

PTERIDOPHYTIC FLORA OF DARRANG DISTRICT, ASSAM

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ABSTRACT

The present paper deals with first-hand information on the pteridophytic flora of Darrang district of Assam. Altogether 78 spp., belonging to 45 genera have been reported. Each species is appended with relevant field data.

INTRODUCTION

Darrang district was reorganised in the year 1983 by carving out of the Mangaldai sub-division of the erstwhile Darrang district of Assam. It lies between 26° 21' - 26° 57' N latitude and 91° 24' - 92° 40' E longitude covering an area of 3,465 sq. km., and bounded by the Himalayan Hill range in Arunachal Pradesh and in Bhutan on the north and by the river Brahmaputra on the south.

Physiographically the district occupies mostly low-lying alluvial plains with the altitude varying from 50 m to 750 m. The district is dissected by several rivers and their tributaries originating from the Himalayan ranges on the north. The Brahmaputra itself has innumerable braided channels in the district and at places it is 10 km wide containing extensive riverine islands. During the monsoon months the water overflows the nominal banks of the rivers and inundate most of the plain areas.

The climate is warm and humid. The district falls within a range of rain shadow zone and experiences heavy rainfall. The average annual rainfall is 158.54 cm and holds relative humidity ranging from 42 to 90 per cent throughout the year. Maximum mean temperature rises up to 38° c in the summer months and the minimum mean temperature is around 7° c in the months of December-January (Anonymous, 1990).

PREVIOUS WORKS ON PTERIDOPHYTIC
FLORA OF NORTH-EASTERN INDIA
AND IN THE AREA OF WORK

North-eastern India is one of the richest and interesting botanical regions of the Indian subcontinent, but still remains as one of the botanically incompletely known area in India. This is more true for the Pteridophytes. Except the works of Baishya and Rao (1982) on ferns and fern - allies of Meghalaya state, Jamir and Rao (1988) on ferns of Nagaland and a couple of papers (Kachroo 1953, 1975; Panigrahi 1960; Panigrahi and Patnaik 1968; Ghosh and Biswas 1977; Handique and Konger 1986 and Barua *et al.* 1989) no systematic account has appeared on this group. The only available flora by Kanjilal *et al.* (1934-40) of this region is far from completion as it deals mostly with tree species and completely excluded monocots (except Poaceae) and Pteridophytes. During the last decade a few works on the flora of this region have appeared (Balakrishnan 1981, 1983; Deb 1981, 1983; Joseph 1982; Haridasan and Rao 1985, 1987), but in none of these works (except Deb 1981, 1983) Pteridophytes have been included.

Except for a few occasional reference by Kachroo (1953, 1975) there is a complete lack of contribution on Pteridophytic flora of Darrang district, and the same is attempted here.

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PRESENT STUDY ON THE PTERIDOPHYTIC FLORA AND VEGETATION

Approximately two-thirds of the total geographical area of Darrang district is occupied by paddy fields and non-productive low-lying areas. The general vegetation of the district can be studied mainly under tropical rain forests along the Indo-Bhutan boundary. This includes mainly semi-evergreen and mixed-deciduous types of forests. Riparian grass-lands are widely spread over the river banks and are the most conspicuous feature in the vegetation types of the district. There is yet another type of vegetation mostly along the river banks and road-sides, this includes the Social Forestry Plantation of timber yielding tree species done by the Forest and Irrigation departments. These plantations are widely spread over the areas and became naturalised in the local flora and vegetation of the district.

The Pteridophytic vegetation can be studied mainly under the terrestrial and epiphytic forms with respect to the above forest types. In case of the riparian grass-lands, the fern flora is rather poor. *Diplazium esculentum* *Sphaerostephanos unitus*

Pteridium aquilinum association forms a conspicuous ground vegetation along road-side, railway tract side and along the banks of ponds and puddles, throughout the district. Gregarious growth of *Stenochlaena palustris* covering the bole of *Alstonia scholaris* (L.) R.Br., *Spondias pinnata* (L.f.) Kurz and other soft wooded angiospermic trees amidst bamboo thickets is yet another prominent feature. Among the epiphytic forms, *Drymoglossum piloselloides* and *Pyrrosia lanceolata*, creep up profusely on the tree trunks and branches of *Mangifera indica* L., *Ficus religiosa* L. and other common avenue trees.

However, the fern flora is quite rich and diverse in semi-evergreen forest patches along the Indo-Bhutan boundary and the foot hill regions of Arunachal Pradesh. Along with many angiospermic species, different species of *Selaginella*, *Pteris* and *Thalypteridaceae* are very common. In moist and shady conditions inside these forests, sporadic growth of *Angiopteris evecta*, *Microlepia speluncae* and *Ampelopteris prolifera* are common. In the open

hill slopes however, *Lygodium flexuosum*, *L. japonicum* are the common twiners over *Eupatorium* bushes and *Dicranopteris linearis* var. *altissima* and *Pteridium aquilinum* making dense thickets to form ground vegetation. *Lycopodium japonicum* and *Palhinhaea cernua* takes the opportunity to creep widely below the herbaceous bushes.

The number of species in epiphytic forms is apparently less but their frequency is so high that almost each of the trees provide habitat for growth of *Asplenium nidus*, *Drynaria quercifolia* and *Pseudodrynaria coronans*. However, few other Polypodiaceous species like *Pyrrosia*, *Microsorium* etc. and *Phlegmariurus phlegmaria*, *Vittaria flexuosa* are also not uncommon epiphytes.

Besides the above, there is a considerable aquatic flora too. The numerous pools and puddles in different areas of the district harbour floating *Azolla pinnata* and *Salvinia* spp, along with other aquatic angiosperms. *Marsilea minuta* and *Ceratopteris thalictroides* are the important sub-aquatic elements in the Pteridophytic flora of the district.

MATERIALS AND METHODS

The present work is based on collections made regularly during 1991-1993 by one of the authors (PD) from several localities in different parts of the district.

In the following enumeration of species, the arrangement of the families is broadly according to the system of Pichi Sermolli (1977, 1982) with slight modification of Ching (1978) and Nayar (1970). However, in determining names of the taxa and other related aspects, reference has also been made to Beddome (1883, 1892), Clarke (1880), Copeland (1947) and Holttum (1954). The genera and species under each family are arranged alphabetically.

Brief remarks have been provided for each taxon on habitat, life form and distribution. The specimens are deposited in the herbarium of Gauhati University.

ANALYSIS OF THE FLORA

The present account comprises of 78 species belonging to 35 families and 45 genera including

fern-allies. Out of these, 18 species are epiphytes, 53 species are terrestrials, 2 species rupestrials and 5 are marshy plants.

The present study also shows that Polypodiaceae with 6 genera and 13 spp. is the largest family in the district, which is also incidentally the largest family in north-eastern India (Mehra & Bir 1964; Baishya & Rao 1982; Jamir & Rao 1988). This is followed by Pteridaceae and Thelypteridaceae with 2 genera and 9 spp., and 6 genera and 8 spp. respectively. Among the ferns by far the largest genera recorded in the district are *Pteris*, which is represented by 8 spp., followed by *Pyrrosia* and *Adiantum* each with 5 and 4 spp. respectively. Selaginellaceae represented by 5 spp. of the genus *Selaginella* is the largest family among the fern-allies of the area.

A perusal of literature reveals that of all the taxa recorded in the present study, *Drynaria sparsisora* is restricted only to north-eastern region of India, being known from Sri Lanka and Malay Peninsula; *Salvinia cucullata* to eastern India and known from Western Australia; *Sphaerostephanos penniger* to eastern India and known from Sri Lanka and Bangladesh; *Acystopteris tenuisecta* to Sikkim and known from China, Japan and Java; *Tectaria variolosa* to East Bengal Plains and Assam and known from Myanmar, Formosa and Bangladesh; *Pteris grevilleana* to eastern India and known from Bangladesh, Myanmar, Malay Peninsula, Borneo and Singapore; and *Lygodium salicifolium* to eastern India and known from Siam, China, Formosa, Malay Peninsula and New Guinea. Moreover, *Angiopteris evecta* and *Helminthostachys zeylanica* are accorded with the status of rare species (Jain & Sastry 1980).

Many of the species recorded in the present study are also known for their medicinal and/or other uses in literature (Anonymous 1948-1976, 1985, 1988; Chopra *et al.* 1956, 1958, 1969; Dixit & Bhatt 1974; Dixit 1975; Dixit *et al.* 1978; Ambasta 1986; Rastogi & Mehrotra 1990, 1991, 1993; Jain 1991; Asolkar *et al.* 1992; Jain & De Philipps 1992). *Adiantum capillus-veneris*, *A. caudatum*, *A. philippense*, *A. venustum*, *Ampelopteris prolifera*,

Asplenium nidus, *Blechnum orientale*, *Ceratopteris thalictroides*, *Cheilanthes farinosa*, *C. tenuifolia*, *Dicranopteris linearis*, *Drynaria quercifolia*, *Equisetum diffusum*, *E. ramosissimum* subsp. *debile*, *Helminthostachys zeylanica*, *Hypolepis punctata*, *Lycopodium japonicum*, *Lygodium flexuosum*, *L. japonicum*, *Marsilea minuta*, *Nephrolepis biserrata*, *N. cordifolia*, *Onychium japonicum*, *O. siliculosum*, *Palhinhaea cernua*, *Pityrogramma calomelanos*, *Pteridium aquilinum*, *Pteris ensiformis*, *Selaginella involvens* and *Sphenomeris chinensis* are known for their therapeutic value. Similarly, tender fronds of *Ampelopteris prolifera*, *Ceratopteris thalictroides*, *Diplazium esculentum*, *Lygodium flexuosum*, *Pteridium aquilinum*, *Pteris ensiformis* and *Stenochlaena palustris*, leaves and sprouts of *Marsilea minuta*, and founts and rhizome of *Helminthostachys zeylanica* are eaten as vegetable. Rhizome of *Blechnum orientale* and *Pteridium aquilinum*, tuber of *Nephrolepis cordifolia* and stem of *Angiopteris evecta* are also eaten cooked. Alcoholic drinks are made also from rhizomes of *Pteridium aquilinum* and stems of *Angiopteris evecta*. Moreover, *Onychium japonicum*, *Adiantum caudatum*, *A. capillus-veneris*, *A. philippense*, *Microsorium membranaceum*, *M. punctatum* and *Pityrogramma calomelanos*, which is a native of Tropical America, are cultivated as ornamental pot plants.

ENUMERATION

HUPERZIACEAE

Phlegmariurus phlegmaria (L.) Sen et Sen, Fern Gaz. 11 (6) : 421. f. 4 a - j. 1978.

Epiphytes; tufted sporophytes, dropping, strobili branched and slender. Rare; Tangla, 41; Bhutiachang, 306.

LYCOPODIACEAE

Lycopodium japonicum Thunb. Fl. Jap. 341. 1784.

Terrestrials; one of the most common wide trailing sporophytes in open hill-slopes. Kurua hills, 69; Bornadi forest, 112.

Palhinhaea cernua (L.) Franco. et Vasc. in Vasc. et Franco. Bol. Soc. Broter. ser. 2. 41: 25. 1967.

Terrestrials; wide trailing sporophytes forming

ground vegetation in shady hill-slopes. Common; Bandarguri, 906; Orang forest, 609.

SELAGINELLACEAE

Selaginella helferi Warb, Monsunia 1: 107. 121. 1900.

Terrestrials; irregularly branched trailing sporophytes. Common; Bhebarghat, 3.

S. involens (Sw.) Spring, Bull. Acad. Brux. 10: 136. 1843.

Terrestrials; erect sporophytes with spreading branches. Common; Bhebarghat, 24; Bhairabkunda, 257.

S. repanda (Desv. et Poir.) Spring, Gaud. Voy. Bonite Bot. 1:329. 1846.

Terrestrials; slender, branched, procumbent sporophytes. Frequent on moss covered rocky surfaces; Bhebarghat, 15; Khalingduar, 235.

S. semicordata (Wall. ex Hook. et Grev.) Spring, Mart. F1. Bras. 1 (2): 122. 1840.

Terrestrials sporophytes. Frequent in moist and shady places along streams inside forests; Rowta forest, 124.

S. wallichii (Hook. et Grev.) Spring, Mart. F1. Bras. 1 (2): 124. 1840.

Terrestrials; prostrate sporophytes with spreading lateral branches. Common along open hill-slopes; Bhairabkunda 259.

EQUISETACEAE

Equisetum diffusum D. Don, Prod. F1. Nepal. 19. 1825.

Terrestrials; erect sporophytes with greenish brown strobili. Very common, forming dense patches along sandy river banks; Orang forest, 610; Bhairabkunda, 260.

E. ramosissimum Desf. subsp. **debile** (Roxb. ex Vauch.) Hauke. Amer. Fern J. 52 : 33. 1962.

Similar habitats and life-form of the above species. Common; Kurua hills, 70 ; Rowta forest, 125.

HELMINTHOSTACHYACEAE

Helminthostachys zeylanica (L.) Hook. Gen. Fil. t. 47. 1840.

Erect terrestrials with palmate sterile lamina. Very common in moist and shady forests; Deomarnai, 31; Bandarguri, 910.

Ophioglossum reticulatum L. Sp. Pl. 2 : 1063. 1753.

Terrestrials; erect, sheathaceous sporophytes with solitary sterile lamina. Frequent on shady habitats; Bhebarghat, 35.

ANGIOPTERIDACEAE

Angiopteris evecta (Forst.) Hoffm. Comm. Soc. Reg. Gott. 12: 29. t. 5. 1793-94.

Robust terrestrials with large spreading lamina. Gregarious, in moist and shady forest floor; Rowta forest, 775; Bhairabkunda, 261.

Dicranopteris linearis (Burm. f.) Underw. var. **altissima** Holtt. Reinw. 4: 276. 1957.

Perennial terrestrials. Very common in open forests and in forest cleared areas forming dense thickets; Kurua hills, 25.

POLYPODIACEAE

Drymoglossum heterophyllum (L.) Trimen, J. Linn. Soc. Bot. 24: 152. 1887.

Epiphytes with dimorphic fronds. Frequent, on tree trunks in exposed places; Siphajhar, 40.

D. piloselloides Presl, Tent. Pterid. 227. 1836.

One of the commonest epiphytes, creeping densely over tree trunks in all situations. Orangjuli, 571; Bechimari, 590.

Goniophlebium amoenum (Wall. ex Mett.) J. Sm. in Hook. Gen. Fil. t. 51. 1840.

Epiphytes as well as terrestrials on humus rich situation inside forests. Common ; Dimakuchi, 426.

Leptochilus axillaris (Cav.) Kaulf. Enum. Fil. 147. t. 1. f. 10. 1824.

Terrestrials but slender rhizome creeping high up on host plants; fronds dimorphic with linear and slender fertile lamina. Common; in shady forest floor; Paneri, 454; Bengbari, 478.

Microsorium cuspidatum (D. Don) Tagawa in Hara's Fl. East Himalaya 495. 1966.

Epiphytes with fleshy, creeping rhizome; fronds pinnate. Common inside evergreen forests; Rowta forest, 126.

M. membranaceum (D. Don) Ching, Bull. Fan. Mem. Inst. Biol. 4.: 309. 1933.

Epiphytes as well as terrestrials; lamina membranaceous with raised veins. Common in humus rich shady areas; Orang forest, 611.

M. punctatum (L.) Copel. Orient. Gen. Polyp. in Univ. Calif. Publ. Bot. 16: 110. 1926.

Epiphytes with fleshy lamina. Common in moist shady places on tree-trunks or on humus and moss covered rocks; Bhebarghat, 37.

Pseudodrynaria coronans (Wall. ex Mett.) Ching, Sunyat. 6: 10. 1941.

One of the most common epiphytes with sterile and fertile lamina fused together. Bhebarghat, 6; Kaupati, 810.

Pyrrosia adnascens (Sw.) Ching, Bull. Chin. Bot. Soc. 1 : 45. 1935.

Epiphytes with dimorphic fronds. Common on tree-trunks in open places; Sipajhar, 39.

P. beddomeana (Gies.) Ching, Bull. Chin. Bot. Soc. 1:68. 1935.

Epiphytes; Common in shady forests. Nilbari, 837.

P. heteracta (Mett. ex Kuhn) Ching, Bull. Chin. Bot. Soc. 1: 57. 1935.

Epiphytes; wiry rhizome forming mat over tree-trunks. Very common; Harisinga, 858; Bechimari, 591.

P. lanceolata (L.) Farwell, Amer. Midl. Nat. 12: 245. 1931.

Epiphytes; lamina densely woolly tomentose. Common; Champangoan, 760.

P. mollis (Kunze) Ching, Bull. Bot. Soc. 1:55. 1935.

Epiphytes; lamina with pitted hydathodes on upper surface. Very common; Kalikhula, 731.

DRYNARIACEAE

Drynaria quericifolia (L.) J. Sm. in Hook. J. Bot. 3: 398. 1841.

Epiphytes; fronds dimorphic, sterile fronds appearing dry on maturity. Very common; Bhebarghat, 47; Orang forest, 612.

D. sparsisora (Desv.) Moore, Ind. Fil. 348. 1857.

Epiphytes; fronds dimorphic, sterile frond green and leathery. Very common on exposed tree-trunks; Batabari, 712; Bhalukmari, 759.

LYGODIACEAE

Lygodium flexuosum (L.) Sw. Schrad. J. Bot. 1800 (2): 106. 1801.

Terrestrial twiners. Very common in open hill-slopes; Kurua hills, 29.

L. japonicum (Thunb.) Sw. Schrad. J. Bot. 1800 (2): 106. 1801.

Terrestrial twiners. Common along forest edges; Bhebarghat, 4.

L. salicifolium Presl, Suppl. Tent. Pterid. 102. 1845.

Terrestrial twiners. Common in open places; Kurua hills 30; Orangjuli, 572.

CHEILANTHACEAE

Cheilanthes farinosa (Forsk.) Kaulf. Enum. Fil. 212. 1824.

Lithophytes; tufted fronds with slender stipes, lamina with white powdery indumentum beneath. Common near ravines and on rock crevices; Bhairabkunda, 262.

C. tenuifolia (Burm. f.) Sw. Syn. Fil. 129, 332. 1806.

Lithophytes with dimorphic fronds. Common in moist and shady rock crevices; Bhebarghat, 21.

CRYPTOGRAMMACEAE

Onychium japonicum (Thunb.) Kunze, Bot. Zeit. 6: 507. 1848.

Terrestrials with creeping rhizome. Very common in open dry places; Tangla, 13; Sipajhar, 96.

O. siliculosum (Desv.) C. Chr. Ind. Fil. 468. 1906.
Terrestrials with ascending rhizome. Common in

open dry places; Tangla, 42; Rowta forest, 127.

PTERIDACEAE

Pteridium aquilinum (L.) Kuhn, Reis. 3 (3): 11. 1879.

Deep rooted terrestrials with wide creeping rhizome. Common forming thickets in hill-slopes and in open places; Barnadi forest, 113.

Pteris cretica L. Mant. Pl. 130. 1767.

Terrestrials; fronds dimorphic. Very common in dry forest floor; Kurua hills, 27.

P. ensiformis Burm. f. Fl. Ind. 230. 1768.

Terrestrials with dimorphic fronds. Common in moist and shady humus rich forest floor; Kurua hills, 28; Rowta forest, 128.

P. excelsa Gaud. Frey. Voy. Bot. 388. 1829.

Terrestrials. Common in open as well as in shady places; Bhebarghat, 11; Bandarguri, 911.

P. grevilleana Wall. ex Agardh. Rec. Sp. Gen. Pteridis 23. 1839.

Terrestrials; fronds dimorphic with pedately pinnate lamina. Rare; amongst dry rock boulders; Bhebarghat, 5; Bhairabkunda, 263.

P. quadriaurita Retz. Obs. Bot. 6:38. 1791.

Terrestrials with bipinnatifid fronds. Rare in moist shady places; Tangla, 44.

P. semipinnata L. Sp. Pl. 2: 1076. 1753.

Terrestrials with semipinnatifid fronds. Rare in moist shady places; Bhebarghat, 10; Nilbari, 838.

P. tripartita Sw. Schrad. J. Bot. 1800 (2): 67. 1801.

Terrestrials with tripartite fronds. Common in open places. And forest margins; Bhebarghat, 891; Deomarnai, 321.

P. vittata L. Sp. Pl. 2: 1074. 1753.

Terrestrials; tufted fronds with silky brown paleae. Common along road cuttings and rock crevices; Tangla, 17.

ADIANTACEAE

Adiantum capillus-veneris L. Sp. Pl. 2: 1096. 1753.

Terrestrial ferns with blackish brown stipes and

rachis. Common in shady habitats; Bhairabkunda, 236.

A. caudatum L. Mant. Pl. 308. 1771#

Terrestrials hairy fern with proliferating vegetative buds. Common in shady forest floor; Kurua hills, 26.

A. philippense L. Sp. Pl. 2: 1094. 1753.

Terrestrials with ascending, pinnate lamina. Very common along open hill-slopes; Bhebarghat, 9; Kurua hills, 81.

A. venustum D. Don, Prod. Fl. Nepal. 17. 1825.

Terrestrials. Common along forest edges; Rowta forest, 230.

HEMIONITIDACEAE

Pityrogramma calomelanos (L.) Link, Handb. Erken. Gew 3: 20. 1833.

Terrestrials tufted fern; lamina powdery white at maturity. Common in open places; Khairabari, 358.

VITTARIACEAE

Vittaria flexuosa Fee, 3 Mem. Foug. 16. 1851-52.

Epiphytes; lamina ribbon-like with marginal confluent sori. Common in shady areas; Orang, 613; Deomarnai, 1012.

PARKERIACEAE

Ceratopteris thalictroides (L.) Ad. Brongn. Bull. Sci. Soc. Philom. Paris 1821: 186. 1822.

Sub-aquatic fern with dimorphic fronds. Common in paddy fields and in shallow stagnant water bodies; Bhebarghat, 23.

MARSILEACEAE

Marsilea minuta L. Mant. Pl. 308. 1771.

Sub-aquatic fern with 4-foliate lamina. Common in paddy fields and shallow stagnant waters; Bhebarghat, 36; Sipajhar, 97.

DENNSTAEDTIACEAE

Microlepia speluncae (L.) Moore, Ind. Fil. 93. 1857.

Terrestrials with wide creeping, slender rhizomes. Very common inside forests; Deomarnai, 1013.

HYPOLEPIDACEAE

Hypolepis punctata (Thunb.) Mett. ex Kuhn, Fil. Afr. 120. 1868.

Terrestrials with long creeping rhizome. Very common in open places and along roadsides; Bhebarghat, 8.

LINDSAEACEAE

Sphenomeris chinensis (L.) Maxon, J. Wash. Acad. Sc. 3: 144. 1913.

Tufted terrestrials with decompound lamina. Common in open hill-slopes; Kurua hills, 71; Bhairabkunda, 237.

THELYPTERIDACEAE

Ampelopteris prolifera (Retz.) Copel. Gen. Fil. 144. 1947.

Terrestrials; main rachis proliferating at apex. Common along river banks; Bhebarghat, 14; Tangla, 147.

Christella parasitica (L.) Lev. Fl. Kouy-tescheon 475. 1915.

Terrestrials with short creeping rhizomes. Common in moist and shady places; Bhebarghat, 12; Majbat, 1037.

C. zeylancia (Fee) Holtt. in Nayar et Kaur, Comp. to Bedd. Handb. 201. 1974.

Terrestrials with long creeping rhizomes. Common along river courses; Bhebarghat, 12; Kurua hills, 671.

Cyclosorus goggilodes (Schkuhr) Link, Hort. Berol. 2: 128. 1833.

Terrestrials; Very common in swampy areas; Sipajhar, 38.

Pronephrium nudatum (Roxb. ex Griff.) Holtt. Blumea 20 (1): 111. 1972.

Terrestrials with deep-rooted wide creeping rhizomes. Common along forest edges; Bhebarghat, 20; Orangjuli, 573.

Pseudocyclosorus tylodes (Kunze) Ching, Acta Phytotax. Sin. 8: 324. 1963.

Terrestrials; fronds with yellowish tubercles along stipes. Common along moist and shady places; Dalgaon, 978; Khairabari, 359.

Sphaerostephanos penniger (Hook.) Holtt. in Nayar et Kaur, Comp. to Bedd. Handb. 207. 1974.

Terrestrials; ventral base of pinnae with yellowish white aerophores. Common inside forests; Orang forest, 614; Barnadi, 114.

S. unites (L.) Holtt. in Nayar et Kaur, Comp. to Bedd. Handb. 206. 1974.

Terrestrials with creeping rhizomes. Very common forming thickets along roadsides and forest cleared areas; Bhebarghat, 22; Kalaigaon, 890.

ASPLENIACEAE

Asplenium nidus L. Sp. Pl. 2: 1079. 1753.

Epiphytes; lamina spirally arranged to rhizomes. Very common inside forests; Rowta forest, 231; Kurua hills, 1027.

Acystopteris tenuisecta (Bl.) Tagawa, Acta Phytotax. Geobot. 7:73. 1938.

Terrestrial tufted fern with pinnate fronds. Rare in moist and shady places; Kurua hills, 1; Bandarguri, 912.

Diplazium esculentum (Retz.) Sw. Schrad. J. Bot. 1801 (1): 321. 1803.

One of the most common terrestrials growing throughout the district. Bhebarghat, 2; Dalgaon, 979.

D. muricatum (Mett.) v.A.v.R. Malayan Ferns 829. 1909.

Terrestrials; fronds bipinnate to tripinnatifid. Rare on moist humus forest; Bhebarghat, 13; Bechimari, 592.

D. sylvaticum (Bory) Sw. Syn. Fil. 92. 1806.

Terrestrials; fronds simple pinnate. Common; Bhebarghat, 18; Orangjuli, 574.

ASPIDACEAE

Ctenitopsis fuscipes (Wall. ex Bedd.) Ching, Bull. Fan. Mem. Inst. Biol. 8: 313. 1938.

Terrestrials with dimorphic fronds. Common in moist, shady forest as well as along rivers and

streams; Dimakuchi, 549; Orang forest, 615.

Tectaria variolosa (Wall. ex Hook.) C. Chr. Contr. U.S. Nat. Herb. 26: 289. 1931.

Terrestrials with dimorphic fronds. Rare; in moist shady forest; Batabari, 713; Dumunichaki, 550.

NEPHROLEPIDACEAE

Nephrolepis biserrata (Sw.) Schott. Gen. Fil. t. 3. 1834.

Terrestrials; rhizomes stoloniferous. Cultivated as pot plants; Mangaldai, 371.

N. cordifolia (L.) Presl, Tent. Pterid. 79. 1836.

Terrestrials or on humus deposited tree-trunks; stolons producing tubers. Common inside forests as well as cultivated as pot plants; Bhebarghat, 16; Mangaldai, 372.

BLECHNACEAE

Blechnum orientale L. Sp. Pl. 2: 1077. 1753.

Tufted terrestrials. Common in open places; Tangla, 45.

STENOCHLAENACEAE

Stenochlaena palustris (Burm.) Bedd. Ferns Brit. India Suppl. 26. 1876.

Epiphytes with wide creeping rhizome and dimorphic fronds. Very common; densely covering tree trunks; Bhebarghat, 7; Bhutiachang, 307.

AZOLLACEAE

Azolla pinnata R. Br., Prodr. Fl. Nov. Holl. 167. 1810.

Floating aquatics appearing pinkish over stagnant waters. Very common; Deomarnai, 32.

SALVINIACEAE

Salvinia cucullata Roxb. ex Bory, Bel. Voy. Bot. 2:6. 1833.

Floating aquatics. Very common; Deomarnai, 33; Dalgaon, 799.

S. natans (L.) All. Fl. Pedem. 2:289. 1785.

Floating aquatics. Very common; Deomarnai, 34; Sipajhar, 97.

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