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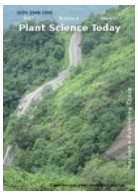

Research Article

Checklist of Mosses (Bryophyta) of Bodamalai Hills in Eastern Ghats, Tamil Nadu

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Abstract

Bodamalai Hills, situated on the Southern Eastern Ghats of Tamil Nadu, were explored for mosses (bryophyta) for the first time. As a result a checklist of mosses has been prepared comprising 52 species belonging to 38 genera and 21 families. The dominant families with the maximum number of species are Pottiaceae, Bryaceae, Stereophyllaceae, Sematophyllaceae and Brachytheciaceae. The dominant genera are *Brachymenium* and *Bryum* and the dominant species are *Barbula javanica* and *Bryum capillare*.

Keywords
Bodamalai Hills; Eastern Ghats; mosses; Tamil Nadu

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Introduction

Bryophytes were the pioneers to colonize a terrestrial habitat from an aquatic one. They are the second largest group of terrestrial plants next to angiosperms (Chopra, 1975). They represent a heterogeneous assemblage of plants which include liverworts (Marchantiophyta), hornworts (Anthocerophyta) and mosses (Bryophyta) that impart lush greenery, a verdant cover, spongy bed or carpet in every possible habitat. They colonize on rocks, road-side cuts, walls and old monument remains, as epiphytes on trees, logs, stumps, leaves and forest floors. The Indian sub-continent is bestowed with a wide range of phytogeographical regions with varied ecological conditions. Currently about 2,489 taxa of bryophytes have been reported from India (Dandotiya *et al.*, 2011). In recent years floristic studies on the bryophytes of the Eastern Ghats have been made by (Kumar and Krishnamurthy, 2007; Sahaya Sathish, 2013; Rani *et al.*, 2014; Sathish *et al.*, 2014; Biju and Daniels, 2016 and Mishra *et al.*, 2016). Studies on the ecology and distribution of bryophytes along the north coastal zone of the Andhra Pradesh in the Eastern Ghats have been made by (Murty *et al.*, 2011, Rao and Rao, 2013, and Dash *et al.*, 2009).

Study Area

Bodamalai hills are situated in the Southern Eastern Ghats and fall under Rasipuram Taluk in Namakkal District, Tamil Nadu. Rasipuram is the nearest town to Bodamalai hills and Thengalpalayam, Vadugam and Kullampatti are the neighbouring villages. The hills lie between 11° 14"46' - 12° 53"30' North latitude and 77° 32"52' - 78° 53"05' East longitude. The maximum elevation of the hills is ca 1, 200 m (Sathiyaraj & al., 2015; Fig. 1. a, b).

Figure 1 (A, B) Views of Bodamalai Hills

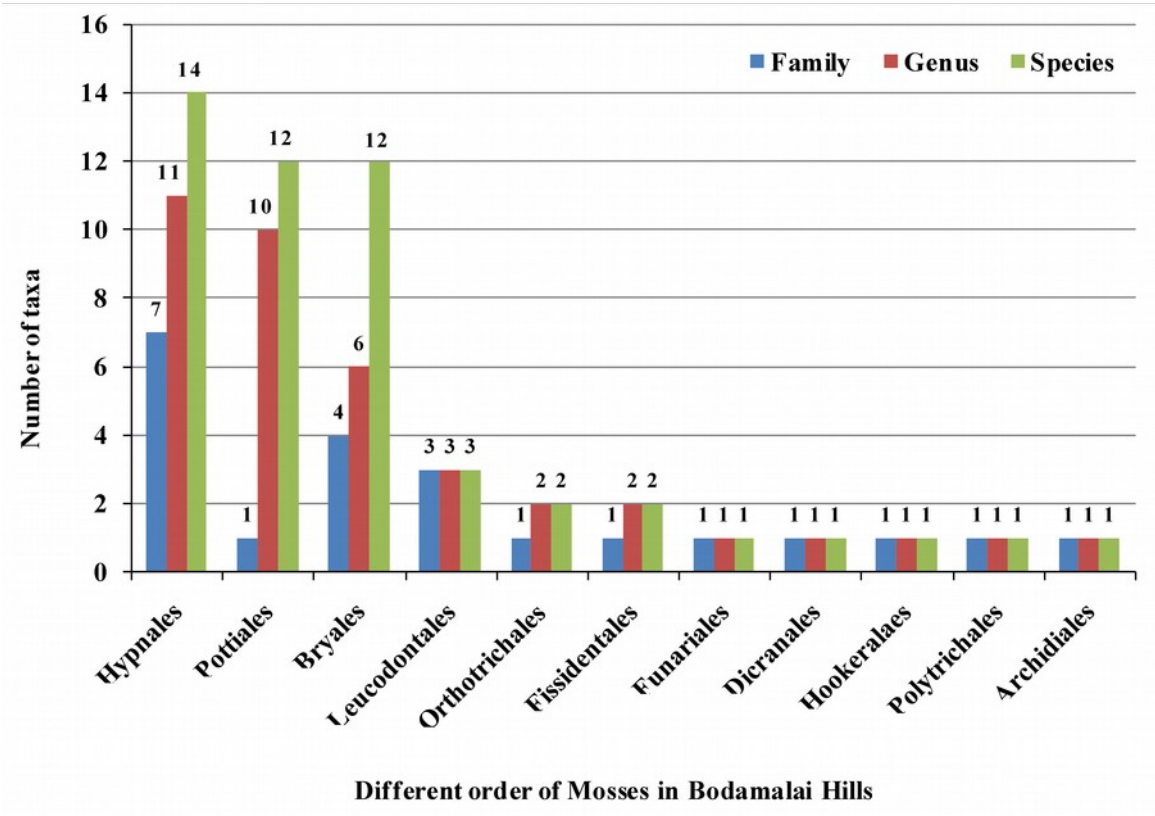

Figure 2. Representation of different orders of mosses of Bodamalai hills

Materials and Methods

Collections were made following traditional methods. Surveys were carried out from August 2013 to March 2016 immediately after monsoon rains. Simple methodology was adopted to collect specimens in the field. A knife was used to peel off specimens from tree barks, rocks and other substrata. Specimens were dried at room temperature on blotting paper and placed carefully in brown paper envelopes of dimension 15 × 10 cm. Collection details were noted including locality, date of collection, habitat type, altitude etc. Identifications were made with the help of Gangulee's '*Mosses of Eastern India and Adjacent Regions*' (1969-1980), Manju *et al.*, *Bryophytes of Wayanad in Western Ghats* (2005) and other related works and also by comparing with protologues. All moss taxa included in the list were checked against the database (www.tropicos.org and www.theplantlist.org) and Daniels (2010) concerning current acceptable nomenclature.

Results and Discussion

The present study on the mosses of Bodamalai hills reveals the occurrence of a total number of 52 species belonging to 38 genera and 21 families, (Table **1**). The most diverse order is Hypnales with

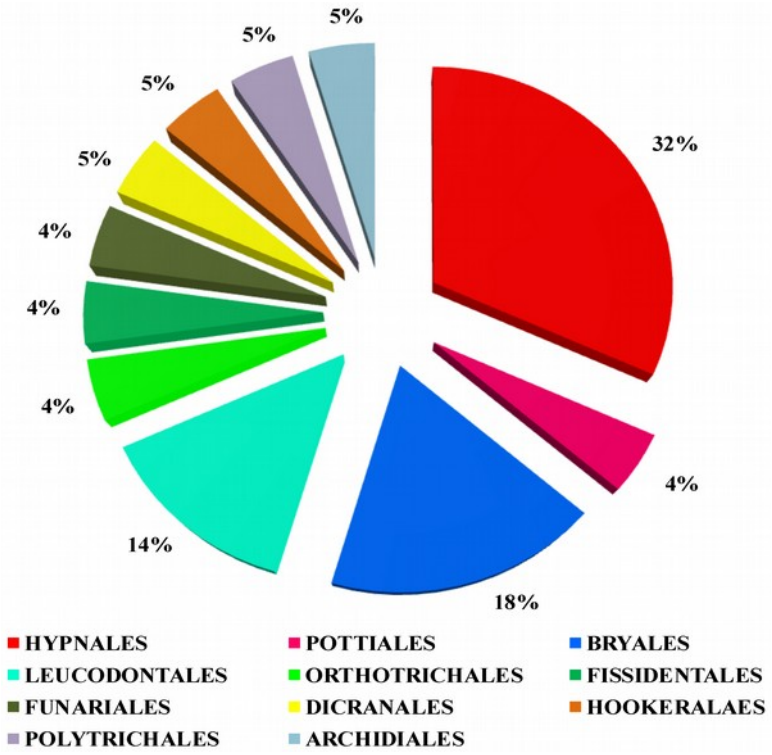

Figure 3. Percentage Distribution of different orders of Mosses of Bodamalai hills

14 species, 11 genera and 7 families followed by Pottiales with 12 species belonging to 10 genera and 1 families and Bryales with 12 species, 6 genera and 4 families. The most predominant family is Pottiaceae comprising 10 genera and 12 species followed by Bryaceae with 3 genera and 10 species (Fig. 2 – 3). Most of the species are rupicolous and a few are lignicolous and only on species folicolous. The evergreen forests in the study area harbour a maximum of 33 species. On the contrary, plantations harbour only 5 species. This observation highlights the need for conservation of the relict, fragmented evergreen forests.

Competing Interest

The authors declare that they have no competing interests.

Authors' contributions

All authors read and approved the final manuscript.

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Table 1. List of mosses occurring in Bodamalai hills

	Name of the species	Family	Order
	***Anoectangium* Schwägr.**		
1.	*Anoectangium thomsonii* Mitt. **Syn.:** *Anoectangium bicolor* Renauld & Cardot	Pottiaceae	Pottiales
	***Archidium* Brid.**		
2.	*Archidium birmannicum* Mitt. ex Dixon	Archidiaceae	Archidiales
	***Barbula* Hedw.**		
3.	*Barbula indica* (Hook.) Spreng.	Pottiaceae	Pottiales
4.	*Barbula javanica* Dozy & Molk. **Syn.:** *Hydrogonium consanguineum* (Thwaites et Mitt.) Hilp.	Pottiaceae	Pottiales
	***Brachymenium* Schwägr**		
5.	*Brachymenium leptophyllum* Bruch & Schimp. ex Mull.Hal.) Bruch & Schimp. ex A. Jaeger	Bryaceae	Bryales
6.	*Brachymenium sikkimense* Renauld & Cardot	Bryaceae	Bryales
7.	*Brachymenium acuminatum* Harv.	Bryaceae	Bryales
8.	I. ***Brachymenium bryoides* Hook. ex Schwägr.**	Bryaceae	Bryales
9.	*Brachymenium exile* Dozy & Molk.) Bosch & Sande Lac.	Bryaceae	Bryales
	***Bryum* Hedw**		
10.	*Bryum cellulare* Hook.	Bryaceae	Bryales
11.	*Bryum capillare* Hedw.	Bryaceae	Bryales
12.	*Bryum caespiticium* Hedw.	Bryaceae	Bryales
13.	*Bryum argenteum* Hedw.	Bryaceae	Bryales
	***Campylopus* Brid.**		
14.	*Campylopus subluteus* (Mitt.) A. Jaeger	Dicranaceae	Dicranales
	***Didymodon* Hedw.**		
15.	*Didymodon ovatus* (Mitt.) A. Jaeger	Pottiaceae	Pottiales
16.	*Didymodon asperifolius* (Mitt.) H.A. Crum, Steere & L.E. Anderson	Pottiaceae	Pottiales
	***Entodon* Müll. Hal.**		
17.	*Entodon rubicundus* (Mitt.) A. Jaeger	Entodontaceae	Hypnales
	***Entodontopsis* Broth**.		
18.	*Entodontopsis tavoyensis* (Hook. ex Harv.) W.R. Buck & Ireland	Stereophyllaceae	Hypnales
	Fabronia Raddi		
19.	*Fabronia schensiana* Müll.Hal.	Fabroniaceae	Hypnales
	Fissidens Hedw.		
20.	*Fissidens ceylonensis* Dozy & Molk. var. *ceylonensis*	Fissidentaceae	Fissidentales
21.	*Fissidens subangustus* M. Fleisch. **Syn.:** *Fissidens leptopelma* Dixon	Fissidentaceae	Fissidentales
	***Floribundaria* M. Fleisch.**		
22.	*Floribundaria floribunda* (Dozy & Molk.) M. Fleisch.	Meteoriaceae	Leucodontales
	***Gymnostomiella* M. Fleisch.**		
23.	*Gymnostomiella vernicosa* (Hook. ex Harv.) M. Fleisch.	Pottiaceae	Pottiales
	***Hymenostylium* Brid**		
24.	*Hymenostylium recurvirostrum* (Hedw.) Dixon	Pottiaceae	Pottiales
	***Hyophila* Brid.**		
25.	*Hyophila involuta* (Hook.) A. Jaeger	Pottiaceae	Pottiales
26.	*Hyophila nymaniana* (M. Fleisch.) M. Menzel	Pottiaceae	Pottiales
	***Hypopterygium* Brid.**		
27.	*Hypopterygium flavolimbatum* Müll.Hal. **Syn.:** *Hypopterygium tibetanum* Mitt.	Hypopterygiaceae	Hookeriales

Table 1 (Contd). List of mosses occurring in Bodamalai hills

	Name of the species	Family	Order
	***Macromitrium* Brid.**		
28.	*Macromitrium sulcatum* (Hook.) Brid.	Orthotrichaceae	Orthotrichales
	***Philonotis* Brid.**		
29.	*Philonotis hastata* (Duby) Wijk & Margad.	Bartramiaceae	Bryales
	***Pinnatella* M. Fleisch**.		
30.	*Pinnatella foreauana* Thér. & P. de la Varde	Neckeraceae	Leucodontales
	***Platyhypnidium* M. Fleisch.**		
31.	*Platyhypnidium muelleri* (A. Jaeger) M. Fleisch.	Brachytheciaceae	Hypnales
	***Pogonatum* P. Beauv.**		
32.	*Pogonatum neesii* (Müll.Hal.) Mitt.	Polytrichaceae	Polytrichales
	***Pohlia* Hedw.**		
33.	*Pohlia ludwigii* (Spreng. ex Schwägr.) Broth.	Bryaceae	Bryales
	***Pseudotaxiphyllum* Z. Iwats.**		
34.	*Pseudotaxiphyllum elegans* (Brid.) Z. Iwats.	Hypnaceae	Hypnales
	***Pseudoleskea* Bruch & Schimp.**		
35.	*Pseudoleskea incurvata* (Hedw.) Loeske	Leskeaceae	Hypnales
	***Pterobryopsis* M. Fleisch.**		
36.	*Pterobryopsis orientalis* (Müll.Hal.) M. Fleisch.	Pterobryaceae	Leucodontales
	***Pyrrhobryum* Mitt.**		
37.	*Pyrrhobryum spiniforme* (L. ex Hedw.) Mitt.	Rhizogoniaceae	Bryales
	***Racopilum* P. Beauv.**		
38.	*Racopilum orthocarpum* Wilson ex Mitt. **Syn.:** *Racopilum siamense* Dixon	Racopilaceae	Bryales
	***Rhynchostegiella* (Schimp.) Limpr.**		
39.	*Rhynchostegiella divaricatifolia* (Renauld & Cardot) Broth.	Brachytheciaceae	Hypnales
40.	*Rhynchostegiella ramicola* (Broth.) Broth.	Brachytheciaceae	Hypnales
	***Schlotheimia* Brid.**		
41.	*Schlotheimia grevilleana* Mitt.	Orthotrichaceae	Orthotrichales
	***Semibarbula* Herzog ex Hilp.**		
42.	*Semibarbula ranuii* Gangulee.	Pottiaceae	Pottiales
	***Sematophyllum* Mitt.**		
43.	*Sematophyllum humile* (Mitt.) Broth.	Sematophyllaceae	Hypnales
	***Splachnobryum* Müll. Hal.**		
44.	*Splachnobryum assamicum* Dixon	Splachnobryaceae	Funariales
	***Stereophyllum* Mitt.**		
45.	*Stereophyllum radiculosum* (Hook.) Mitt.	Stereophyllaceae	Hypnales
46.	*Stereophyllum fulvum* (Harv.) A. Jaeger	Stereophyllaceae	Hypnales
	***Taxiphyllum* M. Fleisch.**		
47.	*Taxiphyllum taxirameum* (Mitt.) M. Fleisch.	Hypnaceae	Hypnales
	***Tortella* (Lindb.) Limpr**		
48.	*Tortella tortuosa* (Schrad. ex Hedw.) Limpr.	Pottiaceae	Pottiales
	***Trichostomum* Hedw.**		
49.	*Trichostomum subminusculum* Dixon & P. de la Varde	Pottiaceae	Pottiales
	***Trachyphyllum* A. Gepp**		
50	*Trachyphyllum inflexum* (Harv.) A. Gepp	Entodontaceae	Hypnales
	***Wijkia* H.A. Crum**		
51.	*Wijkia surcularis* (Mitt.) H.A. Crum	Sematophyllaceae	Hypnales
52.	*Wijkia deflexifolia* (Mitt. ex Renauld &Cardot) H.A. Crum	Sematophyllaceae	Hypnales

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