

Survey of ferns and fern allies from Kolli Hills, Eastern Ghats, Tamil Nadu

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Abstract

This paper deals with the survey of Pteridophytic plants that are prevalent in the Kolli Hills, South India and lists their botanical names, families, habitats and present status.

Keywords: cryptogams, Eastern Ghats, ferns, Kolli hills, Pteridophytes

INTRODUCTION

Pteridophytes are seedless spore bearing vascular cryptogams which occupy a position between the lower non-seed bearing and higher seed bearing plants and form a generally much neglected group of plants. About 250 millions years ago, they constituted the dominant vegetation on earth. However, they are now replaced by seed bearing plants in the modern day flora.

India has a rich population of Pteridophytes, most of the species appear in either the Himalayan region or in the South Indian mountains called the Western and Eastern Ghats. Most of the south Indian representatives of the Pteridophytes are found in the Western Ghats. The first Indian fern was described by Linnaeus and later amplified by Swertz floristic survey and taxonomical works began with British botanists, Beddome (1983) who played an important role in studying and surveying South Indian ferns.

Pteridophytes grow luxuriantly in moist, tropical and temperate forests. Out of 12,000 species of Pteridophytes that occur in the World flora, more than 1,000 species belonging to 70 families and 191 genera likely to occur in India (Dixit and Vohra, 1984). Out of 1,000 species of Pteridophytes occurring in India, 170 species have been found to be used as food, flavour, dye, medicine, bio-fertilizers, oil, fiber and bio-gas production (Manickam and Irudayaraj, 1992). The medicinal value of Pteridophytes against bacteria, fungi and virus, in treating cancer, rheumatism, diabetes, inflammation, fertility and their diuretic, pesticidal, hepatoprotective and sedative properties are well known.

Status of pteridophytic flora in India:

India, with a varied type of topography and climate is one of the richest regions of the world with regards to

ferns and fern allies. Fern flora occupies the forest floor, tree trunks and branches, and also in the niche of rock. The major floristic works previously done on South Indian ferns were by Beddome (1983), Manickam (1986), Manickam and Irudayaraj (1992) and Manickam and Ninan (1984). Beddome (1983) had recorded 211 species of fern from Southern India and Manickam (1986) had collected and recorded 140 species of ferns from the Palani hills. However, there is no information available on the current status of ferns especially with regard to the Eastern Ghats. The present paper documents the ferns and fern allies of Kolli hills in the Eastern Ghats, South India from a survey conducted from January 2006 to December 2006.

STUDY AREA

Kolli Hills is an isolated hill range of the discontinuous Eastern Ghats mountain system situated in the Namakkal district of Tamil Nadu. Kolli Hills on the western, eastern and southern sides rise abruptly from the plains and are thickly forested and are well known for its rich biological diversity. The Kolli hills is flanked by Namakkal Taluk on the north east and Trichy district in the east. The altitude ranges from 1000-1400 m rising to 1450 m at *Kuzhivalavu* (11 10 - 30 N and 75 15 - 30 E). *Kollimalai* called as *Chaturagiri* or Square hill, contains high rising peaks and ravines. Slopes are quite steep, forming several narrow and deep valleys and in some places rising abruptly from plains and generally steep near ridges.

Kolli hills is drained by two rivers, *Vasistha nadhi* and *Sweta nadhi*. *Sweta nadhi* originates from Kolli hills and drains the northern side of Salem district. *Vasistha nadhi* is called as *Pearar* and originates from the *Aranuttmalai*, turns eastwards and becomes an irrigation resource to Attur Taluk.

MATERIALS AND METHODS

In the present study an intensive survey was made over a period of 12 months from January 2006 to December

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2006. The field survey was made in the first week of every month in various places namely, *Solakkadu*, *Semmedu*, *Kuzhialavu shola*, *Nachiyar kovil*, *Arapallieswarar Kovil* and *Sengarai shola* of Kolli hills.

During the course of survey ferns and fern allies were collected and a herbarium of the collections was made. All the specimens were compared and identified with the Classification of Holttum (1949) and the standard herbarium available in St. Xavier's College, Palayamkottai, Tirunelveli, South India. The voucher specimens were kept and preserved in the Department

of Botany and Microbiology, A.V.V.M. Sri Pushpam College, Thanjavur District, Tamil Nadu, South India.

RESULTS AND DISCUSSION

In the present study 80 species of ferns and fern allies comprising 37 genera with 28 families have been collected and identified in different places of Kolli Hills (Table 1).

Distribution of ferns in the Kolli Hills showed a wide range of variations. Most of the ferns and fern allies have been frequently sighted inside the shola vegetation.

Table 1. List of ferns identified from the Kolli Hills, South India

S. No.	Genus	Species	Family	Habitat	Distribution Pattern
1.	<i>Hyperzia</i>	<i>phlegmaria</i>	Lycopodiaceae	-E-	-F-
2.	<i>Lycopodium</i>	<i>cernua</i>	Lycopodiaceae	-T-	-C-
3.	<i>Selaginella</i>	<i>wightii</i>	Selaginellaceae	-L-	-R-
4.	<i>Selaginella</i>	<i>radiata</i>	Selaginellaceae	-T-	-F-
5.	<i>Selaginella</i>	<i>tenera</i>	Selaginellaceae	-T-	-C-
6.	<i>Psilotum</i>	<i>nudum</i>	Psilotaceae	Ep&L	-R-
7.	<i>Ophioglossum</i>	<i>reticulatum</i>	Ophiogloseae	-T-	-R-
8.	<i>Botrychium</i>	<i>lanuginosum</i>	Ophiogloseae	-L-	-R-
9.	<i>Angiopteris</i>	<i>evecta</i>	Angiopteridaceae	-T-	-C-
10.	<i>Lygodium</i>	<i>microphyllum</i>	Schizaeaceae	-T-	-R-
11.	<i>Anemia</i>	<i>wightiana</i>	Schizaeaceae	-T-	-C-
12.	<i>Pteris</i>	<i>vitata</i>	Pteridaceae	-T-	-R-
13.	<i>Pteris</i>	<i>multiaurita</i>	Pteridaceae	-T-	-R-
14.	<i>Pteris</i>	<i>pellucida</i>	Pteridaceae	-T-	-C-
15.	<i>Pteris</i>	<i>cretica</i>	Pteridaceae	-T-	-F-
16.	<i>Pteris</i>	<i>biaurita</i>	Pteridaceae	-T-	-C-
17.	<i>Pteris</i>	<i>argyraea</i>	Pteridaceae	-T-	-C-
18.	<i>Pteris</i>	<i>confusa</i>	Pteridaceae	-T-	-C-
19.	<i>Actinopteris</i>	<i>radiata</i>	Actinopteridaceae	-T&L-	-C-
20.	<i>Doryopteris</i>	<i>concolor</i>	Sinopteridaceae	-T-	-C-
21.	<i>Pellaea</i>	<i>falcata</i>	Sinopteridaceae	-T-	-O-
22.	<i>Pellaea</i>	<i>boivini</i>	Sinopteridaceae	-L-	-F-
23.	<i>Cheilanthes</i>	<i>farinosa</i>	Sinopteridaceae	-L-	-C-
24.	<i>Cheilanthes</i>	<i>mysurensis</i>	Sinopteridaceae	-T-	-R-
25.	<i>Cheilanthes</i>	<i>tenuifolia</i>	Sinopteridaceae	-L&T-	-C-
26.	<i>Ceratopteris</i>	<i>thalictroides</i>	Parkeriaceae	-T-	-C-
27.	<i>Hemionitis</i>	<i>arifolia</i>	Hemionitidaceae	-T-	-C-
28.	<i>Pityrogramma</i>	<i>calemelonos</i>	Hemionitidaceae	-T-	-C-
29.	<i>Pityrogramma</i>	<i>calemelonos</i> var. <i>aureoflava</i>	Hemionitidaceae	-T-	-C-
30.	<i>Adiantum</i>	<i>incisum</i>	Adiantaceae	-T-	-C-
31.	<i>Adiantum</i>	<i>lunulatum</i>	Adiantaceae	-T-	-C-
32.	<i>Adiantum</i>	<i>raddianum</i>	Adiantaceae	-T,L-	-C-
33.	<i>Vittaria</i>	<i>elongata</i>	Vittariaceae	-E-	-C-
34.	<i>Antrophyum</i>	<i>plantagineum</i>	Vittariaceae	-E,L-	-R-
35.	<i>Pteridium</i>	<i>aquilinum</i>	Dennstaedtiaceae	-T-	-C-

S. No.	Genus	Species	Family	Habitat	Distribution Pattern
36.	<i>Microlepia</i>	<i>platyphylla</i>	Dennstaedtiaceae	-T-	-C-
37.	<i>Odontosoria</i>	<i>chinensis</i>	Lindsaeaceae	-T-	-C-
38.	<i>Lindsaea</i>	<i>encifolia</i>	Lindsaeaceae	-T-	-C-
39.	<i>Lindsaea</i>	<i>malabarica</i>	Lindsaeaceae	-T-	-R-
40.	<i>Lindsaea</i>	<i>heterophylla</i>	Lindsaeaceae	-T-	-C-
41.	<i>Leucostegia</i>	<i>immerse</i>		-E-	-C-
42.	<i>Araistegia</i>	<i>pulchra</i>	Davalliaceae	-T,L-	-C-
43.	<i>Nephrolepis</i>	<i>auriculata</i>	Olendraceae	-T-	-C-
44.	<i>Nephrolepis</i>	<i>multiflora</i>	Olendraceae	-T-	-R-
45.	<i>Hymenophyllum</i>	<i>denticulatum</i>	Hymenophyllaceae	-E,L-	-R-
46.	<i>Hymenophyllum</i>	<i>javanicum</i>	Hymenophyllaceae	-L-	-R-
47.	<i>Trichomanes</i>	<i>sexifragoides</i>	Hymenophyllaceae	-E,L-	-C-
48.	<i>Trichomanes</i>	<i>plicatum</i>	Hymenophyllaceae	-E-	-C-
49.	<i>Dicranopteris</i>	<i>linearis</i>	Gleicheniaceae	-T-	-C-
50.	<i>Cyathea</i>	<i>gigantea</i>	Cyatheaceae	-T-	-C-
51.	<i>Macrothelypteris</i>	<i>torresiana</i>	Thelypteridaceae	-T-	-C-
52.	<i>Pseudocyclosorus</i>	<i>tylodes</i>	Thelypteridaceae	-T-	-C-
53.	<i>Pseudocyclosorus</i>	<i>octothodes</i>	Thelypteridaceae	-T-	-C-
54.	<i>Sphaerostephanos</i>	<i>arbuscula</i>	Thelypteridaceae	-T-	-C-
55.	<i>Christella</i>	<i>parasitica</i>	Thelypteridaceae	-T-	-C-
56.	<i>Christella</i>	<i>dentata</i>	Thelypteridaceae	-T-	-C-
57.	<i>Asplenium</i>	<i>decrescens</i>	Aspleniaceae	-T-	-C-
58.	<i>Asplenium</i>	<i>indicum</i>	Aspleniaceae	-E,L-	-C-
59.	<i>Asplenium</i>	<i>inaequilaterale</i>	Aspleniaceae	-T-	-C-
60.	<i>Asplenium</i>	<i>lancinatum</i>	Aspleniaceae	-E,L-	-R-
61.	<i>Asplenium</i>	<i>aethiopicum</i>	Aspleniaceae	-T-	-C-
62.	<i>Athyrium</i>	<i>solenopteris</i>	Athyriaceae	-T-	-C-
63.	<i>Diplazium</i>	<i>esculentum</i>	Athyriaceae	-T-	-C-
64.	<i>Diplazium</i>	<i>polypodioides</i>	Athyriaceae	-T-	-C-
65.	<i>Tectaria</i>	<i>codunata</i>	Dryopteridaceae	-T-	-C-
66.	<i>Polystichum</i>	<i>molluccense</i>	Dryopteridaceae	-T-	-C-
67.	<i>Arachniodes</i>	<i>aristata</i>	Dryopteridaceae	-T-	-C-
68.	<i>Dryopteris</i>	<i>cochleata</i>	Dryopteridaceae	-T-	-C-
69.	<i>Dryopteris</i>	<i>sparsa</i>	Dryopteridaceae	-T-	-C-
70.	<i>Bolbitis x</i>	<i>prolifera</i>	Lomariopsidaceae	-T-	-C-
71.	<i>Blechnum</i>	<i>orientale</i>	Blechnaceae	-T-	-C-
72.	<i>Leptochillus</i>	<i>decurrans</i>	Polipodiaceae	-T-	-C-
73.	<i>Drynaria</i>	<i>quercifolia</i>	Polipodiaceae	-E,L-	-C-
74.	<i>Pyrrosia</i>	<i>lanceolata</i>	Polipodiaceae	-E,L-	-C-
75.	<i>Pyrrosia</i>	<i>porosa</i>	Polipodiaceae	-T-	-C-
76.	<i>Microsorium</i>	<i>punctatum</i>	Polipodiaceae	-E-	-C-
77.	<i>Pleopeltis</i>	<i>macrocarpa</i>	Polipodiaceae	-E,L-	-C-
78.	<i>Lepisorus</i>	<i>nidus</i>	Polipodiaceae	-E-	-C-
79.	<i>Marsilea</i>	<i>minuta</i>	Marsileaceae	-A,Sa-	-C-
80.	<i>Azolla</i>	<i>pinnata</i>	Azollaceae	-A-	-C-

Habitat : E, Ep- Epiphytic, Terrestrial T, L-Lithophyte

Distribution pattern : F - Frequent, C - Common, R - Rare

This may be explained that shola vegetation provides an ideal microclimatic condition in terms of lower temperature, higher percentage of humidity, frequent rainfall and the soil containing humus. It is a common fact, that during rainy season (March, April) all kinds of plants including ferns exhibited a luxurious growth in the community, since the ferns are highly sensitive to water.

During exploration, it was observed frequently that some of the ferns were having higher degree of association with some species. For eg., *Angiopteris* with *Cyathea*, *Drynaria* with *Asplenium*, *Blechnum* with *Dicranopteris*, *Selaginella* with *Hemionitis*. In Kolli Hills, *Selaginella tenera* and *Huperzia phlegmaria* an epiphytic fern showed their rare occurrence. This may be due to the habitat loss, over exploitation by local people for medicinal purposes and host specificity in the case of epiphytic ferns.

In Kolli Hills, several ferns such as *Drynaria*, *Selaginella*, *Huperzia*, etc., are being collected by the local people for the preparation of medicines to cure various diseases. Similarly the rhizome of *Angiopteris* and the stem of *Cyathea* are collected and kept in the pooja room. Every year many ferns and fern allies namely, *Adiantum*, *Dicranopteris* and *Pteris* sp. have been collected as study materials. So far as the distribution of ferns in the Kolli

Hills are concerned, *Huperzia*, *Selaginella*, *Ceratopteris* are very rare. Only few patches of *Dicranopteris* were observed along the road side. Many ferns and fern allies seem to be on the decline due to over exploitation and habitat disturbance in the Kolli Hills.

REFERENCES

- Beddome, R. H. 1983. *A Handbook to the ferns of British India, Ceylon and Malaya Peninsula* : Thacker Spink & Co. Calcutta.
- Dixit, R. D. and Vohra, J. N. 1984. *A Dictionary of the Pteridophytes of India, Bot. Sur. India.*, Kolkata.
- Holtum, R.E. 1949. The Classification of Ferns. *Biol. Rev.*, 24: 267 - 296.
- Manickam, V.S. and Ninan, C. A. 1984. *Ecological studies on the Fern Flora of the Palani hills (South India)*. Today and Tomorrow's Printers and Publishers. New Delhi.
- Manickam, V. S. 1986. *Ferns Flora of Palani hills (South India)*, Today and Tomorrow's Printers and Publishers, New Delhi.
- Manickam, V.S. and Irudayaraj, V. 1992. *Pteridophyte Flora of the Western Ghats South India*, B I Publications Pvt. Ltd., New Delhi.