

## Genus *Bryum* Hedw. in Peninsular India

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**Abstract:** Bansal, P. and Nath, V. (2014): Genus *Bryum* Hedw. in Peninsular India. *Frahmia* 4:1-11.

The present study is aimed mainly to document the diversity of genus *Bryum* Hedw. in Peninsular India. During the revision of the genus 26 taxa are distributed in four states (Karnataka, Kerala, Maharashtra, Tamil Nadu) and one union territory (Goa) of Western Ghats, whereas 8 species reported from 3 states (Andhra Pradesh, parts of Odisha and Tamil Nadu) of Eastern Ghats. *Bryum tuberosum* Mohamed & Damanhuri is reported for the first time from Shimoga district of Karnataka and *B. wightii* Mitt. from Munnar (Idukki district) of Kerala.

### 1. Introduction

The geography of South Indian region encompasses two mountain ranges *i.e.* the Western and Eastern Ghats and a plateau heartland of which Western Ghats itself is a biodiversity hotspot. The region covers an area of about 635780 square km *i.e.* 19.31% of the total area of India. The region comprises the states of Andhra Pradesh, Karnataka, Kerala, Maharashtra, Tamil Nadu and some parts of Odisha as well as union territories of Goa, Lakshadweep and Puducherry. This region is bounded by the Arabian Sea in the west, Indian Ocean in the south and Bay of Bengal in the east. The Western Ghats constitute a mountainous range along the western side of India which are not true mountains, but are the faulted edge of the Deccan Plateau. The region extend from the Satpura range in the north, go south past Maharashtra, Goa, through Karnataka and into Kerala and Tamil Nadu. The Western Ghats were well-covered in dense forests that provides complex and species rich natural habitat. The Eastern Ghats are a chain of discontinuous range of mountains run from West Bengal in the north, through Odisha and Andhra Pradesh to Tamil Nadu in the south and passing some parts of Karnataka and the Deccan Plateau lies to the west of the range, between the Eastern Ghats and Western Ghats.

After extensive survey of literature it was concluded that in the past the mosses remained a neglected field of study and the collections of mosses in the past were sent to foreign specialists and the bulk of information on South Indian mosses was through the efforts of several workers. However, in recent years, considerable work had been started on these plants and some excellent contributions were made by several Indian workers in South India. The knowledge of the mosses of South India is based on the work done during the last two centuries (Montagne, 1842; Mueller, 1853, 1854a, 1854b; Dixon, 1909, 1914, 1921; Dixon and Potier de la Varde, 1927, 1930; Bruhl, 1931; Foreau, 1930, 1931; Raghavan and Wadhwa, 1968, 1970; Dabhade, 1969; Wadhwa, 1969,

1971; Chopra, 1975) and the present century (Maniselvan and Kumar, 2000; Nair and Madhusoodanan, 2001, 2002; Madhusoodanan and Nair, 2004; Nair et al., 2004).

The genus *Bryum* Hedw., belonging to family Bryaceae represents a large and complex taxon is considered to be one of the important and most isolated genus amongst mosses, owing to huge range of plasticity in morphological characters exhibited by the genus. Therefore, it has been treated differently by various workers resulting in a large number of taxa thus causing serious taxonomic problems. In recent years a number of publications appeared on this genus from various territories of India (Deora and Chaudhary, 1996; Bansal et al., 2010, 2012; Bansal and Nath, 2012, 2013) but no consolidated information on the South Indian taxa of this genus is available so far.

So far as the literature concerned on the *Bryum* species of Western Ghats, Brotherus (1899) published 8 species of *Bryum* from various parts of Western Ghats. Sedgewick (1910, 1911, 1913) reported several species from Poona, Mahabaleshwar, Purandar Fort and Lonavala. Dixon (1914) worked out on the collection made by Sedgewick and reported *B. ghatense*, *B. sahyadrense*, *B. retusifolium*, *B. argenteum* var. *lanatum*, *B. argenteum* var. *australe*, *B. ramosum* and *B. wightii* from various localities of Western Ghats. Thereafter Potier de la Varde (1922, 1923a, 1923b, 1924) published an account of mosses including several species of *Bryum* from Madurai whereas, Raghavan and Wadhwa (1968) from Agumbe-Hulical Ranges (Shimoga District). Dabhade (1998) reported *B. argenteum*, *B. alpinum*, *B. coronatum*, *B. ghatense* and *B. wightii* from different parts of Khandala and Mahabaleshwar. Gangulee (1974) made valuable contributions on the mosses of Eastern India and adjacent regions and described twenty two species of *Bryum*. He reported 6 taxa from South India and in the same publication several species endemic to South India including *B. retusifolium*, *B. retusifolium* var. *heterophyllum* and *B. bessonii* (Palni hills), *B. wightii* (Mahabaleshwar, Nilgiri and Palni hills), *B. medianum* (Nilgiri hills) are also reported. Vohra and Aziz (1997) listed some rare and threatened endemics of *Bryum* and reported 23 species from Western Ghats. Nair et al. (2004) recorded *Bryum tuberosum* as a new record for India from Uduppi district of Karnataka. Lal (2005) provided a consolidated checklist of Indian mosses and listed 33 species, 1 subspecies and 4 varieties of the genus *Bryum* from various phytogeographical regions of India. In the same checklist he also added 13 another species of the genus *Bryum* along with 1 subspecies and 3 varieties, as endemic to South India only.

Going back to the earlier records of *Bryum* species of Kerala state, a few are worth mentioning (Foreau, 1964; Nair et al., 2005; Madhusoodanan et al., 2007; Manju et al., 2008). Subsequently, Manju et al. (2009) reported *B. paradoxum* and *B. wightii* from Agasthyamalai Biosphere Reserve. Daniels and Daniel (2007) reported several species from Southern Western Ghats and Phatak et al. (2007) reported *B. coronatum* and *B. bessonii* from Rivona and Zambaulim area of South Goa. Hile (2011) worked on the *Bryum* species of Kasara-Thal Ghat of Western Ghats. There has been some considerable work are being carried out on the bryophytes of Tamil Nadu also including Nilgiri and Palni hills (Foreau, 1961; Srinivasan, 1974; Subramanian, 2008; Daniels, 2010; Kumar Verma et al., 2011). Dandotiya et al. (2011) provided a checklist of 45 taxa of *Bryum* from India along with their distribution pattern and listed 26 taxa from South India including 10 taxa from Nilgiri hills, 10 from Palni hills, 7 from Kerala, 4 from Eastern Ghats of Orissa, 3 from Kodaikanal, 1 from Maharashtra and 4 from Tamil Nadu.

Going by the general trend of concentrating the research works on the South Indian *Bryum*, in Eastern Ghats and Deccan Plateau bryophytes are a neglected lot and only stray references are present (Kumar and Krishnamurthy, 2007; Pullaiah et al., 2012). Though, above stated work has been carried out to explore the genus across the Peninsular India but listing of taxa and their fragmentary taxonomic descriptions was scattered. Therefore, it was thought desirable to prepare an updated account to envisage the current status of the genus in Peninsular India.

## 2. Materials and Methods

The present study is based on the critical investigations of the herbarium specimens available at the Bryophyte Herbarium of the National Botanical Research Institute, Lucknow (LWG) collected earlier from various localities of Goa, Karnataka and Kerala and authentic specimens borrowed from Calicut University Herbarium, Kerala (CAL), Farlow Herbarium, Harvard (FH) and Herbarium National Science Museum Tokyo, Japan (TNS) as well as from personal collections of A.E.D. Daniels from Tamil Nadu (AEDD). The data on their distribution is based on the information collected from herbarium specimens as well as literature. The distribution of all the known species of South India is provided in the Map.

## 3. Floristic List

**1. *Bryum alpinum* Huds. ex With.,** Syst. Arr. Brit. Pl. (ed. 4) 3: 824. 1801.

**Specimens examined:** WESTERN GHATS: KERALA: Vattakkayam, Kakkayam, Kozhikode district, alt. 1050 m, on rocky patch, 10.05.2003, Coll.: *Manju & K.P. Rajesh* 120180 (CAL).

**Range of distribution in South India:** Western Ghats: Kerala-Kozhikode; Maharashtra-Kasara (Thal Ghat), Khandala, Mahabaleshwar; Tamil Nadu-Nilgiri hills, Palni hills.

**2. *Bryum apalodictyoides* Müll. Hal.,** Bot. Zeitung (Berlin) 11: 21. 1853.

**Specimens examined:** WESTERN GHATS: KARNATAKA: Herb. Walker, near Hatur, Coorg, India, on dry exposed rocks in bamboo jungle, Jan. 1898, Coll.: *T.L. Walker* 189, Det.: *V.F. Brotherus* (FH); Herb. Walker, near Nalknad Palace, Coorg, India, on tree trunks, Mar. 1898, Coll.: *T.L. Walker* 326, Det.: *V.F. Brotherus* (FH); Bryophytes of Western India, Union of India, Bombay State, Satara district, Mahabaleshwar, near the summit of the Western Ghats, altitude about 4500 feet, 17°55' N, 73°40' E, stone wall, early November 1950, Coll.: *Hale H. Cook*, Det.: *H.A. Gleason, Jr.* (FH 15, 16).

**Range of distribution in South India:** Western Ghats: Karnataka-Kodagu (Hatur, Nalknad Palace); Kerala-Palakkad (Silent Valley); Maharashtra-Mahabaleshwar; Tamil Nadu-Kodaikanal (Tiger Chola), Nilgiri hills, Palni hills.

**3. *Bryum apiculatum* Schwaegr.,** Sp. Musc. Frond., Suppl. 1(2): 102. f. 72. 1816.

**Specimens examined:** WESTERN GHATS: KERALA: Muthanga range, Wayanad WLS, alt. 878 m, terrestrial, 18.04.2002, Coll.: *Manju* 84510 (CAL); TAMIL NADU: Sea field, Kanyakumari, 820 m, saxicolous, 31.09.2009, Coll.: *A.E.D. Daniels & J.L. Mabel* (AEDD 450); Natchur, Palni hills, 6 Jan. 1927, Coll.: *Foreau* 553a Det.: *H.N. Dixon* (FH). DECCAN PLATEAU & EASTERN GHATS: ANDHRA PRADESH: University of Toronto Herbarium, Flora of India-Herb. Walker, Jeypore Taluq, Vizagapatam district, Nov. 1899, Coll.: *T.L. Walker* 535, 554 Det.: *H.N. Dixon* (FH).

**Range of distribution in South India:** Western Ghats: Karnataka-Agumbe (Hulical Ranges); Kerala-Wayanad; Maharashtra-Khandala, Lonavala, Mahabaleshwar, Purandar Fort; Tamil Nadu-Kanyakumari, Nilgiri hills (Udhagamandalam-Naduvattam), Palni hills; Deccan Plateau & Eastern Ghats: Andhra Pradesh-Guntur, Vishakapatnam; Odisha-Koraput, Puri; Tamil Nadu-Shervaroy hills.

**4. *Bryum argenteum* Hedw.,** Sp. Musc. Frond. 181. 1801.

**Specimens examined:** WESTERN GHATS: KARNATAKA: Herb. Walker, Hatur, Coorg, on dry rocks, Jan. 1898, Coll.: *T.L. Walker* 193, Det.: *V.F. Brotherus* (FH); KERALA: Idukki district,

Marthoma Campus, Munnar, grows on cemented walls and bricks, 11.09.2007, Leg.: *V. Nath* 247681, 247682B (LWG); Marthoma Campus, Munnar, grows on bricks, 11.09.2007, Leg.: *V. Nath* 247683A (LWG); Thirunelli Reserve Forest, Wayanad, alt. 1180 m, grows on land cuttings, 31.07.2004, Coll.: *Manju* (CAL 99625); TAMIL NADU: Narakkad, Tirunelveli, alt. 1000 m, saxicolous, 15.08.2009, Coll.: *A.E.D. Daniels* (AEDD 76); Herbarium of Edwin B. Bartram, Herbarium Charrier, Indes Owglaises, Kodaikanal, 8 mai 1912, Leg.: *R.P. Foreau* (FH); Perumal, May 1923, Coll.: *G.F. Foreau* (FH); Herb. Edwin B. Bartram, Flora of South India, Nilgiri hills, 1959, Coll.: *C. Srinivasan* 143, Det.: *E.B. Bartram* (FH); St. Xavier's College, Palamcottah, Palney hills, alt. 6000 ft, 1929, Coll.: *G.F. Foreau* (FH); Beschi College Herb., Shembaganur, Palni hills, Kodaikanal, alt. 7000 ft, July 56, Coll.: *G.F. Foreau* 16 (FH).

**Range of distribution in South India:** Western Ghats: Karnataka-Agumbe (Hulical Ranges), Kodagu; Kerala-Chinnar Wildlife Sanctuary, Eravikulam National Park, Idukki, Wayanad; Maharashtra-Kasara (Thal Ghat), Khandala, Mahabaleshwar, Panchgani; Tamil Nadu-Anamalais, Kodaikanal, Nilgiri hills (Udhagamandalam), Palni hills; Deccan Plateau & Eastern Ghats: Odisha-Koraput; Tamil Nadu-Shervaroy hills.

**5. *Bryum bessonii* Ren. & Card.,** Suppl. Prodr. Fl. Bryol. Madag. 59. 1909.

**Range of distribution in South India:** Western Ghats: Goa-Rivona and Zambaulim; Tamil Nadu-Kodaikanal (Shenbaganur), Palni hills.

**6. *Bryum billardieri* Schwaegr.,** Sp. Musc. Frond., Suppl. 1(2): 115. 1816.

**Specimens examined:** WESTERN GHATS: KARNATAKA: *B. ramosum* (Hook.) Mitt., Herb. Walker, near Verajpet, Coorg, dry clay banks, Mar. 1898, Coll.: *T.L. Walker* 290, Det.: *V.F. Brotherus* (FH); KERALA: near Eravikulam Hut, Eravikulam NP, Munnar, Idukki, alt. 1975 m, epiphytic on *Cupressus* associated with Lichen and *Drymoglossum*, 13.01.2001, Coll.: *Manju* 76053a (CAL); Shendurney Wildlife Sanctuary, Kollam W. Ghats, 560 m, rupicolous, 04.11.2008, Coll.: *R. Felix* (AEDD 245). TAMIL NADU: Himalayan Mosses, Ootacamund, 7500 ft, on soil, Coll.: *H. Gangulee*, Det.: *E.B. Bartram* (FH 3156); Ex Rijksherbarium, Leiden, Nilgiris, Naduvattam, along road from Utacamund to Gudalur, on tree trunk, ca 2000 m, 7.1976, Leg.: *A.J.G.H. Kostermans* 4 (FH); Herbarium Charrier, Indes Owglaises, Kodaikanal, 12 September, 1912, Leg.: *R.P. Foreau* (FH); Perumal, May 1923, Leg.: *G.F. Foreau* (FH); St. Xavier's College, Palamcottah, Palney hills, 5600 ft., 1929, Coll.: *G.F. Foreau* (FH); Mosses of Southern India, Madras State, Madura district, Palni hills, Kodaikanal and surrounding region, Shembaganur, Tiger Shola, alt. ca 5600 ft, Leg.: *G. Foreau* 184, 31 March 1926, Residue of "Musci Madurenses Indiae Meridionalis Exsiccati", issued by Georges Foreau, S.J. distributed by The New York Botanical Garden (FH); Herb. of Edwin B. Bartram, Herbarium Charrier, Indes Owglaises, Tiger Shola, Gubey hills, 31 March 1926, Leg.: *R.P. Foreau* (FH).

**Range of distribution in South India:** Western Ghats: Karnataka-Kodagu (Verajpet, Ponnappet); Kerala-Eravikulam National Park, Idukki, Shendurney Wildlife Sanctuary; Tamil Nadu-Kodaikanal (Law's Ghat road, Shenbaganur and Tiger Chola), Madurai, Nilgiri hills (Udhagamandalam-Naduvattam), Palni hills, Perumal.

**7. *Bryum caespiticium* Hedw.,** Sp. Musc. Frond. 180. 1801.

**Range of distribution in South India:** Western Ghats: Tamil Nadu-Kanyakumari, Tirunelveli.

**8. *Bryum capillare* Hedw.,** Sp. Musc. Frond., 182. 1801.

**Specimens examined:** WESTERN GHATS: KERALA: Idukki district, Mesthirishola, Eravikulam NP, Munnar, alt. 2000 m, grows on rocky patch, 23.09.2001, Coll.: *Manju* 80218 (CAL); TAMIL NADU: Kanyakumari, Sea field, 820 m, terricolous, 21.09.2009, Coll.: *A.E.D. Daniels & J.L. Mabel* (AEDD 416); GOA: Keri Surfa (Border of Goa-Karnataka), corticolous, Aug-Sept. 2003, Coll.: *Sulabha Phatak* (LWG 552, 558).

**Range of distribution in South India:** Western Ghats: Goa-Keri Surfa; Kerala-Eravikulam National Park, Idukki, Munnar, Wayanad; Tamil Nadu-Kanyakumari, Palni hills, Nilgiri hills (Udhagamandalam-Naduvattam), Tirunelveli; Deccan Plateau & Eastern Ghats: Andhra Pradesh-Guntur; Tamil Nadu-Shervaroy hills.

**9. *Bryum cellulare* Hook.** in Schwaegr. Sp. Musc. Frond., Suppl. 3(1): 214. 1827.

**Specimens examined:** WESTERN GHATS: KERALA: Palakkad district, Parambikulam WLS, alt. 1100 m, grows on rocky patch, 12.10.2006, Coll.: *Manju* 106823 (CAL).

**Range of distribution in South India:** Western Ghats: Kerala-Kakkavayal Reserve Forest, Parambikulam Tiger Reserve, Wayanad; Tamil Nadu-Nilgiri hills (Doddabetta), Palni hills (Gundar Shola); Deccan Plateau & Eastern Ghats: Andhra Pradesh-Guntur.

**10. *Bryum coronatum* Schwaegr.,** Sp. Musc. Frond., Suppl. 1(2): 103. 71. 1816.

**Specimens examined:** WESTERN GHATS: KARNATAKA: Shimoga, Agumbe, alt. ca 600 m, grows on soil, 17.08.1984, Leg.: *S. Chandra* & *V. Nath* 204124 (LWG); Bryotheca Elevier, S.W. Brit. India, Mangalur (South Canara), Aug. 1906, Leg.: *Rev. J. Pfleiderer* 6821, Det.: *V.F. Brotherus* (FH); Herb. Walker, dry clay ground at Pollebetta, South Coorg, India, Jan. 1898, Coll.: *T.L. Walker* 215, Det.: *V.F. Brotherus* (FH); Herb. Walker, logs in Bamboo jungle-Ponnepet in South Coorg, India, Jan. 1898, Coll.: *T.L. Walker* 238, Det.: *V.F. Brotherus* (FH); KERALA: MG University campus, Kottayam, alt. 40 m, grows on brick wall, 25.07.2004, Coll.: *K.P. Rajesh* 120380 (CAL); GOA: Margao, Lithophyte, on laterite walls, 10.08.2001, Coll.: *Mini N. Vijayan* (LWG 8); TAMIL NADU: Sea field, Kanyakumari, 820 m, saxicolous, 21.09.2009, Coll.: *A.E.D. Daniels* & *J.L. Mabel* (AEDD 472). DECCAN PLATEAU & EASTERN GHATS: ANDHRA PRADESH: University of Toronto Herbarium, Flora of India-Herb. Walker, Jeypore Taluq, Vizagapatam, 2000-4500 ft, Nov. 1899, Coll.: *T.L. Walker* 525, 541, 563, 575, Det.: *H.N. Dixon* (FH); Himalayan mosses, near Cuttack, 29.X.58, Coll.: *H.C. Gangulee* 3115, Det. *E.B. Bartram* (FH).

**Range of distribution in South India:** Western Ghats: Goa-Margao, Rivona, Zambaulim; Karnataka-Kodagu, Mangalur (South Canara), Agumbe (Hulical Ranges, Kanagalgudda); Kerala-Eravikulam National Park, Idukki, Wayanad; Maharashtra-Kasara (Thal Ghat) Khandala, Mahabaleshwar, Pune; Tamil Nadu-Kanyakumari, Maramalmalai, Mundanthurai, Tirunelveli; Deccan Plateau & Eastern Ghats: Andhra Pradesh-Vishakhapatnam; Odisha-Cuttack, Koraput, Puri.

**11. *Bryum dichotomum* Hedw.,** Sp. Musc. Frond. 183. 1801.

**Range of distribution in South India:** Western Ghats: Kerala.

**12. *Bryum euryphyllum* Dix. & P. Vard.,** Archives de Botanique, Bulletin Mensuel 1(8-9): 170. 1927.

**Range of distribution in South India:** Western Ghats: Karnataka, Kerala.

**13. *Bryum haematoneurum* Müll. Hal.,** Nuovo Giorn. Bot. Ital. 4: 17. 17. 1872.

**Range of distribution in South India:** Maharashtra-Purandhar Fort .

**14. *Bryum kashmirensis* Broth.,** Acta Soc. Sci. Fenn. 24(2): 24 24 1899.

**Range of distribution in South India:** Western Ghats: Kerala.

**15. *Bryum lamprostegum* Müll. Hal.,** Bot. Zeitung (Berlin) 11: 22. 1853.

**Range of distribution in South India:** Western Ghats: Tamil Nadu-Nilgiri hills.

**16. *Bryum madurense* (Dix. & P. Vard.) Ochi, J. Hattori Bot. Lab. 35: 67. 1972.**

**Range of distribution in South India:** Western Ghats: Tamil Nadu-Madurai, Upper Palni hills.

**17. *Bryum pachythea* Müll. Hal., Syn. Musc. Frond. 1: 307. 1848.**

**Specimen examined:** WESTERN GHATS: KERALA: Malappuram Dist., Calicut University Campus, alt. ca 40 m, grows on rocky wall, 12.09.2002, Coll.: *Manju* 87001 (CAL).

**Range of distribution in South India:** Western Ghats: Kerala-Calicut University Campus.

**18. *Bryum paradoxum* Schwaegr., Sp. Musc. Frond., Suppl. 3, 1(1): 224a. 1827.**

**Specimens examined:** WESTERN GHATS: KERALA: Kattumala, Eravikulam NP, Munnar, Idukki, alt. 2100 m, grows on rocky patch where water drips regularly, 29.09.2001, Coll.: *Manju* 80224 (CAL); TAMIL NADU: Herbarium of Edwin B. Bartram, Herbiere Charrier, Indes Owglaises, Kodaikanal, 1912, Leg.: *R.P. Foreau* (FH); St. Xavier's College, Palamcottah, Palney hills, alt. 7000 ft, 1929, Coll.: *G.F. Foreau* (FH); Perumal, May 1923, Leg.: *G.F. Foreau* (FH); Mosses of Southern India, India, Madras State, Madura district, Palni hills, Kodaikanal and surrounding region, Shembaganur, Leg.: *G. Foreau*, 1929, Residue of "Musci Madurenses Indiae Meridionalis Exsiccati", issued by Georges Foreau, S.J. distributed by The New York Botanical Garden (FH); Madras State, Madura district, Palni hills, Kodaikanal and surrounding region, Lower Palni hills, Perumalmalai Shola, Residue of "Musci Madurenses Indiae Meridionalis Exsiccati", issued by Georges Foreau, S.J., Distributed by the New York Botanical Garden, Leg.: *G. Foreau* 1926 (TNS 051340).

**Range of distribution in South India:** Western Ghats: Karnataka-Mysore, Nandi hills; Kerala-Agasthyamalai Biosphere Reserve, Eravikulam National Park; Maharashtra-Purandhar Fort; Tamil Nadu-Agasthyamalai Biosphere Reserve, Kodaikanal (Law's Ghat road, Shembaganur), Madurai, Nilgiri hills, Palni hills.

**19. *Bryum pseudotriquetrum* (Hedw.) P. Gaertn., B. Mey. et Scherb., Oekon. Fl. Wetterau 3(2): 102. 1802.**

**Range of distribution in South India:** Western Ghats: Kerala-Eravikulam National Park, Wayanad.

**20. *Bryum pseudotriquetrum* var. *subrotundum* (Brid.) Gangulee, Mosses E. India, 4: 994. 1974.**

**Range of distribution in South India:** Western Ghats: Tamil Nadu-Nilgiri hills (Doddabetta).

**21. *Bryum retusifolium* Card. & Varde, Rev. Bryol. 50: 20. 1923.**

**Specimens examined:** WESTERN GHATS: TAMILNADU: St. Xavier's College, Palamcottah, Palney hills, 7000 ft, Coll.: *G.F.* (FH 1929); Herbarium of Edwin B. Bartram, Herbiere Charrier, Indes Owglaises, Perumal, 1924, Leg.: *R.P. Foreau* (FH 1835).

**Range of distribution in South India:** Western Ghats: Tamil Nadu-Kodaikanal, Madurai, Palni hills.

**22. *Bryum salakense* Card., Annuaire Conserv. Jard. Bot. Genève, 15-16: 166. 1912.**

**Specimen examined:** WESTERN GHATS: KERALA: Wayanad Dist., Pakshipadalam, alt. ca 1100 m, epiphytic, 08.10.2005, Coll.: *K.P. Rajesh* 99750 (CAL).

**Range of distribution in South India:** Western Ghats: Kerala-Wayanad; Deccan Plateau & Eastern Ghats: Tamil Nadu-Sheraroy hills.

**23. *Bryum thomsonii* Mitt., Jour. Proc. Linn. Soc., Bot., Suppl. 1: 73. 1859.**

**Specimens examined:** WESTERN GHATS: KARNATAKA: Herb. Walker, on bridge stones near water, Marcara, Coorg, Dec. 1897, Coll.: *T.L. Walker*, Det.: *V.F. Brotherus* (FH 33).

**Range of distribution in South India:** Western Ghats: Karnataka-Kodagu; Tamil Nadu-Nilgiri hills; Deccan Plateau & Eastern Ghats: Andhra Pradesh-Guntur, Visakhapatnam.

**24. *Bryum tuberosum* Mohamed & Damanhuri**, Bryologist 93(3): 288. 1990.

**Specimens examined:** WESTERN GHATS: KARNATAKA: Shimoga Dist., Agumbe, alt. ca 600 m, grows on walls and rocks, 17.08.1984, Leg.: *S. Chandra & V. Nath* 204116B (LWG); KERALA: Wayanad Dist., Hairpin area, alt. 750 m, on rocky patch, 14.09.2001, Coll.: *Manju* 80093 (CAL).

**Range of distribution in South India:** Western Ghats: Karnataka-Agumbe, Uduppi; Kerala-Wayanad.

**25. *Bryum uliginosum* (Brid.) Bruch, Schimper & W. Gümbel** in Bryol. Eur. 4: 88. 1839.

**Range of distribution in South India:** Western Ghats: Kerala; Tamil Nadu-Nilgiri hills (Udhagamandalam-Naduvattam).

**26. *Bryum wightii* Mitt.**, J. Proc. Linn. Soc., Bot., Suppl. 1: 74. 1859.

**Specimens examined:** WESTERN GHATS: GOA: Keri Surfa (Border of Goa-Karnataka), Terricolous, Aug-Sept. 2003, Coll.: *Sulabha Phatak* (LWG 564); KARNATAKA: Herb. Walker, by small spring at the foot of a cliff of gneiss, Mercara, Coorg, India, Feb. 1898, Coll.: *T.L. Walker* 280, Det.: *V.F. Brotherus* (FH); Herb. Walker, damp earth near Nalknad Palace, Coorg, India, Mar. 1898, Coll.: *T.L. Walker* 329, Det.: *V.F. Brotherus* (FH); KERALA: Idukki Dist., near Devikolam, alt. ca 1800 m, grows on bark of tree, 02.03.1984, Leg.: *D.K. Upreti* 204009 (LWG); Munnar, Devikolam, alt. ca 1590 m, on water logged rocks, 11.9.2007, Leg.: *V. Nath* 248401 (LWG); Wayanad Dist., Manikkunnumala, near MSSRF, alt. ca 970 m, on rocky patch, 20.10.2003, Coll.: *Manju* 120297 (CAL); MAHARASHTRA: Bryophytes of Western India, Union of India, Bombay state, Satara district, near the summit of the Western Ghats, Mahabaleshwar, 17°55' N, 73°40' E, altitude about 4500 feet, on stone, semi-sheltered, early November 1950, Distr.: *H.A. Gleason, Jr.*, Coll.: *Hale H. Cook* 46, 50 Det.: *E.B. Bartram* (FH); TAMIL NADU: Herbarium Charrier, Indes Owglaises, Kodaikanal, 1912, Leg.: *R.P. Foreau* (FH); Beschi College Herb., Shembaganur, Palni hills, Kodaikanal, Leringe Path, about 6700 ft, July 56, Coll.: *G.F. 17* (FH); Herbarium of Edwin B. Bartram, Herbarium Charrier, Indes Owglaises, Pombarai, 4 June 1913, Leg.: *R.P. Foreau* (FH); Mosses of Southern India, Madras State, Madura district, Palni hills, Kodaikanal and surrounding region, Kodaikanal, Residue of "Musci Madurenses Indiae Meridionalis Exsiccati", issued by Georges Foreau, S.J. distributed by The New York Botanical Garden, Leg.: *G. Foreau* 98; 1923, (FH, TNS 051214).

**Range of distribution in South India:** Western Ghats: Goa; Karnataka-Agumbe (Hulical Ranges, Kanalgudda), Kodagu (Nalkad Palace, Mercara); Kerala-Agasthyamalai Biosphere Reserve, Idukki, Kannur, Munnar, Parambikulam Tiger Reserve, Vellarimala, Wayanad; Maharashtra-Mahabaleshwar; Tamil Nadu-Agasthyamalai Biosphere Reserve, Kodaikanal (Perumal Malai), Madurai, Nilgiri hills (Udhagamandalam-Levinge Path, Naduvattam, Thodabetta), Palni hills; Deccan Plateau & Eastern Ghats: Tamil Nadu-Namakal (Kolli hills).

#### 4. Discussion

Based on the exploration done by the earlier workers and published literature on this genus an attempt is made to put on record the *Bryum* taxa distributed in South India. It is seen that neither there has been any consolidated account nor there is any document about systematic studies of *Bryum* from this region. Hence, the present investigation is initiated with the aim to provide a base line information about the *Bryum* wealth of this region which can be used as a reference for preparation of a detailed *Bryum* spp. inventory for the country in future and will also help in

undertaking conservation measures. The species of *Bryum* are found growing in all the phytogeographical regions of India and among these, South India comprises 26 taxa of the genus, out of which 26 taxa are distributed in Western Ghats and 8 in Deccan Plateau & Eastern Ghats. The genus has maximum representation in Tamil Nadu with 19 taxa (73%), out of which *B. caespiticium*, *B. lamprostegum*, *B. madurense*, *B. pseudotriquetrum* var. *subrotundum* and *B. retusifolium* are confined to this state whereas, Kerala comprises 18 taxa (69%), out of which *B. dichotomum*, *B. kashmirensis*, *B. pachythea* and *B. pseudotriquetrum* are confined to this region only. Karnataka shows the presence of 10 taxa (38%) followed by Maharashtra with 8 taxa (30.8%), Andhra Pradesh with 5 taxa (19%) only whereas, Goa and Odisha are rather poor in the representation of the genus *Bryum* with only 4 (15%) and 3 (12%) species respectively. The assessment has revealed that *B. coronatum* is widely distributed in all the six states (Andhra Pradesh, Karnataka, Kerala, Maharashtra, Odisha and Tamil Nadu) and one union territory (Goa) of South India. Most of the taxa show their local distribution in various states of South Indian territory except *B. dichotomum*, *B. kashmirensis* and *B. euryphyllum*, distributed in Kerala and Karnataka but the local distribution are not precisely known. Similarly *B. uliginosum* was reported from Kerala and Tamil Nadu but this species does not show its local distribution in Kerala because of lack of information, thus not shown in Map. The substratum plays a vital role for plant growth of *Bryum* taxa grow in shaded and humid habitats. The rock crevices and tree bases in forests provide shady environment. Rocks in exposed places, such as alpine regions or in thinned out forest, monument and building tops and parapets provide an open sunlight condition to the *Bryum* taxa. *Bryum* colonize on variety of substrates and prefer to grow on rock, soil and bark. More than 61% of South Indian *Bryum* are saxicolous followed by terricolous (33.3%) and corticolous (28.6%). The lithophytes represent only less than 10% of the total *Bryum* species Known from South India, whereas rupicolous and lignicolous represents 4.8% each.

## 5. Acknowledgements

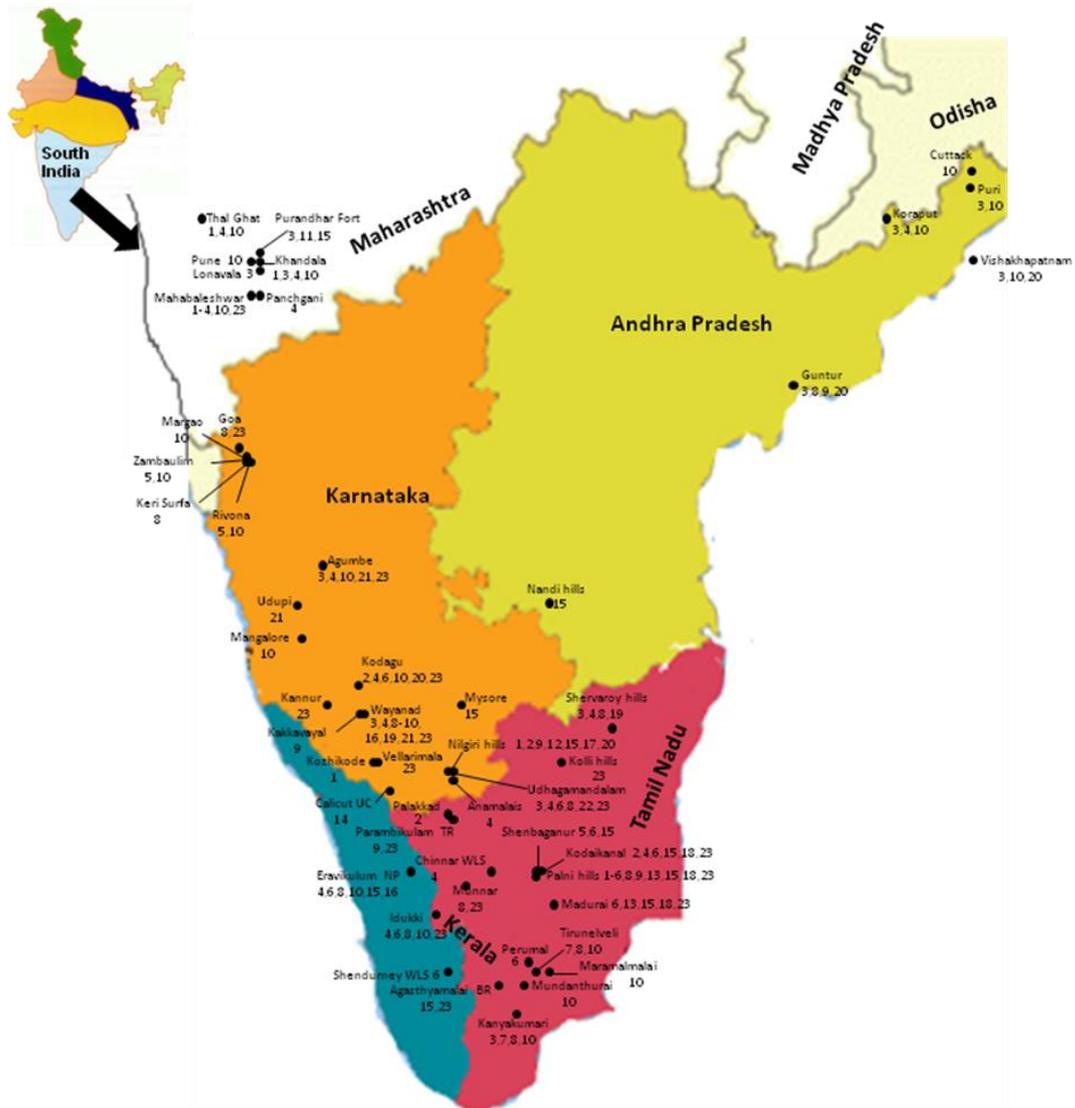
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|------------------------------|--------------------------------|--|
| 1. <i>B. alpinum</i>         | 9. <i>B. cellulare</i>         | 17. <i>B. pseudotriquetrum</i> var. <i>subrotundum</i> |
| 2. <i>B. apalodictyoides</i> | 10. <i>B. coronatum</i>        | 18. <i>B. retusifolium</i>                             |
| 3. <i>B. apiculatum</i>      | 11. <i>B. haematoneurum</i>    | 19. <i>B. salakense</i>                                |
| 4. <i>B. argenteum</i>       | 12. <i>B. lamprostegum</i>     | 20. <i>B. thomsonii</i>                                |
| 5. <i>B. bessonii</i>        | 13. <i>B. madurensis</i>       | 21. <i>B. tuberosum</i>                                |
| 6. <i>B. billardieri</i>     | 14. <i>B. pachythea</i>        | 22. <i>B. uliginosum</i>                               |
| 7. <i>B. caespiticium</i>    | 15. <i>B. paradoxum</i>        | 23. <i>B. wightii</i>                                  |
| 8. <i>B. capillare</i>       | 16. <i>B. pseudotriquetrum</i> |  |

Map. Distribution of genus *Bryum* Hedw. in Peninsular India