

Orchid flora of Joypur Reserve Forest of Dibrugarh district of Assam, India

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Abstract

Systematic survey carried out in Joypur Reserve Forest during 2006 – 2009 recorded the occurrence of 68 species of orchids covering 37 genera. Seven of the recorded plants, *Anoectochilus brevilabris*, *Bulbophyllum spathulatum*, *Ceratostylis sabulata*, *Podochilus khasianus*, *Thelasis longifolia*, *Trichotosia velutina*, and *Tylostylis discolor* are new record of occurrence for Upper Assam.

Key words: Orchid Flora, Joypur Reserve Forest, Distribution, New records.

INTRODUCTION

The orchid family of the Angiosperms is one of the largest and the most fascinating group in the plant kingdom. Among the most beautiful flowers of the world orchids are dominating ones. They have vivid and tremendously variable colour, texture, shape and size. So orchids have been occupying an important role in horticulture and floriculture for their exquisite beauty, scent and their long lasting quality.

Orchidaceae comprises of about 17000 species in some 1000 genera (Chowdhery 1998) with world wide distribution. The North-Eastern region of India is one of the richest and most interesting floristic regions of the country, with orchids forming a prominent feature of the vegetation. According to an estimate in East Himalayan and North-East Indian orchids constitute nearly 70% of total orchid flora of India (Barua 2001).

The Indian state of Assam is the second largest state of North-East India and is a rich store house of Indian orchids. The total number of orchid species may be around 193 covering 71 genera out of which 27 are endemics (Rao 1995; Hegde 2000). The Joypur Reserve Forest has been natural dwelling home of a wide variety of orchids. But, till date there is no such record of the orchid flora of this important nature reserve.

STUDY AREA

Joypur Reserve Forest is falling under the district of Dibrugarh (Dibrugarh Forest Division) and is located within 95°22' E to 95°30' E and 27°00' N to 27°16' N. It is bounded by Arunachal Pradesh in its East and South and Sibsagar District in its West (Fig. 1). This reserve forest is classified as type IB.C.I Assam valley wet Evergreen forest type of or more commonly known as upper Assam *Dipterocarpus-Mesua* formation, according to Champion and Seth (1968). It forms a part of the world heritage of tropical/sub-tropical wet evergreen forest, multistoried in structure and rich in biodiversity, more popularly known as 'Rain forest'.

The area is characterized by high precipitation that maintains a round the year high humid condition. Though the amount of rainfall tapers towards the end of the rainy season but there is some amount of precipitation every month. Maximum annual rainfall recorded is 3640 mm (in 2007) Temperature ranges maximum of 36° C and minimum 6° C.

MATERIALS AND METHODS

The present investigation is the outcome of several field trips encompassing all the season have been carried out in Joypur Reserve Forest during 2006 – 2009. The specimens collected in the flowering and fruiting stages and were processed into dried and mounted herbarium specimens.

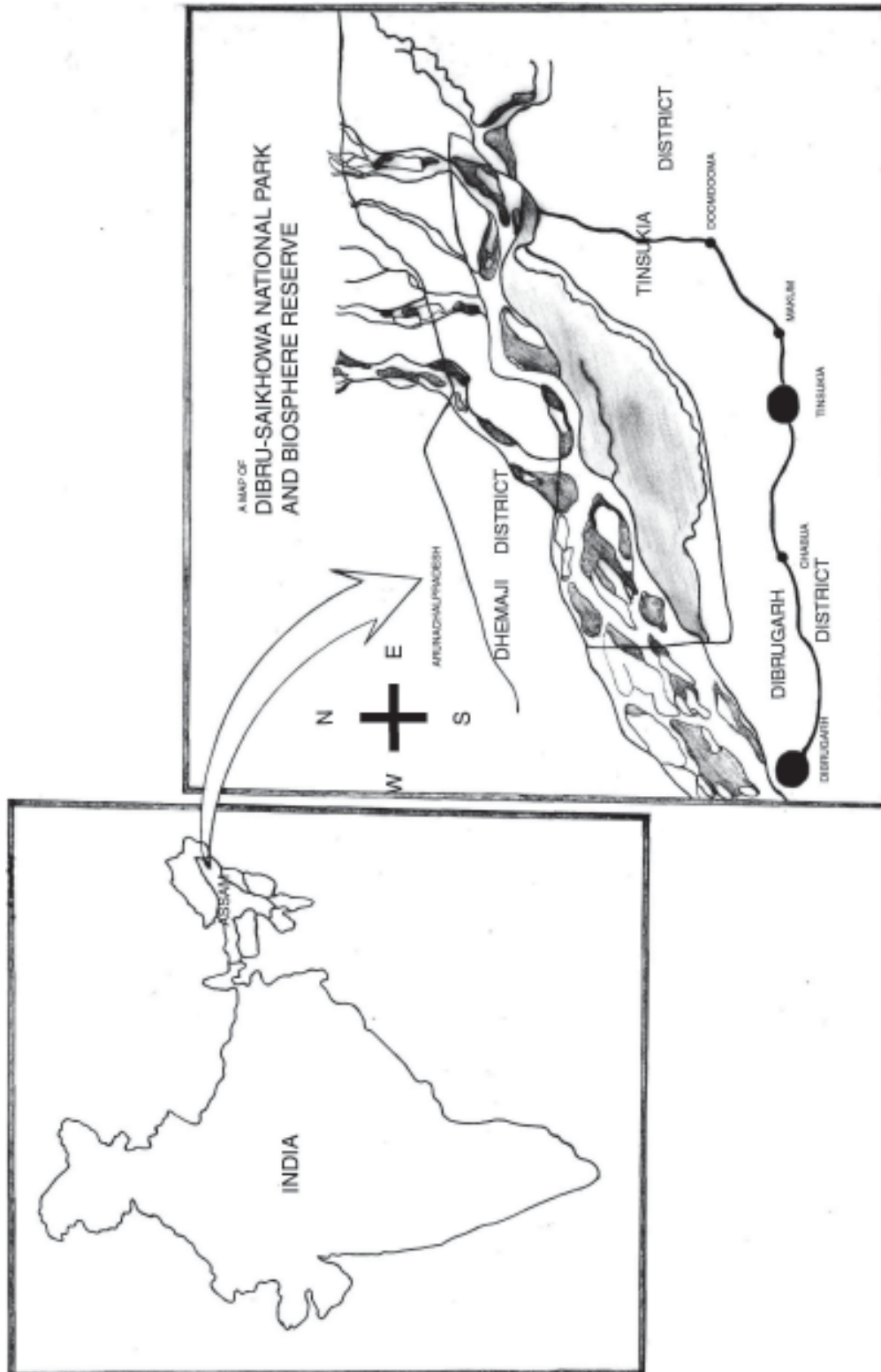


Fig. 1. Location map of Joypur Reserve Forest.



PLATE I: Fig. 2 & 3. *Anoectochilus brevilabris*; Fig. 4. *Bulbophyllum spathulatum*; Fig. 5. *Ceratostylis sabulata*; Fig. 6. *Podochilus khasianus*; Fig. 7. *Thelasis longifolia*; Fig. 8. *Trichotosia velutina*; Fig. 9. *Tylostylis discolour*

Plants were Identified using standard floras and orchid manuals and by matching at the Herbarium of the Department of Botany, Guwahati University. The specimens are deposited in the Herbarium, Department of Botany, Guwahati University. In the enumeration a generic name is provided with its author. Species under a genus is the followed along with their authors, protologues, a short description, flowering period and reference to the voucher specimen. Numerical distribution of each genus also has been provided.

ENUMERATION

ACAMPE Lindley

About 10 species in India, China, S.E. Asia and tropical Africa; 6 species in India, 3 species in Assam, 2 in Joypur Reserve Forest.

Acampe papillosa (Lindley) Lindley Fol. Orchid. Acampe 4: 2, no.5. 1853.

Rare epiphyte on tree trunks; flowers yellow, with brown stripes, 1 cm across.

Flowering: November – December. **ExsiccatuS:** Joypur, Assam, *Gogoi*, 0226, dated 26.12.2008.

Acampe rigida (Buch-Hum. ex J.E. Smith) P.F. Hunt in Kew Bull. 24: 98. 1970.

Common epiphyte, flowers yellow with purple dots, 1.8 cm across.

Flowering: June – July. **ExsiccatuS:** Joypur, Assam, *Borah*, 0096, dated 05.6.2006.

ACANTHEPHIPIUM Blume

About 15 species in tropical Asia, Malaysia and Fiji; 3 species in India, 2 in Assam and 1 species in Joypur Reserve Forest.

Acanthephippium striatum Lindley in Bot. Reg. 24: 41, misc. 68. 1838.

Terrestrial; flowers pinkish with strong red lines, lip tinged with yellow.

Flowering: June – July. **ExsiccatuS:** Joypur, Assam, *Gogoi*, 0233, dated 26.9.2008.

AERIDES Loureiro

About 20 species in S.E. Asia; 10 species in India, 3 in Assam and 2 species in Joypur Reserve Forest.

Aerides odoratum Loureiro, Fl. Cochinch. 2: 525. 1790.

Rare epiphytes on tree trunks; flowers white with pinkish spots, fragrant, 2.2 – 2.5 cm across.

Flowering: May – July. **ExsiccatuS:** Joypur, Assam, *Gogoi*, 0156, dated 26.7.2007.

Aerides roseum Loddiges ex. Lindley & Paxton in Paxton's Fl. Gard. 2: 109, t. 60. 1852.

Common epiphyte in the forest, flowers pink, spotted with darker pink spots, about 2 cm across.

Flowering: May - June. **ExsiccatuS:** Joypur, Assam, *Borah*, 0131, dated 14.6.2007.

AGROSTOPHYLLUM Blume

About 4 species in India, 1 in Assam and 1 in Joypur Reserve Forest.

Agrostophyllum planicaule (Wallich ex Lindley) Rchb.f., Ann. Bot. Syst. 6: 909. 1864.

Common epiphyte, flowers white, 6 – 8 mm. across.

Flowering: August - October. **ExsiccatuS:** Joypur, Assam, *Borah*, 0132, dated 14.6.2007.

ANOECTOCHILUS Blume

About 40 species known from India, S.E. Asia to Australia; 16 species in India, 3 species in Assam, 1 in Joypur Reserve Forest.

Anoectochilus brevilabris Lindley, Gen. Sp. Orchid. Pl. 499. 1840. (Plate I; Figs. 2 & 3)

Common terrestrial orchid, flowers pinkish, lip white, about 2.5 cm long.

Flowering: April - June. **Exsiccatus:** Joypur, Assam, *Gogoi*, 0312, dated 16.11.2008.

Note: It is a new record from Upper Assam.

BULBOPHYLLUM Du. Petit Thouars

About 1000 species in S.E. Asia, Africa, Australia and tropical America; About 100 species in India, 24 in Assam, 6 in Joypur Reserve Forest.

Bulbophyllum affine Lindley, Gen. Sp. Orchid. Pl. 48. 1830.

Rare epiphyte, flower pale-green with purple nerves, about 3 cm long.

Flowering: June - July. **Exsiccatus:** Joypur, Assam, *Borah*, 0098, dated 12.6.2006.

Bulbophyllum andersonii (Hook.f.) J. J. Smith in Bull. Jard. Bot. Buitenzorg ser. 2(8): 22. 1912.

Common epiphyte, flowers pink with minute spots of darker tinge, 1.5 cm long.

Flowering: May - July. **Exsiccatus:** Joypur, Assam, *Gogoi*, 0112, dated 12.6.2006.

Bulbophyllum careyanum (Hook.) Sprengel, Syst. Veg. ed 16(3): 732. 1826.

Common epiphyte, flowers purplish-Brown, 0.5 - 0.8 cm long.

Flowering: October - December. **Exsiccatus:** Joypur, Assam, *Borah*, 0176, dated 08.7.2007.

Bulbophyllum delitescens Hance in J. Bot. 14: 44. 1876.

Common epiphyte, flowers reddish-brown.

Flowering: July - August. **Exsiccatus:** Joypur, Assam, *Gogoi*, 0301, dated 18.11.2008.

Bulbophyllum odoratissimum (J.E. Smith) Lindley, Gen. Sp. Orchid. Pl. 55. 1830.

Common epiphyte, flowers white.

Flowering: May. **Exsiccatus:** Joypur, Assam, *Borah*, 0256, dated 11.10.2008.

Bulbophyllum spathulatum (Rolfe ex. E. Cooper) Seidenfaden in Bot. Tidsskr. 65: 347. 1970.

[Plate I, Fig. 4].

Rare epiphyte; flowers rose-red, deeply spotted, 1.6 cm long,

Flowering: September - November. **Exsiccatus:** Joypur, Assam, *Gogoi*, 0276, dated 11.10.2008.

Note: It is a new record from Upper Assam.

CALANTHE R. Brown

About 150 species throughout the tropics and sub tropical Asia; 23 species in India, 9 in Assam, 1 species in Joypur Reserve Forest.

Calanthe sylvetica (Thouars) Lindley, Gen. Sp. Orchid. Pl. 250. 1833.

Common terrestrial herb, flowers violet, about 5 cm across.

Flowering: August - September. **Exsiccatus:** Joypur, Assam, *Borah*, 0161, dated 26.7.2007.

CERATOSTYLIS Blume

About 60 species in India, S.E. Asia, Philippines and Pacific Islands. 1 species in India, Assam and Joypur Reserve Forest.

Ceratostylis sabulata Blume, Bijdr. 306. 1825. [Plate I, Fig. 5]

Common epiphyte on tree trunks, flowers white, 0.25 cm long.

Flowering: May - August. **Exsiccatus:** Joypur, Assam, *Gogoi*, 0154, dated 26.7.2007.

Note: It is a new record from Upper Assam.

CHRYSOGLOSSUM Blume

About 6 species in India, 3 in Assam, 2 species in Joypur Reserve Forest.

Chrysoglossum ornatum Blume, Bjd. 338. 1825.

Terrestrial, rare, flowers green spotted brown, lip white, 2 – 3 cm across.

Flowering: August – October. **Exsiccatu:** Joypur, Assam, *Borah*, 0252, dated 11.10.2008.

Chrysoglossum robinsonii Ridley, J. Fed. Malay States Mus. 6(3): 157. 1915.

Common terrestrial, flowers yellowish green, 2.5 – 3 cm across.

Flowering: June – July. **Exsiccatu:** Joypur, Assam, *Gogoi*, 0237, dated 26.9.2008.

CLEISOCENTRON P. Bruhl

1 species in India, Assam and Joypur Reserve Forest.

Cleisocentron pallens (Cathcart ex Lindley) N. Pearce & P.J. Cribb in Edinb. J. Bot. 58(1): 118. 2001.

Common epiphyte, flowers pinkish, 2.5 – 2.8 cm across.

Flowering: June – July. **Exsiccatu:** Joypur, Assam, *Borah*, 0230, dated 26.9.2008.

CLEISOSTOMA Blume

About 100 species distributed in India, S.E. Asia, Indonesia, New Guinea, Philippines and Pacific Islands to Australia; 19 species in India, 10 in Assam, 3 species in Joypur Reserve Forest.

Cleisostoma appendiculatum Benth & Hooker f. Gen. Pl. 3(2): 577.1883.

Rare epiphyte, flowers lax, about 1.5 cm across.

Flowering: September – October. **Exsiccatu:** Joypur, Assam, *Borah*, 0150, dated 26.7.2007.

Cleisostoma simondii (Gagnepien) Seidenfaden in Dansk. Bot. Ark. 29(3): 66. 1975.

Rare epiphyte, flowers yellowish with purple markings, 0.5 – 0.9 cm across.

Flowering: August. **Exsiccatu:** Joypur, Assam, *Gogoi*, 0221, dated 26.9.2008.

Cleisostoma subulatum Blume, Bijdr. 363. 1825.

Common epiphyte, flowers yellow with intra marginal brown bands, lip white, 0.6 cm across

Flowering: May – June. **Exsiccatu:** Joypur, Assam, *Borah*, 0097, dated 12.6.2006.

CORYMBORKIS Du. Petit Thouars

About 5 species in the world, 1 species in India, Assam and Joypur Reserve Forest.

Corymborkis veratrifolia (Reinwardt) Blume, Coll. Orchids 125, t.42e, 43i. 1859.

Common terrestrial herbs, flowers white.

Flowering: March – May. **Exsiccatu:** Joypur, Assam, *Gogoi*, 0076, dated 12.5.2006.

CYMBIDIUM Swartz

About 50 species distributed in S.E. Asia, China, Japan, Indonesia, India and Australia; 30 species in India, 12 in Assam and 3 species in Joypur Reserve Forest.

Cymbidium aloifolium (Lindley) Swartz in Nova. Acta Regiae Soc. Sci. Upsal. 6: 73. 1799.

Common epiphyte, flowers pale yellow with maroon- brown strip, lip white, 4 cm across.

Flowering: April – May; **Exsiccatu:** Joypur, Assam, *Borah*, 0079, dated 12.5.2006.

Cymbidium bicolor Lindley, Gen. Sp. Orchid. Pl. 164. 1833.

Rare epiphyte, flowers pale yellow with maroon-brown central stripe, lip white mottled with maroon-brown mid and side lobe, 3 – 4.5 cm across.

Flowering: May – June. **Exsiccatu:** Joypur, Assam, *Gogoi*, 0135, dated 14.6.2007.

Cymbidium dayanum Reichenbach f. in Gard. Chron. 1869: 710. 1869.

Rare epiphyte, flowers white with maroon strips, lip with maroon and yellow stripes, 4 – 5 cm across.

Flowering: June – July. **Exsiccatus:** Joypur, Assam, *Gogoi, 0116*, dated 12.6.2006.

DENDROBIUM Swartz

A large genus of about 900 species widely distributed in India, China, S.E. Asia, Japan, Malaysia, Philippines, New Guinea, Australia, the Pacific Islands and New Zealand; about 91 species in India, 43 species in Assam, 12 in Joypur Reserve Forest.

Dendrobium aduncum Wallich ex Lindley in Bot. Reg. 28: misc. 58. no. 62. 1842.

Common epiphyte, flowers pinkish white to dark pink, 2.5 – 3.5 cm across.

Flowering: May. **Exsiccatus:** Joypur, Assam, *Gogoi, 0078*, dated 12.5.2006.

Dendrobium aphyllum (Roxburgh) C.E.C. Fischer in Gamble, Fl. Presid. Madras 3: 1416. 1928.

Common epiphyte, flowers white, rosy mauve, about 5cm. across.

Flowering: April – May. **Exsiccatus:** Joypur, Assam, *Borah, 0077*, dated 12.5.2006.

Dendrobium cathcartii Hooker f., Fl. Brit. India 6(1): 727. 1890.

Rare epiphyte, flowers in pairs, greenish yellow, 2 cm across.

Flowering: April – May. **Exsiccatus:** Joypur, Assam, *Borah, 0148*, 26.7.2007.

Dendrobium cumulatum Lindley in Gard. Chron. 1855: 756. 1855.

Rare epiphyte, flowers purplish, about 3.5 cm long.

Flowering: March – May. **Exsiccatus:** Joypur, Assam, *Gogoi, 0265*, dated 11.10.2008.

Dendrobium fimbriatum Hooker, Exot. Fl. 1: t.71. 1823.

Rare epiphyte, flowers orange-yellow, lip with a dark maroon blotch or without any blotch, 4 – 5 cm across.

Flowering: April – May. **Exsiccatus:** Joypur, Assam, *Gogoi, 0101*, dated 12.6.2006.

Dendrobium lituiflorum Lindley in Gard. Chron. 1856: 372. 1856.

Common epiphyte, flowers white pale-lilac to dark purple, 5 – 6 cm across.

Flowering: April – May. **Exsiccatus:** Joypur, Assam, *Gogoi, 0057*, dated 12.4.2006.

Dendrobium moschatum (Buchanon-Hamilton) Swartz in Schrader, Neu. J. Bot. 1: 94. 1806.

Common epiphyte, flowers yellow or apricot with lilac veins, about 8 cm across.

Flowering: April – June. **Exsiccatus:** Joypur, Assam, *Borah, 0058*, dated 12.4.2006.

Dendrobium nobile Lindley, Gen. Sp. Orchid. Pl. 24. 1830.

Very rare epiphyte, flowers purple rose, 5 – 6 cm. across.

Flowering: April – May, **Exsiccatus:** Joypur, Assam, *Gogoi, 0346*, dated 18.12.2008.

Dendrobium spatella Reichenbach f. in Hamburger Garten-Blumenzeitung 21: 298. 1865.

Common epiphyte, flowers yellowish white, about 1cm long.

Flowering: June – August. **Exsiccatus:** Joypur, Assam, *Gogoi, 0117*, dated 12.6.2006.

Dendrobium sulcatum Lindley in Bot. Reg. 24: t.65. 1838.

Common epiphyte, flowers yellow, 2 – 3 cm across.

Flowering: June – July. **Exsiccatus:** Joypur, Assam, *Gogoi, 0153*, dated 26.7.2007.

Dendrobium terminale Parish & Reichenbach f. in Trans. Linn. Soc. London 30: 149. 1874.

Rare epiphyte, flowers white, 1.5 cm long.

Flowering: April – June. **Exsiccatus:** Joypur, Assam, *Borah, 0203*, dated 27.8.2007.

Dendrobium transparens Wallich ex Lindley, Gen. Sp. Orchid. Pl. 79. 1830.

Common epiphyte, flowers white, about 4.5 cm across

Flowering: April – May. **Exsiccatus:** Joypur, Assam, *Gogoi*, 0061, dated 12.5.2006.

DIDYMOPLEXIS Griffith

About 2 species in India, 1 in Assam and Joypur Reserve Forest.

Didymoplexis pallens Griffith in Calcutta J. Nat. Hist. 4: 383, t.17. 1844.

Terrestrial, leafless herbs, flowers pale white with brownish tinge, 1 – 0.8 cm across

Flowering: May – June. **Exsiccatus:** Joypur, Assam, *Gogoi*, 0198, dated 27.8.2007.

ERIA Lindley

About 500 species widely distributed in tropical Asia, Malaysia to New Guinea, Australia, Polynesia and adjacent Islands; about 51 species in India, 15 species in Assam, 3 in Joypur Reserve Forest.

Eria paniculata Lindley in Wallich, Pl. Asiat. Rar. 1: 32, t.36. 1830.

Rare epiphyte, flowers yellowish, with brown blotches, 0.7 – 0.9 cm across.

Flowering: March – July. **Exsiccatus:** Joypur, Assam, *Gogoi*, 0225, dated 26.9.2008.

Eria pannea Lindley in Bot. Reg. 28: misc. 64, no. 79. 1842.

Rare epiphyte, flower yellowish brown, 1.5 cm across.

Flowering: May – June. **Exsiccatus:** Joypur, Assam, *Gogoi*, 0147, dated 26.7.2007.

Eria lasiopetala (Willdenow) Ormerod in Op. Botanica 124: 22. 1995.

Common epiphyte, flowers greenish-yellow, 1.5 cm across.

Flowering: March – April. **Exsiccatus:** Joypur, Assam, *Borah*, 0065, dated 12.4.2006.

FLICKINGERIA Hawkes

About 60 species in S. E. Asia, Malaya, Archipelago, Pacific Islands and N. E. Australia; 7 species in India, 2 in Assam and 1 in Joypur.

Flickingeria fugax (Reichenbach f.) Seidenfaden in Dansk Bot. Ark. 34(1): 46. 1980.

Common epiphyte, flowers white, 3 – 3.5 cm across.

Flowering: March – October. **Exsiccatus:** Joypur, Assam, *Borah* 0067, dated 12.4.2006.

GASTROCHILUS D. Don

About 20 species in E. Asia, India, Malaysia and adjoining Islands; 12 species in India, 3 in Assam and Joypur.

Gastrochilus calceolaris (Buchanon-Hamilton ex. J.E. Smith) D. Don, Prodr. Fl. Nepal. 32. 1825.

Rare epiphyte, flowers yellowish green with brown spots, lip with brownish-red markings, 1.5 cm across.

Flowering: October – November. **Exsiccatus:** Joypur, Assam, *Gogoi* 0302, dated 16.11.2008.

Gastrochilus dasypogon (J.E. Smith) O. Kuntze, Revis. Gen. Pl. 2: 661. 1891.

Common epiphyte, flowers yellow with brownish-purple spots, 1.5 – 2 cm across.

Flowering: October – November, **Exsiccatus:** Joypur, Assam, *Gogoi* 0130, dated 14.6.2007.

Gastrochilus inconspicuus (Hooker f.) O. Kuntze, Revis. Gen. Pl. 2: 661. 1891.

Common epiphyte, flowers white, 0.5 cm across.

Flowering: June. **Exsiccatus:** Joypur, Assam, *Borah* 0070, dated 12.5.2006.

GEODORUM G. Jackson

About 10 species in India, S.E. Asia, Australia, and S.W. Pacific Islands; 1 species in India, Assam and Joypur.

Geodorum densiflorum (Lamarck) Schlechter in Feddes Repert. Sp. Nov. Regni Veg. Beih. 4: 259. 1919.

Less common, terrestrial, flowers white, 1.5 cm across.

Flowering: June – July. **Exsiccatus:** Joypur, Assam, *Gogoi 0238*, dated 26.9.2008.

GOODYERA R. Brown

About 40 species widely distributed in Mexico, S. E. Asia, Pacific Islands, New Guinea, Australia and Madagascar; 17 species in India, 4 in Assam, 1 species in Joypur.

Goodyera procera (Ker- Gawler) Hooker, Exot. Fl. 1(3): t.39. 1823.

Not common, terrestrial herb, flowers white, 0.4 – 0.5 cm across.

Flowering: April – June. **Exsiccatus:** Joypur, Assam, *Borah 0205*, dated 27.8.2007.

KINGIDIUM P.F. Hunt

About 5 species distributed in India, Sri Lanka, Myanmar, Thailand, Malaya, Indonesia and Philippines; 2 species India and Assam, 1 in Joypur.

Kingidium deliciosum (Reichenbach f.) H.R. Sweet, Amer. Orch. Soc. Bull. 39: 1095. 1970.

Common epiphyte, flowers greenish yellow with purple spotted lip, 1 – 1.5 cm across.

Flowering: May – July. **Exsiccatus:** Joypur, Assam, *Gogoi 0210*, dated 27.8.2007.

LIPARIS L.C. Richard

About 250 species distributed mainly in the tropics of the world and comparatively less frequent in the temperate region; 45 species in India, 9 in Assam and 2 in Joypur.

Liparis viridiflora (Blume) Lindley, Gen. Sp. Orchid. Pl. 31. 1830.

Common epiphyte, flowers greenish yellow, about 0.5 cm across

Flowering: April. **Exsiccatus:** Joypur, Assam, *Gogoi 0073*, dated 12.5.2006.

Liparis mannii Reichenbach f. in Flora 275. 1872.

Rare epiphyte, flowers yellowish, 0.5cm. across.

Flowering: November – January. **Exsiccatus:** Joypur, Assam, *Gogoi 0124*, dated 14.6.2007.

LUISIA Gaudichaud

About 40 species in tropical Asia, Malaysia, Australia and Japan; 16 species in India, 5 in Assam, 1 in Joypur.

Luisia trichorhiza (Hooker) Blume, Rumphia 4: 50. 1849.

Common epiphyte, flowers purplish green with faint purple lines, about 1.5 cm across.

Flowering: March – May. **Exsiccatus:** Joypur, Assam, *Gogoi 0060*, dated 12.5.2006.

MALAXIS Solander ex Swartz

300 species distributed throughout the world, specially in S. E. Asia and adjoining Island; 19 species in India, 2 in Assam and 1 in Joypur.

Malaxis ophrydis (König) Ormerod in Seidenfaden, Descrip. Epidend. König 1791: 18. 1995.

Common terrestrial herbs, flowers red, 1cm long.

Flowering: May – June. **Exsiccatus:** Joypur, Assam, *Gogoi 0200*, dated 27.8.2007.

MICROPERA Lindley

Micropera mannii (Hooker f.) T. Tang & F.T. Wang in Acta Phytotax. Sin. 1(1-2): 94. 1951.
Rare epiphyte, flowers pale-pink, 0.6 – 0.7 cm across.
Flowering: June – July. **Exsiccatus:** Joypur, Assam, *Gogoi 0324*, dated 16.11.2008.

Micropera rostrata (Roxburgh) Balakrishnan in J. Bomb. Nat. Hist. Soc. 67(1): 66. 1970.
Common epiphyte, flowers pale-purple, 1.5 – 2 cm across.
Flowering: April – May. **Exsiccatus:** Joypur, Assam, *Gogoi 0312*, dated 16.11.2008.

OBERONIA Lindley

About 100 species mainly distributed to tropical Asia, a few are known from Pacific Islands and Australia, a single species in Madagascar and tropical Africa; 50 species in India, 13 in Assam, 1 in Joypur.

Oberonia mucronata (D. Don) Ormerod & Seidenfaden in Seidenfaden, Contrib. Orchid. Fl. Thailand 13: 20. 1997.
Common epiphyte, flowers greenish yellow, very small.
Flowering: September – October. **Exsiccatus:** Joypur, Assam, *Gogoi 0055*, dated 12.4.2006.

PAPILIONANTHE Schlechter

About 11 species in India, S. E. Asia, and Malaya Archipelago; 4 species in India, 2 in Assam, 1 in Joypur.

Papilionanthe teres (Roxburgh) Schlechter in Orchis 9: 78, t.12. 1915.
Common epiphyte, flowers rose coloured with dark rose lip and yellowish spur-mouth, 5 – 6 cm across.
Flowering: April – May. **Exsiccatus:** Joypur, Assam, *Gogoi 0059*, dated 12.4.2006.

PHALAEENOPSIS Blume

About 46 species in India, S.E. Asia, Indonesia, Philippines and N. Australia; 7 species in India, 3 in Assam, 2 in Joypur.

Phalaenopsis mannii Reichenbach f. in Gard. Chron. 1871:902. 1871.
Very rare epiphyte, flowers greenish yellow with brown horizontal stripes, 2.5 – 3.5 cm across.
Flowering: March – May. **Exsiccatus:** Joypur, Assam, *Gogoi 0344*, dated 18.12.2008.

Phalaenopsis parishii Reichenbach f. in Bot. Zeit. 23: 146. 1865.
Very rare epiphyte, flowers white with two chestnut bands on lip, 2 – 2.5 cm across.
Flowering: March – April. **Exsiccatus:** Joypur, Assam, *Gogoi 0258*, dated 11.10.2008.

PHOLIDOTA Lindley ex. Hook. f.

About 30 species in India, China, Malaysia, Indonesia, New Guinea, Pacific Islands and Australia; 10 species in India, 7 in Assam, 2 in Joypur.

Pholidota articulata Lindley, Gen. Sp. Orchid. Pl. 38. 1830.
Epiphytic herbs with jointed branching stems, flowers off white, 0.5 – 0.8 cm across.
Flowering: July – October. **Exsiccatus:** Joypur, Assam, *Gogoi 0435*, dated 06.01.2009.

Pholidota imbricata Hooker, Exot. Fl. 2: t.138. 1825.

Common epiphyte, pseudobulbs conical, flowers pale white, 0.5 cm across.
Flowering: June – August. **Exsiccatus:** Joypur, Assam, *Gogoi 0106*, dated 12.6.2006.

PODOCHILUS Blume

4 species in India, 2 in Assam, 1 in Joypur.

Podochilus khasianus Hooker f., Fl. Brit. India 6(1): 81. 1890. [Plate I, Fig. 6]

Epiphyte, flowers white, 0.5 – 0.6 cm across.

Flowering: June – August. **Exsiccatus:** Joypur, Assam, *Gogoi 0400*, dated 06.01.2009.

Notes: It is a new record from Upper Assam.

RHYNCHOSTYLIS Blume

About 4 species distributed in India, Srilanka, Myanmar, S. E. Asia, Malaysia, Philippines and Indonesia; 2 in India and Assam, 1 in Joypur.

Rhynchostylis retusa (L.) Blume, Bijdr., 286, t.49. 1825.

Common epiphyte, flowers white with spotted with pink, 1 – 1.5 cm across.

Flowering: May – June. **Exsiccatus:** Joypur, Assam, *Gogoi 0049*, dated 12.4.2006.

ROBIQUETIA Gaudichaud

About 25 species in Indonesia, Malaysia, Philippines, Papua New Guinea, Australia and Pacific Island; 4 species in India, 2 in Assam, 1 in Joypur.

Robiquetia spathulata (Blume) J.J. Smith in Natuurk. Tijdschr. Ned.-Indië. 72: 114. 1912.

Epiphytic, pendulous, flowers yellow mottled and banded with brownish – purple, 1 cm across.

Flowering: May – July. **Exsiccatus:** Joypur, Assam, *Gogoi 0450*, dated 10.2.2009.

TAINIA Blume

About 50 species in India China, S. E. Asia; 9 species in India, 3 in Assam, 1 in Joypur.

Tainia latifolia (Lindley) Reichenbach f. in Bonplandia 5: 54. 1857.

Terrestrial, flowers dark brown, lip yellow, up to 2 cm across.

Flowering: March – May. **Exsiccatus:** Joypur, Assam, *Gogoi 0350*, dated 18.12.2008.

THELASIS Blume

4 species in India, 1 in Assam and Joypur.

Thelasis longifolia Hooker f., Fl. Brit. India 6(1): 87. 1890. [Plate I, Fig. 7]

Epiphytic, flowers green.

Flowering: June – August. **Exsiccatus:** Joypur, Assam, *Gogoi 0355*, dated 18.12.2008.

Notes: It is a new record from Upper Assam.

THRIXSPERMUM Loureiro

About 100 species distributed widely from the Himalayas to Philippines and the tropical Islands of S. W. Pacific; 9 species in India, 3 in Assam, 1 in Joypur.

Thrixspermum centipeda Loureiro, Fl. Cochinch. 520. 1790.

Epiphytic, flowers yellowish white, 2.5 cm long.

Flowering: May – August. **Exsiccatus:** Joypur, Assam, *Gogoi 0430*, dated 06.01.2009.

TRICHOTOSIA Blume

50 species widely distributed from Himalayas to the South-West Pacific Island; 3 species in India, 1 in Assam and Joypur.

Trichotosia velutina (Loddiges ex Lindley) Kränzlin in Engler & Prantle, Nat. Pflanzenfam. (IV.50) Dendrob. 140. 1911. [Plate I, Fig. 8]
Epiphytic herbs, flowers pale white, 1 cm across.
Flowering: August – September. **Exsiccatus:** Joypur, Assam, *Gogoi 0391*, dated 18.12.2008.
Note: It is a new record from Upper Assam.

TYLOSTYLIS Blume

1 species in India, Assam and Joypur.

Tylostylis discolour (Lindley) Hooker f. in Ann. Roy. Bot. Gard. (Calcutta) 5: 22. 1895. [Plate I, Fig. 9]
Epiphytic, flowers greenish yellow, 1 cm across.
Flowering: January – March. **Exsiccatus:** Joypur, Assam, *Gogoi 0201*, dated 27.8.2007.
Note: It is a new record from Upper Assam.

DISCUSSION

The forests of Assam support a large number of beautiful and important orchids. Though some information is available on these plants, but studies related to their conservation and commercialization are meager. Incidentally, unregulated forest destruction has led to the depletion of orchid habitats. The orchids are also faced with heavy collection pressures for economic purposes. Consequently, their natural populations are also declining rapidly.

Orchid flora of Joypur Reserve Forest is a valuable natural resource. The present study reflects the interesting composition of the orchid flora of Joypur. During recent survey an appreciable number of 68 species of orchids covering 37 genera have been collected and identified from this reserve. Out of these, 57 are epiphytic and 11 are terrestrial. The orchids with attractive flowers in this area are worth mentioning for their beauty and long lasting qualities like *Aerides odoratum*, *A. roesa*, *Calanthe masuca*, *Cymbidium bicolor*, *C. dayanum*, *Dendrobium aphyllum*, *D. fimbriatum*, *D. lituiflorum*, *D. moschatum*, *D. nobile*, *D. sulcatum*, *D. transparens*, *Papilionanthe teres* etc. Some species of orchids like *Acanthephippium striatum*, *Anoectochilus brevilabris*, *Bulbophyllum spathulatum*, *Calanthe masuca*, *Cymbidium bicolor*, *C. dayanum*, *D. nobile*, *Eria paniculatum*, *Gastrochilus calceolaris*, *Phalanopsis manni*, *P. parishii* are very rare and need to be conserved for their sustainable use.

The present survey also recorded the occurrence of seven species of orchids, namely *Anoectochilus brevilabris*, *Bulbophyllum spathulatum*, *Ceratostylis sabulata*, *Podochilus khasianus*, *Thelasis longifolia*, *Trichotosia velutina*, and *Tylostylis discolour*, for first time from Upper Assam.

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