

## Species diversity of Moss *Fissidens* from Kodaikanal

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### Abstract

Studies on mosses of South India was initiated by Brotherus<sup>1</sup>. Thereafter Bruhl<sup>2</sup> had made a census of Indian mosses. Foreau<sup>4</sup> had made extensive work on the moss flora of Palani Hills. The present paper indicates attempt of reinvestigation of mosses of Kodaikanal where large numbers of species of the Genera vis. *Fissidens* Hedw; *Bryum* Hedw; *Sterophyllum* Mitt, *Entodon* C. Muell; etc were observed. Present paper deals with diversity of species of moss *Fissidens* Hedw; reinvestigated at Kodaikanal of Palani Hills.

**K**odaikanal lies in between 10°12' altitude and 10°15' N with latitude and 77°26' and 77°53' longitude. Its altitude is 2220 meter above sea level, average rainfall 1670 mm., whereas average velocity of wind is 106 km per hour alongwith high % humidity.

*Localities of Collection* : The material has been collected from different localities of Kodaikanal such as Bryant Park, Crocker's Walk, Tiger shola falls, Kodaikanal lake.

Material collected was dried and preserved in packets 13.5 cm x 13.5 cm size. Details of species were noted on the packets. Permanent slides of the materials were prepared using Gum Chloral.

**Genus-*Fissidens*** Hedw., Spec. Musc. 152, 1801. (Generic name is derived from latin word fissures-split, dens a tooth, with reference to the peristome teeth). *Fissidens*

Hedw, belongs to the section Stegocarpi of acrocarpic mosses. It is a much diversified genus mainly in tropical and subtropical zones of the South – East Asia, Africa and America.

The plants are dimorphic, either small and simple or large and branched. Leaves distichous, flattened in one plane, split to the nerve on the inner side of the lower half in two blades clasping the stem or lamina. The prolongation above the lamina on the same side of the nerve is called the apical lamina and the part of the leaf on the other side is called the dorsal lamina.

Leaf cells are either parenchymatous or prosenchymatous. Peristome teeth bifid at least half way or more, or undivided, papillose or not, usually with longitudinal striation or spiral thickening.

Genus *Fissidens* is represented by following four species in the area under study viz

- F. splachnobryoides* Broth.,**  
***F. bryoides* Hedw.**  
***F. teniolatus* Dix. Et p. Vard.,**  
***F. minutes* Thwait, et Mitt.**

The morphological features and distribution of the above four species is given below:

**1. *Fissidens splachnobryoides* Borth. In Schum. Et Lauterb., F1. Deutsch. Schutzgeb. Sudsee 81.1900.**

Dioecious, plants 0.6 to 1 cm high. Stem reddish brown. Leaves distichous, 10-11 pairs, ligulate, slowly narrowed at apex. Leafbase semiamplexicaul, narrow and rounded. Nerve percurrent, ceasing some way below the apex, narrow at the free end and brownish in colour. Leaf margin smooth, entire, slightly undulated, bordered by 2-3 layered, elongated fibre-like. Cells. Both marginal borders meet each other at the apex. Laminal cells chlorophyllose, lying in the form of reticulatiions, irregularly hexagonal to polygonal in shape. Leaf base cells rectangular to subrectangular 50 to 60. Sporophytes not seen. Gemmae septate, clavate, laterally placed on the stem, having very long stalk.

*Distribution :*

Growing on moist soil at Bryant Park, Kodaikanal. This species is mainly confined to the region like Western Ghats of India, North-West Himalaya (Kalka), Eastern India, Calcutta, 24 - Paraganas (Gangulee 1970), East Nepal, Central India (Pachmarhi), Upper Burma, Ceylon, Java, North Borneo, New Guinea, Philippines, Ryukuyu, Japan.

**2. *Fissidens bryoides* Hedw**

Dioecious, Plants green, 2.5 to 3 mm high, with a stem reddish brown, leaves 7-8 in pairs, oblong lingulate, acuminate (slowly becoming narrow at apex). 1.5 to 2 mm long and 0.5 mm broad. Leaves bordered by 2-3 layered cells – long, narrow thick walled, fibre like. At the apex bordered cells (one-rowed) continuous and confluent with nerve end, whereas 2 or 3 rowed at leaf base. Laminal cells smooth, transparent, chlorophyllose with rounded chloroplastids, rounded – hexagonal. Leaf base cells near nerve, percurrent.

Seta light – brown, erect, 6 mm high, capsule 0.5 to 0.5 mm high, 0.2 mm broad, cylindrical with long-rostrate operculum. Persistome teeth 16, discarnate, shiny brown in colour, 0.2 mm long. Spores round, pellucid, smooth walled exine.

*Distribution :*

Growing on moist soil at Crockers walk, Kodaikanal. This species is very commonly associated with *F. splachnobryoides* Broth and widely distributed at Kalyani (West Bengal), Khasia Hills, Arunchal Pradesh, Ranikhet, Simla (Western Himalayas), East Nepal, Mahabaleshwar, Khandala Western Ghats<sup>3</sup>; Nilgiri, Coonoor<sup>4</sup> Ceylon. This cosmopolitan species ranges in distribution from alpine to tropical region. It is confined to other countries viz. China, Taiwan, Japan, Java, Phillipines, Malaya, Siberia, Europe, North-Central Africa and North –South America.

**3. *Fissidens teniolatus* Dix et P. Varde in Ann. Crypt. Exot. 3:160 t, 1, f.2 1930.**

Plants short, 3-6 mm, high with light

greenish brown stem: leaves distichous, 7-10 parted, semiamplexicaul, lanceolate, 2 mm long 0.4 mm. broad and slowly narrowed at apex, broad in the middle region, with undulated margin. Leaf margin with edge. Near the apex, marginal cells show a tendency to protrude upwards. In upper older leaves intra-marginal border of 2-3 layered elongated, chlorophyllose cells present. The intralaminar border ceases upto half or one – third of leaf from leaf base region becoming the bordered margin of leaf base, chlorophyllose, 10-15 u long and 7-8 u broad. Leaf base cells large, rectangular to sub rectangular. Seta light brown coloured slightly curved ,0.5 to 1 cm high, capsule cylindrical, slightly curved, narrowing at base operculum conical. Peristome teeth discranoid, reddish brown in colour, 0.2 mm long. Spores round smooth walled ,exine 11 to 15 u in diameter.

*Distribution :*

This endemic species is restricted to the Palani hills in Southern India and Western Ghats of Western India. It was growing on moist, shady soil near Kodaikanal lake.

**4. *Fissidens minutus* Thw & Mitt in J. Linn. Soc. Bot. 13:323. 1873.**

Plants very small, 2.5 – 3.5 mm high growth on the bark of *Mangifera indica* L. (Mango tree) with 8-12 pairs of leaves on stem. Leaves 0.8-1.0 mm long. 0.3 mm broad, oblong ligulate or obtuse, apex more or less rounded, margin (a short limbidium) bordered

at base reaching ½ distance to upper side, rest of the part of margin entire or undulated Nerve percurrent, ceasing 5-6 cells below the apex. Laminar cells very small. Irregularly quadrate to polygonal with 2-3 punctate papillae on each cell. Sporophyte not seen.

*Distribution :*

Growing on the bark of (Mango tree) *Mangifera indica* near Tiger shola water falls, Kodaikanal.

It is distributed in this sub-continent at Ceylon, Palni hills, Mumbai (Western Ghats), East Nepal.

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