

Contributions to the Orchid flora of Manipur (India) – 1

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Abstract

The paper deals with ten species of orchids viz. *Aerides rosea* Loddiges ex Lindley & Paxton, *Bryobium pudicum* (Ridley) Y.P. Ng & P.J. Cribb, *Eria biflora* (Griffith) Rauschert, *Pinalia stricta* (Lindley) Kuntze, *Eriodes barbata* (Lindley) Rolfe, *Luisia filiformis* J.D. Hooker, *Phalaenopsis braceana* (J.D. Hooker) Christenson, *Tainia angustifolia* (Lindley) Bentham & J.D. Hooker, *Thrixspermum musciflorum* A.S. Rao & J. Joseph and *Uncifera obtusifolia* Lindley which are new distributional records to Manipur. All the species are enumerated with brief description and the details on habitat ecology, phenology and distribution.

Key words: Ten orchid species, New records, Manipur

INTRODUCTION

The Orchidaceae, one of the larger families among the flowering plants, is represented by about 25,000 species of about 800 genera distributed worldwide, mostly in the humid tropics and subtropics except Antarctica (Chen *et al* 2009). So far about 1331 species under 186 genera have been reported from India (Misra 2007), out of which about 900 species in 165 genera are found in North East India (Rao 2007) and about 287 species in 87 genera in Manipur (Kumar & Kumar 2005; Kishor *et al.* 2012; Nanda *et al* 2012 a, b; Chowlu *et al* 2012 a, b, 2013).

Manipur, one of the eight states of North East India, is geographically located between 23° 59' - 25° 47' N and 92° 59' - 94° 46' E. It is spread over an area of 22,327 km² and is a part of the Indo–Myanmar Biodiversity Hotspot. The state supports diverse vegetation types viz. tropical, subtropical, temperate and alpine, and is rich in plant genetic resources including orchids.

With a view to prepare an updated inventory of orchids from Manipur, several sample collections of various species of orchids from Senapati and Tamenglong districts of Manipur have been gathered during the years 2010 to 2012 by a team of scientists from the Centre for Orchid Gene Conservation of Eastern Himalayan Region (COGCEHR) and brought under cultivation as a part of *ex situ* conservation in the field gene bank of the Centre at Hengbung (1298 m). Upon critical study of the so far collections, based on available literature and the specimens deposited in different herbaria like ASSAM, ARUN, OHT and CAL, ten species viz. *Aerides rosea* Loddiges ex Lindley & Paxton, *Bryobium pudicum* (Ridley) Y.P. Ng & P.J. Cribb, *Eria biflora* (Griffith) Rauschert, *Eriodes barbata* (Lindley) Rolfe,

Luisia filiformis J.D. Hooker, *Phalaenopsis braceana* (J.D. Hooker) Christenson, *Pinalia stricta* (Lindley) Kuntze, *Tainia angustifolia* (Lindley) Bentham & J.D. Hooker, *Thrixspermum musciflorum* A.S. Rao & J. Joseph and *Uncifera obtusifolia* Lindley have been proved to be hitherto unrecorded from the state of Manipur. Hence, these species are reported for the first time in the present paper as new additions to the orchid flora of the state. All the species are enumerated below in alphabetically along with brief description, habitat, phenology and distribution and a plate of colour photographs for each species to facilitate their easy identification in the field.

ENUMERATION

Aerides rosea Loddiges *ex* Lindley & Paxton, Paxt. Fl. Gard. 2: 109. 1851. *Aerides trigonum* Koltzsch in Allg. Garten. 23: 177. 1855. *Aerides fieldingii* B.S. Williams, Orch. Grow. Man. 2: 39. 1862.

Epiphyte, growing on moss covered tree trunks and branches in sub-tropical mixed forest. Leaves lorate, unequally bilobed. Inflorescence pendulous, densely flowered. Flowers upto 2 cm across, white tinged with purplish pink.

Flowering: May – July

Exsiccatae: Tamenglong District, Kahulong, 1191 m, 24°55.07' N & 93°29.41' E, Y. Nanda 00004 (COGCEHR Herbarium, Hengbung, Manipur).

Distribution: India (Manipur, Nagaland, Meghalaya, Mizoram, Arunachal Pradesh, Sikkim), Bhutan, China, Laos, Myanmar, Thailand and Vietnam.

Bryobium pudicum (Ridley) Y.P. Ng & P.J. Cribb, Orchid Rev. 113: 272. 2005. *Eria pudica* Ridley in J. Linn. Soc. Bot. 32: 294. 1896. *Eria hindei* Summerh in Bull. Misc. Inform. Kew: 321. 1932.

Epiphyte, growing in sub tropical evergreen forest. Leaves arising from the apex of pseudobulbs. Inflorescence arises from sheath axil, densely or laxly arranged, 11 – 20 flowered. Flowers upto 0.7 cm across, red striped.

Flowering: August – September

Specimens Examined: Tamenglong District, Kahulong, 1191 m, N - 24°55.07' N & 93°29.41' E, Y. Nanda 00006 (COGCEHR Herbarium, Hengbung, Manipur).

Distribution: India (Manipur, Assam, Meghalaya, Tripura, Mizoram, Nagaland, Arunachal Pradesh and Sikkim), Bhutan, Malaysia, Singapore, China

Eria biflora Griffith, Not. Pl. Asiat, 3: 302. 1851. *Eria choneana* Kraenzl. in Bot. Jahrb. Syst. 8: 203. 1886. *Pinalia biflora* (Griffith) Kuntze, Rev. Gen. Pl. 2: 679. 1891. *Cylindrolobus biflorus* (Griffith) Rauschert in Fedders Repert. 94 (7 - 8): 445. 1983; A.N. Rao in Bull. Arunachal For. Res. 26 (1 & 2): 82. 2012.

Epiphyte, growing on moss covered tree trunks and branches in sub-tropical mixed forest. Pseudobulbs clustered. Leaves 3 – 4, narrowly elliptic, sub-acute to acute. Inflorescence short, racemose; flowers 2, pedicellate, arising from leaf axil or from nodes, 0.9 cm long, glabrous, pale yellow.

Flowering: November

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Specimens Examined: Tamenglong District, Kahulong, 1191 m, 24°55.07' N & 93°29.41' E, *Y. Nanda 00005* (COGCEHR Herbarium, Hengbung, Manipur).

Distribution: India (Manipur, Assam, Meghalaya, Arunachal Pradesh, Sikkim and West Bengal), China, Malaysia, Myanmar, SE Asia, Sumatra and Java.

Eriodes barbata (Lindley) Rolfe, Orchid Rev. 23: 327. 1915; *Tainia barbata* Lindley, Gard. Chron. 68. 1857. *Eria barbata* Reichenbach f., Ann. Bot. Syst. (Walpers) 6: 270. 1861 (Oct – Dec). *Neotainiopsis barbata* (Lindley) Raizada & Bennet, Indian Forester 107:433.1981. *Pinalia barbata* (Lindley) Kuntze, Rev. Gen. Pl. 2: 679. 1891. *Tainiopsis barbata* (Lindley) Schlechter, Orchis 9:9. 1915.

Epiphyte or lithophyte, growing in temperate forest. Leaves slightly broadly lanceolate or narrowly elliptic, acuminate, contracted into a petiole, enclosed by 2 or 3 sheaths. Inflorescence laxly 11 flowered, erect, pubescent. Flowers fragrant, upto 2.5 cm across, pale yellow with purplish red stripes.

Flowering: October – December

Specimens Examined: Kapung Hill, Senapati District, 1752 m, 25°28.159' N & 93°58.55' E, *Y. Nanda 00008* (COGCEHR Herbarium, Hengbung, Manipur).

Distribution: India (Manipur, Meghalaya, Mizoram and Arunachal Pradesh), China, Bhutan, Myanmar, Thailand, Vietnam.

Luisia filiformis J.D. Hooker, Fl. Brit. India, 6(1): 23. 1890. *Luisia volucris sensu* King & Pantling in Ann. Roy. Bot. Gard (Calcutta) 8: 204. 1898.

Epiphyte; branches pendulous. Leaves narrowly terete, secund. Inflorescence very short, erect, arising from lower part or near base of stem. Flowers whitish, 1.5 cm across. Lip fleshy, dark purple, with a distinct boundary between epichile and hypochile.

Flowering: March – May

Specimens Examined: Makru, Tamenglong District, 163 m, 24°48.75' N, E - 93°14.70' E, *Y. Nanda 00010* (COGCEHR Herbarium, Hengbung, Manipur).

Distribution: India (Manipur, Meghalaya, Mizoram, Arunachal Pradesh, Sikkim, Orissa, and West Bengal), Bhutan, Laos, Thailand and Vietnam.

Phalaenopsis braceana (J.D. Hooker) Christenson, Selbyana 9: 169. 1986. *Doritis braceana* J.D. Hooker, Fl. Brit. India 6: 196. 1890. *Kingidium braceanum* (J.D. Hooker) Seidenfaden, Opera Bot. 95: 187. 1988. *Biermannia navicular* Tang & F.T. Wang ex Gruss & Rollke, Orchidee (Hamburg) 48 (2): 56. 1997. *Kingidium naviculare* Z.H. Tsi ex Hashimoto, New orchids 3: 40. 1984.

Epiphyte, growing in sub-tropical forests. Roots flattened. Stems not clear. Leaves 2, deciduous, dark green above, dark purple tinged below, oblong, acute. Inflorescence 7 flowered per plant, sub-erect. Flowers up to 2.5 cm across, pinkish violet.

Flowering: May – July

Specimens Examined: Khajinglok, Senapati District, 1446 m, N - 25°27.331' N & 94°03.120' E, *Y. Nanda 00009* (COGCEHR Herbarium, Hengbung, Manipur).

Distribution: India (Manipur and Arunachal Pradesh), China, Bhutan, N. Vietnam.

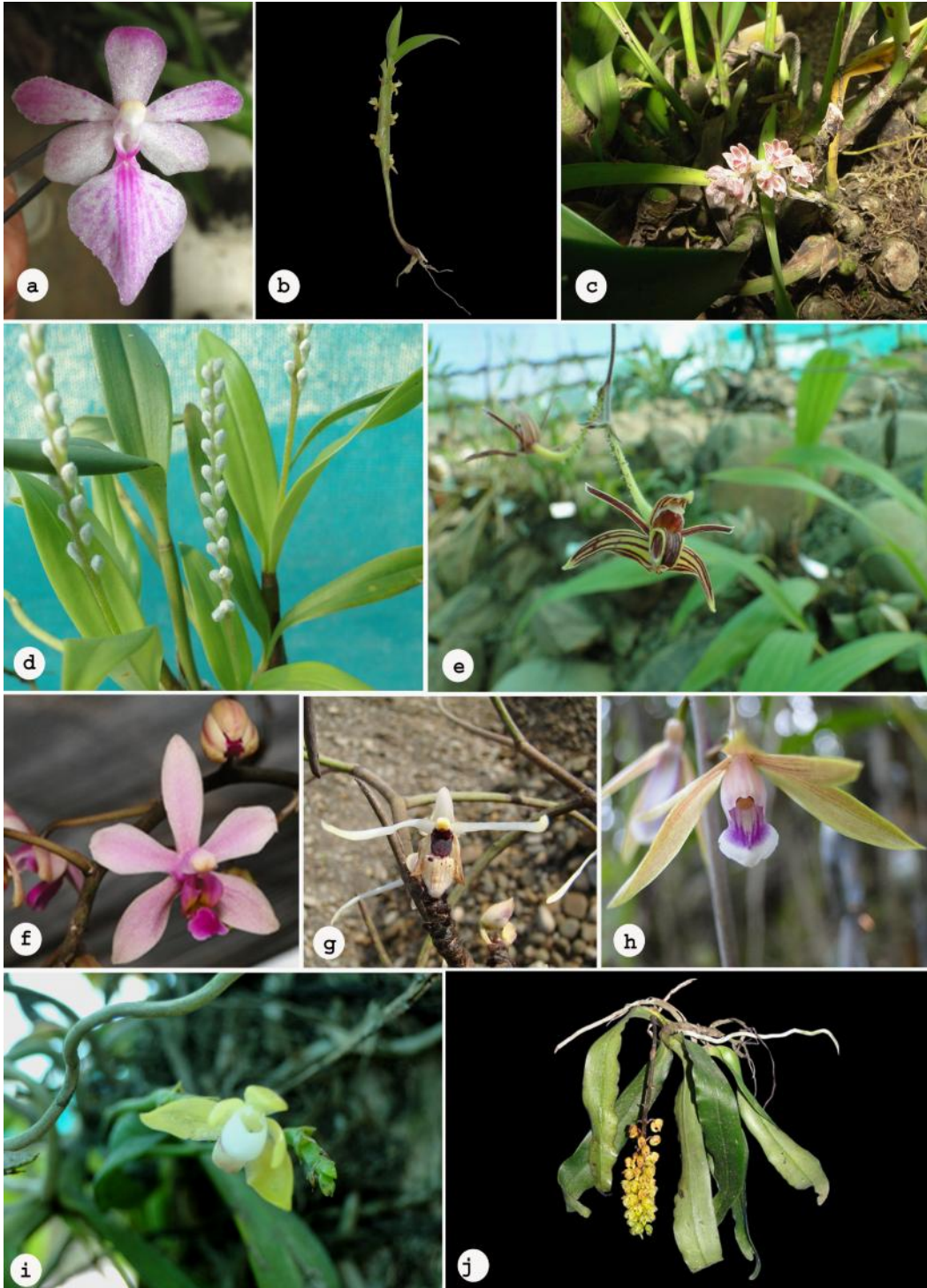


PLATE – I. **a.** *Aerides rosea* Loddiges ex Lindley & Paxton; **b.** *Eria biflora* (Griffith) Rauschert; **c.** *Bryobium pudicum* (Ridley) Y.P. Ng & P.J. Cribb; **d.** *Pinalia stricta* (Lindley) Kuntze; **e.** *Eriodes barbata* (Lindley) Rolfe; **f.** *Phalaenopsis braceana* (J.D. Hooker) Christenson; **g.** *Luisia filiformis* J. D. Hooker; **h.** *Tainia angustifolia* (Lindley) Bentham & J.D. Hooker; **i.** *Thrixspermum musciflorum* A.S. Rao & J. Joseph; **j.** *Uncifera obtusifolia* Lindley

Pinalia stricta (Lindley) Kuntze, Revis. Gen. Pl. 2: 679. 1891. *Eria stricta* Lindley, Coll. Bot. 8: t. 41b. 1826. *Mycaranthus stricta* (Lindley) Lindley, Gen. Sp. Orchid. Pl.: 63. 1830. *Eria secundiflora* Griffith, Not. Pl. Asiat. 3: 302. 1851. Icon. Pl. Asia t. 3: t 302. 1851.

Epiphyte, growing in tropical mixed forest. Pseudobulbs clustered; leaves 2, apex, oblong to narrowly elliptic, unequally bilobed, acute. Inflorescence erect, densely many flowered. Flowers upto 0.5 cm across, white or greenish white. Sepals abaxially densely hairy.

Flowering: December – March

Specimens Examined: Dailong Rangaan, Tamenglong District, 999 m, N - 25°01.09' N & 93°31.31' E, *Y. Nanda* 00007 (COGCEHR Herbarium, Hengbung, Manipur).

Distribution: India (Manipur, Nagaland, Assam, Meghalaya, Arunachal Pradesh, Sikkim, West Bengal), Bhutan, Myanmar, Nepal & Vietnam

Tainia angustifolia (Lindley) Benth & J.D. Hooker, Gen. Pl. 3: 515. 1883. *Ania angustifolia* Lindley, Gen. Sp. Orch. Pl: 129. 1831. *Ascotainia angustifolia* (Lindley) Schlechter, Repert. Spec. Nov. Regni Veg. Beih. 4: 246. 1919. *Eulophia evrardii* Guillaumin in Bull. Soc. Bot. France 77: 337. 1930. *Mitopetalum angustifolium* (Lindley) Blume, Mus. Bot. 2 (9-12): 185. 1856. *Nephelaphyllum evrardii* (Guillaumin) Tang & Wang in Acta phytotax. Sin. i. 77. 1951.

Terrestrial in subtropical mixed forest. Pseudobulbs white, ovoid. Leaves narrowly or broadly elliptic, acuminate. Inflorescence 13 flowered. Flowers 2.5 cm across, yellowish green tinged with purple on lip, sub-pendulous (facing the ground).

Flowering: August – October

Specimens Examined: Hengbung, Senapati District, 1197 m, N - 25°13.769 N & 93°59.913 E, *Y. Nanda* 00011 (COGCEHR Herbarium, Hengbung, Manipur).

Distribution: India (Manipur and Assam), China, Myanmar, Vietnam and Thailand.

Thrixspermum musciflorum A.S. Rao & J. Joseph in Bull. Bot. Surv. India 11 (1 & 2): 204 – 205. 1971, ut '*muscaeflorum*'; Seidenfaden in Opera Botanica 95: 164. 1988. Misra. Orch. India 318. 2007. *Thrixspermum musciflorum* var. *nilagiricum* J. Joseph & Vajr., India Forester 107: 648. 1981.

Epiphyte in subtropical mixed forest. Inflorescence axillary, 8 – 9 flowered. Flowers 1 cm across, appears 1 by 1; sepals greenish yellow, dorsal sepal smaller than laterals; lip white, spotted with purple, red stripes on the foot and in between the side lobes, spur sac like.

Flowering: August – September

Specimens Examined: Lonku, Tamenglong District, 1179 m, N - 25°00.80 N & 93°32.29 E, *Y. Nanda* 00015 (COGCEHR Herbarium, Hengbung, Manipur).

Distribution: India (Manipur, Assam, Meghalaya, Arunachal Pradesh and Sikkim,), Bhutan, Thailand and Sri Lanka

Uncifera obtusifolia Lindley, J. Proc. Linn. Soc. Bot. 3: 40. 1859. *Saccolabium obtusiflorum* (Lindley) J.D. Hooker, Fl. Brit. India 6 (1): 65. 1890. *Gastrochilus obtusifolius* (Lindley) Kuntze, Rev. Gen. Pl. 2: 661. 1891.

Epiphyte in subtropical mixed forest. Leaf unequally bilobed, dissected upto 1.2 – 2.2 cm, lanceolate, acute, thick. Inflorescence axillary, pendulous, densely flowered. Flowers 1 cm

across, green when young, yellow when fully mature, partly fleshy; lip trilobed, centre of mid lobe smaller than lateral lobes.

Flowering: July – September

Specimens Examined: Longku, Tamenglong District, 1179 m, N - 25°00.78 N & 93°32.43 E, Y. Nanda 00013 (COGCEHR Herbarium, Hengbung, Manipur).

Distribution: India (Manipur, Assam, Meghalaya, Nagaland, Arunachal Pradesh, Sikkim and W. Bengal), Nepal, Bhutan, Thailand.

DISCUSSION

Out of 10 orchid species reported in the paper, 8 are epiphytic, one is terrestrial (*Tainia angustifolia*) and one (*Eriodes barbata*) is either epiphytic or lithophytic. Two species viz. *Pinalia stricta* and *Luisia filiformis* are found in tropical area, whereas one species i.e. *Eriodes barbata* is from the temperate zone and the rest have been found growing in subtropical areas.

From the literature it has been noted that *Tainia angustifolia* was recently recorded by Gogoi (2012) as a new record to India from Assam.

During the survey, it has been observed that five species viz. *Eria biflora*, *Luisia filiformis*, *Phalaenopsis braceana*, *Tainia angustifolia* and *Thrixspermum musciflorum* are represented by very few populations in their natural habitats and are under threat due to habitat destruction in the form of biotic pressures like tree cutting by local people for timber and firewood, forest clearance for the extension of human settlements, etc. Hence, there is immediate need to conserve these species through various means including micropropagation with specific mycorrhiza induction for rehabilitating them into suitable and safer natural habitats.

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