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Research Article

SURVEY OF FERN AND FERN ALLIES FROM SITHERI HILLS EASTERN GHATS, TAMIL NADU, INDIA

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ABSTRACT

Sitheri Hills is a hill station in Dharmapuri District located in Tamil Nadu, India. This hills harbouring rich variety plants and animals. It is situated at an altitude of 1097.3m (3600ft). The Sitheri hills comprise various kinds of vegetations. Pteridophytes are the common group among the plant kingdom available along with angiosperms in considerable number in those hills. In this present study reports that 42 species of Pteridophytes which includes terrestrials, aquatic and epiphytic forms. *Psilotum nudum*, *Huperzia* sps, *Actiniopteris radiata*, etc are important species in this list. In this surveyed species most of them determined to rare limited in distribution. Therefore more habitat protection is suggested for conservation of fern flora in Sitheri hills.

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INTRODUCTION

Fern and Fern Allies are the natural group of plants in a major division of plant kingdom called the Pteridophytes. Pteridophytes, the non-flowering plants are the dominant group next to the flowering plants. They are distributed all over the world. Pteridophytes grow luxuriantly in moist, tropical and temperate forests. There are about 12,000 species of Pteridophytes that occur in the world flora. More than 1000 species belonging to 70 families and 191 genera to occur in India. (Dixit, 1984). 170 species have been found to be used as food. Flavour dye, medicine, biofertilizer, oil, fiber and biogas production. (Manickam and Irudayaraj, 1992), The medicinal value of pteridophytes against bacteria, fungi and viral pathogens and for the treatment of cancer, rheumatism, diabetes, inflammation, fertility and other diuretic, pesticidal, hepatoprotective and sedative properties are well known. Therefore, estimation of current status on the species richness along with their distribution pattern of the fern flora is most needed in sitheri hills to prepare management plan for such highly threatened pteridophytes. In light of this fact, the present study was carried out in sitheri hills to document pteridophytic flora.

MATERIALS AND METHODS

Study area

Sitheri is a hill station in Dharmapuri district located in Tamil Nadu, India. Sitheri hills are one of the segment of Eastern Ghats of Tamil Nadu, which comes Pappireddipatti taulk. It is situated at an altitude of 1097.3m (3600ft) above the sea level. Sitheri hills comprises various kinds of vegetation such as the evergreen, semi green, riparian, dry deciduous scrub and thorn scrub forests. The maximum and minimum temperature is 19^oc in winter and 40^oc in summer respectively. The average annual rainfall is 900mm attained from southwest and northeast monsoons. Topographically, the area is undulating with an altitude varying from 240 to 1260m. The total area of sitheri hills is found to be 400km².

Methods

In the present study, intensive surveys were made for three seasons such as summer (March-May), rainy (October-November) and winter (December- January). during the year 2014-2015. The field survey was made in various places Mariyankadu, Kalnadu. Nochikuttai, Kalasapadi, Kadukkapatti, Varattaru stream line, Jakkampatti, Nelamangkadi and Ghat road of Sitheri hills during the study period.

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The collected ferns were identified as per the keys of (Holltum, 1938) and conformed with the specimen of BSI, Yercaud and Coimbatore. The distribution level of the surveyed ferns and fern allies was determined on the basis of visual observations. Five point scale such as rare (1-20% of frequency), Seldom (21-40% frequency), Common (41-60% frequency), frequent (61-80% frequency) and very much frequent (81-100% frequency) were followed for denoting the distribution pattern (Braun Blanquet, 1932).

RESULT AND DISCUSSION

In the present investigations 44 species of fern and fern allies include 18 families have been collected and identified in different localities of sitheri hills. (Table 1). Distribution of these Species in sitheri hills showed remarkable ranges of variations and most of them have been found in 900 and 1200m above msl. It may be due to the presence of ideal microclimate conditions in terms of low temperature, frequent rainfall, high percentage of high humidity and shady soil with rich humus. It was further observed that some of the ferns were having high degree of spatial association between them. It may be explained that the preference of the most common microclimate conditions by these respective species can grouped them in the same habitats (Daubenmire, 1970).

Table 1 A list of fern and fern allies collected from sitheri hills

| S'No | Genus | Species | Family | Habit | Distribution pattern |
|------|----------------------|----------------------------------|-------------------|-------|----------------------|
| 1. | <i>Huperzia</i> | <i>phlegmaria</i> | Lycopodiaceae | -E- | -R- |
| 2. | <i>Selaginella</i> | <i>wightii</i> | Selaginellaceae | -L- | -R- |
| 3. | <i>Selaginella</i> | <i>involvens</i> | Selaginellaceae | -L- | -F- |
| 4. | <i>Selaginella</i> | <i>radicata</i> | Selaginellaceae | -T- | -S- |
| 5. | <i>Selaginella</i> | <i>tenera</i> | Selaginellaceae | -T- | -R- |
| 6. | <i>Psilotum</i> | <i>nudum</i> | Psilotaceae | -E- | -R- |
| 7. | <i>Pteris</i> | <i>multiaurita</i> | Pteridaceae | -T- | -F- |
| 8. | <i>Pteris</i> | <i>biaurita</i> | Pteridaceae | -T- | -S- |
| 9. | <i>Pteris</i> | <i>linearis</i> | Pteridaceae | -T- | -S- |
| 10. | <i>Actinopteris</i> | <i>radiata</i> | Actinoptreidaceae | -L- | -C- |
| 11. | <i>Cheilanthes</i> | <i>farinosa</i> | Sinopteridaceae | -L- | -S- |
| 12. | <i>Cheilanthes</i> | <i>mysurensis</i> | Sinopteridaceae | -L- | -S- |
| 13. | <i>Cheilanthes</i> | <i>tenusifolia</i> | Sinopteridaceae | -T- | -S- |
| 14. | <i>Doryopteris</i> | <i>concolor</i> | Sinopteridaceae | -T- | -S- |
| 15. | <i>Ceratopteris</i> | <i>thalictroides</i> | Parkeriaceae | -A- | -R- |
| 16. | <i>Hemionitis</i> | <i>arifolia</i> | Hemionitidaceae | -T&L- | -F- |
| 17. | <i>Adiantum</i> | <i>caudatum</i> | Adiantaceae | -T- | -S- |
| 18. | <i>Adiantum</i> | <i>lunulatum</i> | Adiantaceae | -T- | -R- |
| 19. | <i>Adiantum</i> | <i>raddianum</i> | Adiantaceae | -T- | -S- |
| 20. | <i>Adiantum</i> | <i>hispidulum</i> | Adiantaceae | -T- | -R- |
| 21. | <i>Adiantum</i> | <i>incisum</i> | Adiantaceae | -T&L- | -C- |
| 22. | <i>Nephrolepis</i> | <i>auriculata</i> | Oleandraceae | -T- | -S- |
| 23. | <i>Nephrolepis</i> | <i>multiflora</i> | Oleandraceae | -E- | -F- |
| 24. | <i>Hymenophyllum</i> | <i>denticulatum</i> | Hymenophyllaceae | -L- | -R- |
| 25. | <i>Hymenophyllum</i> | <i>javanicum</i> | Hymenophyllaceae | -L- | -R- |
| 26. | <i>Trichomanes</i> | <i>saxifragoides</i> | Hymenophyllaceae | -L- | -R- |
| 27. | <i>Trichomanes</i> | <i>plicatum</i> | Hymenophyllaceae | -L- | -R- |
| 28. | <i>Cyclosorus</i> | <i>interruptus</i> | Thelypteridaceae | -T- | -R- |
| 29. | <i>Asplenium</i> | <i>erectum</i> | Aspleniaceae | -E- | -R- |
| 30. | <i>Asplenium</i> | <i>decreescens</i> | Aspleniaceae | -E- | -R- |
| 31. | <i>Asplenium</i> | <i>indicum</i> | Aspleniaceae | -E- | -R- |
| 32. | <i>Pyrrosia</i> | <i>lanceolata</i> | Polypodiaceae | -E- | -S- |
| 33. | <i>Pyrrosia</i> | <i>porosa</i> var. <i>porosa</i> | Polypodiaceae | -T- | -S- |
| 34. | <i>Pleopeltis</i> | <i>macrocarpa</i> | Polypodiaceae | -E- | -R- |
| 35. | <i>Leptochilus</i> | <i>axillaris</i> | Polypodiaceae | -E- | -R- |
| 36. | <i>Leptochilus</i> | <i>decurrens</i> | Polypodiaceae | -T- | -R- |
| 37. | <i>Drynaria</i> | <i>quercifolia</i> | Polypodiaceae | E&L- | -S- |
| 38. | <i>Lepisorus</i> | <i>nudus</i> | Polypodiaceae | -E- | -R- |
| 39. | <i>Lepisorus</i> | <i>amaurolepidus</i> | Polypodiaceae | -E- | -R- |
| 40. | <i>Marsilea</i> | <i>minuta</i> | Marsileaceae | -A- | -R- |
| 41. | <i>Salvinia</i> | <i>molesta</i> | Salviniaceae | -A- | -R- |
| 42. | <i>Azolla</i> | <i>pinnata</i> | Azollaceae | -A- | -R- |

The total number of the ferns are widely varied across the species explored (Table-1). A greater number of 17 species (38%) is terrestrial in habit and 11 species (25%) are epiphytic in nature. A small number of 9 species (20%) and 4 species (9%) were purely lithophytic and aquatic habitat.

The distribution level of the surveyed ferns is determined to be varied greatly (Table 1). A higher number of 24 species (54%) showed rare distribution followed by 14 species (31%) seldom in distribution, 4 species (9%) with frequent distribution and 2 species (4%) in common distribution. It may be attributed to the presence of varied microclimatic conditions in the plant communities of Sitheri hills which resulted in the diverse species with varied distribution level (weaver and Clements, 1929).

The diversity of species among the genera is also greater in the studied hill range. Of the 23 genera survived in the sitheri hills, the genus *polypodium* was present with higher number of eight species, The other genus *selaginella* contributed five species. The genus *adiantum* and *hymenophyllum* have contributed four species each to the communities of sitheri hills. The other genus *cheilanthes* is present with three species. All the remaining genera were generally represented by 1 and 2 species only, in their communities of occurrence.

The study revealed that though the species richness of the pteridophytes in sitheri hills, the distribution pattern of considerable number of species is rare and seldom. Hence still severe habitat protection is suggested for effective conservation of such species, strict measures must be taken to check habitat destruction for raising plantations. Ecosystem destruction must also be avoided for construction activities so as to protect the valuable pteridophytes and hence their germplasm as well in sitheri hills.

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