

A Checklist of *Fissidens* species (Musci: Fissidentaceae) of Nepal

N. Pradhan¹ and S.D. Joshi²

¹Natural History Museum, Tribhuvan University, Swayambhu, Kathmandu, Nepal

²Central Department of Botany, Tribhuvan University, Kirtipur, Kathmandu, Nepal.

Received: 29.11.2006; Accepted: 20.12.2006

Abstract

This paper includes 42 species and 7 varieties of *Fissidens* recorded from Nepal. The distribution of this genus in various geographical areas within the altitudinal range of 100 m to 3400 m has been mentioned. *Fissidens sylvaticus* var. *calcuttense* Gangulee, *Fissidens sylvaticus* var. *auriculatus* (C. Muell.) Gangulee and *Fissidens strictus* Hook. & Wilson have been recorded for the first time in Nepal.

Keywords: *Fissidens*, Bryophytes, Mosses, Conservation

Introduction

Nepal has represented good diversity of bryoflora, which count the total records of 1100 species hitherto. This includes 307 species of liverworts, 766 species of mosses and 8 species of hornworts (Pradhan, 2000). Kattel and Adhikari (1992) recorded a list of 559 species of mosses in Nepal. The combinations of complex geography and differentiated climatic conditions have played vital role for the distribution of bryophytes in Nepal.

The family Fissidentaceae, one of the largest families of mosses, consists of a monogeneric taxon *Fissidens*, with about 900 species worldwide (Ishihara and Iwatsuki, 1992; Iwatsuki *et al.*, 1999; Imura and Iwatsuki, 1988). On percentage basis, Nepal represents 5.2 % of *Fissidens* species at the ratio of the world's species. This is a cosmopolitan genus, easily distinguished with the arrangement and form of its leaves and is distributed over diverse habitat types as low as

116 meter to the maximum elevation of 3400 meter in Nepal. The total record of *Fissidens* in Nepal counts 49 species so far. The degree of Conservation requirement related to *Fissidens* still waits for its status survey.

Taxonomic treatment

Fissidens Hedw.

1. *Fissidens anomalous* Montin, *Ann. Sci. Nat. Bot. ser.2*, **17**: 252 (1842).

Fissidens neckeroides Griff.

C. Nepal: *Dolakha*, Jiri, 2100-2300 m, Higuchi 16935, 3 Oct. 1998 (TNS). *Kathmandu*, Bhangeri, 1894 m, Takaki 56661, 2 Oct 1986 (TNS); E. Nepal: *Tehrathum*, Chitre-Basantapur, 2350 m, Iwatsuki, *s.n.*, June 6, 1972 (TI). *Dor-Chauke*, 2850 m, Iwatsuki, 7 June 1972 (TI).

Western Himalaya, India, Sri Lanka, Burma, Nepal, Thailand, China, Philippines, Java, Vietnam.

2. *Fissidens bififormis* Mitt., *J. Linn. Soc. Bot. Suppl. 1*: 141 (1859).
E. Nepal: *Dhankuta*, Hile-Chitre, 1990 m, Iwatsuki *s.n.*, June 5, 1972 (TI); Dor-Chauke, 2730 m, Iwatsuki *s.n.*, 70 June, 1972 (TI); E. Nepal, 600 -2000 m, Norkett 5841, Feb. 1962 (BM).
Himalaya, Nepal, South India, Sri Lanka.
3. *Fissidens bryoides* Hedw., *S. Musc* :153 (1801).
W. Nepal: *Dang*, Lamahi, 410 m, Pradhan *et. al* 269, 25 Jan 2001 (NHM). *Banke*, Naya Gaun -Dhakeri, 200 m, Pradhan *et al.* 339, 3 June 2001 (NHM); C. Nepal: *Lalitpur*, Phulchoki, 1600 m, Pradhan 48, 14 Oct 1997 (NHM); E. Nepal: *Dhankuta*, Shanghu, 1580 m, Norkett 7773, 19 Nov. 1961 (BM). Topke Gola-Shewaden, 2850 m, Iwatsuki *s.n.*, June 28, 1972 (TI).
Western Himalayas, S. India, Caucasus, China, Nepal, Europe, Japan, Taiwan, N. and C. Africa, N. and S. America, Malaya, Java, Philippines, Sri Lanka, Siberia.
4. *Fissidens bryoides* Hedw. var. *schmidii* (C. Muell.) R. Chopra & S. Kumar, *Mosses W. Him. & Adj. Plains*: 43 (1981).
Fissidens schmidii C. Muell.
W. Nepal: *Kaski*, Phewa Lake, 800 m, Higuchi 15438, 6 Sept 1988 (TNS); C. Nepal: *Kathmandu*, Jamacho, 2000 m. Higuchi 15591, 11 Sept. 1988 (TNS). *Lalitpur*, Godawari, 1530 m, Takaki 55247, 2 Sept 1986 (TNS). E. Nepal: *Ilam*, 1150 m, Higuchi 18301, 5 Nov. 1988 (TNS). *Tehrathum*, Basantapur Dor, 2350 m, Iwatsuki, *s.n.*, 6 June 1972 (TI). Western Himalaya, S. India, Sri Lanka, Pakistan, Malay, Java, Philippines, Nepal, Japan, Central Africa, New Guinea, Malaya.
5. *Fissidens curvato-involutus* Dixon, *Royal Bot. Gard. Edinburgh 19*: 279 (1938).
W. Nepal: *Bardia*, Bargadha Ghat-Parewa Odar, 175 m, Pradhan Br98, 28 Feb 2003 (NHM); *Palpa*, Butwal-Tansen, 300 m, Higuchi 18512, 9 Nov. 1988 (TNS); C. Nepal: *Chitwan*, Pandav Nagar-Bankatta, RCNP, 280 m, Pradhan Pn320, 2 Nov. 2004 (NHM);
India, Nepal, Burma, Thailand, Vietnam.
6. *Fissidens curvato-xiphioides* Dixon & Verd., *Arch. in Bot.*, 1: 163 (1927).
E. Nepal: *Sankhuwasabha*, Arun river bed, 600 m, Norkett 9053, Jan, 1961 (BM).
Western Himalaya, South India, Burma, Nepal, Japan, Yunnan.
7. *Fissidens ceylonensis* Dozy & Molck., *Ann. Sc. Nat. Bot. ser. 3, 2*: 304 (1844).
Fissidens intromarginatulus Bartr.
W. Nepal: *Kaski*, Pokhara-Matepani, 800 m, Higuchi 15577, 2 Sept. 1988 (TNS). C. Nepal: *Rasuwa*, Dhunche, 2000 m, Higuchi 15764, 13 Sept 1988 (TNS). *Bhaktapur*, Nagarkot, 1380-1950 m, Takaki 55609, 16 Sept. 1986 (TNS); E. Nepal: *Sankhuwasabha*, Tumling Tar, 550 m, Norkett 8983, 11 Dec. 1961 (BM); *Dhankuta*, Dharapani-Dhankuta, 1750 m, Noguchi *s.n.*, 1966 (TI).
Western Himalaya, S. India, Nepal, Sri Lanka, Burma, Thailand, Vietnam, S. China, Malaya, Singapore, Borneo, Sumatra, Java, Philippines, New Zealand.

8. *Fissidens ceylonensis* var. *simplex* (C. Muell.) Norkett in Gangulee, *Mosses E. Ind. & Adj. Reg.* 2: 514 (1971).
Fissidens simplex C. Muell.
E. Nepal: *Sankhuwasabha*, Tumling Tar-Arun River, 550 m, Norkett 9046, 23 Dec. 1961 (BM).
Sri Lanka, Java, Nepal.
9. *Fissidens crenulatus* Mitt., *J. Proc. Linn. Soc. Bot., Suppl.* 1:140. 1859.
W. Nepal: *Bardia*, Bargadha Ghat, RBNP, 174 m, Pradhan Br84, Br85, 28 Feb 2003 (NHM); C. Nepal: *Chitwan*, Bankatta, 300 m, Pradhan Pn 87, 13 Dec. 2003 (NHM).
Philippines, Nepal, China, Vietnam, Myanmar, Japan, New Guinea, S. India, Upper Burma.
10. *Fissidens crenulatus* Mitt. var. *titalyanus* (C. Muell.) Gangulee, *Mosses E. Ind. & Adj. Reg.* 2: 506 (1971).
Fissidens titalyanus C. Muell.
W. Nepal: Dang, De Gadawa, 290 m, Pradhan 543, 9 Nov. 2001 (NHM); E. Nepal: 600 m, Norkett 9995, Nov. 1962 (BM).
India, Nepal, China.
11. *Fissidens diversifolius* Mitt., *Musci. Ind. Or.* 140 (1859).
E. Nepal: *Sankhuwasabha*, Tumling Tar, 550 m, Norkett 8881, 15 Dec 1961 (BM).
Western Himalaya (Simla, Mussori), S. India, Nepal, Bhutan, Burma, Japan.
12. *Fissidens diversifolius* var. *rubricaulis* (Dixon) Norkett in Gangulee, *Mosses E. India. & Adj. Reg.* 2: 494 (1971).
E. Nepal: *Sankhuwasabha*, Tumling Tar, 750 m, Norkett 8770, 12 Dec. 1961 (BM).
India, Nepal.
13. *Fissidens dubius* P. Beauv., *Prodr. Cinq. Six. Fam. Aeth.* :57 (1805).
Fissidens cristatus P.S. Wilson ex Mitt.
C. Nepal: *Makwanpur*, Daman 2000 m, Higuchi & Takaki 56089, 23 Sept 1986 (TNS); E. Nepal: Hati Sar Minchin Dhap, Noguchi *et al. s.n.*, 1966 (TI).
Western Himalaya, S. India, Sri Lanka, Java, Nepal, New Guinea, Philippines, Japan, Europe, Caucasus, N. Africa, N. America.
14. *Fissidens ganguleei* Norkett, *Mosses E. Ind. & Adj. Reg.* 2: 527 (1971).
E. Nepal: 1400 m, Norkett 9952, 18 Jan 1962 (BM).
Nepal, India (Darjeeling).
15. *Fissidens gardneri* Mitt., *J. Linn. Soc., Bot.* 2: 593 (1869).
Fissidens microcladus Thwait. et Mitt.
W. Nepal: *Kaski*, Pokhara, Phewa Lake, 800 m, Higuchi 15443, 6 Sept, 1988 (TNS). C. Nepal: *Chitwan*, Bharatpur-Tadi, 500 m, Takaki 56165, 26, Sept. 1986 (TNS). *Kathmandu*, Gokarna Forest, 1350 m, Higuchi 115181, 6 Sept 1988 (TNS). *Kavre*, Barhabise, 900-1000 m, Higuchi 15336, 1 Sept, 1988 (TNS); E. Nepal: *Sankhuwasabha*, Arun Velley, 753 m, Stainton 1526b (BM).
America, Sri Lanka, Laos, Thailand, Nepal, China, Taiwan, Indonesia, Philippines,

- Papua New Guinea, India, Japan, New Caledonia.
16. *Fissidens geppii* M. Fleisch., *Musci. Fl. Buitenzorg I*: 26 (1904).
W. Nepal: *Kaski*, Pokhara-Begnas Tal, 600 m, Higuchi 18635, 11 Nov. 1988 (TNS).
India, Indonesia, Sumatra, Java, Nepal, Borneo, China, Korea, Japan.
17. *Fissidens grandifrons* Brid., *Sp. Musc. I*: 170 (1806).
C. Nepal: *Rasuwa*, Dhunche, 2400-2500 m, Higuchi 15889, 14 Sept 1988 (TNS); E. Nepal: *Dhankuta* Mewa Khola Gorge, 3000 m, Norkett 9100A, 18 Jan 1961 (BM); *Taplejung*, Topke Gola-Sewaden, 3400 m, Iwatsuki *s.n.*, 28 June 1972 (TI).
Western Himalaya, Nepal, South India, Pakistan, Europe, N. & C. America, N. & Central Africa, C. China, Taiwan, Japan, C. Asia, Siberia.
18. *Fissidens hollianus* Dozy & Molk., *Bryol. Jav. I*: 4 (1855).
C. Nepal: *Kathmandu*, Gokarna, 1350 m, Higuchi 15166, 29 Aug. 1988 (TNS).
Burma, Borneo, China, Indochina, Thailand, Malay Pen, Nepal, Myanmar, Sumatra, Java, Philippines, Taiwan, Japan, Papua New Guinea, Peninsula, Vietnam.
19. *Fissidens involutus* P.S. Wilson ex Mitt., *J. Proc. Linn. Soc. Bot., Suppl. I*: 138 (1859).
E. Nepal: *Sankhuwasabha*, Tumling Tar, 550 m, Norkett 9626, 21 Dec 1961 (BM). *Sunsari*, Dhankuta, 400 m, Norkett 9990, 24 Feb. 1962 (BM).
- Western Himalaya, Sikkim, East India, Myanmar, Pakistan, Burma, Nepal, China, Japan, Thailand, Vietnam, Philippines.
20. *Fissidens javanicus* Dozy & Molk., *Bryol. Jav., I*: 11 (1855).
W. Nepal: *Bardia*, Parewa Odar, RBNP, 195 m, Pradhan Br123, 2 March 2003 (NHM); *Kaski*, Pokhara, 800 m, Higuchi 18614, 10 Nov. 1988 (TNS). C. Nepal: *Chitwan*, Simaldhap, 300 m, Pradhan Pn267, 20 Dec 2003 (NHM); Pandav Nagar, 300 m, Pradhan Pn318, 2 Nov. 2004 (NHM); E. Nepal: Mewa Khola, 2400 m, Norkett 9705B, 27 Jan 1962 (BM).
Western Himalaya, India, Nepal, Sri Lanka, Singapore, Sumatra, Thailand, Java, Borneo, Philippines, China, Taiwan, Japan, New Guinea.
21. *Fissidens kalimpongensis* Gangulee, *Bull. Bot. Beng., II*: 71 (1957).
E. Nepal: *Sankhuwasabha*, Tumling Tar, 550 m, Norkett 9025, 21 Dec 1961 (BM). *Sunsari*, Dharan, 900 m, Norkett 5060, 17 Sept. 1961 (BM); Tamrang Khola, 1882 m, Norkett 8665, 31 Oct. 1961 (BM).
Western Himalaya, Nepal, India (Darjeeling).
22. *Fissidens kurzii* C. Muell., *Linnaea*, 37: 163 (1872).
E. Nepal: Chauke-Lamo Pokhari, 2620 m, Iwatsuki *s.n.*, 8 June, 1972 (TI).
Himalaya, Nepal, Burma.
23. *Fissidens laxitextus* Broth. ex. Gangulee, *Nova Hedwigia*, 8: 144 (1964).
E. Nepal: Sewaden Papung, 2400 m, Iwatsuki *s.n.*, 29 June 1972(TI).

Himalaya, Nepal, India (Darjeeling).

24. *Fissidens linearis* Brid. var. *obscurirete* (Broth. & Paris) I.G. Stone, *J. Bryol.* **16**: 404 (1991) *Fissidens obscurirete* Broth. & Paris in Broth.

C. Nepal: *Bhaktapur* Kharipati-Nagarkot, 1380-1985 m, Takaki 55608, 18 Sept 1986 (TNS).

China, Nepal, Korea, Japan, New Caledonia.

25. *Fissidens longisetus* Griff., *Cal. J. Nat. Hist.*, **2**: 503 (1842).

E. Nepal: *Dhankuta*, Sanghu Down, 1800 - 2108 m, Norkett 9917, 17 Feb. 1972 (BM).

China, Nepal, India.

26. *Fissidens maceratus* Mitt., *Trans. Proc. Royal Soc. Victoria* **19**: 91 (1882).

Fissidens splachnobryoides Broth.

C. Nepal: *Lalitpur*, Phulchowki, 1800 m, Noguchi *et al.*, June 1975 (TI); E. Nepal: *Sunsari*, Dharan 200-240 m, Iwatsuki, *s.n.*, 1 June 1972 (TI); Bir Gaun Dingla, 1300 m, Iwatsuki, *s.n.*, 1 July 1975 (TI).

India, Nepal, Sri Lanka, Upper Burma, Java, North Borneo, New Guinea, Philippines, Formosa, Japan.

27. *Fissidens microcladus* var. *terrestries* Aust. in Featherman, *Rep. Bot. Surv. S. C. Louisiana* 2 Rep. (1871).

E. Nepal: *Sankhuwasabha*, Tumling Tar, 550 m, Norkett 8829, 13 Dec 1961 (BM).

China, Nepal, India, Japan, Sri Lanka, Philippines, Singapore, Taiwan.

28. *Fissidens minutus* Thwaites & Mitt., *J. Linnean Soc. Bot.* **13**: 323(1873).

Fissidens foreauanus Cardot.

E. Nepal: *Sunsari*, Dharan-Ghopa Camp, 200 m, Norkett 10226, 27 Feb. 1962. (BM).
Nepal, Sri Lanka, India (Palni).

29. *Fissidens nobilis* Griff., *Cal. J. Nat. Hist.*, **2**: 505 (1842).

W. Nepal: *Kaski*, Pokhara, 800 m, Higuchi 18599, 10 Nov. 1988 (TNS). C. Nepal: *Kathmandu*, Jamacho, 1600 m, Takaki, 56590, 11 Oct 1986 (TNS); Kathmandu, 1350 m, Rana 2108, April 1900 (BM); E. Nepal: *Dhankuta*, Sanghu, 1800-2108 m, Norkett 8603, 8 Jan. 1962 (BM).

Western Himalaya, Sri Lanka, Burma, Nepal, Thailand, Vietnam, Malay, Sumatra, Java, Philippines, Taiwan, E. China, Japan.

30. *Fissidens nymanii* M. Fleisch., *Musc. Fl. Buitenz.*, **1**: 19 (1902).

Fissidens himayanus Broth. in Bruehl.

C. Nepal: *Lalitpur*, Phulchowki, 2100 m, Iwatsuki *s.n.*, 9 Nov. 1972 (TI); E. Nepal: *Dhankuta*, Sanghu, 1850 m Norkett 5858-5861, 8 Jan 1962 (BM).

Western Himalaya, Nepal, South India, Java, North Borneo.

31. *Fissidens obscurus* Mitt., *Musc. Ind. Or.*: 138 (1859).

E. Nepal: *Taplejung*, Mewa Khola Gorge, 1560 m, Norkett 9512, 24 Jan 1962 (BM); Bhuje-Gupha Pokhari, 2800 m, Iwatsuki *s.n.*, 4 July 1972 (TI).

Himalaya, E. India, Nepal.

32. *Fissidens pellucidus* Hornsch., *Linnaea*. **15**: 146.1 (841).
Fissidens laxis Sull. & Lesq.
Fissidens mitinii Par.
W. Nepal: *Kaski*, Pokhara, Phewa Lake, 800 m, Higuchi 15944, 6 Sept. 1988 (TNS). C. Nepal: *Rasuwa*, Dhunche, 2800-3000 m, Higuchi 15944, 14 Sept. 1988 (TNS); E. Nepal: *Sankhuwasabha*, Tumling Tar, 600 m, Norkett 7761, 23 Dec. 1961 (BM); Chauke-Dor, 1850 m, Iwatsuki *s. n.*, June 29, 1972 (TI).
Nepal, China, S. India, Japan, Burma, Sri Lanka, Thailand, Vietnam, Malaysia, Singapore, Indonesia, Philippines, S. America, Malay Pen, Sumatra, Java, Borneo, Hong Kong, Taiwan.
33. *Fissidens plagiochiloides* Besch., *J. de Bot.*, **12**: 93 (1898).
W. Nepal: *Bardia*, Budhi Khola-Parewa Odar, RBNP, 220 m, Pradhan Br 54, 27 Feb. 2003 (NHM); C. Nepal: *Kathmandu*, Jamacho, 1500 m, Takaki 56333, 1 Oct. 1986 (TNS); Shivalaya, 2700 m, Higuchi 17255, 6 Oct. 1988 (TNS); E. Nepal: *Taplejung*, Mewa Khola, 3000 m, Norkett 9234, 1962 (BM).
Himalaya, Nepal, China, Borneo, Philippines, Japan, New Guinea.
34. *Fissidens polypodioides* Hedw. var. *areolatus* (Griff.) Wils., *Kew. J. Bot.*, **9**: 294 (1857).
Fissidens areolatus Griff.
E. Nepal: Shewaden-Papung, 2500 m, Iwatsuki *s.n.*, June 29, 1972 (TI); Hooker, 1832 (BM).
India, Burma, Borneo, China, Nepal, Japan, Taiwan, Thailand, Vietnam, Malay, Sumatra, N. Philippines.
35. *Fissidens pulchellus* Mitt., *J. Linn. Soc. Bot. Suppl. 1*: 140 (1859).
E. Nepal: *Sankhuwasabha*, Milke Danda, 2600 m, Norkett 6155B, 16 Oct. 1962 (BM).
India (Darjeeling), Nepal.
36. *Fissidens rambii* Gangulee, *Mosses E. India & Adj. Reg. 2*: 475 (1971).
E. Nepal: Chauke Dor, 2600 m, Iwatsuki *s.n.*, 6 July 1972 (TI).
Nepal, India (Darjeeling).
37. *Fissidens ranchinensis* Gangulee, *Bull. Bot. Soc. Beng.*, **11**: 68 (1957).
E. Nepal: *Sankhuwasabha*, Tumling Tar, 550 m, Norkett 8459, 7 Dec. 1961 (BM).
South India, Nepal.
38. *Fissidens semperfalcatus* Dixon, *J. Siam. Soc. Nat. Hist. Suppl.*, **10**: 2 (1935).
E. Nepal: Norkett 9991 (BM).
Western Himalaya, S. Burma, Thailand, Nepal, Java.
39. *Fissidens strictulus* C. Muell., *Nuov. Giorn. Bot. Ital. n. ser.* **5**: 159 (1898).
Fissidens subxiphoides Broth.
C. Nepal: *Bhaktapur*, Suryavinayak, 1400 m, Takaki 55941, 21 Sept. 1986 (TNS); E. Nepal: *Dhankuta*, Sanghu, 1800 m, Norkett 5800, 9 Oct. 1961 (BM).
Western Himalaya, India, China, Nepal, Burma, Japan. Endemic to East Himalaya.
- *40. *Fissidens strictus* Hook. & Wilson, *Flora Tasmaniae 2*: 167. 171, f. 7 (1859).

- W. Nepal: *Bardia*, Danab Tal, 340 m, RBNP, Pradhan *et al.* 159, 20 Jan 2001 (NHM).
41. *Fissidens subbryoides* Gangulee, *Nova Hedwigia* 8: 141 (1964).
- C. Nepal: *Chitwan*, Chandi Bhanjyang, 1200 m, Pradhan Pn378, 6 Nov. 2004 (NHM); *Nawalparasi*, Tribeni, 290 m, Pradhan Pn429, 7 Nov 2004 (NHM); E. Nepal: *Sunsari*, Ghopa Camp- Dharan, 300 m, Norkett 9996A, 1962, (BM).
South India, Nepal, Andaman Island.
42. *Fissidens subpalmatus* C. Muell., *Linnaea* 37: 164 (1872).
- C. Nepal: *Chitwan*, Chautara-Uppardang Gadhi, 1200 m, Pradhan Pn 455, 4 Nov 2004 (NHM); E. Nepal: Nepal, Norkett *s.n.*, 1962 (BM).
South India, Nepal.
- *43. *Fissidens sylvaticus* Griff. var *auriculatus* (C. Muell.) Gangulee, Mosses of E. India and Adj. regions 2: 540-541 (1971).
- W. Nepal: *Bardia*, Danab Tal, 225 m, RBNP, Pradhan *et al.* 482, 6 Nov, 2001(NHM).
Algeria, C. Africa, Madagascar, Sri Lanka, Burma, Indo China, Indonesia, China, Philippines, New Guinea, Samoa.
- *44. *Fissidens sylvaticus* Griff. var *calcuttense* Gangulee, Mosses E. India and Adj. reg 2: 538-539 (1971).
- W. Nepal: *Bardia*, Danab Tal, 225 m, RBNP, Pradhan *et al.* 487, 6 Nov., 2001(NHM).
India (S. Bengal, Orissa).
45. *Fissidens taxifolius* Hedw., *Sp. Musc.* : 155 (1801).
- W. Nepal: *Bardia*, Kothia Ghat, 116 m, Pradhan *et al.*, NGS 371, Oct.2001 (NHM).
Gularia, 181 m, Pradhan , NGS 400, 1 Nov, 2001 (NHM). *Kaski*, Mahendra Cave, Pokhara, 920 m, Higuchi 18643, 11 Nov. 1988 (TNS); C. Nepal: *Kathmandu*, Swoyambhu, 1350 m, Pradhan 350, 14 Nov. 2001(NHM). *Makwanpur*, Hetauda-Bharatput, 230 m, Higuchi 18478, Nov. 8, 1988 (TNS). *Chitwan*, Uppardang Gadhi, 1200 m, Pradhan Pn456, 5 Nov. 2004 (NHM); E. Nepal: *Dhankuta*, Sanghu, 2108 m, Norkett 9912, 17 Feb 1962(BM); *Ilam*, 1150 m, Higuchi 18312, 5 Nov. 1988 (TNS).
Western Himalaya, S. India, Nepal, Sri Lanka, Burma, Europe, Africa, C. Asia, N.C. and South America, Vietnam, Sumatra, Java, New Guinea, New Zealand, Philippines, Hong Kong, Japan, Algeria, Korea, Madagascar, Thailand.
46. *Fissidens virens* Thwaites & Mitt., *J. Linn. Soc. Bot.*, 13: 324 (1875).
- E. Nepal: *Sankhuwasabha*, Tumling Tar 600-1400 m, Norkett 8742, 12 Dec. 1961 (BM).
S. India, Nepal, Sri Lanka, Formosa, Vietnam.
47. *Fissidens viridulus* Wils., *Bryol. Brit.*: 303 (1855).
- E. Nepal: Norkett 8670, 17 Feb. 1962 (BM).
Western Himalaya, Europe, Siberia, China, Nepal, Caucasus, North and Central Africa, North America, New Zealand.
48. *Fissidens zippelianus* Dozy & Molck. in *Zoll., Syst.Verzeichn.*: 29 (1854).

W. Nepal: *Kailali*, Ghodaghodi lake, 220 m, Pradhan *et al* NGS 425, 3 Nov. 2003 (NHM); C. Nepal: *Syanja*, 900 m Higuchi 18524, 9 Nov. 1988 (TNS); *Kathmandu*, Brahma Tole, 1300 m, Pradhan k45, 16 Jan.2005 (NHM). *Chitwan*, 300 m, Pradhan 450, 2 Nov. 2004 (NHM); E. Nepal: *Ilam*, 1150 m Higuchi 18331, 5 Nov. 1988 (TNS). Palaeotropics.

49. *Fissidens zollingeri* Montin, *Ann. Sc. Nat. Bot. Ser. 3, 4*: 114 (1845).

Fissidens xiphoides, M. Fleisch.

E. Nepal: Lamo Pokhari, 2630 m, Iwatsuki *s. n.*, June 9, 1972 (TI).

Western Himalaya, S. India, Burma, Borneo, China, Japan, Java, Malaysia, Myanmar, Nepal, Philippines, Sumatra, Taiwan, Thailand.

Discussion

The most common species found in Nepal are *Fissidens taxifolius*, *F. javanicus*, *F. plagiochiloides* and *F. nobilis*. *Fissidens plagiochiloides* is the largest *Fissidens* (15 cm x 3-5mm) known so far. This species is recorded at 220 m to 3000 m of elevation and is fairly common in western, central and eastern regions of the country. The smallest *Fissidens* reported in the country is *Fissidens curvatoxiphoides* (0.52 mm long and 0.36 mm broad, male plant). *Fissidens grandifrons* has been collected from the highest elevation of 3400 m of Topke Gola-Shewaden, Eastern Nepal. *Fissidens sylvaticus* var *auriculatus*, *Fissidens sylvaticus* var *calcuttense* and *Fissidens strictus* have been recorded new to the country. This list includes all the species of

Fissidens known so far in Nepal. This shows the occurrence of high diversity in the east. The western part of the country has not been explored extensively except few collections made by Pradhan (2003).

Acknowledgements

Our sincere thanks go to Dr. K.K. Shrestha, Professor, Central Department of Botany, TU, for providing us valuable suggestions and encouragement to prepare this paper. We appreciate the kind help of Dr. D.G. Long, Royal Botanic Garden, Edinburgh for helping us in the identification work. Thanks are also due to L.T.Ellis, British Museum, London and Dr. Virendra Nath, National Botanical Research Institute Lucknow for identifying some of the doubtful specimens. Thanks go to Dr. Mohan Siwakoti, Natural History Museum for his kind cooperation.

References

- Imura, S. and Z. Iwatsuki. 1988. Vegetative diaspores of genus *Fissidens* Hedw. (Fissidentaceae, Musci) in Japan. *Hikobia 10*: 225-229.
- Ishihara, M. I. and Z. Iwatsuki. 1992. Some important sporophytic characters for infrageneric classification of the genus *Fissidens*. *Hikobia 11*: 141-146.
- Iwatsuki, Z., T. Suzuki and X. J. Li. 1999. New records of *Fissidens* (Fissidentaceae, Bryopsida) in China. *Bryobrothera 5*: 127-130.
- Kattel, L.P. and M.K. Adhikari. 1992. *Mosses of Nepal (List & References)*. Nat. Hist. Soc. Nepal, Kathmandu. pp. 30-32.
- Pradhan, N. 2000. *Materials for a Checklist of Bryophytes of Nepal*. The Natural History Museum, London.
- Pradhan, N. and S.D. Joshi. 2003. *Tropical Bryoflora of Nepal*. Proc. of World Conference of Bryology 2002, Lucknow (in Press).

* = new record for Nepal