



DIVERSITY OF ORCHIDS OF POBA RESERVE FOREST



A thesis submitted to

Assam Science & Technology University,

Tetalia Road, Jalukbari, Guwahati, Assam

In partial fulfilment of the requirements for the award of the degree of
Master of Science in **BOTANY**

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Academic Year 2020-2022



CERTIFICATE

This is to certify that this thesis entitled "**Diversity of Orchids of Poba Reserve Forest**" submitted to Assam Science & Technology University, Guwahati for the award of the degree of Master of Science in Botany is a bonafide research work carried out by the student **Mr. Manoranjan Chutia** (Roll No. 202820047012) under my guidance and supervision during the period between April 2022 to August 2022 in the Department of Botany. I further certify that no part of this thesis has been submitted anywhere else for the award of any Degree, Diploma, Associateship, Fellowship or any other similar titles.

Date: 19/09/2022
Place: Silapathar Science College


Dr. JITU GOGOI
Internal Guide



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I hereby declare that the work embodied in this thesis entitled "**Diversity of Orchids of Poba Reserve Forest**" is a research work done by me under the supervision and guidance of **Dr. JITU GOGOI**, Assistant Professor of Botany, Silapathar Science College, Silapathar. I further declare that this work has not been submitted earlier in full or in parts to any other university for the award of any other Degree, Diploma, Associateship, Fellowship or other similar titles.

Date: 19/09/2022

Place: Silapathar Science college

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ACKNOWLEDGEMENT

With great pleasure, the author acknowledges his sincere appreciation and sense of gratitude to his external guide Mrs Maya Konwar, Dept. of Botany, Moridhal college for constant motivation, support and guidance in completing the work successfully and internal guide Dr. Jitu Gogoi, Assistant professor, Dept of Botany, Silapathar Science College for assistance and guidance throughout.

The author is really grateful to Dr. Ranjit Saikia, Principal , Silapathar Science College, for giving him permission to accomplish the project and Dr. M. Mathiyazhagan, Associate professor, Dept. of Botany, Silapathar Science College for providing guidance , support and necessary instruction during the work and Dr. Zakir Hussain Malik for constant support and help.

The author also wishes to express his gratitude to Dr. Dipen Saikia, Principal, Moridhal College whose permission made the effort possible. The author would like to express his gratitude for the assistance and cooperation offered from the entire office staff of Silapathar Science College.

The author owes a lot to his cherished parents Mr Moheswar chutia and Rupanjali Chutia and other family members whose warm blessings and encouragement have always given confidence in completing the work.

The author also extends his sincere gratitude to his friends Bidyot, Bitupan, Ananya, Tarunjyoti, Manuj Kumar, Bipul for their support, collaboration and support in various ways.

Above all, the author expresses his fervent thankfulness to God, for giving him the inner courage to finish the thesis.

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LIST OF ABBREVIATIONS AND SYMBOLS USE

Sp, spp	Species (singular and plural)
Viz	Namely
et al.	And other co workers
Sl. No.	Serial number
%	Percent
Cm	Centimeter
Fig	Figure (s)
0 c	Degree Celsius
MSL	Mean Sea Level
No	Numbers

INTRODUCTION

Orchids are very popular for their medicinal values since Vedic period, but in recent years orchids are in great demand in national and international market due to their aesthetic value. Orchids show diversity in habit and habitat at global level by occupying almost all the environments under epiphytic and terrestrial conditions. Orchids are well-known highly angiospermic plant representing 9% of the Indian flora. A total of 32,000 orchids have been recorded in the world. In India about 1430 species distributed into 192 genera have been reported (Kumar & Kumar, 2005; Misra, 2019) mainly from the Himalayas and the mountain regions of Eastern and Western Ghats (Gogoi *et al.*, Linthoingambi *et al.*, 2015; Swain *et al.*, 2019). Among them 150 species are endemic to north east India (De & Singh, 2015). In India, Arunachal Pradesh shows rich orchid flora and Assam encompasses 398 species in 102 genera (Gogoi, 2019). The fox tail orchid *Rhynchostylis retusa* (Linnaeus, 1753; 953) Blume (1825: 286) commonly known as *Kopo phool* in Assam has great cultural (*Bihu* festival) significance. Similarly Buddhists are using golden inflorescence of *Dendrobium hookerianum* to worship the Lord Buddha. The climatic conditions of Assam are favouring the growth of orchid. Several studies carried out in reserve forest of Assam and adjoining areas (Gogoi, 2012 & Gogoi, 2019) have led to the documentation of 398 orchid species and 107 species were found in Joypur Reserve Forest of Dibrugarh district. A case study in two districts of Assam reported 95 species in Tinsukia (Gogoi, 2012) and 140 species in Lakhimpur (Gogoi *et al.*, 2021). Manas National Park located at Chirang and Baksa District houses 45 species (Daimalu Baro *et al.*), the present work aims to document orchid species in Poba Reserve Forest (PRF) of Dhemaji District, Assam.

Study area

The Poba Reserve Forest (27°50'11"N and 95°17'45"E) is situated in Jonai Subdivision of Dhemaji District of Assam. The Reserved Forest (RF) was created in the year 1924 and covers an area of 10,221 hectares. Poba is one of the richest rain forests of North-East India in terms of the flora and fauna found in it and can be very well termed a biodiversity hotspot. The forest receives annual rainfall of 3600mm to 4000mm; highest temperature so far recorded is 35°C in summer and lowest 7.0°C in winter.

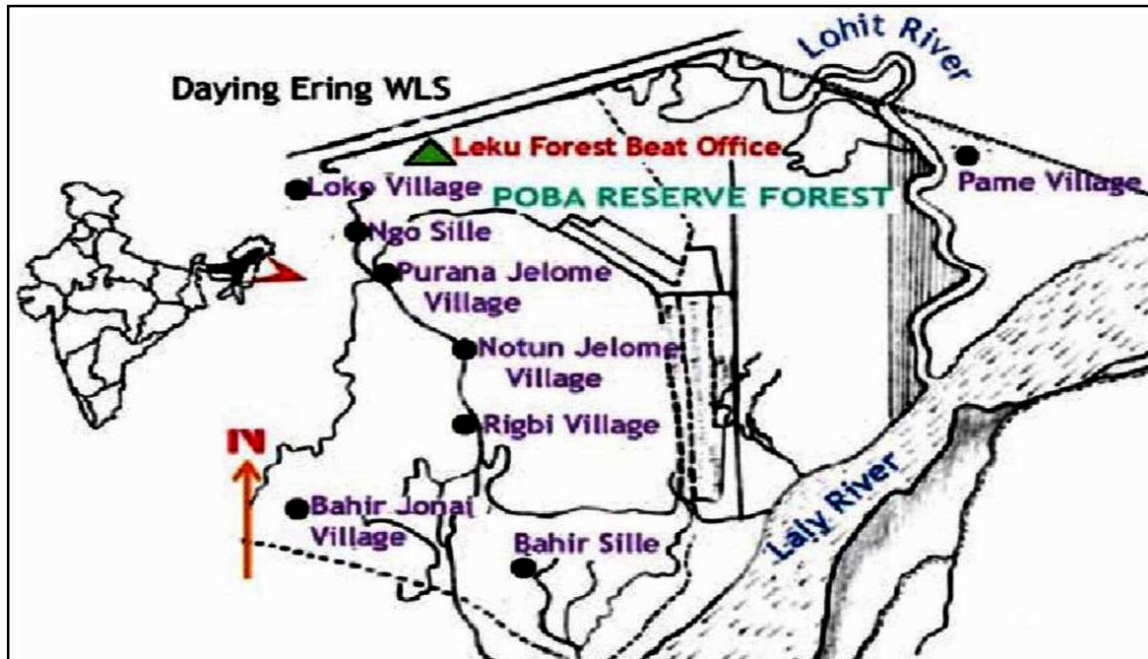


Fig 1 : Map showing location of Poba Reserve Forest

Table 1: Physical parameters of Poba Reserve forest in three sectors

SI.NO	Parameters	Characteristics
1	Temperature	4° C-35°C
2	Humidity	38-72%
3	Rainfall	3,700mm - 3,900mm
4	Soil type	Sandy/Semi sandy/alluvial soil
5	Forest type	Semi evergreen
6	% of forest cover	65% dense forest, 20% grass land and 15% wetland

Boundries towards North are the foothills of the Himalayan range in Arunachal Pradesh, towards East and South are the Siang, Dibrang and Lohit river systems confluencing into the mighty Brahmaputra and the Dibru-Saikhowa National Park and towards West are the revenue villages of the Jonai Sub division of the Dhemaji District of Assam. Poba RF is an important elephant corridor linking the foot hills of Arunachal Pradesh and Dibru Saikhowa National Park via the proposed Kober Chapori Reserve Forest. Peripheral area of the RF is inhabited by a few ethnic groups such as Mising, Bodo, Sonowal Kachari and Hajong (Rabha). These communities are dependent mostly on forest for their livelihood. Scientific research is still being carried out on the flora and fauna of the forest. Poba forest is under serious threats from anthropogenic activities and natural calamities particularly erosion by the Siang river. If the present trend of deforestation and erosion continues, urgent and effective control measures need to be initiated to save this Rain forest. However, for

complete study and documentation of orchids, present study is divided into three following sectors.



Fig 2: Photo captured in Leku Beat

Sector 1:Leku area located in northern side of the forest and are closer to the NH 15 and the area is fully covered with evergreen plants along with few of deciduous species. So the dense, evergreen, characteristics of this forest made the environment fit for the origin of various orchid habitats. But identification, documentation of orchids from this area could be achieved in the month of March to April by blooming of amazing flowers.



Fig 3: Photo captured in Tinimali Beat

Sector 2:The southern part of the forest is surrounded by Tinimali beat and the beauty of the region is because of the almighty Laly river (known as the Brahmaputra river)



Fig 4: P: photo captured while conducting the project work in PRF

Sector 3:The forest department of Assam in Sirung to protect this forest area from the encroachment nearby villages and other anthropogenic factors. Sirung area comprises grasslands, wetlands and woodland. The climatic conditions of this forest are more or less similar to the rainforest of western India and it favours for rich biodiversity.



Fig 5: Summer view of PRF

The PRF is a good habitatsince it provides favourable environmental conditions for growth of orchid. Though the numbers of orchid species of this region is gradually disappearing due to habitat destruction, soil erosion over exploitation. The adverse affect of climate change has also encouraging the loss of orchid species from the region.

REVIEW OF LITERATURE

Gogoi *et al.* (2012) conducted a study and suggested that *Taeniophyllum* is a member of the epiphytic genus family. It is difficult to identify the genus in a woodland region due to their low size and absence of leaves. All the species grow well in shady places. The undisturbed habitat rich forest is ideal for its lavish growth and development. But the destruction of forests causes greater harm in the natural population of this botanically less known Orchid *Taeniophyllum* in the Assam.

Ninawe and Swapna (2017) in their study explained that orchids can grow in a variety of soil types. They are both economically and medicinally significant, and their impact on our country's economy could be significant. The orchid family is facing serious threats due to various environmental factors and climate change in India's north-eastern region. Many of them are now on the IUCN's RET list and will face extinction unless urgent and necessary actions, such as awareness campaigns against indiscriminate collection, are taken. To protect the unique and vast genetic diversity of orchids in North East India, the Department of Forest and Wildlife, in collaboration with NGOs and local people, should work together.

Acharya and Rokaya (2010) Nepal is abundant in medicinal orchids, which are mostly terrestrial or epiphytic in nature. The distribution of medicinal orchids is uneven, either horizontally or vertically. The most orchids are found in the central part of Nepal in a horizontal manner, while the most medicinal orchid species are found vertically at an elevation of 1700 msl. Because human-caused activities endanger orchid populations and there is a lack of knowledge about available orchid populations, extensive field research is required to prioritise the conservation needs of such sites in the future. Furthermore, in order to protect medicinal orchid diversity, protected areas must be established and protected areas must be synchronised.

Islam *et al.* (2010) in their study explained the antioxidant, analgesic, and cytotoxic activity of *Vanda roxburghii* root was investigated in a crude methanolic study. At the same time, its ability to suppress abdominal writhes confirms the extract's analgesic properties. These findings support the plant's traditional use in the treatment of heart disease and high cholesterol. It is also used to treat gallstones, the common cold and flu, asthma, hair loss, migraine headaches, and chronic fatigue syndrome, as well as to boost the immune system and prevent colon cancer.

Gogoi *et al.* (2012) concluded that 107 Orchid species from 47 genera were discovered during a field survey in the Joypur reserve forest of Assam's Dibrugarh district. There are 82 epiphytic species, 23 terrestrial species, and two saprophytic species, *Didymoplexis pallens* and *Epipogium roseum*. Thirty of them are common in that region, while the rest are uncommon. In comparison to other plant species in the study areas, the entire Orchidaceae family faces a high risk of habitat threat. The main reasons for the rapid destruction of natural habitats in the study areas are deforestation, agricultural land expansion, urbanisation, development schemes, atmospheric pollution, pesticide and weedicidal pollution, and many other anthropogenic activities.

Ahmedullah and Nayar (1987) published the first authentic work on the endemic plants of peninsular India, estimating 123 species and 33 genera of endemic orchids from this region. While Nayar (1996) estimated 136 species, Kumar and Manilal (1994) recorded 142 species from 38 genera. Rao (1998) estimated 126 endemic species. Singh *et al.* (2001) recorded 135 species, while Misra (2007) recorded 160. So far, 404 (2.3 percent) of the total flowering plants in India are endemic orchids (Misra 2007), with peninsular India accounting for 39.6 percent of the total number of orchids (1,331). The current study yielded 130 species from 38 genera that are endemic to peninsular India. The Western Ghats region has the most endemic orchid species, with 123, followed by the Deccan Plateau and the Eastern Ghats. 95 (73 percent) of the peninsular region's endemic orchid species are strictly endemic to the Western Ghats, while five (4 percent) are restricted to the Eastern Ghats. The Deccan Plateau, however, has no strictly endemic species. A state-by-state analysis of the distribution of endemic orchids reveals that Kerala has the most endemic species, followed by Tamil Nadu, Karnataka, and Maharashtra. Gujarat, Andhra Pradesh, and Odisha have very poor representation of endemic species. A total of 27 orchid species previously thought to be endemic to the peninsular region have been removed from the list due to their widespread distribution in neighbouring countries.

Pant(2013) in his study revealed that extensive research is still required before the orchid species can be fully recommended for their medicinal uses. Because of their small population size and limited distribution, intensive care and habitat management is strongly advised. There has been very little effort made to cultivate medicinal orchids on a commercial scale. Only with human assistance can species that have become threatened due to human activities survive. Plant tissue culture may be one of the most appropriate alternative tools for reducing pressure on natural populations of medicinal orchids and ensuring their long-term utilisation.

Singh *et al.* (2012) in their study explained that orchids are well-known for their beautiful flowers but little is known about their medicinal properties. However, a number of compounds with medicinal properties have been isolated from various parts of the plant. Compounds with antimicrobial, antitumor, anti-inflammatory, antioxidant, anti-diabetic, neuroprotective, and antiallergic properties have been isolated and tested on animal models, but clinical trials with orchid plant parts are not common. The emphasis on clinical trials will open up a new avenue for the treatment of diseases with herbal medicines. The orchid components still need to be thoroughly researched with full experimental trials before they can be accepted as medical recommendations.

Khyanjeet Gogoi (2005) in his study concluded that Assam's woodlands are home to several stunning and significant orchid species. Although there is some information on these plants, there are few studies that deal with their preservation and commercialization. In addition, habitats for orchids have been diminished as a result of unchecked forest clearing. Additionally, the orchids are under intense commercial collection pressure. Consequently, their natural populations are declining rapidly. Orchid flora of Dibru-Saikhowa National Park and Biosphere Reserve (35 species) is a valuable natural resource. It must be thoroughly examined, assessed, and listed for long-term commercial use. 7 species of floriculturally

important Dendrobes have been gathered from the Dibru-Saikhowa National Park and Biosphere Reserve: *Dendrobium moschatum*, *D. fimbriatum*, *D. nobile*, *D. transparens*, *D. lituiflorum*, *D. aphyllum*, and *D. aduncum*. Some of these, including *D. fimbriatum*, *D. nobile*, *D. aphyllum* var. *katakinum*, and *D. aduncum*, are rare and must be preserved for long-term use in Assam. In addition, the current research have significant intellectual, exploratory, and educational significance while being an embodiment of a smaller body of work. A continuing and in-depth investigation is certain to produce incredibly helpful information on the rich flora of the entire forested area, while a featured study of the current nature is likely to show the richness or lack thereof of a taxon in addition to adding to the information already accessible.

R. P. Medhi *et al.* (2012) in their study mentioned that India's vast genetic resources for orchids hold considerable promise for the nation's floriculture, herbal, medicinal, and tourism industries. However, because to pressures from commercial collection and habitat destruction, degradation, and shrinking, these resources are quickly depleting. These priceless biological treasures must be preserved immediately in their native habitats, in addition to adopting cutting-edge preservation techniques including cryopreservation, in vitro conservation, and seed storage. A network of organisations dedicated to orchid conservation and a robust programme for breeding orchids would improve the wise use of orchids.

Balpitt (2005) explained that Greek word "orchis," which translates to "testicles," is the root of the English word "orchid." This may explain why orchids were used as aphrodisiacs in ancient culture. Theophrastus was the first person to use the Greek word "orchis" to designate a specific family of plants whose roots were dried, cut, and employed in traditional medicine as antidepressants, sex stimulants, and in nourishing drinks. *Vanillaplanifolia* is one of the commercially important orchid as a source plant for Vanillin, which is used as a food favoring agent.

According to Kong *et al.* (2003) The major constituents reported from orchid species are alkaloids, triterpenoids, favonoids and stibenoid.

According to Medhi *et al.* (2009)'s study, Sikkim's elders and traditional healers have been employing various orchids as their major forms of healthcare.

Singh and Duggal (2009) in their study concluded that the angiosperms' largest and most varied group is the orchids. They are raised for its lovely flowers. The value of their medical properties is less well understood than their economic significance. There is evidence supporting the therapeutic use of some plants, including *Dendrobium crumenative*, *Eulophiacampestris*, *Orchislatifolia*, *Vanda roxburghii*, and *Vanda tessellata*. Some orchids are said to include alkaloids, triterpenoids, flavonoids, and stilbenoids phytochemically. Four plants, namely Riddhi, Vriddhi, Jivaka, and Rishbhaka, have been discussed as potential members of the family Orchidaceae. The Ashtavarga (group of eight medicinal herbs) is an essential component of Ayurvedic formulations like Chyvanprasha.

According to Khyanjeet Gogoi *et al.* (2013) all the many habits and growth forms that are seen in orchidaceous are evident in Assam Orchids. Assam, the second-largest state in North-East India, is home to a variety of Indian orchids. Many stunning, valuable orchids can be found in Assam's woods. There may be 193 species of orchids in all, divided among 71 genera, of which 27 are endemic.

Carl Ludwing Blume introduced the genus *Taeniophyllum* in 1825. The genus name refers to long, ribbon-like leaves and is derived from the Greek words "tainia" (ribbon) and "phylon" (a leaf) [Barua IC (2001)] About 120–180 species of the genus *Taeniophyllum* can be found in tropical Africa, tropical Asia, Australia, and the Pacific islands (Chen *et al.*; 2009). Ten of these species are found in India (Misra. S. 2007)

OBJECTIVES

1. To study the habitats and morphological characteristics of orchids.
2. Diversity of orchids of Poba Reserve Forest (PRF)

MATERAIS AND METHODS

Documentation of orchid from the PRF was carried out during the period of 2022. During this study period, identification was done as per the methodology of Jain and Rao (1977) and the data found in the literature(Hooker, 1890; Deva &Nathani, 1968; Seidenfaden, 1973, Chowdhery,1988). Habits, host trees and locality of species and other important physical parameters of the forest have been recorded for future use.

Morphological characteristics of orchids.

Orchids are evergreen or deciduous herbaceous perennial. Due to inherent slow growth and reduced photosynthetic capacity some species like *Cypripedium calceolus* has long vegetative period . Orchids are bilaterally symmetric (zygomorphic), many resupinate, one petal (labellum) is always highly modified, stamens and carpels are fused, and the seeds are extremely small



Fig 6: Photos showing stem of orchids

Stem: Based upon growth habit they can be classified into monopodial and sympodial orchids. In monopodial orchids, the stem emerges from a single bud, elongates and produces leaves from the apex each year. The flower stem emerge from the base of the uppermost leaves. e.g., *Phalaenopsis*, *Vanda* and *Vanilla*. In sympodial orchids, the plant produces a series of adjacent shoots which grow to a certain size, bloom and then stop growing, to be then replaced. The base of the stem of sympodial epiphytes, or in some species essentially the entire stem, may be thickened to form what is called a pseudobulb that contains nutrients and water for drier periods, e.g., *Cymbidium*, *Cattleya*, *Dendrobium*, *Oncidium*. Based upon natural habitat, orchids are classified in to three categories, namely epiphytes, terrestrial and saprophytes. Epiphytes are grown on trees, rocks or in leaf litter. Nutrients mainly come from animal droppings and other organic detritus on their supporting surface. Epiphytic orchids are characterized by thick and succulent leaves with thick cell walls, cuticles and small sub-

stomatal chamber whereas those of terrestrial species are thin. Epiphytes generally have smaller stomata than terrestrial species. E.g. *Vanda*, *Dendrobium*, *Phalaenopsis*. Terrestrial orchids may be rhizomatous or form corms or tubers which contain reserve carbohydrates. Glucomannan is the major constituent of reserve carbohydrate in tubers. The free mannose, glucose, manobiose and maltose formed from the reserve polysaccharides are transformed to sucrose and transported to new tubers and to the newly formed upper part of plant. In warm and humid climates, many terrestrial orchids do not need pseudobulbs. E.g. *Calanthe*, *Eulophia*, *Phaius*, *Paphiopedilum*, *Spathoglottis*. Saprophytic orchids obtain their food from dead organic matter instead of by photosynthesis, are found in a number of orchid groups. The majority of orchids pass through a saprophytic seedling stage, which may last for months, especially in terrestrial species. E.g. *Neotia* species.



Fig 7: Photos showing roots of orchids

Roots: Epiphytic and most lithophytic orchids have clinging roots for anchorage, absorbing roots which penetrate the humus on bark and the aerial roots hang free in the air and help to the absorption of moisture. Many a times the epiphytic roots contain chlorophylls, are capable of performing photosynthesis. The roots of genera like *Phalaenopsis* become flat and assist the plant to creep over the surface, while those of *Aerides* and *Vanda* help the plant to trail. Roots of orchids are white and thick. Epiphytic orchid roots are covered with a spongy tissue that helps the orchid cling to a tree or rock and absorb water and nitrogen from the air. Epiphytic orchids have modified aerial roots that are sometimes few meters long. In the older parts of the roots, a modified spongy epidermis called velamen has are subsequently remobilised to support new shoot and inflorescence development.



Fig 8: Photos showing leaves of orchids

Leaves: Like most monocots, orchids generally have simple leaves with parallel veins, although some Vanilloideae have a reticulate venation. They may be ovate, lanceolate, or orbiculate and very variable in size. They are normally alternate on the stem, often plicate, and have no stipules. Orchid leaves often have siliceous bodies called stegmata in the vascular bundle sheaths (not present in the Orchidoideae) and are fibrous. The attractive mottle of the leaves of Lady's Slippers from tropical and subtropical Asia, (*Paphiopedilum*) is caused by uneven distribution of chlorophyll. Also *Phalaenopsis schilleriana* is a pastel pink orchid with leaves spotted dark green and light green. The Jewel Orchid (*Ludisia discolor*) is grown more for its colorful leaves than its fairly inconspicuous white flowers. Number of stomata per unit surface area is always higher in upper leaves on the same stem due to stronger light intensity on the upper leaves. Epiphytes generally have smaller stomata than terrestrial species. Epiphytic orchids are characterized by thick and succulent leaves with thick cell walls, cuticles and small substomatal chamber whereas those of terrestrial species are thin. Usually mature leaves are photosynthetically active. Leaves are sites for reduction of transpiration, water storage organs, retention of rain or condensed water and absorption of water as liquid or vapour. The hard leathery leaf type of orchids are drought tolerant with very thick cuticle and thick walled epidermis together with extensive lignification offer excellent protection against desiccation. Thick leaves have Crassulacean Acid Metabolism (CAM), a very important adaptation to water stress. All thin orchid leaves show C₃ photosynthesis. Small and narrow leaves are better adapted exposed sites than larger ones because they lose heat more efficiently by convection. Leaf hair may help conserve water by increasing the boundary layer thickness of air around the leaf and lengthening the diffusion

pathway. Deciduousness occurring in sympodial orchids avoid water stress during the dry season by shedding their leaves and entering a dormancy period. In monopodial orchids, the number of leaves on stem depends on the age of the plant while the orchid like *Cattleya* has one leaf per pseudobulb and *Dendrobium* has 5-20 leaves per pseudobulb.



Fig 9:Photos showing flowers of orchids

Flowers: Orchids are monocotyledonous plants bearing flowers with seven floral parts- three sepals, three petals and the column or gynostemium. The orchid flowers show a great diversity in size, colours and form. The range of size varies from that in some species of *Oberonia* (0.15cm across) to *Pecteilis gigantea* (10 cm. across). The predominant shades are white, yellow, green and purple occurring in pure state or in every possible combination. The orchid flowers exhibit mimicry like Spiders, Dancing girls, Bees, Ladies slipper, or Insects. In few cases like *Oberonia* and *Malaxis* the flowers are in an upside down position, having twisted through 180° on its pedicel. The inferior ovary or the pedicel usually rotates 180 degrees, so that the labellum, goes on the lower part of the flower, thus becoming suitable to form a platform for pollinators. It is called resupination. Some orchids have secondarily lost this resupination, e.g. *Zygopetalum* and *Epidendrum secundum*. The inflorescence of *Geoderum densiflorum* bends down in 180° and present the flowers in upside down position. One of the most important characteristics of all orchid flowers is that they are zygomorphic and bisexual or very rarely unisexual. The orchid flowers may have or have not spur which is the appendage of lip meant for storing nectar. It may be short or long in size and vary in shape. The orchid flowers consist three outer most floral parts- the sepals are more or less similar in appearance. But in few cases like *Bulbophyllum*, the dorsal sepal is of different size from the laterals. They may be coloured (petaloid sepals) and free from one another or

united forming sepaloid tube. The inner whorl of three segments called the petals. The two lateral petals are alike and the other one, called the lip or labellum, is highly modified and enlarged. The labellum is the most prominent and distinctive part of the orchid flower. The petals may be similar to sepals and are filiform or fimbriate. The lip is attached to the base of the column loosely or firmly. The colour pattern, size and shape of the lip vary in different genera. The most fascinating aspect of the lip is its habit of mimicry to facilitate pollination. The column or gynostemium is located at the center of the flower, is the unique structure distinguishing the orchids from all other kinds of plants. It is the reproductive part of the flower formed by the union of the male and female organs. It bears one to three movable or rigidly attached anthers at its tip or on the sides. On the basis of one or more fertile anthers, orchids are called as Monandrae or Pleonandrae, respectively. The anther contains a mass of pollen called pollinium which is varying from 2, 4 and 6 to 8. The pollinia are contained in a cavity called the clinandrium. Just below the anther, on the ventral surface of the column, is a hollow cavity of sticky and viscid mass known as stigmatic surface. It is formed by the fusion of two fertile stigmas. The anther and stigmatic surface is separated by the structure called rostellum, which is actually the third stigma. The rostellum serves to prevent from selfpollination. The genera like *Eria* and *Dendrobium*, the column is extended below into a structure called foot. The orchidaceous ovary is generally inferior, tricarpeal, one celled, with numerous number of ovules on three parietal placentas. It is stalked or sessile.

RESULTS

In this study, a total of 33 species belonging to 24 genera were identified and documented below. Of which 26 species were identified as epiphytes and 07 as terrestrial. Epiphytic species were mostly observed on the host trees such as *Lagerstroemia speciosa* (Linnaeus) Persoon, *Bombax ceiba* Linnaeus, *Bischofia javanica* Blume, *Premna bengalensis* C.B. Clarke, *Dillenia indica* Linnaeus, *Dipterocarpus retusus* Bl., *Terminalia chebula* Retz and *Vatica lanceifolia* (Roxburgh) Blume. However, maximum numbers of epiphytes were found on the host tree *Lagerstroemia speciosa*. Terrestrial orchids have been found in forest floors, grasslands and in the river bank of the forest. The numbers of orchid species availability in three sectors (Leku Beat, Tinimail Beat and Sirung Forest camp) are 29, 19 and 16 respectively.

Table 2: List of Orchids of Poba Reserve Forest

SL. NO	LIST OF ORCHID SPECIES
1	<i>Acampe carinata</i> (Griffith) Panigrahi
2	<i>Acampe praemorsa</i> var. <i>longepedunculata</i> (Trimer) Govaerts
3	<i>Acanthephippium sylhetense</i> Lindley
4	<i>Aerides multiflora</i> Roxburgh
5	<i>Aerides odorata</i> Loureiro
6	<i>Aerides rosea</i> Loddiges ex Lindley and Paxton
7	<i>Bulbophyllum careyanum</i> (Hooker f.) Sprengel
8	<i>Bulbophyllum roxburghii</i> (Lindley) Reichenbach f.
9	<i>Calanthe sylvatica</i> (Thouars) Lindley
10	<i>Corymborkis veratrifolia</i> (Reinwardt) Blume
11	<i>Cymbidium aloifolium</i> (Linnaeus) Swartz
12	<i>Dendrobium aphyllum</i> (Roxburgh) C.E.C. Fisch
13	<i>Dendrobium aduncum</i> Lindl.
14	<i>Dendrobium lituiflorum</i> Lindley.
15	<i>Dendrobium moschatum</i> (Banks) Swartz.
16	<i>Dendrobium transparens</i> Wallich ex Lindley
17	<i>Dendrobium ferrugineum</i> (Lindley). A.N. Rao.
18	<i>Dendrobium lasiopatelum</i> (Willdenow) S.C. Chen & J.J. Wood.
19	<i>Deniao phrydis</i> (J. Koenig) Seidenfaden.
20	<i>Goodyera procera</i> (Ker Gawler) Hooker
21	<i>Liparis viridiflora</i> (Blume) Lindley
22	<i>Luisia trichorrhiza</i> (Hooker) Blume
23	<i>Nervila</i> sp.
24	<i>Oberonia mucronata</i> (D. Don) Ormerod & Seidenfaden
25	<i>Papilionanthe teres</i> (Roxburgh) Schlechter
26	<i>Pelatantheria insectifera</i> Rchb. f.
27	<i>Pholida articulate</i> Lindley
28	<i>Pholida imbricate</i> Hooker
29	<i>Pinalia bractescens</i> (Lindley) Kuntze

30	<i>Rhynchosyilis retusa</i> (Linnaeus)
31	<i>Spiranthes sinensis</i> (Persoon)Ames
32	<i>Sarcoglyphis arunachalensis</i> A.N. Rao
33	<i>Zeuxine nervosa</i> (Wallice ex Lindley) Bentham ex Trimen

DISCUSSION



Fig 10: Photo of *Acampe carinata*

1. *Acampe carinata* (Griff.), Taxon 34:689 (1985).

Plants 16-23 cm tall. Stems stout. Leaves 8-14 x 1.5-2.3 cm, oblong. Inflorescence 1-4 cm, subumbellate, densely few to many-flowered. Flowers 1-1.3 cm across; sepals and petals yellow with reddish brown transverse stripes, lip white, slightly spotted with purple-red, spur yellow.

Flowering: November-February.

Habitat: Epiphyte on tree trunks and branches.

Distribution: India, China, Burma, Bangladesh, Vietnam, Thailand, Bhutan, Laos, Myanmar, Nepal



Fig 11 :Photo of *Acampe praemorsa*

2.*Acampe praemorsa* var. *longepedunculata*(Trimen)Govaerts, Skvortsovia 4(3):75(2018)

Plants 50-90 cm long.Stem stout, unbranched or branched.Leaf 17-40 x 3.5-5 cm, distichiouslorate.Inflorescence axillary or opposite to leaf, many-flowered.Flowers 1.3-1.8 cm across,yellow with purplish brown transverse stripes,lipwhite,with purplish brown longitudinal stripes above.

Flowering:May-August

Habitat:Epiphyte on tree trunks or large branches in riverine and secondary forest.

Distribution:Southern and East

Africa,Srilanka,India,China,Burma,Taiwan,Thailand,Cambodia,Vietnam,Peninsular Malaysia.



Fig 12: Photo of *Acanthephippium sylhetense*

Acanthephippium sylhetense Lindl, Gen. Sp. Orchid. Pl. 177 (1833)

Plants 40-50 cm tall. Pseudobulb 7-15 x 1.5-4 cm, ovoid cylindrical. Leaves 2 or 4, 26-40 x 8-11 cm, elliptic to oblong elliptic, inflorescence 15-20 cm, densely 3-5 flowered. Flowers 4-4.5 cm long, white or yellow with purplish brown spots.

Flowering: April-July.

Habitat: Shaded places in dense forests.

Distribution: NE India, Bangladesh, China, Japan, Laos, Malaysia, Myanmar and Thailand.



Fig 13: Photo of *Aerides multiflora*

4. *Aerides multiflora* Roxburgh, Pl. Corom. 3: 67, t. 271 (18200).

Plants 25-35 cm tall. Stem sheathed. Leaves 14-31 x 1.5-3 cm, oblong, distichous, channeled, linear-oblong, leathery, recurved, broadly 2-lobed at apex. Inflorescence 16-32 cm long, axillary longer than leaves, densely many flowered. Flowers 2-2.8 cm across, white with freely marked and flushed with pink or purple; Lip 3-lobed, clawed.

Flowering: March-August.

Habitat: epiphytic on shaded and humid places in dense forest, banks of streams.

Distribution: North West Himalaya, Nepal, India, Bangladesh, Myanmar, Laos, Thailand, Cambodia and Vietnam.



Fig 14: Photo of *Aerides odorata*

5. *Aerides odorata* Loureiro, Fl. Cochinch: 525(1790)

Plants 21-40 cm long. Stem 9-18cm long, stout, pendent, branched, covered by persistent leaf sheaths. Flowers 1.8-2.4 cm across, fragrant, purple to almost white, often tipped and spotted purple, spur greenish-yellow at apex.

Flowering: May-June.

Habitat: Epiphyte in lowland forest.

Distribution: India, Nepal, Bhutan, Burma, Andaman Is., Thailand, Vietnam, Philippines.

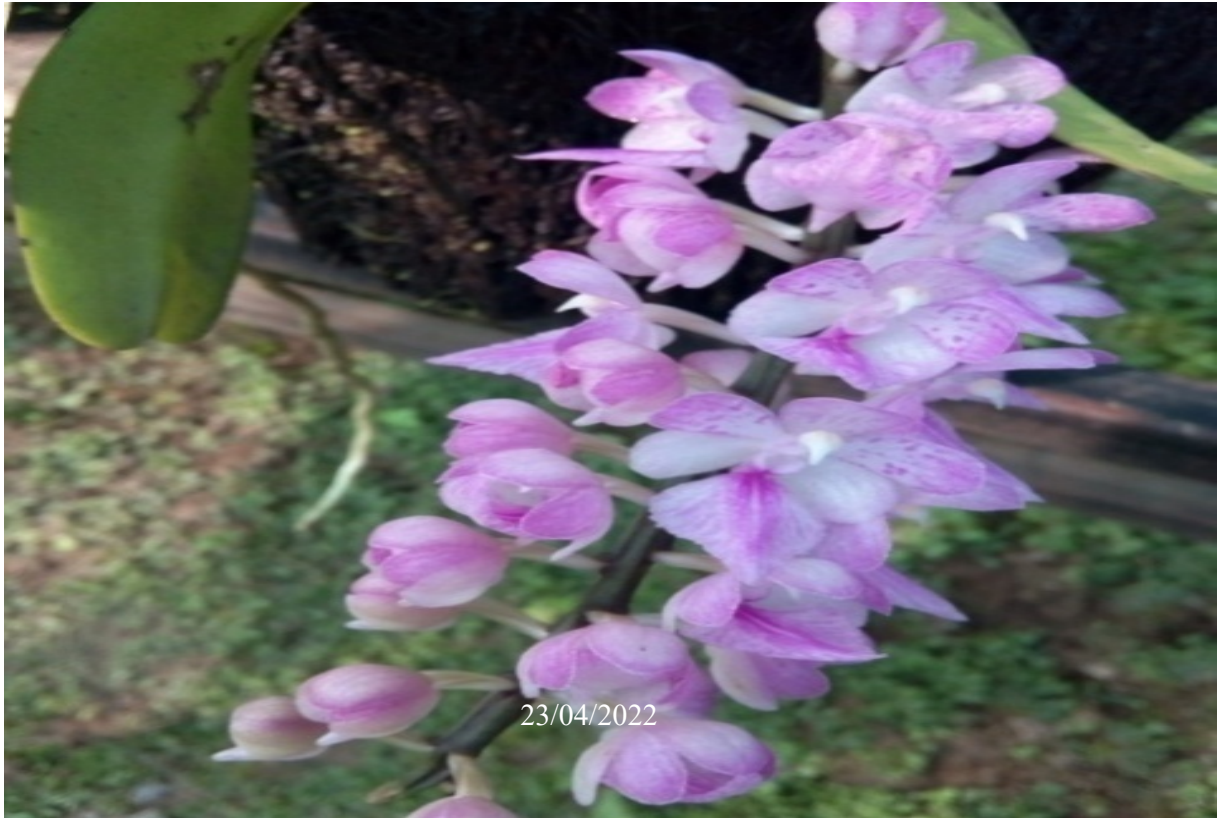


Fig 15: Photo of *Aerides rosea*

6. *Aerides rosea* Loddiges ex Lindley and Paxt. In Paxton FI Gard. 2: 109, t.60 (1852)

Plants 25-35cm. stem stout, covered with sheaths. Flowers 1.6-3.5cm across; dorsal sepal and petals amethyst-purple, suffused with white, lateral sepals white with a pale apical spot, lip amethyst-purple mottled with white, spur whitish.

Flowering: April-May.

Habitat: Epiphyte in mixed deciduous forest and humid evergreen forest.

Distribution: N.E India, Bhutan, Burma, China (Yunnan), Thailand and Vietnam.



Fig 16: Photo of *Bulbophyllum careyanum*

Bulbophyllum Careyanum (Hooker f.) Sprengel, in Hook.f., Brit. India, 5:760(1890).

Plant erect; rhizome 0.3-0.4cm thick, stout. Pseudobulbs 3-6 x 2.8-3.4 cm. Leaf 11-23 x 3.6-4.9cm, solitary. Inflorescence lateral, densely many-flowered. Flowers 0.7-0.8 cm long, sepals and petals dark purple, lip yellow blotched with violet, column orange yellow.

Flowering: October-December.

Habitat: Epiphyte on tree trunks in dense primary humid evergreen forest.

Distribution: India (N.E), Nepal, Bhutan, Burma, Thailand and Vietnam.

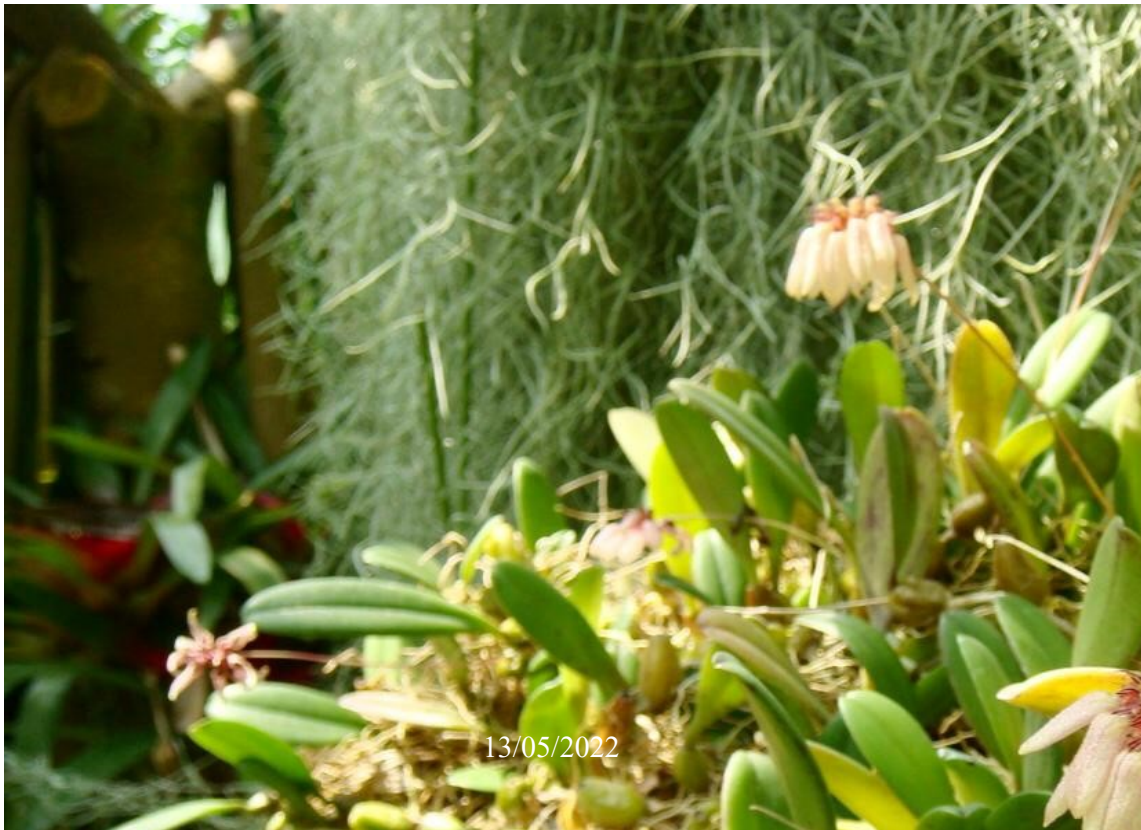


Fig 17: Photo of *Bulbophyllum roxburghii*

8. *Bulbophyllum roxburghii* (Lindl.) Reichb.f. in W.G. Walpers, Ann. Bot. Syst. 6: 263(1861).

Epiphyte. Pseudobulb, ovoid, globose, 1-1.5 cm long. Leaves 6-9 x 1.2 cm. Inflorescence 6-10 cm long, umbellate. Flowers small, 1.5 cm long, dirty brown or pale rosy, spotted with purple.

Flowering: April-July.

Habitat: Epiphytic in evergreen forest.

Distribution: N.E India and Eastern Himalayas.



Fig 18: photo of *Calanthe sylvatica*

9. *Calanthe sylvatica* (Thou.) Lindl., Gen. Sp. Orchid. Pl.: 250 (1833).

Plant 25-57 cm tall. Pseudobulbs 2-4 cm, narrowly conical-cylindrical. Leaves 4-6, 15 x 4-11 cm. Inflorescence terminal, laxly few to many-flowered, 21-35 cm long. Flowers 2.5-4.2 cm across, uniformly violaceous-purple.

Flowering: August- September.

Habitat: Forests, damp places on riversides.

Distribution: China, Bhutan, India, Indonesia, Malaysia, Myanmar, Nepal, Thailand, Vietnam, Africa and Madagascar.



Fig 19: Photo of *Corymborkis veratrifolia*

10. *Corymborkis veratrifolia* (Reinw) Blume, Coll. Orchid.: 125, t. 42e, 43i (1859).

Plant 80-100 cm tall. Stem erect, woody, subterete, leafy. Leaves 20-45 x 4-13 cm, elliptic, sheathed, caudate-acuminate. Inflorescence panicle, 2 to 9-branched, many-flowered. Flowers 3.2-5 cm long, fragrant, spreading, white.

Flowering: March – August.

Habitat: Terrestrial at shade and in dense humid evergreen forest with undergrowth of tall herbs.

Distribution: Assam, India, Thailand, Vietnam, Tropical East Asia, Australia, Solomon Islands, New Guinea, Philippines.



Fig 20: Photo of *Cymbidium aloifolium*

11. *Cymbidium aloifolium* (L.) Sw., Nova ActaRegiae Soc. Sci. Upsal. 6:73 (1799).

Plant 40 - 65 cm tall. Pseudobulbs 6-8 x 3-4 cm, ovoid. Leaves 4-5, 34-65 x 2.7-3.8 cm, oblong, obtuse to emarginated. Inflorescence many flowered, pendulous, 50-70 cm long.. Flowers 4-5cm across, lightly scented; sepals and petals pale yellow-cream, maroon- striped, lip white cream, base yellow, maroon- veined, callus yellow.

Flowering: April – May.

Habitat: Epiphyte on tree trunk in dense humid evergreen forest.

Distribution: Srilanka, India, Nepal, Bangladesh, China, Burma, Thailand, Cambodia, Vietnam, Peninsular Malaysia and Java.



Fig 21: Photo of *Dendrobium aphyllum*

12. *Dendrobium aphyllum* (Roxb.) Fisher, in Gamble, Fl. Press. Madras 3, 1416 (1928).

Plants with pseudobulbs, 60-120cm long. Leaves deciduous, sessile, sheathing; Flowers 4.5-5cm across, 1-3 each node, in shortly peduncled racemes, pale rose, lip yellow, pubescent, orbicular at the base, shortly convolute-climate, pale yellow with radiating streaks at the base.

Flowering: April-May.

Habitat: Epiphyte in mixed deciduous forest or open forest.

Distribution: India, Nepal, Bhutan, Burma, China, Thailand, Cambodia, Vietnam and Peninsular Malaysia



Fig 22: Photo of *Dendrobium aduncum*

13. *Dendrobium aduncum* Lindl., Edwards Bot. Reg. 289(Misc.): 58 (1842).

Plants pendulous, 30-60 cm long. Stems, branching, narrow, grooved. Leaves 5.5 – 8.9 x 0.8 – 1.6cm, oblong-lanceolate, acute to acuminate. Inflorescence 4-6 flowered, 3-8cm long, zigzag. Flowers 2-2.5cm across, uniformly pale purple, anther dark purple.

Flowering: May-July.

Habitat: Epiphyte on a small tree trunk in dense humid evergreen forest.

Distribution: N.E India, Bhutan, Burma, China, Thailand and Vietnam.



Fig 24: Photo of *Dendrobium lituiflorum*

14. *Dendrobium lituiflorum* Lindl., Gard. Chron. 1856: 372(1856).

Plant pendulous, cylindric, up to 60-80cm long, 0.7-1 cm across. Leaves 7.5-10 x 1.6-2cm narrowly oblong, linear-lanceolate, absent at the time of flowering. Inflorescences many, arising from old leaflets stem, 2-5 flowered. Flowers 4-5cm across, pale purple inner surface of lip with a deep purple spot surrounded by a white circle.

Flowering: April-May.

Habitat: Epiphytic on tree trunks in open forest.

Distribution: N.E. India, Thailand, Vietnam, Burma and China.



Fig 25: Photo of *Dendrobium moschatum*

15. *Dendrobium moschatum* (Buch-Ham) Sw., Neues J. Bot. 1:94 (1805).

Plant 70-131 cm tall with clustered stems. Leaves 8-17 x 2-4.5 cm, lanceolate to elliptic-lanceolate. Inflorescences lateral, arising from nodes of leafy or leaflets stem, laxly 7-14 flowered, 10-18 cm long. Flowers 5.5-7.4 cm across, showy, mild scented, colour variable, sepals and petals orange-yellow and red-orange veined, lip yellow-ochre, yellow to white with 2 brown-purple or red spots inside.

Flowering: April- June.

Habitat: Epiphytic on tree trunks in open forests.

Distribution: Nepal, Bhutan, Burma, China, Thailand, Cambodia and Vietnam.



Fig 26 : Photo of *Dendrobium transparens*

16. *Dendrobium transparens* Wall.exLindl., Gen. Sp. Orchid. Pl.: 79 (1830).

Plant 30 – 54cm tall, slender, erect, swollen at nodes, pseudobulbous at base. Leaves 7 – 11 x 1.1 – 1.6cm, linear-lanceolate to oblong-elliptic, acute to oblique. Inflorescence lateral, arising from leafless stem, 2 – 4 flowered. Flowers 4-4.5cm across; sepals and petals white suffused with pink, lip with large purple patch at base.

Flowering: April – May.

Habitat: Epiphytic on tree trunks at forest.

Distribution: India, Nepal, Bhutan and Burma.



Fig 27: Photo of *Dendrolirium ferrugineum*

17. *Dendrolirium ferrugineum* (Lindl.) A.N. Rao, Bull. Arunachal Forest Res. 26:103(2010).

Plants 17 – 22 cm tall. Pseudobulbs 7-9 x 0.5- 0.7 cm, cylindrical, branched. Leaves 2, 11-21 x 1.5-3 cm, narrowly oblong-elliptic. Inflorescence racemose, 6 to 11-flowered. Flowers 2-3 cm across, yellowish green to white with purple pink; lip white with red-purple spotting.

Flowering: May – September.

Habitat: Epiphyte in dense humid evergreen forest.

Distribution: N.E India and Bhutan.



Fig 28: Photo of *Dendrobium lasiopetalum*

18. *Dendrobium Lasiopetalum* (Willd.) S.C. Chen & J.J. Wood, Fl. China 25:351 (2009).

Plant 19 – 33 cm, with woody rhizome. Pseudobulbs 3.6-5 x 2.3-3.5 cm. Leaves 2-5, 7-14 x 2-3.5 cm, lanceolate-oblong. Inflorescence lateral, arising from pseudobulb base, subdensely 6-13 flowered, 7-12 cm long, softly white-tomentose. Flowers 1.8-2.2 cm across, green to yellow, lip with crimson-purple.

Flowering: March – April.

Habitat: Epiphyte in humid evergreen forest, mixed deciduous forest.

Distribution: Himalayas, China, Taiwan, Yunnan, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Thailand, Java and Sumatra.



Fig 29: Photo of *Dieniao phrydis*

19. *Dieniao phrydis* (J. Koenig) Seidenfaden, Contr. Orchid Fl. Thailand 13:18 (1997).2

Plant 10-30 cm tall. Pseudobulbs 3.5-8 x 1.5-2cm. Leaves 3-6, 6-18 x 7.5 cm, unequal, elliptic-lanceolate, acute or acuminate. Inflorescence single, apical, 15-37cm long, erect. Flowers reddish purple or yellow.

Flowering: May – June.

Habitat: Terrestrial in open humid evergreen forest.

Distribution: India, Nepal, Bhutan, Myanmar, Srilanka, Cambodia, Vietnam, Philippines and Australia



Fig 30: Photo of *Goodyera procera*

20. *Goodyera procera* (Ker Gawl.) Hook., Exot. Fl. 1: t. 39 (1823).

Plant 27-63 cm tall. Leaves 7- 14 x 3.7-6cm, linear-lanceolate. Inflorescence densely many-flowered, 7- 19cm long. Flowers small, subglobose uniformly white; pedicellate-ovary 0.4-0.6 cm long, twisted.

Flowering: April – June.

Habitat: Terrestrial at the bank of a small stream and in open herbaceous vegetation at the top of a waterfall in evergreen forest, also on rock in a stream.

Distribution: Sri Lanka, India, Nepal, Bhutan, Burma, China, Taiwan, Cambodia, Vietnam, Peninsular Malaysia, Sumatra, Java and Philippines.



Fig 31: Photo of *Liparis viridiflora*

21. *Liparis viridiflora* (Blume) Lindl., Gen. Sp. Orchid. 31(1830)

Plant 12-23cm. Pseudobulbs 1.8-3.5 x 2-3cm, obovate-oblong to oblanceolate, obtuse, acute or acuminate. Inflorescence densely many flowered, 6-11cm long. Flowers 0.4-0.54 cm across; sepals and petals white with a yellow lip.

Flowering: April – May.

Habitat: Epiphyte in humid evergreen forest and mixed deciduous forest.

Distribution: Srilanka, Nepal, India, Bhutan, Burma, China, Thailand, Vietnam, Malaysia, Sumatra, Java, Borneo, Philippines.



Fig 32: Photo of *Luisia trichorrhiza*

22. *Luisia trichorrhiza* (Hook.) Blume, Rumphia 4:50 (1849)

Plants 27-40 cm tall. Stems unbranched or branched, stout, sheathed. Leaves 9-18 cm long distichous, terete, narrowed at apex. Inflorescence axillary, 4-5 flowered, tubercled fascicles. Flowers 1.5-1.7 cm across; lip 3-lobed. Sepals pale green with faint purple lines, lip dark purple, the base outlined with green lines, the apical ridges green, column purple.

Flowering: March – June.

Habitat: Epiphyte in humid evergreen forest, growing on exposed trees.

Distribution in Assam: Distributed in all parts of Assam.

Distribution: India, Nepal, Bhutan, Bangladesh, Burma, China, Thailand, Myanmar.



Fig 33: Photo of *Nervila juliana*

23. *Nervila Juliana* (Roxb.) Schltr., Bot. Jahrb. Syst. 45:402 (1911).

Plant tuberous; Tubers globose, 1-2cm across, with 2-3 transverse bands. Leaves, 5-8 cm across, solitary, green, purple beneath, ovate-cordate, glabrous, 5-9 nerved. Inflorescence 8-10cm long, sheathing. Flowers 3-4 cm across, solitary, faintly scented; sepal and petals purplish green; lip white, mottled with pink.

Flowering: May – July.

Habitat: Terrestrial, growing on open and loose soil.

Distribution: Assam, Arunachal Pradesh, Bangladesh, Srilanka and Myanmar.



Fig 34: Photo of *Oberronia mucronata*

24. *Oberronia mucronata* (D. Don) Ormerod & Seidenf. in G. Seidenfaden, Contr. Orchid Fl. Thailand 13:20 (1997).

Plant 21-34cm, broadly ensiform, acute to mucronate, overlapping at base, fleshy, the lower ones smaller. Inflorescence decurved, densely many flowered, 15-24cm long, slender, ridged. Flowers 0.1-0.13 cm long, sub-verticillate, uniformly pale green to yellow.

Flowering: September – October.

Habitat: Epiphyte on tree trunk in evergreen tropical forest.

Distribution: India, Bangladesh, Myanmar, Bhutan, Indonesia, Laos, China, Malaysia, Myanmar, Nepal and Phillipines.



Fig 35: Photo of *Papilionanthe teres*

25. *Papilionanthe teres* (Roxb) Schltr., Orchids 9:78 (1915)

Plant 60-155cm long, some times more, branched, terete. Leaves 7-19 x 0.6-0.8cm, terete, linear. Inflorescence leaf opposed, laxly 3-5flowered, 10-15cm long. Flowers 5-8cm across; sepals and petals whitish pink, spur with a yellow mouth.

Flowering: April – May.

Habitat: Epiphyte in mixed deciduous forest, also on solitary roadside trees.

Distribution: India (NE), Nepal, Bhutan, Burma, China and Thailand.



Fig 36: Photo of *Pelatantheria insectifera*

26. *Pelatantheria insectifera* (Rchb. F.) Ridl., J. Linn. Soc., Bot. 32:373 (186).

Plants 17-60 cm tall. Stem erect, scandent, flexuous. Leaves 2-4 x 1.3-1.8 cm, oblong, amplexicaul, apex 2 lobed. Inflorescence 10-12 mm long, 2 to 5-flowered. Flowers 1.2-1.5 cm across; sepals and petals greenish yellow striped with red lip; lip purple.

Flowering: August – November.

Habitat: Epiphyte on tree trunk and branches.

Distribution: North West Himalaya, The Deccan Plateau and North East India, Nepal, Myanmar, Vietnam and China.



Fig 37: Photo of *Pholida articulate*

27. *Pholidota articulate* Lindl. Gen. Sp. Orchid. 38 (1833).

Plant 22-43cm long. Pseudobulbs 4-9 cm, slender to swollen. Leaves 2, 6.5-11 x 2-3.7cm, ovate to linear lanceolate, acute to acuminate. Inflorescence synanthous, 9-21 flowered, 4-7cm long, straight to zigzag. Flowers, 0.7-1cm across, resupinate, fragrant; sepals, petals and lip white-cream to greenish-pink.

Flowering: July – October.

Habitat: Epiphyte in open montane conifer woodland, in dense humid evergreen forest close to a waterfall, in open semideciduous dipterocarp forest, in riverine forest, and in humid evergreen montane forest.

Distribution: INDIA, Nepal, Bhutan, Burma, China (Yunnan), Thailand, Cambodia, Vietnam, Peninsular Malaysia, Sumatra, Java, Borneo, Sulawesi and Phillipines.



Fig 38:Photo of *Pholidota imbricata*

28. *Pholidota Imbricata* Lindl. in W.J. Hooker, Exot. Fl. 2: t. 138 (1825).

Plant 16-41 cm. Pseudobulbs 5-11 x 1.8-2cm, ovoid-conical. Leaf solitary, 19-38 x 4.7-8.5cm, arises from pseudobulb apex. Inflorescence synanthous, densely many flowered, 17-20cm long. Flowers 0.5-0.7cm across, non-resupinate, overlapping, white to cream-coloured, tinged yellowish.

Flowering: June – August.

Habitat: Epiphyte on tree trunk near a small stream in deciduouddipterocarp forest and humid evergreen forest, on a large ficus branch in riverine forest.

Distribution: India, Bhutan, Burma, China, Thailand, Cambodia, Vietnam, Peninsular Malaysia, Singapore, Sumatra, Java, Philippines.



Fig 39: Photo of *Pinalia bractescens*

29. *Pinalia bractescens* (Lindl.) Kuntze, Revis. Gen. P1.2: 679 (1891).

Plants 15-27 cm tall. Pseudobulbs clustered, cylindrical conical. Leaves 2-6, 8-14 x 1-2.5 cm, elliptic-oblong, petiolate, subacute. Inflorescence 2, racemose, laxly 5 to 8-flowered. Flowers 1.5-2 cm across, pale yellow to greenish; lip 3-lobed.

Flowering: April – July.

Habitat: Epiphyte in tropical forest.

Distribution: Assam, Bangladesh, Eastern Himalayas, Nepal, Andaman Islands, Myanmar, Thailand, Cambodia, Vietnam, Malaysia, Borneo, Sumatra, Sulawesi and Philippines.



Fig 40:Photo of *Rhynchosstylis retusa*

30. *Rhynchosstylis retusa* (L.) Blume, Bijdir.: 286 (1825)

Plant 8-31cm long, some times more. Leaves distichous, 8-14 leaves, 12-40 x 2-3.8cm, apex obliquely 2-lobed to retuse, deeply channeled. Inflorescence 20-40cm long, emerging from leaf sheaths, densely many-flowered. Flowers 1.7-2cm across; sepals and petals white with purple dots, spur white.

Flowering: May – June.

Habitat: Epiphyte in the evergreen forest and deciduous mixed forest.

Distribution: Sri Lanka, India, Nepal, Bhutan, Burma, China, Thailand, Cambodia, Vietnam, Peninsular Malaysia, Sumatra, Java and Philippines.



Fig 41: Photo of *Spiranthes Sinensis*

31. *Spiranthes Sinensis* (Persoon) Ames, Orch. 2:53 (1908).

Plants 12-30 cm tall; roots cylindric, hairy,.Leaves 3-5, 5-11 x 0.7-1cm, oblong-elliptic to linear-lanceolate, acute. Inflorescence densely many flowered, spirally arranged, 10-15 cm long. Flowers 0.5-0.6 cm long, spreading, white.

Flowering: February – April.

Habitat: Open and moist areas in forests, thickets, wet grasslands, meadows, Marsshes.

Distribution: India, Bhutan, China, Japan, Afganistan, Korea, Malaysia, Mangolia, Myanmar, Nepal, Philippines, Russia, Thailand, Vietnam and Australia.



Fig 42: Photo of *Sarcoglyphis arunachalensis*

32.*Sarcoglyphis arunachalensis* A.N.Rao.

Plant 25-45cm long, pendent, stem unbranched, sheathed. Leaves 5-16,6-18 x 1.3-3.5 cm, linear lanceolate, oblique, sessile, apex 2-lobed. Inflorescence racemose, drooping, leaf opposed, laxly many flowered. Flowers 1.2- 1.6 cm across, resupinate, yellow with brownish spots; lip sessile, spurred.

Flowering: April – May.

Habitat: Epiphyte in the wet evergreen tropical forest.

Distribution: North East India, Nepal, Bhutan, Myanmar, Thailand, Southeast Asia, the Himalayas, Southern China.



Fig 43: Photo of *Zeuxine nervosa*

33. *Zeuxine nervosa* (Wall. Ex. Lindl) Benth.exTrimen, J. Ceylon Branch Roy. Asiat.Soc.9:90 (1885).

Plants 18-30 cm tall, slender. Stem erect, glabrous. Leaves 4-7, 3-6 x 1.5-2.5cm, ovate to ovate-elliptic. Inflorescence 18-28cm, 4 to 9-flowered. Flowers 2-2.5 cm long; sepals reddish brown to yellowish green, petals white; lip white or pale yellow.

Flowering: February –April.

Habitat: Terrestrial or damp places in forests.

Distribution: Bangladesh, Bhutan, Cambodia, North East India, Japan, Nepal, Philippines, Sri Lanka, Thailand, Vietnam, China.

SUMMARY AND CONCLUSION

India is one of the quintessential repositories of genetic resources of orchids having great potentiality in the field of floriculture, pharmacy and tourism. In India, North Eastern States including Assam plays an important role for orchid diversity. In Assam, Poba Reserve Forest (Dhemaji district) is rich in flora and fauna due to substantial rainfall, hilly location and various rivers such as Siang, Dibang and Lohit. There are 33 orchids belonging to 24 genera enlisted in Poba reserve forest. But the orchid resources are lessening rapidly due to destruction, degradation and shrinkage of natural habitats and commercial exploitation. As part of the national plant conservation efforts, the present study propose an attempt to explore the orchid resources of Poba Reserve Forest.

Orchids are cynosure of all eyes around the globe because of its fascinating and eccentric natures of their reproductive parts. Apparently, the elegance of orchids (Flower) is double edged sword. It entices people to conserve them, but it also leads to the depletion of many species in India and other countries as some of the orchid lovers are involving in over exploitation of wild orchids in unscientific way in the name of conservation. Besides this, the native species faces threats in the form of adverse climatic conditions and habitat destruction. In India, north east regions such as Arunachal Pradesh, Sikkim, Assam favors the growth of orchid due to its environmental suitability. The Dhemaji district of Assam is blessed with a total of 9 Reserve forests (PRF) Is the only one thriving forest in the district whereas other eight forests are already degraded which were once good habitats of myriad of orchids. Hence, this project is focusing on Poba Reserve Forest for orchid documentation. PRF is rich in flora and fauna and ideal habitat for various types of orchid. The work reveals highest number of species (29) in Leku beat and (19) and (16) species in Tinimail and Sirung areas respectively. Leku is very close to the river with good numbers of host plants without disturbance may support the maximum orchids. Heavy soil erosion by Laliriver., depletion of forest area and host trees is reducing the number of orchid species. However, Sirung sector comprises lesser number of orchids than other sector due to availability of more percentage of grassland and wetland as compared to woodland.

In this studied area, *Dendrobium luitifolium*, *Dendrobium aphyllum*, *Rhynchostylis retusa*, *Papilionthaetes* are dominating orchid species on host tree. *Lagersotomia speciosa* which are more conspicuous in flowering session. *Corymboriks vertifolia* (Reinwardt) Blume is very rare where only one plant is noticed in core area of the forest.

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International Journal of Botany Studies

Indexed Journal, Refereed Journal, Peer Reviewed Journal

ISSN: 2455-541X, Impact Factor: RJIF 8

Publication Certificate

This certificate confirms that "**Manuranjan Chutia**" has published article titled "**Orchid resources of Poba Reserve Forest in Dhemaji district of Assam (India)**".

Details of Published Article as follow:

Volume : 7
Issue : 6
Year : 2022
Page Number : 45-51
Certificate No. : 7-5-25
Published Date : 10-06-2022



Nilashis

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