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ROLE OF HERBARIA IN THE STUDY OF ORCHID FLORA OF ARUNACHAL PRADESH, CONSERVATION AND DEVELOPMENT WITH PARTICULAR REFERENCE TO ORCHID HERBARIUM TIPI.

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ABSTRACT

Arunachal Pradesh is known for its rich orchid Flora and to study them. An Orchid Herbarium has been established at Tipi in the year 1979. The herbarium has 2182 numbers of specimens representing 420 species of orchids deposited from time to time by the conserted efforts of the authors. This herbarium includes 15 holotype specimens and specimens of 57 endangered orchids. In this paper detailed list of the specimen deposited have been given. Its role in the study of orchid flora, conservation and development has been discussed.

INTRODUCTION

A Herbarium is a collection of dried, pressed plants mounted on sheets bearing a detailed data label and stored in strong cupboards in systematic sequence (Stace, 1980).

According to the Index herbariorum Part-I (*Regnum vegetabile* Vol. I06, 1981) there are more than 1700 most important herbaria in the world.

Jain & Rao (1977) listed about 10 important herbaria in India. In addition to this there are some more herbaria in various Universities, Colleges, Forest Research Institutions, Pharmacies, etc.

In Arunachal Pradesh there are 3 important herbaria *viz.* Botanical Survey of India, Arunachal Field Station Herbarium (ARUN) at Itanagar, Van Vigyan Kendra Forest Herbarium at Chessa and Orchid Herbarium, at O.R.D.C., Tipi. Out of these three, the former two represent the general flora of Arunachal Pradesh while the last one has been established exclusively for the native orchid species.

In the present paper a brief history of the orchid herbarium, Tipi, its species representation and its role in studying the orchid flora of Arunachal Pradesh have been dealt.

Orchid Herbarium Tipi (OHT) :

Orchid Herbarium Tipi has been established in the year 1979 in West Kameng district of Arunachal Pradesh as a part of research activities of Orchid Research cum Development Centre by the Forest Department. The Acronym OHT has been proposed for this herbarium.

The main aim and objective of OHT are to document all those orchid species which are occurring in various parts of Arunachal Pradesh with a relevant data on their frequency of distribution, their ornamental use and other ethnobotanical value. The herbarium also serves as a base and evidence to study the orchid Flora of Arunachal Pradesh, to assess the status of orchids as rare, endangered and ornamental species within the state and also to know the medicinal and other economic importance of various orchid species.

Since 1979 (until March '92) a total number of 2182 herbarium specimens have been deposited in OHT. While most of the specimens represent the native orchid species, a few of them are from other States *viz.* Meghalaya, West Bengal, Orissa and Karnataka. Some exotic species and hybrids like *Cattleya, Leileocattleya, Paphipedilum* are also represented in OHT herbarium.

The collections deposited so far in the OHT represent a total number of 420 species of orchids belonging to 105 genera. The species have been listed in table-I.

For identification of some of the species deposited in OHT at times, comparative study has been made with specimens represented in the

regional herbaria *viz.* ASSAM of B.S.I. at Shillong and also at CAL, BSI, Howrah.

The Orchid herbarium, Tipi is unique in having 15 Holotype specimen of the new species of orchids which are discovered from Arunachal Pradesh are as follows :

1. *Biermannia jainiana* Hegde & A.N. Rao
2. *Cheirostylis munnacampensis* A.N. Rao
3. *C. sessanica* A. N. Rao
4. *C. tippica* A. N. Rao
5. *Cleisostoma tricallosum* Hegde & A. N. Rao
6. *Epipogium sessanum* Hegde & A. N. Rao
7. *Eria connata* Joseph *et al.*
8. *E. lohitensis* A. N. Rao *et al.*
9. *Gastrochilus arunachalensis* A. N. Rao
10. *Gastrodia arunachalensis* Hegde & A.N.Rao
11. *G. mishmensis* A.N. Rao *et al.*
12. *Herminium heridasanii* A. N. Rao
13. *H. longilobatum* Hegde & A. N. Rao
14. *Sarcoglyphis arunachalensis* A. N. Rao
15. *Zeuxine lindleyana* A. N. Rao

ROLE

Based on the herbarium collection of OHT, ASSAM and CAL coupled with several collection tours in various parts of Arunachal Pradesh the following native species have been assessed as rare and endangered (Kataki *et al.* 1984, Hegde 1984a & b 1986, 87; Rao 1986, Nair & Sasty, 1987).

1. *Acrochaene punctata* Lindl.
2. *Aphyllorchis alpina* King & Pantl.
3. *Biermannia bimaculata* (King & Pantl.) King & Pantl.
4. *Bulbophyllum andersorii* (Hook. f.) J. J. Smith
5. *B. ebulbum* King & Pantl.
6. *B. emarginatum* (Finet) J. J. Smith
7. *B. eublepharum* Reichb. f.
8. *B. guttulatum* Wall. ex. Hook. f.
9. *B. obrieniarum* Rolfe
10. *B. ornatissimum* (Reichb. f.) J. J. Smith
11. *B. piluliferum* King & Pantl.
12. *B. rigidum* King & Pantl.
13. *B. sikkimense* (King & Pantl.) J. J. Smith
14. *B. penicillium* Par. & Reichb. f.
15. *Calanthe chloroleuca* Lindl.
16. *Coelogyne barbata* Griff.
17. *C. griffithii* Hook. f.
18. *Dendrobium densiflorum* Wall. ex Lindl.
19. *Cymbidium elegans* Lindl.
20. *C. iridioides* D. Don
21. *C. hookerianum* Reichb. f.
22. *C. longifolium* D. Don
23. *C. gammieanum* King & Pantl.
24. *C. munronianum* King & Pantl.
25. *Dendrobium cathcartii* Hook. f.
26. *D. parciflorum* Reichb. f. ex Lindl.
27. *D. pauciflorum* King & Pantl.
28. *Diplomeris hirsuta* (Lindl.) Lindl.
29. *Diglyphosa latifolia* Bl.
30. *Epipogium sessanum* Hegde & A. N. Rao
31. *Eria ferrugenia* Lindl.
32. *E. pumila* Lindl. in Wall.
33. *Galeola falconeri* Hook. f.
34. *G. lindleyana* (Reichb. f.) Reichb. f.
35. *G. javanica* (Blume) Benth. & Hook. f.
36. *Habenaria seshagiriana* A. N. Rao
37. *Liparis acuminata* Hook. f.
38. *L. bistriata* Par. & Reichb. f.
39. *L. cathcartii* Hook. f.
40. *L. mannii* Reichb. f.
41. *L. plantaginea* Lindl.
42. *Malaxis josephiana* (Reichb. f.) O.Ktze.
43. *Paphiopedilum fairieanum* (Lindl.) Stein
44. *P. venustum* (Sims) Pfitz.
45. *Monomeria barbata* Lindl.
46. *Pholidota undulata* Lindl.
47. *Podochilus khasianus* Hook. f.
48. *Pomatocalpa armigerum* (King & Pantl.) Tang & Wang
49. *Robiquetia spathulata* (Blume) J. J. Smith
50. *Spathoglottis ixioides* (D. Don) Lindl.
51. *Sunipia candida* (Lindl.) P. F. Hunt
52. *Tylostylis discolor* (Lindl.) Hook. f.

53. *Vanda coerulea* Griff. ex Lindl.
54. *V. stangeana* Reichb. f.

In order to protect the native orchid species which are classified as rare and endangered, several conservation measures have been taken by the Forest Department of Arunachal Pradesh (Hegde, 1987a & b).

Arunachal Pradesh has about 200 species including rare and endangered ones. These are collected from degraded forests and coupe operation areas and brought under cultivation at Orchid Centres at Tipi, Itanagar, Tezu and Roing as a part of *ex situ* conservation of tropical native orchid species.

Temperate species like *Paphiopedilum farrieanim, Cymbidium giganteum, C. grandiflorum, C. mackinnoni, C. cyperifolium, D. hookerianum, Vanda stangeana* have also been collected from degraded forest area and brought under cultivation at Orchid Centre, Dirrang in West Kameng district as a part of *ex situ* conservation.

As a part of *in situ* conservation, several rare and endangered orchids of Arunachal Pradesh are under preservation without any disturbance in their natural habitat in various Wild Life Sanctuaries *viz.* Pakhui Wildlife Sanctuary (West Kameng & East Kameng districts), Mehao Wildlife Sanctuary (West Siang district) and Namdapha National Park in Tirap district etc. in addition to Sessa Orchid Sanctuary in West Kameng district specially created for *in situ* conservation of sub-tropical orchid species. The physiography and other unique floristic features of the orchid Sanctuary have been discussed in detail by the authors elsewhere (Hegde 1984b, 1986, Hegde, Rao & Ahmed, 1991).

Besides conserving the wild orchids in species houses and sanctuaries, the rare and endangered species like *Arachnis clarkei, Cymbidium giganteum, C. grandiflorum, Dendrobium densiflorum, D. chrysotoxum, Paphiopedilum fairrieanum, P. venustum, Vanda coerulea, V. coerulescence* etc. are being produced in large number by adopting the modern Bio-technology *i.e.* Seed & Tissue culture at Orchid Research cum Development Centre, Tipi (Hegde 1991) with a view to re-introducing inside the sanctuaries and other commercial purposes.

Based on the herbarium collection and field experience, germplasm collection has been done and about 66 species of Arunachal Pradesh are listed as commercially important because of their ornamental flowers (Hegde, 1987a).

Consultation of herbarium specimens deposited by various botanists and plant collectors at Orchid Herbarium Tipi (OHT). ASSAM, CAL, ARUN and Van Vigyan Kendra, Chessa has revealed that there are about 450 species of orchids reported so far from Arunacahal Pradesh. Out of them about 422 species are represented at OHT, while the remaining species are deposited in various other herbaria mentioned above.

Besides knowing the total number of species, the herbarium also helps to know the habitat ecology, distributional zone of every individual species based on the data label fixed on the herbarium sheet. During a critical study on orchid flora of Arunachal Pradesh, herbarium consultation in various herbaria mentioned above has revealed that about 100 species are found in Tropical zone (upto 900m), about 120 species in subtropical zone (900-1800) about 20 species in Temperate zone (1800-2500m) and others overlapping with each other in Arunachal Pradesh (Hegde, 1984, A. N. Rao, 1986). Similarly, when the distribution pattern of species is studied it is seen that Arunachal Pradesh shows close affinity with Sikkim Himalayas and Thailand in having maximum species distribution in common.

Table-I : List of species represented in the orchid Herbarium, TIPI

Sl. No.	Name of the species
1.	*Acampe ochracea* (Lindl.) Hochr.
2.	*A. papillosa* (Lindl.) Lindl.
3.	*A. rigida* (Buch.-Ham. ex J. E. Smith) P.F. Hunt
4.	*Acanthephippium striatum* Lindl.
5.	*A. sylhetense* Lindl.
6.	*Aerides multiflorum* Roxb.
7.	*A. odoratum* Lour.

Sl. No.	Name of the species
8.	*A. rosea* Lodd. ex Lindl.
9.	*Acrochaene punctata* Lindl.
10.	*Agrostophyllum brevipes* King & Pantl.
11.	*A. callosum* Reichb. f.
12.	*Agrostophyllum* sp.
13.	*Anoectochilus abbreviatus* (Lindl.) Karthik.
14.	*A. elwesii* (Clarke ex Hook. f.) King & Pantl.
15.	*A. grandiflorus* Lindl.
16.	*A. lanceolatus* Lindl.
17.	*A. roxburghii* Lindley var. *regalis*
18.	*A. sikkimensis* King & Pantl.
19.	*Aphyllorchis montana* (Thw.) Reichb. f.
20.	*Apostasia odorata* Blume
21.	*A. wallichii* R. Br.
22.	*Arachnis cathcartii* (Lindl.) J. J. Smith
23.	*A. clarkei* Rolf.
24.	*A. labrosa* (Lindl. ex Paxt.) Reichb. f.
25.	*Arundina graminifolia* (D. Don) Hochr.
26.	*Biermania bimaculata* (King & Pantl.) King & Pantl.
*27.	*B. jainiana* Hegde & A. N. Rao.
28.	*Brachycorythis iantha* (Wight) Summerh.
29.	*B. obcordata* (Buch.-Ham. ex D. Don) Summerh.
30.	*Bulbophyllum affine* Lindl.
31.	*B. careyanum* (Hook. f.) Spr.
32.	*B. cauliflorum* Hook. f.
33.	*B. clarkeanum* King & Pantl.
34.	*B. helenae* (O. Ktze.) J. J. Smith
35.	*B. cornu-cervi* King & Pantl.
36.	*B. cylindraceum* Lindl.
37.	*B. delitescens* Hance
38.	*B. devangiriensis* Balakrishnan
39.	*B. elatum* (Hook. f.) J. J. Smith
40.	*B. emarginatum* (Finet) J. J. Smith
41.	*B. eublepharum* Reichb. f.
42.	*B. gamblei* (Hook. f.) Hook. f.
43.	*B. griffithii* (Lindl.) Reichb. f.
44.	*B. guttulatum* Wall. ex Hook. f.
45.	*B. hastatum* Tang. & Wang
46.	*B. hirtum* (J. E. Smith) Lindl.
47.	*B. khasianum* Griff.
48.	*B. macraei* (Lindl.) Reichb. f.
49.	*B. obrienianum* Rolfe
50.	*B. odoratissimum* (J. E. Smith) Lindl.
51.	*B. ornatissimum* (Reichb. f.) J. J. Smith
52.	*B. parviflorum* Par. & Reichb. f.
53.	*B. penicillium* Par. & Reichb. f.
54.	*B. piluliferum* King & Pantl.
55.	*B. polyrhizum* Lindl.
56.	*B. protractum* Hook. f.
57.	*B. pulchrum* (N..E. Brown) J. J. Smith.
58.	*B. reptans* (Lindl.) Lindl.
59.	*B. reptans* var. *subracemosa* Hook. f.
60.	*B. retusiusculum* Reichb. f.
61.	*B. sarcophyllum* var. *minor* (King & Pantl.) Hegde & A.N. Rao
62.	*B. scabratum* Reichb. f.
63.	*B. sikkimensis* (King & Pantl.) J. J. Smith
64.	*B. spathulatum* (Rolfe ex E. Cooper) Seidenf.
65.	*B. striatum* (Griff.) Reichb. f.
66.	*B. trichocephalum* (Schltr.) Tang & Wang
67.	*Bulbophyllum* sp.
68.	*Calanthe alismaefolia* Lindl.
69.	*C. biloba* Lindl.
70.	*C. chloroleuca* Lindl.
71.	*C. densiflora* Lindl.
72.	*C. mannii* Hook. f.
73.	*C. masuca* (D.Don) Lindl.
74.	*C. plantaginea* Lindl.
75.	*C. puberula* Lindl.
76.	*C. tricarinata* Lindl.
77.	*C. triplicata* (Willemet) Ames
78.	*Calanthe* sp.
79.	*C. subulata* Blume
80.	*Cheirostylis moniliformis* (Griff.) Seidenf.
81.	*C. sessanica* A. N. Rao
82.	*C. tippica* A.N. Rao
83.	*C. munnacampensis* A. N. Rao
84.	*Cephalanthera damasonium* (Mill.) Druce
85.	*Chiloschista lunifera* (Reichb. f.) J. J. Smith
86.	*Cleisostoma appendiculatum* (Lindl.) Benth. & Hook. f. ex Jackson
87.	*C. discolor* Lindl.
88.	*C. paniculatum* (Ker.-Gawl.) Garay
89.	*C. racemiferum* (Lindl.). Garay
90.	*C. sagittiformae* Garay
91.	*C. simondii* (Gangnep.) Seidenf.
92.	*C. subulatum* Blume
*93.	*C. tricallosum* Hegde & A. N. Rao
94.	*C. williamsonii* (Reichb. f.) Garay
95.	*Coelogyne barbata* Griff.
96.	*C. corymbosa* Lindl.
97.	*C. fimbriata* Lindl.
98.	*C. flaccida* Lindl.
99.	*C. flavida* Wall. ex Lindl.
100.	*C. fuscescens* Lindl.
101.	*Coelogyne griffithii* Hook. f.
102.	*C. longipes* Lindl.
103.	*C. nitida* (Wall. ex D. Don) Lindl.

Sl. No.	Name of the species
104.	*C. occultata* Hook. f.
105.	*C. ovalis* Lindl.
106.	*C. prolifera* Lindl.
107.	*C. punctulata* Lindl.
108.	*C. rigida* Par. & Reichb. f.
109.	*C. schultesii* Jain & Das
110.	*C. stricta* (D. Don) Schltr.
111.	*Coelogyne* sp.
112.	*Collabium assamicum* (Hook. f.) G. Seiden-faden
113.	*C. chinense* (Rolfe) Tang & Wang
114.	*Cottonia peduncularis* (Lindl.) Reichb. f.
115.	*Corymborkis veratrifolia* (Reinw.) Blume
116.	*Cryptochilus lutea* Lindl.
117.	*C. sanguineus* Wall.
118.	*Cymbidium aloifolium* (L.) Swartz
119.	*C. cyperifolium* Lindl.
120.	*C. dayanum* Reichb. f.
121.	*C. devonianum* Paxt.
122.	*C. eburneum* Lindl.
123.	*C. elegans* Lindl.
124.	*C. ensifolium* (L.) Swartz
125.	*C. iridioides* D. Don
126.	*C. hookerianum* Reichb. f.
127.	*C. lancifolium* Hook.
128.	*C. longifolium* D. Don
129.	*C. macrorhizon* Lindl.
130.	*C. mastersii* Griff. ex. Lindl.
131.	*C. pendulum* Sw.
132.	*Dendrobium acinciforme* Roxb.
133.	*D. aduncum* Wall.
134.	*D. anceps* Swartz
135.	*D. aphyllum* (Roxb.) C.E.C. Fioscher
136.	*D. bicameratum* Lindl.
137.	*D. candidum* Lindl.
138.	*D. cathcartii* Hook. f.
139.	*D. chrysanthum* Lindl.
140.	*D. chrysotoxum* Lindl.
141.	*D. cumulatum* Lindl.
142.	*D. densiflorum* Wall. ex Lindl.
143.	*D. denudans* D. Don
144.	*D. devonianum* Paxt.
145.	*D. erieflorum* Griff.
146.	*D. falconeri* Hook.
147.	*D. farmeri* Paxt.
148.	*D. fimbriatum* var. *occultata* Hook.
149.	*D. formosum* Roxb. ex. Lindl.
150.	*D. gibsonii* Lindl.
151.	*D. hookerianum* Lindl.
152.	*D. jenkinsii* Wall. ex Lindl.
153.	*D. kentrophyllum* Hook. f.
154.	*D. lindleyii* Steud.
155.	*D. lituiflorum* Lindl.
156.	*D. longicornu* Lindl.
157.	*D. macrostachyum* Lindl.
158.	*D. mannii* Ridl.
159.	*D. moschatum* Swartz
160.	*D. nobile* Lindl. var. *Schroederianum*
161.	*D. pauciflorum* King & Pantl.
162.	*D. primulinum* Lindl.
163.	*D. stuposum* Lindl.
164.	*D. sulcatum* Lindl.
165.	*D. terminale* Par. & Reichb. f.
166.	*D. transparens* Lindl.
167.	*D. wardianum* Warner
168.	*Didymoplexis pallens* Griff.
169.	*Diglyphosa latifolia* Blume
170.	*Diplomeris hirsuta* (Lindl.) Lindl.
171.	*Epigeneium amplum* (Lindl.) Summerh.
172.	*E. fuscescens* (Griff.) Summerh.
173.	*E. rotundatum* (Lindl.) Summerh.
174.	*Epipogium africanus* Schltr.
175.	*E. roseum* (D. Don) Lindl.
176.	*E. sessanum* Hegde & A. N. Rao.
177.	*Hebenasia latilabsis* Hk.f.
178.	*Eria acervata* Lindl.
179.	*E. amica* Reichb. f.
180.	*E. biflora* Griff.
181.	*E. bipunctata* Lindl.
182.	*E. bractescens* Lindl.
183.	*E. carinata* Gibs.
184.	*E. clausa* King & Pantl.
185.	*E. connata* Joseph, Hegde & Abbareddy
186.	*E. coronaria* (Lindl.) Reichb. f.
187.	*E. dasyphylla* Par. & Reichl. f.
188.	*E. excavata* Lindl.
189.	*E. ferrugenia* Lindl.
190.	*E. flava* Lindl.
191.	*E. lohitensis* A. N. Roa *et al.*
192.	*E. globulifera* Seidenf.
193.	*E. graminifolia* Lindl.
194.	*E. javanica* (Sw.) Blume
195.	*E pannea* Lindl.
196.	*E. paniculata* Lindl.
197.	*E. pudica* Ridl.
198.	*E. pumila* Lindl.
199.	*E. pusilla* (Griff.) Lindl.
200.	*E. rufinula* Reichb. f.
201.	*E. spicata* (D. Don) Hand-Mazz.

Sl. No.	Name of the species
202.	*E. stricta* Lindl.
203.	*E. vittata* Lindl.
204.	*Eria* sp.
205.	*Eulophia harmusjii* Duthie
206.	*E. zollingeri* (Reichb. f.) J. J. Smith
207.	*Flickingeria bancana* Hawkes
208.	*F. fugax* (Reichb. f.) Seidenf.
209.	*F. ritaeana* (King & Pantl.)
210.	*Flickingeria* sp.
211.	*Galeola falconeri* Hook. f.
212.	*G. javanica* (Blume) Benth. & Hook. f.
213.	*G. lindleyana* (Reichb. f.) Reichb. f.
214.	*G. nudifolia* Lour.
215.	*Gastrochilus acutifolius* (Lindl.) O. Ktze.
216.	*G. arunachalensis* A. N. Rao
217.	*G. calceolaris* (Buch. -Ham. ex J. E. Smith) D. Don
218.	*G. dasypogon* (J. E. Smith) O. Ktze.
219.	*G. distichus* (Lindl.) O. Ktze.
220.	*G. inconspicuus* (Hook. f.) O. Ktze.
221.	*G. intermedius* (Griff. ex Lindl.) O. Ktze.
*222.	*Gastrodia arunachalensis* S. N. Hegde & A. N. Rao
*223.	*G. mishmensis* A. N. Rao, Haridasan & Hegde
224.	*Geodorum densiflorum* (Lamk.) Schltr.
225.	*Goodyera foliosa* (Lindl.) Benth. ex Clarke
226.	*G. hispida* Lindl.
227.	*G. procera* (Wall. ex Ker-Gawl.) Hook.
228.	*G. recurva* Lindl.
229.	*G. schlectandaliana* Reichb. f.
230.	*G. vittata* Benth. ex Hook. f.
231.	*Goodyera* sp.
232.	*Habenaria arietina* Hook. f.
233.	*H. dentata* (Swartz) Schltr.
234.	*H. cumminsiana* King & Pantl.
235.	*H. ensifolia* Lindl.
236.	*H. longicorniculata* Grah
237.	*H. seshagiriana* A. N. Rao
238.	*H. stenopetala* var. *arietina*
239.	*H. stenopetala* Lindl.
240.	*Habenaria* sp.
241.	*Herminium josephii* Reichb. f.
242.	*H. lanceum* (Thunb. ex Swartz) J. Vuijk
*243.	*H. longilobatum* Hegde & A. N. Rao
244.	*Herminium* sp.
245.	*Herpysma longicaulis* Lindl.
246.	*Hetaeria rubens* (Lindl.) Benth. & Hook. f.
247.	*Katherinea navicularis* Balakr. & Choudhury
248.	*Kingidium deliciosum* (Reichb. f.) Sweet
249.	*K. taenialis* (Lindl.) P.F. Hunt.
250.	*Liparis bistriata* Par. & Reichb. f.
251.	*L. bituberculata* Lindl.
252.	*L. bootanensis* Griff.
253.	*L. caespitosa* (Thouars) Lindl.
254.	*L. compressa* Lindl.
255.	*L. cordifolia* Hook. f.
256.	*L. delicatula* Hook. f.
257.	*L. distans* Clarke
258.	*L. elliptica* Wight.
259.	*L. longipes* Lindl.
260.	*L. mannii* Reichb. f.
261.	*L. nervosa* (Thunb.) Lindl.
262.	*L. paradoxa* (Lindl.) Reichb. f.
263.	*L. perpusilla* Hook. f.
264.	*L. plantaginea* Lindl.
265.	*L. resupinata* Ridl.
266.	*L. stricklandiana* Reichb. f.
267.	*L. viridiflora* (Blume) Lindl.
268.	*L. wrayii* Hook. f.
269.	*Liparis* sp.
270.	*Luisia filiformis* Hook. f.
271.	*L. zeylanica* Lindl.
272.	*Malaxis accuminata* D. Don
273.	*M. accuminata* var. *biloba* Hook f.
274.	*M. aphylla* (King & Pantl.) Tang & Wang
275.	*M. josephiana* (Reichb. f.) O. Ktze.
276.	*M. khasiana* (Hook. f.) O. Ktze.
277.	*M. latifolia* J. E. Smith
278.	*M. muscifera* (Lindl.) O. Ktze.
279.	*Malaxis* sp.
280.	*Micropera mannii* (Hook. f.) Tang & Wang
281.	*M. obtusa* (Lindl.) Tang & Wang
282.	*Monomeria barbata* Lindl.
283.	*Neogyne gardneriana* (Lindl.) Reichb. f. ex Pfitz.
284.	*Nephelaphyllum sikkimensis* (Hook. f.) Karthik.
285.	*Nervilia infundibulifolia* Blatt. & McCann.
286.	*N. gammieana* (Hook. f.) Schltr.
287.	*N. juliana* (Roxb.) Schltr.
288.	*N. macroglossa* (Hook. f.) Schltr.
289.	*Oberonia acaulis* Griff.
290.	*O. anthropophora* Wall. ex Lindl.
291.	*O. auriculata* King & Pantl.
292.	*O. caulescens* Lindl.
293.	*O. falcata* King & Pantl.
294.	*O. iridifolia* Lindl.
295.	*O. caulescens* Lindl.
296.	*O. acaulis* Griff.
297.	*O. obcordata* Lindl.
298.	*O. recurva* Lindl.
299.	*O. pyrulifera* Lindl.

Sl. No.	Name of the species
300.	*O. rufilabris* Lindl.
301.	*O. obcordata* Lindl.
302.	*Oberonia* sp.
303.	*Oreorchis micrantha* Lindl.
304.	*Ornithochilus difformis* (Wall. ex. Lindl.) Schltr.
305.	*Otochilus albus* Lindl.
306.	*O. fuscus* Lindl.
307.	*O. porrectus* Lindl.
308.	*Otochilus* sp.
309.	*Pachystoma senile* (Lindl.) Reichb. f.
310.	*Panisea demissa* (D. Don) Pfitz.
311.	*P. tricallosa* Rolfe
312.	*Panisea* sp.
313.	*Paphiopedilum fairrieanum* (Lindl.) Stein
314.	*P. venustum* (Sims) Pfitz.; *P. villosum* (Lindl.) Stein.
315.	*Papilionanthe teres* (Roxb.) Schltr.
316.	*P. uniflora* (Lindl.) Garay
317.	*P. vandarum* (Reichb. f.) Garay
318.	*Pacteilis sussannae* (L.) Rafin.
319.	*Peristylus densus* (Lindl.) Santa. & Kap.
320.	*P. fallax* Lindl.
321.	*P. goodyeroides* (D. Don) Lindl.
322.	*P. prainii* (Hook. f.) Kranzl.
323.	*Peristylus* sp.
324.	*Phaius flavus* (Blume) Lindl.
325.	*P. mishmensis* Reichb. f.
326.	*P. tancarvilleae* (Banks ex L'Herit) Blume
327.	*Phalaenopsis mannii* Reichb. f.
328.	*P. parishii* Reichb. f.
329.	*Pholidota articulata* Lindl.
330.	*P. convallariae* (Reichb. f.) Hook. f.
331.	*P. imbricata* (Roxb.) Lindl.
332.	*P. undulata* Lindl.
333.	*Pholidota* sp.
334.	*Phreatia elegans* Lindl.
335.	*Platanthera leptocaulon* (Hook. f.) Soo.
336.	*P. stenantha* (Hook. f.) Soo.
337.	*Platanthera* sp.
338.	*Pleione hookeriana* (Lindl.) William.
339.	*P. humilis* (J. E. Smith) D. Don.
340.	*P. praecox* (J. E. Smith) D. Don
341.	*Podochilus khasianus* Hook. f.
342.	*Pomatocalpa armigerum* (King & Pantl.) Tang & Wang.
343.	*P. undulatum* (Reichb. f.) J. J. Smith
344.	*P. wendlandorum* (Reichb. f.) J. J. Smith
345.	*Pteroceras suaveolens* (Roxb.) Holtt.
346.	*Renanthera imschootiana* Rolfe
347.	*Rhyncostylis retusa* (L.) Blume
348.	*Robiuetia spathulata* (Blume) J. J. Smith
349.	*Robiquetia succisa* (Lindl.) Seidenf. & Garay
350.	*Saccolabiopsis pusilla* (Lindl.) Seidenf. & Garay
351.	*Cleisocentron trichromum* (Reichb. f.) Bruhl.
352.	*Sarcoglyphis arunachalensis* A. N. Rao
353.	*Satyrium ciliatum* Lindl.
354.	*S. nepalense* D. Don
355.	*Schoenorchis gemmata* (Lindl.) J. J. Smith
356.	*Smitinandia micrantha* (Lindl.) Holtt.
357.	*Spathoglotis ixioides* (D.Don) Lindl.
358.	*S. pubescens* Lindl.
359.	*Spiranthes sinesnse* (Pers.) Ames
360.	*Vandopsis undulata* (Lindl.) J. J. Smith
361.	*Stereochilus hirtus* Lindl.
362.	*Stereosandra javanica* Blume
363.	*Sunipia andersonii* (King & Pantl.) P. F. Hunt.
364.	*S. candida* (Lindl.) P. F. Hunt.
365.	*S. intermedia* (King & Pantl.) P. F. Hunt.
366.	*S. jainii* Hynniewta & Malhotra.
367.	*S. racemosa* (J. E. Smith) Tang & Wang
368.	*S. seariosa* Lindl.
369.	*Tainia hookeriana* King & Pantl.
370.	*T. latifolia* (Lindl.) Benth.
371.	*T. wrayana* (Hook. f.) J. J. Smith
372.	*Tainia* sp.
373.	*Thelasis khasiana* Hook. f.
374.	*T. longifolia* Hook. f.
375.	*Thelasis* sp.
376.	*Thrixspermum centipeda* Lour.
377.	*T. pygmaeum* (King & Pantl.) Holtt.
378.	*Thrixspermum* sp.
379.	*Thunia alba* Reichb. f.
380.	*Trichotosia velutina* Kranzl.
381.	*Tropidia angulosa* Blume
382.	*T. curculigoides* Lindl.
383.	*Tylostylis discolor* Hook. f.
384.	*Uncifera acutifolia*
385.	*U. obtusifolia* Lindl.
386.	*Unifera* sp.
387.	*Vanda alpina* Lindl.
388.	*V. coerulea* Lindl.
389.	*V. cristata* Lindl.
390.	*V. pumila* Hook. f.
391.	*V. stangeana* Reichb. f.
392.	*Vanda* sp.
393.	*Zeuxine flava* Trim.
394.	*Z. goodycerodies* Lindl.
395.	*Z. lindleyana* A. N. Rao
396.	*Z. longilabris* Trim.

Sl. No.	Name of the species
397.	*Z. strateumatica* Schltr.
398.	*Zeuxine* sp.

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