



Exact Field Status, Habitat and Local Distribution of Orchid Species of Darjeeling Himalaya of West Bengal, India

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Abstract

Darjeeling Himalaya is the northernmost part of West Bengal occupies a distinctive position in the floristic map of India since the region is estimated to contribute one-seventh of flora of the country and being a part of Eastern Himalaya, occupies a significant place in the map of biodiversity. The present paper includes a total of 321 species under 86 genera to the family Orchidaceae from Darjeeling Himalaya of West Bengal, India. Out of these, 2 species with 2 genera are saprophytic, 100 species with 34 genera are terrestrial and the rest 219 species with 52 genera are epiphytic. Current nomenclature with author citation, habitat, exact field status and local distribution within Darjeeling Himalaya has been provided.

Keywords: Orchid species; Exact field status; Habitat; Local distribution; Darjeeling Himalaya; India

Introduction

In India, the Eastern Himalaya is the centre of Orchids, followed by Western Himalaya and the South Indian hills. The Khasia hills in Assam, Arunachal Pradesh and the Sikkim and Darjeeling Himalayas are richest in Orchid flora in India. In India, Orchids form 10% of the world Orchid flora with Himalayas as their natural home [1]. North East India constitutes an Orchid hotspot and show maximum diversity in the Eastern Himalaya [2]. Of the total Orchid species found in India nearly 70% found in North East India [3]. It is estimated that over 22,500 species with 779 genera are distributed throughout the world [4]. There are 1331 species belonging to 186 genera [5]; 1300 species in 184 genera [6]; 1129 species in 184 genera [7] widely distributed throughout India and Darjeeling Himalaya of Eastern Himalaya is good

resources of Orchid species. Orchids belong to the family orchidaceae which is highly evolved among the monocotyledons and one of the highly specialized and largest families of flowering plants. They exhibit incredible diversity in colour, shape, size, structure and fragrance of flowers and four different life forms viz., subterranean, saprophytic, terrestrial and epiphytic and are pretty admired among the professional and amateur Orchid lovers of the world and are important both botanically and commercially [8]. They are widely distributed from equator to Arctic Circle and from lowland areas to almost upto snowline regions. They are growing in almost every environment of the earth's surface and on a variety of substratum ranging from growing on soil; perching on tree trunks; on rock surface; growing beneath the surface of the substratum and even on humus. The richest Orchid growing area is New Guinea

and other areas like Borneo, Columbia, Venezuela, Brazil, Java and India also possess rich diversity of Orchids.

Darjeeling Himalaya is a part of Singalila range of Eastern Himalaya and a part of Himalayan Hotspot and globally known as one of the mega biodiversity hotspot zones and is known to provide shelter to a large number of endemic, rare and interesting plant species [9]. Floristically, the Eastern Himalaya is one of the richest regions in the world that is literally considered as a botanist's paradise. The Eastern Himalayas is characterized by affluence in the flora and fauna and has attracted the botanists, zoologists and biologists round the world and prosperous storehouse of plant and animal wealth in varied ecological systems. Darjeeling Himalaya is lie between 27°31'05" and 26°27'10" North latitude and between 88°53'00" and 87°59'30" East longitude. The Northern boundary commences on the West at Phalut (3600m), the trijunction of the boundaries of Nepal, Sikkim and West Bengal. This boundary runs east from Phalut along the ridge descending to the Rammam River and proceeding East of that junction the boundary follows the Teesta upstream until its junction with the Rango Chu. From Phalut the Western boundary Nepal follows the Southward ridge until it joins the Mechi river upto the plains.

On the South lies the district of West Dinajpur intercepted by the Mahananda River and the rest other part of the district is bounded by Bangladesh and the Jalpaiguri district. There are three Sub-Divisions in Darjeeling district viz., Darjeeling, Kurseong (hills) and Siliguri (plain) and three blocks come under Kalimpong district viz., Kalimpong, Algarah and Gorubathan (till June 2017) (Figure 1). The altitudinal variations range from 120m at Siliguri to as high as 3660m at Sandakphu. The Himalayan and Sub-Himalayan region of Darjeeling Hills are well known for its floral diversity and extremely variable habitat and diverse micro-climatic conditions, inter-specific competition and available space have resulted into the development of mosaic of forest types and congenial to harbor different groups of Orchids.

General Features of the Study Region

Darjeeling Himalaya is one such hill station of the West Bengal, India having rich and interesting botanical regions in the whole of Indian sub-continent and has been a central point of attraction for large number of plant hunters, botanists and the researchers. The region is being estimated to represent comparatively a higher percentage of floras of the country, representing all the major groups of plant kingdom including a number of endemics. Migration of several species from adjoining countries and their naturalization is a unique feature in this hill region. The Vegetation of Darjeeling Himalaya are classified into five categories i. Plain and tropical vegetation, ii. Sub tropical vegetation, iii. Sub temperate vegetation, iv. Temperate vegetation and v. Sub alpine vegetation.

The rivers and streams that originate from the Ghoom and Lava saddle however, flow northwards. The complicated network of the spurs and ridges govern the direction of the flow along different directions. The most important natural lakes include Kalpokhari, Singalila National Park (3186m), small ponds at Sandakphu (3660m) that serve as the main sources of drinking water. In the Neora Valley region of the Kalimpong Sub-Division, a pair of natural lakes Jorepokhari are located at Neora Valley National Park, Rachel (3100m). Five types of rock formation are observed as we move from the South to the North in the district of Darjeeling are

- i. Siwalik formation,
- ii. Gondwana formation,
- iii. Buxa formation,
- iv. Daling formation and
- v. Darjeeling formation. Generally there are four different colours of soil found in Darjeeling Himalayan region viz. white clay (Kamero mato),



Figure 1: Location Map of Darjeeling Himalaya of West Bengal, India.

gritty red (Lishailo mato), brown clay (Chimte mato) and black (Kalo mato).

The variations of the parent materials exert a strong influence on soil characterization rather than the climate and vegetation. Maximum rainfall is brought about by the south-west monsoon, which picks up the moisture from across the Indian Ocean and the Bay of Bengal and showers in the form of torrential rains. The district experiences highest rainfall between June to September and lowest between November to February, and moderate from March to May. The temperature of the Darjeeling district varies from place to place depending upon the altitudes. In the hilly regions the temperature (day and night) remains higher during rainy season than in the summer and spring while the range of fluctuation of temperature between the day and night is higher in the plains of Siliguri and Terai region. Normally January is the coldest month and the daily temperature at Darjeeling, Sonada, Lava and Rachel often go down below 0°C.

The plains are warm or hot throughout the year except a brief period during winters. Depending upon the various changes in altitudinal ranges, from 120-3660m, the temperature also changes in great extremities from warmer to colder. This change in fact, produces a bracing and congenial climate in the upper hills. The climate (rainfall, temperature and humidity) varies from one part of the district to another corresponding to the altitudes, and configurations of different areas. Elevation wise the district is unique in having three distinct climatic zones, namely tropical, temperate and sub-alpine. The district has five distinct climatic seasons, namely

- i. Spring,
- ii. Summer,
- iii. Monsoon/Rainy,
- iv. Autumn and
- v. Winter.

The area receives rainfall throughout the year, except for a short spell during the winters. Present studies were thus planned with a view to assessing the availability of orchid species within Darjeeling, habitat and their exact field

status and appropriate strategies for its conservation in natural habitat.

Materials and Methods

The field survey work was started from June 2007 to March 2015 covering all the seasons of the year and parts of Darjeeling Himalaya of Eastern Himalaya including the forest areas, floral nurseries and farms covering all the altitudinal ranges as low as $\pm 120\text{m}$ Siliguri, Sevoke and Sukuna to as high as 3660m at Sandakphu and Phalut areas of study regions and interactions made with the local botanists, orchidologists, floral nurserymen, orchid collectors and necessary photographs and specimens of Orchid species were collected and documented (Figure 2).

Literature review

Orchids of Darjeeling Himalaya has already been partially revealed in the works of Hooker, J.D. 1888–1890 (Flora of British India, Vol. V and VI), King and Pantling (1898), (The Orchids of Sikkim Himalaya), Pradhan (1976), (Indian Orchids: Guide to Identification and Culture, Vol. I); Pradhan (1979), (Indian Orchids: Guide to Identification and Culture, Vol. II); Pearce & Cribb (2002), (Flora of Bhutan, The Orchids of Bhutan), and Pradhan and Pradhan (1997), (100 Beautiful Himalayan Orchids and How to Grow them); Bruhl (1926) (A guide to the Orchids of Sikkim); Hara, 1966 (The Flora of Eastern Himalaya, first report); Hara, 1966, 1971 (The Flora of Eastern Himalaya, second report) and Ohashi, 1975 (The Flora of Eastern Himalaya, third report); Mathew, 1966 (A Preliminary list of Plants from Kurseong); Das and Chanda, 1988 (Two New Taxa of the family Orchidaceae from Darjeeling Hills, West Bengal, India); Hedge, 1990 (Enumeration of Native Orchids of West Bengal vis-a-vis Darjeeling Hills); Kumar et al. 2013 (The Orchids of West Bengal, India – A Checklist); Yonzon et al. 2012a (Orchid species Diversity of Darjeeling Himalaya of India); Yonzon et al. 2013 (Present Availability Status, Diversity Resources and Distribution of Medicinal Orchid Species in Darjeeling Himalaya of West Bengal, India) and Yonzon, 2015 (Studies on the Orchid Flora of Darjeeling Himalaya).

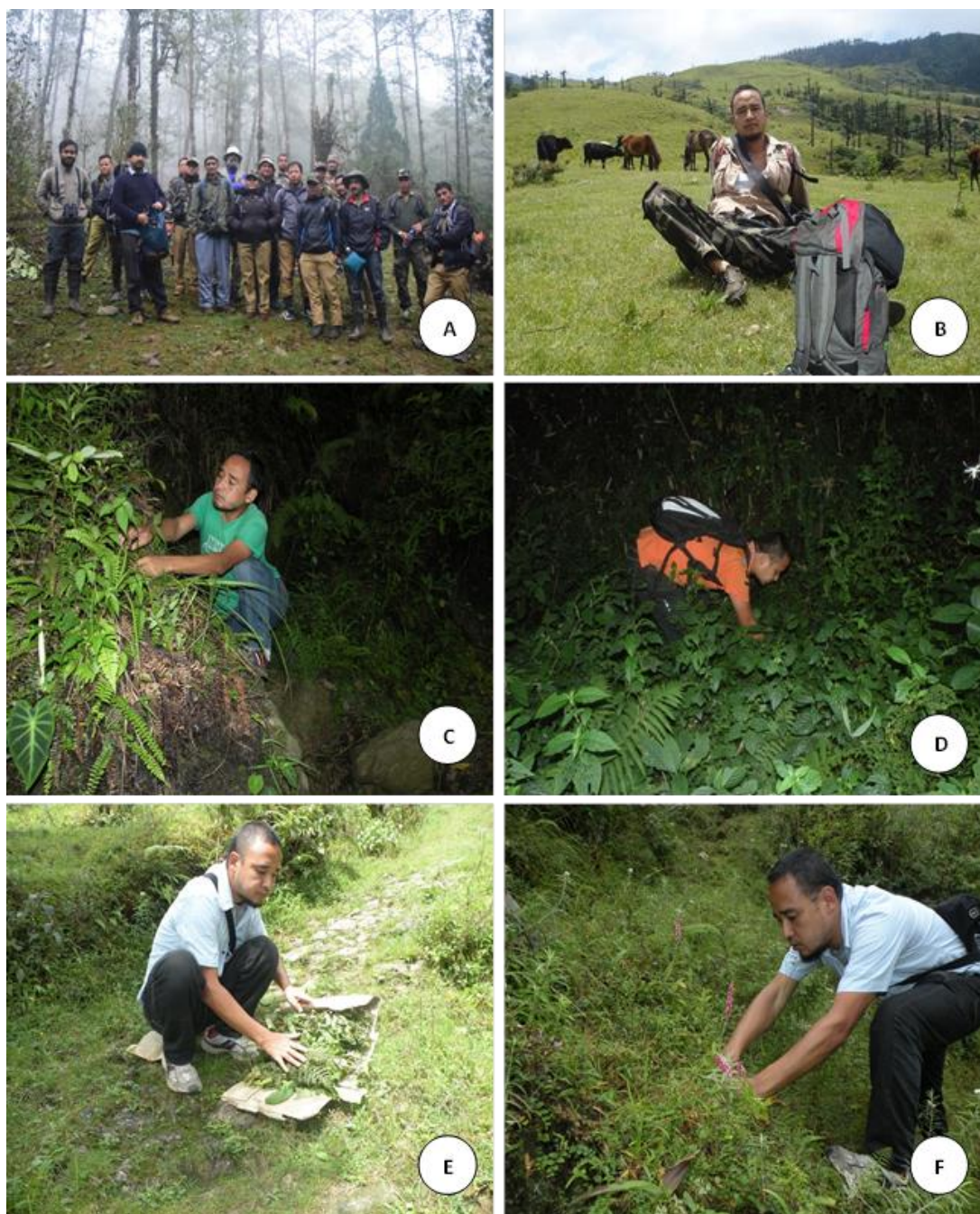


Figure 2: Author during different field tours.

A: Exploration of Orchid species at Neora Valley National Park, Kalimpong with staffs of Department of Wild Life, Government of West Bengal, India.

B: In between Sandakphu and Phalut (boarder areas of Nepal and India).

A. Exploration of Terrestrial Orchid species at Charkhol forest, Kalimpong Block I, West Bengal,

B. Collection of *Zeuxine nervosa* at 13th mile, Kalimpong.

C. Plant specimen's collection for the preparation of herbarium.

D. Habitat study of *Satyrium nepalense* var. *ciliatum* at Tonglu (boarder areas of Nepal and India).

The collected specimens were identified and authenticated with the help of available literatures like The Orchids of the Sikkim Himalaya; Indian Orchids Guide to Identification and Culture, vol. I and II [11]; Orchids of North – West Himalaya [12]; Orchid Flora of Arunachal Pradesh [5]; The Orchids of Bhutan [13]; Orchids of Sikkim and North East Himalaya [14]. The information gathered was noted in the field note book and transfer to computer. The specimens were collected and properly worked out both in the field and laboratory and pressed

in blotting paper following standard herbarium methods (15,16) and finally, one set of Voucher specimens were deposited in the Herbarium of Department of Botany, St. Joseph's College, North Point, Darjeeling, West Bengal and others at Taxonomy and Ethnobiology Research Laboratory, Cluny Women's College, Kalimpong, West Bengal, India. All the recorded Orchid species are enumerated below alphabetically with habitat, local distribution within Darjeeling Himalaya and some photographs (Table 1, Figures 3-12).

| Sl. No. | Botanical name of Orchid species | Habitat | Locality of their availability within Darjeeling Himalaya | Exact field status |
|---------|--|-------------|--|--------------------|
| 1 | <i>Acampe papillosa (Lindl.) Lindl.</i> | Epiphytic | Rambi, Relli, Sevoke, Najoke, Kalijhora forest, Teesta 27 th Mile, Malli-Kalimpong, Sepkhola, Balasan, Birik | Common |
| 2 | <i>Acampe rigida (Buch.-Ham. ex J.E. Sm.) P.F. Hunt</i> | Epiphytic | Rambi, Teesta river sides, Najoke, Fyangtar, Tarkhola forest, Pareng, Chuikhim, Dudhey, Geilkhola | Common |
| 3 | <i>Acanthephippium striatum Lindl.</i> | Terrestrial | Forest areas of Damsangari, Kumsi, Sittong, Chisang-Godok | Rare |
| 4 | <i>Acrochaene punctata Lindl.</i> | Epiphytic | Lava, Nokdara, Kafer, Todey forest, Rambi forest, Downhill-Kurseong, Baggonra, Chimney, Takdah, Jorebantalow | Sparse |
| 5 | <i>Aerides multiflorum Roxb.</i> | Epiphytic | Samalbung, Suruk-Samthar, Siliguri, Mungpoo, Seokbir khani, Sittong | Rare |
| 6 | <i>Aerides odoratum Lour.</i> | Epiphytic | Bagrakot, Sukuna, Malli-Kalimpong, Solok-Kalimpong, Mungpoo, Lesh khola | Rare |
| 7 | <i>Agrostophyllum brevipes King & Pantl.</i> | Epiphytic | 27 th Mile N.H.P.C. project sides, Algarah, Panbu, Seokbir khani, Sittong | Sparse |
| 8 | <i>Agrostophyllum callosum Rchb. f.</i> | Epiphytic | Lungshel, Lava, Nokdara, Algarah, Kafer, Rambi forest, Tungsong, Munsong, Takdah, Lopchu | Common |
| 9 | <i>Agrostophyllum myrianthum King & Pantl.</i> | Epiphytic | Kamsi, Rambi, Teesta, 27 th Mile, Solok-Kalimpong, Sepkhola, Pareng, Sendaybong | Sparse |
| 10 | <i>Agrostophyllum planicaule (Wall. ex Lindl.) Rchb. f.</i> | Epiphytic | Kalijhora, Soureni, Kumsi, Sittong, Nimbong, Pudung | Threatened |
| 11 | <i>Anoectochilus brevilabris Lindl.</i> | Terrestrial | Forest areas of Lava, Takdah, Rangayrung | Rare |
| 12 | <i>Anoectochilus grandiflorus Lindl.</i> | Terrestrial | Forest areas in damsang, algarah, echeey busty | Threatened |
| 13 | <i>Anthogonium gracile Lindl.</i> | Terrestrial | Dello hill, forest areas of Lava, Samthar, Kafer, Samalbung, Rimbick, Ramam, Manaybhanjang, Dhotray, Kalpokhari, Tonglu, Serikhola, Jalapahar, Rambi forest, Senchale, Chimney, Baggonra | Sparse |
| 14 | <i>Appendicula cornuta Bl.</i> | Epiphytic | Birik, Kambal, 27 th Mile, Kumai, Kalijhora, Sepkhola, Lesh khola | Rare |
| 15 | <i>Arundina graminifolia (D. Don) Hochr.</i> | Terrestrial | Dello Hill, Sindeybong, forest areas of Chuikhim, Relli, Kumsi, Teesta River Valley, Yangmakum, Algarah, Mungpoo, Ratay, Makum, Bagrakote, Gorubathan | Common |
| 16 | <i>Ascocentrum ampullaceum (Roxb.) Schltr.</i> | Epiphytic | Rambi, Kalijhora, Sevoke, Kumsi, 27 th Mile, Najoke, Mungpoo, Pankhabari forest, Pareng | Sparse |
| 17 | <i>Biermannia bimaculata (King & Pantl.) King & Pantl.</i> | Epiphytic | Bagrakot, near Teesta Bridge, Kalijhora, Sepkhola, Lesh khola | Rare |
| 18 | <i>Bulbophyllum affine Lindl.</i> | Epiphytic | Samalbung, Samthar, Mungpoo, Bong Busty, Nimbong, Pedong, Seokbir khani, Nagari, Godok | Common |

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|----|--|-----------|--|------------|
| 19 | <i>Bulbophyllum apodum</i> Hook. f. | Epiphytic | Teesta river sides, Malli-Kalimpong, Solok-Kalimpong | Threatened |
| 20 | <i>Bulbophyllum appendiculatum</i> (Rolfe) J.J. Sm. | Epiphytic | Najoke, Latpanjar, Lesh khola, Kumsi | Endangered |
| 21 | <i>Bulbophyllum bisetum</i> Lindl. | Epiphytic | Samalbong, Hill Top-Kalimpong, Kafer, Takdah, Tangta forest, Toroyok, Charkhol, Algarah, Tungsong | Common |
| 22 | <i>Bulbophyllum careyanum</i> (Hook.) Spreng. | Epiphytic | Suruk-Samthar, Latpanjar, Godok-Todey, Tungsong, Mirik | Sparse |
| 23 | <i>Bulbophyllum careyanum</i> (Hook.) Spreng. var. <i>sikkimense</i> S.Z. Lucksom | Epiphytic | Soreksa, Samalbong, Mangzing, Kuwapani-Lava, Echey Busty | Sparse |
| 24 | <i>Bulbophyllum cauliflorum</i> Hook. f. | Epiphytic | Algarah, Sukiapokhari, Rimbick, Kafer, Rambi forest | Sparse |
| 25 | <i>Bulbophyllum cauliflorum</i> Hook. f. var. <i>sikkimense</i> Pearce & Cribb | Epiphytic | Nokhdara, Lava, Algarah, Rambi forest, Munsong, Takdah, Sukiapokhari, Todey | Frequent |
| 26 | <i>Bulbophyllum crassipes</i> Hook. f. | Epiphytic | Suruk, Rambi, Mungpoo, Samalbong, Tindharay, Seokbir khani, Gorubathan, Dudhay, Khaprail, Lohapul, Matigara | Frequent |
| 27 | <i>Bulbophyllum eublepharum</i> Rchb. f. | Epiphytic | Sonada, Neora Valley, Senchale, Rambi forest | Rare |
| 28 | <i>Bulbophyllum gamblei</i> (Hook. f.) Hook. f. | Epiphytic | Takdah, Ramam forest, Algarah forest, Manaybhanjang, Baggora | Common |
| 29 | <i>Bulbophyllum gracilipes</i> King & Pantl. | Epiphytic | Rangit valley, Bagrakot, Nimbong, Tindherey, Sepkhola, Guling forest | Rare |
| 30 | <i>Bulbophyllum guttulatum</i> (Hook. f.) N.P. Balakr. | Epiphytic | Sittong, Mungpoo, Samalbong, Takdah, Godok | Rare |
| 31 | <i>Bulbophyllum helenae</i> (Kuntze) J.J. Sm. | Epiphytic | Mim forest, Todey-Tangta, Kafer, Dilaram, Sonada, | Common |
| 32 | <i>Bulbophyllum hirtum</i> (J.E. Sm.) Lindl. | Epiphytic | Samalbong, Chuikhim, Algarah, Bong Busty, Pedong, Mungpoo, Samthar, Mirik, Munsong, Echey Busty, Rungdung Valley | Frequent |
| 33 | <i>Bulbophyllum hymenanthum</i> Hook. f. | Epiphytic | Ramam, Gorkhey, Senchale, Rambi forest, Baggonra | Threatened |
| 34 | <i>Bulbophyllum khasyanum</i> Griff. | Epiphytic | Algarah, Todey, Rachel, Damsang forest, Lopchu, Takdah, Rambi forest, Rimbick, Sukiapokhari | Common |
| 35 | <i>Bulbophyllum leopardinum</i> (Wall.) Lindl. var. <i>leopardinum</i> | Epiphytic | Kafer, Rimbick, Ramam, Lava, Charkhol, Rambi forest, Algarah, Neora Valley, Palmajua | Sparse |
| 36 | <i>Bulbophyllum odoratissimum</i> (J.E. Sm.) Lindl. var. <i>odoratissimum</i> | Epiphytic | Algarah, Nokhdara, Tangta, Dowhill-Kurseong, Takdah, Patabong | Common |
| 37 | <i>Bulbophyllum odoratissimum</i> (J.E. Sm.) Lindl. var. <i>racemosum</i> N.P. Balakr. | Epiphytic | Forest areas in Damsang gari, Pedung-Kalimpong, Sendaybong, Lopchu | Sparse |
| 38 | <i>Bulbophyllum polyrhizum</i> Lindl. | Epiphytic | Balasan, Majitar, Mungpoo, Lesh khola, Rangit Valley | Threatened |
| 39 | <i>Bulbophyllum reptans</i> (Lindl.) Lindl. | Epiphytic | Hill Top-Kalimpong, Lava, Kurseong, Todey-Tangta forest | Sparse |
| 40 | <i>Bulbophyllum rigidum</i> King & Pantl. | Epiphytic | Todey, Lava, Takdah forest, Rambi forest, Algarah, Chimney-Kurseong | Rare |
| 41 | <i>Bulbophyllum rolfei</i> (Kuntze) Seidenf. | Epiphytic | Forest areas in Damsang gari, Neora Valley - Kalimpong, Rimbick | Threatened |
| 42 | <i>Bulbophyllum roxburghii</i> (Lindl.) Rchb. f. | Epiphytic | Pareng, Yangmakum, Solok-Kalimpong, Lesh khola | Endangered |

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|----|--|-------------|--|------------|
| 43 | <i>Bulbophyllum sarcophyllum</i> (King & Pantl.) J.J. Sm. | Epiphytic | Nim forest, Nimbong, Chisang-Godok, Guling, Jalapahar | Rare |
| 44 | <i>Bulbophyllum scabratum</i> Rchb. f. | Epiphytic | Lower Lungshel, Rachel, Takdah, Alгарah, Kafer forest, Lungshel | Common |
| 45 | <i>Bulbophyllum secundum</i> Hook. f. | Epiphytic | Lopchu forest - Darjeeling; Damsang gari-Kalimpong, Alгарah, Kuwapani-Lava, Rangayrung | Sparse |
| 46 | <i>Bulbophyllum stenobulbon</i> Par. & Rchb. f. | Epiphytic | Kalijhora, Guling forest, Gulma forest, Sepkhola, Rongo | Rare |
| 47 | <i>Bulbophyllum striatum</i> (Griff.) Rchb. f. | Epiphytic | Today-Tangta forest, Rambis forest, Senchale, Sukiapokhari, Jorebunglow, Ramam | Sparse |
| 48 | <i>Bulbophyllum thomsonii</i> Hook. f. | Epiphytic | Neora Valley, Sukiapokhari, Dabaipani-Takdah, Alгарah | Rare |
| 49 | <i>Bulbophyllum tortuosum</i> (Bl.) Lindl. | Epiphytic | Bagrakot, Kumai, Jholung, Kalijhora, Ryang | Threatened |
| 50 | <i>Bulbophyllum triste</i> Rchb. f. | Epiphytic | Samalbung-Sinjee, Godok forest, Charkhol, Lopchu forest, Mirik | Rare |
| 51 | <i>Bulbophyllum umbellatum</i> Lindl. | Epiphytic | Kurseong, Maneybhanjang, Dali-Darjeeling, Mangarjung, Rambis forest | Rare |
| 52 | <i>Bulbophyllum wallichii</i> (Lindl.) Rchb. f. | Epiphytic | Takdah, Neora Valley, Ramam, Damsang forest | Threatened |
| 53 | <i>Bulbophyllum yoksunense</i> J.J. Sm. | Epiphytic | Tangta, Rachel, Damsang forest, Rambis forest, Ramam, Rimbick | Common |
| 54 | <i>Calanthe biloba</i> Lindl. | Terrestrial | Forest areas of Charkhol, Kafer, Lava, Alгарah, Gumbadara, Lopchu, Senchale, Lloyd Botanical Garden - Darjeeling | Common |
| 55 | <i>Calanthe brevicornu</i> Lindl. | Terrestrial | Forest areas of Ramam, Gorkhey, Alгарah, Lava, Kafer, Lopchu, Ghoom-Darjeeling, Takdah | Common |
| 56 | <i>Calanthe puberula</i> Lindl. | Terrestrial | Forest areas of Mem, Sukiapokhari, Baggonra, Toroyok, Lava, Rachel, Ramam, Palmajua | Common |
| 57 | <i>Calanthe sylvatica</i> (Thour.) Lindl. | Terrestrial | Forest areas of Kafer, Alгарah, Takdah, Chimney-Kurseong | Rare |
| 58 | <i>Calanthe triplicata</i> (willem.) ames | T | Godok, sangsay bhalukhop, sonada, todey, mungpoo | Rare |
| 59 | <i>Calanthe trulliformis</i> King & Pantl. | T | Lakpatar-darjeeling, baggonra, chitrey, dhotrey, gumbadara, jari butti, neora valley | Rare |
| 60 | <i>Calanthe yuksomnensis</i> S.Z. Lucksom | Terrestrial | Forest areas of Mem, Sukiapokhari, Takdah, Rambis forest, Dhotrey | Rare |
| 61 | <i>Ceratostylis himalaica</i> Hook. f. | Epiphytic | Mirik, Todey forest, Downhill Kurseong, Sonada, Panbu forest, Majitar, Kumai, Nimbong, Sepkhola, Kambal | Threatened |
| 62 | <i>Ceratostylis subulata</i> Bl. | Epiphytic | | Rare |
| 63 | <i>Cheirostylis griffithii</i> Lindl. | Terrestrial | Munsong, Durpin Hill - Kalimpong, Labdah Mungpoo | Threatened |
| 64 | <i>Cheirostylis yunnanensis</i> Rolfe | Terrestrial | Kalimpong 8 th Mile, Mangaldara, Samalbung, Mangmaya | Rare |
| 65 | <i>Chiloschista parishii</i> Seidenf. | Epiphytic | Sukuna, Sepkhola, Najoke, Chisang-Godok, Samthar | Rare |
| 66 | <i>Chrysoglossum ornatum</i> Bl. | Terrestrial | Forest areas of Charkhol near Kafer, Manaybhanjang, Gumbadara, Takdah | Rare |
| 67 | <i>Cleisocentron pallens</i> (Cathcart ex Lindl.) Pearce & Cribb | Epiphytic | Kalijhora forest, Najoke, Solok-Kalimpong, Samsing | Threatened |
| 68 | <i>Cleisostoma aspersum</i> (Rchb. f.) Garay | Epiphytic | Panighatta, Samsing, Suruk, Yangmakum, Guling forest | Rare |
| 69 | <i>Cleisostoma filiforme</i> (Lindl.) | Epiphytic | Reli, Kalijhora, Najoke, Mungpoo, Chisang-Godok, | Common |

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|----|---|-------------|--|------------|
| | <i>Garay</i> | | Kumai, Latpanjar, Lesh khola | |
| 70 | <i>Cleisostoma racemiferum</i> (Lindl.) <i>Garay</i> | Epiphytic | Nock Dara, Lungsel, Labdah-Mungpoo, Sangsay Bhalukhop | Rare |
| 71 | <i>Cleisostoma subulatum</i> Bl. | Epiphytic | Kalijhora, Najoke, Nimbong, Solok-Kalimpong | Threatened |
| 72 | <i>Coelogyne barbata</i> Lindl. ex Griff. | Epiphytic | Rachela, Todey, Rimbick, Jalapahar, Manaybhanjang | Rare |
| 73 | <i>Coelogyne corymbosa</i> Lindl. | Epiphytic | Rimbick, Tiger Hill, Samanden, Baggonra, Senchale, Tonglu, Megma, Manaybhanjang, Ramam, Lava | Frequent |
| 74 | <i>Coelogyne cristata</i> Lindl. | Epiphytic | Lava forest, Kurseong, Mamring, Todey-Tangta, Rambi forest, Algarah, Damsang, Kafer, Manaybhanjang, Neora Valley, Lopchu, Birch Hill | Common |
| 75 | <i>Coelogyne fimbriata</i> Lindl. | Epiphytic | Relli-Pala, Kumsi forest, Mirik, Munsong, Nimbong, Sittong, Takdah, Mungpoo | Common |
| 76 | <i>Coelogyne flaccida</i> Lindl. | Epiphytic | Relli, Neol forest, Seokbir khani, Panbu forest, Toonang forest, Nimbong, Mungpoo | Common |
| 77 | <i>Coelogyne fuscescens</i> Lindl. var. <i>fuscescens</i> | Epiphytic | Sangsay Bhalukhop, Samalbong, Sinjee, Sittong, Todey forest, Nimbong, East Man Road | Common |
| 78 | <i>Coelogyne raizadae</i> S.K. Jain & S. Das | Epiphytic | Baggora, Rimbick, Toroyok, Rambi forest, Palmajua, Nockdara, Lava, Damsang forest | Sparse |
| 79 | <i>Coelogyne nitida</i> (Wall. ex D. Don) Lindl. | Epiphytic | Nock Dara, Lungshel, Todey-Tangta, Lopchu, Senchale, Rambi forest, Neora Valley, Serikhola, Samanden | Frequent |
| 80 | <i>Coelogyne occultata</i> Hook. f. | Epiphytic | Baggora, Rachela forest, Jalapahar, Samenden, Senchale | Rare |
| 81 | <i>Coelogyne ovalis</i> Lindl. | Epiphytic | Suruk, Samalbong, Lopchu, Nimbong, Solok-Kalimpong, Chisang-Godok | Sparse |
| 82 | <i>Coelogyne pantlingii</i> S.Z. Lucksom | Epiphytic | Sukiapokhari, Ramam, Senchale, Samanden, Serikhola | Rare |
| 83 | <i>Coelogyne pempahesiana</i> H.J. Chowdhery | Epiphytic | Kalimpong, Holumba Floral Nursery (Endemic to Kalimpong), Todey-Tangta forest | Rare |
| 84 | <i>Coelogyne prolifera</i> Lindl. | Epiphytic | Nokdara, Todey, Kumsi, Solok-Kalimpong, Kalimpong (near forest museum) | Common |
| 85 | <i>Coelogyne punctulata</i> Lindl. | Epiphytic | Damsang forest, Rimbick, Rambi forest, Nockdara, Lava | Rare |
| 86 | <i>Coelogyne stricta</i> (D. Don) Schltr. | Epiphytic | Sittong, Nimbong, Mungpoo, Seokbir khani, Samthar | Rare |
| 87 | <i>Coelogyne viscosa</i> Reichb. f. | Epiphytic | Godok-Todey, Kumsi, Mirik, Latpanjar, Samsing | Rare |
| 88 | <i>Cremastra appendiculata</i> (D. Don) Makino, var. <i>appendiculata</i> | Terrestrial | Lava, Seri Khola, Tangta, Manaybhanjang, Ramam, Gumbadara | Rare |
| 89 | <i>Crepidium acuminata</i> D. Don | Terrestrial | Dello Hill, forest areas of Lava, Takdah, Algarah, Lopchu, Birch Hill, Durpin, Tungsong | Sparse |
| 90 | <i>Crepidium khasiana</i> (Hook. f.) Kuntze | Terrestrial | Lava, Neora Valley, Megma, Tonglu, Gairibas, Tangta, Senchale | Sparse |
| 91 | <i>Crepidium josephianum</i> | Terrestrial | Kambal, latpanjar, mangaldara, mungpoo, neol forest, nimbong, samthar | |
| 92 | <i>Malaxis maximowicziana</i> (King & Pentl.) Tang & Wang | Terrestrial | Forest areas of Kumsi, Yangmakum, Relli-Pala, Tindharey, Munsong, Mungpoo, Chisang-Godok | Common |
| 93 | <i>Cryptochilus lutea</i> Lindl. | Epiphytic | Samalbong, Tangta, Rachela, Megma, Palmajua | Rare |
| 94 | <i>Cryptochilus sanguinea</i> Wall. | Epiphytic | Birch hill, Dhotray, Senchale | Threatened |
| 95 | <i>Cymbidium aloifolium</i> (L.) Sw. | Epiphytic | Relli, Suruk-Kalimpong 7 th Mile, Chitrey, Sangsay Bhalukhop, Seokbir khani, Tindharay, Durpin-Kalimpong, Pankhabari, Echey Busty | Sparse |

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| 96 | <i>Cymbidium bicolor</i> Lindl. | Epiphytic | Samalbung-Sinjee, Suruk, Dudhey, Relli-Pala, Chitrey-Teesta, Chuikhim, Bong Busty, Primtambusty | Frequent |
| 97 | <i>Cymbidium cochleare</i> Lindl. | Epiphytic | Charkhol, Lava, Takdah, Algarah, Dabaipani, Dali-Darjeeling, Rambiforest | Sparse |
| 98 | <i>Cymbidium dayanum</i> Reichb. f. | Epiphytic | Jaldhaka, Lathpanjar, Mungpoo, Nimbong, Chisang-Godok, Pareng | Rare |
| 99 | <i>Cymbidium devonianum</i> Lindl. ex Paxt. | Epiphytic | Lungshel, Toroyok, Lava, Damsang forest, Sukiapokhari, Toroyok, Tangta, Takdah, Rambiforest, Ramam, Baggonra | Frequent |
| 100 | <i>Cymbidium eburneum</i> Lindl. | Epiphytic | Mim forest, mungpoo, nagari | Threatened |
| 101 | <i>Cymbidium erythraeum</i> Lindl. | Epiphytic | Lava, Neora Valley, Algarah, Ramam, Tangta, Senchale | Rare |
| 102 | <i>Cymbidium hookerianum</i> Rchb. f. | Epiphytic | Jarebuttee (Neora Valley), Todey, Baggonra, Tangta forest | Threatened |
| 103 | <i>Cymbidium iridioides</i> D. Don | Epiphytic | Algarah, Lava, Neora Valley, Chimney-Kurseong, Baggora, Takdah, | Frequent |
| 104 | <i>Cymbidium lancifolium</i> Hook. | Terrestrial | Algarah, Majitar, Tindharey, Munsong | Rare |
| 105 | <i>Cymbidium longifolium</i> D. Don | Epiphytic | Lava, Gumbadara, Algarah, Kafer forest, Gumbadara, Takdah | Rare |
| 106 | <i>Cymbidium lowianum</i> (Rchb. f.) Rchb. f. | Epiphytic | Todey, Neora Valley, Lloyd Botanical Garden, N.R.C. for Orchid, I.C.A.R, Darjeeling | Planted |
| 107 | <i>Cymbidium mastersii</i> Griff. ex Lindl. | Epiphytic | Forest areas of Kafer, Neora Valley – Kalimpong, Rambiforest | Threatened |
| 108 | <i>Dendrobium aduncum</i> Lindl. ex Lindl. | Epiphytic | Panighatta, Kumsi, Guling forest, Pareng, Majitar | Rare |
| 109 | <i>Dendrobium amoenum</i> Wall. ex Lindl. | Epiphytic | Suruk, Samalbung, Jaldhaka, Lesh khola, Reyang | Sparse |
| 110 | <i>Dendrobium anceps</i> Sw. | Epiphytic | Sevoke, Kalijhora, Rambiforest, Pankhabari, Malli-Kalimpong | Sparse |
| 111 | <i>Dendrobium aphyllum</i> (Roxb.) C.E.C. Fischer | Epiphytic | Suruk, Samalbung, Birik, Kambal, Jholung, Kumsi, Tarkhola, Tindharey, Majitar, Mungpoo, Godok, Kambal, Samthar Busty | Frequent |
| 112 | <i>Dendrobium bicameratum</i> Lindl. | Epiphytic | Lungshel, Todey, Rambiforest, Lopchu | Rare |
| 113 | <i>Dendrobium candidum</i> Wall. ex Lindl. | Epiphytic | Ramam, Gorkhey, Rachel, Megma, Algarah | Sparse |
| 114 | <i>Dendrobium cathcartii</i> Hook. f. | Epiphytic | Ryang, Sevoke, Dudey, Jaldhaka, Sepkhola, Jholung, Tindharey, Kalijhora | Rare |
| 115 | <i>Dendrobium chrysanthum</i> Wall. ex Lindl. | Epiphytic | Algarah, Lava, Nokdara, Lungsel, Todey, Damsang forest, Lopchu, Takdah, Sonada, Rambiforest, Baggonra | Frequent |
| 116 | <i>Dendrobium chrysotoxum</i> Lindl. | Epiphytic | Holumba Floral Nursery – Kalimpong | Planted |
| 117 | <i>Dendrobium crepidatum</i> Lindl. & Paxt. | Epiphytic | Holumba Floral Nursery – Kalimpong | Planted |
| 118 | <i>Dendrobium cumulatum</i> Lindl. | Epiphytic | Holumba Floral Nursery – Kalimpong | Planted |
| 119 | <i>Dendrobium densiflorum</i> Lindl. | Epiphytic | Suruk, Najoke, Relli, Seokbir khani, Lopchu, Mungpoo, Pedong, East Man Road, Tungsong | Sparse |
| 120 | <i>Dendrobium nudans</i> D. Don | Epiphytic | Mangzing, Nimbong, Samalbung, Durpin-Kalimpong, Solok-Kalimpong, Rungdung Valley | Frequent |
| 121 | <i>Dendrobium devonianum</i> Paxt. | Epiphytic | Holumba Floral Nursery – Kalimpong | Planted |
| 122 | <i>Dendrobium eriiflorum</i> Griff. | Epiphytic | Mangzing, Nimbong, Nim, Lopchu forest, Godok, Nimbong, Pedong | Sparse |
| 123 | <i>Dendrobium falconeri</i> Hook. | Epiphytic | Holumba Floral Nursery – Kalimpong | Planted |

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| 124 | <i>Dendrobium farmeri</i> Paxt. | Epiphytic | Kalijhora, Sangsay Bhalukhop, Sepkhola, Birik, Kumsi | Threatened |
| 125 | <i>Dendrobium fimbriatum</i> Hook. | Epiphytic | Kumsi forest, Algarah – Kalimpong, Chisang-Godok, Bong Busty, Mungpoo, Pudung, Nimbong | Sparse |
| 126 | <i>Dendrobium fimbriatum</i> Hook. var. <i>oculatum</i> Hook. | Epiphytic | Suruk, Relli, Guling forest, Gorubathan forest, Pudung | Rare |
| 127 | <i>Dendrobium heterocarpum</i> Lindl. | Epiphytic | Todey, Neora Valley, Rambi forest, Rimbick, Chimney | Rare |
| 128 | <i>Dendrobium jenkinsii</i> Wall. ex Lindl. | Epiphytic | N.R.C. for Orchids, I.C.A.R., Darjeeling Campus, Holumba Floral Nursery – Kalimpong | Planted |
| 129 | <i>Dendrobium lindleyi</i> Steudel | Epiphytic | Holumba Floral Nursery – Kalimpong | Planted |
| 130 | <i>Dendrobium longicornu</i> Lindl. | Epiphytic | Lava, Lungshel, Gumbadara, Algarah, Senchale, Dhotrey, Mungpoo, Kafer | Sparse |
| 131 | <i>Dendrobium moschatum</i> (Buch.-Ham.) Sw. | Epiphytic | Relli, Toonang forest, Chisang-Godok, Samsing, Samalbong, Mungpoo, Latpanjar, Rangit Valley | Sparse |
| 132 | <i>Dendrobium nobile</i> Lindl. | Epiphytic | Relli, 8 th Mile Kalimpong, Rimbick forest, Sangsay Bhalukhop, Toonang forest, East Man Road, Echey | Sparse |
| 133 | <i>Dendrobium ochreatum</i> Lindl. | Epiphytic | Holumba Floral Nursery – Kalimpong | Planted |
| 134 | <i>Dendrobium pendulum</i> Roxb. | Epiphytic | Holumba Floral Nursery – Kalimpong | Planted |
| 135 | <i>Dendrobium porphyrochilum</i> Lindl. | Epiphytic | Manaybhanjang, Ramam forest, Tangta forest | Rare |
| 136 | <i>Dendrobium praecinctum</i> Rchb. f. | Epiphytic | Todey-Tangta forest | Endangered |
| 137 | <i>Dendrobium primulinum</i> Lindl. | Epiphytic | Holumba Floral Nursery – Kalimpong | Planted |
| 138 | <i>Dendrobium stuposum</i> Lindl. | Epiphytic | Takdah, Dabaipani, Rambi forest | Rare |
| 139 | <i>Dendrobium sulcatum</i> Lindl. | Epiphytic | Kumsi, Najoke forest, Solok-Kalimpong, Rangit Valley | Rare |
| 140 | <i>Dendrobium terminale</i> Par. & Rchb. f. | Epiphytic | Lesh khola, Jaldhaka, Nimbong | Endangered |
| 141 | <i>Dendrobium transparens</i> Wall. ex Lindl. | Epiphytic | Kalijhora, Bagrakot, Mem Tea Estate, Tindharay, Gorubathan, Teesta River Valley, Suruk | Sparse |
| 142 | <i>Didymoplexis pallens</i> Griff. | Saprophytic | Samalbong forest, Relli-Pala river sides, Samthar, Najoke | Rare |
| 143 | <i>Dienia ophrydis</i> (Konig) Ormerod | Terrestrial | Pudung, Dello Hill, forest areas of Kumsi, Nimbong, Lopchu, Mungpoo, Pedong, Bong Busty | Sparse |
| 144 | <i>Diplomeris hirsuta</i> (Lindl.) Lindl. | Terrestrial | Kalijhora forest, near Coronation Bridge road sides, Latpanjar | Sparse |
| 145 | <i>Epigenium amplum</i> (Lindl.) Summerh. | Epiphytic | Nim, Lungshel, Algarah, Sukiapokhari, Ramam, Charkhol, Lloyd Botanical Garden, Rambi forest | Frequent |
| 146 | <i>Epigenium rotundatum</i> (Lindl.) Summerh. | Epiphytic | Lava, Nokdara, Algarah, Todey, Toroyok, Dilaram, Happy Valley, Senchale, Rambi forest, Lopchu | Sparse |
| 147 | <i>Eria bambusifolia</i> Lindl. | Epiphytic | Sukiapokhari, Godok-Todey, Rambi forest, Tangta | Rare |
| 148 | <i>Eria biflora</i> Griff. | Epiphytic | Najok-Sepkhola, 27 th mile, N.H.P.C. project sides, Majitar | Rare |
| 149 | <i>Eria bractescens</i> Lindl. | Epiphytic | Algarah, Tinchulay, Kurseong, Pareng, Nimbong, Mungpoo, Dowhill, Lathpanjar | Rare |
| 150 | <i>Eria clausa</i> King & Pantl. | Epiphytic | Ramam, Neora Valley, Senchale | Rare |
| 151 | <i>Eria coronaria</i> (Lindl.) Reichb. f. | Epiphytic | Nimbong, Lungsel, Nokdara, Ramam, Lava, Dilaram, Damsang forest, Todey, Chimney-Kurseong | Common |
| 152 | <i>Eria lasiopetala</i> (Willd.) Ormerod | Epiphytic | Rambi, Relli, Sevoke, Kalijhora, Bagrakot, Seokbir khani, Jholung, Chitrey-Teesta, Lohapul, Solok-Kalimpong, Toonang | Common |

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| 153 | <i>Eria paniculata</i> Lindl. | Epiphytic | Lungshel, Algarah, Todey, Pedong, Charkhol, Relli | Rare |
| 154 | <i>Eria pannea</i> Lindl. | Epiphytic | Kumsi forest, Kambal, Chisang-Godok | Rare |
| 155 | <i>Eria pumila</i> Lindl. | Epiphytic | Kalijhora, Sevoke, Jaldhaka, Sepkhola, Mungpong | Rare |
| 156 | <i>Eria spicata</i> (D. Don) Handel-Mazzetti | Epiphytic | Lungshel, Kumsi, Nokdara forest, Lava, Rambi forest, Todey, Algarah, Dilaram, Gumbadara, | Frequent |
| 157 | <i>Eria vittata</i> Lindl. | Epiphytic | Todey-Tangta, Neora Valley, Senchale, Tiger Hill | Rare |
| 158 | <i>Esmeralda cathcartii</i> (Lindl.) Rchb. f. | Epiphytic | Neora Valley, Sukiapokhari, Lava, Chimney | Rare |
| 159 | <i>Esmeralda clarkei</i> Rchb. f. | Epiphytic | Lava, Todey, Chimney-Kurseong, Algarah, Damsang forest | Rare |
| 160 | <i>Eulophia spectabilis</i> (Dennstedt) Suresh | Terrestrial | Forest areas of Kumsi, Sittong, Chisang-Godok | Sparse |
| 161 | <i>Flickengeria fugax</i> Rchb. f. | Epiphytic | Relli, Kalijhora, Jholung, Sevoke, Jaldhaka, Sepkhola, Mungpong | Sparse |
| 162 | <i>Galeola lindleyana</i> (Hook. f. & Thomson) Rchb. f. | Saprophytic | Rangayrung, dhotrey, neora valley | Threatened |
| 163 | <i>Gastrochilus acutifolius</i> (Lindl.) Kuntze | Epiphytic | Kafer, Baggora forest, Rambi forest | Rare |
| 164 | <i>Gastrochilus calceolaris</i> (Buch.-Ham. ex J.E. Sm.) D. Don | Epiphytic | Ramam, Toroyok, Lava, Rambi forest, Mamring, Takdah | Rare |
| 165 | <i>Gastrochilus dasypogon</i> (J.E. Sm.) Kuntze | Epiphytic | Sittong, Panbu forest, Pareng | Rare |
| 166 | <i>Gastrochilus distichus</i> (Lindl.) Kuntze | Epiphytic | Alubari (Neora Valley), Todey, Rimbick | Rare |
| 167 | <i>Gastrochilus inconspicuus</i> (Hook. f.) Kuntze | Epiphytic | Seokbir Khani, Relli forest, Jholung, Sepkhola, Sukuna | Rare |
| 168 | <i>Gastrochilus sonamii</i> S.Z. Lucksom | Epiphytic | Ramam forest, Neora Valley, Manaybhanjang | Sparse |
| 169 | <i>Geodorum densiflorum</i> (Lamk.) Schltr. | Terrestrial | Relli river sides, Pudung-Sendaybong, Sittong, Bong Busty | Rare |
| 170 | <i>Geodorum densiflorum</i> (Lamk.) Schltr. var. <i>kalimpongense</i> Rajendra Yonzone, D. Lama, R. B. Bhujel & Samuel Rai | Terrestrial | Relli river sides below Bong Busty – Kalimpong, Seokbir khani, Lathpanjar, Peshok | Rare |
| 171 | <i>Goodyera foliosa</i> (Lindl.) Benth. ex C.B. Clarke | Terrestrial | Forest areas of Todey, Neora Valley, Lava | Sparse |
| 172 | <i>Goodyera fusca</i> (Lindl.) Hook. f. | Terrestrial | Forest areas of Lava, Neora Valley, Damsang forest | Rare |
| 173 | <i>Goodyera hemsleyana</i> King & Pantl. | Terrestrial | Forest areas of Senchale, Neora Valley, Palmajua, Sukiapokhari | Rare |
| 174 | <i>Goodyera hispida</i> Lindl. | Terrestrial | Forest areas of Takdah, Lava, Pedong, Kalijhora | Rare |
| 175 | <i>Goodyera procera</i> (Ker Gawler) Hook. | Terrestrial | Forest areas of Samalbong, Suruk-Samthar, Pudung, Panbu, Kumsi, Sittong, Seokbir khani, Mangmaya | Frequent |
| 176 | <i>Goodyera schlechtendaliana</i> Rchb. f. | Terrestrial | Forest areas of Lava, Kafer, Manaybhanjang, Takdah, Rimbick | Sparse |
| 177 | <i>Goodyera vittata</i> (Lindl.) Benth. ex Hook. f. | Terrestrial | Forest areas of Todey-Tangta, Gairibas forest, Jaunbari, Dhotrey | Rare |
| 178 | <i>Gymnadenia orchidis</i> Lindl. var. <i>orchidis</i> | Terrestrial | Sandakphu, Phalut forest | Threatened |
| 179 | <i>Habenaria arietina</i> Hook. f. | Terrestrial | Manaybhanjang, Lava, Megma, Siri khola, Sandakphu, Megma, Palmajua, Ramam, Rimbick, Chitrey, Senchale, Kalpokhari, Tumbling | Sparse |
| 180 | <i>Habenaria dentata</i> (Sw.) Schltr. | Terrestrial | Forest areas of Algarah, Soureni, Mungpoo, | Rare |

| | | | Samalbung, Kalimpong 15 th Mile | |
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| 181 | <i>Habenaria furcifera</i> Lindl. | Terrestrial | Forest areas of Kumsi, Relli-Pala river sides, Sittong, Pudung-Sendaybung | Rare |
| 182 | <i>Habenaria pectinata</i> (J.E. Sm.) D. Don | Terrestrial | Dhotray, Manaybhanjang, Ramam, Pattabong, Damsang forest | Rare |
| 183 | <i>Habenaria stenopetala</i> Lindl. | Terrestrial | Forest areas of Lava, Manaybhanjang, Lopchu, Takdah, Algarah, Dabaipani, Sureil | Sparse |
| 184 | <i>Herminium jaffreyanum</i> King & Pantl. | Terrestrial | Manaybhanjang, Tonglu, Meghma (border area of Neapl and India), Gairibas, Jaunbari | Sparse |
| 185 | <i>Herminium lanceum</i> (Thunb. ex Sw.) Vuijk | Terrestrial | Dello Hill, forest areas of Algarah, Dilaram-Kurseong, Ramam, Kalpokhari, Rachel, Lava, Palmajua, Rimbick, Manaybhanjang | Sparse |
| 186 | <i>Herminium mackinnonii</i> Duthie | Terrestrial | Rachel forest, Dello Hill, Lava, Durpin Kalimpong, Manaybhanjang, Tonglu -Darjeeling | Rare |
| 187 | <i>Herminium macrophyllum</i> (D. Don) Dandy | Terrestrial | Kalpokhari, Bikhaybhanjang, Sandakphu (border area of Nepal and India), Phalut | Sparse |
| 188 | <i>Herminium quinquelobum</i> King & Pantl. | Terrestrial | Manaybhanjang, Tonglu forest, Senchale, Dhotrey, Rambi forest | Rare |
| 189 | <i>Herpysma longicaulis</i> Lindl. | Terrestrial | Forest areas of Charkhol, Kafer, Rangayrung | Sparse |
| 190 | <i>Liparis bootanensis</i> Griff. | Epiphytic | Todey, Lava, Rimbick, Toroyok, Jalapahar, Pattabong, Takdah | Sparse |
| 191 | <i>Liparis cathcartii</i> Hook. f. | Terrestrial | Forest areas of Jarebutti Neora Valley, Senchale, Tonglu, Kalpokhari | Rare |
| 192 | <i>Liparis cespitosa</i> (Lamk.) Lindl. | Epiphytic & Lithophytic | Lava, Rimbick, Todey, Manaybhanjang, Nockdara, Rimbick, Sonada | Sparse |
| 193 | <i>Liparis cordifolia</i> Hook. f. | Terrestrial | Forest areas of Takdah, Algarah forest, Damsang gari | Threatened |
| 194 | <i>Liparis deflexa</i> Hook. f. | Terrestrial | Algarah, Kalimpong 15 th Mile, Tungsong | Rare |
| 195 | <i>Liparis dongchenii</i> S.Z. Lucksom | Terrestrial | Forest areas of Kumsi, Panbu, Nimbong, Pudung-Sendaybung, Sittong | Rare |
| 196 | <i>Liparis duthiei</i> Hook. f. | Terrestrial | Najoke, Relli river sides, Kumsi | Threatened |
| 197 | <i>Liparis gamblei</i> Hook. f. | Epiphytic | Meghma, Jalapahar, Budhabaray forest, Senchale | Rare |
| 198 | <i>Liparis nervosa</i> (Thunb.) Lindl. var. <i>nervosa</i> | Terrestrial | Dello Hill, Algarah, Lava, Takdah, Rambi forest, Manaybhanjang | Sparse |
| 199 | <i>Liparis odorata</i> (Willd.) Lindl. | Terrestrial | Dello Hill (Kalimpong), Kafer, Durpin-Kalimpong, Tunsong, Sonada-Pacheng, Munsong, Todey | Frequent |
| 200 | <i>Liparis plantaginea</i> Lindl. | Terrestrial | Forest areas of Lava, Neora Valley, Takdah, Todey, Tangta, Sukiapokhari, Manaybhanjang, Jalapahar, Dhotrey | Common |
| 201 | <i>Liparis platyrachis</i> Hook. f. | Epiphytic | Todey-Algarah, Durpin-Kalimpong, Kafer, Takdah, Lopchu | Rare |
| 202 | <i>Liparis resupinata</i> Ridl. | Epiphytic | Lava forest, Algarah, Tangta forest, Dabaipani, Chimney-Kurseong, Kafer, Pattabong, Rambi forest | Frequent |
| 203 | <i>Liparis resupinata</i> var. <i>ridleyi</i> King & Pantl. | Epiphytic | Todey-Tangta, Algarah forest, Damsang forest, Lava, Rangayrung, Charkhol | Sparse |
| 204 | <i>Liparis somai</i> Hayata | Epiphytic | Samalbung, Sangsay Bhalukhop, Algarah forest, Rangayrung, Lungshel | Rare |
| 205 | <i>Liparis viridiflora</i> (Bl.) Lindl. | Epiphytic | Todey, Neora Valley, Ramam forest, Chimney-Kurseong, Sonada | Sparse |
| 206 | <i>Luisia brachystachys</i> (Lindl.) Bl. | Epiphytic | Mungpoo, Mamring, Samthar | Threatened |
| 207 | <i>Luisia filiformis</i> Hook. f. | Epiphytic | Relli, Kalijhora, Tindharay, Nimbong, Sittong, | Rare |

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| 208 | <i>Luisia trichorrhiza</i> (Hook.) Bl. | Epiphytic | Kumsi, Mungpoo, Samalbong, Nimbong, Seokbir khani, Pudung-Sendaybong | Sparse |
| 209 | <i>Luisia zeylanica</i> Lindl. | Epiphytic | Kalijhora, Kumsi, Tindharey, Kumai forest, Jholung, Sepkhola, Single, Rangit Valley | Sparse |
| 210 | <i>Malaxis muscifera</i> (Lindl.) Kuntze | Terrestrial | Forest areas of Gairebas, Gurasay, Kalpokhari, Birch Hill, Dhotray, Rachel, Bikhaybhanjang, Lamaydhura, Senchale, Tonglu, Sandakphu, Phalut, Jaunbari, Tiger Hill | Frequent |
| 211 | <i>Malaxis purpurea</i> (Lindl.) Kuntze | Terrestrial | Kumsi, Relli-Pala, Seokbir khani, Tindharey, Pudung-Sendaybong, Rongo, Mangaldara | Sparse |
| 212 | <i>Micropera obtusa</i> (Lindl.) Tang & Wang | Epiphytic | Kalijhora, Sevoke, Relli, 27 th mile, Kumai, Sepkhola, Pareng, Single, Samsing, Gasoke | Sparse |
| 213 | <i>Monomeria barbata</i> Lindl. | Epiphytic | Lava, Neora Valley, Tangta forest, Senchale, Gumbadara | Rare |
| 214 | <i>Nephelaphyllum cordifolium</i> Lindl. | Terrestrial | Forest areas of Damsang, Munsong, Neol forest | Threatened |
| 215 | <i>Nephelaphyllum pulchrum</i> Bl. var. <i>sikkimensis</i> Hook. f. | Terrestrial | Relli river sides, Sepkhola, Tarkhola | Threatened |
| 216 | <i>Nervilia aragoana</i> Gaud. | Terrestrial | Kalijhora, Teesta 27 th Mile, Sittong, Geilkhola, Lathpanjar | Sparse |
| 217 | <i>Nervilia gammieana</i> (Hook. f.) Schltr. | Terrestrial | Kumsi forest, Suruk, Godok, Rungdung Valley, Relli-Pala | Rare |
| 218 | <i>Nervilia macroglossa</i> (Hook. f.) Schltr. | Terrestrial | Samalbong Busty, Nimbong, Seokbir Khani, Godok, Chamung, Kumsi, Mungpoo, Pedong | Sparse |
| 219 | <i>Nervilia plicata</i> (Andr.) Schltr. | Terrestrial | Teesta river valley, Pareng, Rongo, Kalijhora | Sparse |
| 220 | <i>Oberonia acaulis</i> Griff. | Epiphytic | Todey, Tangta, Godok, Toroyok, Rangayrung, Paiyung, Algarah, Lopchu forest, Munsong, Mungpoo, Takdah | Sparse |
| 221 | <i>Oberonia angustifolia</i> Lindl. | Epiphytic | Sittong, Dello hill, Munsong, Lopchu | Rare |
| 222 | <i>Oberonia caulescens</i> Lindl. | Epiphytic | Forest areas in Damsang, Lava – Kalimpong, Sureil, Dhotrey | Rare |
| 223 | <i>Oberonia emarginata</i> King & Pantl. | Epiphytic | Dello Hill, Todey, Durpin Hill -Kalimpong, Tungsong, Algarah, Takdah | Sparse |
| 224 | <i>Oberonia ensiformis</i> (J.E. Sm.) Lindl. | Epiphytic | Teesta 27 th Mile N.H.P.C. Project side, Najoke forest – Kalimpong, Guling forest, Balasan | Rare |
| 225 | <i>Oberonia falcata</i> King & Pantl. | Epiphytic | Forest areas in Kafer, Lava – Kalimpong, Algarah, Dabaipani-Takdah | Rare |
| 226 | <i>Oberobia mucronata</i> (D. Don) Ormerod et Seidenf. | Epiphytic | Kumai, Relli, Kalijhora, Sittong, Pareng, Rongo, Samsing, Seokbir Khani Suruk, Geilkhola, Rangit Valley, Gasoke | Common |
| 227 | <i>Oberonia pachyrachis</i> Rchb. f. ex Hook. f. | Epiphytic | Kalijhora, Relli, Yangmakum forest, Najoke, Nimbong, Sittong, Ryang, | Common |
| 228 | <i>Oberonia recurva</i> Lindl. | Epiphytic | Kalijhora, Relli, Sevoke, Gorubathan, Pareng, Pankhabari forest, Panbu, Chuikhim | Sparse |
| 229 | <i>Odontochilus crispus</i> (Lindl.) Hook. f. | Terrestrial | Forest areas in Latpanjar, Baggonra, Munsong, Mungpoo | Rare |
| 230 | <i>Odontochilus elwesii</i> C.B. Clarke ex Hook. f. | Terrestrial | Forest areas in Lava, Samanden, Tangta forest, Sepi, Gumbadara | Rare |
| 231 | <i>Odontochilus grandiflorus</i> (Lindl.) Benth. & Hook. f. | Terrestrial | Forest areas in Damsang, Algarah, Echey Busty | Threatened |
| 232 | <i>Odontochilus lanceolatus</i> (Lindl.) Bl. | Terrestrial | Forest areas of Lava, Ramam, Chimney, Sonada | Rare |

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| 233 | <i>Ornithochilus difformis</i> (Wall. ex Lindl.) Schltr. | Epiphytic | Nokhdara, Lava, Kumsi, Lopchu forest, Ghoomtey Tea Garden, Chimney-Kurseong | Sparse |
| 234 | <i>Otochilus albus</i> Lindl. | Epiphytic & Lithophytic | Lava, Algarah, Pedung, Durpin Hill -Kalimpong, Tungsong, Rambi forest, Rangayrung, Samalbong, Takdah, Dello Hill, Chimney-Kurseong | Frequent |
| 235 | <i>Otochilus fuscus</i> Lindl. | Epiphytic | Dello hill, Suruk, Samthar, Seokbir khani, Nimbong, Samalbong, Sendaybong, Todey, Godok, East Man Road-Kalimpong | Frequent |
| 236 | <i>Otochilus lancilabius</i> Seidenf. | Epiphytic | Algarah, Nokhdara, Tangta forest, Toroyok, Jalapahar, Lopchu forest, Kafer, Downhill-Kurseong, Nockhdara, Baggonra | Frequent |
| 237 | <i>Panisea demissa</i> (D. Don) Pfitz. | Epiphytic | Lopchu, Lava, Rachel forest, Tangta forest, Chimney-Kurseong, Baggonra, Pattabong, Chitrey, Gorkhey | Sparse |
| 238 | <i>Panisea uniflora</i> (Lindl.) Lindl. | Epiphytic | Khalijhora, Pankhabari forest, Nimbong, Sittong, Guling forest | Rare |
| 239 | <i>Paphiopedilum fairrieianum</i> (Lindl.) Stein | Terrestrial | N.R.C. for Orchids, I.C.A.R., Darjeeling Campus, Pine View and Holumba floral Nursery – Kalimpong | Planted |
| 240 | <i>Paphiopedilum hirsutissimum</i> (Lindl. ex Hook.) Stein | Terrestrial | Holumba Nursery (Kalimpong); N.R.C. Orchids, I.C.A.R., Darjeeling, Lloyd Botanical Garden, N.R.C. Orchids, I.C.A.R., Darjeeling | Planted |
| 241 | <i>Paphiopedilum insigne</i> (Wall. ex Lindl.) Pfitz. | Terrestrial | Lloyd Botanical Garden, Holumba Nursery (Kalimpong); National Research Centre for Orchids, Darjeeling Campus, Darjeeling, N.R.C. Orchids, I.C.A.R., Darjeeling | Planted |
| 242 | <i>Paphiopedilum venustum</i> (Wall.) Pfitz. | Terrestrial | Lloyd Botanical Garden, Pine View and Holumba Floral Nursery – Kalimpong; N.R.C. Orchids, I.C.A.R., Darjeeling | Planted |
| 243 | <i>Paphiopedilum villosum</i> (Lindl.) Pfitz. | Terrestrial | Lloyd Botanical Garden, Pine View floral Nursery –Kalimpong; N.R.C. for Orchids, I.C.A.R., Darjeeling Campus | Planted |
| 244 | <i>Pelatantheria insectifera</i> (Rchb. f.) Ridl. | Epiphytic | Sevoke forest, Golma forest, Gorubathan | Endangered |
| 245 | <i>Papilionanthe teres</i> (Roxb.) Schltr. | Epiphytic | Sevoke, N.B.U. Campus, Najoke, Kumai, Matigara, Khapraail, Gulma forest, Sukuna, Balasan, Sepkhola | Sparse |
| 246 | <i>Peristylus affinis</i> (D. Don) Seidenf. | Terrestrial | Panbu, Algarah forest, Seokbir khani | Rare |
| 247 | <i>Peristylus constrictus</i> (Lindl.) Lindl. | Terrestrial | Relli river sides, Kumsi forest, Mangmaya, Latpanjar, Birik, Nimbong, Ambeok | Sparse |
| 248 | <i>Peristylus fallax</i> Lindl. | Terrestrial | Kalpokhari, Sandakphu forest, Jaunbari, Bikhaybhanjang | Threatened |
| 249 | <i>Peristylus goodyeroides</i> (D. Don) Lindl. | Terrestrial | Forest areas of Kumsi, Suruk, Mangmaya, Samthar, Samalbong | Sparse |
| 250 | <i>Peristylus nematocaulon</i> (Hook. f.) M.L. Banerji & P. Pradhan | Terrestrial | Lamaydhura, Tonglu forest, Megma, Ramam, Sandakphu | Rare |
| 251 | <i>Peristylus parishii</i> Rchb. f. | Terrestrial | Samalbong, Pareng, Yangmakum, Sittong, Gasoke | Rare |
| 252 | <i>Peristylus superanthus</i> J.J. Wood | Terrestrial | Megma, Tonglu forest, Gairibas forest | Sparse |
| 253 | <i>Peristylus tipuliferus</i> (Par. & Rchb. f.) Mukerjee | Terrestrial | Dello Hill, Megma, Tonglu, Neora Valley, Dowhill-Kurseong, Tangta forest, Sonada, Lava, Jorebungalow | Sparse |
| 254 | <i>Phaius flavus</i> (Bl.) Lindl. | Terrestrial | Kalimpong 8 th Mile, Kumsi, Mungpoo, Paiyung | Rare |
| 255 | <i>Phaius mishmensis</i> (Lindl. & Paxt.) Rchb. f. | Terrestrial | Forest areas of Takdah, Manaybhanjang, Kafer, Dilaram | Rare |

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| 256 | <i>Phaius tankervilleae</i> (Banks ex l'Herit.) Bl. | Terrestrial | Samalbung, Sinjee, Primtam, Pudung, Pedong, Kurseong, Mirik, Seokbir khani, Sittong, Algarah, Lolay-Pala, Peshok, Mangmaya | Planted |
| 257 | <i>Phalaenopsis deliciosa</i> Rchb. f. subsp. <i>hookeriana</i> (Gruss & Rollke) E.A. Christenson | Epiphytic | Guling, Jaldhaka, Lesh khola, Kumai, Sittong, Sepkhola, Pareng, Ryang, Samsing, Chuikhim | Sparse |
| 258 | <i>Phalaenopsis lobbii</i> (Rchb. f.) H.R. Sweet | Epiphytic | Tarkhola, Sukuna, Teesta 27 th Mile, N.H.P.C. project sides, Sepkhola, Gasoke | Rare |
| 259 | <i>Phalaenopsis mannii</i> Rchb. f. | Epiphytic | Sukuna forest, Najoke, Sittong, Neol forest | Sparse |
| 260 | <i>Phalaenopsis taenialis</i> (Lindl.) E.A. Christenson et Pradhan | Epiphytic | Kumsi, Ramam forest, Mungpoo, Budhabaray, Rimbick, Baggonra | Rare |
| 261 | <i>Pholidota articulata</i> Lindl. | Epiphytic | Samalbung, Kalijhora, Seokbir khani, Rungdung Valley, Godok, Ryang, Guling forest, Toonang, Nimbong, East Man Road-Kalimpong | Frequent |
| 262 | <i>Pholidota articulata</i> var. <i>griffithii</i> (Hook. f.) King & Pantl. | Epiphytic | Samalbung, Yangmakum, Mangzing, Guling forest, Pedong, Nim forest, Pempling | Sparse |
| 263 | <i>Pholidota imbricata</i> Hook. | Epiphytic | Samalbung-Relli, Kalijhora, Teesta 27 th Mile N.H.P.C. project sides, Lohapul, Bong Busty, Mamgmaya | Frequent |
| 264 | <i>Pholidota pallida</i> Lindl. | Epiphytic | Samalbung, Relli, Kalijhora, Lathpanjar, Sittong, Rungdung Valley, Sinjee | Sparse |
| 265 | <i>Pholidota recurva</i> Lindl. | Epiphytic | Todey, Tangta forest, Baggonra, Badamtam, Echey busty | Rare |
| 266 | <i>Pholidota rubra</i> Lindl. | Epiphytic | Algarah, Lava forest, Mungpoo, Ghoomtey Tea Garden, Charkhol | Sparse |
| 267 | <i>Phreatia elegans</i> Lindl. | Epiphytic | Lava, Algarah, Gumbadara, Toroyok, Damsang Gari, Tungsong, | Rare |
| 268 | <i>Pinalia acervata</i> Lindl. | Epiphytic | Kalijhora, Relli, Nokdara, Jholung, Sepkhola, Mungpong | Rare |
| 269 | <i>Eria amica</i> Rchb. f. | Epiphytic | Kumsi, Panbu, Algarah, Samthar, Pareng, Nimbong, Pareng, Rongo, Sittong, Latpanjar, Gasoke | Sparse |
| 270 | <i>Pinalia excavata</i> Lindl. | Epiphytic | Todey-Tangta forest, Rambis forest, Sukiapokhari, Charkhol, Chimney, Dhotray, Gumbadara, Pokhraybong | Frequent |
| 271 | <i>Pinalia graminifolia</i> Lindl. | Epiphytic | Toroyok, Serikhola, Tangta forest, Ramam, Birch Hill | Rare |
| 272 | <i>Pinalia stricta</i> Lindl. | Epiphytic | Suruk, Samalbung, Chuikhim, Chisang-Godok, Latpanjar, Guling forest | Sparse |
| 273 | <i>Platanthera bakeriana</i> (King & Pantl.) Kranz. | Terrestrial | Megma, Tumbling, Phalut forest, Bikhaybhanjang, Gairibas, Neora Valley | Rare |
| 274 | <i>Platanthera biermanniana</i> (King & Pantl.) Kranz. | Terrestrial | Chetrey, Tonglu, Kalpokhari (border area of Nepal and India); Neora Valley - Kalimpong, Jaunbari | Sparse |
| 275 | <i>Platanthera clavigera</i> Lindl. | Terrestrial | Manaybhanjang, Neora Valley, Rimbick, Toroyok, Rambis forest, Dhotrey | Sparse |
| 276 | <i>Platanthera cumminsiana</i> (King & Pantl.) Renz. | Terrestrial | Megma, Tonglu, Sandakphu, Phalut, Kalpokhari forest, Gairibas, Jaunbari, Bikhaybhanjang | Frequent |
| 277 | <i>Platanthera edgeworthii</i> (Hook. f. ex Collett) R.K. Gupta | Terrestrial | Megma, Samanden forest, Manaybhanjang, Gairibas, Gorkhey | Rare |
| 278 | <i>Platanthera exelliana</i> Soo | Terrestrial | Sandakphu, Phalut (border area of Nepal and India), Bikhaybhanjang, | Sparse |
| 279 | <i>Platanthera leptocaulon</i> (Hook. f.) | Terrestrial | Manaybhanjang, Dello Hill, Kalpokhari forest, | Frequent |

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| | <i>Soo</i> | | Bikhaybhanjang, Chitrey, Sandakphu, Megma | |
| 280 | <i>Platanthera stenantha</i> (Hook. f.) <i>Soo</i> | Terrestrial | Forest areas of Kaiyakatay, Gairibas, Kalpokhari, Jalapahar | Rare |
| 281 | <i>Pleione hookeriana</i> (Lindl.) B.S. <i>Williams</i> | Epiphytic | Ghorkhey, Sandakphu, Kalpokhari, Samanden, Gorkhey, Tonglu, Manaybhanjang, Phalut, Ramam | Sparse |
| 282 | <i>Pleione humilis</i> (J.E. Sm.) D. Don | Epiphytic | Chetray, Neora Valley, Kalpokhari forest, Bikhaybhanjang, Gairibas, Tangta, Tonglu, Gorkhey, Serikhola | Sparse |
| 283 | <i>Pleione maculata</i> (Lindl.) Lindl. | Epiphytic | Pankhasari forest, Mirik, Mungpoo, Rangayrung, Munsong | Threatened |
| 284 | <i>Pleione praecox</i> (J.E. Sm.) D. Don | Epiphytic | Charkhol, Lava, Todey, Sukiapokhari, Baggonra, Toroyok, Tangta, Manaybhanjang, Happy Valley-Darjeeling, Dali-Darjeeling, Jalapahar, Rambi forest, Senchale | Sparse |
| 285 | <i>Podochilus cultratus</i> Lindl. | Epiphytic | Dudhay, Panbu, Seokbir khani, Solok, Yangmakum | Rare |
| 286 | <i>Podochilus khasianus</i> Hook. f. | Epiphytic | Kafer, Godok-Todey, Toroyok, Takdah, Sonada-Pacheng | Rare |
| 287 | <i>Pomatocalpa armigerum</i> (King & Pantl.) Tang & Wang | Epiphytic | Sukuna, Kalijhora, Teesta 27 th Mile N.H.P.C. project sides, Kumai, Solok-Kalimpong, Gasoke | Threatened |
| 288 | <i>Porpax elwesii</i> (Rchb. f.) Rolfe | Epiphytic | Suruk Busty, Latpanjar, Nimbong, Pudung, Sittong, Toonang | Rare |
| 289 | <i>Pteroceras teres</i> (Bl.) Holtt. | Epiphytic | Guling, Panbu forest, Dudhey-Soureni, Suruk, Gasoke | Rare |
| 290 | <i>Rhomboda lanceolata</i> (Lindl.) <i>Ormerod</i> | Terrestrial | Forest areas of Damsangari, Kafer, Chimney, Lava | Threatened |
| 291 | <i>Rhynchostylis retusa</i> (L.) Bl. | Epiphytic | Samalbong, Sevoke, Bagrakot, Jaldhaka, Sittong, Mungpong, Kumsi, Latpanjar, Balasan, Sinjee, Gasoke | Frequent |
| 292 | <i>Saccolabiopsis pusilla</i> (Lindl.) <i>Seidenf. & Garay</i> | Epiphytic | Sevoke, Gorubathan, Kumai, Jaldhaka, Sepkhola, Kambal | Rare |
| 293 | <i>Satyrium nepalense</i> D. Don, var. <i>ciliatum</i> (Lindl.) Hook. f. | Terrestrial | Sandakphu, Kalpokhari, Tonglu, Megma, Lamaydhura, Tumbling, Gairibas, Gorkhey, Bikhaybhanjang, Phalut forest, Jaunbari | Frequent |
| 294 | <i>Satyrium nepalense</i> D. Don, var. <i>nepalense</i> | Terrestrial | Maneybhanjang, Lava, Algarah, Chitrey, Dhotrey, Rambi forest, Senchale, Serikhola | Rare |
| 295 | <i>Smitinandia micrantha</i> (Lindl.) <i>Holtt.</i> | Epiphytic | Sukuna, Sevoke, Panighatta, Tindharay, Sittong, Mungpong, Mungpoo, Lesh khola, Nimbong | Sparse |
| 296 | <i>Spirentes sinensis</i> (Pers.) Ames | Terrestrial | Forest areas of Tumbling, Megma, Manaybhanjang, Dello Hill, Lava, Rachel, Chimney-Kurseong, Ramam, Dali-Darjeeling, Takdah, Rimbick, Chitrey, Jalapahar, Tungsong, Dhotrey | Sparse |
| 297 | <i>Stereochilus hirtus</i> Lindl. | Epiphytic | Serikhola, Dhotray, Rambi forest, Tangta, Nockdara | Rare |
| 298 | <i>Sunipia bicolor</i> (Lindl.) Lindl. | Epiphytic | Rimbick, Lava, Algarah, Takdah, Downhill-Kurseong, Todey, Rambi forest, Chimney-Kurseong, Kafer | Frequent |
| 299 | <i>Sunipia cirrhata</i> Lindl. | Epiphytic | Damsang Gari, Algarah, Lopchu, Takdah, Kuwapani-Lava, Rambi forest | Sparse |
| 300 | <i>Sunipia intermedia</i> (King & Pantl.) P.F. Hunt | Epiphytic | Lungshel, Dow Hill-Kurseong, Kafer, Lava, Chimney-Kurseong | Rare |
| 301 | <i>Sunipia scariosa</i> Lindl. | Epiphytic | Lakpatar, Todey, Takdah, Munsong, Dabaipani | Rare |
| 302 | <i>Tainia megalanthum</i> Tang & | Terrestrial | Forest areas of Kalijhora, Kumai, Jholung, | Threatened |

| | Wang | | Lathpanjar | |
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| 303 | <i>Tainia minor</i> Hook. f. | Terrestrial | Forest areas of Mem, Sukiapokhari, Lava, Algarah, Toroyok, Rambi forest, Baggonra | Common |
| 304 | <i>Tainia penangiana</i> (Hook. f.) Summerh. | Terrestrial | Forest areas of Samalbong, Sinjee, Algarah, Lopchu, Seokbir khani, Nimbong | Sparse |
| 305 | <i>Thelasis longifolia</i> Hook. f. | Epiphytic | Najoke forest, Lathpanjar forest, Suruk, Pudung, Panbu, Nimbong | Rare |
| 306 | <i>Thelasis pygmaea</i> (Griff.) Bl. | Epiphytic | Neol forest, Kumsi, Yangmakum, Najoke, Seokbir khani, Kumsi, Sittong, Mangmaya, Gasoke | Common |
| 307 | <i>Thunia alba</i> (Lindl.) Rchb. f. var. <i>alba</i> | Epiphytic | Suruk, Pudung, Sendaybong, Sittong, Dello Hill | Rare |
| 308 | <i>Thunia alba</i> (Lindl.) Rchb. f. var. <i>bracteata</i> (Roxb.) Pearce & Cribb. | Epiphytic | Hill Top, Dello Hill, Pudung, Kumsi, Seokbir khani, Sinjee | Common |
| 309 | <i>Tipularia josephi</i> Rchb. f. ex Lindl. | Terrestrial | Forest areas of Gairibas, Kalpokhari, Tonglu, Dhotrey | Rare |
| 310 | <i>Trichotosia dasyphylla</i> (Par. & Rchb. f.) Kranz. | Epiphytic | Samalbong, Nimbong, Sittong, Kumsi, Suruk, Mungpoo, Paiyung-Kalimpong | Rare |
| 311 | <i>Trichotosia pulvinata</i> (Lindl.) Kranz. | Epiphytic | Chibo busty-Kalimpong, Majitar, Suruk, Guling forest, Gasoke | Rare |
| 312 | <i>Tylostylis discolor</i> (Lindl.) Hook. f. | Epiphytic | Relli, Sevoke, Kalijhora, Kumsi, Nimbong, Toonang forest, Mungpoo, Solok, Samthar, Samsing, Relli-Pala, Pareng | Sparse |
| 313 | <i>Uncifera obtusifolia</i> Lindl. | Epiphytic | Sonadah, Lava, Sukiapokhari, Rambi forest, Kafer, Tungsong | Rare |
| 314 | <i>Vanda alpina</i> Lindl. | Epiphytic | Algarah forest, Munsong | Threatened |
| 315 | <i>Vanda cristata</i> Lindl. | Epiphytic | Lungshel, Samalbong, Sinjee, Mangmaya, Seokbir khani, Mirik, Sendaybong, Mangmaya, Munsong, Todey, Mungpoo, Sittong, Sendaybong | Common |
| 316 | <i>Vanda pumila</i> Hook. f. | Epiphytic | National Research Centre for Orchids, I.C.A.R., Darjeeling Campus | Planted |
| 317 | <i>Vandopsis undulata</i> (Lindl.) J.J. Sm. | Epiphytic | Nokdara, Rimbick, Lava, Baggonra, Toroyok, Rambi forest, Senchale | Sparse |
| 318 | <i>Zeuxine affinis</i> (Lindl.) Benth. ex Hook. f. | Terrestrial | Forest areas in Kafer, Lava-Kalimpong, Nockdara | Threatened |
| 319 | <i>Zeuxine flava</i> (Wall. ex Lindl.) Trimen | Terrestrial | Forest areas of Lava, Takdah, Lopchu | Endangered |
| 320 | <i>Zeuxine goodyeroides</i> Lindl. | Terrestrial | Forest areas of Neora Valley, Takdah, Rambi forest, Baggonra | Rare |
| 321 | <i>Zeuxine reflexa</i> King & Pantl. | Terrestrial | Forest area in Algarah, Damsang Gari – Kalimpong, Mungpoo | Threatened |

Table 1: List of Orchid species of Darjeeling Himalaya with habitat, Local distribution within Darjeeling Himalaya and Exact field status.

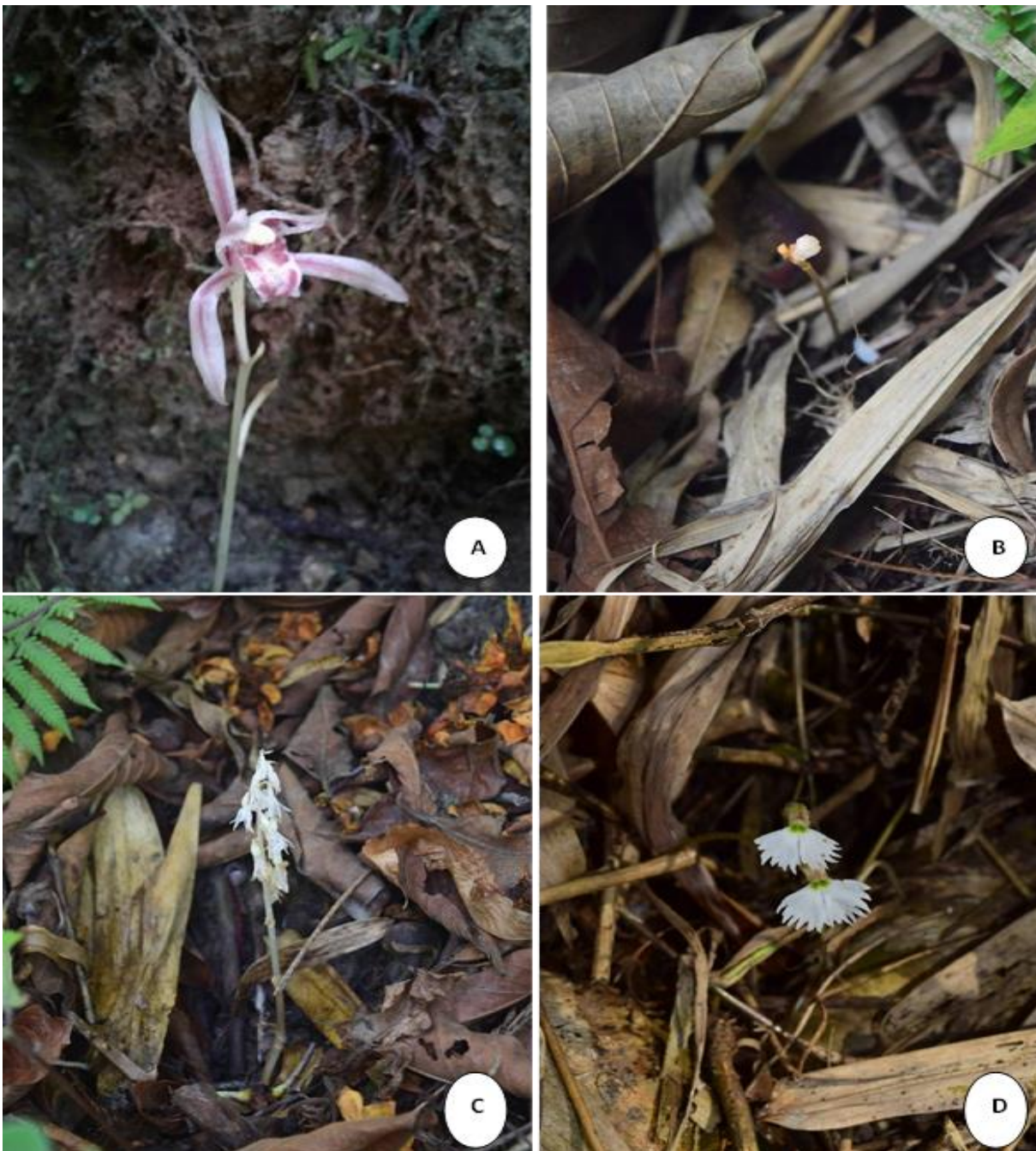


Figure 3: A: *Cymbidium macrorhizon* Lind l., B: *Didymoplexis pallens* Griff, C: *Epipogium roseum* (D. Don) Lindl, D: *Cherostrylis yunnanensis* Rolfe.

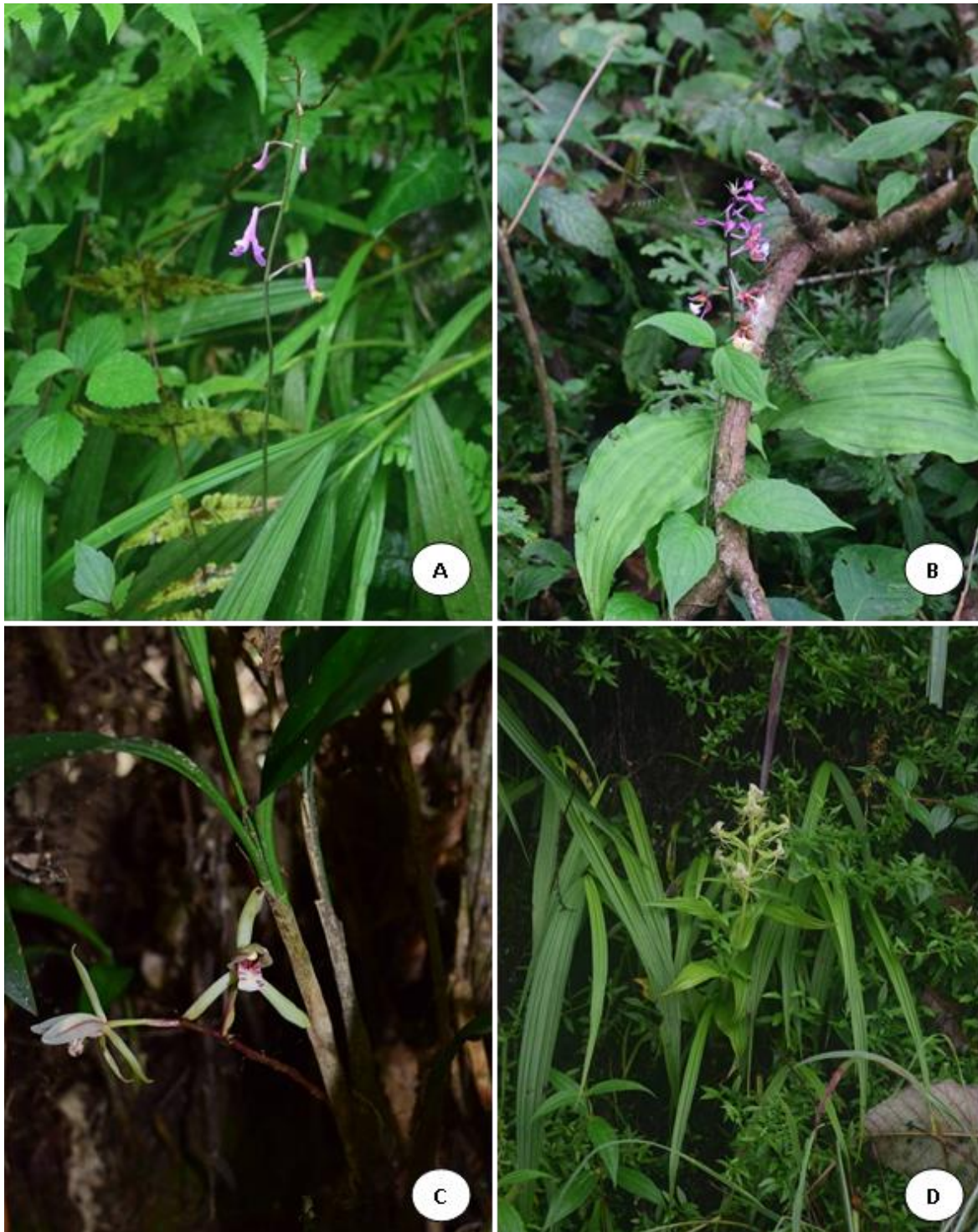


Figure 4: A: *Anthogonium gracile* Lindl., B: *Calanthe biloba* Lindl., C: *Cymbidium lancifolium* Hook., D: *Habenaria arietina* Hook. f.



Figure 5: A: *Habenaria furcifera* Lindl., B: *Herpysma longicaulis* Lindl., C: *Gymnadenia orchidis* Lindl., D: *Malaxis acuminata* D. Don.

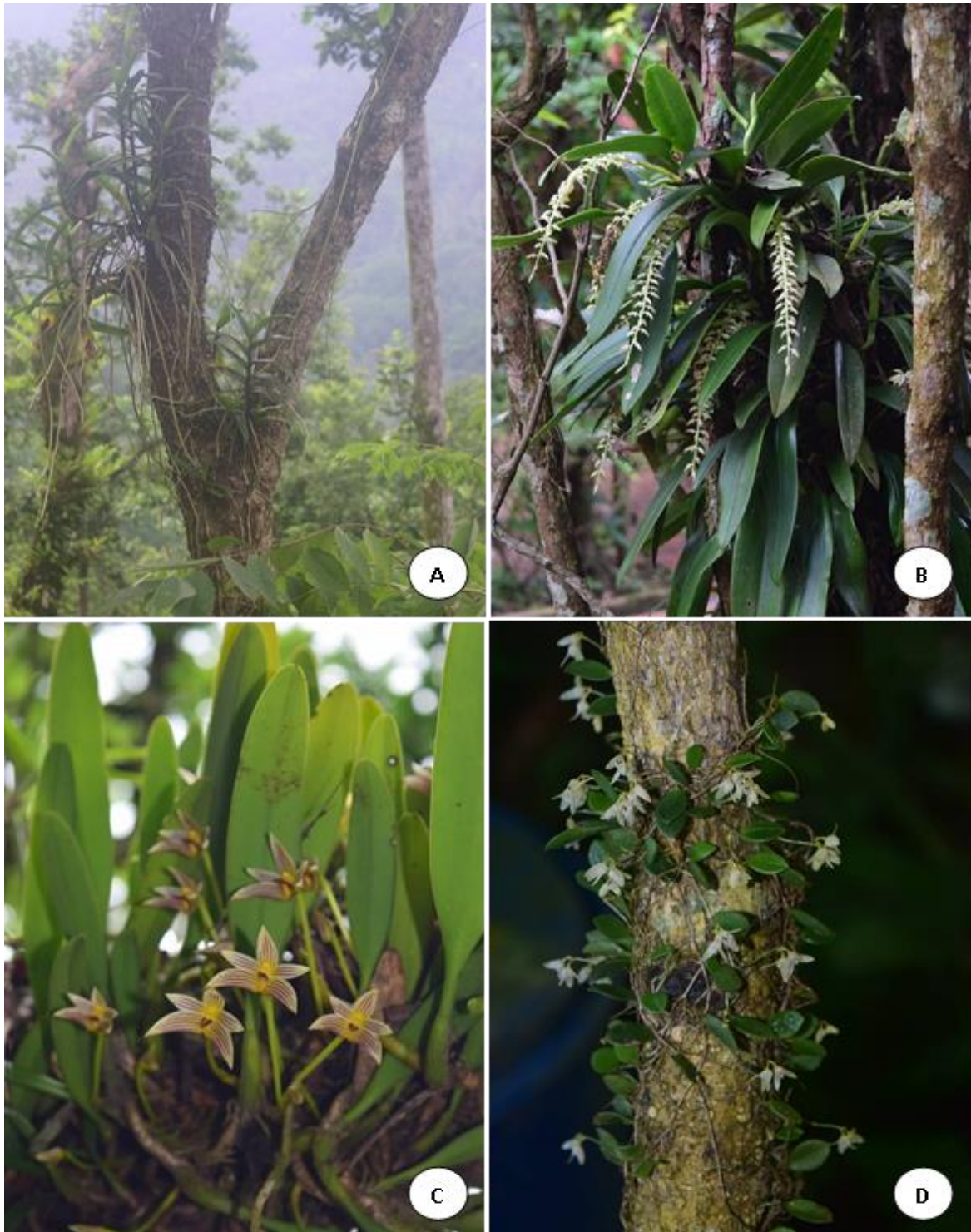


Figure 6: A: *Acampe papillosa* (Lindl.) Lindl., B: *Bulbophyllum apodum* Hook. f., C: *Bulbophyllum affine* Lindl., D: *Bulbophyllum hymenanthum* Hook. f.

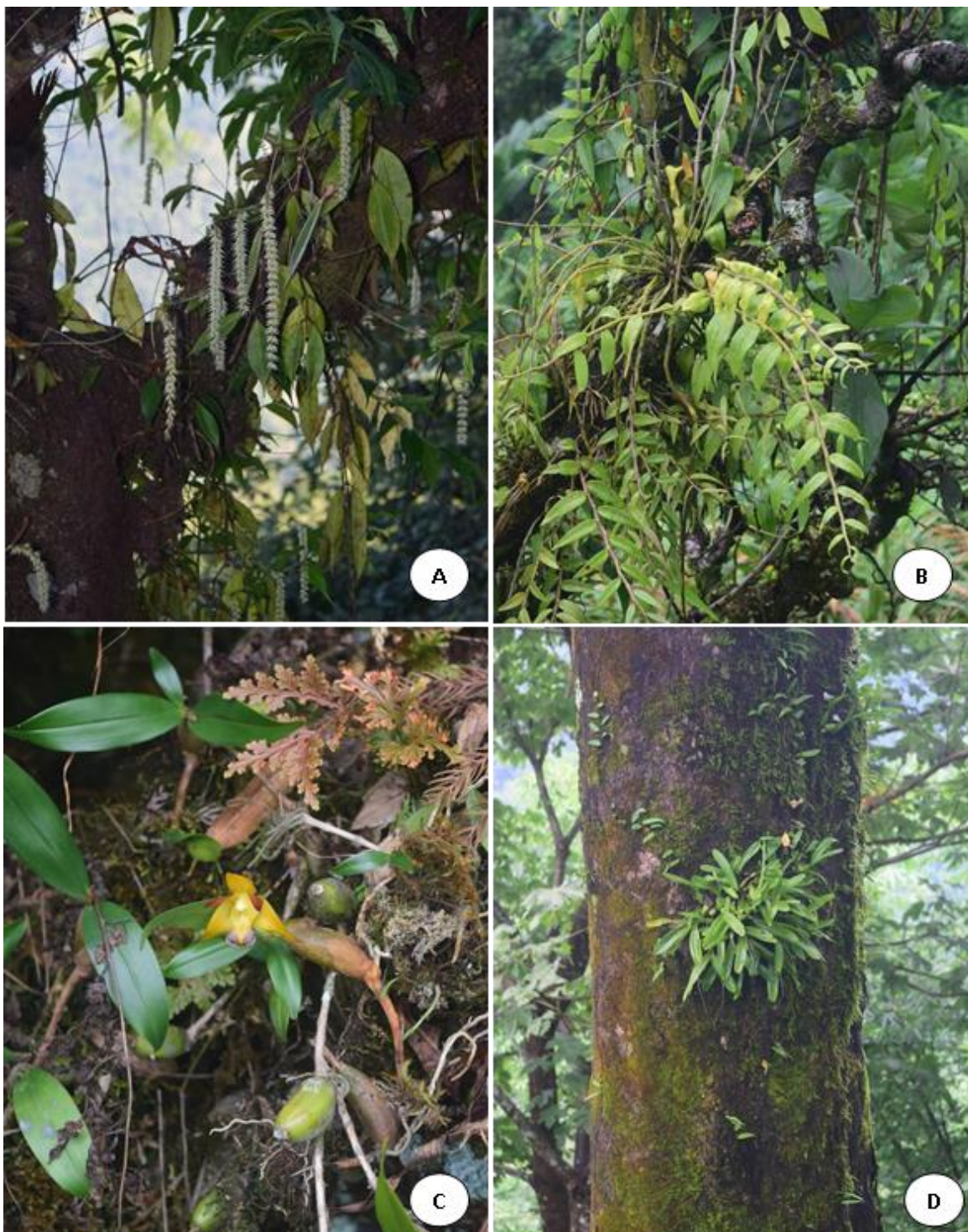


Figure 7: A: *Bulbophyllum hirtum* (J.E. Sm.) Lindl., B: *Dendrobium aphyllum* (Roxb.) C.E.C. Fisc., C: *Epigenium rotundatum* (Lindl.) Summerh., D: *Liparis somai* Hayata.

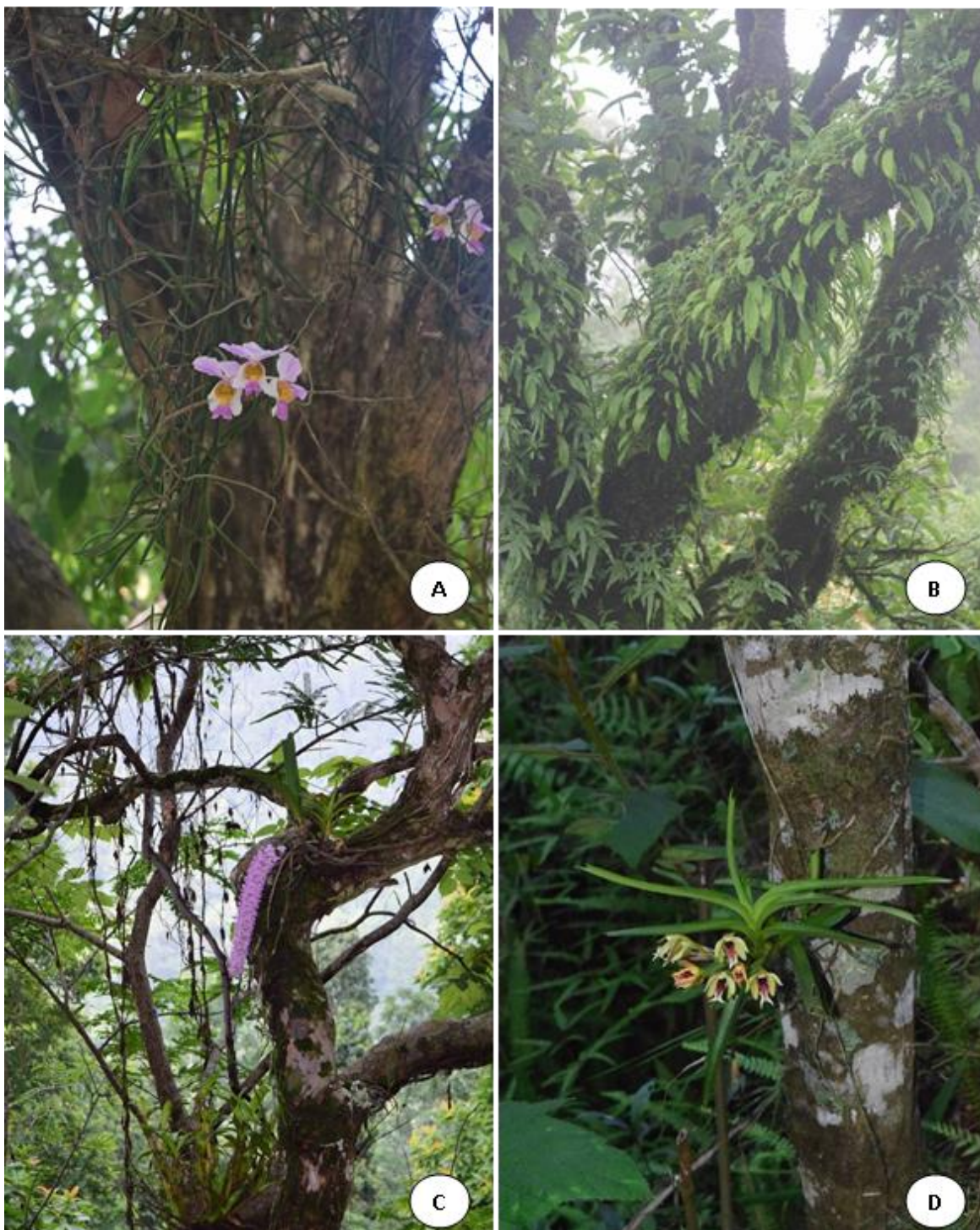


Figure 8: A: *Papilionanthe teres* (Roxb.) Schltr., B: *Pleione praecox* (J.E. Sm.) D: Don, C: *Rhynchostylis retusa* (L.) Bl., D: *Vanda cristata* Lindl.

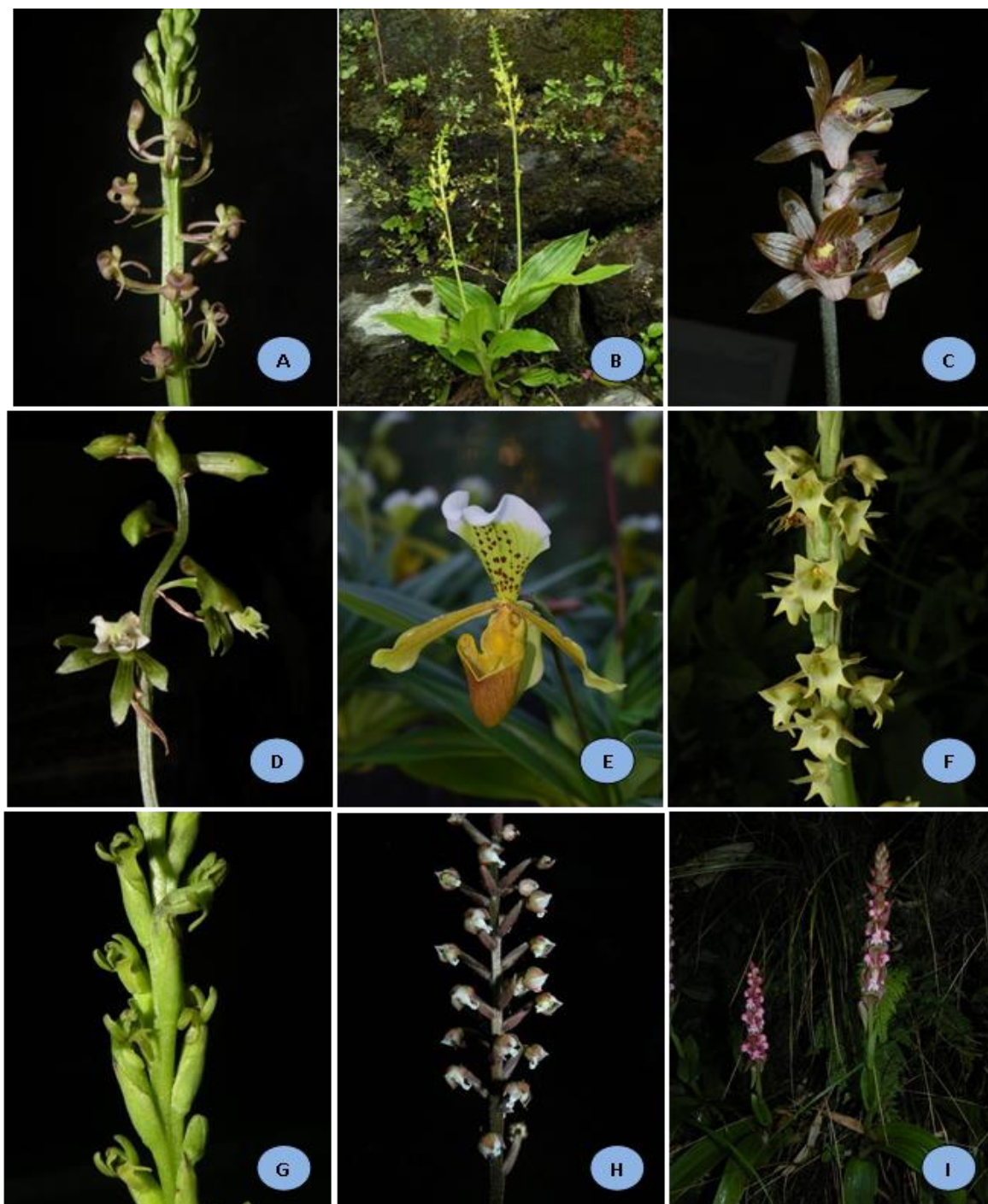


Figure 9: A: *Liparis odorata* (Willd.) Lindl., B: *Malaxis acuminata* D., Don, C: *Mischobulbum megalanthum* Tang & Wang, D: *Nephelaphyllum cordifolium* (Lindl.) Bl., E: *Paphiopedilum insigne* (Wall. ex Lindl.) Pfitz., F: *Peristylus goodyeroides* (D. Don) Lindl., G: *Platanthera biermanniana* (King & Pantl.) Kranz., H: *Rhomboda lanceolata* (Lindl.) Ormerod, I: *Satyrium nepalense* D. Don, var. *ciliatum* (Lindl.) Hook. f.

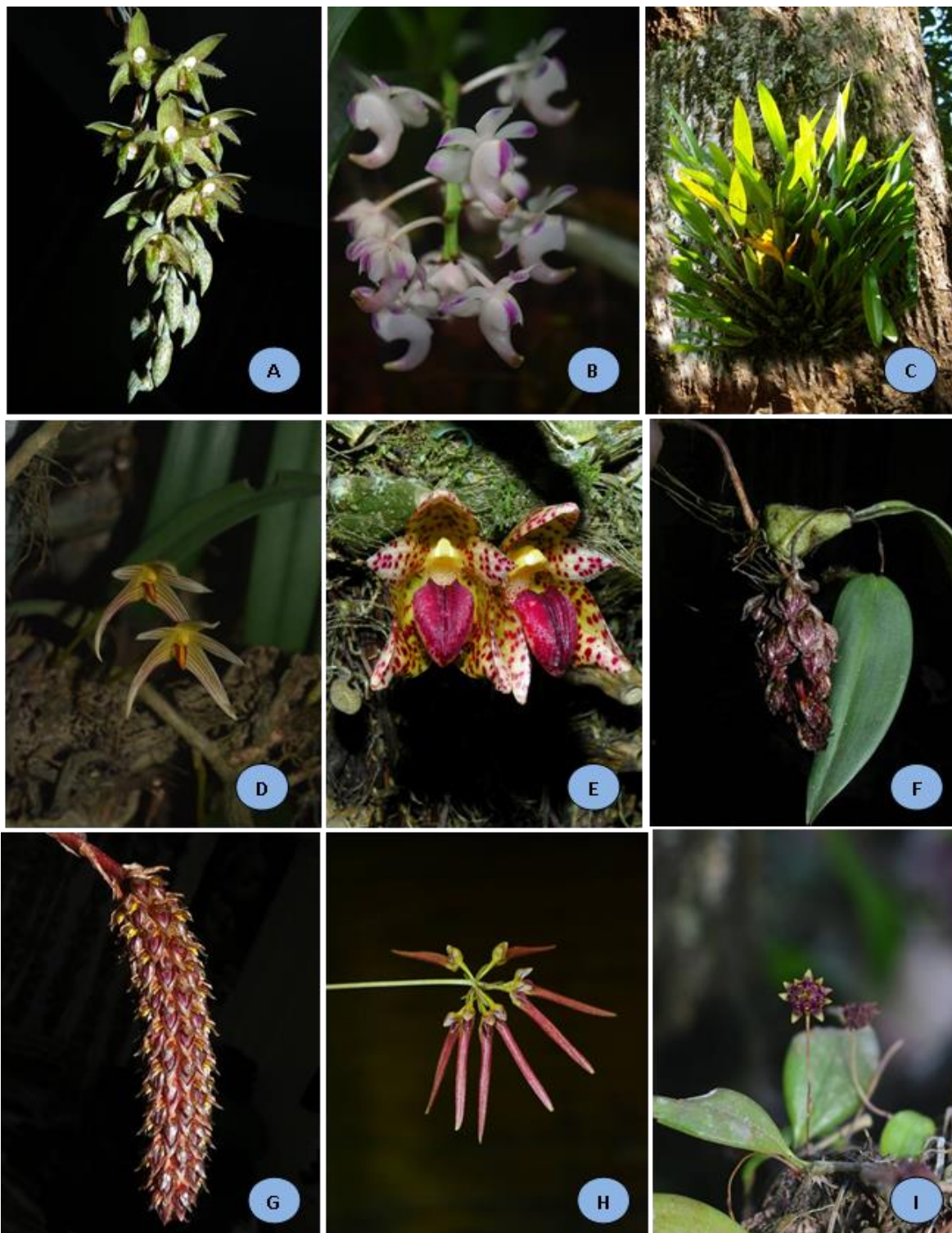


Figure 10: A: *Acrochene punctata* Lindl., B: *Aerides odoratum* Lour., C: *Agrostophyllum khasianum* Griff., D: *Bulbophyllum affine* Lindl., E: *Bulbophyllum leopardianum* (Wall.) Lindl., F: *Bulbophyllum bisetum* Lindl., G: *Dendrobium careyanum* (Hook.) Spreng, H: *Bulbophyllum helenae* Kuntze) J.J. Sm., I: *Bulbophyllum gracilipes* King & Pantl.

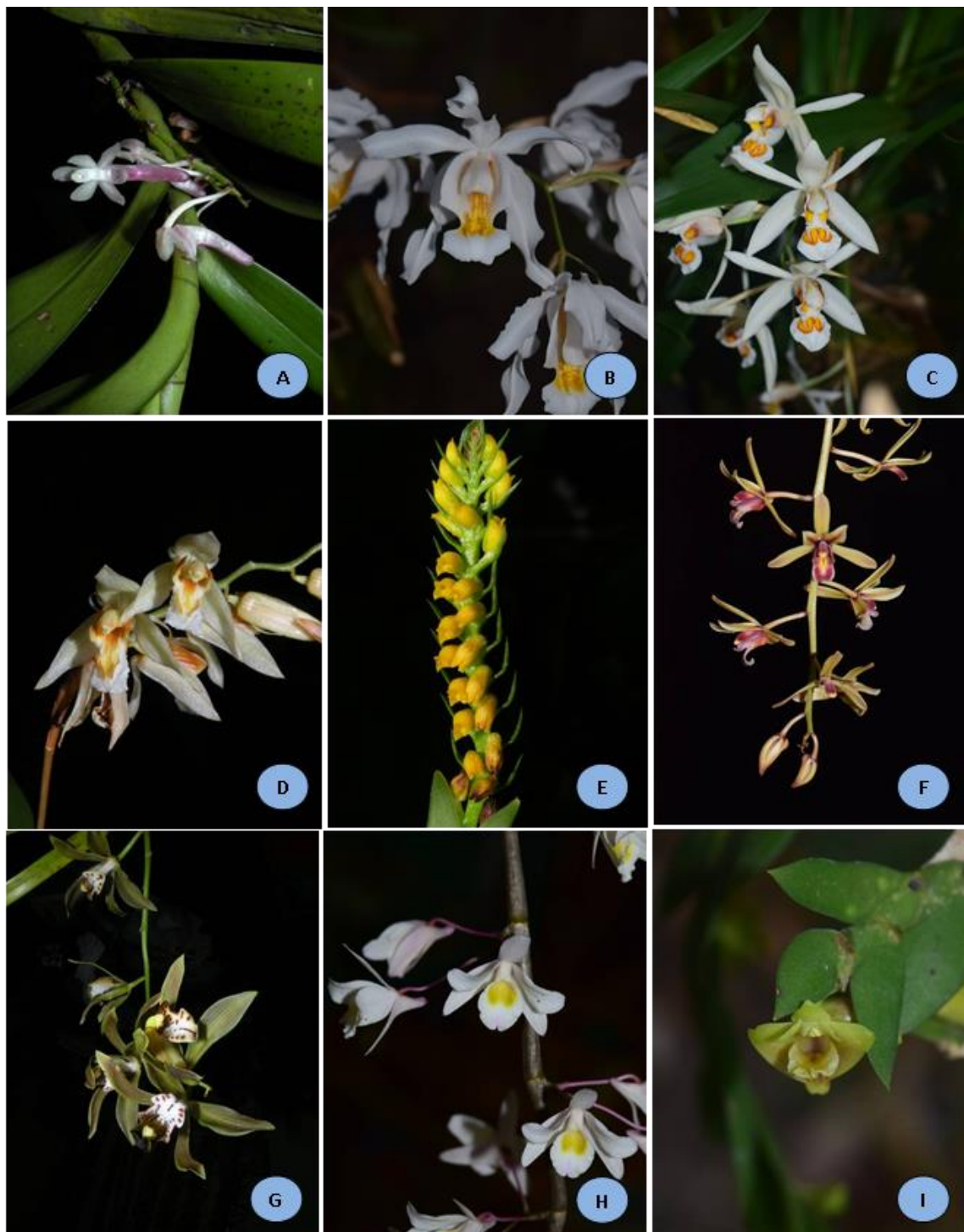


Figure 11: A: *Cleisocentron pallens* Rchb. f., B: *Coelogyne cristata* Lindl., C: *Coelogyne punctulata* Lindl., D: *Coelogyne raizadae* Jain & Das, E: *Cryptochilus lutea* Lindl., F: *Cymbidium aloifolium* (L.) Sw., G: *Cymbidium erythraeum* Lindl., H: *Dendrobium amoenum* Wall. ex Lindl., I: *Dendrobium anceps* Sw.,

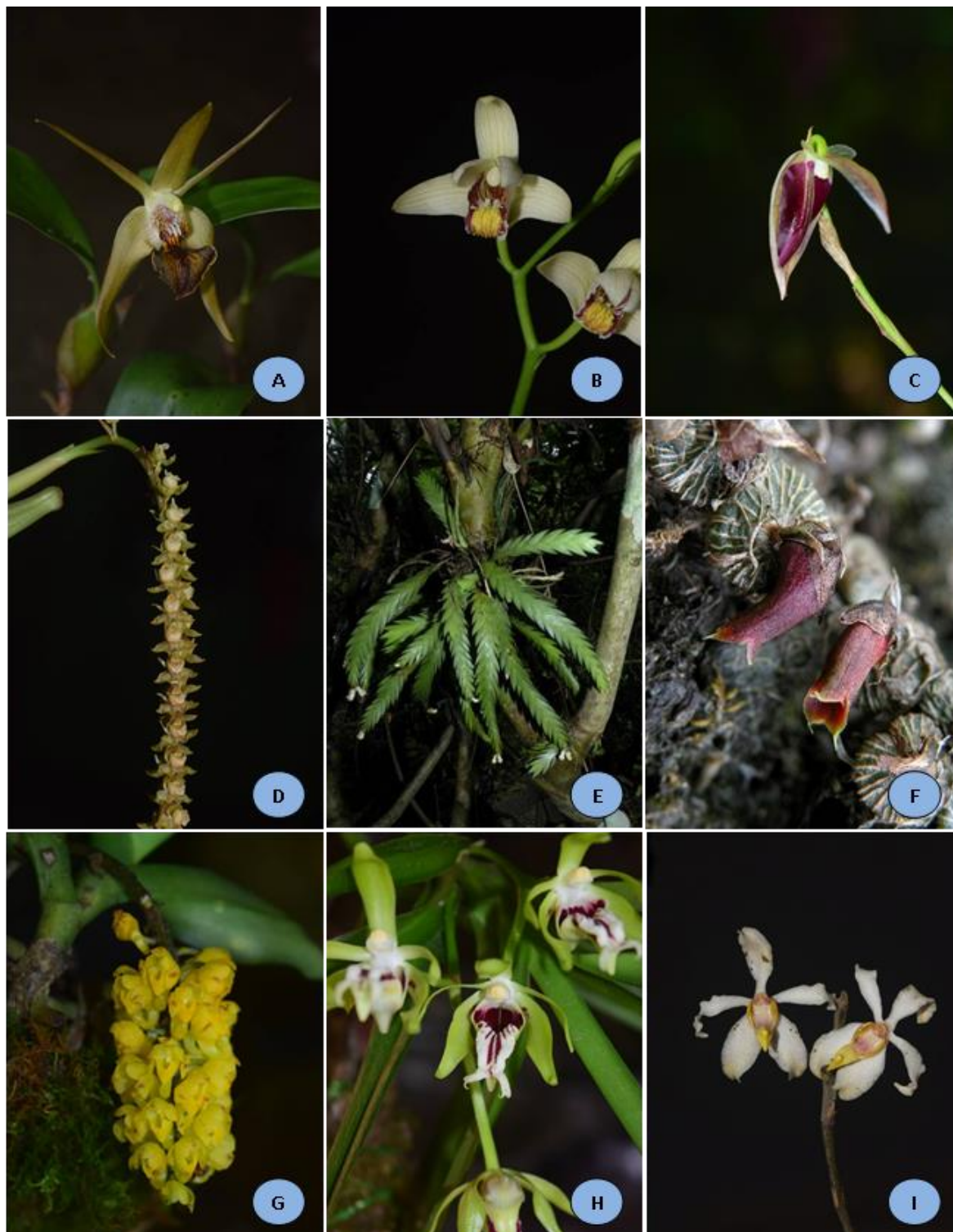


Figure 12: A: *Epigeneium amplum* (Lindl.) Summer., B: *Eria coronaria* (Lindl.) Rchb. f., C: *Ione cirrhata* Lindl., D: *Pholodota rubra* Lindl. E: *Podochilus cultratus* Lindl., F: *Porpax elwesii* (Rchb. f.) Rolfe, G: *Uncifera obtusifolia* Lindl., H: *Vanda cristata* Lindl., I: *Vandopsis undulata* (Lindl.) J.J. Sm.

Results and Discussion

Besides, a checklist of the Orchid Flora of the region achieved in this work will be an important information base for the researchers, scientists, botanists and planners and overall to the government for its proper utilization and management. This will equally be useful for the people of Botanical Survey of India involved with the assignment of preparation of *Flora of India*. Herbarium so developed in this study is a source of authentic information and may find an utmost use by researchers, taxonomists, horticulturists, foresters and scientists in the future. The continuous immigration of several foreign species and their naturalization has added the richness to the flora and vegetation of this region. The richness of Orchid diversity has its bearing with complex physiography and their ecological relationship. The

Orchid Flora of Darjeeling Himalayan region deserves to be treated separately as a unit of study and richness in Orchid diversity within the area is because of favourable factors like conducive climatic, variation in edaphic, sufficient rainfall, altitudinal, exposure to light regime, space, temperature, humidity, precipitation, soil type, soil pH and their natural complex inter-relationships within the species. The tough terrains, confusing ridges and slopes are the barriers and many areas in the region are still unexplored. In the present investigation, a total of 321 species of Orchids under 86 genera reported to occur in the different areas of Darjeeling Himalayan regions and it has been recorded that 2 species with 2 genera are saprophytic, 100 species with 34 genera are terrestrial and the rest 219 species with 52 genera are epiphytic (Figure13,14). The numbers of epiphytic are greater than the terrestrial and saprophytic species.

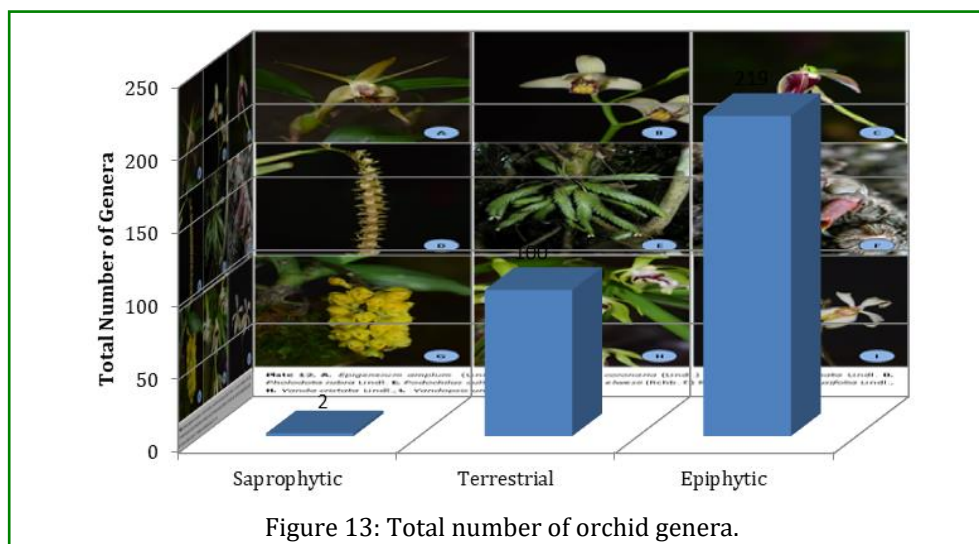


Figure 13: Total number of orchid genera.

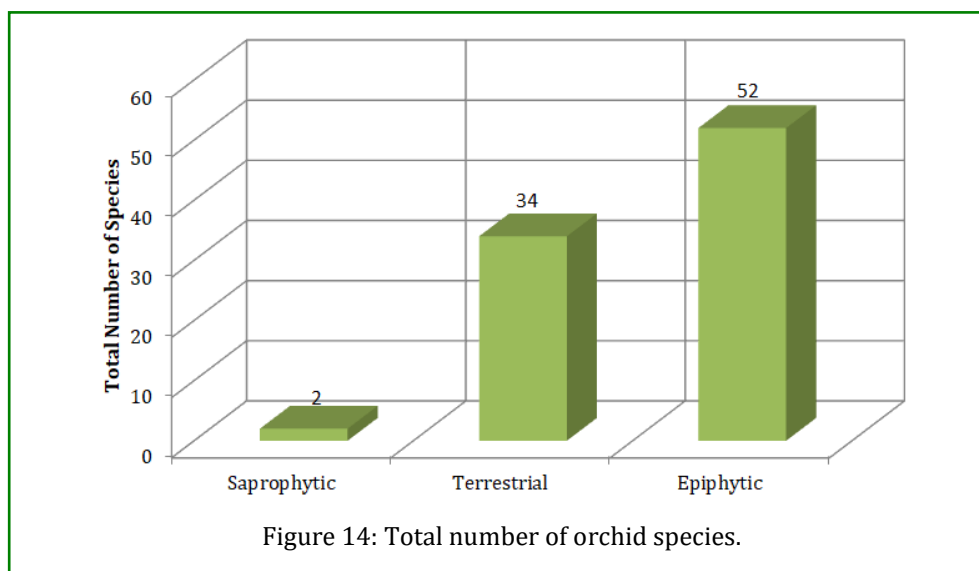


Figure 14: Total number of orchid species.

Availability Status

The exact field status of all the collected specimens has been determined by visual observation on the spot during repeated field trips. Orchid species found only in the planted condition are categorized as cultivated and the species available and distributed different areas of the study region and their natural population are still populous are considered as common and the species which are found in less population but available throughout the region is considered as frequent and the species which are available throughout the region but lesser population than the frequent is considered as sparse. The species which are found only in 6-7 places throughout the entire regions and their natural population very less is categorized as rare and the species which are found only 4-5 places and their natural population is less and persist maximum risk of threats is

categorized as threatened and the species which have meager natural population, less availability and distribution and having high risk of threats is categorized as endangered. The present study revealed that immediate conservative measures must be adopted if the Orchid flora of the region is to be saved and preserved. One of the earlier cause was their large scale collection for commercial purposes. The study shows that at present, only about 30 species falling under the category of common; 28 being frequent; 85 being sparse. At present as many as 118 species have become rare with high risk of extinction looming large over 35 species that are threatened and 6 species endangered. About 19 species find refuge under cultivation (Figure 15, Table 2). Thus, immediate conservation strategies have to be implemented or in a few years from hence we may lose many of these beautiful plants from the region.

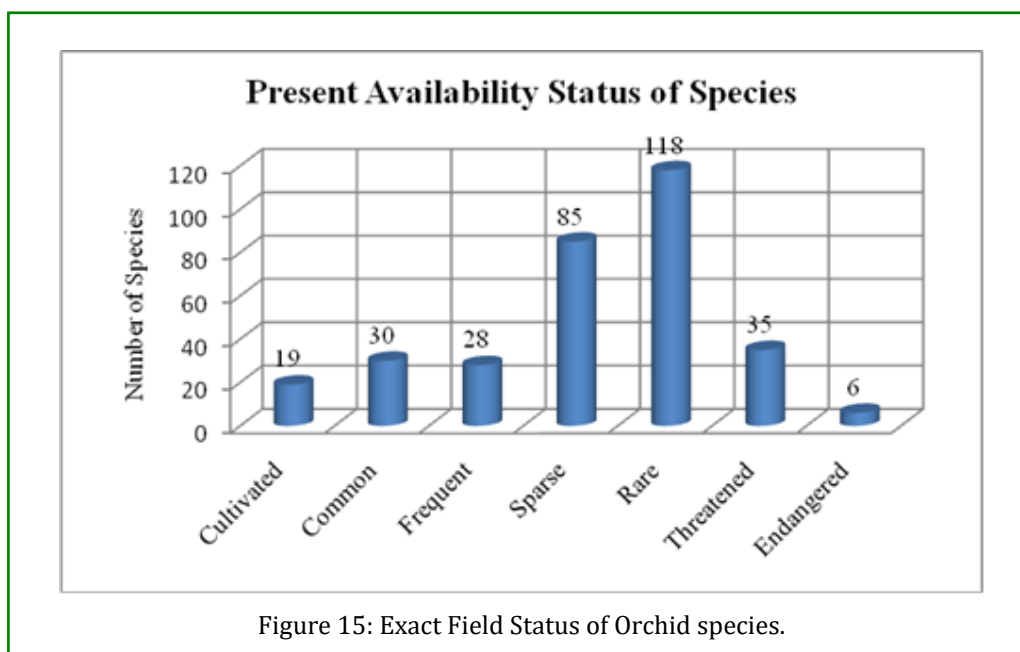


Figure 15: Exact Field Status of Orchid species.

The following Table 2 gives an account of the present availability status of Orchid species of Darjeeling Himalaya.

| Sl. No. | Present Availability Status | Total no. of species |
|--------------|-----------------------------|----------------------|
| 1 | Cultivated | 19 |
| 2 | Common | 30 |
| 3 | Frequent | 28 |
| 4 | Sparse | 85 |
| 5 | Rare | 118 |
| 6 | Threatened | 35 |
| 7 | Endangered | 6 |
| Total | | 321 |

Table 2: Total number of Orchid species with their exact field status.

Under the study of the Orchid flora of Darjeeling Himalaya the field survey and recording of such category of Orchid species were simultaneously carried out during 2007-2015. The recorded data is based on repeated visits to the locality of occurrence and study of their distribution and exact field status within the Darjeeling Himalaya. The threatened Orchid species of Darjeeling Himalaya may be accounted according to Red List of Threatened Vascular Plants Species in India [17] into following categories (Table 3 - 6):

| Categories | Species | % of total species |
|----------------------------|-----------|--------------------|
| Extinct/ Endangered (Ex/E) | - | - |
| Endangered (E) | 1 | 0.31 |
| Vulnerable (V) | - | - |
| Rare (R) | 4 | 1.25 |
| Indeterminate (I) | 6 | 1.86 |
| Total | 11 | 3.42 |

Table 3: Threatened Orchid Species of India recorded from Darjeeling Himalaya.

Source: Red List of Threatened Vascular Plants Species in India [17].

In the present study, as many as 11 (3.42%) Orchid species were found to be threatened categories.

Endangered: There was only 1 Orchid species (0.31%) that belongs to the endangered category (Table 4).

The following is the list of the endangered species

| | |
|----|---------------------------------|
| i. | Paphiopedilum fairrieanum [18]. |
|----|---------------------------------|

Table 4: Endangered category of Orchid species.

Rare: There were 4 Orchid species (1.25%) which belong to the rare category. The rare species list provided below (Table 5).

| | |
|------|-----------------------------------|
| i. | Esmeralda clarkei [19]. |
| ii. | Coelogyne cristata [19]. |
| iii. | Coelogyne nitida [19]. |
| iv. | Paphiopedilum hirsutissimum [19]. |

Table 5: Rare category of Orchid species.

Indeterminate: In the Orchid flora of the Darjeeling Himalaya only 6 species (1.86%) were found to be the indeterminate category. Following is the list of indeterminate species (Table 6).

| | |
|------|--|
| i. | Anoectochilus brevilabris [19]. |
| ii. | Coelogyne barbata [19]. |
| iii. | Coelogyne flaccida [19]. |
| iv. | Coelogyne prolifera [19]. |
| v. | Liparis duthiei (Jain & Sastry, 1980). |
| vi. | Phaius mishmensis [19]. |

Table 6: Indeterminate category of Orchid species.

Threats Assessment and Conservation Aspect of Orchid species in the regions

Most importantly, Orchid flora may find a prompt and justifiable use in the overall planning and strategy of many developmental programmes. Researchers including naturalists, foresters, botanists, floral nurserymen, ecologists, Orchid enthusiast and economic planner may use the Orchid flora for policy advocacy, conservation activities, sustainable exploitation, mass education, planning environmental strategies, and propagation of the threatened Orchid species. Indiscriminate collection of Orchid species and sale to the local floral nurseries still exist in the regions and this act has already reduced the natural population of Orchid species of the region. The practice of illegal felling of old epiphytic host trees by forest departments and local villagers for firewood, charcoal collection and timber harvesting are the major threat to Orchid species in the regions. Common people are ignorant about the floristic wealth and biodiversity of the region. Deforestation, rapid urbanization, developmental works, construction and extension of motorable roads, frequent land slides etc. cause the great loss of many Orchids in the regions (Figures 16,17). Deforestation associated with commercial plantations should be stopped immediately. Illegal entry of unauthorized person is prohibiting into the forests, wild life sanctuaries and national parks. Micropropagation of rare, threatened and endangered species should be emphasized to conserve and replantation in the preferable habitat in nature and transfer of species from one orchid species rich host trees to other surrounding small host trees should be encouraged for massive proliferation and conservation in habitat. Village level awareness programme in the form of workshops, seminars, trainings, distribution of booklets, palm plates, publicity, group discussion etc. are necessary to educate the people in the villages. Therefore, grass root level awareness is utmost important to save valuable orchid species in the regions. An immediate measure has to be taken for conservation of these species before they vanish, especially for those species which are vulnerable, rare, threatened and endangered. Therefore, protection and conservation of natural habitat may only be the prominent way to conserve Orchid species resources of the regions.



A: Land slide at Lava forest.



B: Felling of trees at Neora forest.



C: Cutting of tree for timber collection.



D: Extension of motorable road at Lava.



E: Grazing of yak within Singalila N.P.



F: Collection of Orchid species from habitat.

Figure 16: A – F: Different threats for Orchid species of Darjeeling Himalaya, India.



H:Harvesting of fuel wood by local.



G: Collection of fuel wood from forest.



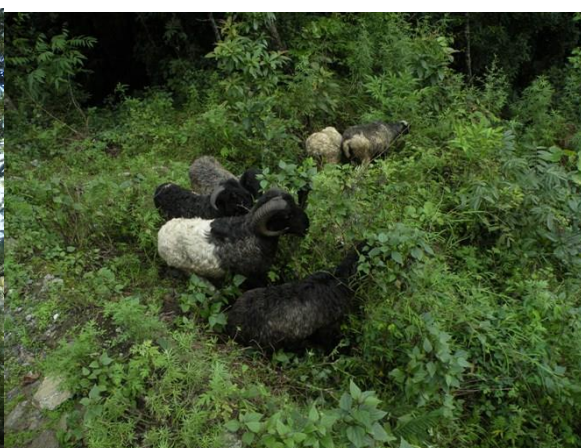
I: Harvesting of timber by local villagers.



J: Construction of motorable road.



K: Indiscriminate collection of epiphytic orchids.



L: Grazing of Sheeps within grassland.

Figure 17: G – L: Different threats for Orchid species of Darjeeling Himalaya, India.

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