Taiwania, **52**(2): 168-176, 2007

Enumeration of the Mosses in Amarkantak (Madhya Pradesh), India – I

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(Manuscript received 28 August, 2006; accepted 10 January, 2007)

ABSTRACT: A total of 21 genera and 28 species of mosses belonging to 12 families were investigated from various localities of Amarkantak (Madhya Pradesh), India. The genera, *Entodontopsis leucostega* (Brid.) Buck & Ireland, *Entodontopsis nitens* (Mitt.) Buck & Ireland, *Pseudotaxiphyllum elegans* (Brid.) Iwats., *Erythrodontium julaceum* (Schwaegr.) Par., *Trachyphyllum inflexum* (Harv.) Gepp., *Hyophila involuta* (Hook.) Jaeg. were the dominant taxa. The richness of the moss taxa has been recorded in the Kapildhara locality and the epiphytic forms are found to be the most successful taxa in the area. The mosses of Amarkantak have been enumerated for the first time.

KEY WORDS: Mosses, Enumeration, Amarkantak, Central India.

INTRODUCTION

Amarkantak – a famous pilgrimage of Hindus is situated at the meeting point of Vindhya and Satpura mountain ranges between 22°41' N latitude and 81°46' E longitude in the Anuppur district of Madhya Pradesh (India), at an altitude of 1065 m. Amarkantak is a source of two sacred rivers Narmada and Sone which are religiously significant. The river Narmada is about 1,280 km and it flows westwards, while the river Sone flows towards the east (Pandeya et al., 1972). Shadangi and Nath (2005) studied the impact of seasonal changes on ground flora of this area. The climate of the Amarkantak is humid, mesothermal and without any water deficiency throughout the year. The hills and forest of Amarkantak are the treasures having valuable herbs and medicinal plants. The Gulbakawali Ark (a medicinal herb, *Hedychium coronarium* Koenig.) is world famous for eye tonic and also for the prevention of Motiabind (Cataract), Dasmool (*Asparagus racemosus* Willd.) roots possess valuable medicinal properties. The forest area of the Amarkantak region represents tropical moist deciduous type with *Shorea robusta* Gaertn.f as a monodominant species with varying associates like *Terminalia alata* Heyne ex Roth, *Mallotus philipensis* Muell. Arg., *Emblica officinalis* Gaertn., *Ficus bengalensis* L., *Mangifera indica* L., *Madhuca indica* J. F. Gmel. The proportion of genera: species in Amarkantak is 1:1.5 which is much less from India (1:7) and world (1:13). This makes every genus of great botanical importance because if a particular plant becomes extinct the genus itself will die as it does not live through any of its variant species. In India, there are very few such spots as Amarkantak which is a natural heritage area of national and international importance. Due to the unique ecosystem and status of vegetation, in March 2005, it has been declared as Biosphere Reserve by the Ministry of Environment and Forest.

Study of literature in hand suggests that little attention has been paid on the mosses of central India as compared to the hepatics. The significant contribution on hepatics of central India were made by Chavan and Mahabale (1945), Pande and Srivastava (1952), Bapna (1958), Bapna and Vyas (1962), Srivastava (1972), Udar and Srivastava (1973), Lal and Parihar (1979), Patidar et al. (1985), Jain and Kaul (1985), Kaul et al. (1995 a, b) and Kaul (2001), while Gangulee (1969 - 1980) referred to 13 species of mosses from central India including 11 species from M.P. and surroundings. Bapna (1975), Deora and Chaudhary (1996), Chaudhary and Sharma (2000) studied the mosses of Rajasthan while Chaudhary and Deora (2001) of Mt. Abu, Chaudhary and Sharma (2002) of Gujarat, also Lal (2005) published a census of Indian mosses. Lal and Parihar (1979) provided a list of hornworts and liverworts of Amarkantak, however no attempt has been made to investigate mosses of this area. The critical survey and collections of mosses were made with the objective to provide the complete bryoflora of Amarkantak and enumerated here for the first time.

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MATERIALS AND METHODS

The plants were collected in September 1987 and March 2004 from various localities of Amarkantak viz; Kabirchabutra, Kapildhara, Doodhdhara, Mai Ki Bagia, Sonmuda, Jaleshwar, Durgadhara etc. The specimens have been deposited in the Bryophyte Herbarium, National Botanical Research Institute, Lucknow (LWG).

In the enumeration the name of the mosses are followed by ecology and distribution, altitude, range of distribution and specimen(s) examined. The families are arranged according to the classification provided by Vitt (1984) followed by genera and species (Figs. 1-3).

ENUMERATION

I. Family – Bryaceae Schwaegr. in Willd., Sp. Pl. ed. 4. 5(2): 47 (1830). T: *Bryum* Hedw.

1. *Brachymenium exile* (Doz. *et* Molk.) Bosch *et* Lac. in Bryol. Jav., 1: 139 (1860).

Ecology and Distribution: On rocks, Kapildhara, Doodhdhara, Jaleshwar, 588-1000 m.

Range of Distribution: E. Himalayas - Darjeeling, Sikkim, Upper Assam, Manipur, N.E.F.A, W. Himalayas - Mussoorie, Delhi, Almora, Ranikhet, S. India - Perumalmalai hills (Kodaikanal), Ootacamund, Naga hills, Khandala, C. India - Orissa, Mt. Abu, Gangetic Plain - Lower Bengal, Andaman Is.; Ceylon, China, East Nepal, Formosa, Hawaii, Indonesia, Japan, Java, Korea, Mangolia, Malaya, Pacific Ocean Islands, Philippines, Rjukiu, Sumatra, Taiwan, Tonkin.

Specimens examined: India, central India, Doodhdhara, 27.9.1987, leg. *V. Nath*, *204582* (LWG); Jaleshwar, 29.9.1987, *204624* (LWG); Kapildhara, 23.3.2004, leg. *A.K. Asthana* et al., *226237* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

2. *Bryum capillare* L. ex Hedw. in Sp. Musc.: 182 (1801).

Ecology and Distribution: On soil, Kapildhara, Jaleshwar, 1000 m.

Range of Distribution: E. Himalayas - Darjeeling, Sikkim, W. Himalaya & - Kashmir, S. India - Nilgiri, C. India - Mt. Abu; Australia, Bhutan, Caucasus, East Nepal, Europe Hawaii, Japan, Korea, North Vietnam, Siberia,Thailand, China with western Tibet, Taiwan, central Asia, North and Central Africa, whole of North and S. America, New Zealand.

Specimens examined: India, central India, Kapildhara, 27.9.1987, leg. *V. Nath*, *204571* (LWG); Jaleshwar, 29.9.1987, *204616* (LWG), *204625* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

3. *Pohlia gedeana* (Bosch & Lac.) Gangulee, Mosses of Eastern India and Adjacent Regions 2: 927-928 (1974- 1977).

Ecology and Distribution: On rocks, Kabirchabutra, Durgadhara, 594-612 m.

Range of Distribution: Bhutan, Thailand, Java, Borneo.

Specimens examined: India, central India, Kabirchabutra, 22.3.04, leg. *A.K. Asthana* et al., *226218* (LWG); Durgadhara, 23.3.04, *226304* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

II. Family – Thuidiaceae Schimp., Syn. Musc. Eur. 493 (1860). T: *Thuidium* B. S. G.

4. *Thuidium koelzii* Robinson in Bryologist, 71: 92 (1968).

Ecology and Distribution: On rocks, Kapildhara, 602 m.

Range of Distribution: E. Himalayas - Assam, Khasia hills, W. Himalayas – Mussoorie, C. India – Orissa; Bhutan, E. Nepal, Thailand, Philippines, Celebes and Seram.

Specimen examined: India, central India, Kapildhara, 23.3.2004, leg. *A.K. Asthana* et al., *226241* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

5. *Thuidium investe* (Mitt.) Jaeg. in Ber. S. Gall. Naturw. Ges. 1876 – 77: 252 (1878).

Ecology and Distribution: On rocks and stem bark, Kabirchabutra, in association with *Pohlia gedeana* (Bosch & Lac.) Gangulee, 602 m.

Range of Distribution: E. Himalayas – Assam; Burma (Moulmein), New Guinea, Philippines, Thailand, Java, Malay Pen.

Specimens examined: India, central India, Kabirchabutra, 22.3.2004, leg. *A.K. Asthana* et al., *226218* (LWG), *226225* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

6. *Thuidium kiasense* Williams in Bull. N. Y. Bot. Gard., 8: 363 (1914).

Ecology and Distribution: On tree bark, Sonmuda, 600 m.

Range of Distribution: E. Himalayas - Darjeeling, Arunachal Pradesh, Assam; Philippines (Kias hill).

Specimen examined: India, central India, Sonmuda, 23.3.2004, leg. *A.K. Asthana* et al., *226287* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

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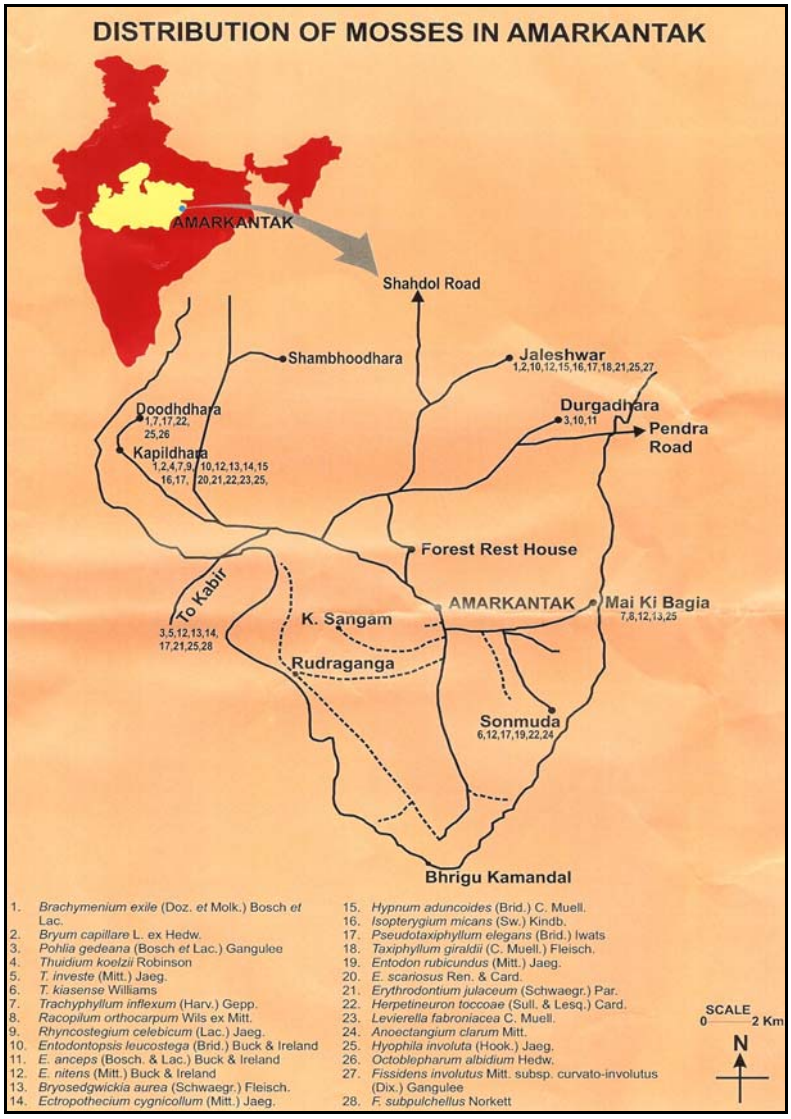


Fig. 1. Enumeration of the Mosses in Amarkantak.

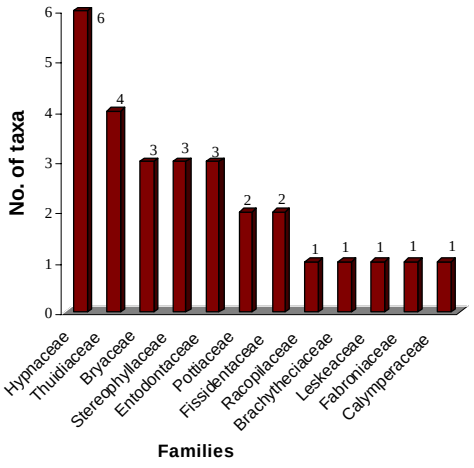


Fig. 2. Diversity of taxa in different families.

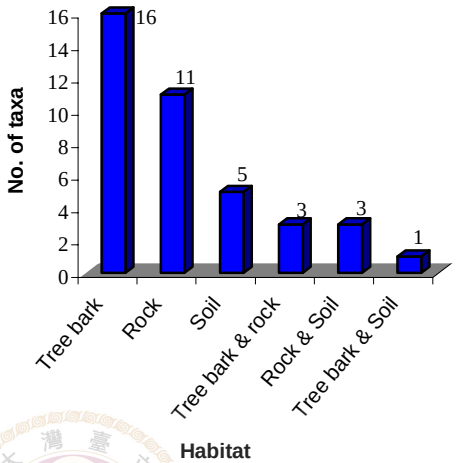


Fig. 3. Diversity of taxa on different habitat.

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7. *Trachyphyllum inflexum* (Harv.) Gepp in Hiern.: Cat. Welw. Afr. Pl., 2 (2): 299 (1901).

Ecology and Distribution: On tree bark, Kapildhara, Doodhdhara, Mai Ki Bagia, 588-612 m.

Range of Distribution: E. Himlayas - Darjeeling, Sikkim, Khasi hills, S. India - Palni hills (Palamalai, Mundathurai), C. India - Orissa, Madhya Pradesh, Kanara; Australia, Bangladesh, Burma, Cambodia, China, Ceylon, E. Nepal, Java, Madagascar, Malacca, Moluccas, New Caledonia, Philippines, Thailand.

Specimens examined: India, central India, Kapildhara, 23.3.2004, leg. *A.K. Asthana* et al., *226233* (LWG), *226239* (LWG), *226240* (LWG); Doodhdhara, *226267* (LWG); Mai Ki Bagia, *226281* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

III. Family – Racopilaceae Kindb., in Bot. Centralbl. 76: 85 (1898). T: *Racopilum* P. Beauv.

8. *Racopilum orthocarpum* Wils. ex Mitt. in Musci Ind. Or.: 136 (1859).

Ecology and Distribution: On tree bark, Mai Ki Bagia, 690 m.

Range of Distribution: E. Himalayas - Sikkim, Khasi hills, W. Himalayas – Laws Ghat road, S. India - Kodaikanal, Palni; Burma, Ceylon, E. Nepal, N. Vietnam.

Specimen examined: India, central India, Mai Ki Bagia, 23.3.04, leg. *A.K. Asthana* et al., *226283* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

IV. Family – Brachytheciaceae Schimp., Syn. Musc. Eur., ed. 2 xcv sic (cxv), 637 (1876). T: *Brachythecium* B. S. G.

9. *Rhynchostegium celebicum* (Lac.) Jaeg. in Ber. S. Gall. Naturw. Ges. 1876 – 77: 374 (1878).

Ecology and Distribution: On soil, Kapildhara, 602 m.

Range of Distribution: E. Himalayas - Assam, W. Himalayas - Garhwal, S. India – Palni; Celebes, Java, Philippines, Thailand, Tonkin, Sumatra.

Specimen examined: India, central India, Kapildhara, 23.3.2004, leg. *A. K. Asthana* et al., *226226* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

V. Family – Stereophyllaceae (Fleisch.) Buck & Ireland, Nova Hedwigia 41: 95 (1985) - Plagiotheciaceae subfam. Stereophylloideae Fleisch., Musci Fl. Buitenzorg 4: 1158 (1923), "Stereophylleae".

10. *Entodontopsis leucostega* (Brid.) Buck & Ireland, Nova Hedwigia 41: 103-104 (1985).

Stereophyllum decorum (Mitt.) Wijk & Marg., Taxon 9: 52 (1960).

Ecology and Distribution: On tree bark, rocks, Kapildhara, Jaleshwar, Durgadhara, 594 – 1000 m.

Range of Distribution: W. Himalayas - Kumaon, C. India - Girnar hills (Gujarat) and elsewhere in the Indian Himalayas; E. Nepal.

Specimens examined: India, central India, Kapildhara, 27.9.1987, leg. *V. Nath*, *204559* (LWG), *204561* (LWG); Jaleshwar, 29.9.1987, *204614* (LWG); Jaleshwar, 23.3.2004, leg. *A.K. Asthana* et al., *226294* (LWG), *226300* (LWG), *226302* (LWG), *226303* (LWG); Durgadhara, *226310* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

11. *Entodontopsis anceps* (Bosch. & Lac.) Buck & Ireland, Nova Hedwigia 41: 103 (1985).

Stereophyllum anceps (Bosch. & Lac.) Broth., Nat. Pfl. 1(3): 898 (1907).

Ecology and Distribution: On tree bark, Durgadhara, 594 m.

Range of Distribution: E. Himalayas – Assam (Mismari), S. India - Mahabaleshwar, C. India - Girnar hills (Gujarat), Gangetic plain – Chhotanagpur; Kanara, Bangladesh, China, Ceylon, Cochin, Indonesia, Java, Philippines, Thailand, Vietnam.

Specimen examined: India, central India, Durgadhara, 23.3.2004, leg. *A.K. Asthana* et al., *226313* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

12. *Entodontopsis nitens* (Mitt.) Buck & Ireland, Nova Hedwigia 41: 104 (1985).

Stereophyllum ligulatum Jaeg. & Sauerb., Ber. Tatigk. St. Gall. Naturw. Ges. 1877- 78: 277 (1880).

Ecology and Distribution: On tree bark, Kabirchabutra, Kapildhara, Mai Ki Bagia, Jaleshwar, Sonmuda, 609-1000 m.

Range of Distribution: S. India - western Ghats, Poona, Botampalli, Palni hills, Kanan Deva hills, Punjab Plain & Rajasthan - Chhotanagpur, Rajasthan, C. India - Girnar hills (Gujarat).

Specimens examined: India, central India, Kapildhara, 27.9.1987, leg. *V. Nath*, *204574* (LWG); Kabirchabutra, 22.3.2004, leg. *A.K. Asthana* et al., *226219* (LWG), *226221* (LWG); Kapildhara, 23.3.2004, *226230* (LWG), *226247* (LWG),

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226248 (LWG), *226249* (LWG), *226257* (LWG); Mai Ki Bagia, *226280* (LWG); Sonmuda, *226286* (LWG), *226289* (LWG); Jaleshwar, *226298* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

VI. Family – Hypnaceae Schimp., Coroll. Bryol. Eur. 113. 1855 (1856). T: *Hypnum* Hedw.

13. *Bryosedgwickia aurea* (Schwaegr.) Fleisch. in Hedwigia 63: 211 (1922).

Ecology and Distribution: On tree bark, Kabirchabutra, Kapildhara, Mai Ki Bagia, sometimes in association with *Levierella fabroniacea* C. Muell., 609 – 1000 m.

Range of Distribution: E. Himalayas - Darjeeling, Sikkim, Khasia hills, W. Himalayas - Dharamshala, Ranikhet; Bhutan, Nepal.

Specimens examined: India, central India, Kabirchabutra, 28.9.1987, leg. *V. Nath, 204593* (LWG); Kapildhara, 23.3.2004, leg. *A.K. Asthana* et al., *226231* (LWG), *226234* (LWG); Mai Ki Bagia, *226271* (LWG), *226275* (LWG), det. V. Nath, A. K. Asthana and R. Kapoor.

14. *Ectropothecium cygnicollum* (Mitt.) Jaeg. in Ber. S. Gall. Naturw. Ges., 1877 – 78 : 259 (1880).

Ecology and Distribution: On rocks, Kabirchabutra, Kapildhara, 579-602 m.

Range of Distribution: E. Himalayas – Darjeeling, Sikkim, Nicobar Is.

Specimens examined: India, central India, Kabirchabutra, 22.3.04, leg. *A.K. Asthana* et al., *226227* (LWG); Kapildhara, 23.3.04, *226254* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

15. *Hypnum aduncoides* (Brid.) C. Muell., Syn., 2: 295 (1851).

Ecology and Distribution: On tree bark, soil, Kapildhara, Jaleshwar, in association with *Phaeoceros laevis* (L.) Prosk. subsp. *laevis* Prosk. and *Frullania muscicola* St., 602-620 m.

Range of Distribution: E. Himalayas - Darjeeling, Assam; Burma, China (Yunnan), Madagascar, S. Africa.

Specimens examined: India, central India, Kapildhara, 27.9.1987, leg. *V. Nath, 204575* (LWG); Jaleshwar, 29.9.1987, *204621* (LWG); Jaleshwar, 23.3.2004, leg. *A.K. Asthana* et al., *226259* (LWG), *226299* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

16. *Isopterygium micans* (Sw.) Kindb. in Enum. Bryin. Exot. 21 (1888).

Ecology and Distribution: On rocks near water stream, soil, Kapildhara, Jaleshwar, 612 – 1000 m.

Range of Distribution: E. Himalayas - Assam (Mismari); China, Islands to East of Mexico, N. America, Northern South America, S. Tibet, S. Africa, U.S.A (Long Island to Gulf of Mexico, west to Missourie).

Specimens examined: India, central India, Jaleshwar, 28.9.1987, leg. *V. Nath, 204619* (LWG); Kapildhara, 23.3.2004, leg. *A.K. Asthana* et al., *226260* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

17. *Pseudotaxiphyllum elegans* (Brid.) Iwats., Journ. Hattori Bot. Lab. 63: 449 (1987).

Isopterygium elegans (Brid.) Lindb., Not. Saellsk. F. Fl. Fenn. Foerh. 13: 416 (1874).

Ecology and Distribution: On rocks, soil, Kabirchabutra, Kapildhara, Doodhdhara, Sonmuda, Jaleshwar, 609-1000m.

Range of Distribution: E. Himalayas, W. Himalayas – Simla; Japan, Europe, Nepal, Feno-scandia, United kingdom, N. America.

Specimens examined: India, central India, Doodhdhara, 27.9.1987, leg. *V. Nath, 204581* (LWG); Jaleshwar, 29.9.1987, *204620* (LWG); Kabirchabutra, 22.3.2004, leg. *A.K. Asthana* et al., *226220* (LWG); Kapildhara, 23.3.2004, *226242* (LWG), *226243* (LWG); Sonmuda, *226284* (LWG), *226311* (LWG) det. V. Nath, A.K. Asthana and R. Kapoor.

18. *Taxiphyllum giraldii* (C. Muell.) Fleisch. in Musci Fl. Buitenz., 4: 1435 (1923).

Ecology and Distribution: On soil, Jaleshwar, 620 m.

Range of Distribution: W. Himalayas – Kumaon; China, Formosa, Japan, Nepal, Taiwan.

Specimen examined: India, central India, Jaleshwar, 23.3.04, leg. *A.K. Asthana* et al., *226297* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

VII. Family - Entodontaceae Kindb., Gen. Eur, Northamer, Bryin, 7 (1897). T: *Entodon* C. Muell.

19. *Entodon rubicundus* (Mitt.) Jaeg. in Ber. S. Gall. Naturw. Ges. 1867 – 77: 285 (1878).

Ecology and Distribution: On tree bark, Sonmuda, 600 m.

Range of Distribution: E. Himalayas - Darjeeling, Sikkim, Assam, Meghalaya, Khasi hills, W. Himalayas, S. India - Andaman Is., Central India – Pachmarhi; Bhutan, E. Nepal, E. Siberia, Japan, Korea, Myanmar, Philippines, Yunnan.

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Specimen examined: India, central India, Sonmuda, 23.3.2004, leg. *A.K. Asthana* et al., *226290* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

20. *Entodon scariosus* Ren. & Card. in Bull. Soc. R. Bot. Belg., 34 (2): 75 (1896).

Ecology and Distribution: On tree bark, Kapildhara, 602 m.

Range of Distribution: E. Himalayas – Darjeeling, Sikkim.

Specimen examined: India, central India, Kapildhara, 23.3.2004, leg. *A.K. Asthana* et al., *226221* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

21. *Erythrodontium julaceum* (Schwaegr.) Par. in Index. Bryol.: 436 (1896).

Ecology and Distribution: On tree bark, Kabirchabutra, Kapildhara, Jaleshwar, 612-1000 m.

Range of Distribution: E. Himalayas – Darjeeling, Sikkim, Assam, Khasi hills, W. Himalaya & - Dehradun, Mussoorie, Ranikhet, Kumaon, S. India - Palni hills (Kodaikanal, Tiger Shola, Manalur), Nilgiri, C. India – Pachmarhi, Orissa; Bhutan, Burma, Coorg, Celebes, Central & South Africa, Ceylon, E. Nepal, Haos, Java, Philippines, Solomon islands, Sumatra, Thailand, Tonkin, Yunnan.

Specimens examined: India, central India, Jaleshwar, 28.9.1987, leg. *V. Nath*, *204623* (LWG), *204627* (LWG), *204629* (LWG), *204631* (LWG); Kabirchabutra, 22.3.2004, leg. *A.K. Asthana* et al., *226229* (LWG); Kapildhara, 23.3.2004, *226258* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

VIII. Family – Leskeaceae Schimp. Coroll. Bryol. Eur. 109. 1855 (1856).

22. *Herpetineuron toccoae* (Sull. & Lesq.) Card. in Beih. Bot. Centralbl., 19 (2): 128 (1905).

Ecology and Distribution: On tree bark, rocks, Kapildhara, Doodhdhara, Sonmuda, 588 – 612 m.

Range of Distribution: E. Himalayas - Darjeeling, Sikkim, Manipur, Khasi hills, W. Himalayas - Kasauli, Nainital, Garhwal, Almora, Mussoorie, S. India - W. ghats, Kodaikanal, Palni hills (Tiger shola), Jaunsar, C. India - Orissa, Gangetic plain – Bihar; Arizona, Australia, Celebes, Central and S. Africa Ceylon, E. china, E. Nepal, Florida, Formosa, Fr. Guinea, Georgia (Type locality: Toccoa falls), Guatemala, Hong Kong, Japan, Java, Korea, Louisiana, Manchuria, Mexico, New Caledonia, North Carolina, New Zealand, Philippines, S. California, Sumatra, Taiwan, Tonkin, Ussuri.

Specimens examined: India, central India, Kapildhara, 23.3.2004, leg. *A.K. Asthana* et al., *226236* (LWG), *226238* (LWG); Doodhdhara, *226262* (LWG); Sonmuda, *226288* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

IX. Family - Fabroniaceae Schimp., Coroll. Bryol. Eur. 102. 1855 (1856). T: *Fabronia* Raddi.

23. *Levierella fabroniacea* C. Muell. in Bull. Soc. Bot. Ital. 1897: 73 (1897).

Ecology and Distribution: On tree bark, Kapildhara, 612 m.

Range of Distribution: E. Himalayas - Darjeeling, W. Himalayas - Mussoorie, S. India - Purandhar, C. India - Madhya Pradesh; Nepal, Abyssinia, Setschwan, Transvaal.

Specimen examined: India, central India, Kapildhara, 23.3.2004, leg. *A.K. Asthana* et al., *226250* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

X. Family – Pottiaceae Schimp., Coroll. Bryol. Eur. 24. 1855 (1856). T: *Pottia* (Reichenb.) Furnr.

24. *Anoectangium clarum* Mitt. in Musc. Ind. Or.: 31 (1859).

Ecology and Distribution: On wall, Sonmuda, in association with *Plagiochasma intermedium* Ldbg. *et* G., 600 m.

Range of Distribution: E. Himalayas - Darjeeling, Sikkim, W. Himalayas; Ceylon, Nepal, Yunnan.

Specimen examined: India, central India, Sonmuda, 23.3.04, leg. *A.K. Asthana* et al., *226292* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

25. *Hyophila involuta* (Hook.) Jaeg. in Ber. S. Gall. Naturw. Ges. 1871 – 72 : 356 (1873).

Ecology and Distribution: On rocks, soil, Kabirchabutra, Kapildhara, Doodhdhara, Mai Ki Bagia, Jaleshwar, 609 – 1000 m.

Range of Distribution: E. Himalayas - Darjeeling, Sikkim, upper Assam, Khasi hills, Arunachal Pradesh, W. Himalayas, S. India - W. Ghats, Shembaganur (Kodaikanal), Nilgiri, Palni, Mysore , Khandala, Mahabaleshwar, Borivli, Bombay, Nicobar Is., C. India - Gujarat, Orissa, Madhya Pradesh, Mt. Abu, Gangetic Plain - lower Bengal, north Bihar, Chhotanagpur, upper Gangetic plains; Burma, Borneo, Celebes, Ceylon, E. China, E. Nepal, Europe, Japan, Java, Korea, Manchuria, New Guinea, N & S Vietnam, Oceania, Philippines, Sumatra, Taiwan, North-Central-South America,.

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Specimens examined: India, central India, Kabirchabutra, 27.9.1987, leg. *V. Nath*, *204583* (LWG), *204584* (LWG); Doodhdhara, 28.9.1987, *204595* (LWG); Jaleshwar, 29.9.1987, *204623* (LWG); Kapildhara, 23.3.2004, leg. *A.K. Asthana* et al., *226232* (LWG), *226236* (LWG); Mai Ki Bagia, *226268* (LWG), *226272* (LWG), *226278* (LWG); Jaleshwar, *226293* (LWG), *226296* (LWG), det. V. Nath, A. K. Asthana and R. Kapoor.

XI. Family – Calymperaceae Kindb., Gen. Eur. Northamer. Bry. 11 (1897). T: *Calymperes* Sw. in Web.

26. *Octoblepharum albidum* Hedw. in Sp. Musc.: 50 (1801).

Ecology and Distribution: On tree bark, Doodhdhara, 589 m.

Range of Distribution: E. Himalayas - Darjeeling, Sikkim, upper Assam, Manipur, NEFA, W. Himalayas - Kumaon, S. India - Kodaikanal, Mahabaleshwar, Khandala, Andaman Is., C. India - Orissa, Gangetic plain - Lower Bengal; Africa Australia, Burma, Concan, Ceylon, China, Hawaii Is., Java, Madagascar, New Guinea, N & S. America, Nepal, Philippines, Sri Lanka, Thailand, Vietnam. It is cosmopolitan and widely distributed in tropical and subtropical countries.

Specimen examined: India, central India, Doodhdhara, 23.3.04, leg. *A.K. Asthana* et al., *226262* (LWG), det. V. Nath, A. K. Asthana and R. Kapoor.

XII. Family – Fissidentaceae Schimp., Coroll. Bryol. Eur. 20. 1855 (1856). T: *Fissidens* Hedw.

27. *Fissidens involutus* Mitt. subsp. ***curvato – involutus*** (Dix.) Gangulee, in Mosses of Eastern India and Adjacent Regions 1: 548-549 (1969-1972)

Ecology and Distribution: On tree bark, Jaleshwar, 630 m.

Range of Distribution: Uttar Pradesh (Dehra Dun), Haryana (Kalka, Pinjore), M.P. (Bastar).

Specimen examined: India, central India, Jaleshwar, 23.3.2004, leg. *A.K. Asthana* et al., *226294* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

28. *Fissidens subpulchellus* Norkett, in Mosses of Eastern India and Adjacent Regions 1: 521 – 523 (1969- 1972).

Ecology and Distribution: On rocks, Kabirchabutra, 612 m.

Range of Distribution: North East Frontier Area.

Specimen examined: India, central India, Kabirchabutra, 22.3.2004, leg. *A.K. Asthana* et al., *226224* (LWG), det. V. Nath, A.K. Asthana and R. Kapoor.

DISCUSSION

The present study revealed the occurrence of 28 species of mosses belonging to 21 genera under 12 families. The genera *Entodontopsis leucostega*(Brid.) Buck & Ireland, *Entodontopsis nitens* (Mitt.) Buck & Ireland, of family Stereophyllaceae, *Pseudotaxiphyllum elegans* (Brid.) Iwats., of family Hypnaceae, *Erythrodontium julaceum* (Schwaegr.) Par. of family Entodontaceae, *Trachyphyllum inflexum* (Harv.) Gepp., of family Thuidiaceae *Hyophila involuta* (Hook.) Jaeg. of family Pottiaceae were common in occurrence in the Amarkantak area. Higher number of taxa (18) were found in the Kapildhara which seems to be a suitable place for the growth of the mosses. Epiphytic forms (16) are more than the saxicolous (11) followed by the terricolous taxa (5). Three species: *Isopterygium micans* (Sw.) Kindb., *Pseudotaxiphyllum elegans* (Brid.) Iwats., *Hyophila involuta* (Hook.) Jaeg. were recorded commonly growing on the rocks and soil, three species: *Thuidium investe* (Mitt.) Jaeg., *Entodontopsis leucostega* (Brid.) Buck & Ireland, *Herpetineuron toccoae* (Sull. & Lesq.) Card. growing on the rocks as well as on bark of trees, whereas one species: *Hypnum aduncoides* (Brid.) C. Muell. is common on soil and tree bark.

ACKNOWLEDGEMENTS

Authors are thankful to Director, National Botanical Research Institute, Lucknow for his encouragement and providing the facilities. This work is financially supported by Ministry of Environment & Forest, Govt. of India, New Delhi .

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印度 Amarkantak 地區之苔類目錄–I

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(收稿日期：2006 年 8 月 28 日；接受日期：2007 年 1 月 10 日)

摘　　要

本文調查印度 Amarkantak 附近地區之苔類共 12 科 21 屬 28 種。*Entodontopsis leucostega* (Brid.) Buck & Ireland, *E. nitens* (Mitt.) Buck & Ireland, *Pseudotaxiphyllum elegans* (Brid.) Iwats., *Erythrodontium julaceum* (Schwaegr.) Par., *Trachyphyllum inflexum* (Harv.) Gepp., *Hyophila involuta* (Hook.) Jaeg.等 6 種是本地區的優勢種；Kapildhara 地區被認為是苔類植物最豐富的地區；而在此地區以蔓生苔類最成功。本文是印度 Amarkantak 地區之苔類目錄的首篇報導。

關鍵詞：苔類、目錄、Amarkantak、印度中部。

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