

***Ex-situ* conservation of wild orchids in the Western Ghats of Kerala, India**



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KFRI Research Report No. 528

ISSN No. 0970-8103

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(Report of project KFRI RP-663/13)

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August 2017

ABSTRACT OF THE PROJECT PROPOSAL

Project Number : KFRI RP 663/13

Title : *Ex-situ* Conservation of Wild Orchids in the Western Ghats of Kerala, India

Objective : To explore, collect and identify wild orchids from different forest areas of Kerala part in Western Ghats and to enrich live collection of KFRI Orchidarium

Project period : June 2013 - May 2016

Funding agency : KFRI Plan Grants

Investigators : V.B. Sreekumar, P. Sujanalal, P. A. Jose, K. A. Sreejith, A. V. Raghu

Research Fellow : Nirmesh T. K.

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ACKNOWLEDGEMENTS

The authors are thankful to Dr. P. S. Easa and Dr. P. G. Latha, former Directors; Dr. B.S. Corrie IFS, Director, KFRI; Dr. K. Balagopalan and Dr. E. A. Jayson former Research Coordinator and, Dr. Sajeev, T. V. Research Coordinator, KFRI for their keen interest in providing all facilities for the implementation and completion of the project. We are grateful to the Executive Vice President for the financial support from the Kerala State Council for Science, Technology and Environment (KSCSTE), Thiruvananthapuram for the conduct of the study. Thanks to Dr. N. Sasidharan, Scientist under Dr. B.P. Pal National Environment Fellowship, KFRI for valuable discussions. We express our sincere thanks to officials of the Kerala Forest Department for logistic support and help during the field work.

ABSTRACT

Orchids are unique flowering plants with their bewildering range of flowers and beautiful colour combinations provide a source of profound aesthetic pleasure. The orchid family Orchidaceae compared to other angiosperms families, have a high proportion of threatened genera, with most containing threatened species. IUCN redlisted 36 species from India including *Paphiopedilum druryi* (Critically Endangered) and *Vanda spathulata* (Vulnerable), the two threatened species found in Kerala. A project on “*Ex-situ* conservation of Wild orchids in Western Ghats of Kerala” envisaging collection, identification, propagation and conservation of indigenous orchids from forests of Kerala part of Western Ghats was implemented at Kerala Forest Research Institute. As an outcome this work, 321 accessions of 129 species representing 53 terrestrial and 76 epiphytic orchids were added to the existing Orchidarium of Kerala Forest research Institute. The epiphytic orchids like *Aerides crispa* Lindl., *Dendrobium anamalayanum* Chandra., Chandras. & N.C. Nair, *Oberonia santapau* Kapad., *Habenaria digitata* Lindl. and terrestrial species like *Ipsea malabarica* (Rchb.f.) Hook.f., *Anoectochilus elatus* Lindl., *Pecteilis gigantea* (J. E. Smith) Rafin., *Satyrium nepalense* D. Don, are few among them.

INTRODUCTION

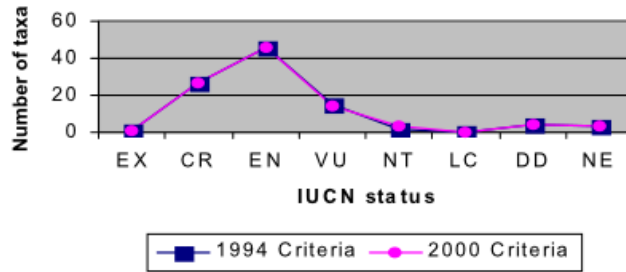
Orchids are highly evolved among the monocotyledons, exhibits incredible range of diversity in habit, shape, size, colour and fragrance of flower and their fascination. The family Orchidaceae with about 24,500 species (Dressler, 2006) under 788 genera (Mabberley, 1997), is the second largest family of flowering plants in the world. The orchid family displays a wide variety of unique morphological and anatomical adaptations, a diversity which few other plant families match and their distribution ranges from desert and semiscrub, rain forest and cloud forest, to tundra ecosystems. Since orchids have mycorrhizal specificity, pollinator specialization and limited germination rates (McCormick and Jacquemyn, 2014), most of the species are narrowly distributed in specific habitats (Lozano et al., 1996) and are extremely susceptible to habitat disturbance comparing to other plants. There are thirty six genera, each with 100 or more species, comprising 10,849 species of orchids are reported in the tropics. Recent studies pinpoint that distribution of orchids was limited by the joint effect of habitat availability and pollination limitation (Mc Cormick and Jacquemyn, 2014). Specifically, patterns of orchid richness are regulated by habitat size and elevation range (Schödelbauerová et al., 2009; Acharya et al., 2011), while light availability, soil moisture, canopy height and area (especially for the epiphytic orchids) regulate richness at fine scales (Mc Cormick and Jacquemyn, 2014).

India has a very large variety of orchids and hilly regions have one or the other orchid flowering almost throughout the year. The diversity is so large that there are large-flowered, terrestrial, epiphytic and also saprophytic orchids. In general, terrestrial orchids are more common in North-Western India, epiphytic orchids in North-Eastern India and small flowered orchids in Western Ghats. Orchids are well known for their beautiful flowers, botanical specialty (symbiosis), medicinal and horticultural importance. Growing of orchids in India commercially is not organized and is still in the hands of hobbyists and few dealers who mainly depend on wild collections from forest to meet a large part of their overseas and local demands, due to which some of the orchids-growing areas are now without any orchid and very rare species are now facing the danger of depletion.

In India, they are represented by 186 genera and 1,141 species (Sathish Kumar and Manilal, 1992). North East region of India is also considered as one of the mega biodiversity spot in terms of richness where about 876 orchid species in 151 genera are recorded. However there are reports with 1,129 species and 184 genera, (Jalal *et al.*, 2008) with maximum diversity represented in the eastern Himalayas, including the North-Eastern region, the Western Ghats, and eastern part of Western Himalayas (Kumaon Himalayas). The Western Ghats are represented with 267 species, 3 sub species and 3 varieties of orchids. The database on flowering plants version 2.0 published by Sasidharan represented with 265 species from Kerala part of Western Ghats, among which dominant genera are *Habenaria* (26), *Oberonia* (26) *Bulbophyllum* (19), *Dendrobium* (19) etc.,

Ex-situ conservation involves preservation and maintenance of samples of living organisms outside their natural habitat, in the form of whole plants, seeds, pollen, vegetative propagules, and tissue or cell cultures. *Ex-situ* techniques are generally used to complement *in situ* methods but in some cases they are the only possible techniques to conserve certain species (Ramsay *et al.*, 2000). Among *ex-situ* conservation methods the most common are cultivation in botanic gardens, seed storage, and in vitro cultivation. Deforestation through burning of forest trees and felling of forest trees for timber has been the major causes for the depletion of Indian orchid wealth. A large number of orchid species which were present in plenty in Indian forests are now at the verge of extinction and some of them have become so rare that a large number of botanical teams were unable to trace them. Of the 837 orchids species listed as per IUCN red list assessment (2015), one species, *Oeceoclades seychellarum* is extinct, 148 are Critically Endangered, 231 are Endangered, 108 Vulnerable, 46 Near Threatened, 56 Data Deficient and 247 as Least concern. From India 35 orchids are listed (IUCN, 2015), of which seven species are represented from Peninsular India. However, in a camp workshop of orchids conducted by (Sathish Kumar *et al.*, 2001) of the endemic orchid taxa of the Western Ghats (125 taxa), 106 were assessed and the status derived according to both the 1994 and 2000 criteria indicated that more than 84.8% of the taxa are threatened in the Western Ghats. The status of Western Ghats endemic orchids as assessed is provided in Figure 1.

Figure 1. Status of endemic orchids of Western Ghats according to the 1994 and 2000 IUCN Red List Criteria.



The summary status of endemic orchids of Western Ghats assessed by Conservation Assessment and Management Plan (C.A.M.P workshop) is provided (Sathish Kumar *et al.*, 2001) in Table 1.

Table 1. Summary status of endemic orchids of Western Ghats assessed by Conservation Assessment and Management Plan (C.A.M.P) Workshop.

IUCN Category	Orchid assessment according to	
	1994 Criteria	2000 criteria
Extinct (EX); 1994, 2000	1	1
Critically Endangered (CR); 1994, 2000	27	27
Endangered (EN) 1994, 2000	46	46
Vulnerable (VU) 1994, 2000	15	14
Lower Risk near threatened (LRnt) 1994/ Near threatened (NT) 2000	2	3
Lower Risk least concern (LRlc) 1994/ Least Concern (LC) 2000	-	-
Data deficient (DD) 1994, 2000	4	4
Not Evaluated (NE) 1994, 2000	3	3

The major factors threatening the natural populations of tropical orchids include (1) large-scale collection as ornamental or medicinal plants for commercial purposes, and (2) alteration in natural habitats of ecological conditions and changes of territories for crop cultures. These changes are caused by human interventions, such as agricultural development,

industrial development, road construction, mining, tourism and recreation and timber extraction.

KFRI Orchidarium

The KFRI orchidarium was established by Sasidharan et al. (1990) with 84 species including some rare and endemic species. The main activities of KFRI Orchidarium in the field of conservation of tropical orchid species *ex situ* include maintenance of living collections, propagation of these plants through vegetative propagation techniques and to create awareness among students and researchers about the in conservation importance. The list of orchids species collected by Sasidharan et al. (1990) with collection locations is provided in table. 2

Table 2. List of orchid species collected by sasidharan et al. (1990) with collection locations.

Sl. No	Scientific Name	Locations
1	<i>Acampe ochracea</i> (Lindl.)	Pooyamkutty, Idukki Dist., Kuruva Island. Wayanad
2	<i>Acampe praernorsa</i> (Roxb.) Blatt. & Mc Cann.	Kerala
3	<i>Acanthephippium bicolor</i> Lindl.	Silent Valley
4	<i>Aerides crispum</i> Lindl.	Wayanad
5	<i>Aerides ringens</i> (Lindl.) Fischer	Kerala
6	<i>Anoechtochilus elatus</i> Lindl.	Bonacaud Nelliampathy
7	<i>Arundina graminifolia</i> (Don) Hochr.	Kerala
8	<i>Brachycorythis iantha</i> (Wight) Surnerh.	Kerala
9	<i>Brachycorythis iantha</i> (Wight) Surnerh.	Ponmudi
10	<i>Bulbophyllum kaitense</i> (Wight) Reichb. f.	Munnar
11	<i>Bulbophyllum neilgherrense</i> Wight	Peechi Sholayar
12	<i>Bulbophyllum tremulum</i> Wight	Kerala
13	<i>Cleisostoma tenuifolium</i> (Linn.) Garey	Silent Valley
	<i>Calanthe masuca</i> (D. Don) Lindl.	Munnar Sholayar
14	<i>Coelogyne breviscapa</i> Lindl.	Munnar Silent Valley
15	<i>Coelogyne mossae</i> Rolfe	Munnar
16	<i>Coelogyne nervosa</i> A. Rich.	Sholayar

17	<i>Cottonia peduncularis</i> (Lindl.)	Attappady
18	<i>Cymbidium aloifolium</i> (Linn.) Sw.	Kerala
19	<i>Cymbidium bicolor</i> Lindl	Kulathupuzha,
20	<i>Dendrobium anamalayanam</i> Chandrabose et al.	Munnar
21	<i>Dendrobium aqueum</i> Lindl.	Munnar.
22	<i>Dendrobium barbatulum</i> Lindl.	Silent Valley
23	<i>Dendrobium bambusaefolium</i> Par. ex Reichb. f.	Agasthiyarmala
24	<i>Dendrobium crepidatum</i> Lindl.	Chandanathode, Wayanad
25	<i>Dendrobium herbaceum</i> Lindl.	Silent valley, Nelliampathy, Wayanad , Sholayar
26	<i>Dendrobium heterocarpum</i> Wall. ex Lindl..	Varadimala
27	<i>Dendrobium heyneanum</i> Lindl.	Ponmudi,
28	<i>Dendrobium lawianum</i> Lindl.	Sholayar
29	<i>Dendrobium mabelae</i> Gammie	Chandanathode Wayanad
30	<i>Dendrobium macrostachyum</i> Lindl.	Kerala
31	<i>Dendrobium ovatum</i> (Willd.)	Kerala
32	<i>Diplocentrum congestum</i> Wight	Vellanimala Trichur Achenkovil, Quilon.
33	<i>Eria dalzelli</i> (Hook ex Dalz.)	Silent Valley
34	<i>Eria mysorensis</i> Lindl.	Kerala
35	<i>Eria pauciflora</i> Wight	Munnar
36	<i>Eria pseudocalvicaulis</i> Blatt. & Mc Cann	Munnar Agasthiyarmala
37	<i>Eria reticosa</i> Wight	Munnar
38	<i>Eulophia epidendreaea</i> (Koenig) Schltr.	Peechi.
39	<i>Eulophia graminea</i> Lindl.	Agasthiyarmala
40	<i>Eulophia nuda</i> Lindl.	Nelliampathy Peechi
41	<i>Flickingera nodosa</i> (Dalz.) Seidenf.	Munnar Silent Valley
42	<i>Gastrochilus flabelliformis</i> (Blatt. & Mc Cann) Saldanha	Nilambur Sholayar Peechi
43	<i>Geodorum densiflorum</i> (Larnk.) Schltr	Sholayar, Peechi Wayanad
44	<i>Habenaria crinifera</i> Lindl.	Sholayar Ponmudi Peechi

45	<i>Habenaria digitata</i> Lindl. var. <i>travancorica</i> (Hook. f.) Fischer	Sholayar
46	<i>Habenaria heyneana</i> Lindl.	Munnar Silent Valley Agasthiyarmala
47	<i>Habenaria longicorniculata</i> Grah.	Ponmudi (Trichur) Ponmudi (Trivandrum)
48	<i>Habenaria longicornu</i> Lindl.	Munnar. Silent Valley, Ponmudi (Trichur)
49	<i>Habenaria ovalifolia</i> Wight	Peechi
50	<i>Habenaria plantaginea</i> Lindl.	Vellanimala (Trichur) Walayar, Achenkovil Vazhachal
51	<i>Liparis artopurpurea</i> Lindl.	Nelliampathy,
52	<i>Liparis nervosa</i> (Sw.) Lindl.	Sholayar,, Nelliampathy
53	<i>Liparis prazeri</i> King & Pantl.	Kuruwa Island, Wayanad
54	<i>Liparis viridiflora</i> (Bl.) Lindl.	Ponmudi, Sholayar. Peechi, Wayanad, Nelliampathy and Silent Valley.
55	<i>Liparis wrayii</i> Hook. f.	Moozhiyar, Pathanathitta
56	<i>Luisia evangelinae</i> Blatt. & McCann	Sholayar
57	<i>Luisia zeylanica</i> Lindl.	Kerala
58	<i>Malaxis rheedii</i> Sw.	Wayanad, Munnar, Peechi, Ponmudi
59	<i>Nervilia aragoana</i> Gaud.	Peechi, Chimmini dam, Neyyar dam
60	<i>Nervilia plieata</i> (Andr.) Schltr.	Peechi, Vellanimala, Trichur
61	<i>Nervilia prainiana</i> (King & Pantl.) Seidenfaden & Smitin.	Kuruva Island, Wayanad
62	<i>Oberonia brachyphylla</i> Blatt & Mc Cann.	Vellanirnala, Trichur and Silent Valley
63	<i>Oberonia brunoniana</i> Wight	Silent Valley, Ponmudi, Thekkadi, Agasthiyarmala
64	<i>Oberonia iridifolia</i> Lindl. var. <i>denticulata</i> (Wt.) Hook. f.	Peechi.
65	<i>Oberonia santapau</i> Kapad	Ponmudi, Silent Valley, Wayanad
66	<i>Oberonia thwaitesii</i> Hook. f.	Peechi Elanad, Trichur.

67	<i>Pachystoma hirsuta</i> (Joseph & Vajravelu) Sathishkumar & Manilal	Ponmudi, Trichur
68	<i>Pecteilis gigantea</i> (J. E. Sm.) Rafin.	Wayanad and Munnar
69	<i>Peristylus goodyerioides</i> (D. Don) Lindl.	Peechi, Vellanimala. Trichur
70	<i>Peristylus richardianus</i> Wight	Munnar, Wynad
71	<i>Phalaenopsis decumbens</i> (Griff.) Holtum.	Sholayar
72	<i>Pholidotta pallida</i> Lindl.	Peechi, Kulathupuzha Nilambur.
73	<i>Podochilus falcatus</i> Lindl.	Chandanathode, Wayanad
74	<i>Polystachya cencreta</i> (Jacq.) Garey & H. R. Sweet	Sholayar Silent Valley
75	<i>Porpax reticulata</i> Lindl.	Silent valley
76	<i>Rhynchostylis retusa</i> (Linn.) Blume	Kerala
77	<i>Satyrium nepalense</i> D. Don	Agasthiarmala,
78	<i>Sirhookera latifolia</i> (Wight) Ktze	Sholayar, Silent Valley
79	<i>Smithsonia maculata</i> (Dalzell) Saldanha	Nelliampathy
80	<i>Smithsonia straminea</i> Saldanha	Vellanimala and Palapally of Trichur Dist
81	<i>Trias stocksii</i> Benth. ex Hook. f.	Peechi and Sholayar
82	<i>Vanda tessellata</i> (Roxb.) Hook. f. ex G. Don	Marayur
83	<i>Vanda testacea</i> (Lindl.) Reichb. f.	Kerala
84	<i>Vanilla wightiana</i> Lindl. ex. Hook. f.	Kulathupuzha, Sholayar, Ezhimala

As 23 years have elapsed since the establishment of the KFRI orchidarium and no major additions were made since then, hence in this context the present study was conducted with the following objective.

Objective

- To explore, collect and identify wild orchids from different forest areas in Kerala part of Western Ghats and to enrich live collection of KFRI orchidarium.

MATERIALS AND METHODS

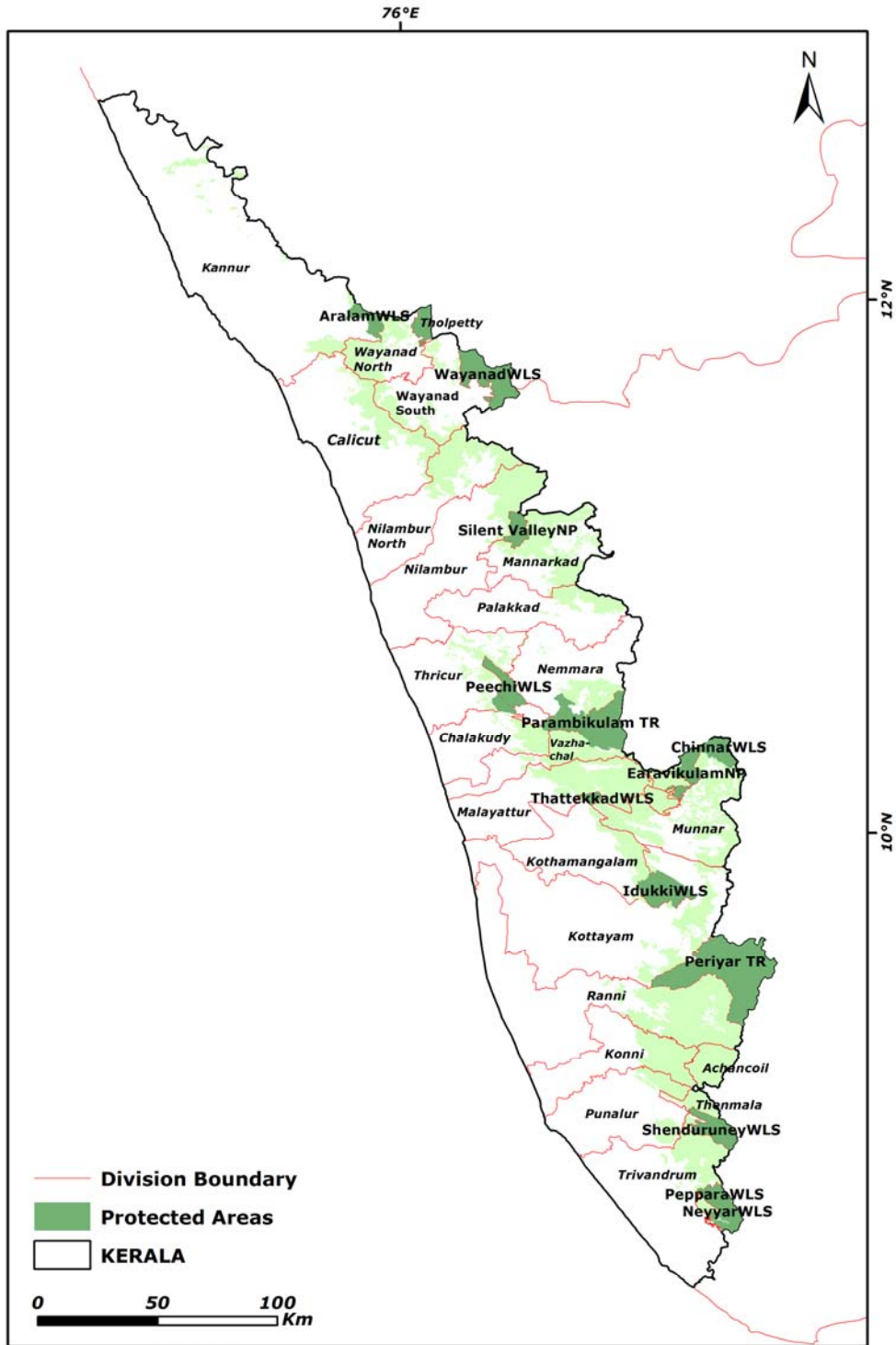
Several field trips were conducted in forest areas of Kerala part of Western Ghats during 2013-2016 (Map 1). Orchids from different habitats were collected and while surveying the orchids, data pertaining to occurrence, availability and habitat of individual species were also carefully documented. Collection of epiphytic orchids, especially from the evergreen forests was rather difficult due to the enormous height of the trees on which they were found. Hence, for epiphytic orchids collections were made from fallen trees or branches. The specimens were identified with pertinent literature and by comparing with authentic specimens. After collection, orchids were mainly grouped into epiphytes and terrestrial, depending on their growth habitats. For growing orchids inside the orchidarium, the methods suggested for terrestrial and epiphytic orchids by Sasidharan et al. (1990) and American Orchid Society are followed.

Field surveys were conducted to the following areas:

Protected areas: Aaralam WLS, Wayanad WLS, Muthanga WLS, Malabar WLS, Parambikulam WLS, Silent Valley NP, Peechi WLS, Shenduruny WLS, Periyar Tiger Reserve, Chinnar WLS, Eravikkulam NP etc.,

Sacred groves: Mundiyan Kavu, Poyil Kavu, Iringole Kavu, Andallur Kavu, Ponnakkudam Kavu, Edayilakkad grove, Mani Kavu, Poyil Kavu, Chandana kavu, Vallikottu Kavu etc.,

Terrestrial forest Divisions: Kottiyur, Kannavam, Tirunelli, Thamarassery-Vanaparvam, Nilambur & Nadugani, Dhoni, Nellyampathy, Muthikulam, Athirappilly – Malakkappara, Ranni, Konni, Wagamon, Peerumedu, Malayattur, Aryankavu, Thenmala, Kulathupuzha, Neriyaamangalam, Kunjyapathy, Ponmudi, Agasthyamala, etc.



Map 1. The study area: Kerala part of Western Ghats.

RESULTS

A total of 129 species representing 53 terrestrial and 76 epiphytic orchids were collected. Maximum number of species are represented in genus like *Dendrobium*, *Habenaria*, and *Bulbophyllum*. Genus wise-Details of orchids collected details are provided in Table 3. For each species species description with citation, synonyms, habitat, flowering and fruting information and accession details are as follows:

Table 3. Genus wise-details of orchids collected in the present study

Sl. No	Genera	Number of species
1	<i>Acampe</i>	2
2	<i>Aenhenrya</i>	1
3	<i>Aerides</i>	3
4	<i>Anoectochilus</i>	1
5	<i>Aphyllorchis</i>	1
6	<i>Arundina</i>	1
7	<i>Brachycorythis</i>	2
8	<i>Bulbophyllum</i>	8
9	<i>Calanthe</i>	2
10	<i>Cheirostylis</i>	1
11	<i>Chiloschista</i>	1
12	<i>Cleisostoma</i>	1
13	<i>Coelogyne</i>	4
14	<i>Conchidium</i>	2
15	<i>Cottonia</i>	1
16	<i>Cymbidium</i>	3
17	<i>Dendrobium</i>	12
18	<i>Diplocentrum</i>	1
19	<i>Disperis</i>	1
20	<i>Epipogium</i>	1
21	<i>Eria</i>	3
22	<i>Eulophia</i>	4
23	<i>Flickingeria</i>	1
24	<i>Gastrochilus</i>	2
25	<i>Geodorum</i>	1
26	<i>Habenaria</i>	13
27	<i>Ipsea</i>	1
28	<i>Liparis</i>	4
29	<i>Luisia</i>	3

30	<i>Malaxis</i>	3
31	<i>Nervilia</i>	4
32	<i>Oberonia</i>	8
33	<i>Pachystoma</i>	2
34	<i>Papilionanthe</i>	1
35	<i>Pecteilis</i>	4
36	<i>Pholidota</i>	2
37	<i>Polystachya</i>	1
38	<i>Pomatocalpa</i>	1
39	<i>Porpax</i>	2
40	<i>Pteroceras</i>	1
41	<i>Rhynchostylis</i>	1
42	<i>Robiquetia</i>	1
43	<i>Satyrium</i>	1
44	<i>Seidenfia</i>	1
45	<i>Sirhookera</i>	2
46	<i>Smithsonia</i>	2
47	<i>Spiranthes</i>	1
48	<i>Taeniophyllum</i>	1
49	<i>Tainia</i>	1
50	<i>Trias</i>	1
51	<i>Trichoglottis</i>	1
52	<i>Vanda</i>	2
53	<i>Zeuxine</i>	3

1. ***Acampe ochracea*** (Lindl.) Hochr., Bull. New York Bot. Gard. 6: 270. 1910; Sant. & Kapad., Orch. Bombay 234, 1966; Abraham & Vatsala, Introd. Orchids 452. 1981; Ramach. & V.J. Nair, Fl. Cannanore Dist. 446. 1988; Muktesh, Epiphytic Fl. Western Ghats 74. 1998; Sasidh., Fl. Periyar Tiger Reserve 399. 1998; Sasidh., Fl. Parambikulam WLS 319 ; Sathish & Manilal, Orchid Memories 163. 2004; Anil Kumar et al., Fl. Pathanamthitta 477. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 781. 2009.

Saccolabium ochraceum Lindl., Bot. Reg. Misc. 2. 1842; Hook. f., Fl. Brit. India 6: 62. 1890.

Description

Epiphytes, stem stout, monopodial covered by persistent leaf bases. Stems about 7 mm thick, covered by sheaths. Leaves many, distichous, fleshy, oblong, obtuse and 2 lobed at apex, sessile, 8-22 × 1.5-2.5 cm. Inflorescence paniculate, leaf opposed, suberect, many flowered; peduncle slender, branched, glabrous, sheathed at base, 1-1.5mm thick; sheaths 2, tubular, overlapping, 2-3mm tall. Flowers densely arranged, yellow, 0.6-1.2cm across, in 10-20 cm long, axillary, racemose panicles; sepals and petals yellow to ochre with irregular brown markings, dorsal sepal 7 × 2 mm, obovate, obtuse, 5-veined; lateral sepals 6 × 1-2 cm, obliquely oblong, acute, 3-veined; petals spatulate, obtuse, 7 × 1-2 mm, obovate-oblong or spatulate, 6-veined; lip 4 × 2 mm, triangular, obtuse, papillate, with 5 × 1 mm, cylindrical spur, Column thick, dentate, c 2mm tall; anther cap dome shaped, beaked; pollinia globose, 0.1-0.2mm long; caudicle clavate, 1 mm long. Fruit fusiform ovoid, subsessile, 2-2.9 x 0.5-0.8cm.

Habitat : Moist deciduous and semi-evergreen forests.

Flowering and Fruiting : February - April

Accession Details

Accession Number, Date & Locality : KFRI-OR-28B, 14-02-2014, Chanthanathode, Wayanad; KFRI-OR- 28C, 25-08- 2014, Kannavam, Kannur; KFRI-OR-28D, , 20-10- 2014, Peerumedu, Idukki.

2. ***Acampe praemorsa*** (Roxb.) Blatt. & McCann, Journ. Bombay Nat. Hist. Soc. 35: 495. 1932; Rathakrishnan in Bull. Bot. Surv. India. 13: 2,1973; Abraham & Vatsala, Introd. Orchids 450. 1981; Manilal & Sivar., Fl. Calicut 284. 1982; Mohanan, Fl. Quilon Dist. 390. 1984; Ansari, Fl. Kasaragod Div. 367. 1985; Joseph. Orch. Nilgiris 183, 1987; Antony, Syst. Stud. Fl. Kottayam Dist. 382. 1989; Babu, Fl. Malappuram Dist. 775. 1990; Vajr., Fl. Palghat Dist. 465. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 446. 1994; Subram., Fl. Thenmala Div. 373. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 433. 1996; Sasidh., Fl. Shenduruny WLS 308. 1997; Sivar. & Mathew, Fl. Nilambur 677. 1997; Muktesh, Epiphytic Fl. Western Ghats 74. 1998; Sasidh., Fl.

Parambikulam WLS 320. 2002; Mohanan & Sivad., Fl. Agasthyamala 652. 2002; Sathish & Manilal, Orchid Memories 163. 2004; Anil Kumar et al., Fl. Pathanamthitta 477. 2005; Sunil & Sivadasan, Fl. Alappuzha Dist. 673. 2009; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 782. 2009.

Epidendrum praemorsum Roxb., Pl. Corom. 34, t.43. 1795.

Saccolabium praemorsum (Roxb.) Hook.f., Fl. Brit. India 6: 62. 1890.

Acampe wightiana Lindl., Fol. Orch. Acampe 2.1853; Gamble, Fl. Pres. Madras 1447(1011).1928.

Vanda wightiana (Lindl.) Wight, Ic. t. 1670. 1851.

Plate 1- A

Description

Epiphytic plants without pseudobulb, stems about 40-50 cm long, ensheathed by petiolar leaf bases, bearing thick roots. Leaves 15-20 x 1.5-3 cm, lorate, fleshy, coriaceous, bibbed at apex, apex rounded. Flowers in leaf opposed compact panicle, 4-8 cm long. Floral bracts triangular, c. 2 x 1 mm, fleshy, purple. Flowers yellow, barred with purple across. Sepals and petals thick, fleshy, barred purple on inside and outside; dorsal sepal oblong, 8-10 x 4-5 mm, obtuse; lateral sepals obovate, 8-10x 3-4 mm, obtuse, mucronulate. Petals spatulate, c. 10 x 4 mm, obtuse; lip yellow, 3-lobed, lateral lobes small erect, midlobe obovate, dilated beyond lateral lobes, with 3-4 red lines; spur short, papillose within. Column short, c. 2.5 mm long, with two erect horns. Anther 2-celled, c. 1.5 x 2 mm; pollinia 2, waxy, globose. Ovary with pedicel 10-15 mm long. Capsule fusiform, 6-7 x 0.5 cm, ribbed.

Habitat : Moist deciduous forests, also in the plains.

Flowering and Fruiting : March – April.

Accession Details

Accession Number, Date & Locality : KFRI-OR-12D, 4-01-2014, Peechi, Thrissur; KFRI-OR-12F, 15-10-2015, Nelliampathy, Palakkad; KFRI-OR-12F, 20-11-2015, Thenmala, Kollam.

3. *Aenhenrya rotundifolia* (Blatt.) Sathish & Rasm., Novon 7: 81. 1997; Sasidh. et al., Journ. Bombay Nat. Hist. Soc. 94: 473. 1997; Sasidh., Fl. Periyar Tiger Reserve 400.1998; Sathish & Manilal, Orchid Memories 164. 2004.

Odontochilus rotundifolius Blatt., Journ. Bombay Nat. Hist. Soc. 32. 521. 1928; Gamble, Fl. Pres. Madras 1453(1016). 1928.

Anoectochilus rotundifolius (Blatt.) Balakr., Journ. Bombay Nat. Hist. Soc. 63: 327. 1966.

Aenhenrya agastyamalayana Gopalan, Journ. Bombay Nat. Hist. Soc. 90: 271. 1994; Gopalan & Henry, Endemic Pl. Agasthiyamala 44. 2000.

Description

Terrestrial herbs to 10 cm high with creeping rhizome; stem decumbent, nodes short. Leaves 3-5, crowded at the base, orbicular-ovate, fleshy, c. 3.5 x 3 cm, acute, purple; petiole amplexicaul, 1 cm long. Inflorescence 1-2 flowered; peduncle upto 6 cm long, hairy, sheaths at the base c. 1 cm long. Flowers white, sessile. Floral bracts c. 10 x 8 mm, ovate-lanceolate, hairy without, acuminate. Sepals: dorsal one ovate-lanceolate, c. 20 x 8 mm, acuminate, curved, hairy, 3-nerved; lateral one ovate-lanceolate, c. 15 x 8 mm, acuminate, 3-nerved. Petals oblong-lanceolate, c. 14 x 6 mm; lip 3-lobed, 20-25 mm, attached to the column, ligules auricular at the base of the lip, lateral lobes fringed, midlobe triangular with acute tip. Column 10-12 mm long; stigma, 3-lobed, two lateral, papillose and one triangular, extends and form two horn like projections. Anther 2-lobed, with broad connective; pollinia 2, pyriform, 2 mm long, with long caudicle, upto 12 mm long, ending in gland. Ovary with pedicel to 8 mm long

Habitat : Evergreen forests

Flowering and Fruiting : May - June

Accession Details

Accession Number, Date & Locality : KFRI-OR-65B, 11-06-2015, Mannavanshola, Munnar.

4. ***Aerides crispa*** Lindl., Gen. Sp. Orchid. Pl. 239. 1833; Hook. f., Fl. Brit. India 6: 45. 1890; Gamble, Fl. Pres. Madras 1442 (1008). 1928; Cook Fl. Pres. Bombay 3: 203, 1958 (Repr. ed.); Sant. & Kapad., Orch. Bombay 122, 1966; Abraham & Vatsala, Introd. Orchids 446. 1981; Ansari, Fl. Kasaragod Div. 367. 1985; Manilal, Fl. Silent Valley 268. 1988; Babu, Fl. Malappuram Dist. 776. 1990; Subram., Fl. Thenmala Div. 372. 1995; Lakshmi. In Sharma *et al.* (ed.) Fl. Maharashtra Monocot. 12, 1996; Sivar. & Mathew, Fl. Nilambur 678. 1997; Muktesh, Epiphytic Fl. Western Ghats 75. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 193. 1999; Mohanan & Sivad., Fl. Agasthiyamala 653. 2002; Sathish & Manilal, Orchid Memories 165. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 783. 2009.

Aerides lindleyana Wight, Ic. 5:9, t.1677. 1852.

Plate 1 - B

Description

Tough, robust epiphytes; roots slender long, woody, stout stems 10-25 cm long clothed by bases of fallen leaves. Leaves leathery, rigid, 7.0-12.0 x 2.3-2.7 cm, thick linear-oblong, bilobed at apex. Inflorescence racemes, 13-32 cm long arise in the axil of the lower leaves, lax

flowered: peduncle with bracts. Flowers 2-3 cm across pinkish white, sweet scented, long pedicellate, restricted towards the distal end. Bracts small; sepals oblong, obtuse petals broader lip 3 - lobed, white or pale lilac with longitudinal streaks in the middle, bent inwards midlobe crenulate lateral lobes erect, with rhomboid orbicular bilobed callus; spur white, broadly funnel shaped incurved, column white, grooved in the middle; rostellum beaked with a central deep furrow, pollinia 2 yellow waxy capsules pear shape.

Habitat : Semi-evergreen and evergreen forests

Flowering and Fruiting : June - September

Accession Details

Accession Number, Date & Locality: KFRI-OR - 68A, 28-08-2015, Suganthagiri, Nelliampathy Hill top; KFRI-OR- 68B, 02-01-2016, Nadukani, Nilambur.

5. *Aerides maculosa* Lindl., Bot. Reg. t. 58. 1845; Hook. f., Fl. Brit. India 6: 45. 1890; Gamble, Fl. Pres. Madras 1442(1008). 1928; Cook Fl. Pres. Bombay 3: 120, 1958 (Repr. ed.); Sant. & Kapad. Orchid. Bombay 120, t. 30, 1966; Abraham & Vatsala, Introd. Orchids 444. 1981; Manilal, Fl. Silent Valley 269. 1988; Vajr., Fl. Palghat Dist. 466. 1990; Lakshmi. in Shrama *et al.* (ed.) Fl. Maharashtra Monocot. 13, 1996; Muktesh, Epiphytic Fl. Western Ghats 75. 1998; Sasidh., Fl. Periyar Tiger Reserve 400. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 194. 1999.

Saccolabium speciosum. Wt. Lc. Pl. India. Or. 5(1): 9.t. 1674 & 1675,1852

Description

Epiphytes robust herb; stem thick, woody, about 5 cm long; roots many thick often shrivelled. Leaves channeled 10-20 x 2-3 cm linear oblong, unequally bilobed at apex. Inflorescence simple or branched racemes, much longer than leaves. Flowers pinkish violet or rose coloured, about 2 cm across, in panicles up to 15 cm long pedunculate, pedicellate, bracteate; bract minute, ovate. Petals and sepals spotted darker pink, ovate as long as broad; petals little shorter than sepals, lip 1.2- 2.0 cm long 3 lobed; midlobe larger; spur up to 6 mm long, curved arched with 2 fleshy, subconical calli within, pollinia 2, globular waxy, caudicle with a narrow gland, capsule 1.5 cm long, ellipsoid or obovoid deeply 3 ribbed, enclosed at base by marcescent perianth.

Habitat : Evergreen forests

Flowering and Fruiting : June - August

Accession Details

Accession Number, Date & Locality: KFRI-OR-128, 6-05-2016, Pothumala, Pakuthipalam.

6. *Aerides ringens* (Lindl.) C.E.C. Fisch., Bull. Misc. Inform. Kew 1928: 284. 1928 & Gamble, Fl. Pres. Madras 1442(1008). 1928; Sant. & Kapad., Orch. Bombay 119, 1966; Abraham & Vatsala, Introd. Orchids 446. 1981; Mohanan, Fl. Quilon Dist. 390. 1984; Manilal, Fl. Silent Valley 269. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 447. 1988; M. Mohanan & Henry, Fl. Thiruvanthapuram 446. 1994; Subram., Fl. Thenmala Div. 372. 1995; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 40. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 433. 1996; Sasidh., Fl. Shenduruny WLS 309. 1997; Swarup. et al., Shola For. Kerala 80. 1998; Sivar. & Mathew, Fl. Nilambur 679. 1997; Muktesh, Epiphytic Fl. Western Ghats 76. 1998; Sasidh., Fl. Periyar Tiger Reserve 400. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 194. 1999; Sasidh., Fl. Parambikulam WLS 320. 2002; Mohanan & Sivad., Fl. Agasthyamala 654. 2002; Sathish & Manilal, Orchid Memories 165. 2004; Anil Kumar et al., Fl. Pathanamthitta 478. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 783. 2009.

Saccolabium rubrum auct non lindl., Wt., Icon 5(l):9.t.1673.

Saccolabium ringens Lindl., Gen. Sp. Orchid. Pl. 221. 1833.

Aerides radicata A. Rich., Ann. Sci. Nat. Bot. ser. 2, 15: 65. 1841; Hook. f., Fl. Brit. India 6: 46. 1890.

Saccolabium paniculatum Wight, Ic. t. 1676. 1851.

Aerides lineare Hook. f., Fl. Brit. India 6: 47. 1890.

Plate 1 - C

Description

Epiphytic herb. Stem 6-20 cm long, woody, Leaves 13-15 x 0.5 cm, linear, keeled, obliquely bilobulate. Flowers white with pink, 2 x 1.5 cm, in about 20 cm long, lax racemes; dorsal sepal 8 x 3 mm, oblong-ovate, acute, 5-veined; laterals 5 x 3.5 mm, broadly ovate, acute, 5-veined; petals 6 x 3 mm, oblong, obtuse, 5-veined; lip 6 x 2 mm, ovate, acute, side lobes oblong or orbicular small, midlobe linear-oblong, acute; disc with fleshy callus; spur 6 x 2 mm, cylindrical.

Habitat : Moist deciduous and semi-evergreen forests and grasslands

Flowering and Fruiting: June - July

Accession Details

Accession Number, Date & Locality : KFRI-OR-59F, 16-08-2015, Anamudi hut; KFRI-OR-59G, 1-08-2015; Vazhikadavu, Nilambur; KFRI-OR-59H, 15-10-2015, Manpara, Nelliampathy.

7. ***Anoectochilus elatus*** Lindl., Proc. Linn. Soc. Bot. 1: 178. 1857; Hook. f., Fl. Brit. India 6: 95. 1890 'elator'; Gamble, Fl. Pres. Madras 1453(1016). 1928; Abraham & Vatsala, Introd. Orchids 196. 1981; Mohanan, Fl. Quilon Dist. 390. 1984; Manilal, Fl. Silent Valley 269. 1988; M. Mohanan & Henry, Fl. Thiruvanthapuram 448. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 434. 1996; Sasidh., Fl. Shenduruny WLS 309. 1997; Swarup. et al., Shola For. Kerala 80. 1998; Sivar. & Mathew, Fl. Nilambur 680. 1997; Sasidh., Fl. Periyar Tiger Reserve 401. 1998; Sasidh., Fl. Chinnar WLS 301. 1999; Biju in Manoharan et al., Silent Valley-Whispers Reason 154. 1999; Sathish in Manoharan et al., Silent Valley-Whispers Reason 194. 1999; Sasidh., Fl. Parambikulam WLS 320. 2002; Sathish & Manilal, Orchid Memories 165. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 784. 2009.

Plate 1 - D

Description

Terrestrial plants with succulent, creeping stem and erect, terminal stem 10-20 cm high. Leaves orbicular-ovate, c. 3.5 x 2 cm, dark velvety green with white reticulation, acute, purple beneath; petiole sheathing. Inflorescence terminal spike, 2-10 flowered; peduncle 4-6 cm long, glandular pubescent, with 2-3 sheath. Flowers white, c. 2 cm broad. Floral bracts ovate-lanceolate, c. 1 x 0.5 cm, 1-veined, glandular pubescent. Sepals subequal, 1-veined and glandular pubescent; dorsal sepal oblong-ovate, c. 10 x 5 mm, hooded, obtuse; lateral sepals obliquely oblong, c. 12 x 4 mm, acute. Petals appressed with dorsal sepal, falcate-oblong, c. 1 x 0.3 cm, acute, 1-veined, gland dotted; lip 1 cm long, spurred, clawed each claw with 8 filiform lobes on each side, c. 10 mm long, side lobes small, midlobe with two lobules, oblong, c. 5 x 3 mm; spur, 6 x 3 mm long, inflated, bifid at apex. Column with 2 appendages. Anther 2-celled, pollinia 2, glandular, with slender caudicle of 2 mm long. Ovary 1.5-2 cm long, glandular pubescent.

Habitat : Evergreen and shola forests

Flowering and Fruiting : November - December

Accession Details

Accession Number, Date & Locality : KFRI-OR-47A, 23-01-2015, Muthikulam, KFRI-OR-47B, 11-06-2015, Mannavanshola.

8. ***Aphyllorchis montana*** Rchb.f., Linnaea 41: 57. 1877; Hook. f., Fl. Brit. India 6: 116. 1890; Gamble, Fl. Pres. Madras 1457(1019). 1928; Mohanan et al., Journ. Bombay Nat. Hist. Soc. 79: 234. 1982; M. Mohanan & Henry, Fl. Thiruvanthapuram 448. 1994; Sasidh., Fl. Shenduruny WLS 309. 1997; Sasidh., Fl. Periyar Tiger Reserve 401. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 194. 1999; Mohanan & Sivad., Fl. Agasthyamala 655. 2002; Sathish & Manilal, Orchid Memories 166. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 784. 2009.

Aphyllorchis prainii Hook.f., Fl. Brit. India 6: 117. 1890; Manilal, Fl. Silent Valley 270. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 447. 1988; Vajr., Fl. Palghat Dist. 467. 1990.

Description

Terrestrial, leafless saprophytic herbs, 50-60 cm high; stem purple, erect, unbranched, with tubular sheath. Flowers yellowish purple, 1.5-2 cm across, in lax terminal racemes, to 20 cm long. Bracts lanceolate, to 10 mm long, acute, reflexed. Sepals and petals unequal; dorsal sepal linear-oblong, c. 12 x 4 mm, obtuse, 3-veined; lateral sepals linear-oblong, c. 16 x 4 mm, obtuse, adnate to the lip, 3-nerved. Petals subfalcate, yellowish purple, 8-10 mm long, acute; lip oblong, c. 12 x 5 mm, obtuse, saccate, attached to column, clawed with two triangular, acute auricles. Column c. 2.5 mm long. Anther 2-celled; pollinia 4, in 2 pairs, granular; ovary with pedicel 2-2.5 cm long. Capsule ellipsoid, grooved.

Habitat : Evergreen forests

Flowering and Fruiting : August - September

Accession Details

Accession Number, Date & Locality : KFRI OR – 36A, 15-06-2014, Sairanthiri, Poochipara; KFRI OR – 36B, 20-10-2014, Olakara, Peechi.

9. ***Arundina graminifolia*** (D. Don) Hochr., Bull. New York Bot. Gard. 6: 270. 1910; Gamble, Fl. Pres. Madras 1432(1002). 1928; Abraham & Vatsala, Introd. Orchids 497. 1981; Manilal, Fl. Silent Valley 270. 1988; Antony, Syst. Stud. Fl. Kottayam Dist. 382. 1989; Vajr., Fl. Palghat Dist. 467. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 448. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 434. 1996; Sasidh., Fl. Periyar Tiger Reserve 401. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 196. 1999; Sathish & Manilal, Orchid Memories 166. 2004.

Bletia graminifolia D. Don, Prodr. Fl. Nepal. 29. 1825.

Arundina bambusifolia Lindl., Gen. Sp. Orchid. Pl. 125. 1830; Hook. f., Fl. Brit. India 5: 857. 1890.

Plate 1 - E

Description

Erect stout terrestrial plants; stem 2 m tall, terete. Leaves distichous, linear-lanceolate, to 8 x 2 cm, persistent. Flowers about 4 cm across, pink-purple, in terminal few-flowered racemes or short panicles; sepals free, similar, ovate-lanceolate, 3.5 x 1 cm; petals broader than the sepals, rhomboid, elliptic, 3.5 x 2 cm; lip trumpet shaped, enclosing the column, bilobed at

apex, margin crenulate, midlobe with lamellae, purple with white shades at base; column long, narrowly winged; pollinia 8, lenticular.

Habitat : Among rocks in grasslands

Flowering and Fruiting : July - September

Accession Details

Accession Number, Date & Locality : KFRI OR- 37C, 22-05-2014, Vagamon; KFRI OR- 37D, 15-06-2014, Silent valley dam site.

10. *Brachycorythis iantha* (Wight) Summerh., Kew Bull. 1955: 238. 1955; Abraham & Vatsala, *Introd. Orchids* 254. 1981; Vajr., *Fl. Palghat Dist.* 468. 1990; M. Mohanan & Henry, *Fl. Thiruvanthapuram* 449. 1994; Sasidh., *Fl. Periyar Tiger Reserve* 402. 1998; Sasidh., *Fl. Chinnar WLS* 302. 1999; Sasidh., *Fl. Parambikulam WLS* 321. 2002; Mohanan & Sivad., *Fl. Agasthyamala* 656. 2002; Sathish & Manilal, *Orchid Memories* 167. 2004; Ratheesh Narayanan, *Fl. Stud. Wayanad Dist.* 785. 2009.

Platanthera iantha Wight, *lc. t.* 1692. 1851.

Platanthera affinis Wight, *lc. t.* 1693. 1851.

Habenaria galeandra Benth., *Hook. f., Fl. Brit. India* 6: 163. 1890.

Phyllomphax obcordata (D. Don) Schltr., *Feddes Repert.* 4: 119. 1919; Gamble, *Fl. Pres. Madras* 1476(1031). 1928.

Plate 1 - F

Description

Erect, terrestrial, unbranched herbs upto 40 cm high, with underground tubers. Leaves reduced below the middle, ovate-lanceolate, acute, amplexicaul, 3-4.5 x 0.8-1.5 cm, 3-veined. Inflorescence terminal racemes, 3-5 cm long. Flowers purple, 20-25 mm across, in the axil of the bracts which are similar to the leaves, 20-25 x 5-10 mm. Sepals and petals erect arching the column. Sepals: dorsal one ovate, 6-7 x 1.5-2 mm, obtuse, 3-veined; lateral sepals lanceolate, 5-6 x 1-1.5 mm, acute, 3-veined. Petals lanceolate, 5-6 x 1-1.5 mm, acute, 3-veined; lip obcordate, 12-18 mm across and 20-25 mm long, apex emarginate, margin crenulate; spur 5 mm long, conical. Column 5-6 mm long, rostellum toothed. Anther terminal; pollinia 2, granular. Stigma sessile; ovary with pedicel to 1.5 cm long. Capsule ovate, to 1 cm long.

Habitat : Grasslands

Flowering and Fruiting : July - August

Accession Details

Accession Number, Date & Locality : KFRI OR-43A, 08-05-2014, Periyar; KFRI OR-43B, 11-10-2014, Nelliampathy; KFRI OR-43C, 17-08-2015, Anamudi.

11. *Brachycorythis splendida* Summerh., Kew Bull. 1955: 240. 1955; Rathakr., Bull. Bot. Surv. India 13: 2. 1971; Abraham & Vatsala, Introd. Orchids 256. 1981; M. Mohanan & Henry, Fl. Thiruvanthapuram 449. 1994; Swarup. et al., Shola For. Kerala 80. 1998; Sasidh., Fl. Periyar Tiger Reserve 402. 1998; Mohanan & Sivad., Fl. Agasthyamala 656. 2002; Sathish & Manilal, Orchid Memories 167. 2004.

Habenaria iantha Hook. f., Fl. Brit. India 6: 164. 1890, descr. tantum. partim exclu. synon.

Phyllomphax obcordata (D. Don) Schltr. var. *iantha* (Hook. f.) C.E.C. Fisch. in Gamble, Fl. Pres. Madras 1476(1031). 1928.

Description

Erect, terrestrial, unbranched herbs with underground tubers. Stem with the inflorescence 10-16 cm high. Leaves imbricate, ovate-lanceolate, 2.5-3 x 1-1.5 cm, acuminate, 3-5 veined. Inflorescence terminal racemes, 5-6 cm long. Flowers purple, 25-35 mm across. Bracts lanceolate, 8-10 x 3-5 mm, acuminate. Sepals and petals erect, arching the column; dorsal sepal ovate, c. 4 x 2 mm, obtuse, 3-veined; lateral sepals lanceolate, c. 6 x 2 mm, obtuse, 3-veined. Petals lanceolate, c. 5 x 1.5 mm, obtuse, 3-veined; lip flabelliform, c. 12 x 2.5 mm, with sinus in between the two lobes and no apiculum, margins crenulate, epichile 10-20 mm long; spur conical, 4 mm long. Column 5 mm long. Anthers 2-celled; pollinia 2, granular. Stigma sessile; ovary with pedicel upto 5 cm long.

Habitat : Grasslands

Flowering and Fruiting : July - September

Accession Details

Accession Number, Date & Locality : KFRI OR- 70D, 08-05-2014, Periyar; KFRI OR- 70B, 12-04-2014, Kurichiarmala; KFRI OR- 70F, 22-08-2014, Nelliampathy.

12. *Bulbophyllum aureum* (Hook. f.) J.J. Smith, Bull. Buitz. ser. 2, 8: 22. 1912; Abraham & Vatsala, Introd. Orchids 338. 1981; Manilal, Fl. Silent Valley 270. 1988; Sasidh. & Sivar., Fl. Pl. Thrissur For. 435. 1996; Sasidh., Fl. Shenduruny WLS 310. 1997; Sasidh., Fl. Periyar Tiger Reserve 402. 1998; Muktesh, Epiphytic Fl. Western Ghats 77. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 196. 1999; Sasidh., Fl. Parambikulam WLS 321. 2002; Sathish & Manilal, Orchid Memories 168. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 786. 2009.

Cirrhopetalum aureum Hook. f., Fl. Brit. India 5: 777. 1890; Gamble, Fl. Pres. Madras 1420(993). 1928.

Description

Epiphytes. Pseudobulbs distant, ovoid, on a slender rhizome with clustered roots. Leaf one per pseudobulb, linear-oblong, 2-3 x 1-1.5 cm, obtuse, coriaceous. Scape slender arising below the pseudobulb, 1-2 flowered, longer than leaf, upto 4 cm long. Flowers bright yellow, 2 cm across, in 1-2 flowered umbel. Sepals: dorsal one orbicular-ovate, c. 8 x 6 mm, obtuse, 5 veined; lateral one linear-oblong, 15-20 x 4-5 mm, acute, incurved cohering. Petals oblong, 5-6 x 2-3 mm, tip rounded, 3-veined; lip tongue shaped, auricled at the base, c. 5 x 2-3 mm. Column c. 4 mm long, winged. Anther 2-celled; pollinia 4 in 2 pairs; c. 0.25 mm long, oblong. Ovary with pedicel upto 10 mm long.

Habitat : Evergreen and semi-evergreen forests

Flowering and Fruiting : November - December

Accession Details

Accession Number, Date & Locality : KFRI OR- 98C, 13-01-2016, Vazhachal; KFRI OR- 98A, 09-02-2014, Mannavanshola; KFRI OR- 98D, 22-03-2016, Suganthagiri.

13. *Bulbophyllum fimbriatum* (Lindl.) Rchb.f., Walp. Ann. 6: 260. 1861; Abraham & Vatsala, Introd. Orchids 336. 1981; Hook, f., Fl. Brit. India 5: 774, 1885; Fischer in Gamble, Fl. Pres. Madras 993,1928; Cooke Fl. Pres. Bombay 3: 188, 1958 (Repr. ed.); Sant. & Kapad., Orch. Bombay 198,1966; Lakshmi. in Shrama *et al.* (ed.) Fl. Maharashtra Monocot 14, 1996. Muktesh, Epiphytic Fl. Western Ghats 78. 1998; Sasidh., Fl. Periyar Tiger Reserve 403. 1998; Sathish & Manilal, Orchid Memories 169. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 787. 2009.

Cirrhopetalum fimbriatum Lindl., Bot. Reg. Misc. 72. 1839; Hook. f., Fl. Brit. India 5: 774. 1890; Gamble, Fl. Pres. Madras 1420(993). 1928; Ramach. & V.J. Nair, Fl. Cannanore Dist. 449. 1988.

Plate 1-G

Description

Rhizomatous, pseudobulbs, epiphytes; Pseudobulbs yellow sub globose, 1.5 cm across, wrinkled; leafless when flowering. Leaves 2, sessile, oblanceolate, 1-nerved. Inflorescence 10-15 cm long, erect, umbellate, on a separate scape from the rhizome. Flowers shortly pedicel led, radiating from the apex of peduncle; greenish yellow with reddish lines and maroon pedicellate, foetid scented bracts 3-4 mm long, oblong. acuminate; sepals unequal; dorsal sepal ovate, yellowish with purplish fimbriate; lateral more than 4 time longer than dorsal sepal, adherent, acute, 3 nerved; petals similar to dorsal sepal in colour but with longer fimbriate, 3-nerved lip yellowish, short, fleshy spathula recurved; column short, white' with 2 deep curved horns; foot long, narrow, pollinia 4 waxy, ovoid, capsule pyriform.

Habitat : Evergreen and semi-evergreen forests

Flowering and Fruiting : February - March

Accession Details

Accession Number, Date & Locality : KFRI OR- 48A, 26-09-2013, Varadimala, KFRI OR- 48B, 14-02-2015, Sholayur, KFRI OR- 48C, 14-02-2015, Neelikal.

14. *Bulbophyllum fischeri* Seidenf., Dansk Bot. Ark. 29: 202. 1973; Abraham & Vatsala, Introd. Orchids 341. 1981; Manilal, Fl. Silent Valley 271. 1988; Vajr., Fl. Palghat Dist. 468. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 449. 1994; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 27. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 435. 1996; Swarup. et al., Shola For. Kerala 80. 1998; Muktesh, Epiphytic Fl. Western Ghats 78. 1998; Sasidh., Fl. Periyar Tiger Reserve 403. 1998; Mohanan & Sivad., Fl. Agasthyamala 657. 2002; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 788. 2009.

Phyllorkis gamblei (Hook.f.) Kuntze, Revis. Gen. Pl. 2: 677. 1891.

Cirrhopetalum gamblei Hook. f., Fl. Brit. India 5: 778. 1890; Gamble, Fl. Pres. Madras 1420(993). 1928; Sathish in Manoharan et al., Silent Valley-Whispers Reason 198. 1999; Sasidh., Fl. Parambikulam WLS 322. 2002; Sathish & Manilal, Orchid Memories 174. 2004.

Bulbophyllum gamblei (Hook.f.) J.J.Sm., Bull. Jard. Bot. Buitenzorg, II, 8: 24. 1912, nom. illeg.

Cirrhopetalum thomsonii Hook. f., Fl. Brit. India 5: 778. 1890; Abraham & Vatsala, Introd. Orchids 343. 1981.

Description

Lithophytes or epiphytes, root stock thick, with distant, globose pseudobulbs, 1-1.5 cm long, obscurely grooved. Each pseudobulb with one leaf. Leaves oblong, 4.5 x 1.5 cm, obtuse,

midrib furrowed, coriaceous. Flowers 5-8, in umbel. Peduncle longer than the leaves, 8-10 cm long, with three sterile bracts. Flowers yellow, 1-1.5 x 0.3 cm. Floral bracts ovate-lanceolate, c. 5 x 2 mm, acuminate, 5-veined, as long as the ovary. Sepals: dorsal one ovate-lanceolate, acute, c. 6 x 2.5 mm, 5-veined; lateral one ovate-lanceolate, c. 12 x 4 mm, cohering together, acute, 5-veined, pubescent without. Petals oblong, c. 3 x 2 mm, obtuse, 3-veined, glabrous; lip spatulate, 3-lobed, lateral lobes erect, midlobe fleshy, tongue shaped and attached to the foot. Column c. 3 mm long, flat, 3-toothed at apex; foot flat curved. Anther 2-celled, terminal; pollinia 4, collateral, attached in pairs, c. 0.3 mm long, waxy. Ovary with pedicel to 6 mm long.

Habitat : Evergreen and shola forests

Flowering and Fruiting : October - November

Accession Details

Accession Number, Date & Locality : KFRI OR- 129A, 12-05-2014, Munnar; KFRI OR- 129B, 6-05-2016, Poopara; KFRI OR- 129C, 18-07-2016, Pothumala.

15. *Bulbophyllum fuscopurpureum* Wight, Ic. t. 1651. 1851; Hook. f., Fl. Brit. India 5: 760. 1890; Gamble, Fl. Pres. Madras 1418 (992). 1928; Abraham & Vatsala, Introd. Orchids 334. 1981; Muktesh, Epiphytic Fl. Western Ghats 79. 1998; Sasidh., Fl. Periyar Tiger Reserve 404 ; Sathish & Manilal, Orchid Memories 169. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 788. 2009.

Description

Pseudobulb ovoid, 4.5 x 2 cm, tapering towards apex, ridged, distantly placed. Leaves solitary, 15-20 x 3-3.8 cm, oblong, base acute; petiole 2-2.5 cm long. Flowers 4 or 5, yellowish-pink to darker, in 10-12 cm long sheathed raceme; bracts 12 x 8 mm, ovate, acute, 9-veined; dorsal sepal 1.9 x 0.9 mm, ovate, subacuminate, 7-veined; lateral sepals 32 x 12.5 mm, ovate, lanceolate, acute, keeled, fleshy, 7-veined; petals 17 x 4 mm, at base with a caudate long tail; lip 16 x 7-9 mm, ovate-oblong, subacute, apiculate at apex; side lobes falcately oblong, obtuse; disc channelled.

Habitat : Shola forests

Flowering and Fruiting : April - May

Accession Details

Accession Number, Date & Locality : KFRI OR- 49A, 22-12-2014, Kurichiarmala; KFRI OR- 49B, 26-02-2015; Mannavanshola, KFRI OR- 49C, 26-02-2015, Devikulam.

16. *Bulbophyllum kaitiense* Rchb.f., Walp. Ann. 6: 262. 1861; Abraham & Vatsala, Introd. Orchids 338. 1981; Muktesh, Epiphytic Fl. Western Ghats 79. 1998; Sasidh., Fl. Periyar Tiger Reserve 404. 1998; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 788. 2009.

Cirrhopetalum neilgherrense Wight, Ic. t. 1654. 1851; Hook. f., Fl. Brit. India 5: 788. 1890; Gamble, Fl. Pres. Madras 1420(993). 1928; Sathish & Manilal, Orchid Memories 174. 2004.

Phyllorkis kaitiensis (Rchb.f.) Kuntze, Revis. Gen. Pl. 2: 677. 1891.

Plate 1-H

Description

Epiphytic or lithophytic herbs; pseudobulb ovoid, 2.5 x 2 cm, distantly placed. Leaves solitary, 5-7 x 1.5 - 2 cm, oblong, subacute at base, obtuse at apex; petiole 2 cm long. Scape slender, elongated to 10 cm long; flowers 4-7, yellow; bracts 7 x 2 mm, ovate, acuminate, 5-veined. Dorsal sepal 3 x 6 mm, broadly ovate, acute, 7-veined, hooded; lateral sepals 2.2 cm x 7 mm, ovate-oblong, acute, puberulous towards base. Petals 5 x 3.2 mm, ovate, apiculate, slightly oblique, with reddish-brown streaks at base. Lip 2 mm, ovate-oblong, obtuse, curved.

Habitat : Evergreen forests

Flowering and Fruiting : August - September

Accession Details

Accession Number, Date & Locality : KFRI OR- 109A, 14-11-2015, Poopara; KFRI OR- 109B, 4-03-2016, Devikulam.

17. *Bulbophyllum rosemarianum* Sathish, Kumar & Saleem, Rheedeia 11: 97. 2001; Sathish & Manilal, Orchid Memories 170. 2004.

Description

Epiphytic herbs with creeping rhizomes; pseudo bulbs 1.7-3.5 x 1.1-1.6 cm, quadrangular, pale yellowish green, arranged distantly on a thick and wiry rhizome, rooted below and 1-leaved. Leaves 5-18 x 1.6-3.2 cm, erect, oblong, thick and fleshy, deeply channeled in the middle region, narrowed at the base, obtuse at apex; petiole short. Inflorescence from the base of pseudo bulb, pale green, longer than leaf with 5.5-9.2 cm long scape bearing 4 cup-like sterile bracts and a short raceme (4-5 cm) of pale yellow flowers. Dorsal sepal 4-5 x 3-3.5 mm, ovate-elliptic, truncate-angulate, 5-veined, acute at apex, joined only at the central part at base leaving side-margins free; lateral sepals 8-9 x 4-4.5 mm, ovate-elliptic or boat-shaped, 5-veined, margins folded inwards, lower edges slightly connate near base, attached to column-

foot at sides, acute at apex. Petals 2-2.5 x 1.5-2 mm, broad-based, ovate-aristate, slightly oblique and erose at margins, gland-dotted and 1-veined. Lip 3-3.5 x 1.5-2 mm, thick, yellow with brown markings, papillose throughout except the median furrow region, 3-lobed; side lobes represented by 2 auricles, ovate-oblong, attached to tip of column by a short ligament. Column 2-3 mm long, thick with 2 erects sharply pointed stielidia that rise above operculum. Column-foot about 2 mm long bearing lateral sepals on sides and lip a little below the apex. Fruits 2-2.5 x 0.7-1.2 cm, globose.

Habitat : On trees in the riverine vegetation and lowland forests

Flowering and Fruiting : January - March

Accession Details

Accession Number, Date & Locality : KFRI OR- 41A, 22-08-2014, Irritty; KFRI OR- 41B, 11-02-2015, Vaguavarai; KFRI OR- 41C, 11-11-2015, Aaralam.

18. *Bulbophyllum sterile* (Lam.) Suresh in Nicolson, Suresh & Manilal, Interpr. Hort. Malab. 298. 1988; Babu, Fl. Malappuram Dist. 777. 1990; Sivar. & Mathew, Fl. Nilambur 680. 1997; Mohanan & Sivad., Fl. Agasthyamala 658. 2002; Sathish & Manilal, Orchid Memories 171. 2004; Anil Kumar et al., Fl. Pathanamthitta 479. 2005; Sunil & Sivadasan, Fl. Alappuzha Dist. 674. 2009; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 790. 2009.

Epidendrum sterile Lam., Encycl. 1: 189. 1783.

Bulbophyllum neilgherrense Wight, Ic. t. 1650. 1851; Hook. f., Fl. Brit. India 5: 761. 1890; Gamble, Fl. Pres. Madras 1418(992). 1928; Abraham & Vatsala, Introd. Orchids 334. 1981; Manilal & Sivar., Fl. Calicut 284. 1982; Mohanan, Fl. Quilon Dist. 390. 1984; Ansari, Fl. Kasaragod Div. 367. 1985; Manilal, Fl. Silent Valley 271. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 447. 1988; Vajr., Fl. Palghat Dist. 468. 1990; Subram., Fl. Thenmala Div. 374. 1995; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 27. 1996; Muktesh, Epiphytic Fl. Western Ghats 80. 1998; Sasidh. & Sivar., Fl. Pl. Thrissur For. 435. 1996; Sasidh., Fl. Shenduruny WLS 310. 1997; Sasidh., Fl. Periyar Tiger Reserve 405. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 196. 1999; Sasidh., Fl. Parambikulam WLS 321. 2002.

Plate 1-I

Description

Epiphytes. Rhizome c. 3 mm thick, creeping. Pseudobulbs green, conical, 3-4 mm long, 4-5 angled, with single leaf. Leaves fleshy, 8-17 x 2-3 cm, oblong, emarginate, glabrous, midvein prominent. Inflorescence arising from the base of pseudobulb, shorter than leaves, drooping, sheathed at the base with 1 or 2 sheaths. Flowers 1.5 cm across, yellow, dotted with red, with unpleasant odour, in dense raceme. Floral bracts lanceolate, 5 x 2 mm, acute, 3-veined. Sepals:

dorsal one ovate, 5 x 3 mm, acute, 5-veined, yellow with red tinge; lateral one ovate-falcate, c. 8 x 3.5 mm, acute, united in the lower half to form sac like structure. Petals ovate, c. 3.5 x 1.5 mm, apiculate, apiculum 1 mm long; lip tongue shaped, 3-lobed, c. 9 x 2.5 mm, attached to the foot, lateral lobes reddish brown, erect, linear, acute, midlobe oblong, c. 4.0 x 2.5 mm, fleshy, obtuse, yellow. Column c. 4.5 mm long, flat, red on one side, apex 2-toothed; foot c. 2.5 mm, flat, curved, red-coloured; stigmatic surface elliptic. Anther 2 celled; pollina 4, attached in pairs, oblong, 0.4 mm, waxy. Ovary to 5 mm long.

Habitat : Common in all forest types

Flowering and Fruiting : December - January

Accession Details

Accession Number, Date & Locality : KFRI OR- 84A, 04-01-2014, Peechi; KFRI OR- 84D, 20-10-2015, Vazhachal, KFRI OR- 84C, 16-02-2014, Nadukani.

19. *Bulbophyllum tremulum* Wight, Ic. t. 1749. 1841; Hook. f., Fl. Brit. India 5: 763. 1890; Gamble, Fl. Pres. Madras 1418(992). 1928; Abraham & Vatsala, Introd. Orchids 331. 1981; Manilal, Fl. Silent Valley 271. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 448. 1988; Antony, Syst. Stud. Fl. Kottayam Dist. 382. 1989; Vajr., Fl. Palghat Dist. 469. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 450. 1994; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 27. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 435. 1996; Sasidh., Fl. Shenduruny WLS 310. 1997; Muktesh, Epiphytic Fl. Western Ghats 80. 1998; Sasidh., Fl. Periyar Tiger Reserve 405. 1998; Sathish & Manilal, Orchid Memories 171. 2004; Anil Kumar et al., Fl. Pathanamthitta 479. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 790. 2009.

Plate 2-A

Description

Lithophytic small plants with thick rhizome. Pseudobulbs upto 1 cm diameter spherical, thick, ridged. Leaves one per pseudobulb, elliptic, 3-5 x 0.5-1 cm long. Scape arise from base of the pseudobulb, 6-12 cm long, with 2-3 sheath. Flowers 5-8, purple, c. 15 mm across; pedicel c. 2 mm long. Sepals: dorsal one lanceolate, c. 8 x 3 mm, acute or mucronate, 3-veined; lateral one lanceolate, c. 10 x 2 mm, acute, 3-veined. Petals small, scaly, ovate, c. 3 mm long, acute, 1-veined, hairy at the margins; lip linear, to 12 mm long, fringed with several hairs at the margin. Column c. 2 mm, flat. Anther 2-celled; pollinia 4 in 2 groups, globular to 0.5 mm long. Ovary 4 mm long, ridged.

Habitat : Evergreen and semi-evergreen forests

Flowering and Fruiting : March - April

Accession Details

Accession Number, Date & Locality : KFRI OR- 8A, 6-11-2013; Olakara, KFRI OR- 8B, 16-10-2014, Varadimala; KFRI OR- 8C, 2-1-2015, Suganthagiri.

20. *Calanthe sylvatica* (Thouars) Lindl., Gen. Sp. Orchid. Pl. 250. 1833; Sathish in Manoharan et al., Silent Valley-Whispers Reason 197. 1999; Sasidh., Fl. Parambikulam WLS 321. 2002; Sathish & Manilal, Orchid Memories 171. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 791. 2009.

Centrosis sylvatica Thouars, Orch. Iles. Aust. Afr. t. 35,36. 1822.

Bletia masuca D. Don, Prodr. Fl. Nepal. 30. 1825.

Calanthe masuca (D. Don) Lindl., Gen. Sp. Orchid. Pl. 249. 1833; Hook. f., Fl. Brit. India 5: 850. 1890; Gamble, Fl. Pres. Madras 1432(1001). 1928; Abraham & Vatsala, Introd. Orchids 265. 1981; Mohanan, Fl. Quilon Dist. 391. 1984; Manilal, Fl. Silent Valley 272. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 448. 1988; Vajr., Fl. Palghat Dist. 469. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 450. 1994; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 27. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 436. 1996; Sasidh., Fl. Shenduruny WLS 311. 1997; Swarup. et al., Shola For. Kerala 80. 1998; Sasidh., Fl. Periyar Tiger Reserve 407. 1998; Mohanan & Sivad., Fl. Agasthyamala 659. 2002; Anil Kumar et al., Fl. Pathanamthitta 479. 2005.

Plate 2-B

Description

Terrestrial herbs; stem not pseudobulbous at base. Leaves many, 25-50 x 5-8 cm, ovate-lanceolate, acuminate at apex, attenuate at base to sheathing petiole, 10-15 cm long, 7-9 ribbed, plicate. Inflorescence terminal racemes, 30-60 cm high. Flowers towards tip of peduncle, basal portion with 2-3 tubular sheaths; floral bracts 1.5-2 cm long, 0.2-0.3 cm wide, clavate. Flowers 3-4 cm across. Sepals and petals ovate, 1.5-2 x 0.8-1 cm, purple. Lip 1.5-2 cm long, 3-lobed, side lobes small, mid-lobe 2 fid, deep violet; spur 2- 2.5 cm long, slender. Pollinia 8, grouped in groups of 4. Column short. Capsule 2.5-3 x 1-1.5 cm, broadly oblong.

Habitat : Evergreen and shola forests

Flowering and Fruiting : August - December

Accession Details

Accession Number, Date & Locality : KFRI OR- 76A, 11-05-2014, Nedumkayam; KFRI OR- 76B, 28-09-2015, Nelliampathy; KFRI OR- 76C, 11-12-2015, Thenmala.

21. *Calanthe triplicata* (Willem.) Ames, Philipp. J. Sci. 2: 326. 1907; Abraham & Vatsala, Introd. Orchids 263. 1981; Mohanan, Fl. Quilon Dist. 391. 1984; Vajr., Fl. Palghat Dist. 470. 1990; Sasidh., Fl. Periyar Tiger Reserve 407. 1998; Sathish & Manilal, Orchid Memories 172. 2004.

Orchis triplicata Willem., Ann. Bot. (Usteri) 18: 52. 1793.

Limodorum veratrifolium Willd., Sp. Pl. 4: 122. 1805.

Calanthe veratrifolium R. Br., Bot. Reg. 9. Pl. 720. 1823; Hook. f., Fl. Brit. India 5: 851. 1890; Gamble, Fl. Pres. Madras 1432(1001). 1928.

Calanthe perrottetii A.Rich., Ann. Sci. Nat. Bot. ser. 2, 15: 68. 1841.

Description

Leaves 35 x 9-10 cm, broadly elliptic-oblong, acute, glabrous, with 10-15 cm long petiole. Flowers rose, in 80-90 cm long pubescent, terminal raceme; flower bearing portion 5-10 cm long; dorsal sepal 11 x 7 mm, ovate, obtuse, 3-5-veined; lateral sepals 12 x 7 mm, elliptic, apiculate, 5-veined; petals 11 x 2-5 mm, obovate, 3-veined; lip 10 x 10 mm, 3-lobed, side lobes 5.5 x 2 mm, oblong, obtuse; midlobe, 2-lobuled, each 4 x 4.5 mm, obovate-oblong, rounded to truncate at apex; spur 20 mm long, disc with fleshy calli at mouth.

Habitat : Evergreen forests

Flowering and Fruiting : October - November

Accession Details

Accession Number, Date & Locality : KFRI OR- 71A, 11-1-2014, Varadimala; KFRI OR- 71B, 2-1-2015, Pakuthipalam; KFRI OR- 71C, 16-08-2015, Rosemala.

22. *Cheirostylis flabellata* (A. Rich.) Wight, Ic. 16. 1851 (as *Monochilus flabellatum* t. 1727); Hook. f., Fl. Brit. India 6: 105. 1890; Gamble, Fl. Pres. Madras 1454(1017). 1928; Abraham & Vatsala, Introd. Orchids 194. 1981; Mohanan, Fl. Quilon Dist. 391. 1984; Manilal, Fl. Silent Valley 272. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 448. 1988; M. Mohanan & Henry, Fl. Thiruvanthapuram 451. 1994; Swarup. et al., Shola For. Kerala 80. 1998; Sivar. & Mathew, Fl. Nilambur 681. 1997; Sasidh., Fl. Periyar Tiger Reserve 407. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 197. 1999; Mohanan & Sivad., Fl. Agasthyamala 660. 2002; Sathish & Manilal, Orchid Memories 172. 2004; Anil Kumar et al., Fl. Pathanamthitta 480. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 791. 2009.

Goodyera flabellata A. Rich., Ann. Sci. Nat. Bot. ser. 2, 15: 79. t. 12. 1841.

Monochilus flabellatum Wight, Ic. t. 1727. 1851.

Plate 2-C

Description

Terrestrial herbs, 5-10 cm high; rhizome creeping and then erect. Leaves 2-3, ovate, 0.5-1 cm long, 3-veined. Inflorescence racemes, peduncle 5-7 cm long with 2-3 sterile bracts. Flowers dirty white, 4-6 mm across. Floral bracts ovate, 2-3 x 1.5 mm, glandular pubescent. Sepals fused at the base, dorsal one ovate, 3-3.5 x 1.5-2 mm, acute, 1-veined; lateral one oblong, 3-3.5 x 1-1.2 mm, obtuse, 1-veined. Petals lanceolate, 3-3.5 x 1-1.5 mm, falcate, 1-veined; lip 6-8 mm long, suborbicular, deeply bibbed, lobes 5-lobed, 3-veined, saccate at the base with two calli within. Column 1-1.5 mm long; rostellum bifid with club shaped arms. Anther 2-celled; pollinia 2, pyriform, c. 0.5 mm long, on an oblong gland. Ovary with pedicel 4-6 mm long.

Habitat : Moist deciduous and evergreen forests

Flowering and Fruiting : February - May

Accession Details

Accession Number, Date & Locality : KFRI OR- 66, 28-06-2015, Sairanthiri.

23. *Chiloschista fasciata* (Muell.) Seidenf. & Ormerod, Opera Bot. 124: 64. 1995; Sathish & Manilal, Orchid Memories 172. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 792. 2009.

Sarcochilus fasciatus Muell., Fragm. 5: 202. 1866.

Chiloschista usneoides Wight, Ic. 5:19. t.f1741. 1851, non Lindl. 1839.

Sarcochilus wightii Hook. f., Fl. Brit. India 6: 37. 1890 (excl. syns.) Trimen 1898.

Sarcochilus minimifolius Hook.f., Fl. Brit. India 6: 37. 1890.

Chiloschista pusilla auct. non Schltr., Feddes Repert. 4:275.1919; Gamble, Fl. Pres. Madras 1441(1007). 1928; Abraham & Vatsala, Introd. Orchids 495. 1981; M. Mohanan & Henry, Fl. Thiruvanthapuram 486. 1994; Sathish in Manoharan et al., Silent Valley-Whispers Reason 198. 1999; Mohanan & Sivad., Fl. Agasthyamala 661. 2002.

Description

Very small epiphytic herbs; stem reduced and with a tuft of radiating vermiform roots. Leaves 1 or 2, very small, 1-1.5 x 0.5-0.6 cm, linear-lanceolate, leafless on flowering. Inflorescence 2-4 flowered spiciform racemes, 1-2 cm long; floral bracts minute, tubular. Flowers 0.6-0.7 cm across, greenish-yellow. Sepals and petals subequal, 0.4-0.5 x 0.2 cm, ovoid. Lip 0.3-0.35 x 0.7-0.8 cm, broader than long, attached to foot of column; lateral lobes broadly winged, mid-lobe 2-fid. Pollinia 2, attached to narrow gland. Pedicel and ovary 0.25-0.3 cm long.

Habitat : Evergreen forests

Flowering and Fruiting : October - November

Accession Details

Accession Number, Date & Locality : KFRI OR- 80A, 4-10-2015, Poochipara; KFRI OR- 80B, 4-10-2015, Panthamthode.

24. *Cleisostoma tenuifolium* (L.) Garay, Bot. Mus. Leafl. Harvard Univ. 23: 175. 1972; Sasidh. & Sivar., Fl. Pl. Thrissur For. 436. 1996; Lakshmi. in Shrama *et al.* (ed.) Fl. Maharashtra Monocot. 16, 1996. Sasidh., Fl. Shenduruny WLS 313. 1997; Sivar. & Mathew, Fl. Nilambur 681. 1997; Muktesh, Epiphytic Fl. Western Ghats 82. 1998; Sasidh., Fl. Periyar Tiger Reserve 408. 1998; Sasidh., Fl. Parambikulam WLS 322. 2002; Sathish & Manilal, Orchid Memories 174. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 792. 2009.

Epidendrum tenuifolium L., Sp. Pl. 952. 1753.

Sarcanthus peninsularis Dalz. in Hook.'s J. Bot. Kew Gard. Misc. 3: 343. 1851; Hook. f., Fl. Brit. India 6: 67. 1890; Gamble, Fl. Pres. Madras 1447(1012). 1928; Antony, Syst. Stud. Fl. Kottayam Dist. 387. 1989.

Sarcanthus pauciflorus Wight, Ic. t. 1747. 1851; Abraham & Vatsala, Introd. Orchids 471. 1981; Mohanan, Fl. Quilon Dist. 401. 1984; Ansari, Fl. Kasaragod Div. 375. 1985; Ramach. & V.J. Nair, Fl. Cannanore Dist. 462. 1988; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 27.1996; Anil Kumar et al., Fl. Pathanamthitta 494. 2005.

Description

Pendulous epiphytic herbs, 20-30 cm long. Leaves 10-12 x 0.5 cm, linear, strongly keeled, acute. Flowers yellow, in 3-6 cm long, leaf-opposed racemes. Dorsal sepal 4.5 x 1.2 mm, obovate-oblong, lanceolate, acute, 3-veined; lateral sepals 3 x 1 mm, elliptic, acute, 3-veined. Petals 3 x 0.8 mm, falcately-oblong, truncate, 1-veined. Lip 2 x 4 mm, 3-lobed, side lobes 1.5 x 1 mm, ovate, apiculate, midlobe, 2 x 1 mm, ovate, with 2 fleshy calli; spur 3 x 1 mm, oblong-ovoid.

Habitat : Semi-evergreen and evergreen forests

Flowering and Fruiting : July - August

Accession Details

Accession Number, Date & Locality : KFRI OR- 46A, 16-02-2014, Nadukanni; KFRI OR- 46B, 6-01-2015, Ranni; KFRI OR- 46C, 22-04-2015, Neriamangalam.

25. *Coelogyne breviscapa* Lindl., Fol. Orch. Coelogyne 4. 1854; Hook. f., Fl. Brit. India 5: 833. 1890; Gamble, Fl. Pres. Madras 1430(1000). 1928; Abraham & Vatsala, Introd. Orchids 277. 1981; Mohanan, Fl. Quilon Dist. 392. 1984; Joseph Orch. Nilgiris 157. 1987; Manilal, Fl. Silent Valley 273. 1988; Vajr., Fl. Palghat Dist. 470. 1990; Antony, Syst. Stud. Fl. Kottayam Dist. 383. 1989; Sasidh. & Sivar., Fl. Pl. Thrissur For. 437. 1996; Muktesh, Epiphytic Fl. Western Ghats 82. 1998; Sasidh., Fl. Periyar Tiger Reserve 408. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 198. 1999; Sasidh., Fl. Parambikulam WLS 322. 2002; Sathish & Manilal, Orchid Memories 174. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 793. 2009.

Coelogyne angustifolia Wight, Ic. t.1641. 1851; Hook. f., Fl. Brit. India 5: 833. 1890; Gamble, Fl. Pres. Madras 1430(1000). 1928, non A. Rich. 1841.

Plate 2-D

Description

Epiphytes; rhizome slender, creeping; pseudobulbs 4-5cm long, ovoid-oblong, conical, aggregated, younger sheathed. Leaves 2, 10-16 x 1-1.5cm, linear, elliptic, acute at apex, narrowed at base into a deeply channeled petiole; flowers white. Scented, 6-12cm long racemes; bracts 1.8-3cm long, oblanceolate, acute; pedicels 1.2-2cm long, slender; dorsal sepal broadly lanceolate, laterals slightly smaller; petals similar to sepals slightly narrower; lip saccate to short-spurred, 3-lobed, with midlobes orbicular, sessile without column foot column hooded; pollinia 4, waxy in granular mass. Capsules 3cm long, ellipsoid, with persistent perianth.

Habitat : Semi-evergreen and evergreen forests

Flowering and Fruiting : March - April

Accession Details

Accession Number, Date & Locality : KFRI OR- 117A, 11-05-2014, Suganthagiri, KFRI OR- 117B, 20-03-2016, Varadimala.

26. *Coelogyne mossiae* Rolfe, Bull. Misc. Inform. Kew 1894: 156. 1894; Gamble, Fl. Pres. Madras 1430(1000). 1928; Abraham & Vatsala, Introd. Orchids 285. 1981; Manilal, Fl. Silent Valley 273. 1988; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 40. 1996; Swarup. et al., Shola For. Kerala 80. 1998; Muktesh, Epiphytic Fl. Western Ghats 83. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 198. 1999; Mohanan & Sivad., Fl. Agasthyamala 662. 2002; Sathish & Manilal, Orchid Memories 175. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 794. 2009.

Description

Epiphytic herbs; rhizome creeping. Pseudobulbs 4-5.5 x 2-2.5 cm, ovoid-conical, covered with ovate-lanceolate bracts, 4-5 x 2.5-3 cm. Leaves 2 per bulb, 10-14 x 3-4 cm, elliptic-lanceolate, acute at apex, narrowed at base; mid-rib and about 8 nerves prominent. Flowers terminal to new shoots, covered with leafy bracts. Floral bracts 3.5-4 x 0.8-1.2 cm, ovate lanceolate, scarious. Flowers white, 3.5-4 cm across. Sepals and petals subequal, 1.5 cm long, 0.8-1 cm wide. Lip 1.5-2 cm long, ovate-oblong; column 0.8-1 cm long; foot 0; Pollinia 4. Pedicel and ovary 1.2-1.5 cm long.

Habitat : Shola forests

Flowering and Fruiting : August - October

Accession Details

Accession Number, Date & Locality : KFRI OR- 99A, 11-11-2014, Nyamakadu; KFRI OR- 99B, 26-01-2016, Agasthiyamala.

27. *Coelogyne nervosa* A. Rich., Ann. Sci. Nat. Bot. ser. 2, 15: 16. 1841; Gamble, Fl. Pres. Madras 1430(1000). 1928; Abraham & Vatsala, Introd. Orchids 285. 1981; Manilal, Fl. Silent Valley 273. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 449. 1988; M. Mohanan & Henry, Fl. Thiruvanthapuram 451. 1994; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 27. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 437. 1996; Sasidh., Fl. Shenduruny WLS 313. 1997; Muktesh, Epiphytic Fl. Western Ghats 83. 1998; Sasidh., Fl. Periyar Tiger Reserve 409. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 198. 1999; Sasidh., Fl. Parambikulam WLS 323. 2002; Mohanan & Sivad., Fl. Agasthyamala 662. 2002; Sathish & Manilal, Orchid Memories 175. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 794. 2009.

Coelogyne corrugata Wight, Ic. t. 1639. 1851; Hook. f., Fl. Brit. India 5: 835. 1890.

Plate 2-E

Description

Epiphytes and Lithophytes. Pseudobulbs yellow and rugose, subglobose, c. 4 x 2.5 cm covered with sheaths. Leaves two, from the top of each pseudobulb, elliptic-oblong, 12-16 x 2-3.5 cm, coriaceous, 5-veined, acute at apex. Flowers 3-4, in terminal raceme. Flowers creamy white, 4-5 cm across. Floral bracts 2-2.5 cm long, oblong-lanceolate, acute, brown and falling off as the flower opens. Sepals: dorsal one oblong-lanceolate, 2.5-3 x 1-1.5 cm, obtuse, 9-veined; lateral one oblong-lanceolate, 2.5-3 x 0.8-1 cm, obtuse, 7-veined. Petals oblong, c. 2.5 x 2 cm, obtuse; lip 3-lobed, 2-2.5 cm long, lateral lobes oblong erect, midlobe orbicular, apiculate with 3 crisped ridges ending in a red point. Column 1-1.5 cm long, winged, apex hooded. Anther 2-celled; pollinia 4, fused in pairs, 1.2 x 1 mm. Ovary c. 1.2 cm long. Capsule 1.5-2.5 cm long, ellipsoid, 6-ribbed.

Habitat : Grasslands, evergreen and shola forests

Flowering and Fruiting : June - July

Accession Details

Accession Number, Date & Locality : KFRI OR- 3A, 26-09-2013, Varadimala, KFRI OR- 3B, 26-09-2013, Munnar, KFRI OR- 3F, 11-06-2015, Kothayar, KFRI OR- 3D, 18-12-2014, Minnampara.

28. *Coelogyne odoratissima* Lindl., Gen. Sp. Orchid. Pl. 41. 1830; Hook. f., Fl. Brit. India 5: 834. 1890; Gamble, Fl. Pres. Madras 1430(1000). 1928; Abraham & Vatsala, Introd. Orchids 277. 1981; Manilal, Fl. Silent Valley 274. 1988; Sivar. & Mathew, Fl. Nilambur 682. 1997; Muktesh, Epiphytic Fl. Western Ghats 83. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 198. 1999; Sathish & Manilal, Orchid Memories 175. 2004.

Coelogyne angustifolia A. Rich., Ann. Sci. Nat. Bot. ser. 2, 15: 16. 1841.

Description

Epiphytes with pseudobulbous stems and long slender roots; pseudobulbs 1.7 x 1.4 cm, crowded, subglobose, formed at the bases of shoots after flowering, wrinkled when old, green, covered by hyaline sheaths. Leaves 1 or 2 to each pseudobulb, small at time of flowering, becoming larger and longer at fruiting, 3-10 x 0.8-1.3 cm, linear-lanceolate, acute, coriaceous, recurved and punctulate beneath. Flowering shoot arising from the base of the pseudobulb, with five imbricate basal sheaths and two small foliage leaves, from the centre of which emerges the

terminal racemes bearing 2-4 flowers; peduncle 4.5 cm long with a single, brown, membranous, papery, sterile bract half-way; floral bracts 1.3-1.6 x 1.2 cm, orbicular-ovate, acute, membranous, persistent and about 12-veined. Flowers 3.5 cm across, very fragrant, white. Dorsal sepal 2.3 x 0.95-1.05 cm, oblong-lanceolate, subacute, 9-veined; lateral sepals oblong-lanceolate or oblong-ovate, 2.3 x 0.75 cm, 5-veined, all sepals ridged dorsally in the midline. Petals linear, 2.2 cm x 2.6 mm, acute, 3-veined. Lip 2.2 x 1.4 cm, 3-lobed, 9-veined; lateral lobes oblong, obtuse, erect; midlobe orbicular, apiculate, with three crisped ridges along the midline. Column 1.4 cm high, 3 mm broad, winged, bending over at the apex, mentum inconspicuous. Anther terminal, 2-loculed, 2.4 x 2 mm. Ovary with pedicel 9 mm long. Fruit a capsule, 1.5-2.7 x 1-1.4 cm, ellipsoid, 6-ribbed, pendulous at the ends of thick, elongated peduncles.

Habitat : Evergreen forests

Flowering and Fruiting : February - May

Accession Details

Accession Number, Date & Locality : KFRI OR- 85A, 29-10-2013, Aaralam, KFRI OR- 85B, 11-12-2014, Anakkampoyil; KFRI OR- 85C, 20-10-2015, Varadimala.

29. *Conchidium braccatum* (Lindl.) Brieger, Schlechter Orchideen 1: 751. 1981; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 795. 2009.

Dendrobium braccatum Lindl., Gen. Sp. Orchid. Pl. 75. 1830.

Eria braccata (Lindl.) Lindl., J. Proc. Linn. Soc. Bot. 3:46.1859; Hook. f., Fl. Brit. India 5:787.1890; Gamble, Fl. Pres. Madras 1425(996). 1928; Sathish & Manilal, Orchid Memories 186. 2004.

Eria reticosa Wight, Ic. t. 1637. 1851; Hook. f., Fl. Brit. India 5: 787. 1890; Abraham & Vatsala, Introd. Orchids 373. 1981; Mohanan, Fl. Quilon Dist. 394. 1984; Manilal, Fl. Silent Valley 280. 1988; Vajr., Fl. Palghat Dist. 477. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 456. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 440. 1996; Muktesh, Epiphytic Fl. Western Ghats 96. 1998; Sasidh., Fl. Periyar Tiger Reserve 416. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 202. 1999; Sasidh., Fl. Parambikulam WLS 327. 2002; Mohanan & Sivad., Fl. Agasthyamala 673. 2002; Sathish & Manilal, Orchid Memories 188. 2004.

Description

Pseudobulbs discoid, 6-10 mm diameter, reticulated. Leaves 2 per pseudobulb, 2-7 x 0.5-1.5 cm, oblanceolate to oblong-lanceolate, apex acute-apiculate, membranous. Flowers white, tinged with pink, solitary on 2-4 cm long slender scape from the pseudobulb; dorsal sepal 16-19 x 6-7 mm, oblong-lanceolate, obtuse, 7-veined; lateral sepals 16-20 x 6-11 mm,

obliquely ovate-lanceolate, acute, 7-veined; petals 15-19 x 6 mm, oblong-lanceolate, subacute, 5-veined; lip 16-19 x 5-9 mm, elliptic-oblong or ovate, obtuse emarginate at apex; disc with 2 white ridges reaching subapically.

Habitat : Evergreen and shola forests, also in grasslands

Flowering and Fruiting : July - October

Accession Details

Accession Number, Date & Locality : KFRI OR- 61A, 11-02-2014, Dhoni; KFRI OR- 61B, 18-05-2015, Silent valley estate Munnar; KFRI OR- 61C, 21-06-2015, Ponmudi.

30. *Conchidium filiforme* (Wight) Rauschert, Feddes Repert. 94: 444. 1983; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 795. 2009.

Dendrobium filiforme Wight, Ic. t. 1642. 1851.

Eria filiformis (Wight) Rchb.f. in W.G.Walpers, Ann. Bot. Syst. 6: 268. 1861.

Dendrobium dalzellii Hook. ex Dalz. in Hook.'s J. Bot. Kew. Gard. Misc. 4: 292. 1852.

Dendrobium fimbriatum Dalz. in Hook.'s J. Bot. Kew Gard. Misc. 4: 292. 1852, nom. illeg.

Eria dalzellii Lindl., J. Proc. Linn. Soc. Bot. 3: 47. 1859; Hook. f., Fl. Brit. India 5: 789. 1890; Gamble, Fl. Pres. Madras 1425(996). 1928; Abraham & Vatsala, Introd. Orchids 375. 1981; Manilal, Fl. Silent Valley 279. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 454. 1988; Antony, Syst. Stud. Fl. Kottayam Dist. 384. 1989; Vajr., Fl. Palghat Dist. 477. 1990; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 27. 1996; Sasidh., Fl. Periyar Tiger Reserve 414. 1998; Muktesh, Epiphytic Fl. Western Ghats 93. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 201. 1999; Sasidh., Fl. Parambikulam WLS 326. 2002; Sathish & Manilal, Orchid Memories 186. 2004; Anil Kumar et al., Fl. Pathanamthitta 482. 2005.

Eria dalzellii (Hook. ex Dalz.) Lindl. var. *fimbriata* (Dalz.) Hook. f., Fl. Brit. India 5: 789. 1890; Gamble, Fl. Pres. Madras 1425(996). 1928.

Plate 2-F

Description

Pseudobulbs 1.5 cm in diameter. Leaves 3 or 4, 5-7 x 1 cm, oblanceolate, apex obtuse, mucronate. Racemes 10 cm long. Flowers greenish-yellow; sepals subsimilar, lanceolate, acuminate, margins with stalked glands, 3-veined; petals slightly, narrower than sepals; lip 3 x 1 mm, falcate panduriform, minutely papillate; disc with 2 thick yellowish orange ridges.

Habitat : Evergreen forests

Flowering and Fruiting : September - December

Accession Details

Accession Number, Date & Locality : KFRI OR- 95A, 13-11-2013, Munar, KFRI OR- 95B, 3-01-2015, Elival Hills; KFRI OR- 95C, 13-01-2016, Naduvattam.

31. *Cottonia peduncularis* (Lindl.) Rchb.f., Cat. Orch. Schiller 52. 1857; Abraham & Vatsala, Introd. Orchids 456. 1981; Ramach. & V.J. Nair, Fl. Cannanore Dist. 450. 1988; Vajr., Fl. Palghat Dist. 471. 1990; Subram., Fl. Thenmala Div. 376. 1995; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 20. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 437. 1996; Sasidh., Fl. Shenduruny WLS 313. 1997; Sivar. & Mathew, Fl. Nilambur 683. 1997; Muktesh, Epiphytic Fl. Western Ghats 84. 1998; Sasidh., Fl. Periyar Tiger Reserve 409. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 199. 1999; Sasidh., Fl. Parambikulam WLS 323. 2002; Mohanan & Sivad., Fl. Agasthyamala 663. 2002; Sathish & Manilal, Orchid Memories 176. 2004; Anil Kumar et al., Fl. Pathanamthitta 480. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 797. 2009.

Vanda peduncularis Lindl., Gen. Sp. Orchid. Pl. 216. 1833.

Cottonia macrostachya Wight, Ic. t. 1755. 1851; Hook. f., Fl. Brit. India 6: 26. 1890; Gamble, Fl. Pres. Madras 1439(1006). 1928.

Plate 2-G

Description

Epiphytes with elongate stem, stems 0.4-0.8cm thick, closely sheathed, producing vermiform roots; leaves 4-12 1-1.5cm, lorates channeled, unequally bilobed leaves. Inflorescence a 2-3 branched panicle with long peduncle up to 1 m long; sepals spreading, broader than petals, free with brownish nerve petals similar to sepals; lateral lobes small, pubescent yellowish; column short, pubescent; pollinia 2 unequally 2-partite, caudicle long, strap shaped, attached to a minute gland. Fruits fusiform ridged.

Habitat : Semi-evergreen and evergreen forests

Flowering and Fruiting : March - May

Accession Details

Accession Number, Date & Locality : KFRI OR- 89A, 10-01-2014, Peerumade, KFRI OR- 89B, 11-10-2014, Chanthanathode, KFRI OR- 89C, 20-11-2015, Thenmala.

32. *Cymbidium aloifolium* (L.) Sw., Nov. Acta Regiae Soc. Upsal. 6: 73. 1799; Hook. f., Fl. Brit. India 6: 8. 1890; Gamble, Fl. Pres. Madras 1436(1004). 1928; Mohanan, Fl. Quilon Dist. 392. 1984; Ansari, Fl. Kasaragod Div. 368. 1985; Ramach. & V.J. Nair, Fl. Cannanore Dist. 450. 1988; Antony, Syst. Stud. Fl. Kottayam Dist. 383. 1989; Vajr., Fl. Palghat Dist. 471. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 452. 1994; Subram., Fl. Thenmala Div. 376. 1995; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 14. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 437. 1996; Sasidh., Fl. Shenduruny WLS 314. 1997; Sivar. & Mathew, Fl. Nilambur 683. 1997; Muktesh, Epiphytic Fl. Western Ghats 84. 1998; Sasidh., Fl. Periyar Tiger Reserve 409. 1998; Sasidh., Fl. Chinnar WLS 302. 1999; Sasidh., Fl. Parambikulam WLS 323. 2002; Mohanan & Sivad., Fl. Agasthyamala 664. 2002; Sathish & Manilal, Orchid Memories 177. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 798. 2009.

Epidendrum aloifolium L., Sp. Pl. 953. 1753.

Epidendrum pendulum Roxb., Pl. Corom. 1: 35. t. 44. 1795.

Cymbidium pendulum (Roxb.) Sw. & Lindl., Nova Acta Regiae Soc. Sci. Upsal. 6: 73. 1799; Gamble, Fl. Pres. Madras 1436(1004). 1928; Abraham & Vatsala, Introd. Orchids 325. 1981.

Cymbidium erectum Wight, Ic. t. 1753. 1851.

Description

Epiphytes. Stem covered with ribbed, membranous sheath and vermiform roots at the base. Leaves equitant, linear, coriaceous, 20-30 x 1-2 cm, midvein prominent, tip 2-lobed. Flowers in long pendulous racemes about 20 cm long; peduncle thick upto 10 cm long, covered with sheath. Flowers yellow and dark purple, 4-5 cm across. Floral bracts ovate, c. 3 x 2.5 mm, obtuse. Sepals subequal, linear-oblong, 20-25 x 4-5 mm, acute, 3-veined. Petals linear-lanceolate, purple along the centre with yellow margin, 15-20 x 4-5 mm, acute; lip c. 15 x 10 mm, 3-lobed, lateral lobes lanceolate, erect, covering the purple column, base yellow, saccate with 2 ridges, midlobe oblong, curved, pubescent. Anther 2-celled; pollinia 2, globular, c. 1.5 mm long, sessile on a flat gland. Ovary with pedicel upto 3 cm long. Capsule pyriform, 5-6 x 2.5 cm, with persistent perianth at apex.

Habitat : Semi-evergreen and moist deciduous forests

Flowering and Fruiting : April - May

Accession Details

Accession Number, Date & Locality : KFRI OR- 10A, 14-12-2013, Suganthagiri, KFRI OR- 10B, 20-1-2014 Peechi; KFRI OR- 10C, 17-12-2015, Koothattukulam.

33. *Cymbidium bicolor* Lindl., Gen. Sp. Orchid. Pl. 164. 1833; Hook. f., Fl. Brit. India 6: 11. 1890; Muktesh, Epiphytic Fl. Western Ghats 85. 1998; Sathish & Manilal, Orchid Memories 177. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 798. 2009.

Description

Tufted epiphytes with short, stout, fleshy stems clothed in membranous sheaths embracing the leaf bases; roots vermiform, giving off aerial roots standing out of the clump as thin needles. Leaves 2 or 3, loriform, 20-48 x 1.8-2.5 cm, coriaceous, tip unequally and obtusely 2-lobed, sheaths 5-8 cm long, very stout, strongly ribbed, green. Flowers cream-coloured, stained reddish-purple down the middle of the sepals and petals with a purple blotched lip, in laxly many-flowered, pendulous racemes about 28 cm or more long; rachis stout, terete; peduncle 12-14 cm long, stout, clothed with imbricating, acute sheaths at the base. Floral bracts 2.5 x 3 mm, broadly ovate, fleshy, rounded at the apex, 3-veined; dorsal sepal 2-2.2 cm x 4.5-6 mm, linear-oblong, suddenly acuminate or apiculate, obtuse, 7-9 veined; lateral sepals 1.8-2.1 cm x 5-6 mm, linear-oblong, falcate, obtuse, 7-9 veined; petals 1.8-2.1 cm x 6.5-7.5 mm, lanceolate, erect, subacute or apiculate, 3-veined, the lateral veins branching from the base, each producing 2 branches, giving a 7-veined appearance; lip 1.5-1.6 x 1.15 cm, sessile on the base of the column and embracing it by its lateral lobes, 5-veined, the two extreme lateral veins branching, supplying the midlobe as well as the lateral lobes, base saccate with 2 ridges and calli; lateral lobes lanceolate, acute; midlobe broadly oblong, rounded, revolute, finely hairy or papillate on the inner surface; column 1.1 cm high, 3 mm broad, incurved, continuing into a very short foot at the base. Anther terminal, 2-loculed, 2 x 2.8 mm; pollinia 2, ovoid, 1.7 x 1.2 mm, unequally bifid, sessile on a semilunar gland. Ovary with pedicel 1.8-2.7 cm long. Fruit a pyriform capsule 5-6 cm long.

Habitat : Semi-evergreen

Flowering and Fruiting : December - January

Accession Details

Accession Number, Date & Locality : KFRI OR- 90A, 3-2-2014, Nedumkayam; KFRI OR- 90B, 20-11-2015, Suganthagiri; KFRI OR- 90C, 20-11-2015, Kurichiarmala.

34. *Cymbidium ensifolium* (L.) Sw. var. *haematodes* (Lindl.) Du Puy & Cribb., Gen. Cymbidium 161. 1988; Sasidh., Fl. Shenduruny WLS 314. 1997. Sasidh., Fl. Periyar Tiger Reserve 409. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 199. 1999; Mohanan & Sivad., Fl. Agasthyamala 664. 2002; Sathish & Manilal, Orchid Memories 177. 2004.

Cymbidium ensifolium (L.) Sw. var. *haematodes* (Lindl.) Trimen, Cat. 89. 1855 & Handb. Fl. Ceylon 4. 180. 1898.

Cymbidium cyperifolium sensu Manilal, Fl. Silent Valley 275. 1988, non Wall. ex Lindl. 1833.

Cymbidium haematodes Lindl., Gen. Sp. Orchid. Pl. 162. 1833.

Plate 2-H

Description

Plants with thick, short stem covered with sheath and with vermiform roots. Leaves radical, linear-ensiform, 40-50 x 1-1.5 cm, 7-9 veined at the back, acute. Flowers in many flowered raceme to 25 cm long, covered with 3-5 sheath. Flowers yellow with pink tinge, scented, 4-5 cm across. Floral bracts ovate-lanceolate, c. 5 x 1.5 mm, obtuse, 1-veined. Sepals equal, oblong-lanceolate, c. 20 x 10 mm, acute, 7-veined. Petals lanceolate, c. 20 x 6 mm, acute, 7-veined; lip 3-lobed, c. 30 x 8 mm, lateral lobes rounded, midlobe orbicular, obtuse, 5-veined. Anther 2 mm long; pollinia 4 in two pairs, c. 1.2 mm long, on a flat gland, unequal; ovary with pedicel 2.5-3 cm long. Capsule pyriform, upto 6 cm long.

Habitat : Semi-evergreen and evergreen forests

Flowering and Fruiting : September - October

Accession Details

Accession Number, Date & Locality : KFRI OR- 57A, 8-02-2014, Agasthyamala, KFRI OR- 57B, 12-02-2015, Kallar: KFRI OR- 57C, 6-05-2015, Silent valley.

35. *Dendrobium anamalayanum* Chandra., Chandras. & N.C. Nair, Journ. Bombay Nat. Hist. Soc. 78: 575. 1981; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 40. 1996; Swarup. et al., Shola For. Kerala 81. 1998; Muktesh, Epiphytic Fl. Western Ghats 86. 1998; Sasidh., Fl. Periyar Tiger Reserve 410. 1998; Sathish & Manilal, Orchid Memories 177. 2004.

Plate 3-A

Description

Pseudobulb ovoid, 1-1.5 x 0.5-0.7 cm. Leaves few, 2-3 x 0.5 cm, linear-lanceolate, acute. Flowers 4-6, pink, in 4-5 cm long slender terminal racemes; pedicels 3 mm long; dorsal sepal 11 x 4.5 mm, lanceolate, obtuse, 5-veined; lateral sepals 10 x 5 mm, falcately ovate, subacute, apiculate, 5-veined; petals 11.5 x 3-4 mm, oblanceolate, slightly falcate, subacute, apiculate, 5-veined; lip 9 x 9 mm, trilobed, lateral lobes ovate-acute; midlobe ovate, acute; margins thick, fleshy, crenate, disc with 3-tipped calli.

Habitat : Shola forests and grasslands

Flowering and Fruiting : April - May

Accession Details

Accession Number, Date & Locality : KFRI OR- 62A, 11-10-2014, Anamudi, KFRI OR- 62B, 9-01-2015, Eravikulam hut; KFRI OR- 62C, 11-06-2015, Nelliampathy hilltop.

36. *Dendrobium aphyllum* (Roxb.) Fischer in Gamble, Fl. Pres. Madras 1416(991). 1928; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 799. 2009.

Limodorum aphyllum Roxb., Pl. Corom. 1: 34. 1795.

Dendrobium macrostachyum Lindl., Gen., Sp. Orch. 78. 1830; Hook. f., Fl. Brit. India 5: 735. 1890; Gamble, Fl. Pres. Madras 1416(990). 1928; Abraham & Vatsala, Introd. Orchids 355. 1981; Manilal & Sivar., Fl. Calicut 285. 1982; Mohanan, Fl. Quilon Dist. 393. 1984; Ansari, Fl. Kasaragod Div. 369. 1985; Manilal, Fl. Silent Valley 277. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 452. 1988; Babu, Fl. Malappuram Dist. 778. 1990; Vajr., Fl. Palghat Dist. 474. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 453. 1994; Muktesh, Epiphytic Fl. Western Ghats 89. 1998; Sasidh. & Sivar., Fl. Pl. Thrissur For. 439. 1996; Sasidh., Fl. Shenduruny WLS 315. 1997; Sasidh., Fl. Periyar Tiger Reserve 412. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 200. 1999; Sasidh., Fl. Parambikulam WLS 325. 2002; Mohanan & Sivad., Fl. Agasthyamala 667. 2002; Sathish & Manilal, Orchid Memories 180. 2004; Anil Kumar et al., Fl. Pathanamthitta 481. 2005.

Plate 3-B

Description

Epiphytic herbs; stem to 40 cm long, terete. Leaves oblong or ovate-lanceolate, acute, to 8 x 2.5 cm. Flowers dull yellow, 2.5 cm long, 2 or 3 on very short peduncles. Sepals and petals similar, oblong-lanceolate or obovate. Lip obscurely 3-lobed, lateral lobes enclosing the column, midlobe quadrately oblong, ovate, obtuse, with prominent red veins, margins crenulate.

Habitat : Semi-evergreen and moist deciduous forests, also in the plains

Flowering and Fruiting : March - April

Accession Details

Accession Number, Date & Locality : KFRI OR- 40A, 4-07-2014, Periyar, KFRI OR- 40B, 12-08-2015, Parambikulam; KFRI OR- 40C, 11-12-2015, Silent valley.

37. *Dendrobium aqueum* Lindl., Bot. Reg. 6: t.59. 1843; Hook. f., Fl. Brit. India 5: 739. 1890; Gamble, Fl. Pres. Madras 1417(991). 1928; Abraham & Vatsala, Introd. Orchids 349. 1981; Manilal, Fl. Silent Valley 275. 1988; Vajr., Fl. Palghat Dist. 471. 1990; Muktesh, Epiphytic Fl. Western Ghats 86. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 200. 1999; Sathish & Manilal, Orchid Memories 178. 2004; Anil Kumar et al., Fl. Pathanamthitta 481. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 800. 2009.

Dendrobium album Wight, Ic. t. 1645. 1851.

Plate 2-I

Description

Pendulous epiphytes. Pseudobulbs clavate, 20-40 cm long. Internodes 2-5 cm long, covered with sheath, longitudinally striated. Leaves alternate, sessile, ovatelanceolate, glabrous, 6-8 x 2-3 cm, many-nerved. Flowers white, c. 30 mm across, in fascicles of 2-3 from the upper nodes. Bracts ovate-oblong, 20-30 mm, acute, 1-nerved; pedicel 10-15 mm long. Sepals: dorsal one oblong, 20-22 x 8-10 mm, obtuse, 3-nerved; lateral one ovate, c. 20 x 12 mm, obtuse, 3-nerved. Petals oblong, 20-22 x 10-12 mm, obtuse, 3-nerved; lip 20-22 x 15-18 mm, 3-lobed, white with yellow shade, pubescent, lateral lobes to 18 mm, oblong, erect, midlobe to 10 mm long, oblong, acute, hairy. Column to 4 mm long, foot curved. Anther 2-celled; pollinia 4, oblong, 0.8 mm long, waxy. Ovary to 15 mm long. Capsule c. 45 x 20 mm, obovate-pyriform, with 6 strong ridges of 3 mm deep, with persistent sepals and petals.

Habitat : Evergreen and shola forests

Flowering and Fruiting : September - December

Accession Details

Accession Number, Date & Locality : KFRI OR- 5A, 6-11-2013, Walakad; KFRI OR- 5A, 11-12-2014, Kurichiarmala.

38. *Dendrobium barbatulum* Lindl., Gen. Sp. Orchid. Pl. 84. 1830; Hook. f., Fl. Brit. India 5: 719. 1890; Gamble, Fl. Pres. Madras 1416(990). 1928; Manilal, Fl. Silent Valley 276. 1988; Vajr., Fl. Palghat Dist. 473. 1990; Subram., Fl. Thenmala Div. 375. 1995; Sasidh., Fl. Shenduruny WLS 315. 1997; Sivar. & Mathew, Fl. Nilambur 684. 1997; Sasidh., Fl. Periyar Tiger Reserve 410. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 200. 1999; Sathish & Manilal, Orchid Memories 178. 2004.

Description

Tufted erect or pendulous herbs; Leafless during flowering. Pseudobulbs 10-25 cm long, many noded, brown coloured, striated. Inflorescence terminal or lateral racemes, 10-20 flowered; peduncle filiform, 3-5 cm long. Bracts ovate-lanceolate, c. 3.5 x 1 mm, 3-nerved. Flowers whitish shaded with pink, 3-4 cm across, pedicellate; pedicel 1-1.5 cm long. Sepal and petals subequal; dorsal sepal oblonglanceolate, 12-15 x 3-5 mm, acute, 5-veined; lateral ones lanceolate, 15-20 x 4-5 mm, subfalcate, acute, 5-veined. Petals obovate-lanceolate, 12-14 x 4-6 mm, acute, 3-veined; lip 3-lobed, 18-25 mm long, pink, side lobes obtuse, midlobe ovate, apicular and bearded at base with yellow coloured hairs, disc on the lip grooved. Column 2-3 mm long, 2-toothed. Anther 2-celled, c. 1 mm long; pollinia 4 in 2-pairs, waxy, linear. Ovary 1.2-1.5 cm long.

Habitat : Grasslands and moist deciduous forests

Flowering and Fruiting : December - January

Accession Details

Accession Number, Date & Locality : KFRI OR- 56, 5-04-2015, Dam site Silent valley.

39. *Dendrobium haemoglossum* Thw., Enum. Pl. Zeyl. 429. 1864; Hook. f., Fl. Brit. India 5: 740. 189; Gamble, Fl. Pres. Madras 1416(990). 1928; Abraham & Vatsala, Introd. Orchids 365. 1981; Manilal, Fl. Silent Valley 276. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 451. 1988; Sivar. & Mathew, Fl. Nilambur 685. 1997; Muktesh, Epiphytic Fl. Western Ghats 87. 1998; Sasidh., Fl. Periyar Tiger Reserve 411. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 200. 1999; Sathish & Manilal, Orchid Memories 178. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 801. 2009.

Plate 3-C

Description

Stem woody, terete, pendulous, 30-40 cm long. Leaves 10-12 cm x 7-8 mm, linear, obliquely obtuse at apex. Flowers 2-4, white, on leaf opposed tubercles; pedicel 1.2 cm long;

dorsal sepal 9 x 4 mm, oblong-lanceolate, subacute, 5-veined; lateral sepals 9.5 x 5.5 mm, obliquely ovate-lanceolate, subacute, 5-veined; petals 8.5 x 3 mm, lanceolate, subacute, 3-5-veined; lip 10 x 3-3.5 mm, oblanceolately oblong, undulate, subacute, deep red.

Habitat : Evergreen forests

Flowering and Fruiting : September - January

Accession Details

Accession Number, Date & Locality : KFRI OR- 100A, 20-10- 2014, Peerumedu; KFRI OR- 100B, 15-02-2016, Periyar, KFRI OR- 100C, 18-02-2016, Siruvani.

40. *Dendrobium herbaceum* Lindl., Bot. Misc. 69.1840; Hook. f., Fl. Brit. India 5:719.1890; Gamble, Fl. Pres. Madras 1416(990). 1928; Abraham & Vatsala, Introd. Orchids 368. 1981; Mohanan, Fl. Quilon Dist. 393. 1984; Manilal, Fl. Silent Valley 276. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 451. 1988; Antony, Syst. Stud. Fl. Kottayam Dist. 384. 1989; Vajr., Fl. Palghat Dist. 473. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 452. 1994; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 14,27. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 438. 1996; Muktesh, Epiphytic Fl. Western Ghats 87. 1998; Sasidh., Fl. Periyar Tiger Reserve 411. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 200. 1999; Sasidh., Fl. Parambikulam WLS 324. 2002; Mohanan & Sivad., Fl. Agasthyamala 666. 2002; Sathish & Manilal, Orchid Memories 179. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 801. 2009.

Dendrobium ramosissimum Wight, Ic. t. 1648. 1851.

Plate 3-D

Description

Epiphytes, stem pendulous, 25-30 x 0.5 cm high, yellow or brown, polished and shining, upper portion with few leaves. Leaves lanceolate, 2-2.5 x 0.8 cm. Flowers 5-8 mm across, creamy white, 4-5, produced laterally or terminally on the branchlets. Pedicel slender, 1-1.5 cm long. Floral bracts ovate c. 4 x 2 mm. Sepals: dorsal one oblong, c. 6 x 1.5 mm, acute, 3-veined; lateral one oblong, c. 5 x 1.5 mm, acute, 5-veined. Petals linear-oblong, c. 6 x 2 mm, acute, 3-5 veined; lip yellow, oblong, c. 4 x 2 mm, lateral lobes very narrow, midlobes ovate, entire fleshy. Column c. 2 mm long, with a foot at base. Anthers terminal, 2-celled; pollinia 4, oblong, collateral, in pairs, c. 0.5 mm long; ovary with pedicel 6-8 mm long.

Habitat : Moist deciduous, semi-evergreen and shola forests

Flowering and Fruiting : December - January

Accession Details

Accession Number, Date & Locality : KFRI OR- 21A, 20-01-2014, Periyar, KFRI OR- 21B, 01-01-

2015, Parambikulam, KFRI OR- 21C, 21-07-2015, Silent Valley.

41. *Dendrobium heterocarpum* Lindl., Gen. Sp. Orchid. Pl. 78. 1830; Hook. f., Fl. Brit. India 5: 737. 1890; Gamble, Fl. Pres. Madras 1416(991). 1928; Abraham & Vatsala, Introd. Orchids 361. 1981; Manilal, Fl. Silent Valley 276. 1988; Vajr., Fl. Palghat Dist. 473. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 452. 1994; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 27. 1996; Sasidh., Fl. Shenduruny WLS 315. 1997; Muktesh, Epiphytic Fl. Western Ghats 88. 1998; Sasidh., Fl. Periyar Tiger Reserve 411. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 200. 1999; Sasidh., Fl. Parambikulam WLS 324. 2002; Mohanan & Sivad., Fl. Agasthyamala 666. 2002; Sathish & Manilal, Orchid Memories 179. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 802. 2009.

Dendrobium aureum Lindl., Gen. Sp. Orchid. Pl. 77. 1830.

Plate 3-E

Description

Epiphytes. Pseudobulbs 10-25 cm long, clavate, constricted at the nodes, yellow to brown coloured. Internodes ribbed, 3-5 x 1-1.5 cm. Leaves lanceolate, coriaceous, 5-8 x 2-3 cm, unequally notched at the apex, with sheathing leaf base. Pseudobulbs leafless when flowering. Flowers in 2-3 clusters, on short peduncle, at nodes of pseudobulb, fragrant, light yellow, 5-7 cm across. Pedicel 2-2.3 cm long. Bracts oblong, c. 0.5 cm long. Sepals: dorsal one linear-oblong, 2.5-3.5 x 0.6-0.9 cm, rounded at tip, 7-veined, attached to the foot; lateral one obliquely oblong, 2.5-3 x 1-1.2 cm, obtuse, 7-veined. Petals ovate, 3-3.5 x 1-1.4 cm, tip rounded undulate, 5-veined; lip 3-lobed, 4.0-4.5 x 2-3 cm, lateral lobe rounded, covering the column, midlobe recurved, pubescent, ridged, dark yellowish brown blotched, crenulate. Column yellow, conical, c. 4 mm high, 3-toothed, foot broad with disc and form mentum. Anther 2-celled, terminal; pollinia 4, collateral in pairs, 0.5-0.75 mm long, caudicle absent, inner one smaller. Ovary with pedicel 3-3.5 cm long. Capsule pyriform, 4-5 cm long.

Habitat : Evergreen forests

Flowering and Fruiting : February - March

Accession Details

Accession Number, Date & Locality : KFRI OR- 72A, 4-9-2015, Ponmudi; KFRI OR- 72B, 24-11-2015, Chanthanathode; KFRI OR- 72C, 4-2-2016, Periya.

42. *Dendrobium heyneanum* Lindl., Gen. Sp. Orchid. Pl. 78. 1830; Hook. f., Fl. Brit. India 5: 718. 1890; Gamble, Fl. Pres. Madras 1415(990). 1928; Abraham & Vatsala, Introd. Orchids 358. 1981; Mohanan, Fl. Quilon Dist. 393. 1984; Manilal, Fl. Silent Valley 277. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 452. 1988; Vajr., Fl. Palghat Dist. 474. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 453. 1994; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 27,34. 1996; Sasidh. &

Sivar., Fl. Pl. Thrissur For. 438. 1996; Muktesh, Epiphytic Fl. Western Ghats 88. 1998; Sasidh., Fl. Periyar Tiger Reserve 411. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 200. 1999; Sasidh., Fl. Parambikulam WLS 324. 2002; Mohanan & Sivad., Fl. Agasthyamala 667. 2002; Sathish & Manilal, Orchid Memories 179. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 802. 2009.

Plate 3-F

Description

Epiphytic herbs; stem 15-20 cm long. Leaves 8-10 x 0.6-0.8 cm, linear, acute, sessile, sheathed at base. Flowers white or pinkish-white, in 8-10 cm long, 10-12 flowered, slender axillary or terminal racemes; pedicel 7 mm. Dorsal sepal 9 x 2 mm, oblong-lanceolate; acute, 5-veined; lateral sepals 9 x 2.5 x 3 mm, obliquely ovate-lanceolate, acute, 5-veined. Petals 9.5 x 1-1.5 mm, oblanceolate-linear, acute, 3-veined. Lip 12.5 x 4-6.5 mm, obovate, side lobes oblong-lanceolate, acute; midlobe, ovate, subacute, apiculate, margins dentate; disc with a fleshy callus.

Habitat : Evergreen forests

Flowering and Fruiting : August - November

Accession Details

Accession Number, Date & Locality : KFRI OR- 29A, 14-02-2014, Ponmudi, KFRI OR- 29B, 15-02-2014, Bonacad, KFRI OR- 29C, 15-02-2014, Agasthyamala; KFRI OR- 29D, 02-02-2015, Koodam.

43. *Dendrobium microbulbon* A. Rich., Ann. Sci., Nat. ser. 2, 15: 19. t. 8. 1841; Hook. f., Fl. Brit. India 5: 716. 1890; Gamble, Fl. Pres. Madras 1415(990). 1928; Abraham & Vatsala, Introd. Orchids 358. 1981; Muktesh, Epiphytic Fl. Western Ghats 89. 1998; Sasidh., Fl. Periyar Tiger Reserve 412. 1998; Sathish & Manilal, Orchid Memories 180. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 802. 2009.

Dendrobium humile Wight, Ic. t. 1643. 1851.

Dendrobium crispum Dalz. in Hook.'s J. Bot. Kew Gard. Misc. 4: 111. 1852.

Description

Epiphytic herbs in clusters, pseudobulbs globose oblong 1cm long 2 or 3 noded, greenish. Leaves 3-4 per plant, 3-5 long, and 0.75 cm wide membranous, narrowly elliptic lanceolate, acute, sheathing at base. Inflorescence terminal racemes, lax flowered 12cm long

scape slender, filiform with few sterile bracts. Flowers white with purplish green lips. Bracts 5.0-6.0x 1.5 -2.0mm broadly lanceolate, abruptly acuminate at tip. Sepals and petals white. Lip 10 mm long obovate, geniculate about the middle, trilobed, with a forked median ridge up to the middle, thick, fleshy; side lobes purple narrow erect, parallel to the foot of the column, acute entire 6 mm long.

Habitat : Evergreen forests

Flowering and Fruiting : December - July

Accession Details

Accession Number, Date & Locality : KFRI OR- 96, 13-01-2016, Suganthagiri.

44. *Dendrobium nutans* Lindl., Gen. Sp. Orchid. Pl. 90. 1830; Hook. f., Fl. Brit. India 5: 734. 1890; Gamble, Fl. Pres. Madras 1416(990). 1928; Abraham & Vatsala, Introd. Orchids 363. 1981; Manilal, Fl. Silent Valley 278. 1988; M. Mohanan & Henry, Fl. Thiruvanthapuram 453. 1994; Mohanan & Sivad., Fl. Agasthyamala 668. 2002; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 803. 2009.

Callista nutans (Lindl.) Kuntze, Rev. Gen. Pl. 2: 655. 1891.

Dendrobium jerdonianum Wight, Ic. t. 1644. 1851; Hook. f., Fl. Brit. India 5: 734. 1888; Muktesh, Epiphytic Fl. Western Ghats 89. 1998; Sathish & Manilal, Orchid Memories 179. 2004.

Description

Epiphytic herbs; stem 15-30 cm long, clavate, narrowed at base, swollen towards tip; internodes 1.5-1.8 cm long, yellow on drying, ridged, black hairy on ridges. Leaves only at the tip of stem, 4-6 x 1-1.5 cm, linear-lanceolate to linear-oblong, inequally 2-fid at tip, sheathing at base. Flowers 3-4 in short tubercle like leaf opposed racemes; Peduncle 0.5-0.7 cm long; floral bracts scaly, c. 0.1 cm long. Flowers partially open. Sepals and petals 0.3-0.35 cm long, linear, lanceolate. Lip pink, fleshy, 1.5-1.25 cm long, 3-lobed; mentum stout, c. 0.5 m long. Pedicel and ovary 0.8-1.2 cm long. Pods 1.2-1.5 x 0.6-0.7 cm.

Habitat : Evergreen forests

Flowering and Fruiting : February – March

Accession Details

Accession Number, Date & Locality : KFRI OR- 86A, 6-11-2015, Ponmudi; KFRI OR- 86B, 12-2-2016; Munar, KFRI OR- 86C, 19-3-2016, Neelikal.

45. *Dendrobium ovatum* (L.) Kranz. in Engl., Pflanzenr. Orch.-Dendrob. pars 1, 71. 1910; Gamble, Fl. Pres. Madras 1416(990). 1928; Abraham & Vatsala, Introd. Orchids 353. 1981; Mohanan, Fl. Quilon Dist. 393. 1984; Ansari, Fl. Kasaragod Div. 369. 1985; Vajr., Fl. Palghat Dist. 474. 1990; Antony, Syst. Stud. Fl. Kottayam Dist. 384. 1989; Subram., Fl. Thenmala Div. 375. 1995; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 14. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 439. 1996; Sasidh., Fl. Shenduruny WLS 316. 1997; Sivar. & Mathew, Fl. Nilambur 685. 1997; Muktesh, Epiphytic Fl. Western Ghats 90. 1998; Sasidh., Fl. Periyar Tiger Reserve 412. 1998; Sasidh., Fl. Parambikulam WLS 325. 2002; Mohanan & Sivad., Fl. Agasthyamala 669. 2002; Sathish & Manilal, Orchid Memories 181. 2004; Anil Kumar et al., Fl. Pathanamthitta 481. 2005; Sunil & Sivadasan, Fl. Alappuzha Dist. 675. 2009; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 804. 2009.

Epidendrum ovatum L., Sp. Pl. 952. 1753.

Cymbidium ovatum (L.) Willd., Sp. Pl. 4: 101. 1805.

Dendrobium chlorops Lindl., Bot. Reg. Misc. 44. 1844; Hook. f., Fl. Brit. India 5: 719. 1890.

Dendrobium barbatulum Wight, Ic. t. 910. 1844, non Lindl. 1830.

Description

Epiphytes; stem tufted, 15-45 long; leafless when in flower. Leaves 5-7 x 1-2 cm elliptic - oblong acute or obtuse at apex. Flowers 1.5-2 cm across, creamy white; bracts ovate-lanceolate, many flowered racemes; bracts 2-3 mm long, oblanceolate, acute, scarious; pedicels 0.8 - 1 cm long ovate to oblong. Sepals 1.2-1.5 x 0.4-0.6 cm, elliptic-oblong. Petals 1.2-1.5 x 0.5-0.7 cm, lateral petals spatulate. Lip c. 1.5 cm long, 3-lobed, yellow-hairy on dorsal side, mid-lobe large, obovate, side-lobes small, falcate; mentum 4-5 mm long; Pollinia 4, caudicle absent. Capsules up to 2 cm long, oblong; fruiting pedicel up to 1 cm long.

Plate 3-G

Habitat : Moist deciduous forests, also in the plains

Flowering and Fruiting : December - January

Accession Details

Accession Number, Date & Locality : KFRI OR- 91A, 20-11-15, Prambikulam, KFRI OR- 91B, 11-12-15, Thariode, KFRI OR- 91C, 2-1-16, Havlock, Mannarkkad.

46. *Dendrobium wightii* Hawkes & Heller, *Orquidea* 24: 16. 1962; Abraham & Vatsala, *Introd. Orchids* 351. 1981; Ramach. & V.J. Nair, *Fl. Cannanore Dist.* 453. 1988; M. Mohanan & Henry, *Fl. Thiruvanthapuram* 453. 1994; Sasidh., *Fl. Shenduruny WLS* 316. 1997; Muktesh, *Epiphytic Fl. Western Ghats* 91. 1998; Sasidh., *Fl. Periyar Tiger Reserve* 413. 1998; Mohanan & Sivad., *Fl. Agasthyamala* 669. 2002; Sathish & Manilal, *Orchid Memories* 182. 2004; Ratheesh Narayanan, *Fl. Stud. Wayanad Dist.* 805. 2009.

Dendrobium graminifolium Wight, *lc. t.* 1649. 1851; Hook. f., *Fl. Brit. India* 5: 718. 1890; Gamble, *Fl. Pres. Madras* 1415(990). 1928.

Plate 3-H

Description

Lithophyte rarely epiphytic. Rhizome slender, producing a cluster of upright stem. Leaves alternate, linear-lanceolate, membranous, purple tinged, 3-6 x 0.3-0.5 cm. Raceme zig-zag or straight, 4-10 flowered. Flowers white, 10-15 mm across; pedicel c. 5 mm long. Bracts ovate, 6 x 2 mm, 3-veined, purple. Sepals: dorsal one oblong-lanceolate, 9-12 x 3-3.5 mm, acute, 3-veined; lateral one ovate-lanceolate, 8-10 x 2-2.5 mm, acute, mentum c. 4 mm long. Petals oblong-lanceolate, 7-9 x 2-2.5 mm, acute, 3-veined; lip 3-lobed, lateral lobes short erect, c. 1.5 mm long, 3-veined, obtuse, midlobe orbicular, distantly crenulate at margin. Column to 4 mm long, toothed. Anther 2-celled; pollinia 4 in 2 pairs, c. 1 mm long. Ovary c. 3 mm long.

Habitat : Evergreen and semi-evergreen forests

Flowering and Fruiting : September - October

Accession Details

Accession Number, Date & Locality : KFRI OR- 118A, 20-03-2016, Ponmudi; KFRI OR- 118B, 15-04-2016, Siruvani.

47. *Diplozentrum recurvum* Lindl., *Bot. Reg. sub t.* 1522. 1832. & *Gen. Sp. Orchid. Pl.* 218. 1833; Hook. f., *Fl. Brit. India* 6: 78. 1890; Gamble, *Fl. Pres. Madras* 1449(1013). 1928; Abraham & Vatsala, *Introd. Orchids* 469. 1981; Swarup. et al., *Shola For. Kerala* 81. 1998; Muktesh, *Epiphytic Fl. Western Ghats* 91. 1998; Sasidh., *Fl. Periyar Tiger Reserve* 413. 1998; Sasidh., *Fl. Chinnar WLS* 303. 1999; Sasidh., *Fl. Parambikulam WLS* 325. 2002; Sathish & Manilal, *Orchid Memories* 184. 2004.

Diplozentrum longifolium Wight, *lc. t.* 1681. 1852.

Description

Stem 6-8 cm long. Leaves linear, 15-20 x 0.4 cm, keeled, or subterete, obtuse, mucronate. Flower pink, in branched 25-35 cm long racemes; dorsal sepal 3 x 1.1 mm, oblanceolate, bimucronate, 3-veined; lateral sepals 4 x 2 mm, falcately oblong, lanceolate, obtuse, 3-veined; petals 3 x 1.5 mm, oblong-lanceolate, subacute, 3-veined; lip 6.9 x 3 mm, oblong-lanceolate, obtuse, 7-veined, with 2 collateral spurs; disc with a fleshy ridge, forking at apex.

Habitat : Evergreen and moist deciduous forests

Flowering and Fruiting : May - June

Accession Details

Accession Number, Date & Locality : KFRI OR- 58A, 6-05-2015, Munnar; KFRI OR- 58B, 11-06-2015, Champakkad.

48. *Disperis neilgherrensis* Wight, Ic. t. 1719. 1851; Hook. f., Fl. Brit. India 6: 169. 1890; Gamble, Fl. Pres. Madras 1478(1032). 1928; Abraham & Vatsala, Introd. Orchids 208. 1981; Sasidh., Fl. Periyar Tiger Reserve 414. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 201. 1999; Sasidh., Fl. Parambikulam WLS 326. 2002; Sathish & Manilal, Orchid Memories 185. 2004; Kurzweil, Blumea 50: 145. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 806. 2009.

Disperis zeylanica Trimen, J. Bot. 23: 245. 1885; Hook. f., Fl. Brit. India 6: 169. 1890; Manilal, Fl. Silent Valley 278. 1988; Vajr., Fl. Palghat Dist. 475. 1990; Sathish & Manilal, Orchid Memories 185. 2004.

Plate 3-I

Description

Terrestrial small delicate, purple, erect herbs with underground tubers. Stem 5-15 cm long. Leaves 2-3, cordate, 1.5-2 x 0.8-1.5 cm, amplexicaul, acute, 5-veined. Inflorescence corymb, to 4 cm long. Flowers purple, sessile, 2-lipped, 1-1.5 cm across. Floral bracts ovate, c. 1.0 x 0.8 cm, acute, 1-veined. Sepals: dorsal one linear, c. 8 x 1 mm, obtuse, 3-veined; lateral one c. 8 x 5 mm, falcate-oblique, forming the lower lip. Petals falcate, c. 8 x 5 mm, appressed to dorsal sepal forming a hooded upper lip covering the lip; lip c. 4 x 6 mm, 'Y' shaped, with recurved papillate arms. Column c. 2 mm long, with an appendage at base. Anther 2-celled; pollinia c. 2-3 mm long, pinnate, covered with a membrane, caudicle upto 4 mm long, with a gland at base. Ovary elliptic, c. 1.5 cm long. Capsule elliptic, ribbed, to 2 cm long.

Habitat : Evergreen forests and grasslands

Flowering and Fruiting : May - June

Accession Details

Accession Number, Date & Locality : KFRI OR- 101, 26-01-2016, Sairandhri, Silent valley dam site.

49. *Epipogium roseum* (D. Don) Lindl., J. Proc. Linn. Soc. Bot. 1: 177. 1857; Mohanan, Fl. Quilon Dist. 393. 1984; Manilal, Fl. Silent Valley 279. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 453. 1988; Vajr., Fl. Palghat Dist. 476. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 455. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 440. 1996; Sasidh., Fl. Shenduruny WLS 316. 1997; Sivar. & Mathew, Fl. Nilambur 686. 1997; Sasidh., Fl. Periyar Tiger Reserve 414. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 201. 1999; Sasidh., Fl. Parambikulam WLS 326. 2002; Mohanan & Sivad., Fl. Agasthyamala 670. 2002; Sathish & Manilal, Orchid Memories 185. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 807. 2009.

Limodorum roseum D. Don, Prodr. Fl. Nepal. 30. 1825.

Epipogium nutans Rchb.f., Bonplandia 5: 36. 1836; Hook. f., Fl. Brit. India 6: 124. 1890; Gamble, Fl. Pres. Madras 1460(1021). 1928 'Epipogum'.

Podanthera pallida Wight, Ic. t. 1759. 1851.

Plate 4-A

Description

Saprophytic herbs, 25 cm long, tubers ovoid, horizontal, 5 x 2.5 cm. Stem hollow, erect, sheathed, scape leafless, 10-20 cm long, fleshy, 0.5 cm thick at the base and narrowing upwards, sheathed at base. Inflorescence lax racemes. Flowers white, tinged with pink, pedicellate; pedicel 3 mm long. Bracts ovate-lanceolate, c. 5 x 1.5 mm, shorter than ovary. Sepals and petals subequal; dorsal sepal and lateral sepals linear, 8-10 x 2-3 mm, acute, entire 3-veined. Petals linear, 7-8 x 2-2.5 mm, acute; lip ovate, 12-15 x 5 mm, acute, inserted at the base of the column, crenulate, 3-lamellated, white; spur shorter than lip, obtuse. Column c. 2 mm long, incurved. Anther terminal; pollinia 2, with long, filiform caudicle to 4 mm long; ovary ovoid, drooping, 6-8 x 3-4 mm.

Habitat : Evergreen forests

Flowering and Fruiting : April - May

Accession Details

Accession Number, Date & Locality : KFRI OR- 67A, 28-06-2015, Attumudi; KFRI OR- 67B, 4-10-2015, Panthamthode; KFRI OR- 67C, 02-01-2016, Nadukani.

50. *Eria mysorensis* Lindl., J. Proc. Linn. Soc. Bot. 3: 54. 1859; Manilal, Fl. Silent Valley 279. 1988; Sasidh. & Sivar., Fl. Pl. Thrissur For. 440. 1996; Muktesh, Epiphytic Fl. Western Ghats 94. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 202. 1999; Sathish & Manilal, Orchid Memories 187. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 808. 2009.

Eria pubescens Wight, Ic. 5: 4. 1851; Hook. f., Fl. Brit. India 5: 793. 1890; Gamble, Fl. Pres. Madras 1425(996). 1928.

Eria polystachya Wight, Ic. t. 1634. 1851, non A. Rich. 1841.

Description

Aggregated pseudobulbous epiphytes: pseudobulbs 3cm long sheathed, ovoid, 4-5 leaves arising terminally from pseudobulb, oblong-lanceolate or elliptic, lanceolate, acute, flowers white fragrant, slightly pendulous racemes, shorter than leaves; peduncle 6-10 cm long, slender pedicels including ovary to 10 mm long; bracts 10 x 2mm, 3 nerved. Sepals 3 free ca 12 x 3mm, lanceolate 3 nerved, unequal dorsal longer. Petals little shorter than sepals, lanceolate, 3 nerved. Lip oblong, constricted at middle, 3-lobed; lateral lobes narrow. Staminal column short, at right angles to foot. Anthers 2-celled; pollinia 8 in 2 groups of 4, with slender membranous caudicle, ovary to 5mm long, sparsely hairy.

Habitat : Semi-evergreen, evergreen and shola forests

Flowering and Fruiting : August - September

Accession Details

Accession Number, Date & Locality : KFRI OR- 63A, 13-11-2013, Munnar; KFRI OR- 63B, 11-10-2014, Manpara, Nelliampathy; KFRI OR- 63C, 16-10-2014, Elival hills.

51. *Eria pauciflora* Wight, Ic. t. 1636. 1851; Hook. f., Fl. Brit. India 5: 799. 1890; Gamble, Fl. Pres. Madras 1425(996). 1928; Abraham & Vatsala, Introd. Orchids 377. 1981; Manilal, Fl. Silent Valley 280. 1988; Sasidh., Fl. Shenduruny WLS 317. 1997; Muktesh, Epiphytic Fl. Western Ghats 95. 1998; Sasidh., Fl. Periyar Tiger Reserve 415. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 202. 1999; Sasidh., Fl. Parambikulam WLS 327. 2002; Sathish & Manilal, Orchid Memories 187. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 808. 2009.

Description

Epiphytes. Pseudobulbs arising in groups from a creeping rhizome upto 15 cm high, ending in a clavate tip of 2-3 cm long. Leaves 2-3 at apex, linear-oblong, coriaceous, 3-4.5 x 1.5 cm. Flowers solitary, in between the leaves, white; pedicel upto 10 mm long, with 2-3 sheath, oblong upto 6 mm long sepals: dorsal one oblong, c. 10 x 5 mm, acute, 5-veined; lateral one falcate, c. 8 x 5 mm, adnate to the foot of column, acute, 5-veined. Petals oblong, c. 8 x 4mm, obtuse, 3-veined; lip obovate, 3-lobed, c. 10 mm long with 2 prominent ridges, midlobes crenulate. Column c. 5 mm long, with foot at right angles. Anther 4-celled; pollinia 8, in fours, c. 0.5 mm long. Ovary with pedicel upto 10 mm long.

Habitat : Evergreen forests

Flowering and Fruiting : August - September

Accession Details

Accession Number, Date & Locality : KFRI OR- 120A, 13-11-2013, Munnar; KFRI OR- 120B, 30-12-2013, Kothayar; KFRI OR- 120C, 01-03-2014, Chempra.

52. *Eria polystachya* A. Rich., Ann. Sci. Nat. Bot. ser. 2, 11: 20. t.9. 1841; Hook. f., Fl. Brit. India 5: 793. 1890; Gamble, Fl. Pres. Madras 1425(996). 1928; Abraham & Vatsala, Introd. Orchids 382. 1981; Mohanan, Fl. Quilon Dist. 394. 1984; M. Mohanan & Henry, Fl. Thiruvanthapuram 456. 1994; Sasidh., Fl. Shenduruny WLS 317. 1997; Muktesh, Epiphytic Fl. Western Ghats 95. 1998; Sasidh., Fl. Periyar Tiger Reserve 415. 1998; Mohanan & Sivad., Fl. Agasthyamala 673. 2002; Sathish & Manilal, Orchid Memories 187. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 809. 2009.

Plate 4-B

Description

Pseudobulb 2-3 cm long, covered with sheaths. Leaves 13-16 x 2 cm, oblong, acute. Flowers yellowish, in 10-15 cm long, many-flowered, terminal raceme; dorsal sepal 7.1 x 1.2 cm, linear-lanceolate, acute, 3-veined; lateral sepals 6 x 1-2 cm, falcately ovate-lanceolate, acute, 3-veined; lip 3 x 0.8-1 mm, oblong, lanceolate, subacute, disc with 2 ridges at base, 3-veined.

Habitat : Evergreen and semi-evergreen forests

Flowering and Fruiting : December - January

Accession Details

Accession Number, Date & Locality : KFRI OR- 6A, 6-11-2013, Meppadi; KFRI OR- 6B, 20-11-2015, Thenmala.

53. *Eulophia epidendrea* (Koenig ex Retz.) Fischer in Gamble, Fl. Pres. Madras 1434 (1003). 1928; Abraham & Vatsala, Introd. Orchids 294. 1981; M. Mohanan & Henry, Fl. Thiruvanthapuram 458. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 441. 1996; Sasidh., Fl. Periyar Tiger Reserve 416. 1998; Sasidh., Fl. Chinnar WLS 303. 1999; Sathish & Manilal, Orchid Memories 188. 2004; Sunil & Sivadasan, Fl. Alappuzha Dist. 676. 2009; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 810. 2009.

Serapias epidendrea Koenig ex Retz., Obs. Bot. 6: 65. 1791.

Eulophia virens (Roxb.) R. Br., Bot. Reg. sub. t. 573. 1822; Hook. f., Fl. Brit. India 6: 1. 1890.

Limodorum virens Roxb., Pl. Corom. t. 38. 1795 & Fl. Ind. 3: 467. 1832.

Description

Terrestrial herbs; pseudobulb epigeal, conical, 6-8.5 x 3-5 cm, covered with membranous sheaths. Leaves 20-45 x 1-2 cm, linear, midvein prominent, bases covering pseudobulb. Inflorescence branched racemes, upto 40 cm long, erect, with sterile bracts. Floral bracts ovate, 8-10 x 3-5 mm, acuminate, 7-veined. Flowers greenish-white with purple streaks, 2.5-3 cm across. Sepals: dorsal one oblonglanceolate, 16-22 x 4-5 mm, acute, 5-veined; lateral one oblong, 15-20 x 5-6 mm, apiculate, 5-veined. Petals 15-20 x 4-6 mm, lanceolate, apiculate, 5-veined; lip 3-lobed, obovate, c. 20 x 12 mm, lateral lobes erect, covering the column, midlobe oblong, margin crinkled, 5-veined; spur short, incurved. Column 7-9 mm long, without foot. Anther terminal; pollinia 2, globular, c. 0.8 x 0.6 mm, connected to a disc like gland by a strap. Ovary with pedicel 2-2.5 cm long.

Habitat : Moist and dry deciduous forests, also in sacred groves

Flowering and Fruiting : December - January

Accession Details

Accession Number, Date & Locality : KFRI OR- 110F, 4-03-2016, Chinnar; KFRI OR- 110B, 14-02-2014, Periyar; KFRI OR- 110A, 07-04-2014, Olakara.

54. *Eulophia pulchra* (Thouars) Lindl., Gen. Sp. Orchid. Pl. 183. 1833; Mohanan & Sivad., Fl. Agasthyamala 674. 2002; Sathish & Manilal, Orchid Memories 189. 2004; Anil Kumar et al., Fl. Pathanamthitta 484. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 810. 2009.

Limodorum pulchrum Thouars, Orch., Illustr. Austr. Afri. t. 43. 1822.

Oeceoclades pulchra (Thouars) Clements & Cribb in Clements, Cat. Austr. Orch. 99. 1989; Sasidh., Fl. Shenduruny WLS 325. 1997; Sasidh., Fl. Periyar Tiger Reserve 432. 1998.

Eulophia macrostachya Lindl., Gen. Sp. Orchid. Pl. 183. 1833; Hook. f., Fl. Brit. India 6: 4. 1890; Gamble, Fl. Pres. Madras 1435(1003). 1928; Abraham & Vatsala, Introd. Orchids 298. 1981.

Plate 4-C

Description

Pseudobulbous plants; pseudobulbs green, smooth, 7-8 cm long, 3 cm across. Leaves 1-3 per plant, 15-20 x 5 cm. Inflorescence lateral from the base of the pseudobulb, up to 60 cm tall, with 3-4 pale green sheaths; bracts 2.5 cm long, 0.5 cm wide. Flowers 2 cm across, numerous on a raceme. Sepals and petals greenish, spreading. Petals with maroon veins, 1.5 cm long, 1 cm wide. Lip spurred, spur globular, slightly bipartite, limb white with maroon veins on side lobes, spur yellowish. Disc with two calli at the base and two ridges which run the length of the lip. Column 0.5 cm long. Foot absent, pollinia two, conical.

Habitat : Evergreen forests

Flowering and Fruiting : October - December

Accession Details

Accession Number, Date & Locality : KFRI OR- 102A, 07-04-2014, Chanthanathode; KFRI OR- 102B, 04-02-2016, Thariode; KFRI OR- 102C, 26-01-2016, Aryankavu.

55. *Eulophia spectabilis* (Dennst.) Suresh in Nicolson et al., Interp. Hort. Malab. 119. 300. 1988; Babu, Fl. Malappuram Dist. 779. 1990; Sasidh., Fl. Shenduruny WLS 318. 1997; Sasidh., Fl. Periyar Tiger Reserve 417. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 202. 1999; Mohanan & Sivad., Fl. Agasthyamala 674. 2002; Sathish & Manilal, Orchid Memories 189. 2004; Anil Kumar et al., Fl. Pathanamthitta 484. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 811. 2009.

Wolffia spectabilis Dennst., Schluss. Hort. Malab. 11,25,38. 1818.

Eulophia nuda Lindl., Gen. Sp. Orchid. Pl. 180. 1833; Hook. f., Fl. Brit. India 6: 5. 1890; Gamble, Fl. Pres. Madras 1435(1003). 1928; Abraham & Vatsala, Introd. Orchids 303. 1981; Mohanan, Fl. Quilon Dist. 394. 1984; Manilal, Fl. Silent Valley 282. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 454. 1988; Vajr., Fl. Palghat Dist. 479. 1990; Subram., Fl. Thenmala Div. 365. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 441. 1996.

Cyrtopera fusca Wight, Ic. t. 1690. 1851.

Eulophia nuda var. *andersonii* Hook.f., Ann. Roy. Bot. Gard. (Calcutta) 5: 50. 1895; Abraham & Vatsala, Introd. Orchids 303.1981.

Eulophia nuda var. *purpurea* Hook.f., Ann. Roy. Bot. Gard. (Calcutta) 5: 49. 1895; M. Mohanan & Henry, Fl. Thiruvanthapuram 458. 1994.

Plate 4-D

Description

A large sized, terrestrial orchid with subterranean, almost round pseudobulbs enveloped basally by a few imbricate, lanceolate sheaths, carrying 3 to 4, lanceolate, plicate, acuminate, long petiolate leaves. Leaves appear after flowering, 125-130 x 3-4 cm, including 66 cm long petiole, elliptic to oblong-lanceolate, acuminate. Flowers pink, in above 75 cm long, lax raceme; dorsal sepal 22 x 7 mm, oblanceolate-oblong, obtuse, 9-veined; lateral sepals 25 x 7 mm, falcately oblong-lanceolate, obtuse, 9-veined; petals 19 x 10 mm, elliptic or oblong-lanceolate, obtuse, 9-veined; lip 23 x 10-17 mm, 3-lobed, side lobes orbicular; midlobe ovate-orbicular, emarginate, disc with rows of ridges.

Habitat : Grasslands and moist deciduous forests, also in sacred groves

Flowering and Fruiting : May - August

Accession Details

Accession Number, Date & Locality : KFRI OR- 92A, 4-12-2015, Ponmudi; KFRI OR- 92B, 19-03-2016, Neelikal; KFRI OR- 92C, 11-04-2016, Nedumkayam.

56. *Eulophia zollingeri* (Rchb.f.) J.J.Sm., Orch. Java 228. 1905; Sathish & Manilal, Orchid Memories 190. 2004.

Cyrtopera zollingeri Rchb.f., Bonplandia 5: 38. 1857.

Cyrtopera sanguinea Lindl., J. Proc. Linn. Soc. Bot. 3: 32. 1859.

Eulophia sanguinea (Lindl.) Hook.f., Fl. Brit. India 6: 8. 1890.

Eulophia emilianae Saldanha, Indian For. 100: 566. 1974; Manilal, Fl. Silent Valley 282. 1988; Vajr., Fl. Palghat Dist. 478. 1990; Sathish in Manoharan et al., Silent Valley-Whispers Reason 202. 1999.

Description

Plants heteromycotrophic, without green leaves, (15–)40– 80 cm tall. Pseudobulb subterranean, tuberous, pale yellow, suboblong, 3–16 × 1.5–5 cm, many noded, with many stout roots. Inflorescence brownish red, racemose, (15–)40–80 cm, stout, with several scattered, clasping sheaths; rachis 4–13 cm, laxly 8- to more than 20-flowered; floral bracts narrowly lanceolate to almost subulate, 10–25 mm, subequal in length to or exceeding ovary, apex acuminate. Flowers suberect, spreading, or nodding, dull purple-red to brownish yellow, medium-sized, 25–30 mm in diam.; pedicel and ovary 16–20 mm. Dorsal sepal elliptic-oblong, 15–23 × 4–7 mm, apex acuminate; lateral sepals suboblong, slightly oblique, 16–25 × 6–9 mm, adnate at base to column foot, apex acuminate. Petals oblanceolate, 11– 18 × 5–7 mm, apex mucronate; lip adnate to column foot, subobovate or oblong-obovate, 14–15 × 15–18 mm, shortly saccate-spurred at base, 3-lobed; lateral lobes erect and loosely embracing column, subovate or oblong, 3–4 × ca. 4.5 mm, apex rounded; mid-lobe ovate, 4–7 × 3–5 mm, with 5–7 thickened, papillose veins, margin undulate, apex apiculate; disk sparsely papillose, with 2 central, suborbicular lamellae; spur broad, conic, ca. 2 mm. Column ca. 5 mm; column foot 4–5 mm.

Habitat : Moist deciduous forests

Flowering and Fruiting : April - May

Accession Details

Accession Number, Date & Locality : KFRI OR- 35, 15-06-2014, Neelikal.

57. *Flickingeria nodosa* (Dalz.) Seidenf., Dansk Bot. Ark. 34: 41. 1980; Manilal, Fl. Silent Valley 283. 1988; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 14. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 442. 1996; Sasidh., Fl. Shenduruny WLS 318. 1997; Muktesh, Epiphytic Fl. Western Ghats 97. 1998; Sasidh., Fl. Periyar Tiger Reserve 417. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 202. 1999; Sasidh., Fl. Parambikulam WLS 327. 2002; Sathish & Manilal, Orchid Memories 190. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 811. 2009.

Dendrobium nodosum Dalz. in Hook.'s J. Bot. Kew Gard. Misc. 4:292.1852.

Dendrobium macraei Hook. f., Fl. Brit. India 5: 714. 1890, non Lindl. 1830.

Desmotrichum fimbriatum C.E.C. Fisch. in Gamble, Fl. Pres. Madras 1412(987). 1928, non Blume 1825.

Ephemerantha macraei sensu Joseph, Orch. Nilgiris 88. 1982, non (Lindl.) Hunt & Summerh. 1961; Abraham & Vatsala, Introd. Orchids 370. 1981; Vajr., Fl. Palghat Dist. 476. 1990.

Plate 4-E

Description

Epiphytic herbs; rhizome creeping, annulate, profusely branched; stems sub erect, often pendulous, with plurinodal, pseudobulbs 3.5x1.5cm at regular intervals on branches, or flis form, compressed, furrowed, yellowish when dry. Leaves 10-12x2cms, solitary and sessile on pseudobulbs, coriaceous, oblong- elliptic, apex acute, base abruptly narrowed; nerves parallel, prominent on both surfaces. Flowers white, 1-3 from the tip of a pseudobulb, generally solitary, axillary, arising basally white with maroon dots near the lip thick pedicellate, pedicels with ovary 6-8 mm long, unsheathed by several scarious bracts at base. Bracts 1.8 x 2.5 mm, ovate, acuminate, 3-veined; dorsal sepal 10.5 x 3.5 mm, oblong-lanceolate, acute, 5-veined; lateral sepals 10 x 4.5 mm, obliquely oblong-lanceolate, acute, 7-veined; petals 9.5 x 2.5 mm, lanceolate, acute, 3-veined; lip 12 x 6 mm, 3-lobed; lateral lobes oblong, obtuse; midlobe sub quadrate, recurved, crenulate. Sepals-3 lateral sepals adnate to column-foot, forming a mentum obscurely 5 nerved. Petals similar to sepals; lip 3 lobed; mid lob elongated and expanded above the lateral lobes in to 2-winged, erect structures. Column oblong. Anther 1, 2-celled; pollinia 4, in 2 pairs, caudicle absent stigmatic surface broad.

Habitat : Semi-evergreen and moist deciduous forests

Flowering and Fruiting : March - April

Accession Details

Accession Number, Date & Locality : KFRI OR- 121F, 12-04-2016, Siruvani; KFRI OR- 121B, 20-11-2015, Thenmala; KFRI OR- 121C, 02-12-2015, Neriamangalam.

58. *Gastrochilus acaulis* (Lindl.) O. Ktze., Rev. Gen. Pl. 2: 661. 1891; Sasidh., Fl. Shenduruny WLS 318. 1997; Muktesh, Epiphytic Fl. Western Ghats 97. 1998; Sasidh., Fl. Periyar Tiger Reserve 417. 1998; Sasidh., Fl. Chinnar WLS 304. 1999; Sathish in Manoharan et al., Silent Valley-Whispers Reason 203. 1999; Mohanan & Sivad., Fl. Agasthyamala 675. 2002; Sathish & Manilal, Orchid Memories 191. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 812. 2009.

Cleisostoma acaulis Lindl., Gen. Sp. Orchid. Pl. 227. 1833.

Saccolabium acaule (Lindl.) Hook. f., Fl. Brit. India 6: 61. 1890.

Vanda pulchella Wight, Ic. t. 9. 1852.

Gastrochilus calceolare (Buch.-Ham. ex Smith) D. Don, Prodr. Fl. Nepal. 32. 1825; Ramach. & V.J. Nair, Fl. Cannanore Dist. 455. 1988; Manilal, Fl. Silent Valley 283. 1988; Antony, Syst. Stud. Fl. Kottayam Dist. 384. 1989.

Saccolabium nilagiricum Hook. f., Fl. Brit. India 6: 60. 1890.

Gastrochilus nilagiricus (Hook.f.) O.Ktze., Rev. Gen. Pl. 2: 661. 1891; Ansari, Fl. Kasaragod Div. 369. 1985.

Gastrochilus pulchellus (Wight) Schltr., Feddes Repert. 12: 215. 1913; Abraham & Vatsala, Introd. Orchids 466. 1981; Vajr., Fl. Palghat Dist. 479. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 458. 1994.

Saccolabium pulchellum (Wight) C.E.C. Fisch., Gamble, Fl. Pres. Madras 1446(1011). 1928; Subram., Fl. Thenmala Div. 374. 1995.

Gastrochilus indicus Garay, Bot. Mus. Leafl. Harvard Univ. 23:180. 1972; Manilal, Fl. Silent Valley 284. 1988; Anil Kumar et al., Fl. Pathanamthitta 484. 2005.

Plate 4-F

Description

Epiphytes without pseudobulb; stem 2-3 cm long with thick roots. Leaves 4-6, 5-8 x 0.5-1 cm, linear, falcate, unequally notched at apex, midvein prominent, base of the petiole sheathing the stem. Inflorescence short racemes, to 4 cm long; peduncle with 2 sheath at base. Flowers yellow, 1-1.5 cm across. Floral bracts triangular, thick, c. 2 x 1 mm. Sepals: dorsal one obovate, c. 7 x 3 mm, incurved, obtuse, 3-veined; lateral one obovate or spatulate, c. 6 x 2.5 mm, obtuse, incurved. Petals spatulate, c. 5 x 2 mm, obtuse, 3-veined; lip c. 5 x 6 mm, 3-lobed, lateral lobes short, midlobe triangular, acute, fimbriate with a spur. Column short, to 2mm long. Anther 2-celled, 1.5 mm long; pollinia 2, globose, c. 0.5 mm long, attached to a toothed gland by slender caudicle. Ovary with pedicel upto 1 cm long. Capsule with pedicel 3 x 0.8 cm, with six ridges.

Habitat : Semi-evergreen, evergreen and moist and dry deciduous forests

Flowering and Fruiting : October - November

Accession Details

Accession Number, Date & Locality : KFRI OR- 30B, 14-02-2014, Periyar; KFRI OR- 30D, 04-03-2016, Chinnar; KFRI OR- 30, 15-02-2014C, Agasthyamala.

59. *Gastrochilus obliquus* (Lindl.) Kuntze, Revis. Gen. Pl. 2: 661. 1891; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 813. 2009.

Saccolabium obliquum Lindl., Gen. Sp. Orchid. Pl. 223. 1833.

Saccolabium bigibbus Rchb.f. ex Hook. f., Bot. Mag. 95: t.5769. 1867; Hook. f., Fl. Brit. India 6: 61. 1890.

Gastrochilus bigibbus (Rchb.f. ex Hook.f.) O. Ktze., Rev. Gen. Pl. 2: 661. 1891; Sasidh. & Sivar., Fl. Pl. Thrissur For. 442. 1996; Muktesh, Epiphytic Fl. Western Ghats 98. 1998; Sasidh., Fl. Periyar Tiger Reserve 418. 1998.

Plate 4-G

Description

Stem 1-2 cm high. Leaves 10-15 x 2.5-3 cm, oblong, obliquely bifid at apex, obtuse. Flowers pale yellow, 2 cm long, lateral racemes; dorsal sepal 6.5 x 3.2 mm, obovate, obtuse, 3-veined, gland-dotted; lateral sepals 7 x 2.8 mm, obovate, obtuse, 3-veined, gland-dotted; lip 6.5 x 8 mm, deeply saccate, 4 mm broad; midlobe white with yellow centre, finely red-dotted, irregularly toothed on margin; sac with a few spots inside, naked.

Habitat : Evergreen forests

Flowering and Fruiting : November - December

Accession Details

Accession Number, Date & Locality : KFRI OR- 55D, 5-04-2015, Sairandhri; KFRI OR- 55C, 16-10-2014, Elival hills; KFRI OR- 55B, 11-02-2014, Dhoni.

60. *Geodorum densiflorum* (Lam.) Schltr., Feddes Repert. 4: 259. 1919; Gamble, Fl. Pres. Madras 1437(1004). 1928; Abraham & Vatsala, Introd. Orchids 327. 1981; Manilal & Sivar., Fl. Calicut 284. 1982; Mohanan, Fl. Quilon Dist. 395. 1984; Manilal, Fl. Silent Valley 284. 1988; M. Mohanan & Henry, Fl. Thiruvanthapuram 459. 1994; Subram., Fl. Thenmala Div. 364. 1995; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 14. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 442. 1996; Sasidh., Fl. Shenduruny WLS 319. 1997; Sivar. & Mathew, Fl. Nilambur 688. 1997; Sasidh., Fl. Periyar Tiger Reserve 418. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 203. 1999; Mohanan & Sivad., Fl. Agasthyamala 675. 2002; Sathish & Manilal, Orchid Memories 192. 2004; Anil Kumar et al., Fl. Pathanamthitta 485. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 813. 2009.

Limodorum densiflorum Lam., Encycl. 3: 516. 1792.

Geodorum purpureum R. Br. in Ait.f., Hort. Kew. (ed. 2) 5: 207. 1813; Hook. f., Fl. Brit. India 6:

16. 1890.

Geodorum dilatatum sensu Wight, Ic. t. 612. 1844, non R.Br. 1810; Hook. f., Fl. Brit. India 6: 17. 1890.

Plate 4-H

Description

Terrestrial herbs. Pseudobulbs tuberous, up to 3cm long, ovoid- conical, exposed. Leaves 2-4, each 7-20 x 4.5-6.5cm, obovate-oblong, acute at apex, narrowed at base into petiole. Flowers white, suffused with pink in compact, subcorymbose racemes, decurved; peduncle 20-30cm long; bracts 1-1.5cm long, lanceolate, sub acuminate at apex; pedicels 2-3 mm long. Sepals 0.8-1 cm long; dorsal ovate-oblong; laterals oblong, narrow, oblique petals slightly longer than sepals, elliptic-oblong. Lip 0.8-1 cm long deltoid-oblong, saccate, attached to foot, 3-lobed; mid-lobe crenulated, emarginated; laterals broad, entire. Column 3-4mm long, subclavate; foot short, pollinia 2.

Habitat : Moist deciduous and semi-evergreen forests, also in the plains

Flowering and Fruiting : April - June

Accession Details

Accession Number, Date & Locality : KFRI OR- 111E, 4-03-2016, Nedumkayam; KFRI OR- 111B, 18-03-2015, Rosemala; KFRI OR- 111C, 12-02-2016, Sholayar.

61. *Habenaria crinifera* Lindl., Gen. Sp. Orchid. Pl. 323. 1835; Hook. f., Fl. Brit. India 6: 142. 1890; Gamble, Fl. Pres. Madras 1471(1028). 1928; Abraham & Vatsala, Introd. Orchids 241. 1981; Mohanan, Fl. Quilon Dist. 395. 1984; Manilal, Fl. Silent Valley 285. 1988; Vajr., Fl. Palghat Dist. 481. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 460. 1994; Subram., Fl. Thenmala Div. 367. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 443. 1996; Sasidh., Fl. Shenduruny WLS 319. 1997; Sasidh., Fl. Periyar Tiger Reserve 420. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 203. 1999; Mohanan & Sivad., Fl. Agasthyamala 677.2002; Sathish & Manilal, Orchid Memories 193. 2004; Anil Kumar et al., Fl. Pathanamthitta 485. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 816. 2009.

Plate 4-I

Description

Terrestrial herbs, 5-15 cm high with ovoid tubers to 3-5 cm long. Leaves clustered at the base of stem, linear-lanceolate, 5-10 x 1.5-2.5 cm, base sheathing. Inflorescence terminal racemes; peduncle 10-15 cm long, with many sterile bracts. Flower white, upto 2 cm across. Floral bracts ovate-lanceolate, 1.5-2 x 0.3-0.5 cm, acuminate, 3-veined, at base. Sepals: dorsal one ovate, c. 7 x 5 mm, obtuse, 3-veined; lateral one obliquely ovate, c. 8 x 5 mm, obtuse, 3-

veined. Petals c. 7 x 1.5 mm, linear mucronate, 1-veined; lip 20-30 mm long, clawed, 3-lobed, lateral lobes cuneate, serrate, apex filiform nerved, midlobe 2-lobed, flabelliform, serrate, apex acuminate, with a triangular wedge in between the lobes. Anther 2-celled; pollinia 2, oblong, c. 2 mm long with caudicles (c. 3 mm long), covered by a thin sheath, attached to a small gland. Column c. 5 mm long, with clavate stigmatic process; spur upto 40 mm long, clavate. Ovary with pedicel upto 35 mm long. Capsule ellipsoid, upto 4 cm long.

Habitat : Evergreen forests

Flowering and Fruiting : August - October

Accession Details

Accession Number, Date & Locality : KFRI OR- 78A, 4-10-2015, Anginda; KFRI OR- 78B, 26-01-2016, Poochipara.

62. *Habenaria digitata* Lindl., Gen. Sp. Orchid. Pl. 307. 1835; Hook. f., Fl. Brit. India 6: 134. 1890; Gamble, Fl. Pres. Madras 1469(1026). 1928; Manilal, Fl. Silent Valley 286. 1988; Vajr., Fl. Palghat Dist. 481. 1990; Sathish in Manoharan et al., Silent Valley-Whispers Reason 204. 1999; Sathish & Manilal, Orchid Memories 193. 2004; Anil Kumar et al., Fl. Pathanamthitta 486. 2005.

Habenaria trinervia Wight, Ic. t.1701. 1852.

Habenaria travancorica Hook. f., Fl. Brit. India 6: 135. 1890; Mohanan, Fl. Quilon Dist. 396. 1984.

Habenaria digitata Lindl. var. *travancorica* (Hook. f.) C.E.C. Fisch. in Gamble, Fl. Pres. Madras 1469(1026). 1928.

Description

Terrestrial herbs; plants up to 30 (-50) cm, with stalked ovate tuberoids; stem stout, leafy. Leaves 5-7, sessile, largest and crowded in the middle of stem, orbicular to oblong-lanceolate, acute to acuminate, up to 10 x 4 cm, margin somewhat undulate. Inflorescence dense flowered; lower bracts foliaceous, the lower exceeding ovary, the upper equalling the ovary. Sepals green, the dorsal sub-orbicular-concave, 6 mm; lateral sepals obliquely ovate-lanceolate, 10 x 4 mm. Petals 2-parted nearly to the base, posterior lobe greenish, curved backwards and upwards, linear-lanceolate, sickle-shaped, anterior lobe whitish, filiform, curved backwards, 10-12 mm long, usually slightly longer than posterior. Lip deeply 3-parted, white at base, lobes subequal, narrow-linear, mid-lobe straight, 12-14 mm long, green towards the apex, side-lobes spreading and curved backwards, slightly shorter than mid-lobe. Spur c.11 mm long,

slightly shorter than ovary, inflated towards apex. Column 4-5 mm high. Anther canals short, curved upwards. Stigmatic processes clavate. Ovary glabrous.

Habitat : Evergreen forests and grasslands

Flowering and Fruiting : August - November

Accession Details

Accession Number, Date & Locality : KFRI OR- 54D, 5-04-2015, Walakad; KFRI OR- 54F, 04-10-2015, Panthamthode; KFRI OR- 54C, 07-04-2014, Olakara.

63. *Habenaria diphylla* (Nimmo) Dalz. in Hook.'s J. Bot. Kew. Gard. Misc. 2: 262. 1850; Hook. f., Fl. Brit. India 6: 151. 1890; Gamble, Fl. Pres. Madras 1471(1028). 1928; Manilal & Sivar., Fl. Calicut 282. 1982; Babu, Fl. Malappuram Dist. 781. 1990; Mohanan & Sivad., Fl. Agasthyamala 678. 2002; Sathish & Manilal, Orchid Memories 194. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 816. 2009.

Liparis diphyllus Nimmo in J.Graham, Cat. Pl. Bomb. Bombay 252. 1839.

Habenaria jerdoniana Wight, Ic. 5:14. t. 1715. 1851.

Description

Slender herbs, 8-20 cm high. Leaves unequal, 1.5-2.5 x 1-2.5 cm, broadly orbicular-ovate, obtuse to slightly acute at apex, cordate-amplexicaul at base, appressed to the ground. Spikes 5-15 cm long, flowering at top only; basal portion with few lanceolate bracts 0.8-1 cm long. Floral bracts 0.6-0.8 cm long. Flowers 0.6-0.8 cm across. Sepals 0.4 cm long, 0.25-0.3 cm wide, ovate. Petals 0.4 cm long, linear. Lip 0.7-0.8 cm long, 3-lobed; lobes filiform. Spur conical, 0.5-0.6 cm long. Pedicel and ovary 0.5-0.6 cm long.

Habitat : Grasslands, also in the plains

Flowering and Fruiting : September - November

Accession Details

Accession Number, Date & Locality : KFRI OR- 97C, 13-01-2016, Agasthyamala; KFRI OR- 97, 14-12-2013B, Varadimala.

64. *Habenaria elwesii* Hook. f., Bot. Mag. t. 7478. 1896; Gamble, Fl. Pres. Madras 1468(1026). 1928; Sasidh., Fl. Periyar Tiger Reserve 420 ; Sathish & Manilal, Orchid Memories 194. 2004.

Plate 5-A

Description

Erect, terrestrial herbs, 15-30 cm tall; tubers 2 x 1cm horizontal. Leaves 4-5 x 1.5 cm, spiral, 3-5 normal, at the middle of the stem, ovate or oblong lanceolate, apex acute, base slightly rounded and united with sheath; lower leaves very small. Flower yellowish - green in terminal spikes or racemes; bracts 1.5-2 x 0.6-0.7cm long, ovate, acuminate ciliate at margin sheathing. Sepals 3 free 1 x 0.3cm, ovate, acuminate. Lateral petals narrower, densely villous along margin. Lip narrowly 3-lobed; mid lobe long, ciliate along margin, glabrous; spur to 1.8 cm long, little shorter than ovary. Broad above the middle. Stamen 1; pollinia 2. Ovary inferior, 2 cm long; stigmatic lobes 2; column erect.

Habitat : Grasslands

Flowering and Fruiting : August - September

Accession Details

Accession Number, Date & Locality : KFRI OR- 27A, 14-02-2014, Periyar; KFRI OR- 27B, 22-10-2014, Thopimala; KFRI OR- 27C, 19-03-2016, Neelikal.

65. *Habenaria furcifera* Lindl., Gen. Sp. Orchid. Pl. 319. 1835; Hook. f., Fl. Brit. India 6: 149. 1890; Rathakr., Bull. Bot. Surv. India 13: 2. 1971; Manilal, Fl. Silent Valley 286. 1988; Vajr., Fl. Palghat Dist. 481. 1990; Sathish in Manoharan et al., Silent Valley-Whispers Reason 204. 1999; Sathish & Manilal, Orchid Memories 194. 2004.

Habenaria modesta Dalz. in Hook.'s J. Bot. Kew Gard. Misc. 2: 262. 1850; Hook. f., Fl. Brit. India 6: 166. 1890.

Habenaria ovalifolia Wight, Ic. t. 1708. 1851; Hook. f., Fl. Brit. India 6: 149. 1890; Gamble, Fl. Pres. Madras 1471(1028). 1928; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 14. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 444. 1996; Sasidh., Fl. Periyar Tiger Reserve 421. 1998; Sasidh., Fl. Parambikulam WLS 329. 2002; Sathish & Manilal, Orchid Memories 196. 2004.

Plate 5-B

Description

Stem 30-60 cm high, robust. Leaves 15-18 x 4-5.5 cm, elliptic-oblong, apex acute, clustered to the middle of the stem. Flowers greenish-white, in 45-50 cm long, lax raceme,

peduncle 30-35 cm long; bracts 11-12 x 2.5-3 mm, lanceolate, acuminate; dorsal sepal 4 x 5 mm, broadly elliptic, obtuse; lateral sepals 4 x 2.5 mm, obliquely elliptic-oblong, subacute to obtuse, 3-veined; petals 5 x 2.5 mm, obliquely oblong-obtuse; lip, 6 x 11 mm, 3-lobed; lobes unequal, lateral lobes 6 x 1 mm, obliquely oblong-lanceolate, obtuse; spur 16 x 8 mm, cylindrical, subacute.

Habitat : Moist deciduous and semi-evergreen forests, also in grasslands

Flowering and Fruiting : July - August

Accession Details

Accession Number, Date & Locality : KFRI OR- 1A, 26-09-2013, Vengoli; KFRI OR- 1B, 14-02-2014, Periyar; KFRI OR- 1C, 26-01-2016, Sispara.

66. *Habenaria heyneana* Lindl., Gen. Sp. Orchid. Pl. 320. 1835; Hook. f., Fl. Brit. India 6: 148. 1890; Gamble, Fl. Pres. Madras 1471(1028). 1928; Abraham & Vatsala, Introd. Orchids 231. 1981; Manilal, Fl. Silent Valley 287. 1988; Antony, Syst. Stud. Fl. Kottayam Dist. 385. 1989; Vajr., Fl. Palghat Dist. 481. 1990; Swarup. et al., Shola For. Kerala 81. 1998; Sasidh., Fl. Periyar Tiger Reserve 420. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 204. 1999; Sathish & Manilal, Orchid Memories 194. 2004; Anil Kumar et al., Fl. Pathanamthitta 486. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 817. 2009.

Habenaria subpubens A. Rich., Ann. Sci. Nat. Bot. ser. 2, 15: t. 4C.1841; Hook. f., Fl. Brit. India 6: 148. 1890.

Habenaria glabra A. Rich., Ann. Sci. Nat. Bot. ser. 2, 15: 75. 1841.

Habenaria candida Dalz. in Hook.'s J. Bot. Kew Gard. Misc. 2: 262. 1850.

Habenaria cerea Blatt. & Mc Cann, Journ. Bombay Nat. Hist. Soc. 36: 21. t. 6. 1932.

Habenaria cerea Blatt. & Mc Cann *var. polyantha* Blatt. & McCann, Journ. Bombay Nat. Hist. Soc. 36: 22. 1932.

Plate 5-C

Description

Terrestrial erect herbs, to 30cm tall; tubers ovoid-oblong, hairy, 1 x 0.6cm. Leaves 2-5 x 0.5-0.8cm, alternate, spiral, oblong-lanceolate, apex acute, mucronate, base narrowed to a sheath; lower leaves reduced. Flowers white or greenish yellow, shortly pedicellate, in secund, terminal spikes; bracts 1.5-2 x 0.4-0.5cm, erect, ovate, acuminate, sheathing the ovary. Sepals

3, unequal; dorsal 8 x 5mm broader, laterals 10 x 4mm, 1- nerved, greenish-white. Petals narrower and little shorter than sepals, 1-nerved. Lip 3- lobed; mid lobe longer and broader than the lateral lobes, oblong, apex acute; lateral lobes falcately curved, spur 6-10mm long, nearly as long as ovary, straight. Pollinia 2 globose; caudicle short; ovary 2cm long, sessile or shortly stalked.

Habitat : Grasslands

Flowering and Fruiting : August - October

Accession Details

Accession Number, Date & Locality : KFRI OR- 16A, 4-01-2014, Anamudi; KFRI OR- 16B, 11-11-2014, Nyamakad; KFRI OR- 16C, 26-01-2016, Poochipara.

67. *Habenaria longicorniculata* Graham, Cat. Bombay Pl. 202. 1839; Abraham & Vatsala, Introd. Orchids 238. 1981; Manilal, Fl. Silent Valley 287. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 455. 1988; Vajr., Fl. Palghat Dist. 482. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 460. 1994; Subram., Fl. Thenmala Div. 368. 1995; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 14. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 444. 1996; Sasidh., Fl. Shenduruny WLS 319. 1997; Swarup. et al., Shola For. Kerala 81. 1998; Sasidh., Fl. Periyar Tiger Reserve 420. 1998; Sasidh., Fl. Chinnar WLS 304. 1999; Sathish in Manoharan et al., Silent Valley-Whispers Reason 204. 1999; Sasidh., Fl. Parambikulam WLS 328. 2002; Sathish & Manilal, Orchid Memories 195. 2004; Anil Kumar et al., Fl. Pathanamthitta 486. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 817. 2009.

Habenaria longicalcarata A.Rich., Ann. Sci. Nat. Bot. ser.2, 15: 71,t.3B.1841; Hook. f., Fl. Brit. India 6: 141. 1890; Gamble, Fl. Pres. Madras 1470(1027). 1928.

Habenaria longicalcarata var. *viridis* Blatt. & McCann, Journ. Bombay Nat. Hist. Soc. 36: 20. 1932.

Plate 5-D

Description

Terrestrial, erect herbs, to 60cm tall; tubers 1-2, unequal; leaves 4-10 x 1.5-2cm, 6, clustered near the base of stem, variable in size, 2-3 larger, elliptic-oblong or elliptic, apex obtuse or acute, base narrow, sheathing. Flowers 1-4, white, at the top of long, slender peduncle covered by sheathing bracts; floral bracts cover the ovary, pedicellate; sepals 3, free, unequal, 5-7-nerved. Petals 1 x 0.4cm sub falcate, 3 nerved. Lip 3-lobed, to 1.6cm long mid lobe narrower than the 2 lateral lobes; spur slender, 9cm long, thickened below the middle, clavate apex. Anther 1, fertile; cells 2; pollinia 2, narrow; caudicle short; gland rounded. Ovary 2.5-3cm long, 5-ribbed, beaked above, beak 6-7 mm long.

Habitat : Grasslands and moist deciduous forests

Flowering and Fruiting : July - August

Accession Details

Accession Number, Date & Locality : KFRI OR- 9C, 14-12-2013, Varadimala; KFRI OR- 9F, 06-11-2015, Ponmudi; KFRI OR- 9D, 26-02-2015, Mattupetty.

68. *Habenaria marginata* Colebr. in Hook., Exot. Fl. t. 136. 1824; Hook. f., Fl. Brit. India 6. 150. 1890; Gamble, Fl. Pres. Madras 1471(1028). 1928.

Platanthera marginata (Colebr.) Lindl. in Wall., Numer. List 7038. 1832.

Habenaria flavescens Hook.f., Fl. Brit. India 6: 150. 1890.

Habenaria fusifera Hook.f., Fl. Brit. India 6: 147. 1890.

Description

Plants 10-25 cm tall with turnip-shaped tuberoids. Stem with 3-5 closely crowded sub-basal leaves above with 2-4 small leaf-like sheaths. Leaves sessile, spreading, and ovate to oblong, acute, with pale yellow margins. Inflorescence broadly cylindrical, up to 10(-15) x 5 cm. Bracts lanceolate, ± equalling in length the ovary. Flowers green and yellow. Sepals green; dorsal broadly ovate 7-8 x 7 mm, forming a hood with the petals; lateral sepals narrower, oblong-lanceolate, 7 x 3.5 mm. Petals greenish, outer half yellow, triangular-ovate, slightly falcate, 9 mm long, 5 mm broad at base. Labellum bright yellow, 3-lobed from a 2-3 mm long undivided basal part; mid-lobe linear, margins reflexed, obtuse 7-8 x 1.5-2 mm, side lobes longer, narrower, 9 mm long, usually terminating in an ± involute filiform apex. Spur equalling ovary in length, about 12 mm long, widened at base, with slightly inflated and laterally compressed apex. Anther canals c. 1 mm, stigmatic processes c. 1.5 mm long.

Habitat : Scrub jungles

Flowering and Fruiting : July - November

Accession Details

Accession Number, Date & Locality : KFRI OR- 31A, 07-04-2014, Olakara; KFRI OR- 31B, 11-07-2014, Vazhachal.

69. *Habenaria perrottetiana* A. Rich., Ann. Sci. Nat. Bot. 15. 74. t.4B.1841; Hook. f., Fl. Brit. India 6: 164. 1890; Gamble, Fl. Pres. Madras 1471(1028). 1928; Abraham & Vatsala, Introd. Orchids 236. 1981; M. Mohanan & Henry, Fl. Thiruvanthapuram 460. 1994; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 40. 1996; Swarup. et al., Shola For. Kerala 81. 1998; Sasidh., Fl. Periyar Tiger Reserve 422. 1998; Mohanan & Sivad., Fl. Agasthyamala 679. 2002; Sathish & Manilal, Orchid Memories 197. 2004; Anil Kumar et al., Fl. Pathanamthitta 487. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 818. 2009.

Platanthera lutea Wight, Ic. t. 919. 1845.

Plate 5-E

Description

Terrestrial herbs; stem 20-50 cm high. Leaves to 7 x 3 cm, elliptic-oblong, acute. Flowers yellow, few, in about 15 cm long spike; bracts 3 x 1.7 cm, broadly elliptic, acute-apiculate, foliaceous, almost concealing the flowers. Dorsal sepal 15 x 9 mm, ovate-oblong, obtuse, 5-veined; lateral sepals 15 x 9 mm, elliptic, obtuse, 7-veined. Petals 15 x 4 mm, obliquely oblong, acute, 4-veined. Spur 15 mm long, clavate.

Habitat : Grasslands

Flowering and Fruiting : September - October

Accession Details

Accession Number, Date & Locality : KFRI OR- 24A, 28-01-2014, Kurichiarmala; KFRI OR- 24B, 21-04-2014, Suganthagiri.

70. *Habenaria plantaginea* Lindl., Gen. Sp. Orchid. Pl. 323. 1835; Hook. f., Fl. Brit. India 6: 141. 1890; Gamble, Fl. Pres. Madras 1470(1027). 1928; Abraham & Vatsala, Introd. Orchids 238. 1981; Mohanan, Fl. Quilon Dist. 396. 1984; Vajr., Fl. Palghat Dist. 483. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 460. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 444. 1996; Sivar. & Mathew, Fl. Nilambur 688. 1997; Sasidh., Fl. Periyar Tiger Reserve 422. 1998; Sasidh., Fl. Parambikulam WLS 329. 2002; Sathish & Manilal, Orchid Memories 197. 2004.

Description

Terrestrial tuberous herbs, 30-40cm tall; tubers 3-4 cm long ellipsoid. Leaves 3. 4-6.0 X 0.9-3.0cm lanceolate-oblong or elliptic, mucronate at tip. Inflorescence many flowered racemes, lax, 23-36cm with a long slender scape covered with sterile bracts. Flowers bright white ca 12mm across restricted towards the apex of the scape. Bracts narrowly lanceolate,

much shorter than the ovary, acuminate tip. Dorsal sepal ca 5x3mm erect, broadly ovate, obtuse at tip, prominently 3-nerved. Lateral sepals thick, 5.0-5.5 x 2.5-3.0mm, sub erect or spreading, obliquely lanceolate-ovate, obtuse at tip, 4-nerved slightly larger than the dorsal sepal, lateral petals 4.7x1.5mm, narrower than the sepals, elliptic, erect, subequal with sepals, acute at tip, one-nerved, more or less hyaline. Lip trilobed, long-spurred, rhomboid in outline, ca 12mm across; side lobe much broader than the midlobe, wing link, midlobe narrowly ligulate, almost equaling the side one. Spur slender, longer than the ovary. Ovary 1.5-2.0cm long, shortly stalked.

Habitat : Evergreen and moist deciduous forests, also in the plains

Flowering and Fruiting : September - October

Accession Details

Accession Number, Date & Locality : KFRI OR- 73A, 4-09-2015, Achankovil; KFRI OR- 73B, 11-09-2015, Pamba; KFRI OR- 73C, 18-12-2015, Kakadampoyil.

71. *Habenaria rariflora* A. Rich., Ann. Sci. Nat. Bot. ser.2, 15: 70. t.2D.1841; Hook. f., Fl. Brit. India 6: 136. 1890; Gamble, Fl. Pres. Madras 1469(1027). 1928; Abraham & Vatsala, Introd. Orchids 216. 1981; Sasidh., Fl. Periyar Tiger Reserve 422. 1998; Sasidh., Fl. Chinnar WLS 305. 1999; Sasidh., Fl. Parambikulam WLS 329. 2002; Sathish & Manilal, Orchid Memories 197. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 819. 2009.

Plate 5-F

Description

Herbs; stem 10-12 cm high. Leaves 2.5-3.5 x 0.4 cm, linear, acute. Flowers white, 1 or 2, in 5-10 cm long, terminal raceme; dorsal sepal 6 x 6 mm, broadly ovate, obtuse, 5-veined; lateral sepals 7.5 x 3 mm, obliquely elliptic-oblong, subacute, 5-veined; petals 6 x 3 mm, unequally biparted, larger lobe 6 x 3 mm, ovate, acute; smaller lobe 11 x 0.5 mm, linear acute; lip 15 x 3 mm, 3-lobed; lateral lobes 11 x 0.5 mm, linear, acute, midlobe, 6 x 1 mm, oblong, obtuse; spur 40 x 2 mm, cylindric, obtuse.

Habitat : Grasslands

Flowering and Fruiting : July - September

Accession Details

Accession Number, Date & Locality : KFRI OR- 59D, 18-05-2015, Manpara; KFRI OR- 59C, 04-07-2014, Periyar; KFRI OR- 59A, 14-05-2014, Mattupetty.

72. *Habenaria sahyadrica* K.M.P.Kumar, T.K.Nirmesh, V.B.Sreek. & Kumar. *Phytotaxa* 244 (2): 196. 2016.

Plate 5-G

Description

Terrestrial herbs, 35 cm tall, stem cylindric, leafy from base upwards mainly on the upper two thirds of stem. Stem closely embraced by leaf sheath. Tuber one, globose 20 mm diameter and placed directly underneath the stem. Leaves 5–8, alternate, sessile, elliptic-lanceolate, 10.0–12.0 × 2.5–3.5 cm, acute, base narrow, petiole like, glabrous on both sides; leaf margin undulate. Inflorescence terminal, racemose. Peduncle 12–14 cm long, glabrous, clothed with elliptic, acuminate, sterile greenish bracts completely covering the pedicel, 3.4–4.5 cm long, glabrous. Raceme 6–8 cm long, 6 cm broad, 8–15 flowered. Floral bracts elliptic-attenuate, trinerved, glabrous, 20.0–20.8 × 8.0–10.0 mm. Flowers pale greenish-white; dorsal sepal ovate, 6-nerved out of which 3 nerves continuing to the apex, 10–13 × 3–5 mm, densely hispid on upper part, lower part glabrous; lateral sepals ovate-elliptic, sub-falcate, acute, trinerved, 10–13 × 4–6 mm, densely hispid on upper part, lower part glabrous; petals bipartite, posterior lobe filiform, falcate, obtuse, connivent with dorsal sepal, 10–15 mm long, glabrous, anterior lobe slightly narrower, filiform, apex acute and curving upwards, 14–18 mm long; lip trilobed; midlobe filiform, dilated towards rachis, 20–24 mm long, glabrous; lateral lobes slightly narrower, filliform and curving upward, 15–18 mm long, glabrous; spur green, cylindrical, clavate at apex, decurved, 17–24 mm long, glabrous; column greenish-yellow, 1.5 mm long, glabrous; anther locules large, 3.0 × 1.5 mm, glabrous; canals erect 2 mm long, ovary fusiform, glabrous, 18–22 mm long; pollinia yellow, pyriform, 2.0 × 1.5 mm; caudicles transparent, longer than the pollinia, 5 mm; rostellum 3 mm long.

Habitat : Shola forest.

Flowering and Fruiting : October–January.

Accession Details

Accession Number, Date & Locality : KFRI OR- 77, 28-09-2015, Muthikulam

73. *Habenaria viridiflora* (Sw.) R. Br., Prodr. 312. 1810; Hook. f., Fl. Brit. India 6: 150. 1890; Gamble, Fl. Pres. Madras 1471(1028). 1928; Manilal & Sivar., Fl. Calicut 283. 1982; Babu, Fl. Malappuram Dist. 781. 1990; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 27,40. 1996; Sasidh. &

Sivar., Fl. Pl. Thrissur For. 445. 1996; Sathish & Manilal, Orchid Memories 198. 2004; Sunil & Sivadasan, Fl. Alappuzha Dist. 676. 2009.

Orchis viridiflora Sw., Act. Holm. 706. 1800.

Coeloglossum luteum Dalz., Hook.'s J. Bot. Kew Gard. Misc. 2: 263. 1850.

Habenaria viridiflora (Sw.) R.Br. var. *dalzellii* Hook.f., Fl. Brit. India 6: 150. 1890.

Habenaria graminea A. Rich., Ann. Sci. Nat. Bot. 15: 72. 1841, non Spreng. 1826.

Description

Terrestrial, leafy herbs, stem short, tubers ovoid or oblong tubers 2-2.5 cm long, with fleshy root-fibres. Leaves radical, about 5 x 0.9 cm, lanceolate, acute, coriaceous, veins obscure but the midrib prominent on the under surfaces, bases sheathing the stem. Flowers 5 mm across, yellowish-green, spreading in many-flowered racemes; peduncle 9.5-11 cm long with 3 or 4 minute, lanceolate, sterile bracts, the lower ones larger; floral bracts 4.1-4.4 x 2-2.2 mm, ovate, finely acuminate-acute, 1-veined. Dorsal sepals 2.2 mm long and as broad, orbicular-ovate, truncate, 3-veined; lateral sepals 3 x 2 mm, obliquely ovate, obtuse, 3-veined, the outer edge folding over or reflexed forming a flap. Petals 2.4 x 1.4 mm, obliquely triangular-obovate, truncate which one main vein giving off two lateral branches; petals along with the dorsal sepals forming a hood over the column. Lip 3-lobed, the trunk quadrate, 5-veined; lateral lobes subulate, recurved, 4.8 mm long, 2-veined; midlobe shorter and straight, 1-veined with two branches from the adjoining veins; spur 1.3 cm long, longer than the ovary and parallel to it, slightly broader at the end; column minute; stigmatic processes long and clavate, projecting beyond the mouth of the spur. Anther lateral, 2-loculed, tubes short, upcurved; pollinia 2, pyriform, 0.8 x 0.6 mm; caudicles short and glands small. Ovary with pedicels 1.1 cm long. Fruit an erect, fusiform ribbed capsule.

Habitat : Among sedges and grasses in laterite hillocks in the plains

Flowering and Fruiting : September - October

Accession Details

Accession Number, Date & Locality : KFRI OR- 81, 4-10-2015, Poochipara, Karuvarakund.

74. *Ipsea malabarica* (Rchb.f.) Hook.f., Fl. Brit. India 5: 812. 1890; Manilal, Fl. Silent Valley 289. 1988; Manilal & Sathish, Bull. of Pure & Applied Sciences 2C: 38. 1983; Biju in Manoharan et al., Silent Valley-Whispers Reason 154. 1999; Sathish in Manoharan et al., Silent Valley-

Whispers Reason 204. 1999; Sathish & Manilal, Orchid Memories 198. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 820. 2009.

Pachystoma malabaricum Rchb.f., Walp. Ann. 6: 462. 1861.

Spathoglottis malabarica (Rchb.f.) Pradhan, Ind. Orch. 2: 702. 1979.

Plate 5-H

Description

Terrestrial tuberous herbs; tuber discoid. Leaves appear after flowers, two, 8-10 cm long, 1-1.5 cm wide, ribbon like, acuminate at apex, narrowed into a petiole like portion below, plicate. Scape 2-6 flowered, 10-15 cm long; bracts 1-2 on the peduncle and below each flower, 0.8-1.2 cm long, 0.2 cm wide. Flowers bright yellow, opening partially only. Ovary with pedicel 1-1.5 cm long. Sepals and petals 1-1.5 cm long. Lip 3-lobed. Pollinia 8.

Habitat : Grasslands

Flowering and Fruiting : June - July

Accession Details

Accession Number, Date & Locality : KFRI OR- 38A, 15-06-2014, Sairanthiri; KFRI OR- 38B, 15-06-2014, Silent valley dam site; KFRI OR- 38C, 15-06-2014, Muthikulam.

75. *Liparis elliptica* Wight, Ic. t. 1735. 1851; Abraham & Vatsala, Introd. Orchids 412. 1981; M. Mohanan & Henry, Fl. Thiruvanthapuram 461. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 446. 1996; Sasidh., Fl. Shenduruny WLS 320. 1997; Muktesh, Epiphytic Fl. Western Ghats 100. 1998; Sasidh., Fl. Periyar Tiger Reserve 425. 1998; Sasidh., Fl. Parambikulam WLS 330 Mohanan & Sivad., Fl. Agasthyamala 680. 2002; Sathish & Manilal, Orchid Memories 200. 2004; Anil Kumar et al., Fl. Pathanamthitta 488. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 823. 2009.

Liparis viridiflora sensu Hook.f., Fl. Brit. India 5: 704. 1890, non Lindl. 1830; Gamble, Fl. Pres. Madras 1411(987). 1928.

Plate 5-I

Description

Epiphytes; pseudobulbs green and laterally compressed with two sharp winged edges. Leaves 2, membranous, elliptic-oblong, 8-13 x 2-3 cm, acute. Raceme slender, between the leaves, 12-25 cm long. Floral bracts ovate, c. 5 mm long, acute, 3-veined. Flowers yellow, c. 5 mm across. Sepals ovate-oblong, c. 3x1.5 mm, acute, 5-veined. Petals, linear, c. 3 x 1 mm,

acute, 1-veined; lip ovate, c. 4 x 3 mm long. Column c. 2 mm long. Anther 2-celled; pollinia 4, in two pairs, obovate, c. 0.8 mm long. Ovary with pedicel c. 7 mm long. Capsule oblong, ribbed, 5-12 mm long.

Habitat : Evergreen and shola forests

Flowering and Fruiting : April - May

Accession Details

Accession Number, Date & Locality : KFRI OR- 7D, 6-11-2013, Agasthyamala; KFRI OR- 7E, 22-01-2014, Pandimotta; KFRI OR- 7F, 26-11-2014, Parambikulam.

76. *Liparis odorata* (Willd.) Lindl., Gen. Sp. Orchid. Pl. 26. 1830; Sathish in Manoharan et al., Silent Valley-Whispers Reason 205. 1999; Sathish & Manilal, Orchid Memories 200. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 823. 2009.

Malaxis odorata Willd., Sp. Pl. 4: 91. 1805.

Liparis paradoxa (Lindl.) Rchb.f., Walp. Ann. 6:218.1861; Hook. f., Fl. Brit. India 5:697.1890; Sasidh., Fl. Periyar Tiger Reserve 425. 1998.

Liparis nervosa auct. non (Thunb.) Lindl.: C.E.C. Fisch. in Gamble, Fl. Pres. Madras 1410(987). 1928; Abraham & Vatsala, Introd. Orchids 408. 1981; Mohanan, Fl. Quilon Dist. 396. 1984; Manilal, Fl. Silent Valley 291. 1988; Anil Kumar et al., Fl. Pathanamthitta 488. 2005.

Plate 6-A

Description

Stem 18-20 cm long, base bulbous. Leaves 8-9 x 2.5-3 cm, ovate, acute. Flowers pinkish; dorsal sepal oblong-lanceolate, obtuse; lateral sepals elliptic-lanceolate, subacute; petals linear-lanceolate, obtuse; lip 5 x 4-4.5 mm, obovate, fleshy, disc with 2 calli, margin crenate.

Habitat : Grasslands

Flowering and Fruiting : July - September

Accession Details

Accession Number, Date & Locality : 20-01-2014, KFRI OR- 18A, Nelliampathy, 11-05-2014, KFRI OR- 18B, Naduvattam; 18-06-2014, KFRI OR- 18C, Muvattupuzha.

77. *Liparis viridiflora* (Blume) Lindl., Gen. Sp. Orchid. Pl. 31. 1830; Abraham & Vatsala, Introd. Orchids 410. 1981; Mohanan, Fl. Quilon Dist. 397. 1984; Ansari, Fl. Kasaragod Div. 370.

1985; Manilal, Fl. Silent Valley 291. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 456. 1988; Vajr., Fl. Palghat Dist. 483. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 461. 1994; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 27,34. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 446. 1996; Sasidh., Fl. Shenduruny WLS 321. 1997; Sivar. & Mathew, Fl. Nilambur 689. 1997; Muktesh, Epiphytic Fl. Western Ghats 101. 1998; Sasidh., Fl. Periyar Tiger Reserve 425. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 205. 1999; Sasidh., Fl. Parambikulam WLS 330. 2002; Mohanan & Sivad., Fl. Agasthyamala 680. 2002; Anil Kumar et al., Fl. Pathanamthitta 488. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 823. 2009.

Malaxis viridiflora Blume, Bijdr. 392. 1825.

Liparis longipes Lindl., Gen. Sp. Orchid. Pl. 30. 1830; Hook. f., Fl. Brit. India 5: 703. 1890; Gamble, Fl. Pres. Madras 1411(987). 1928.

Plate 6-B

Description

Tufted epiphytes, Pseudobulbs conical, 4-6 x 1-2 cm, covered with sheath. Leaves 2, linear-lanceolate, coriaceous, 15-25 x 1.5-2 cm, 5-7 veined. Flowers yellowish green, in terminal racemes, 10-25 cm long; peduncle 5-10 cm long, base covered with sterile bracts. Flowers greenish yellow, c. 5 mm across. Bracts lanceolate, c. 5 x 2 mm, acute, 1-veined. Sepals: dorsal one oblong, c. 4 x 2 mm, acute, 1-veined; lateral one lanceolate, c. 3.5 x 1.5 mm, acute, 1-veined. Petals linear, 3-4 x 0.5-1 mm, obtuse, 1-veined; lip ovate, fleshy, 3-veined. Column c. 0.4 mm long, fiat. Anther 2 celled; pollinia 4, waxy in two pairs, c. 0.8 mm long. Ovary with pedicel c. 6 mm long.

Habitat : Among sedges and grasses in laterite

Flowering and Fruiting : September - October

Accession Details

Accession Number, Date & Locality : KFRI OR- 19B, 20-01-2014, Peerumade; KFRI OR- 19C, 20-01-2014, Poochipara.

78. *Liparis wightiana* Thw., Enum. Pl. Zeyl. 295. 1861; Hook. f., Fl. Brit. India 5: 695. 1890; Gamble, Fl. Pres. Madras 1410(986). 1928; Abraham & Vatsala, Introd. Orchids 405. 1981; Manilal, Fl. Silent Valley 291. 1988; M. Mohanan & Henry, Fl. Thiruvanthapuram 461. 1994; Swarup. et al., Shola For. Kerala 81. 1998; Sasidh., Fl. Periyar Tiger Reserve 425. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 205. 1999; Mohanan & Sivad., Fl. Agasthyamala 681. 2002; Sathish & Manilal, Orchid Memories 201. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 824. 2009.

Liparis atropurpurea sensu Wight, Ic. t. 904. 1844, non Lindl. 1830.

Plate 6-C

Description

Terrestrial herbs, 4-6 cm high, pseudobulbs 1-1.5 cm long. Leaves 2-3, ovatelanceolate, sheathing at base, 4-5 x 2.5 cm, acuminate, 7-veined; peduncle arising between the leaves, 5-7 cm long. Bracts lanceolate, 3-5 x 1-2 mm, acuminate. Flowers purple, 5-8 mm across. Sepals subequal, white lanceolate, 5-6 x 2-2.5 mm, acute, 5-veined. Petals linear, greenish brown, c. 6 x 1 mm, margin obtuse, involute, 1-veined; lip purple, with a callus at the base, stalk short, orbicular, 4-5 x 3.5 mm. Column c.4 mm long, curved, flattened. Anther 2-celled, pollinia 4, obovate, c. 1.2 mm long; ovary with pedicel upto 10 mm long.

Habitat : Grasslands

Flowering and Fruiting : August - September

Accession Details

Accession Number, Date & Locality : KFRI OR- 11C, 26-09-2013, Ponmudi; KFRI OR- 11D, 16-10-2014, Varadimala.

79. *Luisia birchea* (A. Rich.) Blume, Mus. Bot. Ludg.-Bat. 1: 64. 1849; Abraham & Vatsala, Introd. Orchids 481. 1981; Mohanan, Fl. Quilon Dist. 397. 1984; Ansari, Fl. Kasaragod Div. 370. 1985; Subram., Fl. Thenmala Div. 375. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 447. 1996; Sasidh., Fl. Shenduruny WLS 321. 1997; Sivar. & Mathew, Fl. Nilambur 690. 1997; Sasidh., Fl. Chinnar WLS 305. 1999; Muktesh, Epiphytic Fl. Western Ghats 102. 1998; Sasidh., Fl. Periyar Tiger Reserve 426. 1998; Sathish & Manilal, Orchid Memories 201. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 825. 2009.

Birchea teretifolia A. Rich., Ann. Sci. Nat. Bot. ser. 2, 15: 67. 1841.

Luisia tenuifolia Hook.f., Fl. Brit. India 6: 24. 1890; Gamble, Fl. Pres. Madras 1438(1006). 1928.

Cymbidium triste Wight, Ic. t. 911. 1845.

Luisia pulniana Vatsala, Intr. Orch. 486. 1981.

Plate 6-D

Description

Epiphyte, to 40 cm tall. Leaves 15-25 x 0.2 cm, linear, obtuse. Flowers brownish, axillary, solitary; dorsal sepal 9.5 x 4 mm, oblong-lanceolate, obtuse, keeled, 3-veined; lateral sepals oblong-lanceolate, obtuse, keeled, 3-veined; petals linear, subacute, obtuse, 3-veined; lip 16 x 7 mm, elliptic-oblong, apex 2-lobed, with 2 lateral smaller, fleshy ridges on the lip.

Habitat : Evergreen and moist deciduous forests

Flowering and Fruiting : July - September

Accession Details

Accession Number, Date & Locality : KFRI OR- 15A, 4-01-2014, Nelliampathy; KFRI OR- 15B, 6-11-2015; Sairandhiri.

80. *Luisia evangelinae* Blatt. & McCann, JBHNS 35: 493. 1932; Abraham & Vatsala, Introd. Orchids 483. 1981; Sasidh. & Sivar., Fl. Pl. Thrissur For. 447. 1996; Sasidh., Fl. Shenduruny WLS 321. 1997; Muktesh, Epiphytic Fl. Western Ghats 102. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 206. 1999; Sasidh., Fl. Parambikulam WLS 330. 2002; Sathish & Manilal, Orchid Memories 202. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 825. 2009.

Luisia tenuifolia Blume var. *evangelinae* (Blatt. & McCann) Sant. & Kapad., Journ. Bombay Nat. Hist. Soc. 59: 829. 1962.

Description

Stem pendant, to 20 cm long. Leaves 15 cm long. Peduncle short, to 1.5 cm long. Flowers 3 cm long. Sepals creamy white, oblong, 1.2 x 0.4 cm. Petals linear, creamy white with purple blotches, 2 x 0.2 cm. Lip pandurate, 2.2 x 1 cm, white with purple blotches.

Habitat : Evergreen forests

Flowering and Fruiting : December - January

Accession Details

Accession Number, Date & Locality : KFRI OR- 32C, 7-04-2014, Chanthanathode; KFRI OR- 32D, 18-03-2015, Rosemala; KFRI OR- 32E, 27-09-2014, Umayar.

81. *Luisia tristis* (G.Forst.) Hook.f., Fl. Brit. India 6: 25. 1890; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 826. 2009.

Epidendrum triste G.Forst., Fl. Ins. Austr. 60. 1786.

Luisia zeylanica Lindl., Fol. Orch. Luisia 3. 1853; Abraham & Vatsala, Introd. Orchids 486. 1981; Manilal & Sivar., Fl. Calicut 284. 1982; Manilal, Fl. Silent Valley 292. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 456. 1988; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 34. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 447. 1996; Sasidh., Fl. Shenduruny WLS 322. 1997; Sivar. & Mathew, Fl. Nilambur 690. 1997; Muktesh, Epiphytic Fl. Western Ghats 103. 1998; Sasidh., Fl. Periyar Tiger Reserve 426. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 206. 1999;

Sasidh., Fl. Parambikulam WLS 331. 2002; Mohanan & Sivad., Fl. Agasthyamala 681. 2002; Sathish & Manilal, Orchid Memories 202. 2004; Anil Kumar et al., Fl. Pathanamthitta 488. 2005; Sunil & Sivadasan, Fl. Alappuzha Dist. 677. 2009.

Luisia teretifolia Gaudich., Voy. Uranie 426. 1829; Hook.f., Fl. Brit. India 6: 22. 1890; Gamble, Fl. Pres. Madras 1438(1005). 1928.

Luisia truncata Blatt. & McCann, Journ. Bombay Nat. Hist. Soc. 35: 491. t. 9. 1932.

Description

Erect, tufted, epiphytic herbs; stem to 20 cm long. Leaves 4-10 cm long, terete, acute at apex, fleshy, sheathing at base. Inflorescence condensed racemes, extra-axillary. Flowers 2-4, 5-6 mm long, greenish-yellow with purple tinge; bracts 1.5-2 x 1-2 mm, oblong, obtuse. Sepals c. 5 x 1.5 mm, oblong, obtuse, apex incurved. Petals similar to sepals. Lip 4-6 mm long, oblong, concave towards the base, trilobed with dark maroon horizontal bands; mid-lobe rhomboid, larger than side lobes. Ovary c. 2 mm long. Fruits 1.5-3.5 cm long, oblong.

Habitat : Moist deciduous forests and sacred groves

Flowering and Fruiting : March - August

Accession Details

Accession Number, Date & Locality : KFRI OR- 74A, 28-09-2015, Nilambur, KFRI OR- 74B, 30-09-2015, Parambikulam, KFRI OR- 74C, 18-01-2016, Periyar.

82. *Malaxis acuminata* D. Don., prodr. Fl. Nep. 29, 1825; Radhak., Bull. Bot. Sur. India 1 : 4, 1971.

Microstylis wallichii Lindl., (in Wall. Cat. 1938, 1829 non nud) Gen> Sp. Orch: 20, 1830; Hook. f., Fl. Brit. India 5: 686, 1888 and Ann. Roy. Bot. Gard. Cal. 5: t. 2. 1895; Fischer in Gamble, Fl. Pres. Madras: 1407 (985), 1928.

Microstylis wallichii Lindl. Var. biloba, King & Pantl., Ann. Roy Bot. Gard. Cal. 8: 17, t: 18, 1898.

Malaxis wallichii Deb., Bull. Bot. Sur. India 3 : 128, 1961.

Plate 6-E

Description

Robust plants, 10 cm tall without inflorescence. Leaves 4-5 green with no shade of purple, 10-14 cm long, 2-3 cm wide. Flowering axis angled, stout, purplish, 15 cm long, extending to 20 cm as the flowers open successively, lax flowered. Flowers largest in the genus, 1.25 cm across, flat. Bract 1.2 cm long, pedicel 0.75 cm long, both green. Flower dull-purple throughout. Lip superior.

Habitat : Grasslands

Flowering and Fruiting : April - May

Accession Details

Accession Number, Date & Locality : KFRI OR- 82C, 20-10-2015, Silent valley, KFRI OR- 82D, 14-11-2015, Varadimala, KFRI OR- 82E, 12-02-2016, Sholayar.

83. *Malaxis congesta* (Lindl.) Deb., Bull. Bot. Sur. India 3 : 128, 1961.

Dienia congesta Lindl., Bot. Reg. Sub. T. 825, 1824.

Microstylis congesta (Lindl.) Reich. F. Walp. Ann. 6: 206, 1861; Hook. f., Fl. Brit. India 5: 689, 1888; King & Pantl., Ann. Roy. Bot. Gard. Cal. 8:19, t. 23, 1898.

Plate 6-F

Description

Robust, terrestrial plants, largest of all *Malaxis* species of South India. Plant with inflorescence 30-40 cm tall. Stem and bases of leaves deeply purplish. Leaves 3-4 in number, petiolate, 15-18 cm long, 6 cm wide. Flowering axis deep purple, 15 cm long. Raceme very dense. Flowers 0.3 cm across. Sepals, petals and lip uniformly purple. Column yellow.

Habitat : Grasslands

Flowering and Fruiting : March - June

Accession Details

Accession Number, Date & Locality : KFRI OR- 87AA, 6-11-2015, Chembra, KFRI OR- 87AB, 13-12-2015, Suganthagiri, KFRI OR- 87AC, 23-01-2016, Kurichiarmala.

84. *Malaxis purpurea* (Lindl.) O. Ktze., Rev. Gen. 2: 673. 1891; Ratheesh Narayanan, Fl. Stud.

Wayanad Dist. 826. 2009.

Microstylis purpurea Lindl., Gen. Sp. Orchid. Pl. 20. 1830.

Crepidium purpureum (Lindl.) Szlach., Syst. Orch. 3: 131. 1995; Sathish & Manilal, Orchid Memories 176. 2004.

Malaxis acuminata auct. non D. Don, 1825: Abraham & Vatsala, Introd. Orchids 396. 1981; Antony, Syst. Stud. Fl. Kottayam Dist. 385. 1989; Manilal, Fl. Silent Valley 292. 1988; Vajr., Fl. Palghat Dist. 484. 1990; Sasidh. & Sivar., Fl. Pl. Thrissur For. 448. 1996; Sasidh., Fl. Periyar Tiger Reserve 426. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 206. 1999; Mohanan & Sivad., Fl. Agasthyamala 682. 2002; Anil Kumar et al., Fl. Pathanamthitta 489. 2005.

Microstylis wallichii sensu Hook. f., Fl. Brit. India 5:686.1888,p.p. non Lindl. 1830; Gamble, Fl. Pres. Madras 1407 (985). 1928.

Plate 6-G

Description

Terrestrial erect herbs, 3-15 cm high. Pseudobulbs to 1 cm long. Leaves 2-3, petioled, lamina ovate, 4-5 x 1.5-3 cm, acute, 5-veined. Inflorescence many flowered racemes; peduncle 5-12 cm long, quadrangular with reflexed sterile bracts. Flowers purple, 1-1.5 cm across. Floral bracts lanceolate, 5-7 mm long, 1-veined. Sepals: dorsal one oblong-ovate, 5-6 x 3-3.5 mm, obtuse, 5-veined, margins reflexed; lateral one oblong, 4-4.5 x 2-2.3 mm, rounded tip, 5-veined. Petals linear, 4-4.5 x 1-1.5 mm, acute, 3-veined, margins reflexed; lip superior, fleshy, 8-8.9 x 5-5.5 mm, concave, tip narrow obtuse, bifid, sides dilated, base with 7-branched veins, auriculate. Column 3-4 mm long, adnate to the lip. Anther 2-celled; pollinia-4, unequal, ovoid, in two pairs one pair smaller, 0.2-0.3 mm long. Ovary 8-10 mm long, with short pedicel. Fruit clavate, 1-1.2 cm long.

Habitat : Grasslands

Flowering and Fruiting : April - May

Accession Details

Accession Number, Date & Locality : KFRI OR- 26E, 28-01-2014, Suganthagiri; KFRI OR- 26F, 23-06-2014, Pykara; KFRI OR- 26G, 11-09-2014, Panthamthode.

85. *Nervilia aragoana* Gaud. in Freyc. Voy. Bot. 422, t.35. 1829; Gamble, Fl. Pres. Madras 1459(1020). 1928; Abraham & Vatsala, Introd. Orchids 430. 1981; Subram., Fl. Thenmala Div. 365. 1995; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 20. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 448. 1996; Sasidh., Fl. Shenduruny WLS 322. 1997; Sivar. & Mathew, Fl. Nilambur 692. 1997; Sasidh., Fl. Periyar Tiger Reserve 427. 1998; Ravikumar & Ved, Illustr. Field Guide 100 Red Listed Med. Pl. 254. 2000 Sasidh., Fl. Parambikulam WLS 331. 2002; Sathish & Manilal, Orchid

Memories 202. 2004; Anil Kumar et al., Fl. Pathanamthitta 490. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 827. 2009.

Pogonia carinata Lindl., Gen. Sp. Orchid. Pl. 414. 1840; Hook. f., Fl. Brit. India 6: 120. 1890.

Pogonia flabelliformis Lindl., Gen. Sp. Orchid. Pl. 415. 1840; Hook. f., Fl. Brit. India 6: 121. 1890.

Nervilia carinata (Lindl.) Schltr. in Engl., Bot. Jahrb. Syst. 45: 404. 1911; Gamble, Fl. Pres. Madras 1459(1020). 1928.

Pogonia scottii Rchb.f., Fl. 55: 276. 1872; Hook. f., Fl. Brit. India 6: 120. 1890.

Description

Terrestrial plants with underground tubers. Leaf solitary, appearing after the flower; petiole 12-15 cm long, blade 10-12 cm across, orbicular, acute at apex, many nerved. Scape 10-12 cm with 1-2 greenish purple flowers, not opening fully, drooping; bracts lanceolate, to 8 mm long; pedicel c. 3 mm long. Sepals lanceolate, 12-15 x 2-3 mm, membranous, acute, 3-veined. Petals 12-14 x 2-3 mm, oblanceolate, acute, 3-veined; lip c. 18 x 20 mm, 3-lobed, lateral lobes erect, embracing the column, midlobe crenulate with three central ridges, and hairy. Column 6-8 mm long, dilated above. Anther 2-celled; pollinia 2, obovate, c. 0.8 mm long, powdery, caudicle and gland absent. Ovary with pedicel to 7 mm long.

Habitat : Moist deciduous forests, also in sacred groves

Flowering and Fruiting : April - May

Accession Details

Accession Number, Date & Locality : KFRI OR- 20A, 20-01-2014, Vellanipacha; KFRI OR- 20B, 15-04-2014, Orukompan; KFRI OR- 20C, 22-08-2014, Kallipara.

86. *Nervilia crociformis* (Zoll. & Mor.) Seidenf., Dansk. Bot. Ark. 32: 151. 1978; Sasidh., Fl. Parambikulam WLS 331. 2002; Sathish & Manilal, Orchid Memories 203. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 828. 2009.

Bolborchis crociformis Zoll. & Mor. in Moritzi, Syst. Verg. Pl. Zoll. 89. 1846.

Nervilia crispata (Blume) Schltr. in Engl., Bot. Jahrb. Syst. 45: 402. 1911.

Pogonia crispata Blume, Mus. Bot. Lugd.-Bat. 1: 32. 1849.

Nervilia monantha Blatt. & McCann, Journ. Bombay Nat. Hist. Soc. 35: 724. 1932; Gamble, Fl.

Pres. Madras 1886(1305). 1936.

Nervilia prainiana (King & Pantl.) Seidenf., Dansk. Bot. Ark. 32: 149. 1978; Abraham & Vatsala, Introd. Orchids 432. 1981; Ansari, Fl. Kasaragod Div. 372. 1985; Manilal, Fl. Silent Valley 293. 1988; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 14,20. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 449. 1996; Sivar. & Mathew, Fl. Nilambur 693. 1997; Sasidh., Fl. Periyar Tiger Reserve 427. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 206. 1999.

Description

Tubers ca. 2 cm across, subglobose. Leaves 6-7 cm across, orbicular, cordate, green, velvety with short greenish white hairs on upper surface. Flowers pink, solitary; scape 10 cm long; sepals and petals similar, 30 x 5 mm, linear-oblong, acute; petals slightly narrower; lip 20 x 15 mm, 3-lobed; lateral lobes oblong, obtuse; midlobe truncate, crisped; disc with purplish hairs.

Habitat : Moist deciduous forests

Flowering and Fruiting : May - June

Accession Details

Accession Number, Date & Locality : KFRI OR- 93A, 4-12-2015; Thariode; KFRI OR- 93B, 8-1-2016, Manathavady; KFRI OR- 93C, 15-01-2016, Parambikulam.

87. *Nervilia infundibulifolia* Blatt. & McCann, Journ. Bombay Nat. Hist. Soc. 35: 725. t. 3. 1932; Abraham & Vatsala, Introd. Orchids 435. 1981; Sivar. & Mathew, Fl. Nilambur 693. 1997; Sathish & Manilal, Orchid Memories 203. 2004.

Nervilia hallbergii Blatt. & McCann, Journ. Bombay Nat. Hist. Soc. 35: 726. 1932.

Description

Terrestrial, tuberous herbs with a single leaf; tubers sub-globose, slightly flattened above, sparsely covered with small root-knobs, 8-10 mm across. Leaf flat on ground or slightly above surface, appearing after flowering; sheaths about 1-2 cm long, light brown, acute to subacuminate; lamina 2-3 x 3-4 cm, glabrous, broadly ovate, cordate to suborbicular, subacute, obtuse, or slightly retuse at the apex, margins brown-maroon, irregularly and minutely dentate-crenulate; nerves 5-7; upper surface dark green with broad chocolate-coloured bands along the nerves, lower surface light green with prominent dark-brown nerves. Scapes 6-15 cm long, 1-

flowered; sheaths linear-oblong, obtuse, entire, 5-nerved. Flowers greenish-purple; bracts 3-7 x 2-3 mm, 3-nerved, maroon, the nerves deeper in colour; pedicels 1-1.5 mm long, curved, pale-purple. Sepals and petals light maroon-green with maroon veins. Sepals 13-15 x 3-4 mm, linear-lanceolate, broader in the middle, acute, 3-nerved. Petals 12-14 x 2-2.5 mm, linear-lanceolate, broader in the middle, acute, sparsely or not at all gland-dotted, 3-veined, the mid-nerve more prominent. Lip 16-17 x 5-6 mm, saccate at base, gland-dotted, 3 lobed; lateral lobes 8 x 2 mm, pale green, acute or subobtuse, entire, more or less embracing the column to form a tube, the latter about 3 mm broad at the mouth, narrower behind, midlobe 9-10 x 6-7 mm broadly obovate to even suborbicular, rounded, margin somewhat wavy, white or pink with deep patches of rose-maroon. Column 8 mm long, broad at the top. Anthers 3 x 2 mm, white or faintly tinged with purple-maroon in front. Ovary 4-5 x 3 mm, maroon, 6-keeled with alternate low and high ridges. Capsules 18 x 6 mm, elliptic, maroon.

Habitat : Moist deciduous forests

Flowering and Fruiting : June - July

Accession Details

Accession Number, Date & Locality : KFRI OR- 122A, 12-04-2016, Nedumkayam, KFRI OR- 122B, 29-05-2016, Pattakarimbu; KFRI OR- 122C, 11-06-2016, Vellanipacha.

88. *Nervilia plicata* (Andr.) Schltr. in Engl., Bot. Jahrb. Syst. 45: 403. 1911; Gamble, Fl. Pres. Madras 1458(1020). 1928; Ansari, Fl. Kasaragod Div. 372. 1985; Vajr., Fl. Palghat Dist. 485. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 462. 1994; Subram., Fl. Thenmala Div. 365. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 449. 1996; Sasidh., Fl. Shenduruny WLS 323. 1997; Sasidh., Fl. Periyar Tiger Reserve 427. 1998; Sasidh., Fl. Parambikulam WLS 331. 2002; Mohanan & Sivad., Fl. Agasthyamala 684. 2002; Sathish & Manilal, Orchid Memories 203. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 828. 2009.

Arethusa plicata Andr., Bot. Repos. 5. t.321. 1803.

Pogonia plicata (Roxb.) Lindl., Gen. Sp. Orchid. Pl. 415. 1840; Hook. f., Fl. Brit. India 6: 119. 1890.

Nervilia discolor (Blume) Schltr. in Engl., Bot. Jahrb. Syst. 45: 403. 1911.

Pogonia biflora Wight, Ic. t. 1758. 1851; Hook. f., Fl. Brit. India 6: 119. 1890

Nervilia biflora (Wight) Schltr. in Engl., Bot. Jahrb. Syst. 45: 403. 1911; Gamble, Fl. Pres. Madras 1459(1020). 1928.

Description

Tubers 1.5 x 2 cm across, subglobose, white. Leaf green with purple blotches, 7 x 6 cm, sessile, cordate, orbicular, obtuse, hairy, margins wavy. Scape to 16 cm long, 2-flowered; bracts 5 x 2 mm, ovate-lanceolate; sepals and petals brownish, similar, 20 x 4 mm, oblong, lanceolate, acute; lip dark violet, 18 x 10 mm, elliptic, obtuse, margin wavy.

Habitat : Moist deciduous forests

Flowering and Fruiting : February - March

Accession Details

Accession Number, Date & Locality : KFRI OR- 75A, 28-09-2015, Rosemala, KFRI OR- 75B, 20-10-2015, Parambikulam.

89. *Oberonia bicornis* Lindl., Gen. Sp. Orchid. Pl. 16. 1830; Hook. f., Fl. Brit. India 5: 682. 1888; Manilal, Fl. Silent Valley 294. 1988; R. Ansari & Balakr., Orch. Monogr. 4: 31. 1990; Sasidh., Fl. Shenduruny WLS 323. 1997; Muktesh, Epiphytic Fl. Western Ghats 105. 1998; Sasidh., Fl. Periyar Tiger Reserve 429. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 206. 1999; Sathish & Manilal, Orchid Memories 204. 2004; Sunil & Sivadasan, Fl. Alappuzha Dist. 679. 2009; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 830. 2009.

Oberonia umbonata Blatt. & McCann, Journ. Bombay Nat. Hist. Soc. 35: 259. 1931.

Description

Small epiphytes. Leaves distichous, 1.5-4.5 x 0.4-1.2 cm, ensiform, equitant, apex acute, fleshy, yellowish-green. Raceme terminal, up to 6 cm long, slender, spiciform. Flowers minute, ochraceous-red; lip deep red, 3-lobed, side-lobes erect, surrounding the column; mid-lobe curving upwards with the lateral lobes.

Habitat : Evergreen forests

Flowering and Fruiting : October - November

Accession Details

Accession Number, Date & Locality : KFRI OR- 64A, 11-06-2015, Varadimala, KFRI OR- 64B, 20-10-2015, Kulathupuzha.

90. *Oberonia brachyphylla* Blatt. & McCann, Journ. Bombay Nat. Hist. Soc. 35: 257. 1931; Joseph et al., Bull. Bot. Surv. India 20: 169. 1978; Abraham & Vatsala, Introd. Orchids 416. 1981; Manilal, Fl. Silent Valley 296. 1988; R. Ansari & Balakr., Orch. Monogr. 4: 38. 1990; Vajr., Fl.

Palghat Dist. 486. 1990; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 27. 1996; Muktesh, Epiphytic Fl. Western Ghats 106. 1998; Sasidh., Fl. Periyar Tiger Reserve 429. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 206. 1999; Sasidh., Fl. Parambikulam WLS 332. 2002; Mohanan & Sivad., Fl. Agasthyamala 685. 2002; Sathish & Manilal, Orchid Memories 204. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 830. 2009.

Plate 6-H

Description

Leaves to 4 x 0.6 cm, oblong-ensiform, acuminate. Scape terete. Spike to 7 cm long. Flowers 2 x 1 mm, greenish-orange yellow, scattered; dorsal sepals ovate, acute; lateral sepals obliquely ovate, subacuminate; petals oblong, obtuse, dentate; lip 3-lobed; lateral lobes ear-like, dentate; midlobe obovate, 2-lobuled; lobules oblong, dentate at apex, sinus without any protuberance; disc obovate-orbicular, concave.

Habitat : Evergreen forests

Flowering and Fruiting : January - April

Accession Details

Accession Number, Date & Locality : KFRI OR- 14A, 4-01-2014, Ponmudi, KFRI OR- 14B, 12-04-2014, Sairandhri, KFRI OR- 14C, 11-06-2015, Varadimala.

91. *Oberonia brunoniana* Wight, Ic. t. 1622. 1851; Hook. f., Fl. Brit. India 5: 681. 1888; Gamble, Fl. Pres. Madras 1406(984). 1928; Abraham & Vatsala, Introd. Orchids 422. 1981; Mohanan, Fl. Quilon Dist. 398. 1984; Manilal, Fl. Silent Valley 296. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 457. 1988; Vajr., Fl. Palghat Dist. 486. 1990; R. Ansari & Balakr., Orch. Monogr. 4: 16. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 464. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 449. 1996; Sasidh., Fl. Shenduruny WLS 323. 1997; Muktesh, Epiphytic Fl. Western Ghats 106. 1998; Sasidh., Fl. Periyar Tiger Reserve 429. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 206. 1999; Mohanan & Sivad., Fl. Agasthyamala 685. 2002; Sathish & Manilal, Orchid Memories 204. 2004; Anil Kumar et al., Fl. Pathanamthitta 490. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 831. 2009.

Plate 6-I

Description

Epiphytes or lithophytes. Leaves dull brown, fleshy, 5-10 x 1.5-2.5 cm. Scape spikes, longer than leaves, 15-20 cm long, axis flat, flowers in the middle of the spike open first. Flowers dull orange, 2-2.5 mm across. Floral bracts ovate, c. 1.5 x 1 mm. Sepals: dorsal one, ovate, c. 1.5 x 0.8 mm, obtuse, 1-veined; lateral one ovate, c. 1.8 x 1 mm long, obtuse, 1-veined.

Petals linear, c. 1.4 x 0.3 mm, reflexed, 1-veined; lip 3-lobed, c. 2.0 x 1.5 mm, margin, crenulate, gland dotted, lateral lobes orbicular, midlobe 2-lobulate. Column c. 0.3 mm long. Anther terminal, 2-celled; pollinia 4, obovate, cohering in pair, one of each pairs is smaller, 0.2-0.25 mm long. Ovary with pedicel 0.8 mm long. Capsule pyriform, c. 3 mm long.

Habitat : Evergreen, semi-evergreen and moist deciduous forests

Flowering and Fruiting : December - January

Accession Details

Accession Number, Date & Locality : KFRI OR- 83A, 20-10-2015, Varadimala; KFRI OR- 83B, 04-01-2014, Ponmudi; KFRI OR- 83C, 15-02-2014, Bonacad.

92. *Oberonia chandrasekharanii* V.J. Nair, V.S. Ramach. & R. Ansari, *Blumea* 28:361.1983; Manilal, *Fl. Silent Valley* 296. 1988; Ramach. & V.J. Nair, *Fl. Cannanore Dist.* 458. 1988; R. Ansari & Balakr., *Orch. Monogr.* 4:12.1990; Sasidh. et al., *Bot. Stud. Med. Pl. Kerala* 27. 1996; Sasidh. & Sivar., *Fl. Pl. Thrissur For.* 450. 1996; Sasidh., *Fl. Shenduruny WLS* 324. 1997; Muktesh, *Epiphytic Fl. Western Ghats* 106. 1998; Swarup. et al., *Shola For. Kerala* 82. 1998; Sasidh., *Fl. Periyar Tiger Reserve* 429. 1998; Sathish in Manoharan et al., *Silent Valley-Whispers Reason* 206. 1999; Sathish & Manilal, *Orchid Memories* 204. 2004; Ratheesh Narayanan, *Fl. Stud. Wayanad Dist.* 831. 2009.

Oberonia rangannaiana Murthy, Yoganarasimhan & K.V. Nair, *Curr. Sci.* 56: 621. 1987.

Description

Pendulous epiphytes to 20cm tall. Leaves 1.5-2 cm distichous ensiform. Apex acute. Flowers to 4mm long, yellowish-green or pale brownish, shortly pedicelled, terminal spiculate racemes peduncle 14-20 cm long, adnate to the uppermost leaf at base, ovary with pedicels to 3mm long, broadened upwards; bracts slightly longer than ovary, ovate, acute or acuminate fringed along margin. Sepals 3, free ca 1 x 1mm ovate oblong obtuse, deflexed. Petals 1 x 0.5mm slightly narrower than calyx lobes, linear, toothed at apex. Lip 1.5 x 2mm reniform 3 lobed, pubescent, lateral lobes auriform, broader than mid lobe folded around the column; mid lobe broader than long, 2-lobuled; lobules orbicular. Column oblong pollinia 4, in pairs, ovoid, stigma suborbicular.

Habitat : Evergreen forests

Flowering and Fruiting : December - September

Accession Details

Accession Number, Date & Locality : KFRI OR- 44A, 11-10-2014, Periyar; KFRI OR- 44B, 23-11-2014, Kallar.

93. *Oberonia ferruginea* Parish ex Hook.f., Fl. Brit. India 5: 679. 1888; Muktesh, Epiphytic Fl. Western Ghats 107. 1998; Sathish & Manilal, Orchid Memories 204. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 832. 2009.

Oberonia ensiformis auct. non (Smith) Lindl. 1859: Hook. f., Fl. Brit. India 5: 679. 1888; Gamble, Fl. Pres. Madras 1406(984). 1928; Abraham & Vatsala, Introd. Orchids 419. 1981; Babu, Fl. Malappuram Dist. 784. 1990; Vajr., Fl. Palghat Dist. 486. 1990; R. Ansari & Balakr., Orch. Monogr. 4: 27. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 464. 1994; Sivar. & Mathew, Fl. Nilambur 694. 1997; Muktesh, Epiphytic Fl. Western Ghats 107. 1998; Sasidh., Fl. Periyar Tiger Reserve 430. 1998.

Description

Leaves to 45 x 2 cm, ensiform, acute or acuminate. Scape terete. Spike to 15 cm long. Flowers 3.5 x 1.5 mm, brownish-yellow, in verticils; dorsal sepals ovate, acute; lateral sepals broadly-obliquely ovate, acute; petals ovate-lanceolate, obtuse, dentate; lip 3-lobed; lateral lobes wing like; midlobe 2-lobuled, lobules rounded, sinus broad, without any protuberance.

Habitat : Moist deciduous and evergreen forests

Flowering and Fruiting : August - September

Accession Details

Accession Number, Date & Locality : KFRI OR- 103A, 15-02-2014, Bonacad; KFRI OR- 103B, 13-02-2016, Ponmudi.

94. *Oberonia mucronata* (D. Don) Ormerod & Seidenf. in Seidenf., Contrib. Orchid. Fl. Thailand 13: 20. 1997; Sasidh., Fl. Parambikulam WLS 332. 2002; Sathish & Manilal, Orchid Memories 205. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 833. 2009.

Stelis mucronata D. Don, Prodr. Fl. Nepal. 32. 1825.

Oberonia iridifolia Rchb. ex Lindl. var. *denticulata* (Wight) Hook. f., Fl. Brit. India 5: 675. 1888; Gamble, Fl. Pres. Madras 1406(983). 1928; Abraham & Vatsala, Introd. Orchids 416. 1981; Ansari, Fl. Kasaragod Div. 373. 1985; Muktesh, Epiphytic Fl. Western Ghats 108. 1998.

Oberonia iridifolia Rchb. ex Lindl., Gen. Sp. Orchid. Pl. 15. 1830; Subram., Fl. Thenmala Div. 368. 1995.

Oberonia denticulata Wight, Ic. t. 1625. 1851; R. Ansari & Bal., Orch. Monogr. 4:21.1990; Vajr., Fl. Palghat Dist. 487. 1990; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 27. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 450. 1996; Sasidh., Fl. Shenduruny WLS 324. 1997; Sasidh., Fl. Periyar Tiger Reserve 430. 1998.

Plate 7-A

Description

Leaves oblong-ensiform, acute, jointed at base, to 20 x 2 cm. Spikes to 25 cm long. Flowers pale brownish-yellow, in verticils. Sepals equal, ovate-acute, entire, 1 x 0.75 mm. Petals ovate, obtuse or subacute, 1 x 0.5 mm, denticulate along margins. Lip quadrate or ovate, 3-lobed, 1.5 x 1.5 mm; side lobes deeply dentate; midlobe 2-lobed, lobules ovate-triangular, dentate.

Habitat : Moist deciduous forests

Flowering and Fruiting : November - December

Accession Details

Accession Number, Date & Locality : KFRI OR- 126A, 26-04-2016, Ponmudi; KFRI OR- 126B, 13-06-2016, Neriamangalam; KFRI OR- 126C, 16-07-2016, Parambikulam.

95. *Oberonia santapau* Kapad., Journ. Bombay Nat. Hist. Soc. 57: 265. 1960; Abraham & Vatsala, Introd. Orchids 429. 1981; Manilal, Fl. Silent Valley 297. 1988; R. Ansari & Balakr., Orch. Monogr. 4: 18. 1990; Vajr., Fl. Palghat Dist. 487. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 465. 1994; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 27. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 450. 1996; Sasidh., Fl. Shenduruny WLS 325. 1997; Sivar. & Mathew, Fl. Nilambur 695. 1997; Muktesh, Epiphytic Fl. Western Ghats 110. 1998; Sasidh., Fl. Periyar Tiger Reserve 431. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 207. 1999; Sasidh., Fl. Parambikulam WLS 333. 2002; Mohanan & Sivad., Fl. Agasthyamala 686. 2002; Sathish & Manilal, Orchid Memories 207. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 834. 2009.

Oberonia lindleyana Wight, Ic. t. 1624. 1851, non Brongn. ex Duperr. 1834; Hook. f., Fl. Brit. India 5: 681. 1888; Gamble, Fl. Pres. Madras 1407(984). 1928.

Description

Pendulous epiphytes leaves ensiform, articulated, green succulent, 17 x 2.5 cm, oblong, obtuse, dull brown. Spike to 19 cm long, thick. Flowers orange coloured, dense gland-dotted in racemes longer than leaves; bract ovate, sub denticulate sepals subequal, broadly ovate, acute;

petals equaling sepals, narrowly linear; lip 3 lobed, orange coloured; lateral lobes broad; midlobe 2-lobed, orange coloured; lateral lobes broad; mid lobe 2-lobed; a semilunar nectary is present at the base of the tip pollinia 4, in pairs.

Habitat : Evergreen and shola forests

Flowering and Fruiting : November - December

Accession Details

Accession Number, Date & Locality : KFRI OR- 51A, 28-03-2015, Ponmudi, KFRI OR- 51B, 11-04-2015, Kallar; KFRI OR- 51C, 27-06-2015, Umayar.

96. *Oberonia verticillata* Wight, Ic. t. 1626. 1851; Hook. f., Fl. Brit. India 5: 677. 1888; Gamble, Fl. Pres. Madras 1405(983). 1928; Abraham & Vatsala, Introd. Orchids 419. 1981; Mohanan, Fl. Quilon Dist. 398. 1984; Ansari, Fl. Kasaragod Div. 374. 1985; Ramach. & V.J. Nair, Fl. Cannanore Dist. 458. 1988; R. Ansari & Balakr., Orch. Monogr. 4: 28. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 466. 1994; Muktesh, Epiphytic Fl. Western Ghats 112. 1998; Sasidh., Fl. Periyar Tiger Reserve 432. 1998; Sasidh., Fl. Chinnar WLS 306. 1999; Sasidh., Fl. Parambikulam WLS 333. 2002; Sathish & Manilal, Orchid Memories 208. 2004; Anil Kumar et al., Fl. Pathanamthitta 491. 2005; Muktesh, Epiphytic Fl. Western Ghats 112. 1998; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 836. 2009.

Oberonia verticillata Wight var. *longibracteata* Blatt. & McCann, Journ. Bombay Nat. Hist. Soc. 35: 255. 1931.

Oberonia spiralis Blatt. & McCann, Journ. Bombay Nat. Hist. Soc. 35: 256. 1931, non Griff. 1851, nec. Lindl. 1852.

Description

Epiphytes. Leaves distichous, equitant, ensiform, fleshy, 5-12 x 1-1.5 cm. Scape raceme, longer than leaves, 20-25 cm long. Peduncle 3-5 cm long, attached to the uppermost leaf. Flowers yellow, 2-3 mm across. Floral bracts ovate-lanceolate, c. 2.0 x 0.5 mm. Sepals ovate, 0.8 x 1 mm, acute, 1-veined. Petals oblong-lanceolate, c. 1.0 x 1.2 mm, acute, 1-veined; lip c. 2.0 x 1.2 mm, obcordate, punctate lateral lobes reduced, midlobe 2-lobulate with sinus, margin irregular. Column c. 0.25 mm long. Anther terminal; pollinia 4, waxy, fused in pairs, oblong, c. 0.2 mm long. Capsule c. 2.5 mm long, subglobose, sessile.

Habitat : Evergreen and shola forests

Flowering and Fruiting : September - December

Accession Details

Accession Number, Date & Locality : KFRI OR- 112A, 04-03-2016, Naduvattam, KFRI OR- 112B, 15-02-2014, Bonacad.

97. *Pachystoma hirsutum* (Joseph & Vajr.) Sathish & Manilal, Kew Bull. 42: 942. 1987; Mohanan & Sivad., Fl. Agasthyamala 687. 2002; Sathish & Manilal, Orchid Memories 209. 2004.

Eulophia hirsuta Joseph & Vajr., Bull. Bot. Surv. India 17: 192. 1975 (1978); Vajr., Fl. Palghat Dist. 479. 1990.

Ipea malabarica sensu Abraham & Vatsala, Intro. Orch. 268. 1981, non (Rchb.f.) Hook. f. 1890; M. Mohanan & Henry, Fl. Thiruvanthapuram 461. 1994.

Plate 7-B

Description

Terrestrial tuberous herbs; tuber discoid. Leaves appear after flowering, two, 8-10 cm long, 1-1.5 cm wide, ribbon like, acuminate at apex, narrowed into a petiole like portion below, plicate. Scape 2-6 flowered, 10-15 cm long; bracts 1-2 on the peduncle and below each flower, 0.8-1.2 x 0.2 cm. Flowers bright yellow, opening partially only. Sepals and petals 1-1.5 cm long. Lip 3-lobed. Pollinia 8. Ovary with pedicel 1-1.5 cm long.

Habitat : Grasslands

Flowering and Fruiting : March - May

Accession Details

Accession Number, Date & Locality : KFRI OR- 104, 13-02-2016, Nelliampathy Hill top.

98. *Pachystoma pubescens* Blume, Bijdr. 376. 1825; Sasidh. & Sivar., Fl. Pl. Thrissur For. 451. 1996; Sasidh., Fl. Periyar Tiger Reserve 433. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 207. 1999; Sasidh., Fl. Parambikulam WLS 334. 2002; Sathish & Manilal, Orchid Memories 210. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 837. 2009.

Pachychilus pubescens (Blume) Blume, Mus. Bot. 2: 178. 1856.

Pachystoma senile (Lindl.) Rchb.f., Bonplandia 3: 251. 1856; Hook. f., Fl. Brit. India 5: 812. 1890; Gamble, Fl. Pres. Madras 1426(997). 1928; Abraham & Vatsala, Introd. Orchids 270. 1981; Manilal, Fl. Silent Valley 299. 1988; Vajr., Fl. Palghat Dist. 488. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 466. 1994.

Plate 7-C

Description

Terrestrial herbs, with 'V'-shaped tuber, leafless when flowering. Leaves 1 or 2, linear, to 20 x 1.5 cm; scape above ground portion 25-40 cm long. Flowers 3-8, towards the apex of scape, pink-purple; bracts 1.5-2.5 x 4 mm, ovate, long-acuminate; sepals pubescent outside, subsimilar; dorsal sepal 12.1 x 4.1 mm, elliptic-oblong, acute, 5-veined; lateral sepals 12.1 x 4 mm, oblong-lanceolate, acute, 5-veined; petals 13 x 1-2.5 mm, oblanceolate-oblong, obliquely acute, 3-5-veined; lip 11 x 4-8 mm, 3-lobed; side lobes obliquely ovate, obtuse; midlobe 4.5 x 4 mm, oblong, obtuse; disc ridged, base saccate.

Habitat : Grasslands

Flowering and Fruiting : January - March

Accession Details

Accession Number, Date & Locality : KFRI OR- 79, 4-10-2015, Poochipara.

99. *Papilionanthe cylindrica* (Lindl.) Seidenf., Descr. Epidendr. Koing 1791: 33. 1995; Sathish in Manoharan et al., Silent Valley-Whispers Reason 207. 1999; Sasidh., Fl. Parambikulam WLS 334. 2002; Sathish & Manilal, Orchid Memories 210. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 838. 2009.

Aerides cylindricum Lindl., Gen. Sp. Orchid. Pl. 240. 1833; Hook. f., Fl. Brit. India 6: 44. 1840; Gamble, Fl. Pres. Madras 1442(1008). 1928; Abraham & Vatsala, Introd. Orchids 444. 1981; Anil Kumar et al., Fl. Pathanamthitta 478. 2005.

Papilionanthe subulata Pradhan, Indian Orch. 563. 1979, non (Koenig) Garay 1974; Mohanan, Fl. Quilon Dist. 399. 1984; Subram. et al., Journ. Econ. Tax. Bot. 11:9.1987; Manilal, Fl. Silent Valley 299. 1988; Vajr., Fl. Palghat Dist. 488. 1990; Sasidh., Fl. Shenduruny WLS 325. 1997; Muktesh, Epiphytic Fl. Western Ghats 113. 1998; Sasidh., Fl. Periyar Tiger Reserve 433. 1998; Sasidh., Fl. Chinnar WLS 306. 1999; Mohanan & Sivad., Fl. Agasthyamala 688. 2002.

Plate 7-D

Description

Epiphytic herbs. Leaves 10 x 0.2 cm, terete. Racemes extra axillary, opposite the leaves, 2-5-flowered; flowers white. Sepals 12 x 8 mm, ovate, obtuse at apex, fleshy. Petals 12 x 8 mm, broadly ovate, obtuse, fleshy. Lip yellow, 3-lobed, lobes equal, side lobes erect, middle lobes recurved; spur 8 mm, conical, obtuse at apex. Pedicels with ovary 1.5 cm. Fruit 4 cm long, slightly winged.

Habitat : Evergreen and shola forests

Flowering and Fruiting : February - April

Accession Details

Accession Number, Date & Locality : KFRI OR- 123A, 12-04-2016, Nelliampathy Hill top; KFRI OR- 123B, 10-05-2016, Chempatty.

100. *Pecteilis gigantea* (J. E. Smith) Rafin., Fl. Tellur. 2: 38. 1837; Mohanan, Fl. Quilon Dist. 399. 1984; Manilal, Fl. Silent Valley 299. 1988; Vajr., Fl. Palghat Dist. 489. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 467. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 452. 1996; Sasidh., Fl. Shenduruny WLS 326. 1997; Sasidh., Fl. Periyar Tiger Reserve 433. 1998; Sasidh., Fl. Chinnar WLS 306. 1999; Mohanan & Sivad., Fl. Agasthyamala 689. 2002; Sathish & Manilal, Orchid Memories 211. 2004; Anil Kumar et al., Fl. Pathanamthitta 491. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 838. 2009.

Orchis gigantea J. E. Smith, Exot. Bot. 2: 79,t.100. 1805.

Habenaria susannae Hook. f., Fl. Brit. India 6: 137. 1890, non (L.) R. Br. ex Spreng. 1826.

Platanthera susannae Wight, Ic. t. 920. 1845, non (L.) Lindl. 1835; Gamble, Fl. Pres. Madras 1475(1031). 1928.

Platanthera gigantea (J.E. Smith) J. Vejik, Orchidea 27:133. 1965.

Plate 7-E

Description

Terrestrial tuberous herbs, to 90 cm tall. Leaves to 10 x 7 cm, ovate-lanceolate, acute, sessile, scattered. Flowers white, 9-10 x 8 cm, racemes terminal, 2-4-flowered; bracts 7.5 x 3 cm, ovate-acuminate, foliaceous; dorsal sepal 4 x 5 cm, rhomboid, 7-9-veined; lateral sepals 5 x 2.5 cm, oblique at base, oblong, subacute, obtuse, 7-9-veined; petals 3.5 x 2-4 mm, linear, falcate, obtuse; lip 15 x 7 cm, including 12-13 x 0.5 cm cylindrical spur, 3-lobed; lateral lobes lacinate; midlobe oblong-lanceolate, obtuse; spur long, cylindrical; column short, foot absent; pollinia 2, granular, with long caudicle.

Habitat : Grasslands

Flowering and Fruiting : September - October

Accession Details

Accession Number, Date & Locality : KFRI OR- 17A, 04-01-2014, Suganthagiri; KFRI OR- 17B, 23-11-2014, Varadimala; KFRI OR- 17C, 18-12-2014, Kurichiarmala.

101. *Peristylus aristatus* Lindl., Gen. Sp. Orchid. Pl. 300. 1835; Gamble, Fl. Pres. Madras 1474(1030). 1928; Abraham & Vatsala, Introd. Orchids 246. 1981; Ramach. & V.J. Nair, Fl. Cannanore Dist. 459. 1988; Manilal, Fl. Silent Valley 300. 1988; Vajr., Fl. Palghat Dist. 489. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 467. 1994; Sasidh., Fl. Shenduruny WLS 326. 1997; Sasidh., Fl. Periyar Tiger Reserve 434. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 209. 1999; Sasidh., Fl. Parambikulam WLS 334. 2002; Mohanan & Sivad., Fl. Agasthyamala 690. 2002; Sathish & Manilal, Orchid Memories 211. 2004; Anil Kumar et al., Fl. Pathanamthitta 492. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 839. 2009.

Habenaria aristata (Lindl.) Hook. f. in Trimen, Cat. Ceylon Pl. 91. 1885; Hook. f., Fl. Brit. India 6: 158. 1890, non King & Pantl, 1898.

Description

Slender, erect herbs, to 60 cm tall; tubers 2 each 2 x 1.5 cm, ovoid. Leaves 4-6, clustered near the middle 5-8 x 1-2.2 cm membranous, elliptic or elliptic-lanceolates margin ciliate, apex acute, narrowed at base, faintly 5-nerved; lower part of stem naked or with few reduced leaves. Flowers few, greenish in terminal lax spikes; 3, free; laterals 8 x 4 mm, larger than dorsal, ovate, acute, slightly falcate, faintly 3 nerved; dorsal 2 x 3mm, petals 7 x 0.5mm, narrowly linear. Lip 3-lobed, inserted below small boat shaped structure; lateral lobes slender, long, coiled; spur 1-1.2cm long, clavate; staminal column short erect, flanked by staminodes. Pollinia 2, with short caudicle. Stigmatic lobes sessile, separate.

Accession Details

Accession Number, Date & Locality : KFRI OR- 52A, 28-03-2015, Sholayur; KFRI OR- 52B, 18-08-2015, Ponmudi.

102. *Peristylus richardianus* Wight, Ic. t. 1697.1851; Gamble, Fl. Pres. Madras 1474(1030). 1928; Abraham & Vatsala, Introd. Orchids 246. 1981; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 34. 1996; Sasidh., Fl. Periyar Tiger Reserve 435. 1998; Sathish & Manilal, Orchid Memories 212. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 840. 2009.

Peristylus robustior Wight, Ic. t. 1699. 1851.

Habenaria bicornuata Hook. f., Fl. Brit. India 6: 150. 1890.

Description

Terrestrial herbs, 20-50 cm high. Leaves 5 x 1-1.5 cm, lanceolate, acuminate. Flowers creamy, in about 15 cm long dense spike. Dorsal sepal oblong, obtuse, keeled, 1-veined; lateral sepals oblong, obtuse, keeled, 1-veined. Petals elliptic-lanceolate, obtuse, 1-veined with 2 lateral veins from the middle. Lip 6 x 18 mm, 3-lobed; lobes unequal; midlobe 3 x 1 mm, oblong, obtuse; lateral lobes 8 x 0.5 mm, linear, upcurved. Spur clavate, acute at apex.

Habitat : Grasslands

Flowering and Fruiting : August - September

Accession Details

Accession Number, Date & Locality : KFRI OR- 60A, 18-05-2015, Periyar, KFRI OR- 60B, 12-11-2015, Silent valley.

103. *Peristylus spiralis* A.Rich., Ann. Sci. Nat. Bot. ser. 2, 15: 69. t.2B.1841; Gamble, Fl. Pres. Madras 1474(1030). 1928; Ramach. & V.J. Nair, Fl. Cannanore Dist. 459.1988; Sathish & Manilal, Orchid Memories 212. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 840. 2009.

Habenaria torta Hook.f., Fl. Brit. India 6: 159. 1890.

Plate 7-F

Description

Terrestrial, leafy herbs with small, oblong, pyriform or globose tubers and fleshy root fibres; stem with spike 15-45 cm long, slender, flexuous with many, lanceolate sheaths above the leaves. Leaves 2.5-6.2 cm long, linear-lanceolate, obtuse, acute or acuminate, upper leaves merging into the sheaths on the stem, 5-7 veined, bases sheathing. Flowers greenish-white, secund, variable in size, in slender, lax-flowered, spirally twisted spikes, 5-25 cm in long; floral bracts 6-8 mm long, lanceolate, lower bracts longer than the ovary. Sepals and petals subequal, 2.5-3 mm long, obtuse, 1-veined. Dorsal sepal oblong or linear-oblong, concave; lateral sepals linear, falcate, reflexed. Petals ovate or linear-oblong. Lip variable, longer than the sepals, cuneate, 3-cleft to about the middle, lobes variable short, obtuse, median usually shorter, broader and strongly recurved; spur a minute globose sac; column short, continuous with the lip, rostellum trifid, stigmatic processes clavate. Anther lateral, 2-loculed, loculi parallel, tubes absent; pollinia 2, pyriform; caudicles short; glands oblong.

Habitat : Grasslands

Flowering and Fruiting : November - March

Accession Details

Accession Number, Date & Locality : KFRI OR- 23A, 28-01-2014, Kurichiarmala; KFRI OR- 23B, 11-06-2014, Chempra.

104. *Pholidota imbricata* Hook., Exot. Fl. t. 138. 1825; Gamble, Fl. Pres. Madras 1431(1000). 1928; Ansari, Fl. Kasaragod Div. 374. 1985; Babu, Fl. Malappuram Dist. 786. 1990; Sivar. & Mathew, Fl. Nilambur 696. 1997; Sasidh., Fl. Periyar Tiger Reserve 435. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 209. 1999; Sasidh., Fl. Parambikulam WLS 334. 2002; Sathish & Manilal, Orchid Memories 213. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 841. 2009.

Pholidota pallida sensu Abraham & Vatsala, Intr. Orch. 288. 1981, non Lindl. 1836; Abraham & Vatsala, Introd. Orchids 288. 1981; Mohanan, Fl. Quilon Dist. 400. 1984; Manilal, Fl. Silent Valley 301. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 460. 1988; Vajr., Fl. Palghat Dist. 490. 1990; Antony, Syst. Stud. Fl. Kottayam Dist. 386. 1989; Subram., Fl. Thenmala Div. 369. 1995; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 34. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 452. 1996; Sasidh., Fl. Shenduruny WLS 327. 1997; Muktesh, Epiphytic Fl. Western Ghats 113. 1998; Anil Kumar et al., Fl. Pathanamthitta 493. 2005; Sunil & Sivadasan, Fl. Alappuzha Dist. 679. 2009.

Plate 7-G

Description

Robust epiphytes; pseudobulbs large, ovoid or conical, uninodal, terminated by 1- 2 leaves; leaves oblanceolate, acute at apex, narrowed at base. Inflorescence terminal, racemose drooping many flowered. Flowers creamy-white, hidden in imbricating bracts; bracts cymbiform. Lateral sepals concave, boat shaped keeled acute; dorsal broadly ovate, rounded. Petals narrower linear, free, acute; lip deeply concave, saccate at base, 3 lobed with prominent thickenings on the insid. Column short, broadly winged. Anther 2celled. Pollinia 4 in two pairs, shortly attached to a membrane; capsule tumid pale brown, shining ovoid.

Habitat : Semi-evergreen and moist deciduous forests and sacred groves

Flowering and Fruiting : September - March

Accession Details

Accession Number, Date & Locality : KFRI OR- 13A, 04-01-2014, Siruvani, KFRI OR- 13B, 11-02-2014, Achankovil; KFRI OR- 13C, 23-06-2015, Pamba.

105. *Podochilus malabaricus* Wight, t. 1748. 1857; Hook. f., Fl. Brit. India 6: 80. 1880; Mohanan, Fl. Quilon Dist. 400. 1984; Ramach. & V.J. Nair, Fl. Cannanore Dist. 461. 1988; M. Mohanan & Henry, Fl. Thiruvanthapuram 469. 1994; Sasidh., Fl. Shenduruny WLS 327. 1997; Muktesh, Epiphytic Fl. Western Ghats 114. 1998; Sasidh., Fl. Periyar Tiger Reserve 435. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 209. 1999; Sathish & Manilal, Orchid Memories 213. 2004; Anil Kumar et al., Fl. Pathanamthitta 493. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 842. 2009.

Podochilus falcatus auct. non Lindl. 1833: sensu C.E.C. Fisch. in Gamble, Fl. Pres. Madras 1450(1014). 1928; Abraham & Vatsala, Introd. Orchids 390. 1981; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 34.1996.

Description

Epiphytes, to 15 cm tall. Leaves many, closely set, 7 x 1.2 mm, subulate, obtuse, equitant, distichous. Flowers white, in 4.5-5 cm long, slender, flexuous terminal racemes; bracts 2 x 1 mm, ovate, acuminate, keeled, 1-veined; dorsal sepal ovate-lanceolate, acute, 1-veined; lateral sepals oblong-falcate, acute, 1-veined; petals oblong-lanceolate, acute, 1-veined; lip, 2.1 x 0.5 mm, oblong-lanceolate, subacute, jointed to the foot; disc with 3 parallel ridges; column short with a well developed foot; pollinia 4, with a subclavate caudicle.

Habitat : Evergreen forests

Flowering and Fruiting : September - January

Accession Details

Accession Number, Date & Locality : KFRI OR- 34A, 7-04-2014, Ponmudi, KFRI OR- 34B, 12-06-2015, Seminarivilla; KFRI OR- 34C, 28-07-2015, Chanthanathode.

106. *Polystachya concreta* (Jacq.) Garay & H.R. Sweet, Revista Soc. Colomb. Orquideol. 9: 206. 1974; Manilal, Fl. Silent Valley 301. 1988; M. Mohanan & Henry, Fl. Thiruvanthapuram 469. 1994; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 14. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 453. 1996; Sasidh., Fl. Shenduruny WLS 328. 1997; Muktesh, Epiphytic Fl. Western Ghats 114. 1998; Sasidh., Fl. Periyar Tiger Reserve 436. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 209. 1999; Sasidh., Fl. Parambikulam WLS 335. 2002; Mohanan & Sivad., Fl. Agasthyamala 692. 2002; Sathish & Manilal, Orchid Memories 214. 2004; Anil Kumar et al., Fl. Pathanamthitta 493. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 843. 2009.

Epidendrum concretum Jacq., Enum. Syst. Pl. 30. 1760.

Polystachya purpurea Wight, Ic. t. 1679. 1851; Hook. f., Fl. Brit. India 6: 21. 1890; Gamble, Fl.

Pres. Madras 1437(1005). 1928.

Polystachya wightii Rchb.f., Walp. Ann. 6: 640. 1861; Gamble, Fl. Pres. Madras 1437(1005). 1928.

Polystachya flavescens (Blume) Smith, Fl. Buitenz. 6: 284. f.218. 1905; Abraham & Vatsala, Introd. Orchids 392. 1981; Ramach. & V.J. Nair, Fl. Cannanore Dist. 461. 1988; Vajr., Fl. Palghat Dist. 490. 1990.

Plate 7-H

Description

Epiphytes, to 15 cm high with globose pseudobulb, 1 x 1 cm. Leaves 6-10 x 0.9-1 cm, linear-lanceolate, obtuse, 3-4 per pseudobulb. Flowers pinkish-brown, in 10-15 cm long dense terminal raceme, flower bearing portion about 2-3 cm long; dorsal sepal ovate, acute, 3-veined; lateral sepals ovate, acute, basally connated and jointed with the column foot, 3-veined; petals linear, obtuse, apiculate, 1-veined; lip 2 x 1.5-2.8 mm, 3-lobed; lateral lobes obliquely oblong, acute; midlobe orbicular-ovate, truncate at apex; disc with a longitudinal callus; column short continued into a long foot; pollinia 2, globose.

Habitat : Semi-evergreen forests

Flowering and Fruiting : July - August

Accession Details

Accession Number, Date & Locality : KFRI OR- 113A, 20-01-2014, Nelliampathy Hill top; KFRI OR- 113B, 04-04-2016, Ponmudi.

107. *Pomatocalpa spicatum* Breda., Gen. Sp. Orchid. Pl. Kuhl. & Hasselt t. 15. 1827; Sasidh., Fl. Shenduruny WLS 328. 1997; Muktesh, Epiphytic Fl. Western Ghats 115. 1998; Sasidh., Fl. Periyar Tiger Reserve 436. 1998; Sathish & Manilal, Orchid Memories 214. 2004.

Cleisostoma mannii sensu C.E.C. Fisch. in Gamble, Fl. Pres. Madras 1448(1013). 1928, non Rchb.f. 1872; Sasidh. & Muktesh, Journ. Bombay Nat. Hist. Soc. 82: 241. 1997.

Description

Epiphyte, stem to 5 cm tall. Leaves distichous imbricating, 10-15 x 2 cm, oblong, obliquely bifid at apex, obtuse. Flowers creamy, 4 mm long, in 5-10 cm long, sometimes branched lateral stout spikes; bracts minute; dorsal sepal oblanceolate, obtuse; laterals oblanceolate or spatulate, obtuse; petals obovate or elliptic, obtuse; lip 2.5 x 5 mm, 3-lobed,

midlobe 1 x 2 mm, elliptic-orbicular; side lobes obscure; spur 2.5 x 1.5 mm, saccate with a plate like tongue placed in it; column and foot very short; pollinia 2.

Habitat : Evergreen forests

Flowering and Fruiting : March - April

Accession Details

Accession Number, Date & Locality : KFRI OR- 45A, 20-01-2014, Manpara, KFRI OR- 45B, 22-12-2014, Minnampara.

108. *Porpax jerdoniana* (Wight) Rolfe, Orch. Rev. 16: 18. 1908; Gamble, Fl. Pres. Madras 1422(995). 1928; Abraham & Vatsala, Introd. Orchids 387. 1981; Manilal, Fl. Silent Valley 302. 1988; Vajr., Fl. Palghat Dist. 491. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 469. 1994; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 14. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 453. 1996; Sivar. & Mathew, Fl. Nilambur 697. 1997; Muktesh, Epiphytic Fl. Western Ghats 115. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 209. 1999; Sathish & Manilal, Orchid Memories 214. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 844. 2009.

Lichenora jerdoniana Wight, Ic. t. 1748. 1851.

Eria lichenora Lindl., Proc. J. Linn. Soc. Bot. 3: 46. 1859; Hook. f., Fl. Brit. India 5: 787. 1890.

Plate 7-I

Description

Small epiphytic herbs; pseudobulbs 5-6mm across, flat, discoid, covered by rigid net like sheaths. Leaves 2 x 1.5cm usually a pairs to each pseudobulbs, ovate or orbicular, apex acute, mucronate or retuse base cordate, unequal margins more or less ciliate, green striped with brown. Flowers 1-3 terminal, light brown. Sepals connate only in the lower half; dorsal sepal free in the upper half; laterals united, boat shaped, brownish- tomentose outside. Lip included in sepals, small. Capsule 3x2mm trigonous or ovoid, tomentose, lor 2 from the pseudobulb between leaves; stalk to 2mm long.

Habitat : Semi-evergreen and moist deciduous forests

Flowering and Fruiting : July - August

Accession Details

Accession Number, Date & Locality : KFRI OR- 105A, 13-02-2016, Wallakad, KFRI OR- 105B, 22-02-2016, Mukkali.

109. *Porpax reticulata* Lindl., Bot. Reg. Misc. 31. 1845; Gamble, Fl. Pres. Madras 1422(994). 1928; Abraham & Vatsala, Introd. Orchids 385. 1981; Mohanan, Fl. Quilon Dist. 401. 1984; Manilal, Fl. Silent Valley 302. 1988; Vajr., Fl. Palghat Dist. 492. 1990; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 27. 1996; Sasidh., Fl. Shenduruny WLS 328. 1997; Muktesh, Epiphytic Fl. Western Ghats 116. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 210. 1999; Mohanan & Sivad., Fl. Agasthyamala 692. 2002; Sathish & Manilal, Orchid Memories 215. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 844. 2009.

Aggeranthus marchantioides Wight, Ic. t. 1737. 1851.

Eria reticulata (Lindl.) Benth., Gen Pl. 3: 509. 1883; Hook. f., Fl. Brit. India 5: 786. 1890.

Porpax papillosa Blatt. & McCann, Journ. Bombay Nat. Hist. Soc. 35: 268. f. 4. 1931.

Description

Aggregated pseudobulbs stem less, creeping epiphytes with bulb depressed flattened, sub rotund, covered by reticulate sheaths. Leaves 2 each 4-5 x 1-1.5cm ovate oblong, sub acute at apex, sessile. Flowers solitary, brick red arising laterally below the pseudobulb; bracts 5-6 mm long suborbicular, retuse or obtuse at apex. Sepals 0.8 - 1.2cm long, connate, tubular, 3 lobed at apex, glabrous with out papillose with in petals 7-8mm long, spathulate, sub flacte lip 4-5mm long, panduriform, arcuate, 3-lobed; midlobe sub-orbicular, broader than long, papillose; laterals broadly triangular ovate, column 1.5-2.5 mm long oblong; foot equalling column. Pollinia 8, cohering in tetrads, pyriform capsule

Habitat : Evergreen forests

Flowering and Fruiting : April - June

Accession Details

Accession Number, Date & Locality : KFRI OR- 124A, 26-04-2016, Attumudi; KFRI OR- 124B, 11-08-2016, Thopimala.

110. *Pteroceras leopardinum* (Parish & Rchb.f.) Seidenf. & Smitin., Orch. Thail. IV: 535 f.395. 1963; Sathish., Rheedeia 3: 173. 1993; Muktesh, Epiphytic Fl. Western Ghats 116. 1998; Sathish & Manilal, Orchid Memories 215. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 845. 2009.

Thrixspermum leopardinum Parish & Rchb.f., Trans. Linn. Soc. London 30:145. 1874.

Sarcochilus leopardinum (Parish & Rchb.f.) Hook.f., Fl. Brit. India 6: 38. 1890.

Proteroceras holttumii Joseph & Vajr., J. Indian Bot. Soc. 53: 189. 1974.

Description

Epiphytic herbs, stem more or less curved, often weakly branched. Leaves 2-5, dorsiventral, 4-14.5 x 1-2 cm, linear-lanceolate to broadly oblanceolate, sometimes slightly oblique or somewhat falcate; apex minutely bilobed, lobes obtuse to acute. Inflorescence single or 2 superposed, straight to somewhat curved, erect to horizontal, 1.0-4.9 cm long; peduncle 0.7-3.0 cm long, glabrous, basally with 0-2 bract-like leaves; bracts 1.0-3.3 x 1.7-4.2 mm, scale-like, broadly ovate to reniform, concave, apex rounded to obtuse. Flowers 3-12. Sepals and petals spreading, glabrous, light orange-yellow to white with small brownish to violet dots on their adaxial side. Lateral sepals adnate to column foot for almost its whole length, 4.3-6.2 x 3.2-4.4 mm, broadly ovate, oblique, sometimes slightly concave; median sepal 4.4-6 x 2.3-3, ovate(-elliptic), often slightly concave. Petals 2.8-6.0 x 1.2-2.0 mm, oblong to linear-oblanceolate, apex rounded to obtuse. Lip 4.0-4.6 mm long, subsessile, surface smooth; side lobes erect, pointing upwards or backwards, white, usually with purplish-brown nectar guides on their adaxial side, oblong to linear, apex rounded; mid lobe represented by a transverse, ridge-like callus just above the spur, white, usually dotted purplish-brown; 2 small bulb-like calli present between the bases of side lobes and mid lobe; spur nearly cylindrical, 1.6-2.9 mm in diameter, inside more or less hairy, white; apex rounded. Column subterete, 1.7-2.5 mm high, yellowish to white, usually streaked with red, surface smooth. Rostellum much shorter than diameter of column; anther yellow; pollinia 4, closely appressed in two pairs. Ovary 3-keeled, glabrous, 3.0-9.0 x 0.6-1.6 mm. Capsule strongly 3-keeled, 1.7-4.8 cm x 4.0-10.0 mm.

Habitat : Semi-evergreen forests

Flowering and Fruiting : April - June

Accession Details

Accession Number, Date & Locality : KFRI OR- 42A, 7-09-2014, Siruvani, KFRI OR- 42B, 18-10-2014, Varadimala, KFRI OR- 42C, 22-05-2015, Silent valley.

111. *Rhynchosyilis retusa* (L.) Blume, Bijdr. 286. 1825; Hook. f., Fl. Brit. India 6: 32. 1890; Gamble, Fl. Pres. Madras 1440(1007). 1928; Abraham & Vatsala, Introd. Orchids 454. 1981; Manilal & Sivar., Fl. Calicut 285. 1982; Mohanan, Fl. Quilon Dist. 401. 1984; Ansari, Fl. Kasaragod Div. 375. 1985; Ramach. & V.J. Nair, Fl. Cannanore Dist. 462. 1988; Antony, Syst. Stud. Fl. Kottayam Dist. 387. 1989; Vajr., Fl. Palghat Dist. 492. 1990; Sasidh. & Sivar., Fl. Pl. Thrissur For. 454. 1996; Sasidh., Fl. Shenduruny WLS 329. 1997; Sivar. & Mathew, Fl. Nilambur 698. 1997; Muktesh, Epiphytic Fl. Western Ghats 117. 1998; Sasidh., Fl. Periyar Tiger Reserve

436. 1998; Sasidh., Fl. Parambikulam WLS 337. 2002; Sathish & Manilal, Orchid Memories 215. 2004; Anil Kumar et al., Fl. Pathanamthitta 494. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 845. 2009.

Epidendrum retusum L., Sp. Pl. 953. 1753.

Saccolabium rheedei Wight, Ic. 5: 19. 1851.

Plate 8-A

Description

Sturdy epiphytic herbs; stem short stout, covered at base by persistent fallen leaf bases; roots stout, spreading. Leaves alternate, distichous coriaceous, articulate lorate, bilobed at apex, channeled, keeled (22-28 x 2-3 cm) Flowers ca 2 cm across pale pink or white, spots deep pink, in long drooping, densely-flowered racemes, which are as long as longer than leaves, shortly pedicellate, simple or branched bracteate; bracts 5-6mm long, ovate, acute. Sepals 3, free ca 8x5mm ovate, more or less similar or laterals slightly broader petals similar to sepals. Lip oblong-obovate, clawed 3-lobed; lateral lobes obscure; base saccate and spurred; spur 5-6 x 4-5mm laterally compressed, hairy within column ca 5mm long; rostellum produced is to a beak. Pollinia 2, globose, with short caudicle.

Habitat : Moist deciduous forests, also in sacred groves

Flowering and Fruiting : June - July

Accession Details

Accession Number, Date & Locality : KFRI OR- 114A, 20-03-2016, Peechi; KFRI OR- 114B, 28-03-2016, Kulathupuzha; KFRI OR- 114C, 10-04-2016, Aaralam.

112. *Robiquetia josephiana* Manilal & Sathish, Orch. Rev. 92: 293. 1984; Manilal, Fl. Silent Valley 304. 1988; Muktesh, Epiphytic Fl. Western Ghats 117. 1998; Sasidh., Fl. Periyar Tiger Reserve 436. 1998; Biju in Manoharan et al., Silent Valley-Whispers Reason 166. 1999; Sathish in Manoharan et al., Silent Valley-Whispers Reason 210. 1999; Sathish & Manilal, Orchid Memories 217. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 846. 2009.

Saccolabium roseum auct. non Lindl. 1833: M. Mohanan & Henry, Fl. Thiruvanthapuram 470. 1994.

Malleola rosea auct. non (Lindl.) Schltr. 1913: Abraham & Vatsala, Introd. Orchids 494. 1981.

Description

Epiphytes, to 8 cm tall. Leaves 4-7 x 0.3 cm, linear, grooved, blunt at apex. Flowers white, in about 5 cm long axillary lax raceme; bracts 2 x 1 mm, ovate, acuminate, 1-veined; sepals 3 x 2 mm, obovate, acute, 1-veined; sepals and petals gland dotted; lip 7 x 2.5 mm, obscurely 3-lobed with a conspicuous spur; side lobes insignificant; midlobe triangular.

Habitat : Evergreen and shola forests

Flowering and Fruiting : October - November

Accession Details

Accession Number, Date & Locality : KFRI OR- 106, 13-02-2016, Ponmudi, KFRI OR- 106, 10-03-2016, Munar; KFRI OR- 106, 18-04-2016, Thariode.

113. *Satyrium nepalense* D. Don, Prodr. Fl. Nepal. 26: 1825; Gamble, Fl. Pres. Madras 1476(1032). 1928; Abraham & Vatsala, Introd. Orchids 210. 1981; Antony, Syst. Stud. Fl. Kottayam Dist. 388. 1989; M. Mohanan & Henry, Fl. Thiruvanthapuram 470. 1994; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 40. 1996; Swarup. et al., Shola For. Kerala 82. 1998; Sasidh., Fl. Periyar Tiger Reserve 437. 1998; Mohanan & Sivad., Fl. Agasthyamala 694. 2002; Sathish & Manilal, Orchid Memories 218. 2004; Anil Kumar et al., Fl. Pathanamthitta 495. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 846. 2009.

Satyrium neilgherrensis Wight ex Fyson, Fl. Ind. Hill. This 1876. 1932.

Plate 8-B

Description

Terrestrial herbs, to 30 cm tall, with oblong tuber. Leaves 2 or 3, 5.5-14 x 3-6 cm, ovate or elliptic-lanceolate, acute or subacuminate. Flowers pink or white, in 10-35 cm long, dense terminal raceme. Dorsal sepal oblong-lanceolate, 3-veined; lateral sepals elliptic, obtuse, 5-veined. Petals oblong, obtuse, 3-veined. Lip, 21 x 6 mm, superior, concave, keeled, enclosing the column with two parallel spurs. Column erect; foot 0. Pollinia 2, with recurved caudicle.

Habitat : Grasslands

Flowering and Fruiting : August - September

Accession Details

Accession Number, Date & Locality : KFRI OR- 2A, 26-09-2013; Kurichiarmala, KFRI OR- 2B, 11-11-2013, Suganthagiri; KFRI OR- 2C, 15-05-2014, Varadimala.

114. *Seidenfia rheedei* (Sw.) Szlach., Syst. Orch. 3: 122. 1995; Sasidh., Fl. Parambikulam WLS 337. 2002; Sathish & Manilal, Orchid Memories 221. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 849. 2009.

Malaxis rheedei Sw., Kongl. Vetensk. Acad. Nya Handl. 21: 235. 1800; Manilal & Sivar., Fl. Calicut 283. 1982; Mohanan, Fl. Quilon Dist. 397. 1984; Ansari, Fl. Kasaragod Div. 371. 1985; Manilal, Fl. Silent Valley 293. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 457. 1988; Antony, Syst. Stud. Fl. Kottayam Dist. 386. 1989; Babu, Fl. Malappuram Dist. 783. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 462. 1994; Subram., Fl. Thenmala Div. 367. 1995; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 27,34,40. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 448. 1996; Sasidh., Fl. Shenduruny WLS 322. 1997; Sasidh., Fl. Periyar Tiger Reserve 426. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 206. 1999.

Microstylis rheedei (Sw.) Lindl., Gen. Sp. Orchid. Pl. 21. 1830p.p.; Hook. f., Fl. Brit. India 5: 690. 1890.

Plate 8-C

Description

Terrestrial herbs with green or purple tinged stem, erect, 8-20 cm long, without pseudobulb. Leaves 3-5, ovate-lanceolate, 4-10 x 2.5 cm, plicate, amplexicaul, usually 7-veined, base sheathing, margin wavy. Flowers pale yellow or orange to purplish, c. 8 mm across, in terminal racemes, to 8-12 cm; rachis ribbed, purplish; peduncle covered by single leafy bract at the base; pedicel upto 4 mm long. Bracts persistent, deflexed, 2.5-3 mm long, purple, lanceolate, 1-veined. Sepals: dorsal one linear-oblong, 7-7.5 x 1.5-2.0 mm obtuse, 3-veined; lateral one, ovate, c. 5 x 3.5 mm, obtuse, 3-veined. Petals lanceolate, c. 7.5 x 2 mm, obtuse, 1-veined; lip superior, rounded reniform, pectinate, 4.5-5 x 2-2.5 mm, with 5-6 laciniate teeth on either side of the median line, mid tooth short and bifid at the apex. Column upto 3 mm long. Anther 2-celled; pollinia 4, in pairs, unequal, obovate, 0.5-0.7 mm long. Stigma oblong, truncate. Ovary ridged, c. 10 mm long. Capsule fusiform, 1-1.5 x 0.4 cm, ridged.

Habitat : Semi-evergreen and moist deciduous forests

Flowering and Fruiting : July - September

Accession Details

Accession Number, Date & Locality : KFRI OR- 33A, 7-04-2014, Thenmala; KFRI OR- 33B, 11-04-2015, Olakara; KFRI OR- 33C, 22-06-2015, Periyar.

115. *Sirhookera lanceolata* (Wight) O. Ktze., Rev. Gen. Pl. 2: 681. 1891; Abraham & Vatsala, Introd. Orchids 258. 1981; Mohanan, Fl. Quilon Dist. 402. 1984; Manilal, Fl. Silent Valley 305. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 462. 1988; M. Mohanan & Henry, Fl.

Thiruvanthapuram 470. 1994; Sasidh., Fl. Shenduruny WLS 329. 1997; Muktesh, Epiphytic Fl. Western Ghats 120. 1998; Sasidh., Fl. Periyar Tiger Reserve 438. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 211. 1999; Mohanan & Sivad., Fl. Agasthyamala 695. 2002; Sathish & Manilal, Orchid Memories 222. 2004; Anil Kumar et al., Fl. Pathanamthitta 495. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 850. 2009.

Josephia lanceolata Wight, Ic. t. 1753. 1851; Hook. f., Fl. Brit. India 5: 823. 1890; Gamble, Fl. Pres. Madras 1428(999). 1928.

Plate 8-D

Description

Epiphytes with short stem and vermiform roots. Leaf base covered with reticulate sheath, petiole 3-5 cm; leaf blade 6-12 x 2-3.5 cm, oblanceolate, coriaceous. Petiolar sheath purple when young. Flowers in panicle, 15-25 cm long, with many spikes to 1.5 cm long; peduncle to 10 cm long, noded, with sheath; floral bracts ovate, c. 2 x 1.5 mm, acute. Flowers white with purple tinge, c. 4 mm across. Sepals subequal, 3-4 x 2-2.5 mm, oblong, obtuse, 3 veined. Petals, spatulate, c. 3 x 0.5 mm, 1-veined; lip c. 5 x 2.5 mm, 3-lobed, lateral lobes short, rounded, midlobe 2-lobed. Column c. 3 mm long, conical. Anther 2-celled; pollinia 4, clavate, c. 0.5 mm, attached to a gland. Ovary 3-4 mm long.

Habitat : Shola, evergreen and semi-evergreen forests

Flowering and Fruiting : August - November

Accession Details

Accession Number, Date & Locality : KFRI OR- 25A, 28-01-2014, Neriamangalam; KFRI OR- 25B, 10-11-2015, Sholayar; KFRI OR- 25C, 20-12-2015, Manpara.

116. *Sirhookera latifolia* (Wight) O. Ktze., Rev. Gen. Pl. 2: 681. 1891; Manilal, Fl. Silent Valley 305. 1988; Vajr., Fl. Palghat Dist. 493. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 470. 1994; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 27. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 454. 1996; Sasidh., Fl. Shenduruny WLS 329. 1997; Muktesh, Epiphytic Fl. Western Ghats 120. 1998; Sasidh., Fl. Periyar Tiger Reserve 438. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 211. 1999; Sasidh., Fl. Parambikulam WLS 337. 2002; Mohanan & Sivad., Fl. Agasthyamala 695. 2002; Sathish & Manilal, Orchid Memories 222. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 850. 2009.

Josephia latifolia Wight, Ic. t. 1743. 1851; Hook. f., Fl. Brit. India 5: 823. 1890; Gamble, Fl. Pres. Madras 1428(999). 1928.

Plate 8-E

Description

Epiphytic herbs with short stem covered with reticulate membranous sheaths, and vermiform roots. Leaf 1, coriaceous, oblong, 6-8.0 x 2-3 cm, obtuse, glabrous, base narrowed, apiculate. Inflorescence panicle, 8-12 cm long. Flowers, yellow with purple tinge, c. 4 mm across. Floral bracts lanceolate, thick, c. 3 mm long. Sepals subequal, orbicular, 3.5-4 x 2 mm; dorsal sepal concave, hooded, 3-veined. Petals oblong, 3.5 x 1.5 mm, obtuse, 1-veined; lip adnate to the column, 3-lobed, lateral lobes incurved, rounded, midlobe ovate, acute, 3-veined. Column c. 4 mm long, flat. Anther 2-celled; pollinia 4, clavate, c. 0.8 mm long, in pairs. Ovary with pedicel c. 3 mm long.

Habitat : Evergreen forests

Flowering and Fruiting : August - September

Accession Details

Accession Number, Date & Locality : KFRI OR- 4A1, 26-09-2013, Hill top Nelliampathy, KFRI OR- 4AA, 22-06-2015, Periyar.

117. *Smithsonia straminea* Saldanha, Journ. Bombay Nat. Hist. Soc. 71: 74. 1974 & in Saldanha & Nicolson, Fl. Hassan Dist. 850. 1976; Joseph et al., Bull. Bot. Surv. India 20: 169. 1978; Ramach. & V.J. Nair, Fl. Cannanore Dist. 463. 1988; Vajr., Fl. Palghat Dist. 493. 1990; Sasidh. & Sivar., Fl. Pl. Thrissur For. 454. 1996; Sasidh., Fl. Shenduruny WLS 330. 1997; Sivar. & Mathew, Fl. Nilambur 698. 1997; Muktesh, Epiphytic Fl. Western Ghats 121. 1998; Sasidh., Fl. Parambikulam WLS 338. 2002; Sathish & Manilal, Orchid Memories 223. 2004; Anil Kumar et al., Fl. Pathanamthitta 495. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 851. 2009.

Description

Leaves oblong, unequally lobed at apex, to 4 x 0.6 cm. Racemes to 1.5 cm long. Flowers to 5, pale yellow. Sepals 3 x 1 mm; dorsal, ovate-acute concave, laterals obovate-acute. Lip white, 2.5 x 1 mm, midlobe with short lateral wings; spur purple, 1.5 mm long.

Habitat : Evergreen and semi-evergreen forests

Flowering and Fruiting : September - December

Accession Details

Accession Number, Date & Locality : KFRI OR- 94A, 4-10-2015, Thenmala, KFRI OR- 94B, 6-11-2015, Sairandhiri, KFRI OR- 94C, 11-12-2015, Chempatty.

118. *Smithsonia viridiflora* (Dalz.) Saldanha, Journ. Bombay Nat. Hist. Soc. 71: 75. 1975 & in Saldanha & Nicolson, Fl. Hassan Dist. 851. 1976; Muktesh, Epiphytic Fl. Western Ghats 122. 1998; Sasidh., Fl. Periyar Tiger Reserve 438. 1998; Sathish & Manilal, Orchid Memories 223. 2004.

Micropera viridiflora Dalz., Hook.'s J. Bot. Kew. Gard. Misc. 3: 282. 1851.

Sarcophilus dalzellianus Sant., Kew Bull. 1949: 498. 1949.

Gastrochilus dalzellianus (Sant.) Sant. & Kapad., Journ. Bombay Nat. Hist. Soc. 59. 842. 1963.

Aerides dalzellianus (Sant.) Garay, Bot. Mus. Leafl. Harvard Univ. 23:158. 1972.

Description

Epiphytes; stem very short, to 1 cm high. Leaves 3-10 x 6-15 cm, oblong or elliptic-oblong, obliquely bilobulate at apex. Flowers greenish, in 1-1.5 cm long lateral raceme; sepals obovate, obtuse; petals 5.5 x 2 mm, obovate, obtuse; lip 7 x 5 mm, 3-lobed; spurred; lateral lobes conical, obtuse; midlobe ovate, obtuse; spur conical, subacute.

Habitat : Evergreen forests

Flowering and Fruiting : January - April

Accession Details

Accession Number, Date & Locality : KFRI OR- 127A, 6-01-2016, Mannavanshola; KFRI OR- 127B, 12-04-2016, Nilackal.

119. *Spiranthes sinensis* (Pers.) Ames, Orch. 2: 53. 1908; Gamble, Fl. Pres. Madras 1454(1016). 1928; Manilal, Fl. Silent Valley 305. 1988; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 40. 1996; Sasidh., Fl. Periyar Tiger Reserve 438. 1998; Sasidh., Fl. Chinnar WLS 307. 1999; Sathish in Manoharan et al., Silent Valley-Whispers Reason 211. 1999; Sathish & Manilal, Orchid Memories 224. 2004.

Neottia sinensis Pers., Syn. 2: 511. 1807.

Neottia australis R. Br., Prodr. 319. 1810.

Spiranthes australis (R. Br.) Lindl., Bot. Reg. 10. 1824; Hook. f., Fl. Brit. India 6: 102. 1890.

Spiranthes lancea (Thunb.) Backer et al., Blumea 6:361.1951; Abraham & Vatsala, Introd. Orchids 206. 1981.

Plate 8-F

Description

Small terrestrial plants, 10-25 cm high with tubers. Leaves 4-5, at base of the stem, linear-lanceolate, 5-7 x 0.5-1 cm. Spike twisted, glandular pubescent. Flowers white, small, c. 4 mm across. Sepals subequal, obliquely oblong, 2-3 x 1-1.5 mm, obtuse, 3-veined. Petals linear, c. 3 x 1 mm, acute, 1-veined; lip 3 lobed, c. 3.5 x 2.5 mm, base saccate with 2 glands, apex quadrate, ridged, 3-veined, lateral lobes not distinct, midlobe crenate. Column cylindrical, 1.2 mm long; rostellum bifid. Anther 2-celled; pollinia 4, 2 partite, clavate, c. 0.3 mm long, attached to a gland; ovary with pedicel c. 4 mm long.

Habitat : Grasslands

Flowering and Fruiting : April - May

Accession Details

Accession Number, Date & Locality : KFRI OR 107, 24-02-2016, Anamudi.

120. *Taeniophyllum scaberulum* Hook. f., Fl. Brit. India 6: 77. 1890; Gamble, Fl. Pres. Madras 1448(1013). 1928; Rajesh et al., Rheedia 7:43.1997; Muktesh, Epiphytic Fl. Western Ghats 122. 1998; Sasidh., Fl. Periyar Tiger Reserve 439. 1998; Sasidh., Fl. Parambikulam WLS 338. 2002; Sathish & Manilal, Orchid Memories 224. 2004.

Description

Leafless epiphytic herbs, roots subterete, 5-8 x 0.1 cm. Flowers creamy white, 4 x 2 mm, in 1.5-2 cm long, flexuous spikes; bracts 0.9 x 1 mm, ovate, acute, persistent. Sepals and petals united into a 6 toothed tube; lobes ovate, acute; lip ovate, acute, tip recurved, base saccate.

Habitat : Evergreen and shola forests

Flowering and Fruiting : February - June

Accession Details

Accession Number, Date & Locality : KFRI OR- 115A, 20-03-2016, Silent Valley; KFRI OR- 115B, 28-03-2016, Munnar.

121. *Tainia bicornis* (Lindl.) Rchb.f., Bonplandia 5: 54. 1857; Hook. f., Fl. Brit. India 5: 820. 1890; Gamble, Fl. Pres. Madras 1427(998). 1928; Abraham & Vatsala, Introd. Orchids 290. 1981; Manilal, Fl. Silent Valley 306. 1988; Vajr., Fl. Palghat Dist. 493. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 471. 1994; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 27. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 455. 1996; Sasidh., Fl. Shenduruny WLS 330. 1997; Sasidh., Fl. Periyar Tiger Reserve 439. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 211. 1999;

Mohanani & Sivad., Fl. Agasthyamala 696. 2002; Sathish & Manilal, Orchid Memories 224. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 851. 2009.

Ainia bicornis Lindl., Bot. Reg. 28: 37. 1842.

Ania latifolia Wight, Ic. 3:10. t. 914. 1844-45, non Lindl. 1831.

Plate 8-G

Description

Terrestrial herbs to 30 cm high. Pseudobulbs pyriform, 1-leaved, clustered on rootstock with roots. Leaves ovate-oblong, 12-16 x 4-5 cm, coriaceous, acute, many veined; petiole erect, 9-12 cm long. Inflorescence racemes, 25-30 cm long. Flowers yellow, purple tinged, 2.5-3.5 cm across. Floral bracts ovate-lanceolate, c. 10 x 3 mm, 3-nerved. Sepal: dorsal one linear-oblong, 20-25 x 3-4 mm, obtuse, 7-veined, erect, gland dotted; lateral sepals linear-oblong, 20-22 x 3-4 mm, 9-veined, obtuse, gland dotted, decurved. Petals linear-spathulate, 20-22 x 2-3 mm, 3-veined, obtuse, gland dotted; lip upto 20 mm long, 3-lobed, lateral lobes 10-14 mm, obtuse, has a disc with two ridges, midlobe, subquadrate, c. 6 x 15 mm, 3-ridged, emarginated. Column c. 10 mm long, flat, incurved. Anther terminal, 2-celled, with two purple projections; pollinia 8, pyriform, c. 0.5 mm long, in two groups of four. Ovary with pedicel c. 7 mm long.

Habitat : Evergreen forests

Flowering and Fruiting : November -December

Accession Details

Accession Number, Date & Locality : KFRI OR – 39A, 4-07-2014, Periyar, KFRI OR – 39B, 14-08-2014, Thenmala, KFRI OR – 39C, 7-12-2014, Koodam.

122. *Trias stocksii* Benth. ex Hook. f., Fl. Brit. India 5: 781. 1890; Vivek. et al., Bull. Bot. Surv. India 10: 240. 1969; Vajr., Fl. Palghat Dist. 494. 1990; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 27,34. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 455. 1996; Sasidh., Fl. Shenduruny WLS 330. 1997; Muktesh, Epiphytic Fl. Western Ghats 124. 1998; Sasidh., Fl. Periyar Tiger Reserve 439. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 211. 1999; Mohanan & Sivad., Fl. Agasthyamala 698. 2002; Sathish & Manilal, Orchid Memories 227. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 853. 2009.

Plate 8-H

Description

Small epiphyte to 3 cm high. Pseudobulbs globose, brown, c. 0.5 cm long, crowded on the rhizome bearing roots. Leaf 1, sessile, 2-2.5 x 0.4-0.6 cm, linear-oblong, coriaceous, midvein prominent. Flower solitary, arising from the side of the pseudobulb; pedicel 1.5 cm long, with

truncate sheath at the base. Flowers yellow, 5 mm across, red spotted. Sepals: dorsal one ovate, c. 4 x 2 mm long, acute, 7-veined; lateral one c. 4 x 2 cm, ovate, acute, 7-veined. Petals small c. 2 mm long, oblong, acute; lip 3 mm long, 3-lobed attached to the foot, lateral lobes small, acute, midlobe tongue shaped, obtuse, curved. Column c. 2 mm long. Anther 2-celled; pollinia 4, collateral in pairs, unequal in size, outer c. 0.5 mm long inner lesser in length. Ovary with pedicel upto 6 mm long.

Habitat : Evergreen forests

Flowering and Fruiting : December - January

Accession Details

Accession Number, Date & Locality : KFRI OR- 119A, 12-04-2016, Ponmudi; KFRI OR- 119B, 15-04-2016; Chanthanathode, KFRI OR- 119C, 10-03-2015, Varadimala.

123. *Trichoglottis tenera* (Lindl.) Rchb.f., Gard. Chron. 699. 1872; Abraham & Vatsala, Introd. Orchids 460. 1981; Manilal, Fl. Silent Valley 306. 1988; Sivar. & Mathew, Fl. Nilambur 699. 1997; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 40. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 455. 1996; Sasidh., Fl. Shenduruny WLS 330. 1997; Muktesh, Epiphytic Fl. Western Ghats 125. 1998; Sasidh., Fl. Periyar Tiger Reserve 441. 1998; Sasidh., Fl. Chinnar WLS 307. 1999; Sathish in Manoharan et al., Silent Valley-Whispers Reason 212. 1999; Sasidh., Fl. Parambikulam WLS 338. 2002; Mohanan & Sivad., Fl. Agasthyamala 698. 2002; Sathish & Manilal, Orchid Memories 227. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 853. 2009.

Oeceoclades tenera Lindl., Gen. Sp. Orchid. Pl. 236. 1833.

Cleisostoma tenerum (Lindl.) Hook.f., Fl. Brit. India 6: 73. 1890; Gamble, Fl. Pres. Madras 1448(1012). 1928.

Plate 8-I

Description

Epiphytes, to 60 cm high, stem terete, woody, scandent. Leaves 3 x 1-1.5 cm, elliptic-oblong, obtuse. Flowers yellow, in few-flowered, 15-20 cm long, stout raceme; dorsal sepal elliptic, obtuse, 5-veined; lateral sepals oblanceolate, falcate, obtuse, 3-veined; petals smaller than sepals, oblong, obtuse, 5-veined; lip adnate to the base of column, 7 x 7.5 mm, 3-lobed; lateral lobes oblong, lanceolate, obtuse; midlobe ovate, obtuse, rounded; spur 3 x 1 mm, cylindrical; column and foot very short; pollinia 2.

Habitat : Evergreen and shola forests

Flowering and Fruiting : April - May

Accession Details

Accession Number, Date & Locality : KFRI OR -108A, 24-02-2016, Vaguvurai; KFRI OR -108B, 24-02-2016, Eravikulam Hut.

124. *Vanda tessellata* (Roxb.) Hook. ex D. Don in Loud., Hort. Brit. 372.1830; Gamble, Fl. Pres. Madras 1445(1010). 1928; Sant. & Kapad. Orch. Bombay 220, 1966; Abraham & Vatsala, Introd. Orchids 438. 1981; Manilal, Fl. Silent Valley 307. 1988; Sivar. & Mathew, Fl. Nilambur 700. 1997; Muktesh, Epiphytic Fl. Western Ghats 126. 1998; Sasidh., Fl. Chinnar WLS 309. 1999; Sasidh., Fl. Parambikulam WLS 339. 2002; Sathish & Manilal, Orchid Memories 228. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 854. 2009.

Epidendrum tessellatum Roxb., Pl. Corom. t. 42. 1795.

Vanda roxburghii R.Br., Bot. Reg. 6. t.506. 1820; Hook. f., Fl. Brit. India 6: 52. 1890.

Plate 9-A

Description

Scandent epiphytes. Stem 15-30 cm high, with thick aerial roots. Leaves 10-15 x 1.5-2 cm, linear, recurved, equitant, coriaceous, keeled at the tip with two unequal lobes and short pointed tip. Inflorescence 3-6 flowered racemes, 12-15 cm long; peduncle thick, with 2-3 sheath. . Flowers purple, 4-5 cm across. Floral bracts triangular, c. 2 x 5 mm, obtuse, 1-veined. Sepals obovate, c. 25 x 12 mm, fleshy with wavy margin, obtuse, many veined. Petals obovate, c. 22 x 14 mm obtuse, manyveined; lip 3-lobed, lateral lobes erect, c. 10 mm long, subfalcate, acuminate, midlobe c. 15 x 10 mm, panduriform, apex bibbed disc with two ridges; spur conical base of the lip, c. 7 mm long, obtuse. Column c. 7 mm long, fleshy. Anther 2-celled; Pollinia 2, globular, attached to a gland by a broad caudicle. Capsule clavate, ribbed.

Habitat : Dry and moist deciduous forests, also in the plains

Flowering and Fruiting : June - September

Accession Details

Accession Number, Date & Locality : KFRI OR- 22A, 20-01-2014, Chinnar; KFRI OR- 22B, 15-03-2015, Parambikulam.

125. *Vanda testacea* (Lindl.) Rchb.f., Gard. Chron. 2: 166. 1877; Sant. & Kapad. Orch. Bombay 219, 1966; Abraham & Vatsala, Introd. Orchids 436. 1981; Mohanan, Fl. Quilon Dist. 402. 1984; Ramach. & V.J. Nair, Fl. Cannanore Dist. 464. 1988; Manilal, Fl. Silent Valley 307. 1988; Vajr., Fl. Palghat Dist. 495. 1990; Subram., Fl. Thenmala Div. 373. 1995; Sasidh. et al., Bot. Stud. Med. Pl.

Kerala 14,20. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 456. 1996; Sasidh., Fl. Shenduruny WLS 331. 1997; Sivar. & Mathew, Fl. Nilambur 700. 1997; Muktesh, Epiphytic Fl. Western Ghats 126. 1998; Sasidh., Fl. Periyar Tiger Reserve 442. 1998; Sasidh., Fl. Chinnar WLS 309. 1999; Sathish in Manoharan et al., Silent Valley-Whispers Reason 213. 1999; Sasidh., Fl. Parambikulam WLS 339. 2002; Mohanan & Sivad., Fl. Agasthyamala 699. 2002; Sathish & Manilal, Orchid Memories 228. 2004; Anil Kumar et al., Fl. Pathanamthitta 496. 2005; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 855. 2009.

Aerides testacea Lindl., Gen. Sp. Orchid. Pl. 238. 1833.

Aerides wightiana Lindl., Bot. Reg. 30: Misc. 57. 1844; Hook. f., Fl. Brit. India 6: 50. 1890.

Vanda parviflora Lindl., Bot. Reg. 30: Misc. 57. 1844; Hook. f., Fl. Brit. India 6: 50. 1890; Gamble, Fl. Pres. Madras 1444(1010). 1928.

Plate 9-B

Description

Epiphytic herb; stem 15-25 cm high, with thick aerial roots. Leaves linear, 10-15 x 1.5-2 cm, recurved, equitant, coriaceous, keeled, with unequal lobes. Flowers cream yellow, 2 cm across in many flowered racemes to 12 cm long; peduncle 6-10 cm long. Floral bracts ovate, 2 x 2.5 mm, acute. Sepals: dorsal one obovate, 8-11.2 x 3-3.5 mm, obtuse, incurved; lateral one obovate, 8-10 x 2-3 mm, obtuse. Petals spatulate, 8-10 x 3-4 mm, twisted, obtuse; lip with purple shade, c. 10 mm long, 3-lobed, lateral lobe erect, obtuse, midlobe oblong, c. 6 x 3 mm, dilated at apex, emarginate; disc with 3 broad ridges; spur c. 3 mm long. Column c. 5 mm long. Anther 2-celled; pollinia 2, c. 1.5 mm long, globular, attached to a gland by a caudicle. Ovary with peduncle 2-2.5 cm long.

Habitat : Moist deciduous forests, also in the plains

Flowering and Fruiting : April - May

Accession Details

Accession Number, Date & Locality : KFRI OR -116A, 20-03-2016, Nelliampathy; KFRI OR -116B, 2-04-2016, Peechi.

126. *Vanda thwaitesii* Hook. f. in Trimen, Handb. Fl. Ceylon 4: 193. 1898; Muktesh, Epiphytic Fl. Western Ghats 126. 1998; Sathish, Rheedea 8: 249. 1998; Sasidh., Fl. Periyar Tiger Reserve 442. 1998; Sathish in Manoharan et al., Silent Valley-Whispers Reason 213. 1999; Sathish & Manilal, Orchid Memories 228. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 855. 2009.

Aerides tessellatum Thw., Enum. Pl. Zeyl. 305. 1861, non Wight 1845.

Description

Stem stout, woody, to 25 cm high, covered with leaf base. Leaves 12-15 x 1.5-2 cm, strap-shaped, recurved, unequally notched at apex. Flowers greyish-green, 4 x 3.5 cm, in 9-10 cm long leaf-opposed racemes; dorsal sepal 21 x 11 mm, obovate, obtuse, margins wavy, 7-veined; lateral sepals 23 x 13 mm, elliptic, subacute, obtuse, margins wavy, 9-veined; petals 21 x 11 mm, obovate, obtuse, margins wavy, 7-veined; lip 20 x 18-20 mm, 3-lobed; lateral lobes 9 x 2-2.5 mm, oblong, lanceolate, acute, curved downwards; midlobe 15 x 13 mm, fleshy, broadly ovate, truncate at apex; lobules obtuse; medianly grooved; 2 bilobed calli at the mouth of the spur; spur 10 x 4-6 mm, conical, inflated, keeled, rounded.

Habitat : Evergreen forests

Flowering and Fruiting : September - April

Accession Details

Accession Number, Date & Locality : KFRI OR- 125A, 26-04-2016, Pothumala, Nelliampathy; KFRI OR- 125B, 15-03-2015, Kanavam.

127. *Zeuxine affinis* (Lindl.) Benth. ex Hook. f., Fl. Brit. India 6: 108. 1890; Sasidh., Fl. Shenduruny WLS 332. 1997; Sasidh. et al., Rheedea 9: 159. 1999; Sathish & Manilal, Orchid Memories 231. 2004.

Monochilus affinis Lindl., Gen. Sp. Orchid. Pl. 487. 1840, p.p.

Plate 9-C

Description

Rhizomatous herbs to 30 cm high. Rhizome creeping rooting at nodes. Leaves 4-5, basal, ovate-lanceolate, 3.5-5 x 1.5-2 cm, membranous, with sheathing leaf base, entire, apex acute. Inflorescence terminal, erect, spicate racemes, to 15 cm long; peduncle 6-8 cm long, glandular pubescent, with 2-3 sterile bracts. Bracts ovate-lanceolate, c. 8 x 2 mm, 1-veined, acuminate, glandular pubescent. Flowers white, 15-20 mm across; pedicel, 1.5 mm long. Sepals glandular pubescent without, 1-veined; dorsal sepal ovate, c. 7.5 x 3.5 mm, obtuse, lateral sepals oblong, c. 6 x 2 mm, obtuse. Petals falcately oblong, c. 7 x 3 mm, obtuse, connate with dorsal sepal; lip c. 12 x 10 mm, saccate at the base with two cylindrical glands, dilating, deeply bibbed, lobes obovate, with wavy margin. Anther 2 celled; pollinia 2, pyriform, c. 1.5 mm long with c. 0.5 mm stalk, on a small ovate gland at base. Column c. 1.8 mm long, stigma with glandular protuberance, rostellum oblanceolate, 0.8 mm long, curved. Ovary with a pedicel c. 1 cm long, ridged. Capsule c. 10 mm long.

Habitat : Semi-evergreen and evergreen forests, also in

grasslands

Flowering and Fruiting : March - April

Accession Details

Accession Number, Date & Locality : KFRI OR-88A, 6-11-2015, Sairandhiri, KFRI OR-88B, 6-11-2015, Poochipara.

128. *Zeuxine gracilis* (Breda) Blume, Fl. Java, n.s. 56, t.18,f.2. t.23D.1858; Sant. & Kapad. Orch. Bombay 171, 1966; Abraham & Vatsala, Introd. Orchids 205. 1981; Manilal, Fl. Silent Valley 308. 1988; Vajr., Fl. Palghat Dist. 495. 1990; Sivar. & Mathew, Fl. Nilambur 701. 1997; Mohanan & Sivad., Fl. Agasthyamala 702. 2002; Sathish & Manilal, Orchid Memories 231. 2004; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 856. 2009.

Psychechilos gracile Breda., Gen. Sp. Orchid. & Asc. t. 9. 1827.

Zeuxine blatteri C.E.C. Fisch., Bull. Misc. Inform. Kew 1928: 76. 1928; Gamble, Fl. Pres. Madras 1456(1018). 1928.

Plate 9-D

Description

Rhizomatous herbs to 25 cm high, creeping, rooted at nodes. Leaves 2-3, at base of the stem, ovate-lanceolate, 3-6 x 2-2.5 cm, membranous, acute, brown coloured when seen in shade, green in open places, sheaths hyaline. Flowers in terminal spike, to 12 cm long; peduncle upto 5 cm long, with 2-3 sheath, lanceolate, c. 0.8 cm long, pubescent. Flowers pale-pinkish or pinkish white, c. 5 mm across. Floral bracts lanceolate, 6 x 1 mm, as long as the flower, acuminate, pubescent. Sepals: dorsal one ovate, 3-4 x 2 mm acute, 1-veined; lateral one ovate-lanceolate, 2.5-3 x 1.5-2 mm, acute, 1-veined. Petals ovate, 3-3.5 x 1-2 mm, acute, 1-veined; lip saccate at the base with two pointed calli, 3-3.5 mm long, midlobe with two orbicular, entire lobules, sac of the lip yellow coloured. Anther 2-celled; pollinia 2, pyriform, c. 1 mm long, attached to an oblong gland. Ovary c. 4 mm long, pubescent. Capsules ovoid, glabrescent, c. 8 mm long.

Habitat : Moist deciduous forests

Flowering and Fruiting : February - May

Accession Details

Accession Number, Date & Locality : KFRI OR- 53, 5-04-2015, Sairandhiri, Dam site Silent valley.

129. *Zeuxine longilabris* (Lindl.) Benth. ex Hook. f., Gen. Sp. Pl. 3: 600. 1883; Hook. f., Fl. Brit. India 6: 107. 1890; Gamble, Fl. Pres. Madras 1456(1018). 1928; Abraham & Vatsala, Introd.

Orchids 202. 1981; Manilal & Sivar., Fl. Calicut 283. 1982; Mohanan, Fl. Quilon Dist. 403. 1984; Ansari, Fl. Kasaragod Div. 375. 1985; Manilal, Fl. Silent Valley 308. 1988; Ramach. & V.J. Nair, Fl. Cannanore Dist. 464. 1988; Antony, Syst. Stud. Fl. Kottayam Dist. 388. 1989; Vajr., Fl. Palghat Dist. 495. 1990; M. Mohanan & Henry, Fl. Thiruvanthapuram 472. 1994; Sasidh. et al., Bot. Stud. Med. Pl. Kerala 27. 1996; Sivar. & Mathew, Fl. Nilambur 702. 1997; Sasidh., Fl. Periyar Tiger Reserve 444. 1998; Sasidh., Fl. Chinnar WLS 309. 1999; Sathish in Manoharan et al., Silent Valley-Whispers Reason 213. 1999; Sasidh., Fl. Parambikulam WLS 340. 2002; Mohanan & Sivad., Fl. Agasthyamala 703. 2002; Sathish & Manilal, Orchid Memories 231. 2004; Anil Kumar et al., Fl. Pathanamthitta 496. 2005; Sunil & Sivadasan, Fl. Alappuzha Dist. 680. 2009; Ratheesh Narayanan, Fl. Stud. Wayanad Dist. 857. 2009.

Monochilus longilabris Lindl., Gen. Sp. Orchid. Pl. 478. 1840.

Plate 9-E

Description

Erect herbs to 30 cm long, with creeping rhizome rooted at nodes. Leaves 3-4, ovate, 3-5.5 x 2 cm, membranous, glabrous, 7-veined, with sheathing petiole. Flowers in terminal spike, to 10 cm long; peduncle pubescent, with distant sheaths, c. 5 mm long. Floral bracts lanceolate, c. 8 mm long, pubescent, 3-veined. Flowers white, 20-25 mm across. Sepals: dorsal one oblong, 6-8 x 3-3.5 mm, obtuse, 3 veined; lateral one ovate, 5-6 x 2-2.5 mm, obtuse, 3-veined. Petals glabrous, appressed with dorsal sepal, oblong, 5-6 x 2.5-3 mm, obtuse, 3-veined; lip 15-20 mm, saccate at the base, pinkish, with two acute calli, dilating into 2-lobed, cuneate midlobe margins of the lobe coarsely toothed. Anther 2-celled; pollinia 2, subglobular with gland. Rostellum to 1 mm long, oblanceolate, bifid. Ovary upto 10 mm long, ribbed, glandular pubescent.

Habitat : Evergreen, shola and semi-evergreen forests

Flowering and Fruiting : February - March

Accession Details

Accession Number, Date & Locality : KFRI OR-50A, 12-03-2015, Sairandhiri; KFRI OR-50B, 12-03-2015, Chempotty.

Discussion and conclusion

Orchidaceae is the largest among family of flowering plants and the members occur in a wide range of ecosystems and habitats. A charismatic group, many species are important in horticulture. Many of the orchids are at the threat of extinction mainly due to habitat alteration or destruction derived from change in landuse, and extraction of wild plants for trade. IUCN (2016) listed 36 plant species from India (Table 3) and among them *Paphiopedilum druryi* (Critically Endangered) and *Vanda spathulata* (Vulnerable) are the two threatened species found in Kerala. According to IUCN (2016), the major threats to orchid habitats in the Indian region can be broadly listed as follows:

- 1) Urbanisation and search for agricultural land,
- 2) Clear-felling of primary forests for commercial purposes,
- 3) Commercial collection,
- 4) Lack of public awareness and concern.

While ex situ conservation should never take the place of in situ conservation, ex situ storage of germplasm provides a necessary backup in the event of species extinction in the wild (David et al., 2014). Since most of the orchids species are threatened one or other way, the germplasm collection and its maintenance are important. Orchid germplasm preservation is a priority for the USDA Ornamental Plant Germplasm Center in Columbus, Ohio. Other internationally renowned orchid collection centres are Royal Botanic Garden, Kew (c. 3000 species), the Orchid Jungle, Homestead, Florida (c. 2000 species and 20000 hybrids), the Wheeler Orchid collection and Species Bank, Bell State University (3000 species) and Smithsonian National Orchid Collection, Washington DC (2500 species). The Agri-Horticultural Society of India has introduced 56 different types of orchids from North East India, Andaman and Nicobar Island and hybrids from South East Asia. In Tamil Nadu, the National Orchidarium and Botanical garden at Yercaud, maintained by southern circle of Botanical Survey of India maintains 30 varieties of endemic orchid species and the total area of Orchidarium is 18.4 hectares. Regional Plant Resource Centre, Government of Orissa has a collection of about 220 orchid species/ cultivars/ hybrids collected from Orissa, Andhra Pradesh, Tamilnadu, North Eastern States, other parts of India and abroad. Orchidarium opened at Karanji lake park at Mysuru in 2014 has a collection of 98 plants of five species and many hybrids. Similarly there the centres like JNTBGRI, Thiruvananthapuram (600 wild species and 150 exotic hybrids), Botanic Garden, Orchid research and Development Centre, SFRI station, Tippi, Arunachal Pradesh (400 species), Orchid genebank at Hengbung of Senapati district, Imphal (230 species), National Orchidarium and Botanic Garden, BSI, Shillong, Meghalaya (200 species), Orchidarium of Botanical Garden, Shivaji University, Kolhapur (74 species) and the Orchid Preservation Centre, Khonghampat, Imphal (300 species) are other few examples involved in *ex-situ* conservation of Wild Indian Orchids.

Table 3. Red-listed orchids from India (IUCN, 2016)

Sl.No	Scientific Name	Conservation Status
1	<i>Brachycorythis wightii</i>	Data Deficient ver 3.1
2	<i>Bulbophyllum cauliflorum</i>	Least Concern ver 3.1
3	<i>Bulbophyllum delitescens</i>	Least Concern ver 3.1
4	<i>Bulbophyllum leopardinum</i>	Least Concern ver 3.1
5	<i>Bulbophyllum macranthum</i>	Least Concern ver 3.1
6	<i>Bulbophyllum restrepia</i>	Least Concern ver 3.1
7	<i>Coelogyne rigida</i>	Least Concern ver 3.1
8	<i>Conchidium pusillum</i>	Least Concern ver 3.1
9	<i>Cymbidium tracyanum</i>	Least Concern ver 3.1
10	<i>Cypripedium cordigerum</i>	Vulnerable B2ab(ii,iii,iv,v) ver 3.1
11	<i>Cypripedium elegans</i>	Endangered B2ab(ii,iii,v) ver 3.1
12	<i>Cypripedium himalaicum</i>	Endangered B2ab(ii,iii,v); D ver 3.1
13	<i>Cypripedium tibeticum</i>	Least Concern ver 3.1
14	<i>Dendrobium aphyllum</i>	Least Concern ver 3.1
15	<i>Dendrobium bensoniae</i>	Least Concern ver 3.1
16	<i>Epipactis veratrifolia</i>	Least Concern ver 3.1
17	<i>Erythrorchis altissima</i>	Least Concern ver 3.1
18	<i>Geodorum recurvum</i>	Least Concern ver 3.1
19	<i>Malaxis muscifera</i>	Vulnerable A2cd ver 3.1
20	<i>Paphiopedilum appletonianum</i>	Endangered B2ab(ii,iii,v) ver 3.1
21	<i>Paphiopedilum charlesworthii</i>	Endangered B2ab(i,ii,iii,iv,v) ver 3.1
22	<i>Paphiopedilum druryi</i>	Critically Endangered A2abcd+3bcd+4abcd; B1ab(ii,iii,v)+2ab(ii,iii,v); C1 ver 3.1
23	<i>Paphiopedilum fairrieianum</i>	Critically Endangered A2acd+3cd+4acd; B2ab(i,ii,iii,v); C1+2a(i); D ver 3.1
24	<i>Paphiopedilum hirsutissimum</i>	Vulnerable B2ab(ii,iii,v) ver 3.1
25	<i>Paphiopedilum insigne</i>	Endangered B1ab(ii,iii,v)+2ab(ii,iii,v) ver 3.1

		3.1
26	<i>Paphiopedilum spicerianum</i>	Endangered B2ab(ii,iii,v) ver 3.1
27	<i>Paphiopedilum venustum</i>	Endangered A2acd; B2ab(ii,iii,v) ver 3.1
28	<i>Paphiopedilum villosum</i>	Vulnerable B2ab(ii,iii,v) ver 3.1
29	<i>Phreatia plantaginifolia</i>	Least Concern ver 3.1
30	<i>Podochilus khasianus</i>	Least Concern ver 3.1
31	<i>Pomatocalpa maculosum</i>	Least Concern ver 3.1
32	<i>Spiranthes sinensis</i>	Least Concern ver 3.1
33	<i>Vanda spathulata</i>	Vulnerable A2cd ver 3.1
34	<i>Vanda tessellata</i>	Least Concern ver 3.1
35	<i>Zeuxine rolfiana</i>	Critically Endangered B1ab(iii,v)+2ab(iii,v); C2a(i,ii); D ver 3.1
36	<i>Zeuxine strateumatica</i>	Least Concern ver 3.1

To enrich the existing collection of KFRI Orchidarium, 321 accessions of 129 species representing 53 terrestrial and 76 epiphytic orchids were collected and accessed (Table 4). These collections are maintained (Plate 10. A & B) and in addition to the vegetative propagation techniques, mass propagation using tissue culture protocols will be helpful to reintroduce as and when required.

Table 4. List of Orchid species in KFRI with Habit, Accession details and Conservation status.

Sl. No	Scientific Name	Habit	Locality	Accession Number	Accession Date
1	<i>Acampe ochracea</i> (Lindl.) Hochr.	Epiphyte	Chanthanathode, Wayanad Kannavam, Kannur Peerumedu, Idukki	KFRI-OR-28B KFRI-OR-28C KFRI-OR-28D	14-02-2014 25-08-2014 20-10-2014
2	<i>Acampe praemorsa</i> (Roxb.) Blatt. & McCann	Epiphyte	Peechi, Thrissur Nelliampathy, Palakkad Thenmala, Kollam	KFRI-OR-12D KFRI-OR-12F KFRI-OR-12F	04-01-2014 15-10-2015 20-11-2015
3	<i>Aenhenrya rotundifolia</i> (Blatt.) Sathish & Rasm.	Terrestrial	Mannavanshola, Munnar	KFRI-OR-65B	11-06-2015
4	<i>Aerides crispa</i> Lindl.	Epiphyte	Suganthagiri, Nelliampathy Hill top. Nadukani, Nilambur	KFRI-OR - 68A KFRI-OR- 68B	28-08-2015 02-01-2016
5	<i>Aerides maculosa</i> Lindl.	Epiphyte	Pothumala, Pakuthipalam	KFRI-OR-128	06-05-2016

6	<i>Aerides ringens</i> (Lindl.) C.E.C. Fisch.	Epiphyte	Anamudi hut. Vazhikadavu, Nilambur. Manpara, Nelliampathy.	KFRI-OR-59F KFRI-OR-59G KFRI-OR-59H	16-08-2015 01-08-2015 15-10-2015
7	<i>Anoectochilus elatus</i> Lindl.	Terrestrial	Muthikulam. Mannavanshola.	KFRI-OR-47A KFRI-OR-47B	23-01-2015 11-06-2015
8	<i>Aphyllorchis montana</i> Rchb.f.	Terrestrial	Sairanthiri, Poochipara. Olakara, Peechi.	KFRI OR - 36A KFRI OR - 36B	15-06-2014 20-10-2014
9	<i>Arundina graminifolia</i> (D. Don) Hochr.	Terrestrial	Vagamom. Silent valley dam site.	KFRI OR- 37C KFRI OR- 37D	22-05-2014 15-06-2014
10	<i>Brachycorythis iantha</i> (Wight) Summerh.	Terrestrial	Periyar. Nelliampathy. Anamudi.	KFRI OR-43A KFRI OR-43B KFRI OR-43C	08-05-2014 11-10-2014 17-08-2015
11	<i>Brachycorythis splendida</i> Summerh.	Terrestrial	Periyar. Kurichiarmala. Nelliampathy.	KFRI OR- 70D KFRI OR- 70B KFRI OR- 70F	08-05-2014 12-04-2014 22-08-2014
12	<i>Bulbophyllum aureum</i> (Hook. f.) J.J. Smith	Epiphyte	Vazhachal. Mannavanshola. Suganthagiri.	KFRI OR- 98C KFRI OR- 98A KFRI OR- 98D	13-01-2016 09-02-2014 22-03-2016
13	<i>Bulbophyllum fimbriatum</i> (Lindl.) Rchb.f.	Epiphyte	Varadimala. Sholayur. Neelikal	KFRI OR- 48A KFRI OR- 48B KFRI OR- 48C	26-09-2013 14-02-2015 14-02-2015
14	<i>Bulbophyllum fischeri</i> Seidenf.	Epiphyte	Munnar. Poopara. Pothumala.	KFRI OR- 129A KFRI OR- 129B KFRI OR- 129C	12-05-2014 06-05-2016 18-07-2016
15	<i>Bulbophyllum fuscopurpureum</i> Wight	Epiphyte	Kurichiarmala. Mannavanshola. Devikulam.	KFRI OR- 49A KFRI OR- 49B KFRI OR- 49C	22-12-2014 26-02-2015 26-02-2015
16	<i>Bulbophyllum kaitiense</i> Rchb.f.	Epiphyte	Poopara. Devikulam.	KFRI OR- 109A KFRI OR- 109B	14-11-2015 04-03-2016
17	<i>Bulbophyllum rosemarianum</i> Sathish, Kumar & Saleem	Epiphyte	Iritty. Vaguavarai. Aaralam	KFRI OR- 41A KFRI OR- 41B KFRI OR- 41C	22-08-2014 11-02-2015 11-11-2015
18	<i>Bulbophyllum sterile</i> (Lam.) Suresh	Epiphyte	Peechi. Vazhachal. Nadukani.	KFRI OR- 84A KFRI OR- 84D KFRI OR- 84C	04-01-2014 20-10-2015 16-02-2014
19	<i>Bulbophyllum tremulum</i> Wight	Epiphyte	Olakara. Varadimala. Suganthagiri.	KFRI OR- 8A KFRI OR- 8B KFRI OR- 8C	06-11-2013 16-10-2014 02-01-2015
20	<i>Calanthe sylvatica</i> (Thouars) Lindl.	Terrestrial	Nedumkayam. Nelliampathy. Thenmala	KFRI OR- 76A KFRI OR- 76B KFRI OR- 76C	11-05-2014 28-09-2015 11-12-2015
21	<i>Calanthe triplicata</i> (Willem.) Ames	Terrestrial	Varadimala. Pakuthipalam. Rosemala	KFRI OR- 71A KFRI OR- 71B KFRI OR- 71C	11-01-2014 02-01-2015 16-08-2015
22	<i>Cheirostylis flabellata</i> (A. Rich.) Wight	Terrestrial	Sairanthiri	KFRI OR- 66	28-06-2015

23	<i>Chiloschista fasciata</i> (Muell.) Seidenf. & Ormerod	Epiphyte	Poochipara. Panthamthode.	KFRI OR- 80A KFRI OR- 80B	04-10-2015 04-10-2015
24	<i>Cleisostoma tenuifolium</i> (L.) Garay	Epiphyte	Nadukani. Ranni. Neriamangalam	KFRI OR- 46A KFRI OR- 46B KFRI OR- 46C	16-02-2014 06-01-2015 22-04-2015
25	<i>Coelogyne breviscapa</i> Lindl.	Epiphyte	Suganthagiri. Varadimala.	KFRI OR- 117A KFRI OR- 117B	11-05-2014 20-03-2016
26	<i>Coelogyne mossiae</i> Rolfe	Epiphyte	Nyamakadu. Agasthiyamala.	KFRI OR- 99A KFRI OR- 99B	11-11-2014 26-01-2016
27	<i>Coelogyne nervosa</i> A. Rich.	Epiphyte	Varadimala. Munnar. Kothayar. Minnampara	KFRI OR- 3A KFRI OR- 3F KFRI OR- 3C KFRI OR- 3D	26-09-2013 11-06-2015 11-02-2014 18-12-2014
28	<i>Coelogyne odoratissima</i> Lindl.	Epiphyte	Aaralam. Anakkampoyil. Varadimala	KFRI OR- 85A KFRI OR- 85B KFRI OR- 85C	29-10-2013 11-12-2014 20-10-2015
29	<i>Conchidium braccatum</i> (Lindl.) Brieger	Epiphyte	Dhoni. Silent valley estate Munnar. Ponmudi.	KFRI OR- 61A KFRI OR- 61B KFRI OR- 61C	11-02-2014 18-05-2015 21-06-2015
30	<i>Conchidium filiforme</i> (Wight) Rauschert	Epiphyte	Munnar. Elival Hills. Naduvattam.	KFRI OR- 95A KFRI OR- 95B KFRI OR- 95C	13-11-2013 03-01-2015 13-01-2016
31	<i>Cottonia peduncularis</i> (Lindl.) Rchb.f.	Epiphyte	Peerumade. Chanthanathode. Thenmala.	KFRI OR- 89A KFRI OR- 89B KFRI OR- 89C	10-01-2014 11-10-2014 20-11-2015
32	<i>Cymbidium aloifolium</i> (L.) Sw.	Epiphyte	Suganthagiri. Peechi. Koothattukulam	KFRI OR- 10A KFRI OR- 10B KFRI OR- 10C	14-12-2013 20-01-2014 17-12-2015
33	<i>Cymbidium bicolor</i> Lindl.	Epiphyte	Nedumkayam. Suganthagiri. Kurichiarmala.	KFRI OR- 90A KFRI OR- 90B KFRI OR- 90C	03-02-2014 20-11-2015 20-11-2015
34	<i>Cymbidium ensifolium</i> (L.) Sw. var. <i>haematodes</i> (Lindl.) Du Puy & Cribb.	Terrestrial	Agasthiyamala. Kallar. Sillent valley	KFRI OR- 57A KFRI OR- 57B KFRI OR- 57C	08-02-2014 12-02-2015 06-05-2015
35	<i>Dendrobium anamalanum</i> Chandra., Chandras. & N.C. Nair	Epiphyte	Anamudi. Eravikulam hut. Nelliampathy hilltop	KFRI OR- 62A KFRI OR- 62B KFRI OR- 62C	11-10-2014 09-01-2015 11-06-2015
36	<i>Dendrobium aphyllum</i> (Roxb.) Fischer	Epiphyte	Periyar. Parambikulam. Sillent valley	KFRI OR- 40A KFRI OR- 40B KFRI OR- 40C	04-07-2014 12-08-2015 11-12-2015

37	<i>Dendrobium aqueum</i> Lindl.	Epiphyte	Walakad. Kurichiarmala.	KFRI OR- 5A KFRI OR- 5A	06-11-2013 11-12-2014
38	<i>Dendrobium barbatulum</i> Lindl.	Epiphyte	Dam site Silent valley.	KFRI OR- 56	05-04-2015
39	<i>Dendrobium haemoglossum</i> Thw.,	Epiphyte	Peerumedu. Periyar. Siruvani.	KFRI OR- 100A KFRI OR- 100B KFRI OR- 100C	20-10- 2014 15-02-2016 18-02-2016
40	<i>Dendrobium herbaceum</i> Lindl.	Epiphyte	Periyar. Parambikulam. Silent Valley	KFRI OR- 21A KFRI OR- 21B KFRI OR- 21C	20-01-2014 01-01-2015 21-07-2015
41	<i>Dendrobium heterocarpum</i> Lindl.	Epiphyte	Ponmudi. Chanthanathode. Periya.	KFRI OR- 72A KFRI OR- 72B KFRI OR- 72C	04-09-2015 24-11-2015 04-02-2016
42	<i>Dendrobium heyneanum</i> Lindl.	Epiphyte	Ponmudi. Bonacad. Agasthyamala. Koodam.	KFRI OR- 29A KFRI OR- 29B KFRI OR- 29C KFRI OR- 29D	14-02-2014 15-02-2014 15-02-2014 02-02-2015
43	<i>Dendrobium microbulbon</i> A. Rich.	Epiphyte	Suganthagiri	KFRI OR- 96	13-01-2016
44	<i>Dendrobium nutans</i> Lindl.	Epiphyte	Ponmudi. Munar. Neelikal	KFRI OR- 86A KFRI OR- 86B KFRI OR- 86C	06-11-2015 12-02-2016 19-03-2016
45	<i>Dendrobium ovatum</i> (L.) Kranz.	Epiphyte	Parambikulam. Thariode. Hawlock.	KFRI OR- 91A KFRI OR- 91B KFRI OR- 91C	20-11-2015 11-12-2015 02-01-2016
46	<i>Dendrobium wightii</i> Hawkes & Heller	Epiphyte	Ponmudi. Siruvani.	KFRI OR- 118A KFRI OR- 118B	20-03-2016 15-04-2016
47	<i>Diplocentrum recurvum</i> Lindl.	Epiphyte	Munnar. Champakkad.	KFRI OR- 58A KFRI OR- 58B	06-05-2015 11-06-2015
48	<i>Disperis neilgherrensis</i> Wight	Terrestrial	Sairandhri, Silent valley dam site.	KFRI OR- 101	26-01-2016
49	<i>Epipogium roseum</i> (D. Don) Lindl.	Terrestrial	Attumudi. Panthamthode. Nadukani	KFRI OR- 67A KFRI OR- 67B KFRI OR- 67C	28-06-2015 04-10-2015 02-01-2016
50	<i>Eria mysorensis</i> Lindl.	Epiphyte	Munnar Manpara, Nelliampathy Elival hills, Palakkad	KFRI OR- 63A KFRI OR- 63B KFRI OR- 63C	13-11-2013 11-10-2014 16-10-2014
51	<i>Eria pauciflora</i> Wight	Epiphyte	Munnar Kothayar Chembra	KFRI OR- 120A KFRI OR- 120B KFRI OR- 120C	13-11-2013 30-12-2013 01-03-2014
52	<i>Eria polystachya</i> A. Rich.	Epiphyte	Meppadi Thenmala	KFRI OR- 6A KFRI OR- 6B	06-11-2013 20-11-2015
53	<i>Eulophia epidendraea</i> (Koenig ex Retz.) Fischer	Terrestrial	Chinnar Periyar Olakara	KFRI OR- 110F KFRI OR- 110B KFRI OR- 110A	04-03-2016 14-02-2014 07-04-2014

54	<i>Eulophia pulchra</i> (Thouars) Lindl.	Terrestrial	Chanthanathode Thariode Aryankavu	KFRI OR- 102A KFRI OR- 102B KFRI OR- 102C	07-04-2014 04-02-2016 11-01-2016
55	<i>Eulophia spectabilis</i> (Dennst.) Suresh	Terrestrial	Ponmudi Neelikal Nedumkayam.	KFRI OR- 92A KFRI OR- 92B KFRI OR- 92C	04-12-2015 19-03-2016 11-04-2016
56	<i>Eulophia zollingeri</i> (Rchb.f.) J.J.Sm.	Terrestrial	Neelikal	KFRI OR- 35	15-06-2014
57	<i>Flickingeria nodosa</i> (Dalz.) Seidenf.	Epiphyte	Siruvani Thenmala Neriamangalam.	KFRI OR- 121F KFRI OR- 121B KFRI OR- 121C	12-04-2016 20-11-2015 02-12-2015
58	<i>Gastrochilus acaulis</i> (Lindl.) O. Ktze.	Epiphyte	Periyar, Chinnar, Agasthyamala	KFRI OR- 30B KFRI OR- 30D KFRI OR- 30C	14-02-2014 04-03-2016 15-02-2014
59	<i>Gastrochilus obliquus</i> (Lindl.) Kuntze	Epiphyte	Sairandhri Elival hills Dhoni	KFRI OR- 55D KFRI OR- 55C KFRI OR- 55B	05-04-2015 16-10-2014 11-02-2014
60	<i>Geodorum densiflorum</i> (Lam.) Schltr.	Terrestrial	Nedumkayam Rosemala Sholayar	KFRI OR- 111E KFRI OR- 111B KFRI OR- 111C	04-03-2016 18-03-2015 12-02-2016
61	<i>Habenaria crinifera</i> Lindl.	Terrestrial	Anginda Poochipara	KFRI OR- 78A KFRI OR- 78B	04-10-2015 26-01-2016
62	<i>Habenaria digitata</i> Lindl.	Terrestrial	Walakad Panthamthode Olakara.	KFRI OR- 54D KFRI OR- 54F KFRI OR- 54C	05-04-2015 04-10-2015 07-04-2014
63	<i>Habenaria diphylla</i> (Nimmo) Dalz.	Terrestrial	Agasthyamala Varadimala	KFRI OR- 97C KFRI OR- 97B	13-01-2016 14-12-2013
64	<i>Habenaria elwesii</i> Hook. f.	Terrestrial	Periyar Thopimala Neelikal.	KFRI OR- 27A KFRI OR- 27B KFRI OR- 27C	14-02-2014 22-10-2014 19-03-2016
65	<i>Habenaria furcifera</i> Lindl.	Terrestrial	Vengoli Periyar Sispara.	KFRI OR- 1A KFRI OR- 1B KFRI OR- 1C	26-09-2013 14-02-2014 26-01-2016
66	<i>Habenaria heyneana</i> Lindl.	Terrestrial	Anamudi Nyamakad Poochipara.	KFRI OR- 16A KFRI OR- 16B KFRI OR- 16C	04-01-2014 11-11-2014 26-01-2016
67	<i>Habenaria longicorniculata</i> Graham	Terrestrial	Varadimala Ponmudi Mattupetty.	KFRI OR- 9C KFRI OR- 9F KFRI OR- 9D	14-12-2013 06-11-2015 26-02-2015
68	<i>Habenaria marginata</i> Colebr.	Terrestrial	Olakara Vazhachal	KFRI OR- 31A KFRI OR- 31B	07-04-2014 11-07-2014
69	<i>Habenaria perrottetiana</i> A. Rich.	Terrestrial	Kurichiarmala Suganthagiri	KFRI OR- 24A KFRI OR- 24B	28-01-2014 21-04-2014

70	<i>Habenaria plantaginea</i> Lindl.	Terrestrial	Achankovil Pamba Kakadampoyil	KFRI OR- 73A KFRI OR- 73B KFRI OR- 73C	04-09-2015 11-09-2015 18-12-2015
71	<i>Habenaria rariflora</i> A. Rich.	Terrestrial	Manpara Periyar Mattupetty	KFRI OR- 59D KFRI OR- 59C KFRI OR- 59A	18-05-2015 04-07-2014 14-05-2014
72	<i>Habenaria sahyadrica</i> K.M.P.Kumar, T.K.Nirmesh, V.B.Sreek. & Kumar.	Terrestrial	Muthikulam	KFRI OR- 77	28-09-2015
73	<i>Habenaria viridiflora</i> (Sw.) R. Br.	Terrestrial	Poochipara, Silent Valley Karuvarakund	KFRI OR- 81	04-10-2015
74	<i>Ipsea malabarica</i> (Rchb.f.) Hook.f.	Terrestrial	Sairanthiri, Silent valley dam	KFRI OR- 38	15-06-2014
75	<i>Liparis elliptica</i> Wight	Epiphyte	Agasthyamala Pandimotta Parambikulam	KFRI OR- 7D KFRI OR- 7E KFRI OR- 7F	06-11-2013 22-01-2014 26-11-2014
76	<i>Liparis odorata</i> (Willd.) Lindl.	Terrestrial	Nelliampathy Naduvattam Muvattupuzha.	KFRI OR- 18A KFRI OR- 18B KFRI OR- 18C	20-01-2014 11-05-2014 18-06-2014
77	<i>Liparis viridiflora</i> (Blume) Lindl.	Epiphyte	Peerumade Poochipara	KFRI OR- 19A KFRI OR- 19B	20-01-2014 04-10-2015
78	<i>Liparis wightiana</i> Thw.	Terrestrial	Ponmudi Varadimala.	KFRI OR- 11C KFRI OR- 11D	26-09-2013 16-10-2014
79	<i>Luisia birchea</i> (A. Rich.) Blume	Epiphyte	Nelliampathy Sairandhiri.	KFRI OR- 15A KFRI OR- 15B	04-01-2014 06-11-2015
80	<i>Luisia evangelinae</i> Blatt. & McCann	Epiphyte	Chanthanathode Rosemala Umayar.	KFRI OR- 32C KFRI OR- 32D KFRI OR- 32E	07-04-2014 18-03-2015 27-09-2014
81	<i>Luisia tristis</i> (G.Forst.) Hook.f.	Epiphyte	Nilambur Parambikulam Periyar	KFRI OR- 74A KFRI OR- 74B KFRI OR- 74C	28-09-2015 30-09-2015 18-01-2016
82	<i>Malaxis acuminata</i> D. Don.	Terrestrial	Silent valley Varadimala Sholayar	KFRI OR- 82C KFRI OR- 82D KFRI OR- 82F	20-10-2015 14-11-2015 12-02-2016
83	<i>Malaxis congesta</i> (Lindl.) Deb.	Terrestrial	Chembra Suganthagiri Kurichiarmala.	KFRI OR- 87AA KFRI OR- 87AB KFRI OR- 87AC	06-11-2015 13-12-2015 23-01-2016
84	<i>Malaxis purpurea</i> (Lindl.) O. Ktze.	Terrestrial	Suganthagiri Pykara Panthamthode.	KFRI OR- 26E KFRI OR- 26F KFRI OR- 26G	28-01-2014 23-06-2014 11-09-2014

85	<i>Nervilia aragoana</i> Gaud.	Terrestrial	Vellanipacha Orukompan Kallipara.	KFRI OR- 20A KFRI OR- 20B KFRI OR- 20C	20-01-2014 15-04-2014 22-08-2014
86	<i>Nervilia crociformis</i> (Zoll. & Mor.) Seidenf.	Terrestrial	Thariode Manathavady Parambikulam	KFRI OR- 93A KFRI OR- 93B KFRI OR- 93C	04-12-2015 08-01-2016 15-01-2016
87	<i>Nervilia</i> <i>infundibulifolia</i> Blatt. & McCann	Terrestrial	Nedumkayam Pattakarimbu Vellanipacha.	KFRI OR- 122A KFRI OR- 122B KFRI OR- 122C	12-04-2016 29-05-2016 11-06-2016
88	<i>Nervilia plicata</i> (Andr.) Schltr.	Terrestrial	Rosemala Parambikulam	KFRI OR- 75A KFRI OR- 75B	28-09-2015 20-10-2015
89	<i>Oberonia bicornis</i> Lindl.	Epiphyte	Varadimala, Kulathupuzha.	KFRI OR- 64A KFRI OR- 64B	11-06-2015 20-10-2015
90	<i>Oberonia brachyphylla</i> Blatt. & McCann	Epiphyte	Ponmudi, Sairandhri Varadimala.	KFRI OR- 14A KFRI OR- 14B KFRI OR- 14C	04-01-2014 12-04-2014 11-06-2015
91	<i>Oberonia brunoniana</i> Wight	Epiphyte	Varadimala Ponmudi Bonacad.	KFRI OR- 83A KFRI OR- 83B KFRI OR- 83C	20-10-2015 04-01-2014 15-02-2014
92	<i>Oberonia</i> <i>chandrakharanii</i> V.J. Nair, V.S. Ramach. & R. Ansari	Epiphyte	Periyar Kallar	KFRI OR- 44A KFRI OR- 44B	11-10-2014 23-11-2014
93	<i>Oberonia ferruginea</i> Parish ex Hook.f.	Epiphyte	Bonacad Ponmudi	KFRI OR- 103A KFRI OR- 103B	15-02-2014 13-02-2016
94	<i>Oberonia mucronata</i> (D. Don) Ormerod & Seidenf.	Epiphyte	Ponmudi Neriamangalam Parambikulam	KFRI OR- 126A KFRI OR- 126B KFRI OR- 126C	26-04-2016 13-06-2016 16-07-2016
95	<i>Oberonia santapau</i> Kapad.	Epiphyte	Ponmudi Kallar Umayar	KFRI OR- 51A KFRI OR- 51B KFRI OR- 51C	28-03-2015 11-04-2015 27-06-2015
96	<i>Oberonia verticillata</i> Wight	Epiphyte	Naduvattam Bonacad	KFRI OR- 112A KFRI OR- 112B	04-03-2016 15-02-2014
97	<i>Pachystoma hirsutum</i> (Joseph & Vajr.) Sathish & Manilal	Terrestrial	Nelliampathy Hill top	KFRI OR- 104	13-02-2016
98	<i>Pachystoma pubescens</i> Blume, Bijdr.	Terrestrial	Poochipara	KFRI OR- 79	04-10-2015
99	<i>Papilionanthe</i> <i>cylindrica</i> (Lindl.) Seidenf.	Epiphyte	Nelliampathy Hill top Chempatty	KFRI OR- 123A KFRI OR- 123B	12-04-2016 10-05-2016
100	<i>Pecteilis gigantea</i> (J. E. Smith) Rafin.	Terrestrial	Suganthagiri Varadimala Kurichiamala	KFRI OR- 17A KFRI OR- 17B KFRI OR- 17C	04-01-2014 23-11-2014 18-12-2014
101	<i>Peristylus aristatus</i> Lindl.	Terrestrial	Sholayur Ponmudi	KFRI OR- 52A KFRI OR- 52B	28-03-2015 18-08-2015

102	<i>Peristylus richardianus</i> Wight	Terrestrial	Periyar Silent valley	KFRI OR- 60A KFRI OR- 60B	18-05-2015 12-11-2015
103	<i>Peristylus spiralis</i> A.Rich.	Terrestrial	Kurichiarmala Chempura	KFRI OR- 23A KFRI OR- 23B	28-01-2014 11-06-2014
104	<i>Pholidota imbricata</i> Hook.	Epiphyte	Siruvani Achankovil Pamba	KFRI OR- 13A KFRI OR- 13B KFRI OR- 13C	04-01-2014 11-02-2014 23-06-2015
105	<i>Podochilus malabaricus</i> Wight	Epiphyte	Ponmudi Seminarivilla Chanthanathode	KFRI OR- 34A KFRI OR- 34B KFRI OR- 34C	07-04-2014 12-06-2015 28-07-2015
106	<i>Polystachya concreta</i> (Jacq.) Garay & H.R. Sweet	Epiphyte	Nelliampathy Hill top Ponmudi.	KFRI OR- 113A KFRI OR- 113B	20-01-2014 04-04-2016
107	<i>Pomatocalpa spicatum</i> Breda.	Epiphyte	Manpara Minnampara	KFRI OR- 45A KFRI OR- 45B	20-01-2014 22-12-2014
108	<i>Porpax jerdoniana</i> (Wight) Rolfe	Epiphyte	Wallakad Mukkali.	KFRI OR- 105A KFRI OR- 105B	13-02-2016 22-02-2016
109	<i>Porpax reticulata</i> Lindl.	Epiphyte	Attumudi Thopimala.	KFRI OR- 124A KFRI OR- 124A	26-04-2016 11-08-2016
110	<i>Pteroceras leopardinum</i> (Parish & Rchb.f.) Seidenf. & Smitin.	Epiphyte	Siruvani Varadimala Silent valley.	KFRI OR- 42A KFRI OR- 42B KFRI OR- 42C	07-09-2014 18-10-2014 22-05-2015
111	<i>Rhynchostylis retusa</i> (L.) Blume	Epiphyte	Peechi Kulathupuzha Aaralam	KFRI OR- 114A KFRI OR- 114B KFRI OR- 114C	20-01-2014 28-03-2016 10-04-2016
112	<i>Robiquetia josephiana</i> Manilal & Sathish	Epiphyte	Ponmudi Munnar Thariode.	KFRI OR- 106A KFRI OR- 106B KFRI OR- 106C	13-02-2016 10-03-2016 18-04-2016
113	<i>Satyrium nepalense</i> D. Don	Terrestrial	Kurichiarmala Suganthagiri Varadimala.	KFRI OR- 2A KFRI OR- 2B KFRI OR- 2C	26-09-2013 11-11-2013 15-05-2014
114	<i>Seidenfia rheedei</i> (Sw.) Szlach.	Terrestrial	Thenmala Olakara Periyar	KFRI OR- 33A KFRI OR- 33B KFRI OR- 33C	07-04-2014 11-04-2015 22-06-2015
115	<i>Sirhookera lanceolata</i> (Wight) O. Ktze.	Epiphyte	Neriamangalam Sholayar Manpara	KFRI OR- 25A KFRI OR- 25B KFRI OR- 25C	28-01-2014 10-11-2015 20-12-2015
116	<i>Sirhookera latifolia</i> (Wight) O. Ktze.	Epiphyte	Hill top Nelliampathy Periyar	KFRI OR- 4A1 KFRI OR- 4AA	26-09-2013 22-06-2015
117	<i>Smithsonia straminea</i> Saldanha	Epiphyte	Thenmala. Sairandhiri Chempatty	KFRI OR- 94A KFRI OR- 94B KFRI OR- 94C	04-10-2015 06-11-2015 11-12-2015

118	<i>Smithsonia viridiflora</i> (Dalz.) Saldanha	Epiphyte	Mannavanshola Nilackal	KFRI OR- 127A KFRI OR- 127B	06-01-2016 12-04-2016
119	<i>Spiranthes sinensis</i> (Pers.) Ames	Terrestrial	Anamudi	KFRI OR 107	24-02-2016
120	<i>Taeniophyllum scaberulum</i> Hook. f.	Epiphyte	Silent Valley. Munnar	KFRI OR- 115A KFRI OR- 115B	20-03-2016 28-03-2016
121	<i>Tainia bicornis</i> (Lindl.) Rchb.f.	Terrestrial	Periyar. Thenmala. Koodam.	KFRI OR – 39A KFRI OR – 39B KFRI OR – 39C	04-07-2014 14-08-2014 07-12-2014
122	<i>Trias stocksii</i> Benth. ex Hook. f.	Epiphyte	Ponmudi. Chanthanathode. Varadimala.	KFRI OR- 119A KFRI OR- 119B KFRI OR- 119C	12-04-2016 15-04-2016 10-03-2015
123	<i>Trichoglottis tenera</i> (Lindl.) Rchb.f.	Epiphyte	Vaguvarai. Eravikulam Hut.	KFRI OR -108A KFRI OR -108B	24-02-2016 24-02-2016
124	<i>Vanda tessellata</i> (Roxb.) Hook. ex D. Don	Epiphyte	Chinnar. Parambikulam.	KFRI OR- 22A KFRI OR- 22B	20-01-2014 15-03-2015
125	<i>Vanda testacea</i> (Lindl.) Rchb.f.	Epiphyte	Nelliampathy. Peechi.	KFRI OR -116A KFRI OR -116B	20-03-2016 02-04-2016
126	<i>Vanda thwaitesii</i> Hook. f.	Epiphyte	Pothumala, Nelliampathy Kanavam	KFRI OR- 125A KFRI OR- 125B	26-04-2016 15-03-2015
127	<i>Zeuxine affinis</i> (Lindl.) Benth. ex Hook. f.	Terrestrial	Sairandhiri Poochipara.	KFRI OR-88A KFRI OR-88B	06-11-2015 06-11-2015
128	<i>Zeuxine gracilis</i> (Breda) Blume	Terrestrial	Sairandhiri, Dam site Silent valley.	KFRI OR- 53	05-04-2015
129	<i>Zeuxine longilabris</i> (Lindl.) Benth. ex Hook. f.	Terrestrial	Sairandhiri Chempotty.	KFRI OR-50A KFRI OR-50B	12-03-2015 12-03-2015

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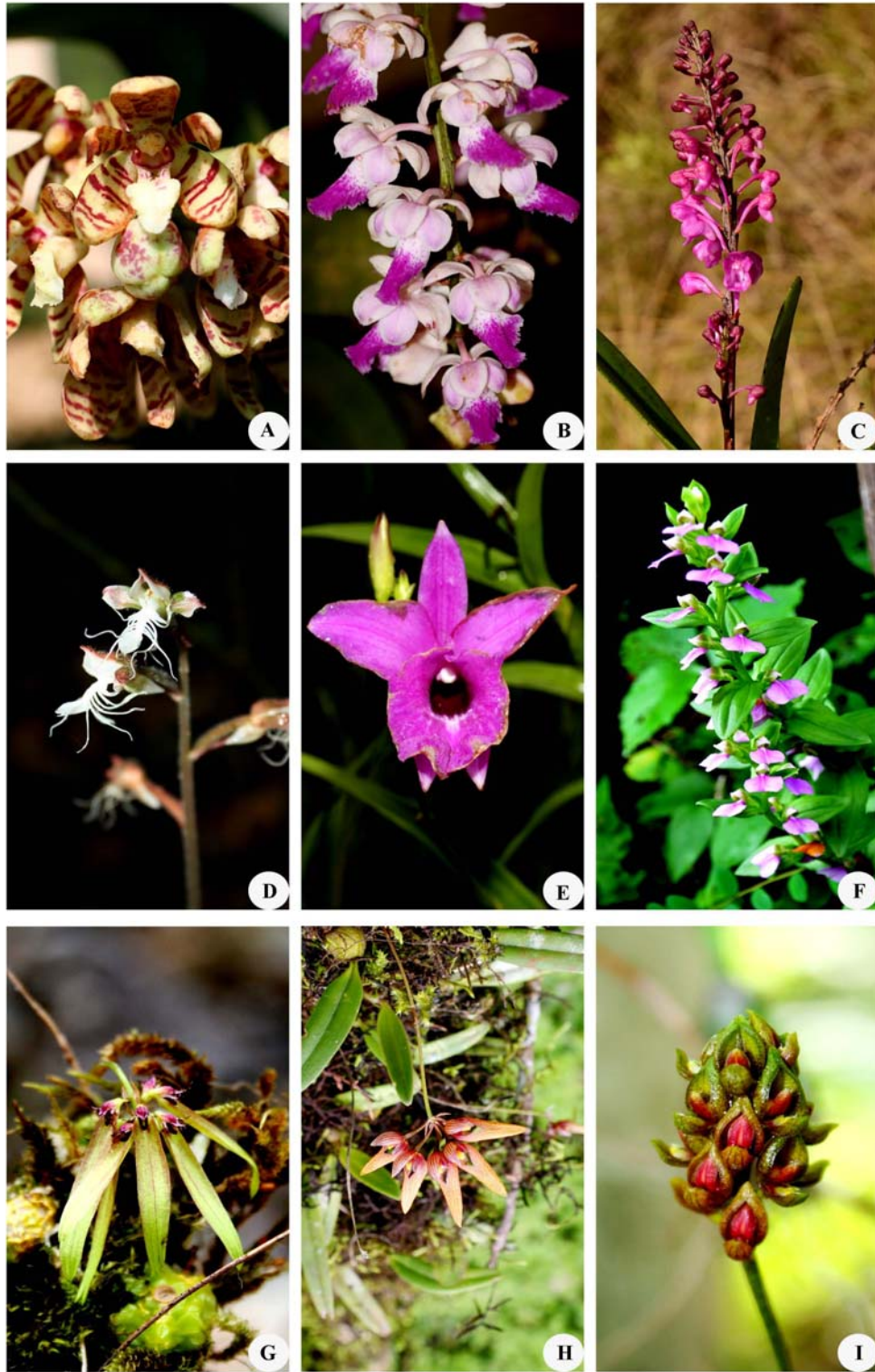


Plate 1. A. *Acampe praemorsa* (Roxb.) Blatt. & McCann; B. *Aerides crispa* Lindl. C. *Aerides ringens* (Lindl.) C.E.C. Fisch.; D. *Anoectochilus elatus* Lindl., E. *Arundina graminifolia* (D. Don) Hochr.; F. *Brachycorythis iantha* (Wight) Summerh.; G. *Bulbophyllum fimbriatum* (Lindl.) Rchb.f.; H. *Bulbophyllum kaitiense* Rchb.f.; I. *Bulbophyllum sterile* (Lam.) Suresh

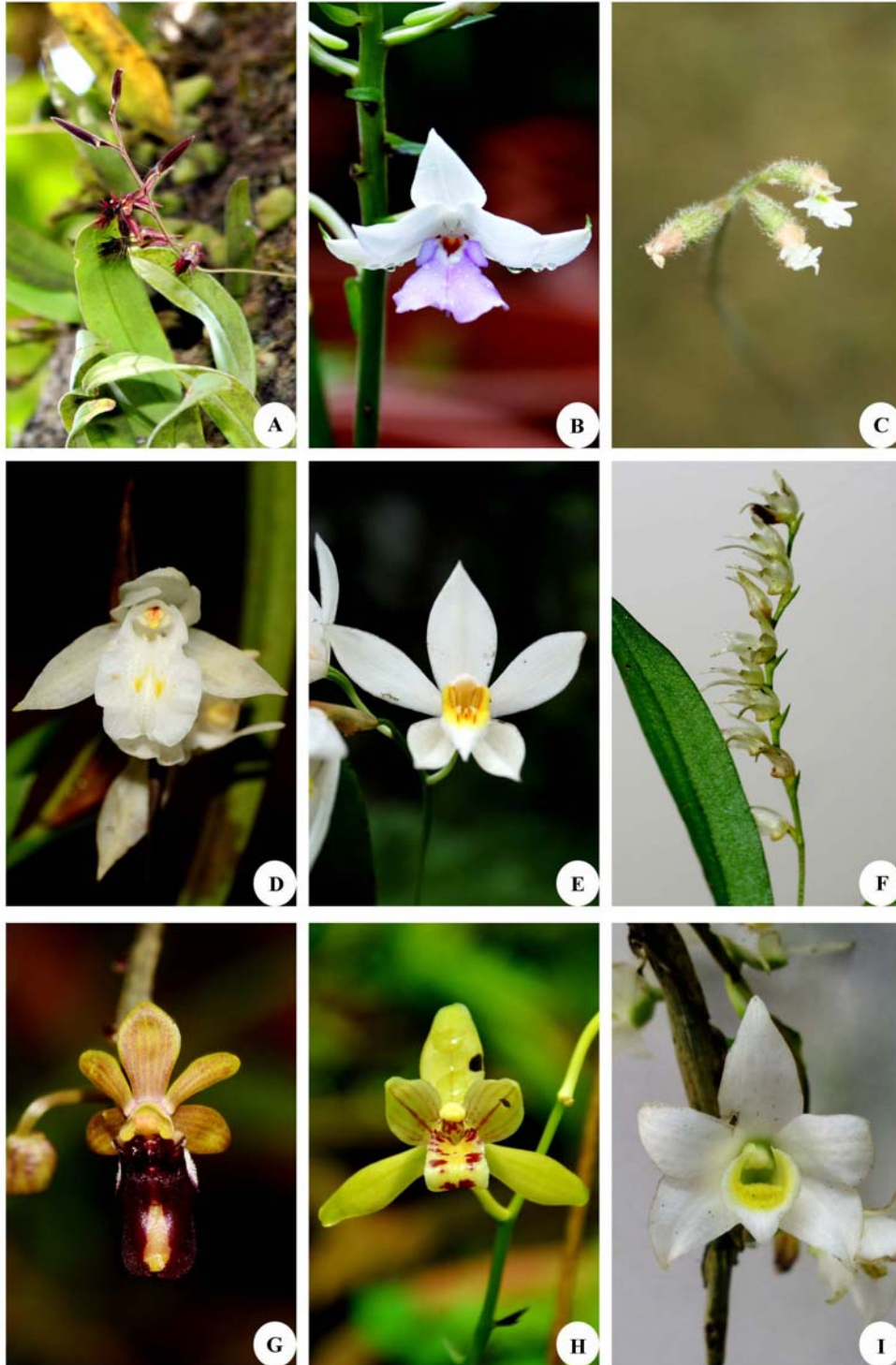


Plate 2. **A.** *Bulbophyllum tremulum* Wight **B.** *Calanthe sylvatica* (Thouars) Lindl. **C.** *Cheirostylis flabellata* (A. Rich.) Wight; **D.** *Coelogyne breviscapa* Lindl. **E.** *Coelogyne nervosa* A. Rich. **F.** *Conchidium filiforme* (Wight) Rauschert **G.** *Cottonia peduncularis* (Lindl.) Rchb.f. **H.** *Cymbidium ensifolium* (L.) Sw. var. *haematodes* (Lindl.) Du Puy & Cribb. **I.** *Dendrobium aqueum* Lindl.

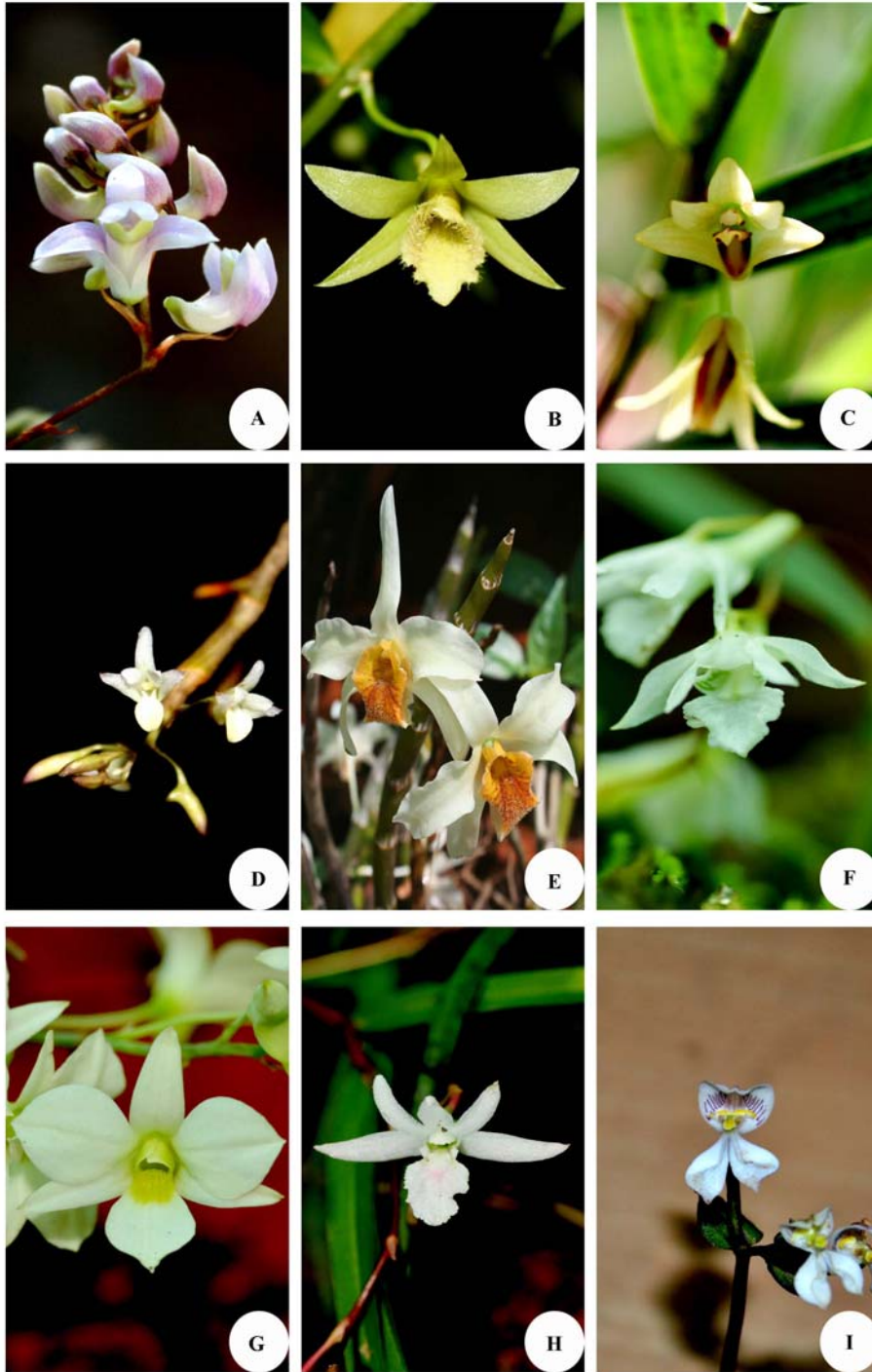


Plate 3.A. *Dendrobium anamalayanum* Chandra., Chandras. & N.C. Nair **B.** *Dendrobium aphyllum* (Roxb.) Fischer **C.** *Dendrobium haemoglossum* Thw. **D.** *Dendrobium herbaceum* Lindl. **E.** *Dendrobium heterocarpum* Lindl. **F.** *Dendrobium heyneanum* Lindl. **G.** *Dendrobium ovatum* (L.) Kranz. **H.** *Dendrobium wightii* Hawkes & Heller **I.** *Disperis neilgherrensis* Wight

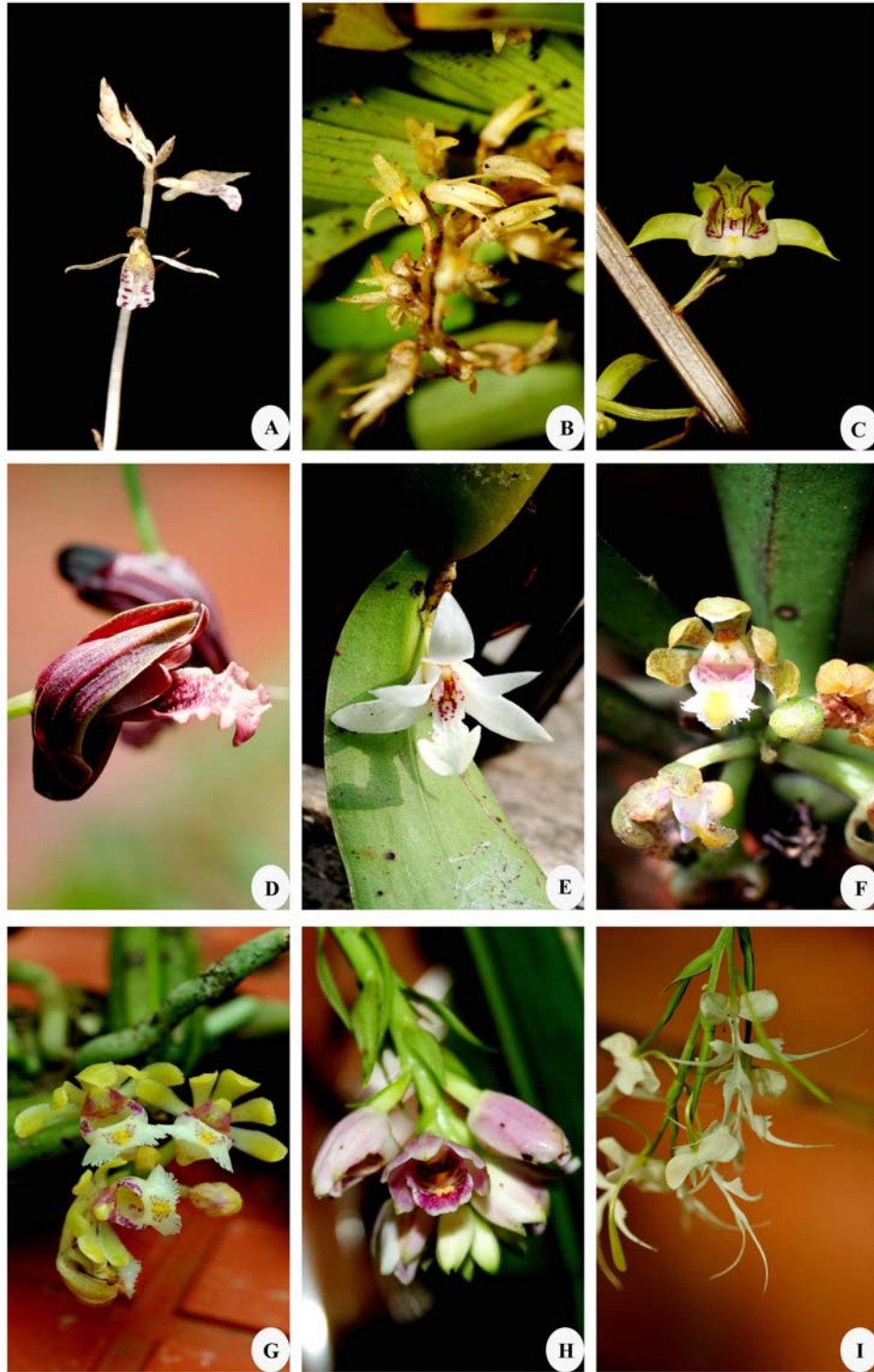


Plate 4.A. *Epipogium roseum* (D. Don) Lindl. **B.** *Eria polystachya* A. Rich. **C.** *Eulophia pulchra* (Thouars) Lindl. **D.** *Eulophia spectabilis* (Dennst.) Suresh **E.** *Flickingeria nodosa* (Dalz.) Seidenf. **F.** *Gastrochilus acaulis* (Lindl.) O.Ktze. **G.** *Gastrochilus obliquus* (Lindl.) Kuntze. **H.** *Geodorum densiflorum* (Lam.) Schltr. **I.** *Habenaria crinifera* Lindl.

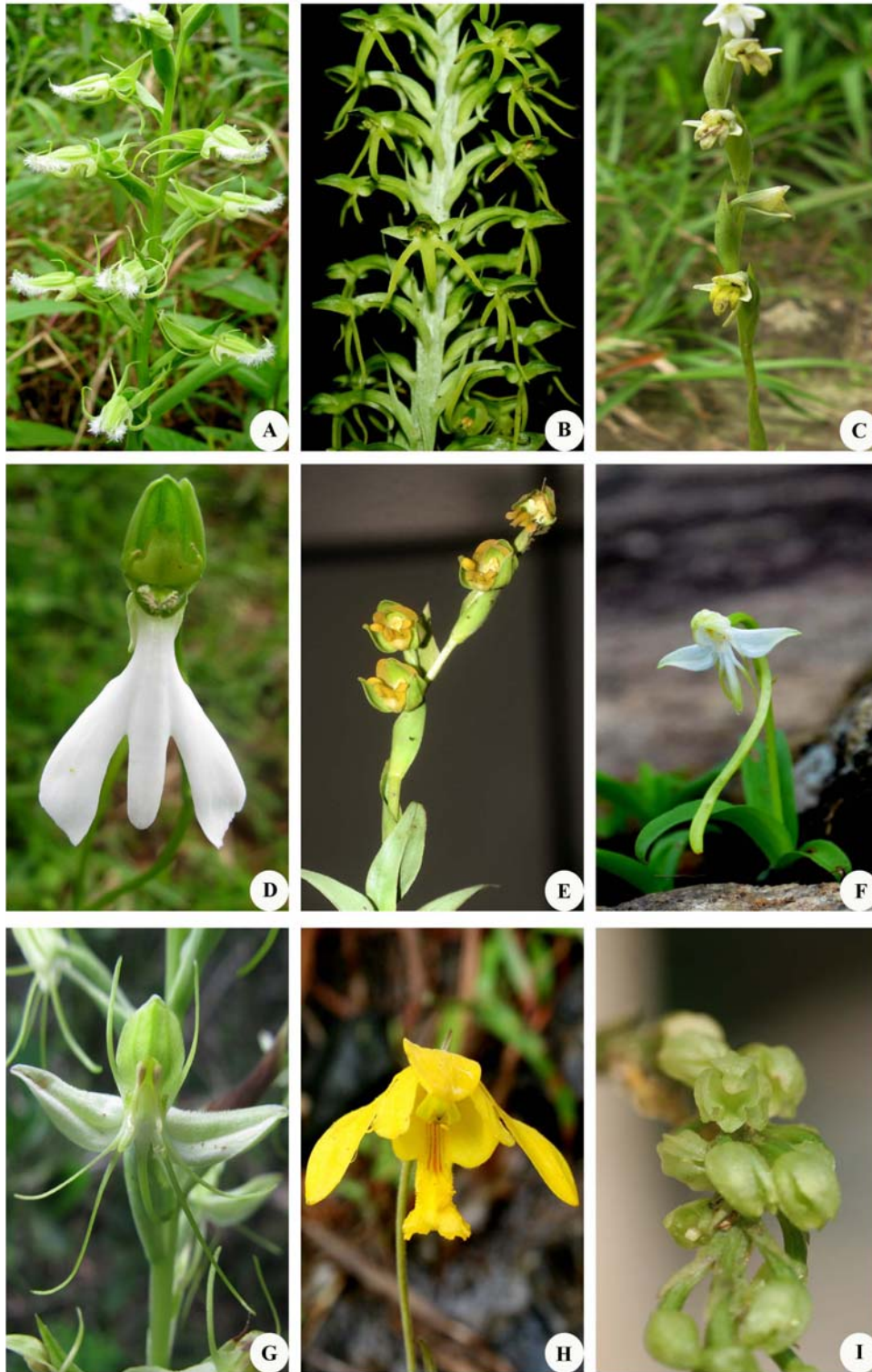


Plate 5. A. *Habenaria elwesii* Hook. f. B. *Habenaria furcifera* Lindl. C. *Habenaria heyneana* Lindl. D. *Habenaria longicorniculata* Graham E. *Habenaria perrottetiana* A. Rich. F. *Habenaria rariflora* A. Rich. G. *Habenaria sahyadrica* K. M. P. Kumar, T. K. Nirmesh, V. B. Sreek. & Kumar. H. *Ipsea malabarica* (Rchb.f.) Hook.f. I. *Liparis elliptica* Wight

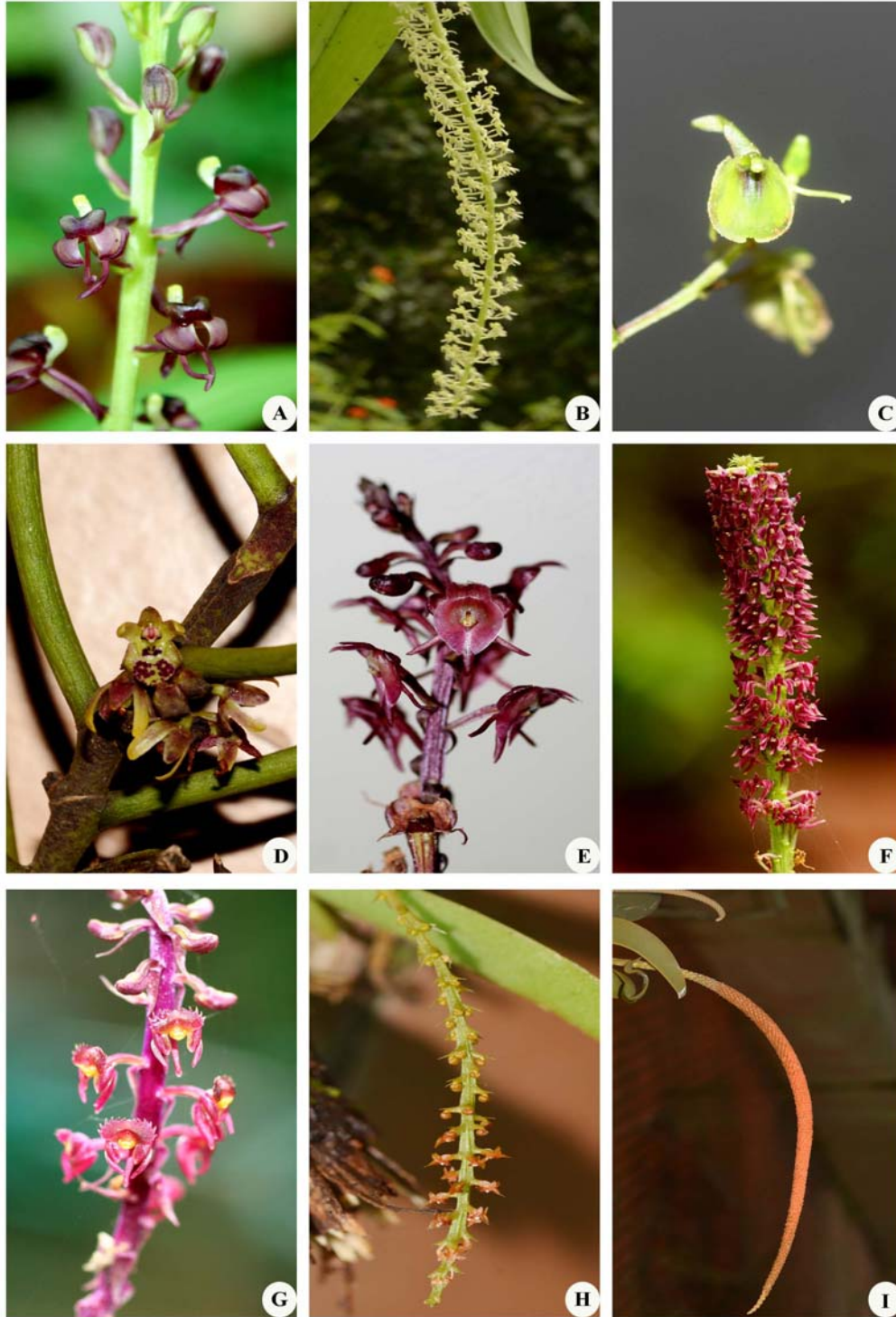


Plate 6. **A.** *Liparis odorata* (Willd.) Lindl. **B.** *Liparis viridiflora* (Blume) Lindl. **C.** *Liparis wightiana* Thw. **D.** *Luisia birchea* (A. Rich.) Blume **E.** *Malaxis acuminata* D. Don. **F.** *Malaxis congesta* (Lindl.) Deb. **G.** *Malaxis purpurea* (Lindl.) O. Ktze. **H.** *Oberonia brachyphylla* Blatt. & McCann **I.** *Oberonia brunoniana* Wight



Plate 7. **A.** *Oberonia mucronata* (D. Don) Ormerod & Seidenf. **B.** *Pachystoma hirsutum* (Joseph & Vajr.) Sathish & Manilal **C.** *Pachystoma pubescens* Blume **D.** *Papilionanthe cylindrica* (Lindl.) Seidenf. **E.** *Pecteilis gigantea* (J. E. Smith) Rafin. **F.** *Peristylus spiralis* A.Rich. **G.** *Pholidota imbricata* Hook. **H.** *Polystachya concreta* (Jacq.) Garay & H.R. Sweet **I.** *Propax jerdoniana* (Wight) Rolfe



Plate 8.A. *Rhynchosstylis retusa* (L.) Blume **B.** *Satyrium nepalense* D.Don **C.** *Seidenfia rheedei* (Sw.) Szlach.
D. *Sirhookera lanceolata* (Wight) O. Ktze. **E.** *Sirhookera latifolia* (Wight) O. Ktze. **F.** *Spiranthes sinensis* (Pers.) Ames
G. *Tainia bicornis* (Lindl.) Rchb.f. **H.** *Trias stocksii* Benth. ex Hook. f. **I.** *Trichoglottis tenera* (Lindl.) Rchb.f.



Plate 9. A. *Vanda tessellata* (Roxb.) Hook. ex D. Don B. *Vanda testacea* (Lindl.) Rchb. f.
C. *Zeuxine affinis* (Lindl.) Benth. D. *Zeuxine gracilis* (Breda) Bl. E. *Zeuxine longilabris* (Lindl.) Benth.



Plate 10. A. A view of KFR I Orchidarium B. A view of plants propagated inside the orchidarium