



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

Rajendra Yonzzone*

Orchids Germplasm Propagation and Conservation Centre, Orchid Society of Eastern Himalaya, India

***Corresponding author:** Dr. Rajendra Yonzzone, Orchids Germplasm Propagation and Conservation Centre, Orchid Society of Eastern Himalaya, Purba Samalbong Busty, West Bengal, India, Email: ryonzone99@gmail.com

Received Date: September 29, 2018; **Published Date:** January 01, 2019

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

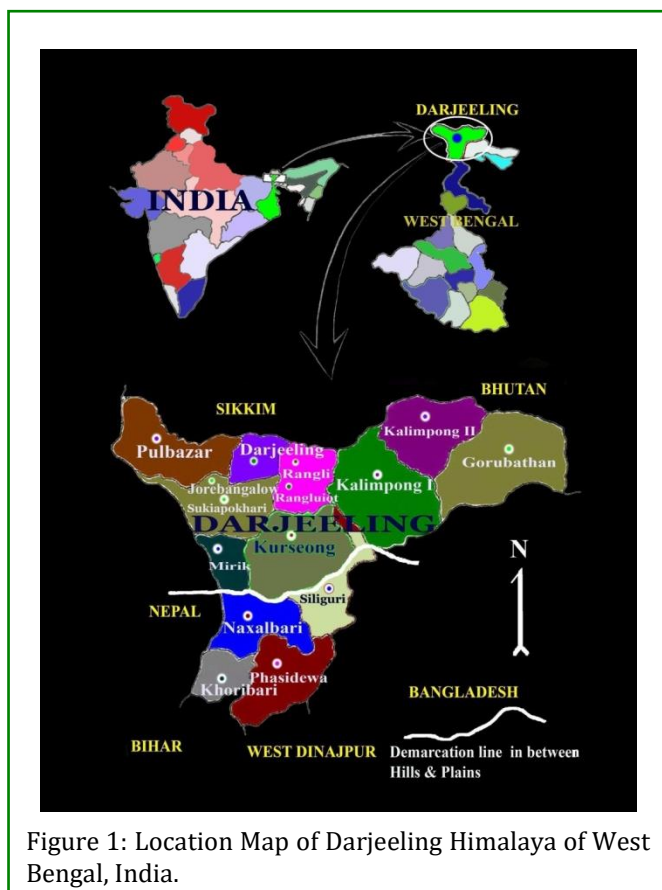


Figure 1: Location Map of Darjeeling Himalaya of West Bengal, India.

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 Rachela 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).

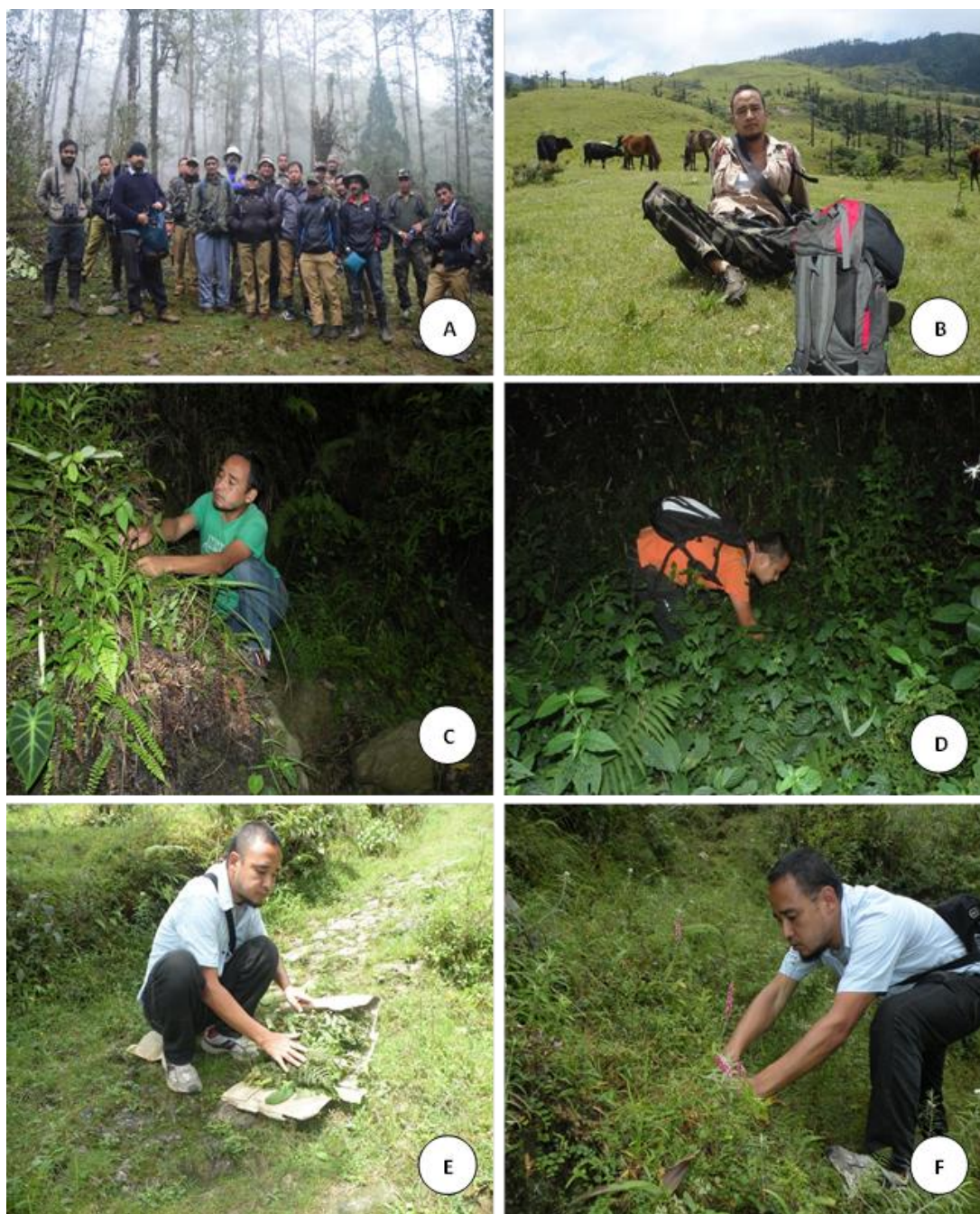


Figure 2: Author during different field tours.

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</i> (Lindl.) Lindl.	Epiphytic	Rambi, Relli, Sevoke, Najoke, Kalijhora forest, Teesta 27 th Mile, Malli-Kalimpong, Sepkhola, Balasan, Birik	Common
2	<i>Acampe rigida</i> (Buch.-Ham. ex J.E. Sm.) P.F. Hunt	Epiphytic	Rambi, Teesta river sides, Najoke, Fyangtar, Tarkhola forest, Pareng, Chuikhim, Dudhey, Geilkhola	Common
3	<i>Acanthephippium striatum</i> Lindl.	Terrestrial	Forest areas of Damsangari, Kumsi, Sittong, Chisang-Godok	Rare
4	<i>Acrochaene punctata</i> Lindl.	Epiphytic	Lava, Nokdara, Kafer, Todey forest, Rambi forest, Downhill-Kurseong, Baggonra, Chimney, Takdah, Jorebangalow	Sparse
5	<i>Aerides multiflorum</i> Roxb.	Epiphytic	Samalbong, Suruk-Samthar, Siliguri, Mungpoo, Seokbir khani, Sittong	Rare
6	<i>Aerides odoratum</i> Lour.	Epiphytic	Bagrakot, Sukuna, Malli-Kalimpong, Solok-Kalimpong, Mungpoo, Lesh khola	Rare
7	<i>Agrostophyllum brevipes</i> King & Pantl.	Epiphytic	27 th Mile N.H.P.C. project sides, Algarah, Panbu, Seokbir khani, Sittong	Sparse
8	<i>Agrostophyllum callosum</i> Rchb. f.	Epiphytic	Lungshel, Lava, Nokdara, Algarah, Kafer, Rambi forest, Tungsong, Munsong, Takdah, Lopchu	Common
9	<i>Agrostophyllum myrianthum</i> King & Pantl.	Epiphytic	Kamsi, Rambi, Teesta, 27 th Mile, Solok-Kalimpong, Sepkhola, Pareng, Sendaybong	Sparse
10	<i>Agrostophyllum planicaule</i> (Wall. ex Lindl.) Rchb. f.	Epiphytic	Kalijhora, Soureni, Kumsi, Sittong, Nimbong, Pudung	Threatened
11	<i>Anoectochilus brevilabris</i> Lindl.	Terrestrial	Forest areas of Lava, Takdah, Rangayrung	Rare
12	<i>Anoectochilus grandiflorus</i> Lindl.	Terrestrial	Forest areas in damsang, algarah, echeey busty	Threatened
13	<i>Anthogonium gracile</i> Lindl.	Terrestrial	Dello hill, forest areas of Lava, Samthar, Kafer, Samalbong, Rimbick, Ramam, Manaybhanjang, Dhotray, Kalpokhari, Tonglu, Serikhola, Jalapahar, Rambi forest, Senchale, Chimney, Baggonra	Sparse
14	<i>Appendicula cornuta</i> Bl.	Epiphytic	Birik, Kambal, 27 th Mile, Kumai, Kalijhora, Sepkhola, Lesh khola	Rare
15	<i>Arundina graminifolia</i> (D. Don) Hochr.	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</i> (Roxb.) Schltr.	Epiphytic	Rambi, Kalijhora, Sevoke, Kumsi, 27 th Mile, Najoke, Mungpoo, Pankhabari forest, Pareng	Sparse
17	<i>Biermannia bimaculata</i> (King & Pantl.) King & Pantl.	Epiphytic	Bagrakot, near Teesta Bridge, Kalijhora, Sepkhola, Lesh khola	Rare
18	<i>Bulbophyllum affine</i> Lindl.	Epiphytic	Samalbong, Samthar, Mungpoo, Bong Busty, Nimbong, Pedong, Seokbir khani, Nagari, Godok	Common

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 guttulatatum</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, Rachela, 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, Pattabong	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
43	<i>Bulbophyllum sarcophyllum</i> (King	Epiphytic	Nim forest, Nimbong, Chisang-Godok, Guling,	Rare

	& Pantl.) J.J. Sm.		Jalapahar	
44	<i>Bulbophyllum scabratum</i> Rchb. f.	Epiphytic	Lower Lungshel, Rachela, Takdah, Algarah, Kafer forest, Lungshel	Common
45	<i>Bulbophyllum secundum</i> Hook. f.	Epiphytic	Lopchu forest - Darjeeling; Damsang gari-Kalimpong, Algarah, 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, Rambi forest, Senchale, Sukiapokhari, Jorebunglow, Ramam	Sparse
48	<i>Bulbophyllum thomsonii</i> Hook. f.	Epiphytic	Neora Valley, Sukiapokhari, Dabaipani-Takdah, Algarah	Rare
49	<i>Bulbophyllum tortuosum</i> (Bl.) Lindl.	Epiphytic	Bagrakot, Kumai, Jholung, Kalijhora, Ryang	Threatened
50	<i>Bulbophyllum triste</i> Rchb. f.	Epiphytic	Samalbong-Sinjee, Godok forest, Charkhol, Lopchu forest, Mirik	Rare
51	<i>Bulbophyllum umbellatum</i> Lindl.	Epiphytic	Kurseong, Maneybhanjang, Dali-Darjeeling, Mangarjung, Rambi 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, Rachela, Damsang forest, Rambi forest, Ramam, Rimbick	Common
54	<i>Calanthe biloba</i> Lindl.	Terrestrial	Forest areas of Charkhol, Kafer, Lava, Algarah, Gumbadara, Lopchu, Senchale, Lloyd Botanical Garden – Darjeeling	Common
55	<i>Calanthe brevicornu</i> Lindl.	Terrestrial	Forest areas of Ramam, Gorkhey, Algarah, Lava, Kafer, Lopchu, Ghoom-Darjeeling, Takdah	Common
56	<i>Calanthe puberula</i> Lindl.	Terrestrial	Forest areas of Mem, Sukiapokhari, Baggonra, Toroyok, Lava, Rachela, Ramam, Palmajua	Common
57	<i>Calanthe sylvatica</i> (Thour.) Lindl.	Terrestrial	Forest areas of Kafer, Algarah, 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, gumbadata, jari butti, neora valley	Rare
60	<i>Calanthe yuksomnensis</i> S.Z. Lucksom	Terrestrial	Forest areas of Mem, Sukiapokhari, Takdah, Rambi 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, Samalbong, 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.) Garay	Epiphytic	Relli, Kalijhora, Najoke, Mungpoo, Chisang-Godok, Kumai, Latpanjar, Lesh khola	Common
70	<i>Cleisostoma racemiferum</i> (Lindl.)	Epiphytic	Nock Dara, Lungsel, Labdah-Mungpoo, Sangsay	Rare

	Garay		Bhalukhop	
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, Rambic 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, Rambic 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, Rambic 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, Rambic 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
96	<i>Cymbidium bicolor</i> Lindl.	Epiphytic	Samalbong-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, Rambi forest	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, Rambi forest, 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, Rambi forest	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, Samalbong, Jaldhaka, Lesh khola, Reyang	Sparse
110	<i>Dendrobium anceps</i> Sw.	Epiphytic	Sevoke, Kalijhora, Rambi Mongpoo, Pankhabari, Malli-Kalimpong	Sparse
111	<i>Dendrobium aphyllum</i> (Roxb.) C.E.C. Fischer	Epiphytic	Suruk, Samalbong, Birik, Kambal, Jholung, Kumsi, Tarkhola, Tindharey, Majitar, Mungpoo, Godok, Kambal, Samthar Busty	Frequent
112	<i>Dendrobium bicameratum</i> Lindl.	Epiphytic	Lungshel, Todey, Rambi forest, Lopchu	Rare
113	<i>Dendrobium candidum</i> Wall. ex Lindl.	Epiphytic	Ramam, Gorkhey, Rachela, 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, Rambi forest, 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 denudans</i> D. Don	Epiphytic	Mangzing, Nimbong, Samalbong, 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
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-	Sparse

			Godok, Bong Busty, Mungpoo, Pudung, Nimbong	
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
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 Yonzon, 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, Samalbong, Kalimpong 15 th Mile	Rare
181	<i>Habenaria furcifera</i> Lindl.	Terrestrial	Forest areas of Kumsi, Relli-Pala river sides, Sittong, Pudung-Sendaybong	Rare
182	<i>Habenaria pectinata</i> (J.E. Sm.) D.	Terrestrial	Dhotray, Manaybhanjang, Ramam, Pattabong,	Rare

	Don		Damsang forest	
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 Nepal 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, Rachela, Lava, Palmajua, Rimbick, Manaybhanjang	Sparse
186	<i>Herminium mackinnonii</i> Duthie	Terrestrial	Rachela 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, Rambh 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-Sendaybong, 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, Rambh 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, Rambh 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	Samalbong, 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, Majitar	Rare
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, Rachela, 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
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, Rambhi forest, Rangayrung, Samalbong, Takdah, Dello Hill, Chimney-Kurseong	Frequent
235	<i>Otochilus fuscus</i> Lindl.	Epiphytic	Dello hill, Suruk, Samthar, Seokbir khani,	Frequent

			Nimbong, Samalbong, Sendaybong, Todey, Godok, East Man Road-Kalimpong	
236	<i>Otochilus lancilabius Seidenf.</i>	Epiphytic	Algarah, Nokdara, Tangta forest, Toroyok, Jalapahar, Lopchu forest, Kafer, Downhill-Kurseong, Nockdara, Baggonra	Frequent
237	<i>Panisea demissa (D. Don) Pfitz.</i>	Epiphytic	Lopchu, Lava, Rachel forest, Tangta forest, Chimney-Kurseong, Baggonra, Pattabong, Chitrey, Gorkhey	Sparse
238	<i>Panisea uniflora (Lindl.) Lindl.</i>	Epiphytic	Khalijhora, Pankhabari forest, Nimbong, Sittong, Guling forest	Rare
239	<i>Paphiopedilum fairrieianum (Lindl.) Stein</i>	Terrestrial	N.R.C. for Orchids, I.C.A.R., Darjeeling Campus, Pine View and Holumba floral Nursery – Kalimpong	Planted
240	<i>Paphiopedilum hirsutissimum (Lindl. ex Hook.) Stein</i>	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 (Wall. ex Lindl.) Pfitz.</i>	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 (Wall.) Pfitz.</i>	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 (Lindl.) Pfitz.</i>	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 (Rchb. f.) Ridl.</i>	Epiphytic	Sevoke forest, Golma forest, Gorubathan	Endangered
245	<i>Papilionanthe teres (Roxb.) Schltr.</i>	Epiphytic	Sevoke, N.B.U. Campus, Najoke, Kumai, Matigara, Khaprail, Gulma forest, Sukuna, Balasan, Sepkhola	Sparse
246	<i>Peristylus affinis (D. Don) Seidenf.</i>	Terrestrial	Panbu, Algarah forest, Seokbir khani	Rare
247	<i>Peristylus constrictus (Lindl.) Lindl.</i>	Terrestrial	Relli river sides, Kumsi forest, Mangmaya, Latpanjar, Birik, Nimbong, Ambeok	Sparse
248	<i>Peristylus fallax Lindl.</i>	Terrestrial	Kalpokhari, Sandakphu forest, Jaunbari, Bikhaybhanjang	Threatened
249	<i>Peristylus goodyeroides (D. Don) Lindl.</i>	Terrestrial	Forest areas of Kumsi, Suruk, Mangmaya, Samthar, Samalbong	Sparse
250	<i>Peristylus nematocaulon (Hook. f.) M.L. Banerji & P. Pradhan</i>	Terrestrial	Lamaydhura, Tonglu forest, Megma, Ramam, Sandakphu	Rare
251	<i>Peristylus parishii Rchb. f.</i>	Terrestrial	Samalbong, Pareng, Yangmakum, Sittong, Gasoke	Rare
252	<i>Peristylus superanthus J.J. Wood</i>	Terrestrial	Megma, Tonglu forest, Gairibas forest	Sparse
253	<i>Peristylus tipuliferus (Par. & Rchb. f.) Mukerjee</i>	Terrestrial	Dello Hill, Megma, Tonglu, Neora Valley, Dowhill-Kurseong, Tangta forest, Sonada, Lava, Jorebungalow	Sparse
254	<i>Phaius flavus (Bl.) Lindl.</i>	Terrestrial	Kalimpong 8 th Mile, Kumsi, Mungpoo, Paiyung	Rare
255	<i>Phaius mishmensis (Lindl. & Paxt.) Rchb. f.</i>	Terrestrial	Forest areas of Takdah, Manaybhanjang, Kafer, Dilaram	Rare
256	<i>Phaius tankervilleae (Banks ex l'Herit.) Bl.</i>	Terrestrial	Samalbong, Sinjee, Primtam, Pudung, Pedong, Kurseong, Mirik, Seokbir khani, Sittong, Algarah, Loday-Pala, Peshok, Mangmaya	Planted
257	<i>Phalaenopsis deliciosa Rchb. f. subsp. hookeriana (Gruss & Rollke) E.A. Christenson</i>	Epiphytic	Guling, Jaldhaka, Lesh khola, Kumai, Sittong, Sepkhola, Pareng, Ryang, Samsing, Chuikhim	Sparse
258	<i>Phalaenopsis lobbii (Rchb. f.) H.R.</i>	Epiphytic	Tarkhola, Sukuna, Teesta 27 th Mile, N.H.P.C.	Rare

	<i>Sweet</i>		project sides, Sepkhola, Gasoke	
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	Samalbong, 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	Samalbong, Yangmakum, Mangzing, Guling forest, Pedong, Nim forest, Pembring	Sparse
263	<i>Pholidota imbricata</i> Hook.	Epiphytic	Samalbong-Relli, Kalijhora, Teesta 27 th Mile N.H.P.C. project sides, Lohapul, Bong Busty, Mamgmaya	Frequent
264	<i>Pholidota pallida</i> Lindl.	Epiphytic	Samalbong, 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, Samalbong, 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 biemanniana</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.) Soo	Terrestrial	Manaybhanjang, Dello Hill, Kalpokhari forest, Bikhaybhanjang, Chitrey, Sandakphu, Megma	Frequent
280	<i>Platanthera stenantha</i> (Hook. f.) Soo	Terrestrial	Forest areas of Kaiyakatay, Gairibas, Kalpokhari, Jalapahar	Rare
281	<i>Pleione hookeriana</i> (Lindl.) B.S. Williams	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.) Ormerod	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.) Seidenf. & Garay	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	Manaybhanjang, Lava, Algarah, Chitrey, Dhotrey, Rambi forest, Senchale, Serikhola	Rare
295	<i>Smitinandia micrantha</i> (Lindl.) Holtt.	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, Rachela, 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 & Wang	Terrestrial	Forest areas of Kalijhora, Kumai, Jholung, Lathpanjar	Threatened
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, Today, 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, Rimick, 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.

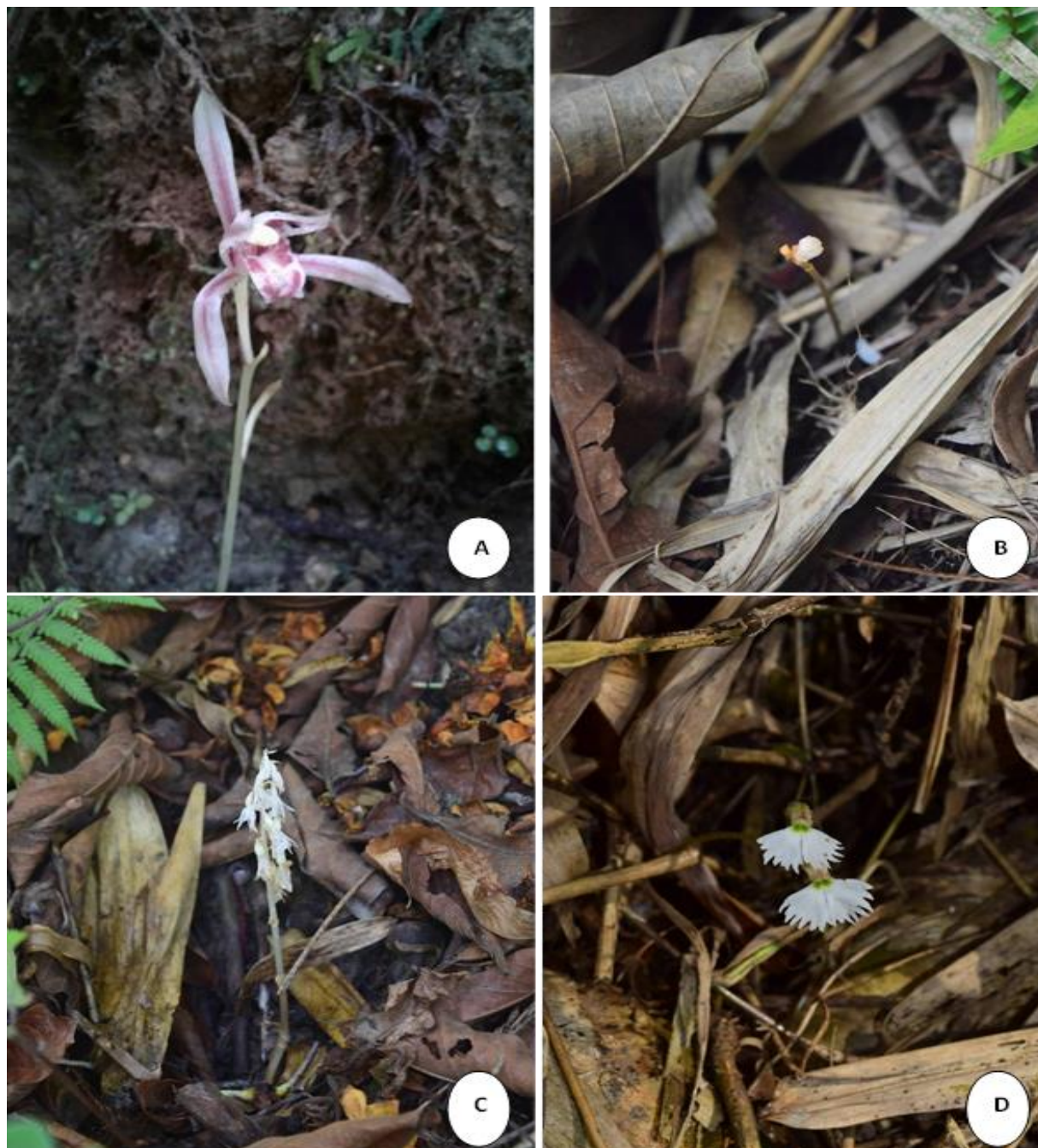


Figure 3: A: *Cymbidium macrorhizon* Lind l., B: *Didymoplexis pallens* Griff, C: *Epipogium roseum* (D. Don) Lindl, D: *Cherostrylis yunnanensis* Rolfe.

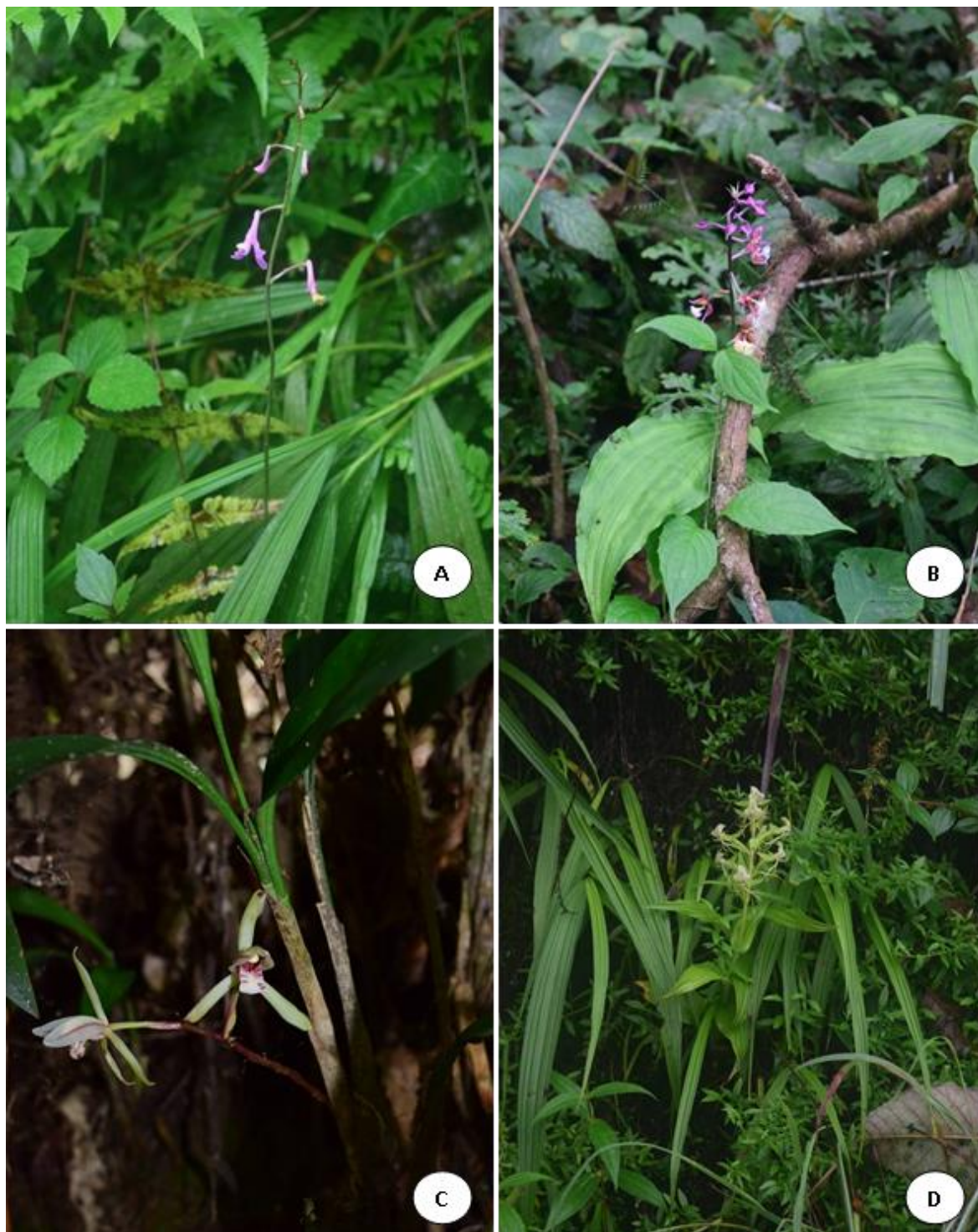


Figure 4: A: *Anthogonium gracile* Lindl., B: *Calanthe biloba* Lindl., C: *Cymbidium lancifolium* Hook., D: *Habenaria arietina* Hook. f.



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

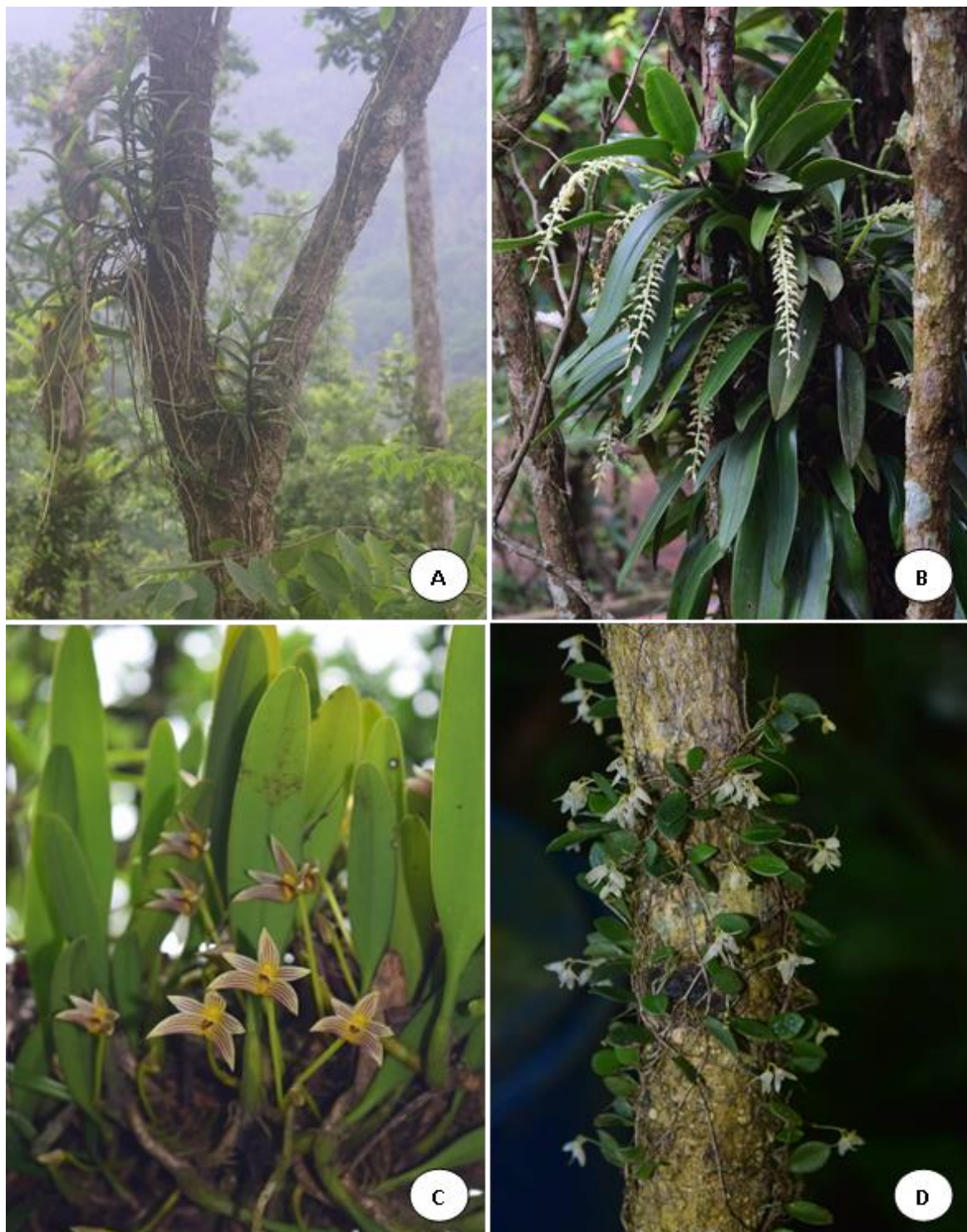


Figure 6: A: *Acampe papillosa* (Lindl.) Lindl., B: *Bulbophyllum apodum* Hook. f., C: *Bulbophyllum affine* Lindl., D: *Bulbophyllum hymenanthum* Hook. f.

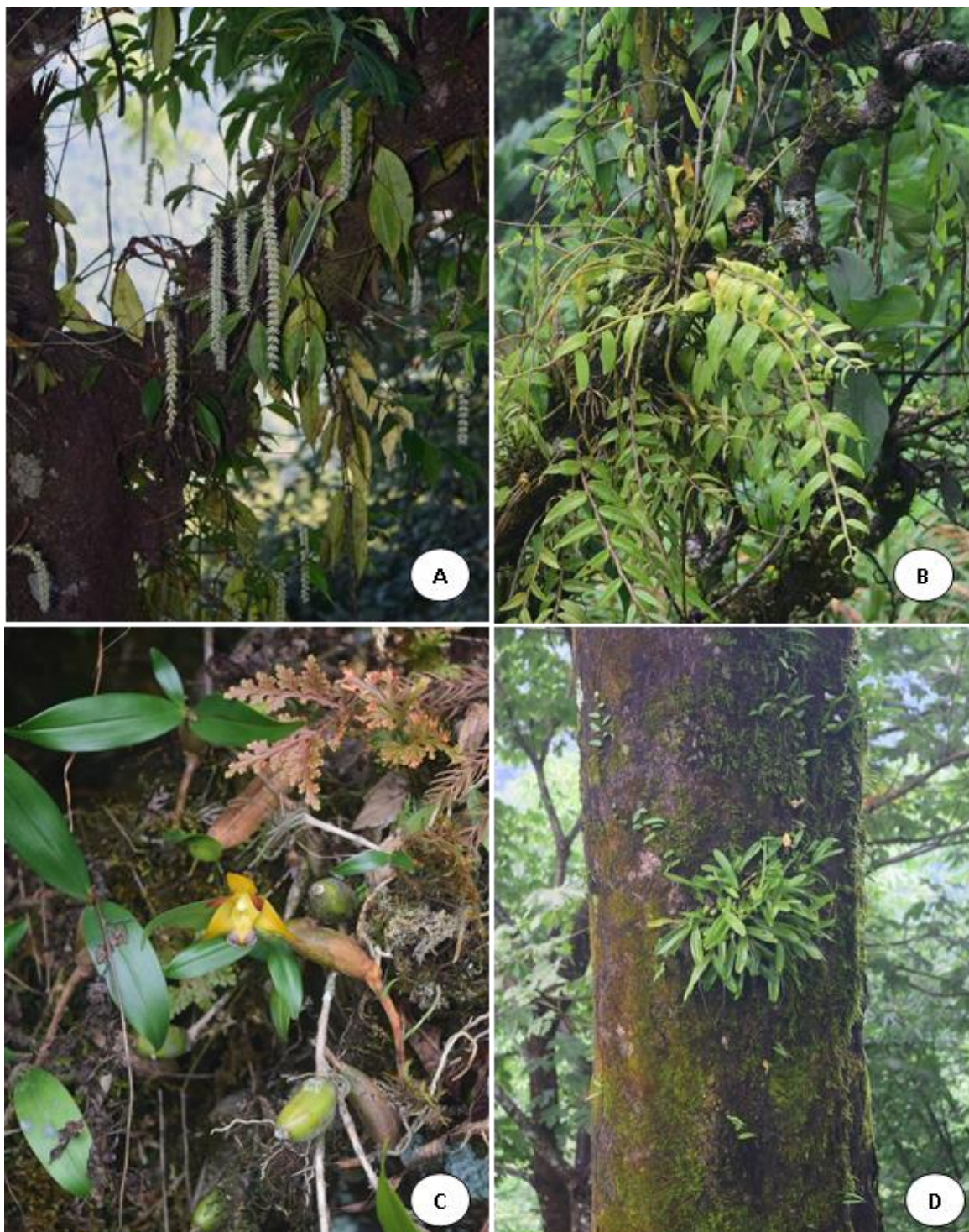


Figure 7: A: *Bulbophyllum hirtum* (J.E. Sm.) Lindl., B: *Dendrobium aphyllum* (Roxb.) C.E.C. Fisc., C: *Epigenium rotundatum* (Lindl.) Summerh., D: *Liparis somai* Hayata.

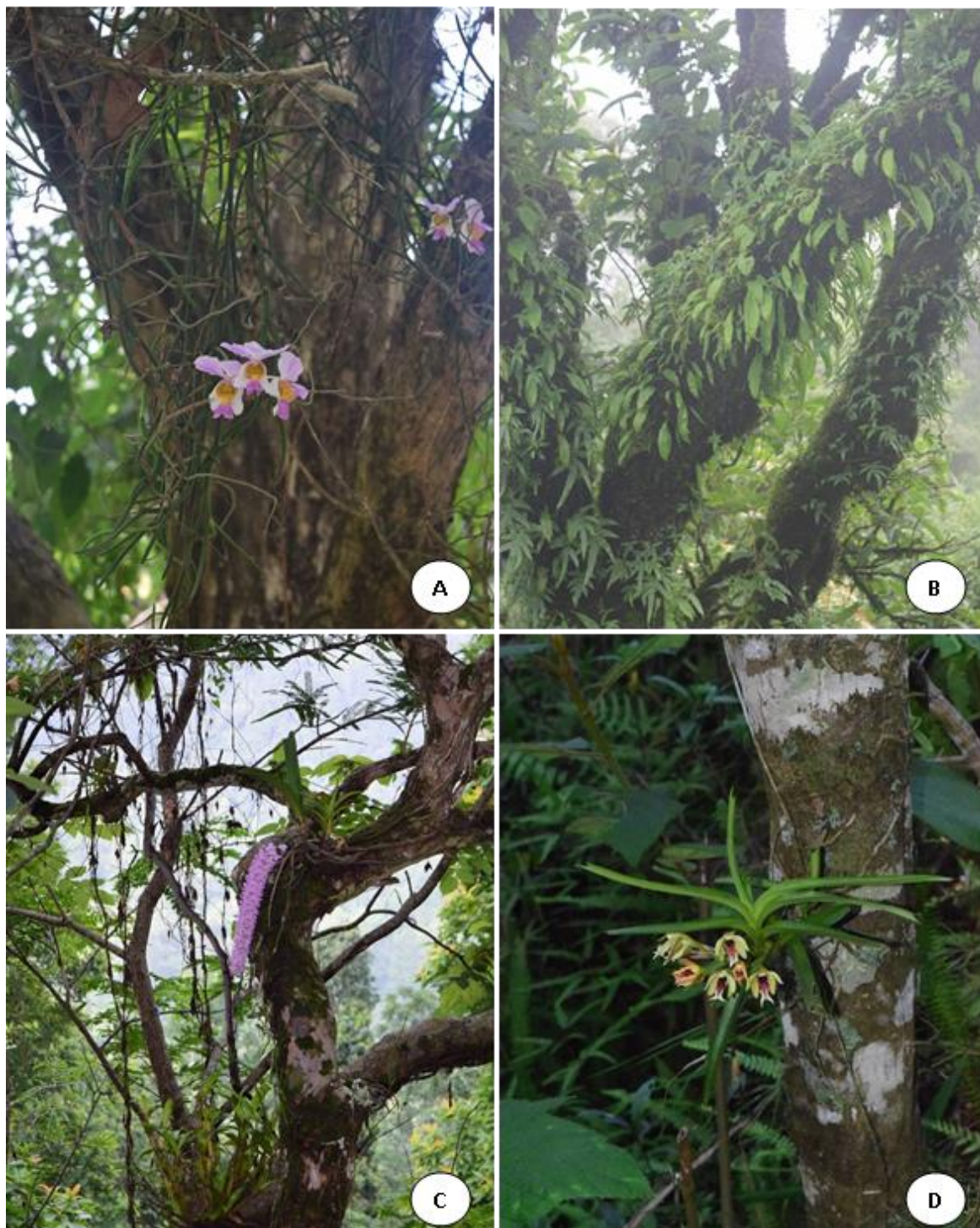


Figure 8: A: *Papilionanthe teres* (Roxb.) Schltr., B: *Pleione praecox* (J.E. Sm.) D: Don, C: *Rhynchostylis retusa* (L.) Bl., D: *Vanda cristata* Lindl.

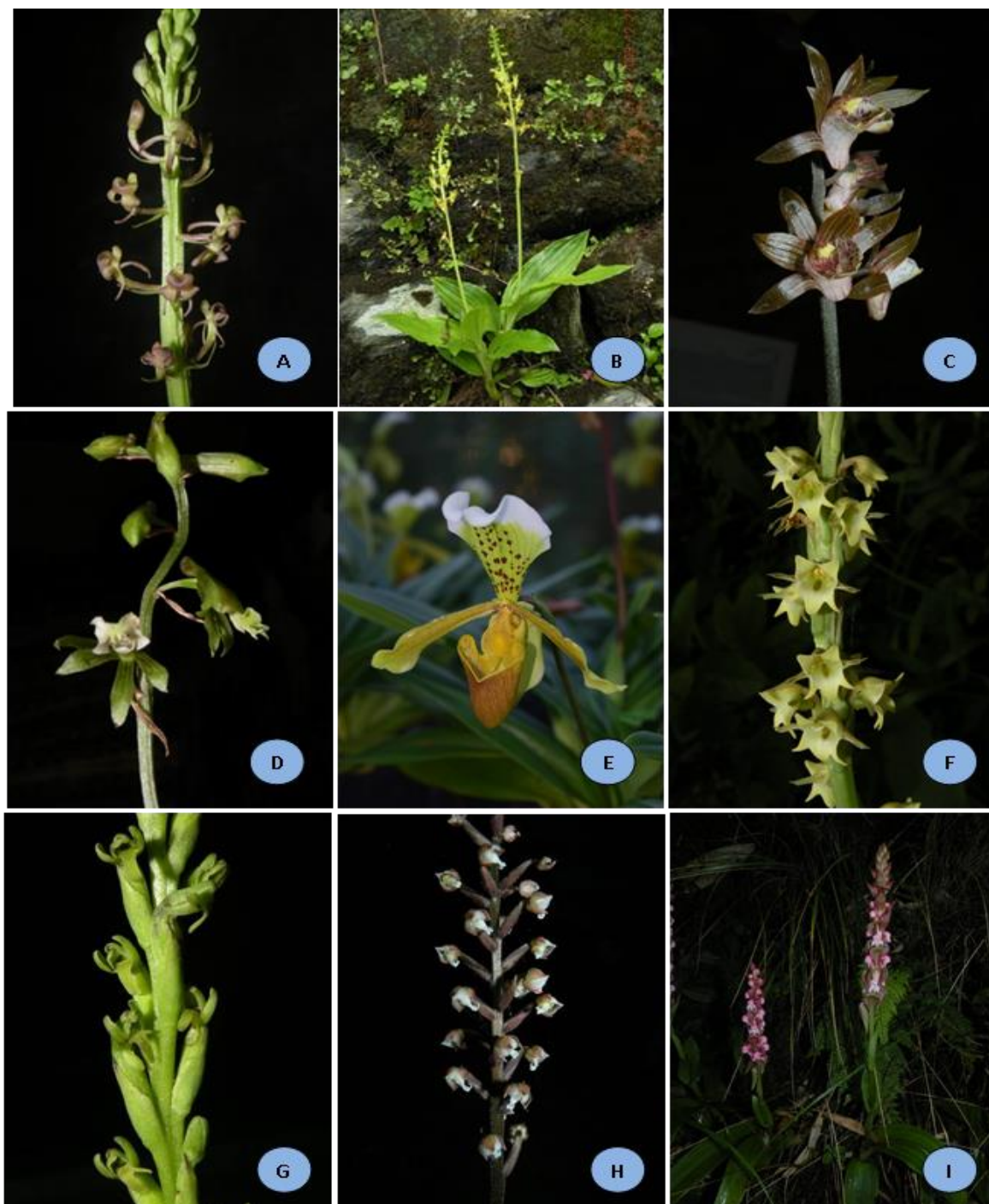


Figure 9: A: *Liparis odorata* (Willd.) Lindl., B: *Malaxis acuminata* D., Don, C: *Mischobulbum megalanthum* Tang & Wang, D: *Nephelaphyllum cordifolium* (Lindl.) Bl., E: *Paphiopedilum insigne* (Wall. ex Lindl.) Pfitz., F: *Peristylus goodyeroides* (D. Don) Lindl., G: *Platanthera biermanniana* (King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

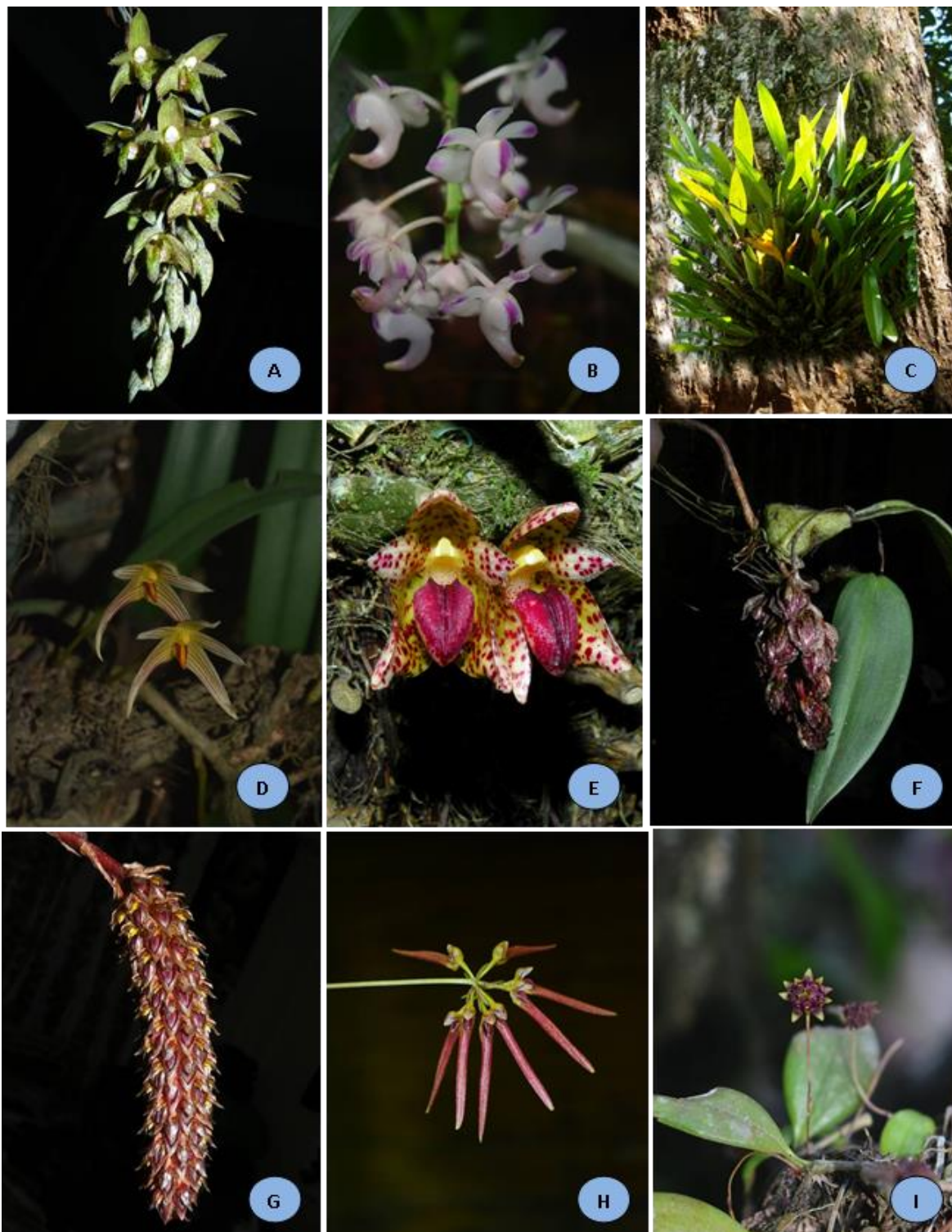


Figure 10: A: *Acrochene punctata* Lindl., B: *Aerides odoratum* Lour., C: *Agrostophyllum khasianum* Griff., D: *Bulbophyllum affine* Lindl., E: *Bulbophyllum leopardianum* (Wall.) Lindl., F: *Bulbophyllum bisetum* Lindl., G: *Dendrobium careyanum* (Hook.) Spreng, H: *Bulbophyllum helenae* Kuntze) J.J.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

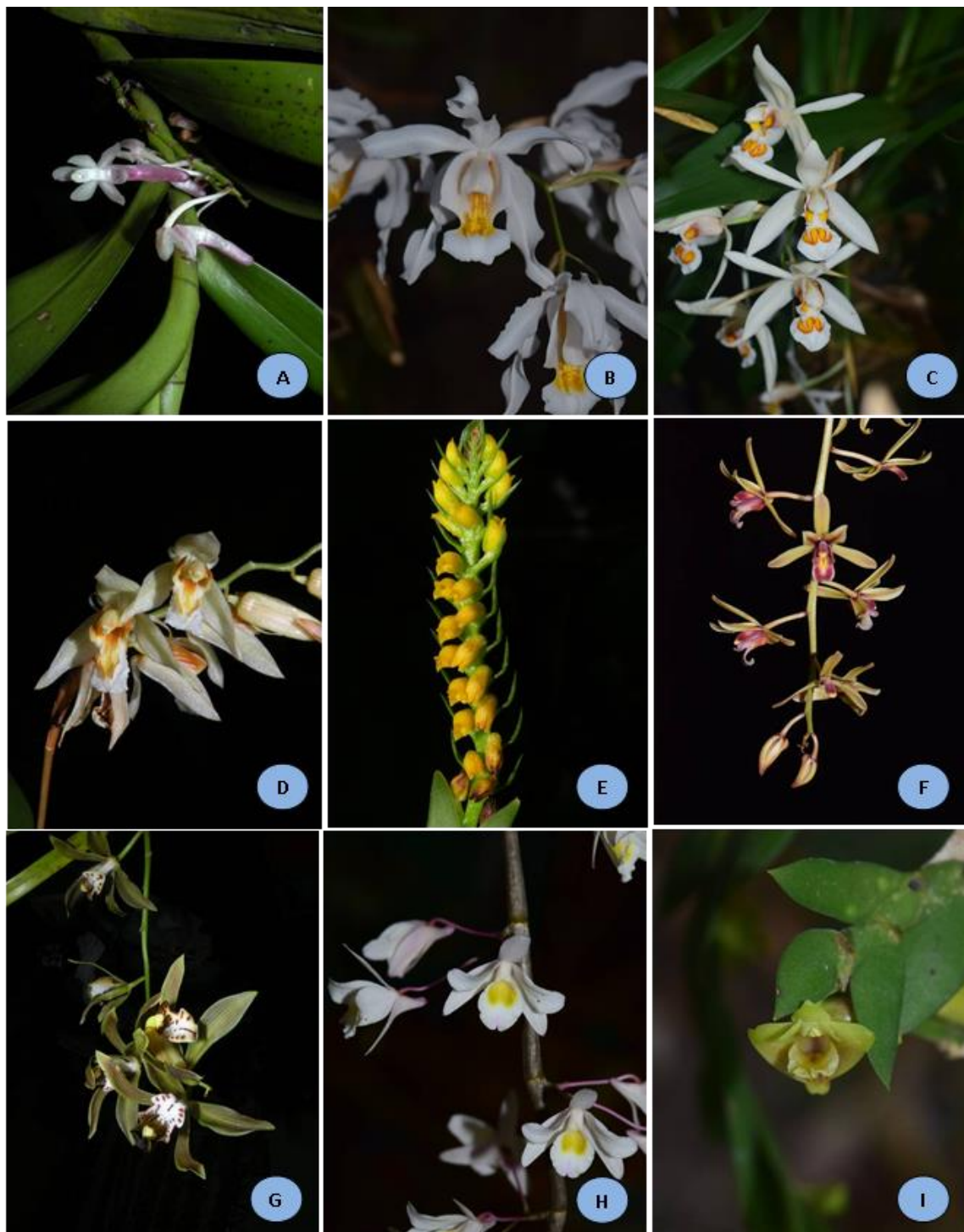


Figure 11: A: *Cleisocentron pallens* Rchb. f., B: *Coelogyne cristata* Lindl., C: *Coelogyne punctulata* Lindl., D: *Coelogyne raizadae* Jain & Das, E: *Cryptochilus lutea* Lindl., F: *Cymbidium aloifolium* (L.) Sw., G: *Cymbidium erythraeum* Lindl., H: *Dendrobium amoenum* Wall. ex Lindl., I: *Dendrobium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

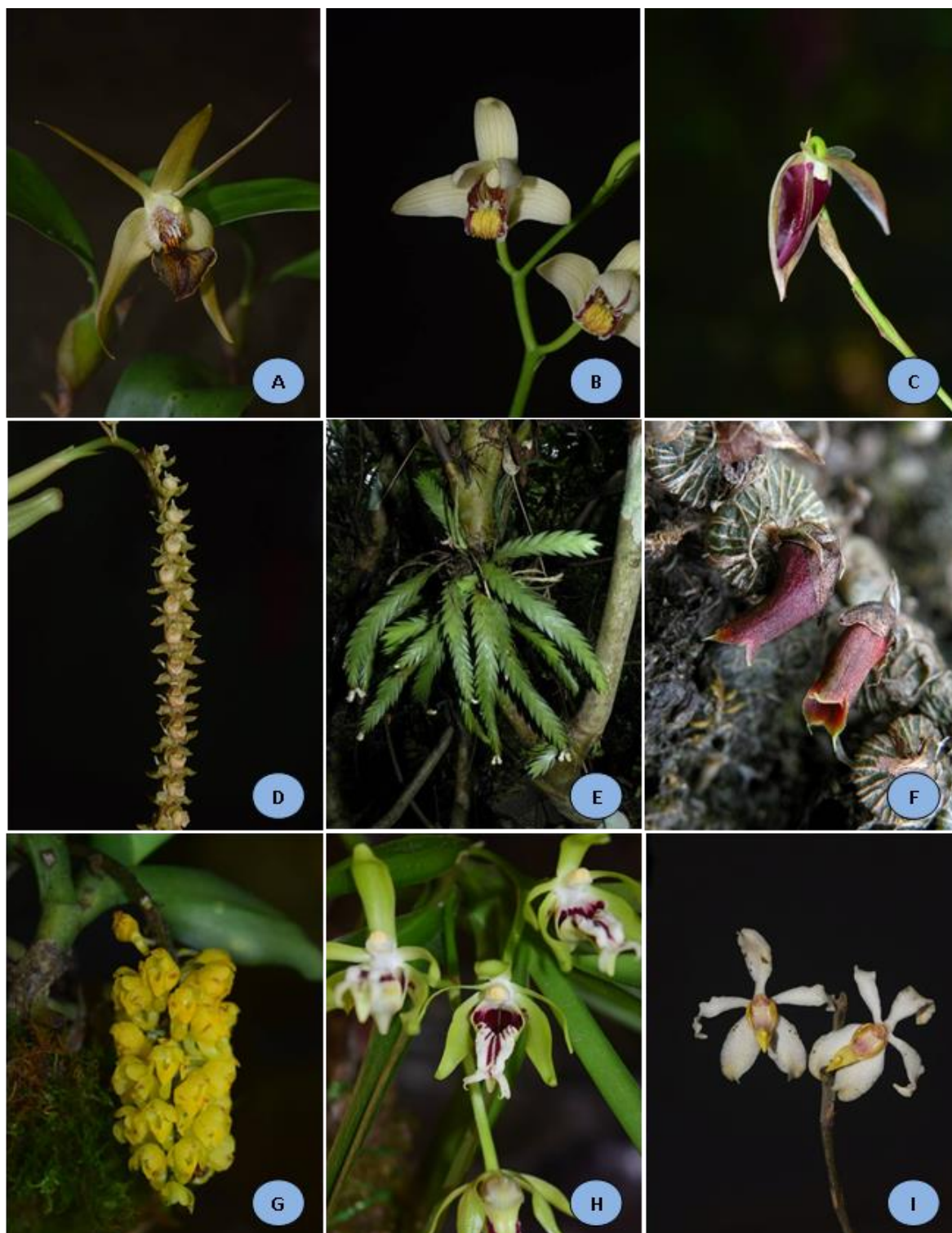


Figure 12: A: *Epigeneium amplum* (Lindl.) Summer., B: *Eria coronaria* (Lindl.) Rchb. f., C: *Ione cirrhata* Lindl., D: *Pholodota rubra* Lindl., E: *Podochilus cultratus* Lindl., F: *Porpax elwesii* (Rchb. f.) Rolfe, G: *Uncifera obtusifolia* Lindl., H: *Vanda cristata* Lindl., I: *Vandopsis undulata*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

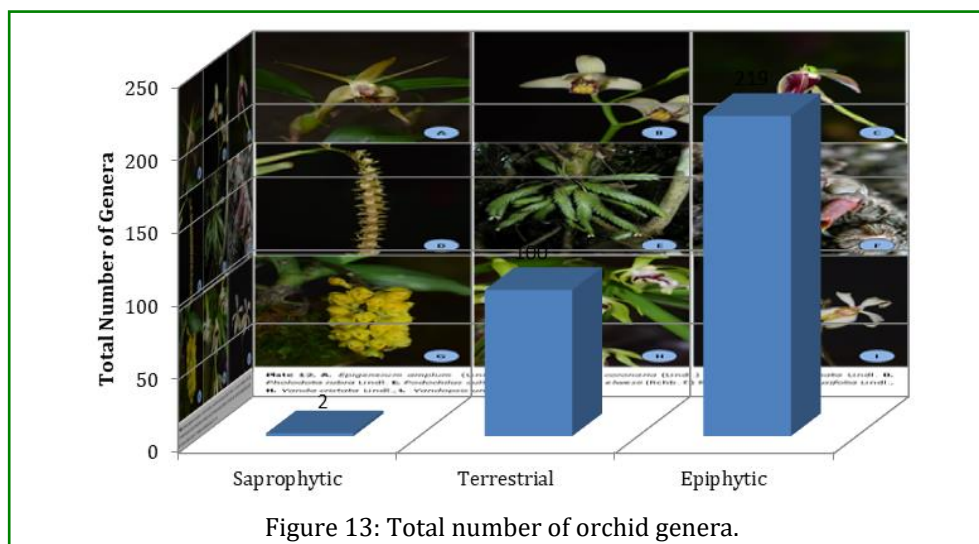


Figure 13: Total number of orchid genera.

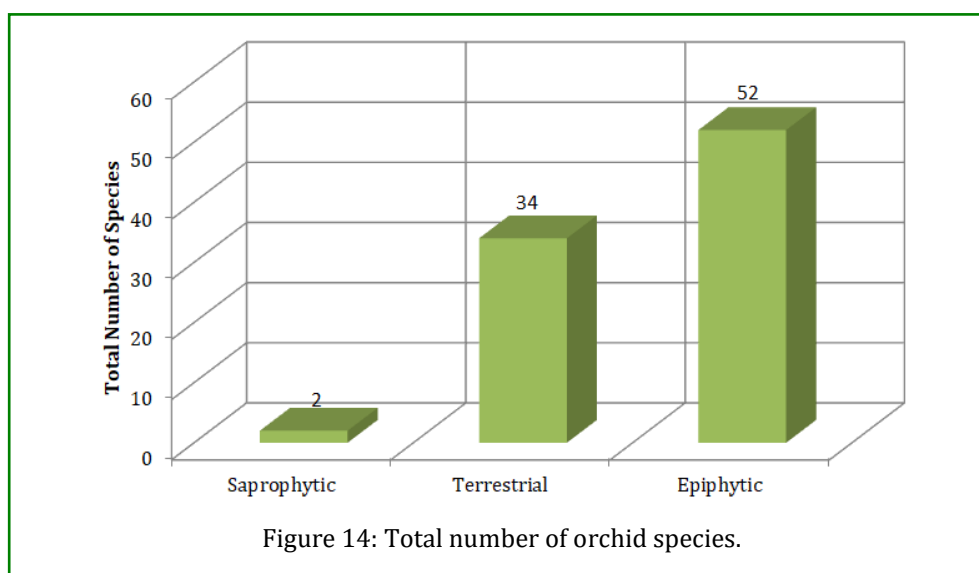
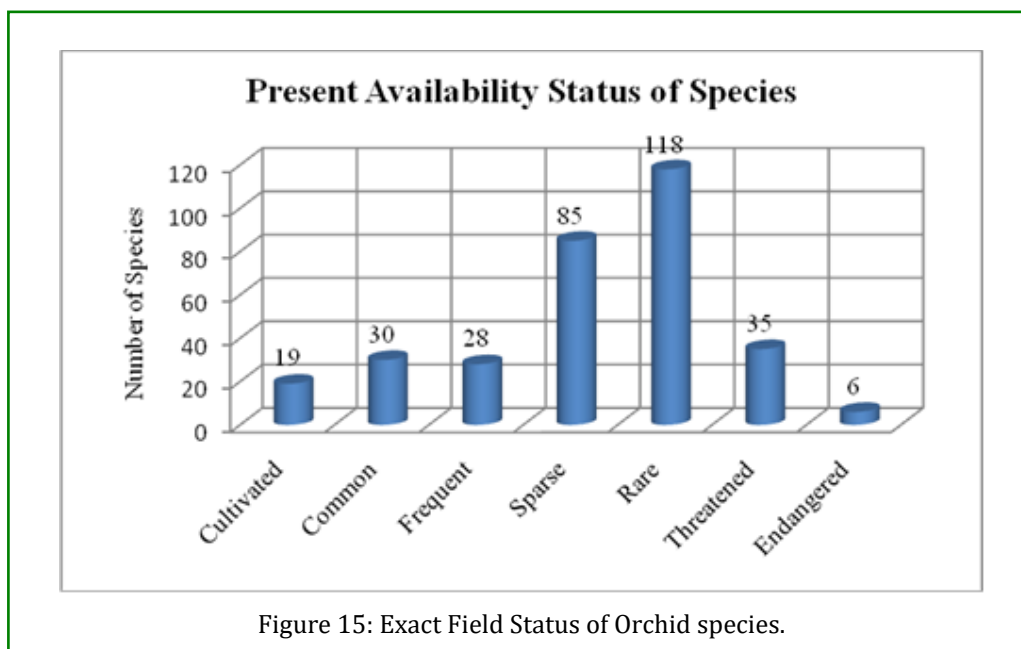


Figure 14: Total number of orchid species.

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 then 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.



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 brevibrabris [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.



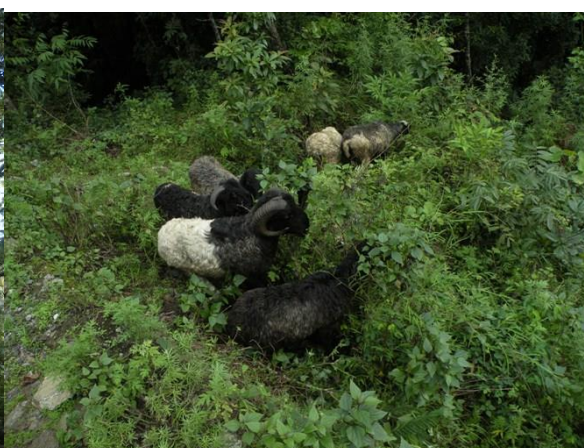
I: Harvesting of timber by local villagers.



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.

References

1. Yonzon Rajendra and Rai Samuel (2016) *Dendrobium Diversity in Darjeeling Himalaya, Taxonomic Details with Cultivation Practices*. Directorate of Cinchona and Other Medicinal Plants, Mungpoo, Darjeeling, India.
2. Vanlalruati, Mandal T, Pradhan S (2016) Habitat studies for conservation of medicinal orchids of Mizoram. *J Orchid Soc India* 30: 15-18.
3. Gogoi K, Rajendra Y (2013) Orchids of the Karbi Angling district of Assam, India. *The McAllen International Orchid Society Journal* 14(5): 11-20.
4. Mabberley DJ (2008) *Mabberley's Plant book: A portable dictionary of plants, their classification and uses*. (3rd edn), Cambridge University Press, Cambridge. pp. 606.
5. Chowdhery HJ (2009) Orchid diversity in North – Eastern States of India. *J Orchid Soc India* 23(1-2): 19-42.
6. Singh P and Chauhan AS (1999) Plant diversity in Sikkim Himalaya. In: PK Hajra, et al. (Eds.), *Plant diversity hotspots of India – An overview*. Director, BSI, Calcutta, pp. 137-154.
7. Karthikeyan S (2000) A statistical analysis of flowering plants of India. In: Singh NP, et al. (Eds.), *Flora of India, Introductory Volume II*. Botanical Survey of India, Calcutta, India, pp. 201-217.
8. Pathak P, Bhattacharya A, Vij SP, Mahant KC, Dhillon K, et al. (2010) An update on the medicinal orchids of Himachal Pradesh with brief notes on their habit, distribution, and flowering period. *J Non Timber Forest Products* 17(3): 365-372.
9. Yonzon Rajendra (2015) *Studies on the Orchid Flora of Darjeeling Himalaya*. Ph.D. Thesis. University of North Bengal, Raja Rammohunpur, Siliguri, West Bengal, India.
10. King G, Pantling R (1898) *The Orchids of the Sikkim-Himalaya*. In *Annals of the Royal Botanic Garden, Calcutta* 8, India.
11. Pradhan UC (1976) *Indian Orchids: Guide to Identification and Culture*, (Vol. I) Premulaceae Books, Kalimpong, India, pp. 188.
12. Deva S, Naithani HB (1986) *Orchids of North – West Himalaya*. Bishen Singh Mahendra Pal Singh, Print & Media Associates, Dehradun, India. pp. 459.
13. Pearce NR, Cribb PJ (2002) *Flora of Bhutan. The Orchids of Bhutan*. Vol. 3, Part 3. Royal Botanic Garden, Edinburgh, pp. 643.
14. Lucksom SZ (2007) *The Orchids of Sikkim and North East Himalaya*. Development Area, Jiwan Thing Marg, Gangtok, Sikkim. pp. 421 & 442.
15. Fosberg FR, Sachet MH (1965) *Manual for Tropical Herbaria, Regnum Vegetabile*. Vol. 39. International Bureau for Plant Taxonomy and Nomenclature.
16. Jain SK, Rao RR (1977) *Field and Herbarium Methods*. Today and Tomorrow's Printers and Publishers. New Delhi, India.
17. Rao CK, Geetha BL, Suresh G (2003) *Red List of Threatened Vascular Plant Species in India (Compiled from the 1997 IUCN Red list of threatened plants)* ENVIS, Botanical Survey of India, Ministry of Environment & Forests, Calcutta, pp. 144.
18. Nayar MP, Shastri ARK (1987) *Red Data Book of Indian Plants*. Vol. 1 – 2. Botanical Survey of India, Calcutta.
19. Arora YK, Gupta RK (1983) Native ornamental orchids: conservation and cultivation of endangered and extinct species. *J Econ Taxon Bot* 4(2): 393-411.
20. Bruhl P (1926) *A Guide to the Orchids of Sikkim*. Thacker, Spink and Co, Simla.
21. Chowdhery HJ (1998) *Orchid Flora of Arunachal Pradesh*. Bishen Singh Mahendra Pal Singh, Dehradun, India. p. 81.
22. Das AP, Chanda S (1987) Flowering calendar of the angiospermic flora of Darjeeling Hills, West Bengal (India). *Trans. Bose Res Inst* 50(4): 99-133.
23. Hara H (1966) *The Flora of Eastern Himalaya*. First Report. University of Tokyo Press, Japan.
24. Hara H (1971) *The Flora of Eastern Himalaya*. Second Report. University of Tokyo Press, Japan.
25. Hedge SN (1990) Enumeration of Native Orchids of West Bengal vis-a-vis Darjeeling Hills. *J Econ Taxon Bot* 14(2): 287-304.

-
26. Jain SK, Sastry ARK (1980) Threatened Plants of India – A state of the Art Report. Botanical Survey of India, Kolkata.
 27. Kumar V, Debta MR, Sabapathy CM, Chowdhery HJ (2013) The Orchids of West Bengal – A Checklist. *Phytotaxonomy*, 13. 08-22.
 28. Mathew KM (1966) A preliminary list of plants from Kurseong. *Bull Bot Surv India* 8(2): 156-157.
 29. Ohashi H (1975) The Flora of Eastern Himalaya. Third Report. University of Tokyo Press, Japan.
 30. Pradhan UC (1979) Indian Orchids Guide to Identification and Culture. (Vol. II), Premulaceae Books, Kalimpong, India.
 31. Yonzon Rajendra, Bhujel RB, Lama D, Rai Samuel (2012) Orchid species Diversity of Darjeeling Himalaya of India. *Int. J. Pharm. Lif. Sci.* 3(3): 1533-1550.
 32. Yonzon R, Lama D, Bhujel RB Rai S (2013) Present Availability Status, Diversity Resources and Distribution of Medicinal Orchid Species in Darjeeling Himalaya of West Bengal, India. *Int J pharm Nat med* 1(1): 14-35.
-