Taiwania, 55(2): 172-176, 2010

NOTE

Three New Bryophyte Records for Andaman Islands, India

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(Manuscript received 17 April 2009; accepted 3 February 2010)

ABSTRACT: Three mosses (Bryophyta) *viz., Hageniella micans* (Mitten) B. C. Tan & Y. Jia, *Wijkia surcularis* (Mitten) H. A. Crum and *Pelekium velatum* Mitten, are first recorded from the Andaman Islands, India. Taxonomic description, synonyms, distribution information, specimens examined and photographs are provided for each species.

KEY WORDS: *Hageniella micans*, *Wijkia surcularis, Pelekium velatum*, Andaman Island, India, Bryophyta, Phytogeography.

INTRODUCTION

The Andaman & Nicobar Islands, well known for its astonishing scenic beauty, thick vegetation cover and presence of some of the rarest human tribes and located in the Bay of Bengal, are the aerial peaks of Arakan Yomah Mountain running in the form an arc from the Cape Negrais of Myanmar to Sumatra over about 912 km and lying almost parallel to the west cost of Myanmar, Thailand, and Malay Peninsula. Udardy (1975) treated these Islands as a Province of Indo-Malayan Realm. However, considering the marked differences in the species composition, these Islands are treated under two distinct biodiversity hotspots; Andaman group of Islands under the Indo-Burmese hotspot and Nicobar Islands as the northern limit of the Sundaland hotspot (Myers et al., 2000; Mittermeier et al., 2005; Whitten et al., 2005; van Dijk et al., 2005, Conservation International, 2007).

Blessed with the hot and humid climate of the tropics, it supports rich species diversity including bryophytes. However, the knowledge on the bryophytes of these Islands is far from complete. It is known only from some casual comments or sporadic collection reports or checklists such as Kurz (1876) Prain (1893), Touw (1962), Gangulee (1969-1980), Kachroo (1970), Hattori (1969), Lal (1980, 2005), Udar and Awasthi (1982a and b) Ellis (1989, 1992 and 1995), Udar and Kumar (1983), Nath (1984), Awasthi (1986), Vohra and Kar (1996), Nath and Asthana (1998), Chavan and Joshi (1999, 2001), Joshi et al. (1990, 1992), Joshi and Chavan (1994), Joshi (2001), Singh et al. (2006), Pandey and Diwakar (2008), etc. These Islands largely remain bryologically under explored.

During the recent bryofloristic explorations, the author could collect three mosses *viz., Hageniella* Broth. (with *H. micans* (Mitten) B. C. Tan & Y. Jia), *Wijkia* Crum (with *W. surcularis* (Mitten) H.A. Crum) and *Pelekium velatum* Mitten), which were not reported from the Andaman Islands. The occurrence of these mosses in a bryologically under explored area such as the Andaman Islands is of phytogeographical significance, and hence reported here.

TAXONOMIC TREATMENTS

Hageniella

The genus *Hageniella* Broth. was reported earlier from Southeast Asia, Indian mainland and Sri Lanka (Tan, 2005), but not from the Bay Islands. The present collection of *Hageniella micans* (Mitten) B.C. Tan & Y. Jia is a record of its occurrence in the Andaman Island.

Hageniella micans (Mitten) B.C. Tan & Y. Jia, J. Hattori Bot. Lab. 86: 37. 1999; B.C. Tan, Raffles Bull. Zool. Suppl. 12: 7. 2005. *Stereodon mican* Mitten, Musci. Ind. Orient. 114. 1859. *Leskea micans* (Mitten) Hook., Syn. Brit. Mosses 1873. *Chrysobryum micans* (Mitten) Lindb. in Sull., Icon. Musc. Suppl. 91. 1874. *Calliergon micans* (Mitten) Kindb., Eur. N. Amer. Bryin. (Mosses) 1: 85. 1897. *Limnobium micans* (Mitten) Kindb., Canad. Rec. Sci. 6: 74. 1894. *Sematophyllum micans* (Mitten) Braithw., Britt. Moss. Fl. 3: 154. 1902; Gangulee, Moss. East. India 1879. f. 956. 1980. *Hygrohypnum micans* (Mitten) Broth., Nat. Pflanzenfam. I (3): 1040. 1908. *Rhaphidostegium micans* (Mitten) Mönk., Laubm. Eur. 869. 208 c. 1927 *non* (Sw.) Renauld & Cardot, Rev. Bryol. 20: 21. 1803, *non* Schimp. ex Besch., Ann. Sci. Nat. Bot., sér. 6, 3: 249. 1876. *Schofieldiella micans* (Mitten) W.R. Buck, J. Hattori Bot. Lab. 82: 39. 1997. [Sematophyllaceae]

Plants slender, greenish, glossy, main stem creeping, irregularly branched with short, erect branches, branches equally long, in some branches are filiform, appressed to stem when dry. Main stem and primary branch leaves broadly ovate, 1-1.25 mm x 0.50-0.75 mm, strongly concave, abruptly narrowed at base, slightly decurrent, secondary stem and branchlet leaves oblong, less than 1 x 0.5 mm, constricted at base, acute to shortly acuminate at apex, some leaves bent to one side, margin faintly denticulate at tip, very short, double, indistinct. Cells linear, ± 38 x 6 µm at tip, basal cells ± 45 x 8 µm, marginal one row of cells different from rest of the cells, broader, ± 60 x 8 µm, alar differentiated with 2 oblong, hyaline cells, ± 22 x 17 µm. (Figs. 1A-D)

Distribution: It is scatteredly distributed in North America, Europe, Russian Siberia, China, Himalayas, the Philippines, North Borneo, India (Darjeeling) (Tan and Jiya, 1999) and Sri Lanka (Tan, 2005). In India it was known only from Darjeeling (Gangulee, 1980). The present collection is a new record of its occurrence in the Andaman Island.

Specimens examined: South Andaman, Port Blair, Shadipur, near BSI Staff Colony, 24/05/2008, *KP Rajesh 27108* (PBL), growing on exposed roots of trees in scrub jungle.

Wijkia

The genus *Wijkia* H.A. Crum was well known from nearby areas such as Myanmar, Thailand, Sri Lanka, etc, but not from the Andaman or Nicobar Islands. The present collection of *Wijkia surcularis* (Mitten) H.A. Crum is a record of its extended distribution in the Andaman Island.

Wijkia surcularis (Mitten) H.A. Crum, Bryologist 74: 173. 1971; Gangulee, Moss. East. India 1862. f. 947. 1980. *Stereodon surcularis* Mitten, Musci Ind. Orient. 112. 1859. *Hypnum surculare* (Mitten) Jaeg., Ber. S. Gall. Naturw. Ges. 1977-78: 344. 1880. *Acanthocladium surculare* (Mitten) Broth. in Paris, Index. Bryol. 2, 1: 3. 1903. [Sematophyllaceae]

Plants yellowish, medium sized, glossy in small tufts growing attached to bark. Main stem creeping, secondary branches short, pinnately branched, up to 5 mm long. Leaves dense, erectopatent, when dry clasping to stem with tips outspread on one side. Stem leaves imbricate to erect, broadly ovate to ovate lanceolate, ends in slender and long acumen, about ½ the leaf length, stem leaf cells oblong to elongate 22-45 µm long, thick walled, branch leaves oblong-lanceolate, tip narrow acuminate, ± 1.4 x 0.5 mm, margin smooth, costa absent in both stem and branch leaves. Cells narrow linear, ±70 x 4 µm at tip, margin slightly involute, ± 40 x 7 µm in middle lamina, alar cells well differentiated, two extreme basal cells ± 80 x 25 µm with a few 3-4 smaller cells at top of large cells, ±50 x 18 µm, alar cells, pitted, coloured. (Figs. 1E-I)

Distribution: It is a southeast Asiatic species distributed in India (Sikkim, Meghalaya (Khasia hills), Kerala (Manju et al., 2008), Andaman Island (Present report)), East Nepal, Myanmar, Thailand (Gangulee, 1980), Sri Lanka (O'Shea, 2002), Vietnam, China, etc.

Specimen examined: South Andaman, Nayashahar, Dhanikhari Botanical Garden, 9/6/2008, *KP Rajesh 27163/b* (PBL), Epiphytic herb, corticolous.

Pelekium

The genus *Pelekium* Mitten is widely distributed in Indomalesian region. Touw (2001) listed three species *viz., Pelekium gratum* (P. Beauv.) Touw, *P. investe* (Mitten) Touw and *P. velatum* Mitten from the Nicobar Islands. The former is also known from the Andaman Island based on a collection by E.H. Man from Andaman, but without precise locality, and lodged in BM, PC & S as *Thuidium hatschullianum* Hampe in Paris (O'Shea, *pers. comm*.). However, there is no confirmed record for the occurrence of the other two species from the Andaman Islands. The present collection of *Pelekium velatum* Mitten is thus a record of its occurrence in the Andaman Island.

Pelekium velatum Mitten, J. Linn. Soc. Bot. 10: 176. 1868; Gangulee, Moss East. India 1615. f. 805. 1978. *Thuidium trachypodum* Bosch & Lac. (*non Leskea trachypodon* Mitten) Bryol. Jav. 2: 122. 1865. *Lorentzia longirostris* Hamp., Nuov. Giron. Bot. Ital. 4: 288. 1872. *Pelekium longirostre* (Hamp.) A.Jaeger, Ber. S. Gall. Naturw. Ges. 1867-77: 276. 1878; *Pelekium fissicalyx* C. Mueller, Bot. Jahrb. 5: 87. 1883. *Pelekium lonchopodum* C. Mueller, Geh. Biblioth. Bot. 13: 7. 1889. *Thuidium velatum* (Mitten) Paris, Index Bryol. 1294. 1898.[Thuidiaceae]

Plants very smaller, delicate, with wiry stem, dull yellowish green, forming loose mats in small stones or rocks, main stem creeping, with extensive branches, secondary branching pinnate, leaves on main stem erect spreading, cordate-lanceolate, narrowed into a long filiform acuminate tip, leaf 0.8-1.2 mm long and 0.5 mm wide at base, costa single, vanishes below the tip, costa equally divides the leaf; paraphyllia numerous on stem and branches, filamentous, often branched, branch leaves in two rows, ovate, tip acute, margin crenulate, very small, up to 0.50 mm long and 0.2-0.4 mm wide, curled when dry, costa ending below tip, costa unequally divides the leaf, papillose on back in both stem and branch eaves. Leaf cells quadrate-hexagonal, ± 8 µm diagonally, with a large papilla which makes the leaf very rough. (Figs. 1J-L)

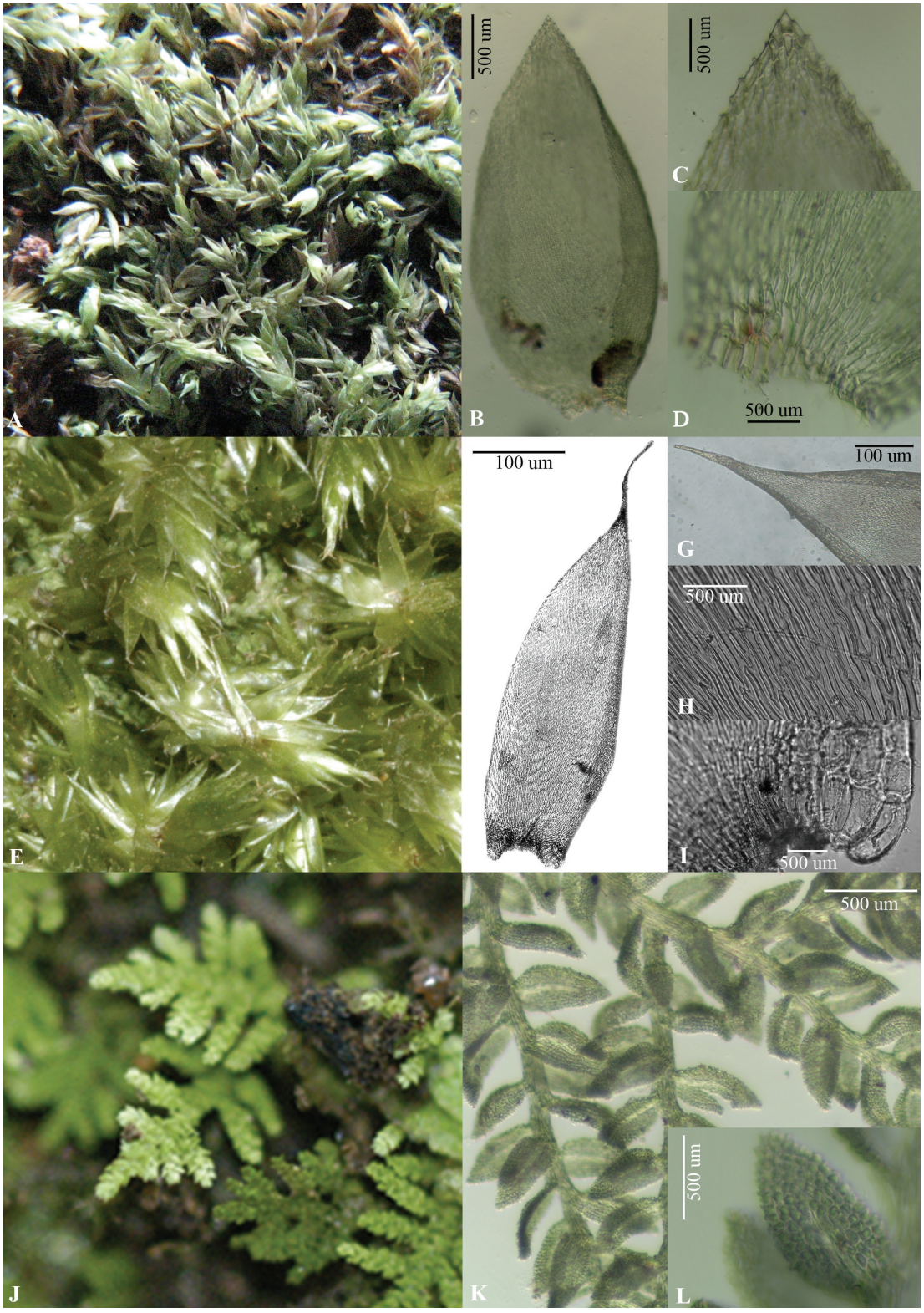

Fig. 1. A-D: *Hageniella micans* (Mitten) B.C. Tan & Y. Jia. A: Habit. B: Branch leaf. C: Branch leaf apex. D: Branch leaf base. E-I: *Wijkia surcularis* (Mitten) H.A. Crum. E: Habit. F: Branch leaf. G: Branch leaf apex. H: Branch leaf middle cells. I: Branch leaf base. J-L: *Pelekium velatum* Mitten. J: Habit. K: A part of branch enlarged. L: Branch leaf.

Distribution: It is widely distributed in Indomalesian region such as India (Arunachal Pradesh, Kerala (Manju et al., 2008), Andaman Island (present report)), Myanmar, Thailand, Perak, Singapore, Sumatra, Java, Celebes, Borneo, Amboina, New Guinea, Philippines, Botel Tobogo Island, Solomon Island, Samoa (Gangulee, 1978), Sri Lanka (O'Shea, 2002), etc.

Specimen examined: South Andaman, Dhanikhari Botanical Garden, Nayashahar, 16/06/2008, *K. P. Rajesh 27180* (PBL); Terrestrial herb or on small pebbles and rocks in the forest floor.

ACKNOWLEDGEMENTS

The author is grateful to Dr. M. Sanjappa, Director, Botanical Survey of India, Kolkata for encouragements and sanctioning the project on Bryophytes of Andaman & Nicobar Islands. He gratefully acknowledges the support and facilities provided by Dr. S. Kumar, Joint Director, Andaman & Nicobar Circle of BSI. He is also thankful to Brian O'Shea, Natural History Museum, London and Dr. Manju C. N., Calicut University for helpful comments and inputs.

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印度安達曼群島三種新紀錄苔類植物

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(收稿日期：2009 年 4 月 17 日；接受日期：2010 年 2 月 3 日)

摘要：本文報導印度安達曼群島三種新紀錄苔類植物，包括 *Hageniella micans* (Mitten) B. C. Tan & Y. Jia, *Wijkia surcularis* (Mitten) H. A. Crum 以及 *Pelekium velatum* Mitten 等。每一種均附有詳細描述、異名、地理分布、檢視的標本及彩色照片。

關鍵詞：*Hageniella micans*、*Wijkia surcularis*、*Pelekium velatum*、安達曼群島、印度、苔類植物、植物地理。