espèce nouvellement observée, *Pholidota convallariae*. Chaque espèce (*Pholidota articulata*, *P. convallariae*, *P. imbricata*, *P. pallida*, *P. protracta* et *P. pygmaea*), est décrite et, à l'exception de *P. protracta*, illustrée. En outre une clé d'identification de ces espèces est proposée.

Introduction

The genus *Pholidota* was described by Lindley in 1825 in W.J.Hooker's *Exotic Flora*. The genus is characterised by pendent or erect, epiphytic or lithophytic plants; pseudobulbs close or distant on the rhizome; leaves 1 or

^a : manuscrit reçu le 2 mars 2015, accepté le 30 septembre 2015

article mis en ligne sur www.richardiana.com le 16/10/2015 – pp. 4-17 - © Tropicalia

ISSN 1626-3596 (imp.) - 2262-9017 (élect.)

2, narrowly elliptic, ovate or oblong; inflorescence laxly to densely many flowered; flowers small, fleshy; dorsal sepal concave or convex, broadly ovate to elliptic; lateral sepals concave to convex, often keeled; petals ovate to linear; lip sessile, epichile sub-entire or 3 lobed, deflexed; column short; polinia 4.

The genus is represented by 41 species (Govaerts *et al.*, 2014) distributed in India, SE Asia, Australia, New Guinea and the Pacific Islands. In India it is represented by 11 species (Misra, 2007; Rao, 2007) and in Manipur it is represented by 5 species (Mukerjee, 1953; Chauhan, 2001; Kumar & Kumar, 2005; Chowlu *et al.*, 2014). Here we are reporting *Pholidota convallariae* J.D.Hooker as a new addition to the Manipur orchid flora. The specimens of the species were collected from different parts of Manipur during the last five years in vegetative condition and brought to the orchidarium of the Orchid Research & Development Centre, in Hengbung, Manipur. They were identified during flowering by consultation of literature (Hooker, 1890; Mukerjee, 1953; Pradhan, 1979; Kataki, 1986; Hynniewata *et al.*, 2000; Chauhan, 2001; Pearce & Cribb, 2002; Rao, 2007; Lucksom, 2007, Chen *et al.*, 2007). All herbarium specimens mentioned in this article are deposited in the herbarium of Centre for Orchid Gene Conservation for Eastern Himalayan Region (COGCEHR). Manipur is one of the biodiversity hot spots in the north-east of India consisting of both India and Myanmar vegetation. It is located between 23° 50' N - 25° 42' N and 92° 58' E - 94° 45' E and covers a total area of about 22,327 km². The state is enclosed by lofty mountains, the highest being Mount Tenipu of Iso which is 2999 m in height.

Identification key to the species

- 1a. Leaf solitary -----2
 1b. Leaf 2 -----4
 2a. Leaf thin, herbaceous; lateral sepals connate at base -----*P. pallida*
 2b. Leaf thick, not herbaceous; lateral sepals free at the base -----3
 3a. Pseudobulbs ovoid-rounded, not with 4 ridges; floral bract ovate-round, obtuse, not coriaceous -----*P. pygmaea*
 3b. Pseudobulbs lanceolate-cylindric, with 4 obscure ridges; floral bract broadly ovate-pentagonal, acute, coriaceous -----*P. imbricata*
 4a. Leaves broad, oblong lanceolate -----*P. articulata*
 4b. Leaves linear lanceolate -----5

5a. Inflorescence secund; floral bracts shading during flowering; flowers bright white -----*P. convallariae*

5b. Inflorescence not secund; floral bracts persisting during flowering; flowers creamy white -----*P. protracta*

Taxonomic description

Pholidota articulata Lindley, *The Genera and Species of Orchidaceous Plants*, 38. 1830. Type region: Himalaya - lectotype: Bangladesh, Pandua, coll. E De Silva 1992 (K-LINDL! iso G, K!, W!).

Coelogyne articulata (Lindley) Reichenbach f., in Walpers, *Annales Botanices Systematicae* 238. 1861.

Pholidota khasiyana Rchb. f., *Bonplandia* 4: 329. 1856. Type region: Khasiya.

Pholidota griffithii J.D.Hooker, *Flora of British India* 5(2): 845. 1890. Type region: Himalaya.

Pholidota articulata var. *griffithii* (J.D.Hooker) King & Pantling, *Annals of the Royal Botanic Garden, Calcutta* 8: 147. T. 204. 1898.

Pholidota obovata J.D.Hooker, *Flora of British India* 5(2): 845. 1890. Type Region: Eastern India.

Pholidota articulata var. *obovata* (J. D. Hooker) T. Tang & F.T. Wang, *Acta Phytotaxonomica Sinica* 1: 40. 79. 1951.

Pseudobulbs 3-7 cm long, slender to swollen, green to greenish yellow; leaves 4.5-11 × 1.5-3 cm, oblong-lanceolate, acute, petiole *ca.* 1 cm long; inflorescence synanthous, 10-20 flowers, lax, peduncle 1.5-3 cm long, terete, rachis 3-6.5 cm long, zigzag; pedicel ovary 3-4 mm long, terete, greenish yellow; floral bract 0.7-1.3 × 0.4-0.7 cm, distichous, oblong-ovate, acute to sub-acute; flowers *ca.* 3 mm across, creamy white and lip creamy yellow; sepals sub-equal, the dorsal 3.5-6 × 1.5-3.0 mm, ovate to ovate-oblong, acute, the lateral ones 4-6.5 × 1.5-3.0 mm, ovate to ovate-lanceolate, acute-acuminate; petals 3-5 × 1.5-2.5 mm, ovate-lanceolate, acute, 3 veined; lip 4-6 × 1.7-3.5 mm, creamy yellow, boat shaped, constricted in the middle, 5 keeled in basal half, epichile recurved, 2-lobed, lobules rounded; column 1.2-2.0 mm long, creamy white, shortly clavate; anther cap *ca.* 1 mm long, light brown, 2 chambered; pollinia 4, obovate, creamy white. (Plate 1)

Flowering: April-July.

Etymology: from the Latin *articulata* (jointed) in reference to the rhizomes.

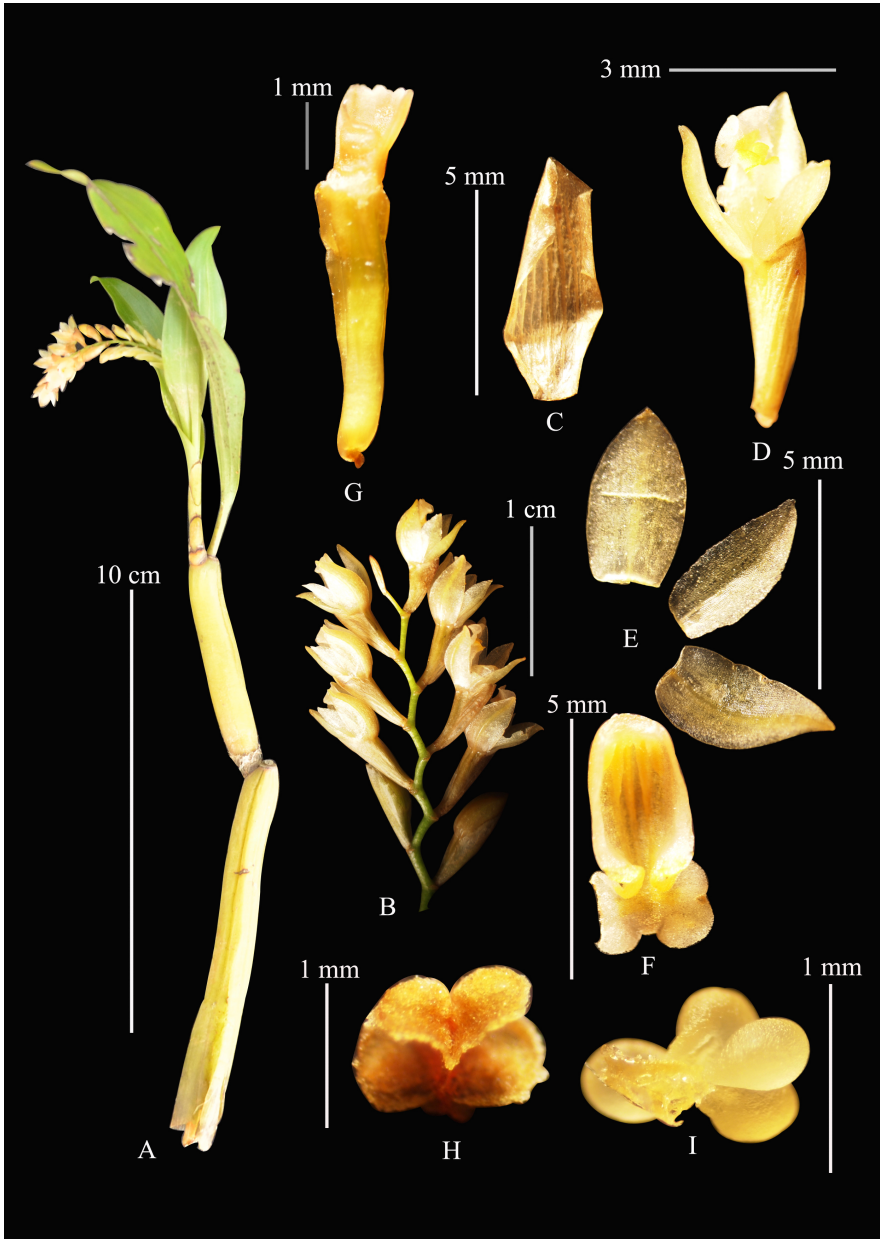


Plate 1: *Pholidota articulata* Lindley

A. Habit; B. Inflorescence; C. Bract; D. Complete flower; E. Dissected parts; F. Lip; G. Column with pedicel ovary; H. Anther cap. I. Pollinia.

Specimens examined: INDIA, Manipur, Senapati District, Hengbung
Chowlu 00079, 00353, 00354, 00355.

Distribution: India (N.E. India, Jammu & Kashmir, Uttrakhand), Cambodia,
Java, Myanmar, Nepal, Thailand, Vietnam to Sumatra.

Pholidota convallariae (C.S.P.Parish & Reichenbach f.) J.D.Hooker,
Hooker's *Icones Plantarum*, 19: ad T. 1880. 1889.

Coelogyne convallariae C.S.P.Parish & Reichenbach f., *Flora* 55: 277. 1872.
Type region: Eastern India.

Pseudobulbs 3-6 cm long, slender to swollen, obpyriform, green to greenish
yellow; leaves 2, 8-15 × 1.4-2.0 cm, linear-lanceolate to oblanceolate, acute,
petiole *ca.* 1 cm long; inflorescence synanthous, secund, 10-15 flowers,
dense, from the base of the pseudobulbs, peduncle 2.5-5 cm long, terete,
covered with sheaths, rachis 3-5.5 cm long, secund; pedicel ovary 3-4.5 mm
long, terete, green; floral bract not seen, distichous, falling off during
flowering; flower 6-7 mm across, brightly white, fragrant; sepals sub-equal,
white, the dorsal 4.8-5.2 × 2.5-2.7 mm, ovate-oblong, acute, concave, the
lateral ones 5-5.5 × 2.5-2.7 mm, ovate, acuminate; petals 4-4.5 × 2.7-3.2 mm,
ovate, sub-acute, white; lip 4.2-5 × 2.3-3 mm, white, cup shaped, 3 nerved;
column 3-4 mm long, minutely winged, white; anther cap 0.8-0.9 × 0.6-
0.7 mm, creamy; pollinia 4, *ca.* 0.7 mm long, transparent. (Plate. 2)

Flowering: April-May.

Specimens examined: INDIA, Manipur, Senapati District, oklong, *Chowlu*
00502, 00503.

Distribution: India (Manipur, Meghalaya, Nagaland), Myanmar.

Pholidota imbricata W.J.Hooker, *Exotic Flora* 2: t. 138. 1825. Type region:
Nepal. Lectotype: based on [icon.in] Hooker's *Exotic Flora* 2: t. 138. 1825,
designated by Seidenfaden.

Cymbidium imbricatum Roxburghii, *Hortus Bengalensis*: 63. 1832.

Coelogyne imbricata (Roxburghii) Reichenbach f., in Walpers, *Annales*
Botanices Systematicae 6: 238. 1861.

Pholidota assamica Regel, *Gartenflora* 39: 607. 1890. Type Region: Assam.

Pholidota henryi Kraenzlin, *Vierteljahrsschrift der Naturforschenden Gesellschaft*
in Zürich 60: 427. 1890. Type Region: Yunnan.

Pholidota imbricata var. *henryi* (Kraenzlin) T.Tang & F.T.Wang, *Acta*
Phytotaxonomica Sinica 1: 40, 79. 1951.

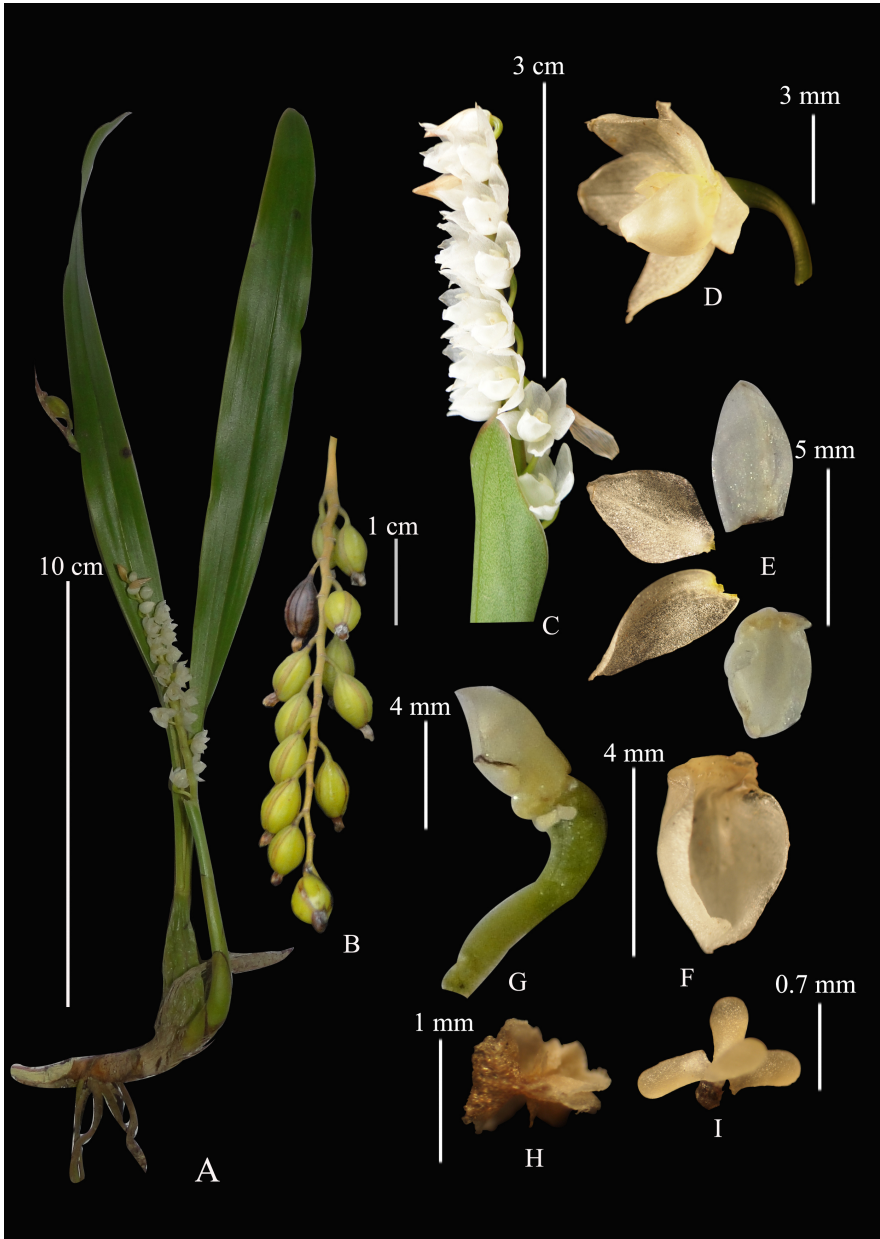


Plate 2. *Pholidota convallariae* (C.S.P.Parish & Reichenbach f.) J.D.Hooker

A. Habit; B. Fruits; C. Inflorescence; D. Flower; E. Dissected parts; F. Lip. G. Column with pedicel ovary; H. Anther cap; I. Pollinia.

Pholidota pallida sensu Hulttun, *Orchids of Malaya* ed. 3: 237. 1964, non Lindley

Ptilocnema bracteata D. Don, *Prodromus Florae Nepalensis*: 33 (1825). Type Region: Nepal.

Pholidota bracteata (D. Don) Seidenfaden, *Opera Botanica* 89: 100. 1986.

Pseudobulbs 3-7 × 1-1.7 cm, 4-5 obtuse ridges, glabrous, sheathing at base, sheaths 3-8 × 0.7-1.5 cm, lanceolate-cylindric, acute; leaf solitary, 14-25 cm long, from the apex of the pseudobulb, obovate-oblong, acute, 5-nerved, petiole 1-1.5 cm long; inflorescence synanthous, 25-55 cm long, densely many flowered, peduncle terete, glabrous, sheathless, rachis 7-17 cm long; floral bracts 4-7 × 5-8 mm, broadly ovate-pentagonal, acute, brown, membranous; pedicel ovary 4-7 mm; flowers 4-5 mm across, creamy white with lip yellow orange; dorsal sepal 4-5 × 3.5-4 mm, broadly ovate, acute, 5-veined, lateral ones 4-5 × 3-3.5 mm, ovate-oblong, acute, keeled, 5 veined; petals 3.8-4.5 × 2.5-3 mm, oblong, acute, falcate, 1 veined; lip 4-4.5 × 3-3.4 mm, yellow orange, base boat shaped or concave, apex deeply 2-rectangular lobed; column 3-4 mm long, winged, creamy white; anther cap 0.7-0.9 × 0.8-1.0 mm, 2 chambered, brown; pollinia 4, 0.4-0.6 mm long, creamy. (Plate. 3)

Flowering: March-July.

Etymology: From the Latin *imbricatus* (overlapping) in reference to the rachis.

Specimens examined: INDIA, Manipur, Senapati district, Willong, *Chowlu* 00077; Chandel district, Chakpikarong, *Chowlu* 00366, Tamenglong district, Tamenglong, *Nanda* 00519.

Distribution: India (N. E. India, Uttrakhand), Australia, Bangladesh, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Thailand, Vietnam and south Pacific Island.

Pholidota pallida Lindley, *Edwards's Botanical Register* 21: sub t. 1777. 1835. Type Region: India. Neotype: Nepal, Gossainthan, *Wallich s.n.* (K-LINDL!) designated by Halle.

Pholidota calceata Reichenbach f., *Bonplandia* 4: 329. 1856. Type Region: Himalaya.

Coelogyne calceata (Reichenbach f.) Reichenbach f., in Walpers, *Annales Botanices Systematicae* 6: 238. 1861.

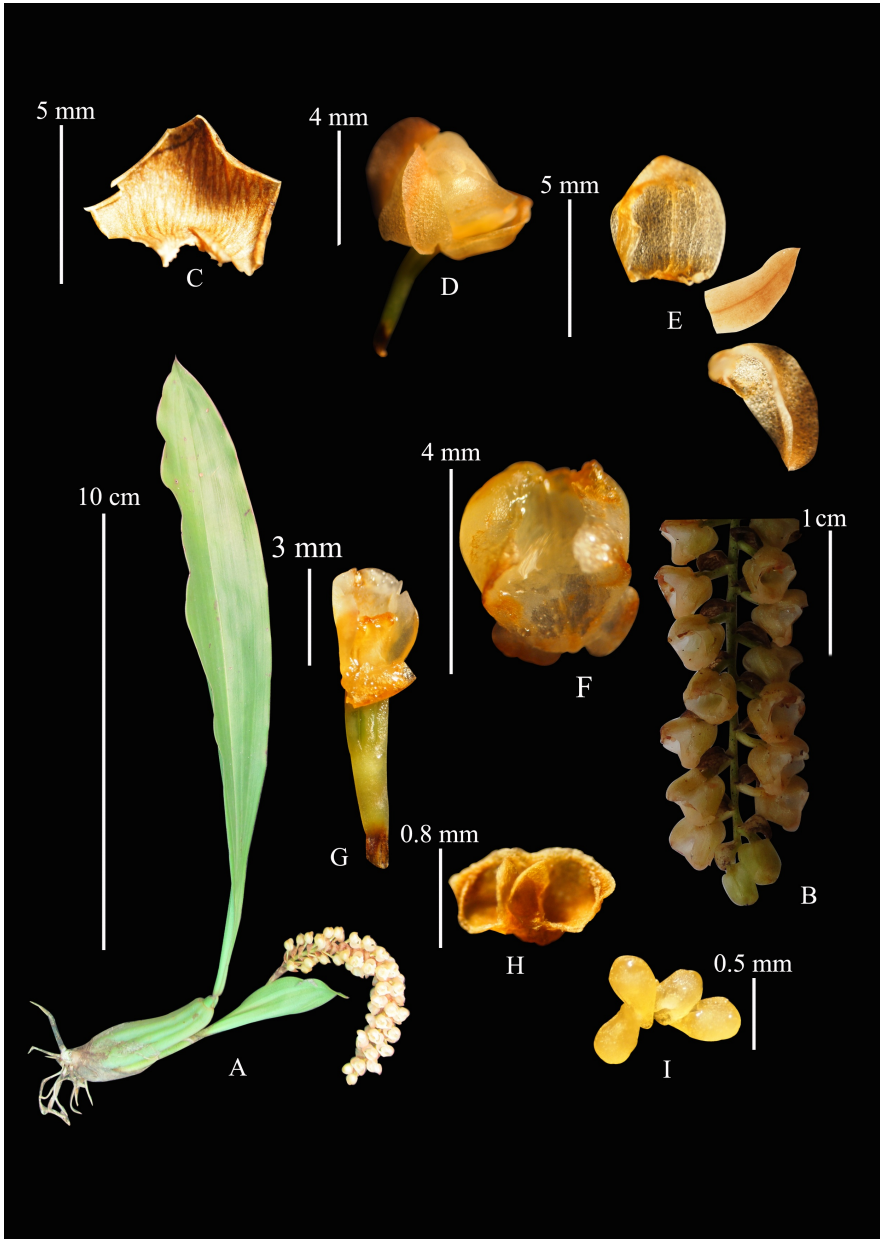


Plate 3. *Pholidota imbricata* W.J.Hooker

A. Habit; B. Inflorescence; C. Bract; D. Flower; E. Dissected parts; F. Lip; G. Column with pedicel ovary; H. Anther cap; I. Pollinia

Pholidota imbricata sensu J.D.Hooker, *Flora of British India* 5(2): 845. 1890.

Pholidota imbricata var. *sessilis* J.D.Hooker, , *Flora of British India* 5(2): 846. 1890.

Pholidota pallida var. *sessilis* (J.D.Hooker) Sarkar, *Journal of Economic and Taxonomic Botany* 5(5): 1008. 1984.

Pholidota yunnanensis Schlechter, *Repertorium Specierum Novarum Regni Vegetabilis* 19: 378. 1924, non Rolfe. *Pholidota yunpeensis* Hu, *Rhodora* 27: 107. 1925. *Pholidota schlechteri* Gagnepain, *Bulletin du Muséum National d'Histoire Naturelle* ser. 2, 3: 147. 1931. Type Region: Yunnan.

Pholidota tixieri Guillaumin, *Bulletin du Muséum National d'Histoire Naturelle* 28: 548. 1956. Type Region: Laos.

Pseudobulbs 2.5-4.5 cm long, slender to swollen, base covered with inconspicuous, 3-4 cm long sheaths; leaf solitary, 6-15 × 1.5-3.0cm, oblong-lanceolate, acute; petiole 0.5-1 cm long; inflorescence 18-30 cm long, synanthous, peduncle 4-14 cm long, terete, rachis densely many flowered; floral bract 4-5 × 4-5 mm, ovate-sagittate, acute, membranous, brown; pedicel ovary 3-4 mm long, smooth, green; flower 2-3 mm across, creamy white, fragrant; sepals sub-equal, creamy white, the dorsal 4-5 × 2-3.5 mm, oblong-elliptic, obtuse, the lateral ones 5-6 × 4-5 mm, oblong-ovate, connate at the base; petals 3-4 × 1-2 mm, oblong, obtuse; lip 4.5-5.5 × 3.8-4.8 mm (when spread out), broadly 3-lobed, disc with 3 short calli, lateral lobes *ca.* 3.5 mm long, erect, apical lobe divided into two lobules, irregularly quadrate; column 2-3 × 2.5 mm, winged, spathulate; anther cap 0.7-0.8 × 1.0-1.2 mm, dark brown; pollinia 4 in two pairs, *ca.* 0.5 mm long. (Plate. 4)

Flowering: August-September.

Etymology: From the Latin *pallidus* (pale) in reference to the flower.

Specimens examined: INDIA, Manipur, Senapati district, Hengbung, Chowlu 00081, 00084, 00085, 00404; Willong, Chowlu 00157; Oklong, Chowlu 00543.

Distribution: India (Arunachal Pradesh, Darjeeling, Manipur, Sikkim), Bhutan, Laos, Myanmar, Nepal, Thailand, Vietnam.

Pholidota protracta J.D.Hooker, *Hooker's Icones Plantarum* ser. 3, 19: t. 1877. 1889; Pearce & Cribb, *Orchids of Bhutan*, 352. 2002. Type Region: Himalaya. Lectotype: India, Sikkim Himalaya, Neebung, Clarke (K!), designated by Vogel.

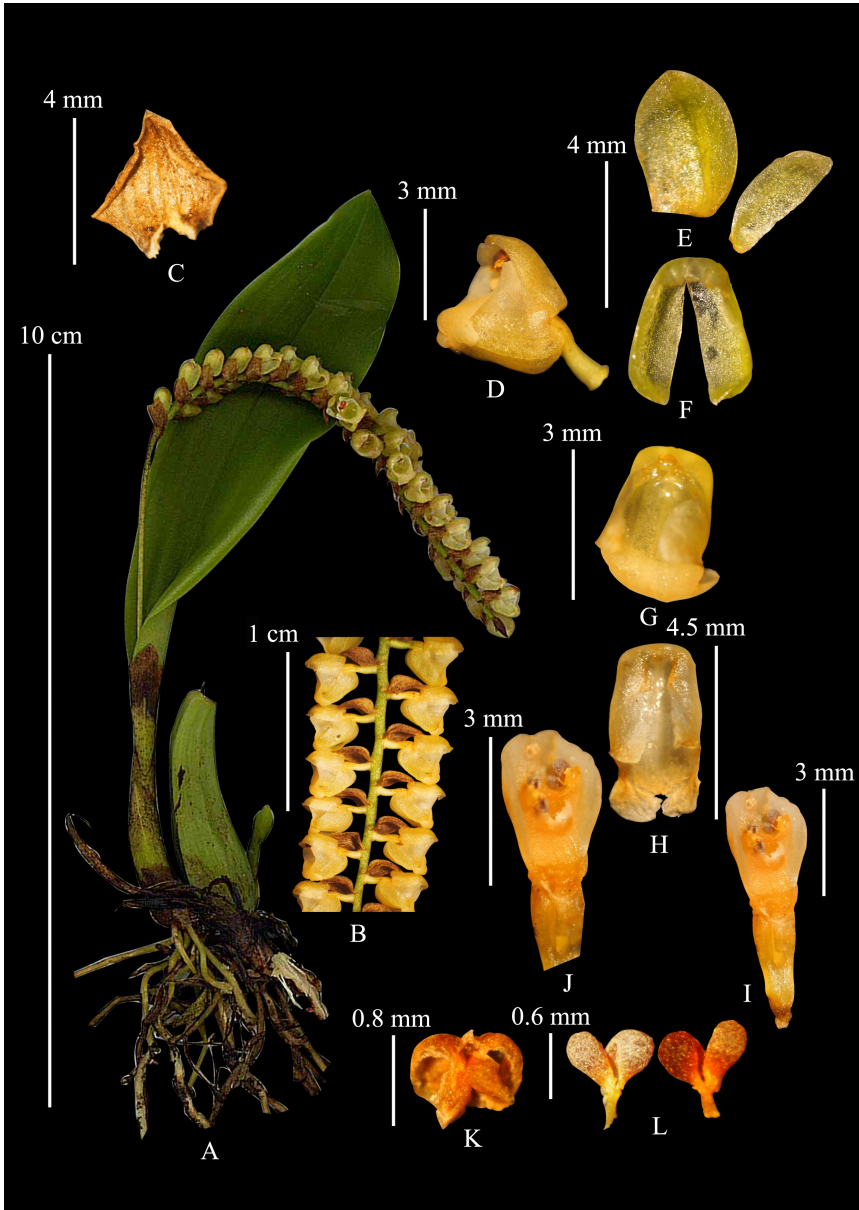


Plate 4. *Pholidota pallida* Lindley

A. Habit; B. Inflorescence; C. Bract; D. Flower; E. Dissected parts; F. Lateral sepals showing the connate nature; G. Lip; H. Lip showing the front view; I. Column with pedicel ovary; J. Column; K. Anther cap. L. Pollinia.

Pseudobulbs 2-7 cm long, slender, conical, curved; leaves 4-12 × 1.3-2.5 cm, linear lanceolate, acuminate, petiole 0.5-1 cm long; inflorescence 4-10 flowered, from the rhizome, peduncle 0.8-1.5 cm long, terete, rachis 2-4 cm long, zigzag; floral bract 2.5-3.5 × 3-4 mm, ovate, acute; flower 5-6 mm across, creamy white; sepals sub-equal, the dorsal 3.5-4.2 × 2-2.2 mm, ovate, sub-acute, the lateral ones 4.5-5.5 × 2.5-3 mm, ovate-oblong, acute; petals 3.5-4 × 1.5-2 mm, ovate to obovate, acute; lip 4.5-5.5 mm long, hypochile shallow, lateral margins lobe like, epichile ovate, apex retuse; column 3-4 mm long, hooded, foot *ca.* 0.3 mm long; anther cap light brown; pollinia 4, 0.5 0.6 mm.

Flowering: October-November.

Etymology: From the Latin *protractus* (lengthened, drawn out).

Distribution: India (Manipur, West Bengal, Sikkim), Bhutan.

Note: During this last 4 and half years we are not able to collect the species but it was reported from Manipur by Mukherjee (1953).

Pholidota pygmaea H.J.Chowdhery & G.D.Pal, *Nordic Journal of Botany* 411. Fig. 1. 1995; Chowlu, Nanda & A.Nageswara Rao, *Journal of the Orchid Society of India*, 27 (1-2): 89-92. 2013. Type Region: Arunachal Pradesh. Type: H.J.Chowdhery 1760 (Holo: CAL, Iso: ARUN).

Pseudobulbs 3-3.5 × 2.4-2.7 cm, ovoid-rounded, clustered, smooth, base covered by sheaths; leaf solitary, 15-22 × 4.5-5.5 cm, broadly elliptic-lanceolate, acute at apex, thick coriaceous, mid nerve shallowly grooved underneath, reflexed, petiole 5-9 mm long; inflorescence 30-35 cm long, curved, peduncle 10-14 cm long, terete, glabrous, rachis 17-21 cm long, densely many flowered; floral bract 6-7 × 4.5-5.5 mm, ovate-round, obtuse; pedicel ovary *ca.* 5 mm long, pale green; flower 4-6 mm across, creamy; sepals unequal, creamy, the dorsal 4-5 × 3.5-4 mm, ovate, sub-acute, the lateral ones 6.5-7 × 3-3.5 mm, oblong, acute, cymbiform with winged keel; petals 3.5-4 × 1.5-2 mm, linear to linear-lanceolate, obtuse, minutely falcate, creamy; lip 5-6 × 4-4.5 mm, 3-lobed, orbicular, lateral lobes rectangular, apical lobe with small sinus; column 3.0-3.5 × 2.5-3 mm, winged, creamy; anther cap 0.6-0.7 × 1-1.3 mm, brown; pollinia 4 in 2 pairs, *ca.* 0.5 mm, creamy. (Plate. 5)

Flowering: September-November.

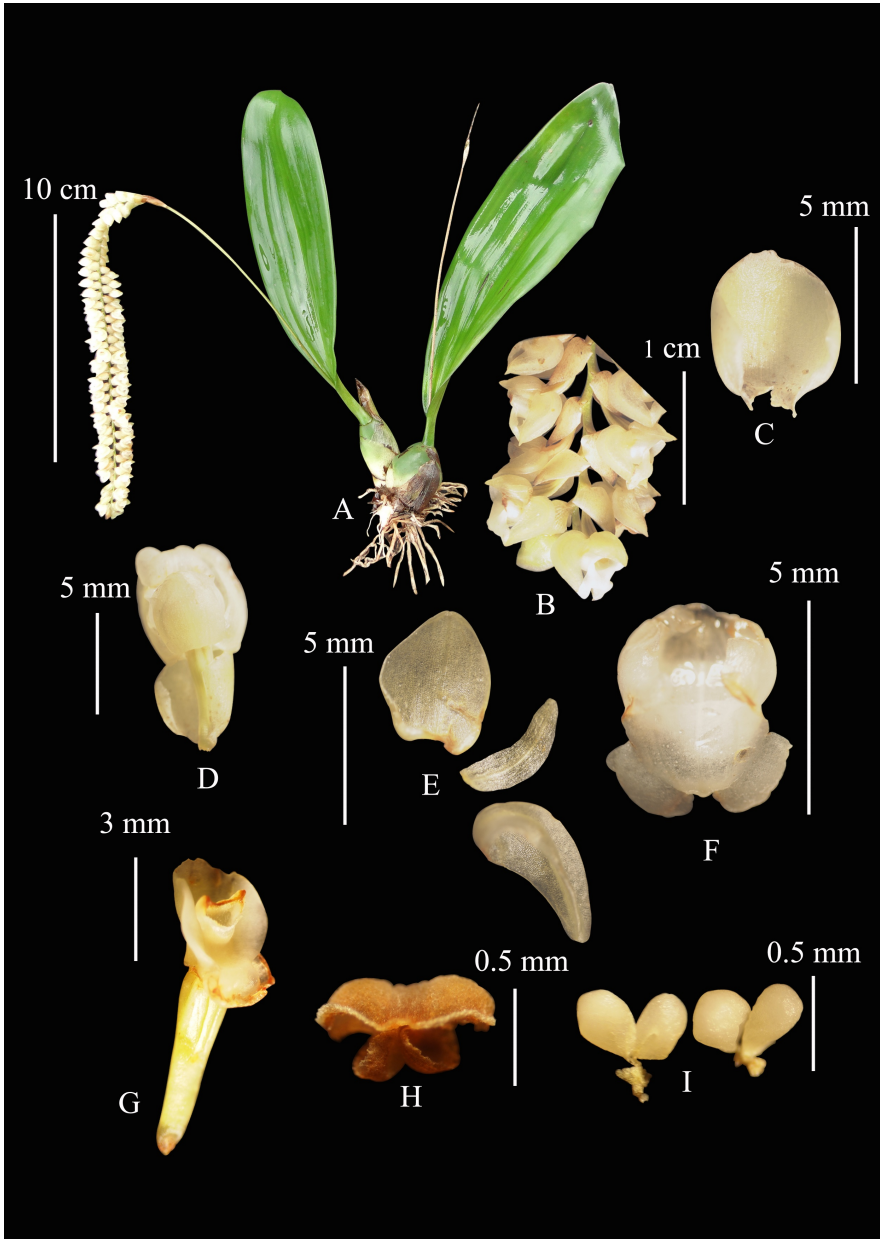


Plate 5. *Pholidota pygmaea* H.J.Chowdhery & G.D.Pal

A. Habit; B. Inflorescence; C. Bract; D. Flower; E. Dissected parts; F. Lip; G. Column with pedicel ovary; H. Anther cap. I. Pollinia.

Etymology: From the Latin *pygmaeus* in reference to the small size of the flower.

Specimen examined: INDIA, Manipur, Chandel district, Kwatha *Chowlu* 00392.

Distribution: India (Arunachal Pradesh, Manipur).

Acknowledgements

Sincere thanks are due to Mr. H. Kipgen, President of the Foundation for Environment and Economic Development Services, Hengbung, for facility and encouragement; to the SERB division of Department of Science and Technology, Government of India, New Delhi for financial support to carry out the study on orchids of the Eastern Himalayan Region.

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