

The orchid species of Ranga reserve forest, Assam, India. With three new records

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Abstract

The present study on orchids of Ranga Reserve Forest, North Lakhimpur, Assam is the outcome of several field surveys carried out from 2020 to 2022. A total of 40 species in 24 genera have been recorded with 3 new species for the flora of this region: *Dendrobium jenkinsii*, *Calanthe odora* and *Vanda bicolor*.

Résumé

La présente étude sur les orchidées de la réserve forestière de Ranga, au nord de Lakhimpur (Assam), est le résultat de plusieurs enquêtes de terrain réalisées de 2020 à 2022. Un total de 40 espèces dans 24 genres ont été recensées avec 3 nouvelles espèces pour la flore de cette région : *Dendrobium jenkinsii*, *Calanthe odora* et *Vanda bicolor*.

Keywords: North Lakhimpur, semi-evergreen forest, habitat, orchid diversity.

Introduction

Assam is one of the “seven sister states” in the Northeastern states of India. It has diverse physiographic features ranging from floodplains, forests, grasslands, hilly regions, etc. Assam is bestowed with rich biodiversity in its entire landscape. The Flora of British India by Hooker (1888-1890 a, b) and Flora of Assam by Kanjilal *et al.* (1934-1940) gave some glimpses of flora from the North Lakhimpur District of Assam. The study of orchids in Assam conducted by Chowdhury (2005) identified 293 species belonging to 75 genera. Later, Gogoi (2019) recorded 398 species belonging to 102 genera. The orchid flora of North Lakhimpur has been enumerated by Gogoi *et al.* (2021) who reported 140 species belonging to 62 genera.

The present study was carried out in Ranga Reserve Forest which comes under the Harmutty Range jurisdiction of Lakhimpur Forest Division, North Lakhimpur. The area was declared as Reserve Forest vide Government of Assam notification no 5018F dated 15th July 1919. The etymology of the “Ranga” comes from the Ranganadi river which is the eastern boundary of the Reserve Forest, the northern boundary is the inter-state boundary with the neighboring state Arunachal Pradesh, the western boundary is the Dikrong river and Harmutty-Gumto road whereas the southern boundary shares border with the civil boundary of Assam. Ranga Reserve Forest covers an area of 85.2971 km². The area is characterized by high humid conditions as rainfall is abundant. The Forest types of the study area comprise of 5 different categories as per forest types of India studied by Champion & Seth (1968): i) 1B/C2 Kayea forest ii) 2/2S1 Secondary Moist Bamboo Brakes iii) 2B/C1/2S2 Eastern Alluvial Secondary Semi-Evergreen Forest iv) Forest Plantation v) Non-Forest areas. The dominant species of the area are *Terminalia myriocarpa* Van Heurck & Müller Argoviensis, *Kayea assamica* King & Prain, *Michelia champaca* Linnaeus, *Ailanthus excelsa* Roxburgh, *Chaukrasia tabularis* A. Jussieu, *Morus macroura* Miquel, *Garcinia pedunculata* Roxburgh ex Buchanan-Hamilton, *Ailanthus integrifolia* Lamarck ex Steud, *Castanopsis indica* (Roxburgh ex Lindley) A. de Candolle, *Ficus hispida* Linnaeus, *Altingia excelsa* Noronha, *Duabanga grandiflora* (Roxburgh ex A. de Candolle) Walpers, *Dillenia indica* Linnaeus, *Bischofia javanica* Blume, *Terminalia bellirica* (Gaertner) Roxburgh, *Artocarpus chaplasha* Roxburgh, *Lagerstroemia parviflora* Roxburgh, *Dysoxylum* spp. and

Canarium spp. The Ranga Reserve Forest is a natural habitat for a wide variety of orchids. We present here an exhaustive inventory of the latter. [Fig. 1-2]

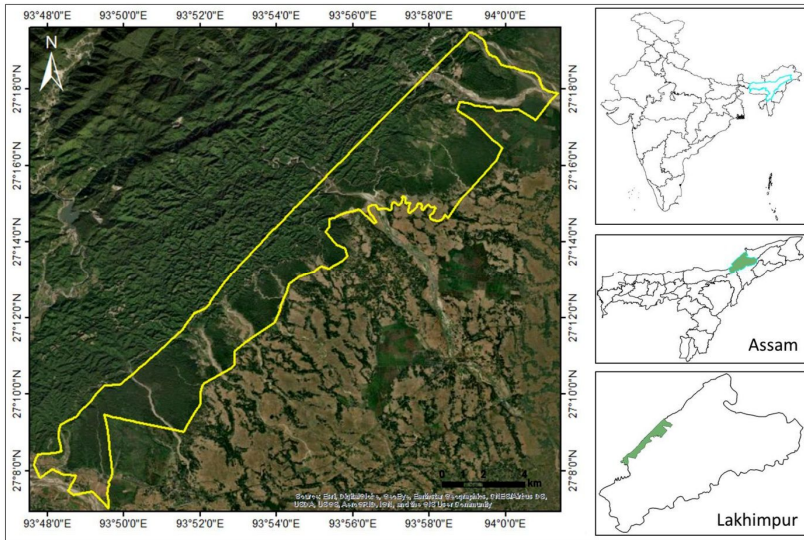


Fig. 1: Location map of Ranga Reserve Forest



Fig. 2: A view of the habitat in Ranga Reserve Forest

Materials & methods

The specimens collected in the flowering and fruiting stages were processed and mounted on herbarium sheets following the standard methods of Jain & Rao (1977). They were identified with the help of relevant literature (King & Pantling, 1898; Pradhan, 1976, 1979; Hegde, 1984; Chowdhery, 1998; Pearce & Cribb, 2002; Lucksom, 2007; Chen *et al.*, 2009; Rao, 2010; Gogoi, 2018, 2019; Misra, 2019; Singh *et al.*, 2019) and by matching with the TOSEHIM, Regional Orchids Germplasm Conservation & Propagation Centre (Assam). The collected specimens were deposited in the herbarium of TOSEHIM.

Results

During the study 40 species belonging to 24 genera were recorded. *Dendrobium* is the dominant genus with 8 species followed by *Calanthe* and *Pinalia* with 3 species each. Of the 40 species recorded 7 are terrestrial orchids and 33 are epiphytic orchids.

Acampe praemosa (Roxburgh) Blatter & McCann, *Journal of Bombay Natural History Society*. 35: 495 (1932).

Habitat: Epiphytic. Status: Common. Flowering time: November-January. Voucher number: Gogoi & Gogoi 042, TOSEHIM.

Aerides multiflora Roxburgh, *Plants of the Coast of Coromandel* 3(3): 68 (1820).

Habitat: Epiphytic. Status: Recorded from Bogoli and Golajuli area only. Flowering time: March-August. Voucher number: Gogoi & Gogoi 014, TOSEHIM.

Aerides odorata Loureiro, *Flora Cochinchinensis* 2: 525 (1790). [Fig. 3A]

Habitat: Epiphytic. Status: Common. Flowering time: March-August. Voucher number: Gogoi & Gogoi 013, TOSEHIM.

Anoectochilus roxburghii (Wallich) Lindley, *Illustrations of Botany and other branches of the Natural history of the Himalayan Mountains* 368 (1839). [Fig. 3B]

Habitat: Terrestrial in dense humid evergreen forest. Status: Very rare species. Recorded from Bogoli area only. Flowering time: August-January. Voucher number: Gogoi & Gogoi 046, TOSEHIM.

Bulbophyllum careyanum (Hooker) Sprengel, *Systema vegetabilium* 16(3): 732 (1826).

Habitat: Epiphytic on tree trunks in dense evergreen forest. Status: Recorded from Bogoli, Dhemagarh, and Bhitoripam area. Flowering time: October-February. Voucher number: Gogoi & Gogoi 025, TOSEHIM.

Bulbophyllum crassipes Hooker, *The Flora of British India* 5(16): 760 (1890). [Fig. 3C]

Habitat: Epiphytic on evergreen broad-leaved forests. Status: Recorded in area of Golajuli, Dhemagarh and Bhitoripam. Flowering time: September-December. Voucher number: Gogoi & Gogoi 030, TOSEHIM.

Calanthe lyroglossa Reichenbach, *Otia Botanica Hamburgensia* 1: 53 (1878). [Fig. 3D]

Habitat: Terrestrial found in damp places on river banks. Status: Very rare. Recorded from the riverside of Bogoli river, Assam-Arunachal Pradesh border. Flowering time: November-February. Voucher number: Gogoi & Gogoi 047, TOSEHIM.

Calanthe odora Griffith, *Notulae ad Plantas Asiaticas* 3: 365 (1851). [Fig. 3E]

Habitat: Terrestrial in shaded and damp places. Status: Rare. Recorded from Bogoli area only. Flowering time: April-August. Voucher number: Gogoi & Gogoi 073, TOSEHIM.

Calanthe sylvatica (Thouars) Lindley, *Genera and Species of Orchidaceous Plants* 250 (1833).

Habitat: Terrestrial orchids in damp places on riverbanks. Status: Recorded from Bogoli-Kasojuli area only. Flowering time: August-November. Voucher number: Gogoi & Gogoi 023, TOSEHIM.

Coelogyne fimbriata Lindley, *Botanical Register* 11: t. 868 (1825).

Habitat: Epiphytic orchid on a tree trunk in dense evergreen humid forests. Status: Very rare, found in the Golajuli area only. Flowering time: June-December. Voucher number: Gogoi & Gogoi 035, TOSEHIM.

Coelogyne ovalis Lindley, *Edward's Botanical Register* 24: (Misc) 91 (1838). [Fig. 3F]

Habitat: Epiphytic on trees and sometimes found on rocky cliffs also. Status: Recorded from Bogoli and Golajuli area. Flowering time: August-February. Voucher number: Gogoi & Gogoi 048, TOSEHIM.

Cymbidium aloifolium (Linnaeus) Swartz, *Nova Acta Regiae Societatis Scientiarum Upsaliensis* Uppsala 6: 73 (1799).

Habitat: Epiphytic found commonly on tree trunks. Status: Very common. Flowering time: April-September. Voucher number: Gogoi & Gogoi 008, TOSEHIM.

Cymbidium bicolor Lindley, *Genera and Species of Orchidaceous Plants*: 164 (1833). [Fig. 3G]

Habitat: Epiphytic found on a tree trunk in dense humid evergreen forests. Status: Common. Flowering time: April-July. Voucher number: Gogoi & Gogoi 009, TOSEHIM.

Dendrobium acinaciforme Roxburgh, *Flora indica* 3: 487 (1832).

Habitat: Epiphytic on a tree trunk in dense evergreen humid forests. Status: Recorded from Bogoli and Golajuli area. Flowering time: June-September. Voucher number: Gogoi & Gogoi 080, TOSEHIM.

Dendrobium aphyllum (Roxburgh) C.E.C Fisher, *Flora of Presidency of Madras* 8: 1416 (1928).

Habitat: Epiphytic. Status: Common in Ranga RF. Flowering time: March-July. Voucher number: Gogoi & Gogoi 001, TOSEHIM.

Dendrobium fimbriatum var. ***oculatum*** Hooker, *Botanical Magazine* 71: t. 4160 (1845).

Habitat: Epiphytic. Status: Recorded in Kasojuli, Bogoli, Gulajuli and Phulbari area. Flowering time: March-June. Voucher number: Gogoi & Gogoi 003, TOSEHIM.

Dendrobium jenkinsii Wallich ex Lindley, *Edwards's Botanical Register* 25: t. 37 (1839). [Fig. 3H]

Habitat: Epiphytic on trees in sunny open forests. Status: Recorded from Golajuli area near Arunachal border. Flowering time: April-August. Voucher number: Gogoi & Gogoi 058, TOSEHIM.

Dendrobium lituiflorum Lindley, *Gardeners Chronicle* 1856: 372 (1856).

Habitat: Epiphytic on tree trunks in open forests. Status: Common. Flowering time: April-July. Voucher number: Gogoi & Gogoi 017, TOSEHIM.

Dendrobium moschatum (Buchanan-Hamilton) Swartz, *Neues Journal für die Botanik* 1: 94 (1805).

Habitat: Epiphytic on tree trunks in open forests. Status: Found in Bogoli, Kasojuli and Golajuli area. Flowering time: June-September. Voucher number: Gogoi & Gogoi 019, TOSEHIM.

Dendrobium nobile Lindley, *Genera and Species of Orchidaceous Plants* 79 (1830). [Fig. 3I]

Habitat: Epiphytic in humid evergreen forest. Status: Rare. Found in the Bogoli area. Flowering time: March-July. Voucher number: Gogoi & Gogoi 070, TOSEHIM.

Dendrobium transparens Wallich ex Lindley, *The Genera and Species of Orchidaceous Plant* 79 (1830).

Habitat: Epiphytic. Status: Common in Kasojuli, Bogoli area. Flowering time: April-July. Voucher number: Gogoi & Gogoi 061, TOSEHIM.

Dendrolirium lasiopetalum (Willdenow) S.C. Chen & J.J. Wood, *Flora of China* 25: 351 (2009). [Fig. 3J]

Habitat: Epiphytic in both evergreen and mixed deciduous forests. Status: Common. Flowering time: February-July. Voucher number: Gogoi & Gogoi 044, TOSEHIM.

Gastrochilus inconspicuus (Hooker) Kuntze, *Revisio Generum Plantarum* 2: 661 (1891).

Habitat: Epiphytic in mixed deciduous and evergreen forests. Status: Common. Flowering time: June-September. Voucher number: Gogoi & Gogoi 036, TOSEHIM.

Gastrochilus obliquus (Lindley) Kuntze, *Revisio Generum Plantarum* 2: 661 (1891). [Fig. 3K]

Habitat: Epiphytic on tree trunks and branches at forest margins. Status: Common. Flowering time: October-January. Voucher number: Gogoi & Gogoi 040, TOSEHIM.

Geodorum densiflorum (Lamarck) Schlechter, *Repertorium Specierum Novarum Regni Vegetabilis, Beihefte* 4: 259 (1919). [Fig. 3L]

Habitat: Terrestrial in forests and also in grasslands. Status: Common. Flowering time: June-September. Voucher number: Gogoi & Gogoi 021, TOSEHIM.

Luisia trichorrhiza (Hooker) Blume, *Museum Botanicum* 1: 63 (1849).

Habitat: Epiphytic in the evergreen forest. Status: Common. Flowering time: March-June. Voucher number: Gogoi & Gogoi 011, TOSEHIM.

Micropera obtusa (Lindley) Tang & F.T. Wang, *Acta Phytotaxonomica Sinica* 1(1): 94 (1951). [Fig. 3M]

Habitat: Epiphytic in evergreen forest. Status: Found in Golajuli- Bogoli area only. Flowering time: March-July. Voucher number: Gogoi & Gogoi 077, TOSEHIM.

Oberonia acaulis Griffith, *Notulae ad plantas asiaticas* 3: 275 (1851). [Fig. 3N]

Habitat: Epiphytic. Status: Rare. Recorded from Dhekiajuli area on Teak trees. Flowering time: October-December. Voucher number: Gogoi & Gogoi 087, TOSEHIM.

Papilionanthe teres (Roxburgh) Schlechter, *Orchis. Monatsschrift der Deutschen Gesellschaft für Orchideenkunde* 9: 78, t. 12 (1915). [Fig. 3O]

Habitat: Epiphytic in mixed deciduous forests and roadside trees. Status: Common. Flowering time: April-August. Voucher number: Gogoi & Gogoi 007, TOSEHIM.

Phalaenopsis deliciosa H.G. Reichenbach, *Bonplandia* 2: 93 (1854). [Fig. 3P]

Habitat: Epiphytic in riverine forests, shady areas in humid evergreen forests. Status: Found in Bogoli area of Ranga RF. Flowering time: May-September. Voucher number: Gogoi & Gogoi 086, TOSEHIM.

Phaius tankervilleae (Banks) Blume, *Museum Botanicum* 2: 177 (1856). [Fig. 3Q]

Habitat: Terrestrial on streams, shady damp places of the forest. Status: Found in Bogoli area only. Flowering time: February-June. Voucher number: Gogoi & Gogoi 055, TOSEHIM.

Pholidota imbricata Hooker, *Exotic Flora* 2: t. 138 (1825).

Habitat: Epiphytic in evergreen forests and riverine forests. Status: Common. Flowering time: March-August. Voucher number: Gogoi & Gogoi 024, TOSEHIM.

Pinalia acervata (Lindley) Kuntze, *Revisio Generum Plantarum* 2: 679 (1891).

Habitat: Epiphytic in dense humid evergreen forest. Status: Found in Golajuli-Bogoli area. Flowering time: April-September. Voucher number: Gogoi & Gogoi 081, TOSEHIM.

Pinalia amica (H.G. Reichenbach) Kuntze, *Revisio Generum Plantarum* 2: 679 (1891).

Habitat: Epiphytic in evergreen forests. Status: Found in Golajuli-Bogoli area only. Flowering time: March-July. Voucher number: Gogoi & Gogoi 060, TOSEHIM.

Pinalia bractescens (Lindley) Kuntze, *Revisio Generum Plantarum* 2: 679 (1891). [Fig. 3R]

Habitat: Epiphyte in secondary evergreen montane forest. Status: Found in Golajuli-Bogoli area only. Flowering time: March-July. Voucher number: Gogoi & Gogoi 062, TOSEHIM.

Rhynchosyilis retusa (Linnaeus) Blume, *Bijdragen tot de flora van Nederlandsch Indië* 7: 286 (1825).

Habitat: Epiphytic in evergreen and deciduous forests. Status: Very common. Flowering time: May-August. Voucher number: Gogoi & Gogoi 006, TOSEHIM.

Thelasis pygmaea (Griffith) Lindley, *Journal of the Proceedings of the Linnean Society* 3: 63 (1858). [Fig. 3S]

Habitat: Epiphytic in mixed deciduous and evergreen forest. Status: Rare, found only in the Golajuli area. Flowering time: July-October. Voucher number: Gogoi & Gogoi 082, TOSEHIM.

Thrixspermum centipeda Loureiro, *Flora Cochinchinensis* 2: 520 (1790).

Habitat: Epiphytic in mixed deciduous, dry evergreen and humid evergreen forest. Status: Rare, found only in the Golajuli area. Flowering time: May-October. Voucher number: Gogoi & Gogoi 076, TOSEHIM.

Vanda bicolor Griffith, *Notulae ad plantas asiaticas* 3: 354 (1851). [Fig. 3T]

Habitat: Epiphytic. Status: Rare, found only in Bogoli and Kasojuli area. Flowering time: February-April. Voucher number: Gogoi & Gogoi 052, TOSEHIM.

Zeuxine strateumatica (Linnaeus) Schlechter, *Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie* 45(3): 394 (1911).

Habitat: Terrestrial in open grassy and damp areas. Status: Rare, found only in Rampur and Naharani area. Flowering time: January-April. Voucher number: Gogoi & Gogoi 057, TOSEHIM.

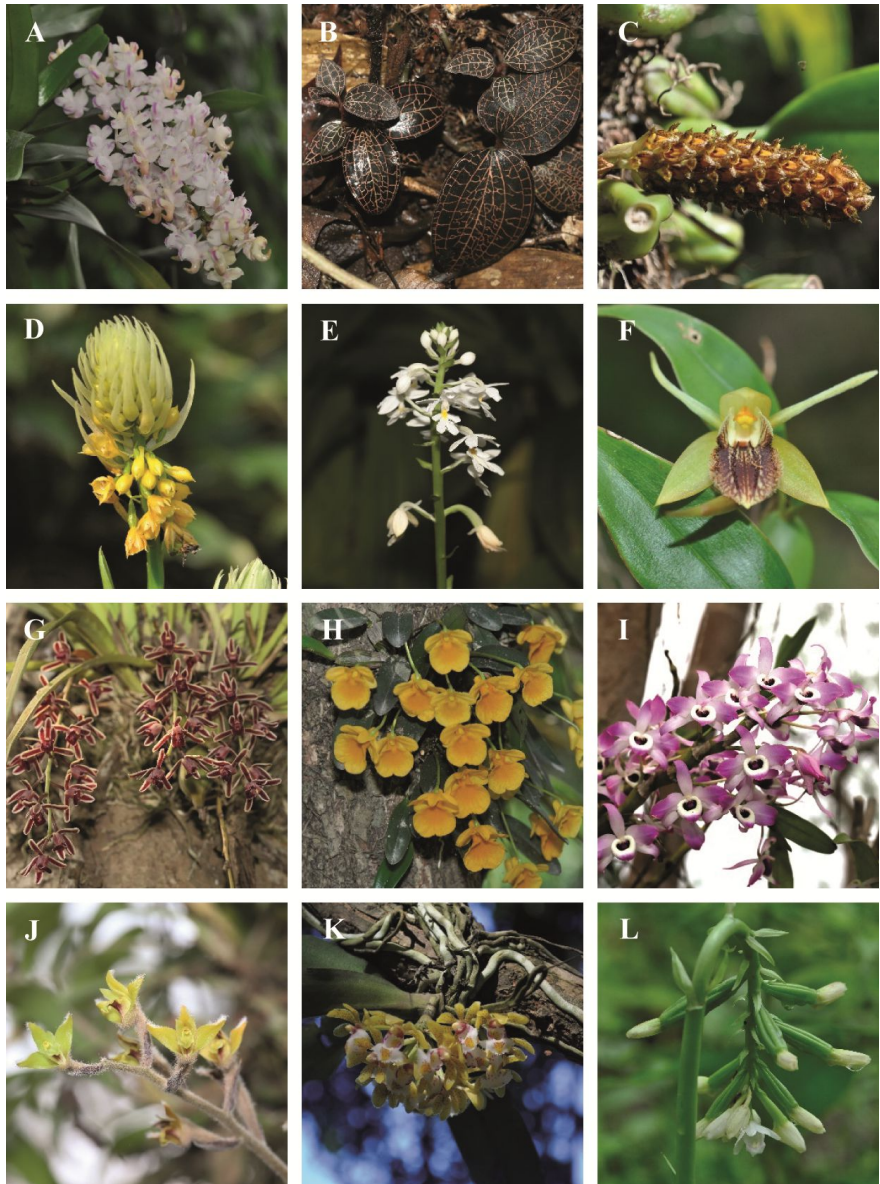


Fig. 3: Photographs of some orchids from Ranga Reserve Forest

A. *Aerides odorata*; B. *Anoectochilus roxburghii*; C. *Bulbophyllum crassipes*; D. *Calanthe lyroglossa*; E. *Calanthe odora*; F. *Coeloglyne ovalis*; G. *Cymbidium bicolor*; H. *Dendrobium jenkinsii*; I. *Dendrobium nobile*; J. *Dendrolirium lasiopetalum*; K. *Gastrochilus obliquus*; L. *Geodorum densiflorum*

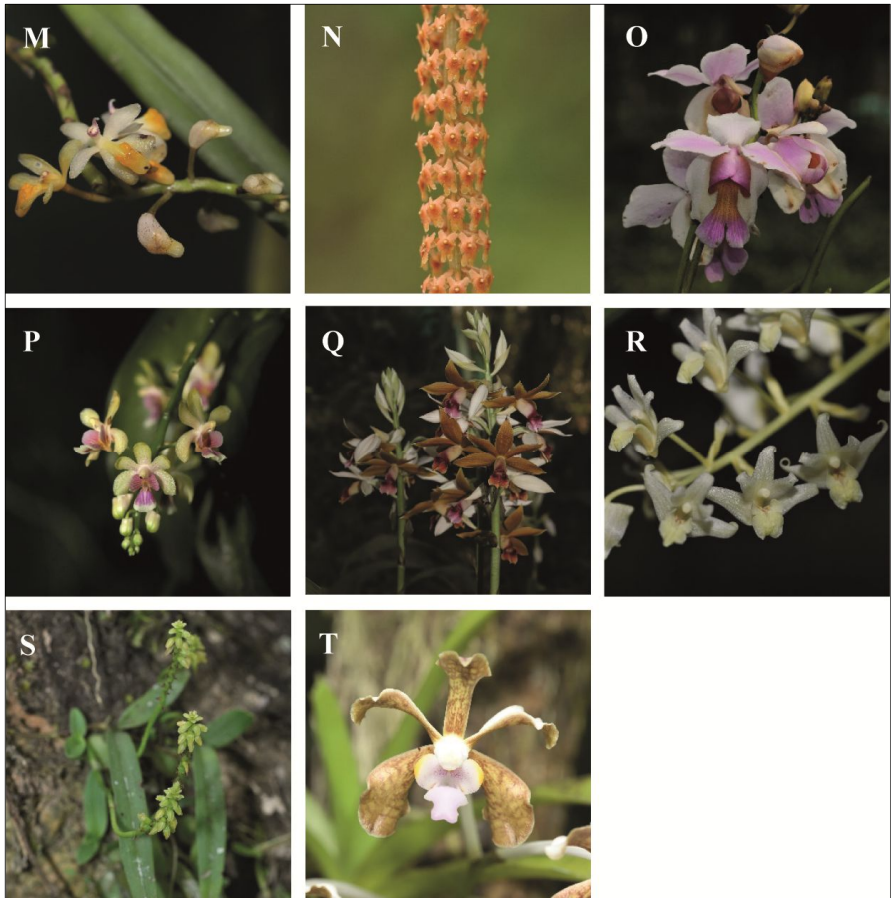


Fig. 3: [after]

M. *Micropera obtusa*; N. *Oberonia aculis*; O. *Papilionanthe teres*; P. *Phalaenopsis deliciosa*; Q. *Phaius tankervilleae*; R. *Pinalia bractescens*; S. *Thelasis pygmaea*; T. *Vanda bicolor*

Discussion

Ranga Reserve Forest is favorable to orchid species. *Dendrobium jenkinsii*, *Calanthe odora* and *Vanda bicolor* are new additions to the North Lakhimpur district. With this, the orchid flora of the district rises to 143 species. The present study has also made it possible to record some of rare species such as *Anoectochilus roxburghii*, *Oberonia acaulis*, *Phalaenopsis deliciosa*, *Pinalia bractescens* and *Dendrobium nobile*. Due to biotic interference, the habitat is

facing a serious threat which is a reason for great concern. Anthropogenic activities near the Ranga Reserve Forest have been increased due to the rise in population and agricultural activities. The habitats are now sandwiched by construction going in all directions. The area of Bogoli and Golajuli shows more diversity of orchids as these are less disturbed as compared to other areas. Few forest patches in Bhitripam and Dhemagarh are also found to be favorable habitats for orchid diversity.

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