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NOTE

NOTES ON THE OCCURRENCE OF ORCHIDS

BULBOPHYLLUM MEDIOXIMUM, *HERMINIUM EDGEWORTHII* AND *H. MACROPHYLLUM* (ORCHIDACEAE) IN ARUNACHAL PRADESH, INDIA

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NOTES ON THE OCCURRENCE OF ORCHIDS *BULBOPHYLLUM MEDIOXIMUM*, *HERMINIUM* *EDGEWORTHII* AND *H. MACROPHYLLUM* (ORCHIDACEAE) IN ARUNACHAL PRADESH, INDIA

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Arunachal Pradesh, the northeastern most state of India, is a part of the eastern Himalaya and considered as one of the biodiversity rich regions of the Eastern Himalayan Biodiversity Hotspot (CEPF 2018). Out of 1,350 species of orchids recorded from India, about 560 species are reported from Arunachal Pradesh (Rao 2006). Arunachal Pradesh may be botanically termed as the 'Orchid Paradise of India' because of the maximum concentration of orchid species (about 40% of the country) in the state when compared to the other states of the country (Rao 2010). During a routine floristic survey in West Kameng and Tawang districts of Arunachal Pradesh, a few orchid specimens (in flowering) belonging to the genera *Bulbophyllum* and *Herminium* were collected by the first author and brought for cultivation to the botanical garden of the Botanical Survey of India,

Arunachal Pradesh Regional Centre, Itanagar for further studies. After dissection, a necessary perusal of the literature (Pearce & Cribb 2002; Luksom 2007; Chen et al. 2009) and consultation of herbarium material deposited at APFH, ARUN ASSAM, K and BM the specimens have been identified as *Bulbophyllum medioximum* J.J.Verm., Schuit. & de Vogel, *Herminium macrophyllum* (D.Don) Dandy and *Herminium edgeworthii* (Hook. f. ex Collett) X.H.Jin, Schuit., Raskoti & Lu Q. Huang of which the former is a new record for Indian flora while the latter two have not been reported so far from Arunachal Pradesh, constituting new records for the state. An updated taxonomy of the species has been provided following Govaerts et al. (2018).

New Record for India

1. *Bulbophyllum medioximum* J.J.Verm., Schuit. & de Vogel, Phytotaxa 166: 104. 2014 (Image 1)

lone annamensis Ridl., J. Nat. Hist. Soc. Siam 4: 115. 1921.

Sunipia annamensis (Ridl.) P.F.Hunt, Kew Bull. 26: 183. 1971.

Type: Vietnam, Langbian Province, South Annam, Langbian Peaks, C. Boden Kloss s.n.

(BM000525247) (BM!).

Plant epiphytic herb, 18–21 cm high including the inflorescence. Rhizome creeping, 5–11 mm long. Pseudobulbs 1.3–1.8 × 0.5–0.8 cm, ovoid, 1.2–1.7 cm apart on rhizome. Leaves solitary, 7–8 × 1.0–1.2 cm,



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Competing interests: The authors declare no competing interests.

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oblong-lanceolate, minutely bilobed at apex, coriaceous, petiole c. 0.4 cm long. Inflorescence 18–21 cm long, erect; peduncle 15–17 cm long, arising from the base of pseudobulbs, covered by the brown sheathing bracts at the base, upper portion with c. 5 sterile bracts, terete, greenish-black; rachis 2.5–3.0 cm long, up to four flowers per inflorescence. Flower c. 5 mm across (petal to petal), widely opening, pale purple with deep purple linings, lip with pale purple with deep purple linings and yellow in epichile. Pedicellate ovary 6–7 mm long, light green. Floral bracts 4–5 × 2.3–2.5 mm, lanceolate, acute at apex, translucent creamy, prominent. Dorsal sepal 5–6 × 3–4 mm, ovate-lanceolate, acute at apex,

pale purple with deep purple lining, 5 nerved, margins minutely recurved. Lateral sepals 8–10 × 3.5–4.0 mm, oblong-lanceolate, bifid at apex, two sepals fused to form a single structure or sepal (synsepalum) but free at apex, lying perpendicular to the pedicellate ovary. Petals 2.5–3.0 × 2.0–2.5 mm, 1-nerved, triangular-ovate, acute, minutely serrate along the margin. Lip simple, 4–5 × 3.5 mm, cup shaped, keeled, pale purple with deep purple linings with epichile yellow, obtuse at apex, base thickened and connate with very short foot of column. Column 3.5–4 mm long, greenish-yellow, rostellum with 2 processes; foot c. 1 mm long. Anther cap 0.7–0.8 × 0.5–0.6 mm, pale greenish-white.

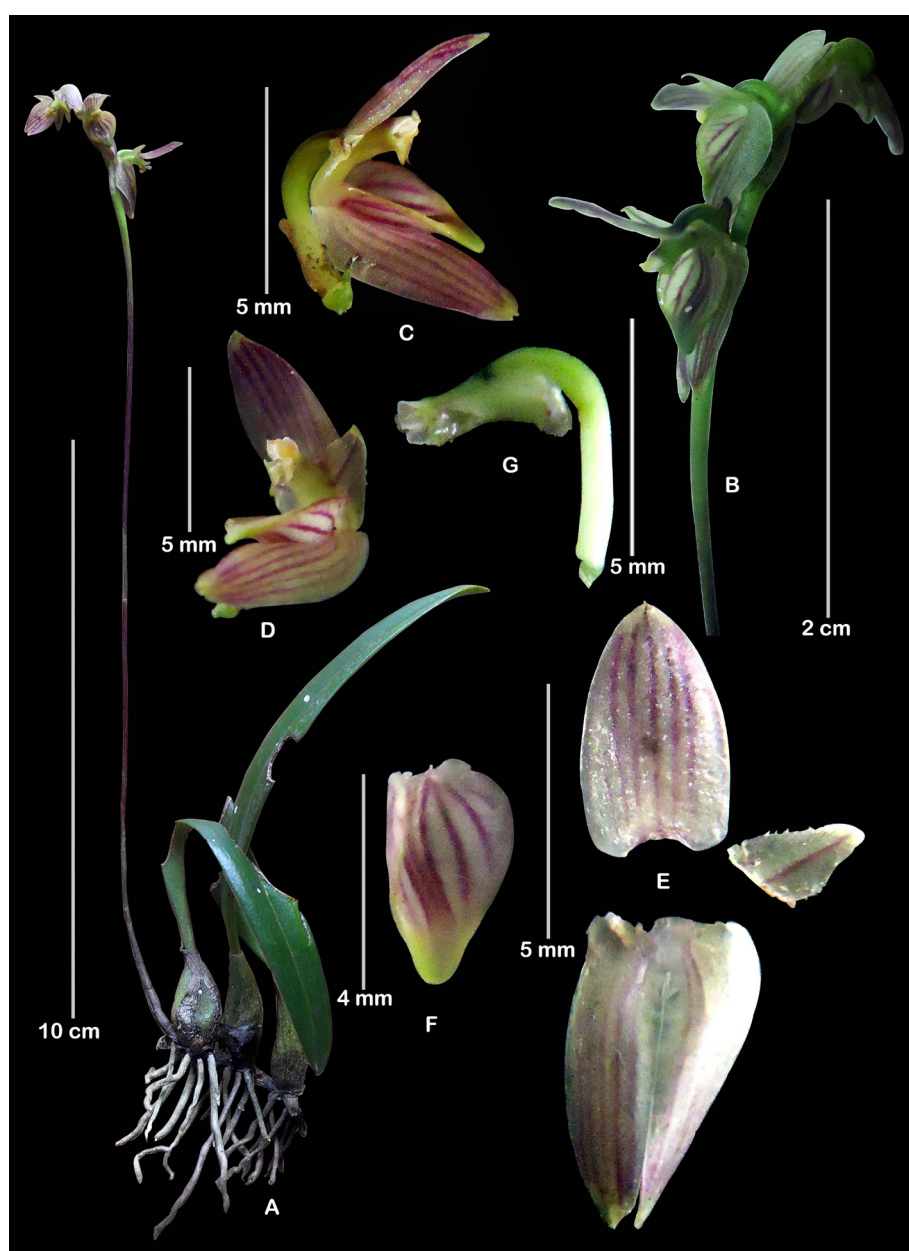


Image 1. *Bulbophyllum medioximum* J.J.Verm., Schuit. & de Vogel. A - Habit; B - Inflorescence; C - Flower; D - Flower; E - Dissected parts; F - Lip; G - Column with ovary plus pedicel. © K. Chowlu

Flowering. November–December.

Habitat: Commonly found growing in open grasslands at around 1,071m elevation.

Distribution: China, India, Thailand and Vietnam.

Specimen examined: 40107 (ARUN), 02.x.2015, India, Arunachal Pradesh, Kameng District, Orchid Sanctuary Sessa, 1,071m, coll. Krishna Chowlu.

New record for Arunachal Pradesh

1. *Herminium macrophyllum* (D. Don) Dandy. J. Bot. 70: 328. 1932 (Image 2)

Neottia macrophylla D. Don, Prodr. Fl. Nepal.: 27. 1825.

Spiranthes macrophylla (D. Don) Spreng., Syst. Veg. 3: 708. 1826.

Peristylus macrophyllus (D. Don) Lawkush, V. Kumar & Bankoti, Indian J. Forest. 36: 388. 2013.

Type: Nepal, 1819, N. Wallich s.n. (BM000034355) (BM!)

Plants 7–20 cm tall. Bulbs ovoid or ellipsoid. Stem green, terete with 2 or 3 leaved. Leaves basal, narrowly oblongelliptic, 4–10 × 0.7–2.2 cm, apex acute to subacute. Inflorescence 515cm long, green; peduncle terete; rachis 2.5–7 cm long, densely many flowered; floral bracts lanceolate, 1–2 mm long, apex acute, shorter than ovary. Flowers 2–3 mm across, yellowish-green or

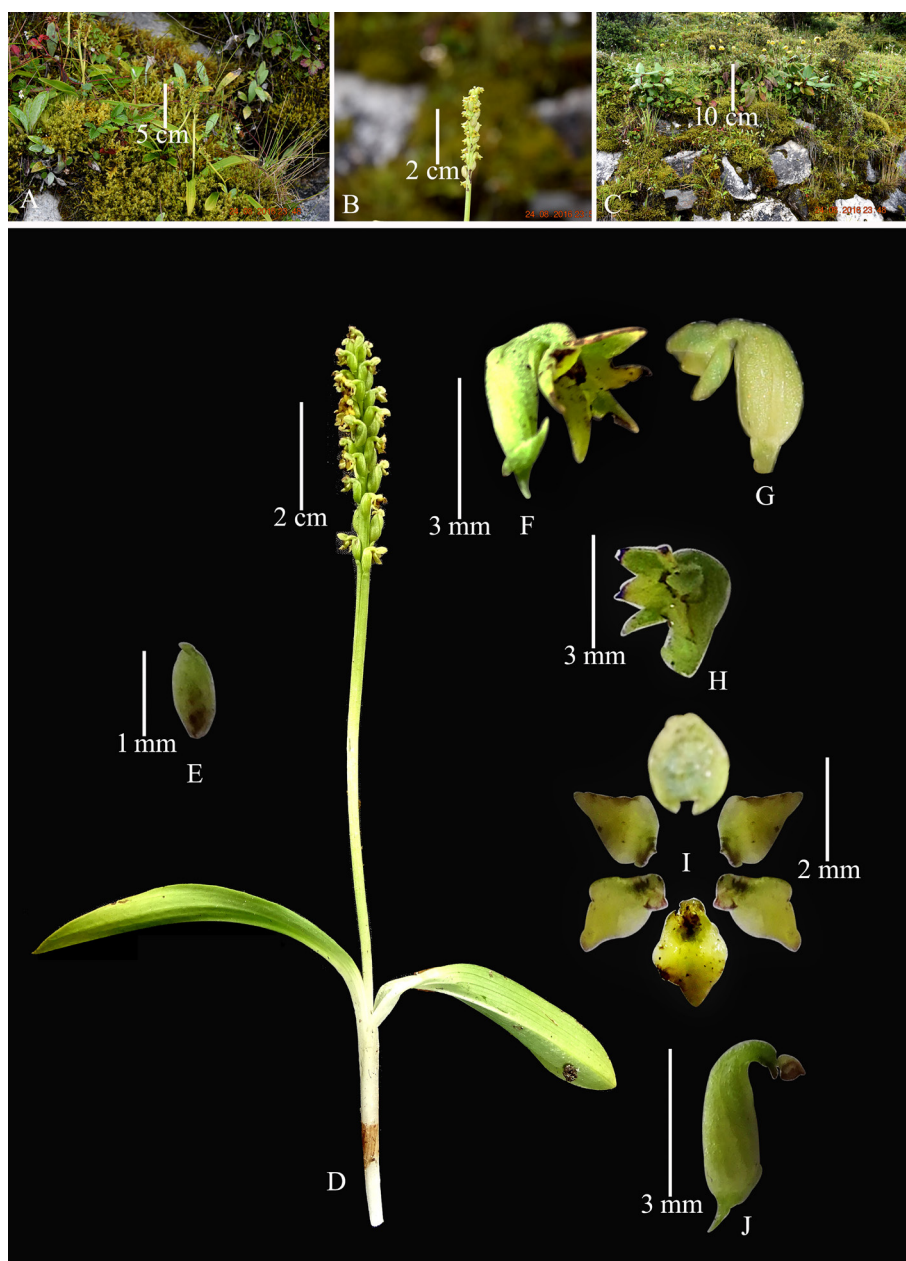


Image 2. *Herminium macrophyllum* (D. Don) Dandy.

A & C - Habitat; B - Inflorescence; D - Habit; E - Bract; F - Flower; G - Flower (side view); H - Flower; I - floral parts; J - Column with ovary plus pedicel. © K. Chowlu

green; ovary distinctly hooked toward apex. Dorsal sepal ovate, $1.3-2.4 \times 0.6-1.2$ mm, obtuse, yellowish-green to green; lateral sepals oblong-lanceolate, $1.5-2.4 \times 0.6-1.2$ mm, acute. Petals spreading, ovate-lanceolate, $1.2-2.0 \times 0.8-1.2$ mm, acuminate, yellowish-green or green; lip ovate-lanceolate, $1.8-2.2 \times 0.8-1$ mm, 3lobed; Column less than 1mm.

Flowering: June–August.

Habitat: Commonly found growing in open grasslands at 3,670m elevation.

Distribution: China, India, Nepal and Pakistan.

Specimen examined: 40930 (ARUN), 21.ix.2016, India, Arunachal Pradesh, Tawang District, Sela Pass, 3,670m, coll. Krishna Chowlu.

2. *Herminium edgeworthii* (Hook.f. ex Collett) X.H.Jin, Schuit., Raskoti & Lu Q. Huang in *Cladistics* 32: 32. 2015 (Image 3)

Habenaria edgeworthii Hook. f. ex Collett in Fl. Siml.: 504, t. 166. 1902.

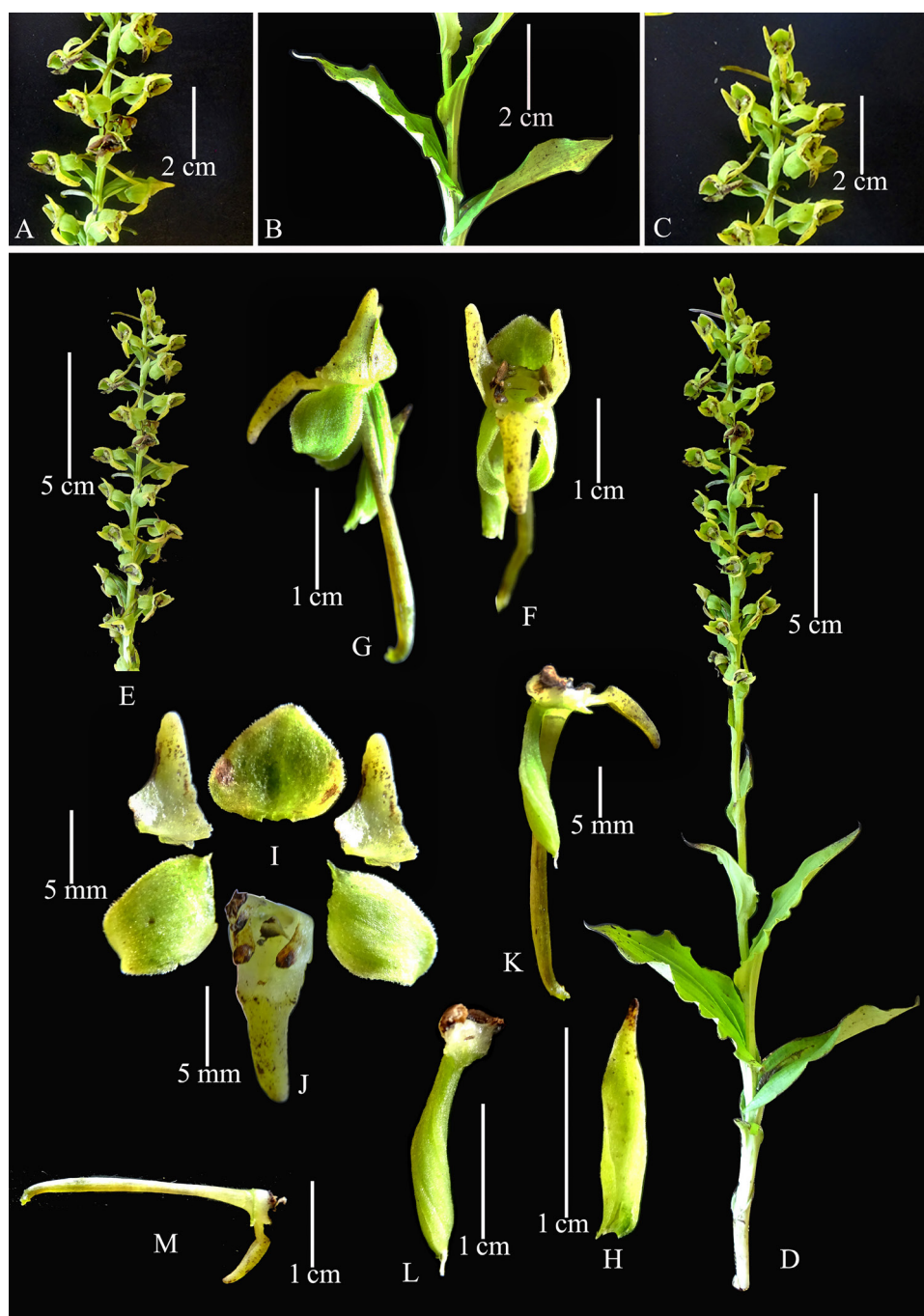


Image 3. *Herminium edgeworthii* (Hook.f. ex Collett) X. H. Jin et.
A & C - Part of Inflorescence;
B - Leaf; D - Habit;
E - Inflorescence; F - Flower;
G - Flower (side view);
H - Bract; I - Floral parts;
J - Lip with column; K - Lip (side view) with spur & pedicel ovary; L - Column with ovary plus pedicel.
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Habenaria acuminata sensu T.A. Rao in Bull. Bot. Surv. India 2: 89. 1960.

Platanthera edgeworthii (Hook. f. ex Collett) R.K. Gupta Fl. Nainital.: 349. 1968.

Type: India, Banasar, August 1834, M.P. Edgeworth s.n. (K000247468) (K!).

Plant fusiform. Stem leafy base sheathed. Leaves 3–4, 5–9 × 2–4.5 cm, lower broadly ovate– lanceolate, base sheathing, acute, margins undulate; Stem bracts lanceolate, acute. Inflorescence 14–26 cm long, subdensely many flowered; rachis erect, c. 20cm long, terete. Floral bracts lanceolate, acute to acuminate, 0.8–1.5 × 0.2–0.4 cm, green. Flower 1.5–1.8 cm long, green. Sepals broadly ovate, 5.5–6.5 × 6.0–7.0 mm, obtuse, concave, margins minutely hairy. Lateral sepals 6–8 × 5 mm, oblong–ovate, apex acute, margins minutely hairy, apex folded externally. Petals 7 × 4 mm, lanceolate base broad, apex obtuse, hooked with the dorsal sepal. Lip simple, 7–8 × 3–4 mm, oblong, obtuse, yellowish-green; spur 1.7–2.1 cm long, green, much longer than the pedicel ovary. Column 2–3 mm long; stigma oblong.

Flowering: August–September.

Habitat: Found growing in open grassland along with other grasses at around 2,915m elevation.

Distribution: China, India, Nepal and Pakistan.

Specimens examined: 40936 (ARUN), 18.ix.2017, India, Arunachal Pradesh, Tawang District, 2,915m, coll. Krishna Chowlu.

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