C. crenulatoserrulata do not occur in India and should be excluded from the Indian fern literature to avoid confusion.

ACKNOWLEDGEMENTS

I thank Mr. C.R. Fraser-Jenkins, British Museum, London for identification, literature and encouragement. Thanks are due to Prof. S.P. Khullar, Department of Botany, Punjab University, Chandigarh for his ever willing help, and to the Head, Department of Botany, D.S.B. Campus, Kumaon University, Nainital for facilities.

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24. *PLAGIOCHILA JUNGHUHNIANA* SANDE LAC. – A NEW RECORD TO INDIAN MAINLAND (NILGIRI HILLS, WESTERN GHATS)[1]

PRAVEEN KUMAR VERMA[2] AND S.C. SRIVASTAVA[2,3]

[1]Accepted September 28, 2007

[2]Department of Botany, University of Lucknow, Lucknow 226 007, Uttar Pradesh, India.
[3]Email: sri_scs@rediffmail.com.

Introduction

Plagiochila junghuhniana belongs to the Family Plagiochilaceae of Hepaticae. The species was introduced from Indonesia (Java) by Sande Lacoste in 1855. Earlier this species was reported from the Nicobar Islands as *P. berkeleyana* Gott. *ex* Steph. by Stephani (1918). Since then this species has never been collected from India. In a recent publication, *P. berkeleyana* has been treated as a synonym of *P. junghuhniana* Sande Lac (So 2001). During a plant collection trip to the Western Ghats and neighbouring areas this species was collected from the Nilgiri hills, thus showing an extended range of distribution to the Indian mainland. It belongs to *Plagiochila* sect. *Contiguae* in having characteristic oblong-ovate to broadly ovate leaves, moderately decurrent dorsal base of leaves and shortly decurrent ventral base with spinose teeth and medium to large trigones in leaf cells. The most important characteristic of the section is asexual reproduction by leaf propagules developing from ventral surface of leaves (So and Grolle 1999; So 2000). In India, the section is represented by 11 species (*Plagiochila khasiana* Mitt., *P. salacensis* Gott., *P. dissecta* Steph., *P. beddomei* Steph., *P. indica* Mitt. *ex* Steph., *P. nepalensis* Lindenb., *P. acuta* Steph., and *P. junghuhniana* Sande Lac., *P. liebmanniana* Lehm. *et* Lindenb., *P. wightii* Steph. and *P. woronofii* Steph. *ex* Pande *et al.*) out of which the last eight are validly reported from the Western Ghats (Rawat and Srivastava 2007).

Plants decumbent, in compact tufts, up to 45 mm long, 2.8-3.2 mm wide, branching terminal (pseudo-dichotomous), "*Frullania*-type". Stem 13-15 cells across the diameter, differentiated, cortex in 3-4 layers, cells thick-walled, 19-22 x 15-19 µm, medullary cells thin-walled, 30-38 x 22-26 µm. Rhizoids spreading along the basal surface of the stem. Leaves contiguous to sub-imbricate, obliquely inserted, horizontally spreading, oblong-ovate, 1.3-1.6 mm long, 0.63-0.94 mm wide with (4) 6-11 (12) teeth per leaf; dorsal margin straight, entire, base decurrent, apex broad (truncate) with 3-6 teeth, 5-6 cells long, and 3-4 cells wide, ventral margin arched, base ampliate with 2-6 small spines, 4-5 cells long teeth, terminal cell acute, 10 x 21 µm, median cells 34-42 x 26-34 µm, basal cells 38-50 x 26-39 µm, trigones distinct. Underleaves vestigial generally present in the upper sector of plant, may be ciliate or variously toothed. Asexual reproduction by propagules.

Dioecious. Gynoecia always terminal on main shoots, with two innovations; female bracts longer than wide,

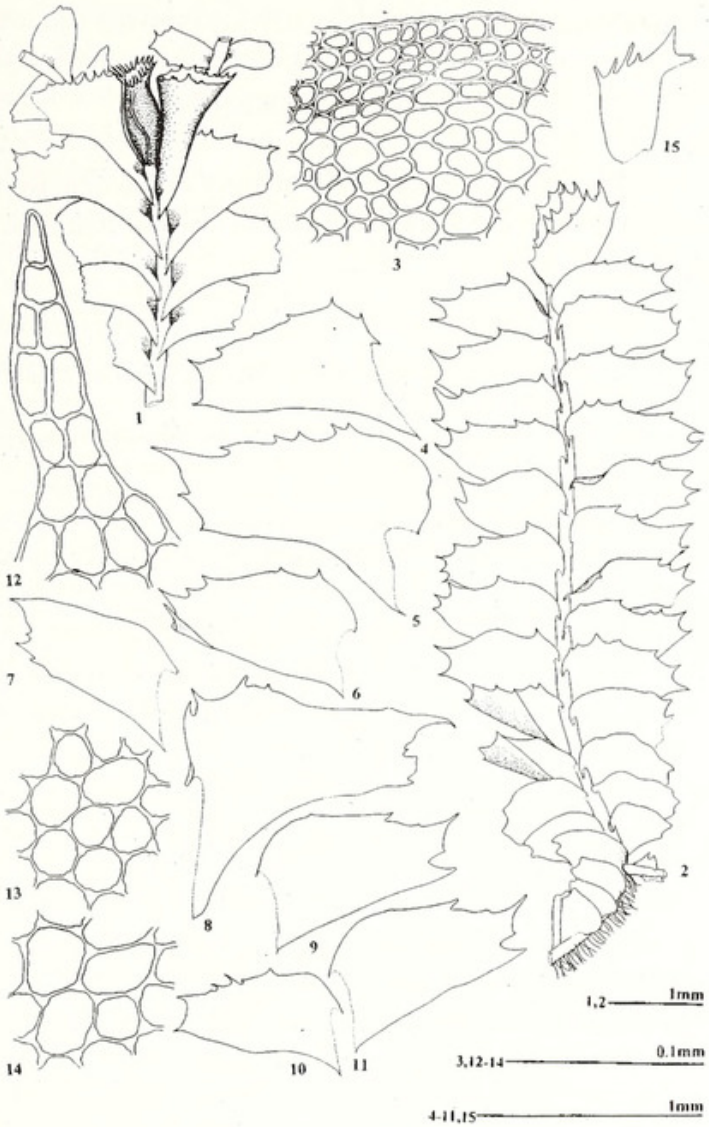


Fig.1: 1-15: *Plagiochila junghuhniana* Sande Lac.
1. Plant, dorsal view; 2. Plant, ventral view; 3. T.S. of stem portion; 4-11. Leaves; 12. Apical cells of leaf; 13. Median cells of leaf; 14. Basal cells of leaf; 15. Underleaf (All figures drawn from LWU 13026/2000)

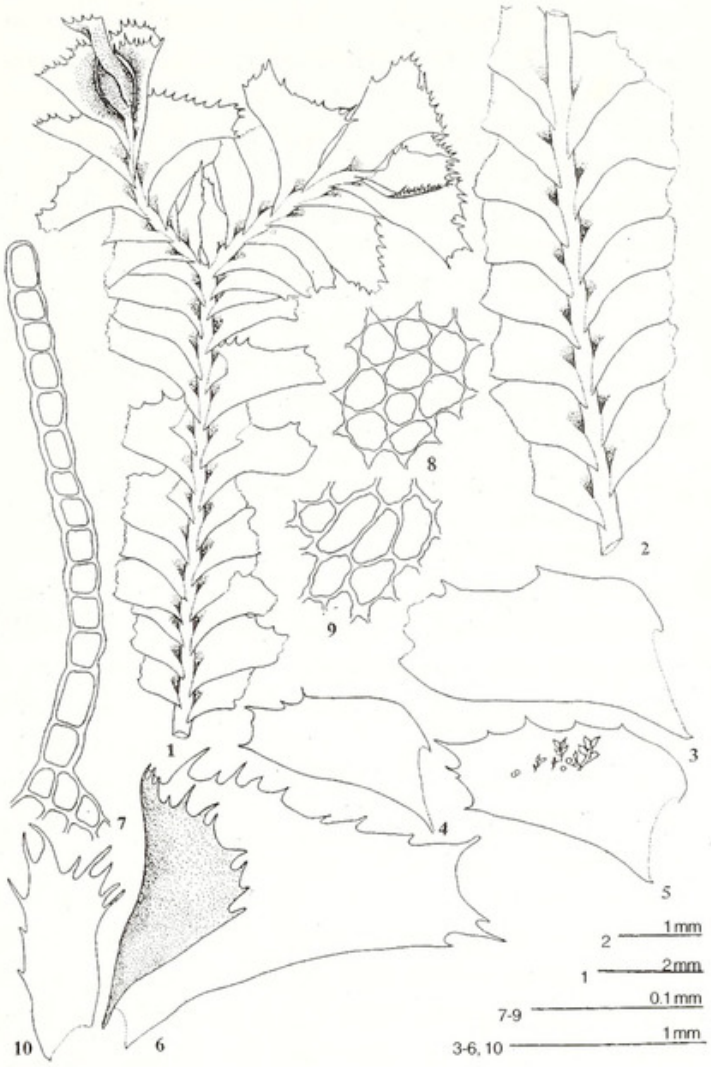


Fig. 2: 1-10: *Plagiochila junghuhniana* Sande Lac.
1. Female plant, dorsal view; 2. Plant showing fragmenting leaves; 3-5. Leaves; 6. Female bract; 7. Apical cells of female bract; 8. Median cells of female bract; 9. Basal cells of female bract; 10. Female bracteole (All figures drawn from LWU 13026/2000)

2.0-2.2 mm long, 1.1-1.2 mm wide, variously toothed, teeth up to 30 per bract; bracteole slightly larger than underleaves, 1.2 mm long and 0.31 mm wide. Perianth cyathiform, immature, apex highly dentate. Sporophyte absent.

Type locality: Indonesia – Java (Inoue 1984).

Range: China, India, Indonesia (Borneo, Java), New Caledonia, Papua New Guinea, Philippines and Thailand (Inoue 1984; So 2001).

Distribution: INDIA: Andaman and Nicobar Islands (So 2001), Tamil Nadu - Nilgiri hills [Coonoor (near municipal bus stand), Gudulur (Cherambadi), Ootacamund (Dodabetta, Kendurai)].

Ecology: Plants growing as terrestrial and epiphytic population on small shrubs.

Specimens Examined: Indo-Malaya: Celebes merid, Tjamba, corticola in siluis primigensis, sciophila; *c.* 1,000 m; J.E. Teysmann; Det.: T.H. Herzog (12538); 1859/60; Hepaticae Selectae *et* Critacae.

India: Western Ghats: Tamil Nadu: Nilgiri hills (Ootacamund-Dodabetta); *c.* 2,660 m, 8.x.2000; S.C. Srivastava and party; 13026/2000 (LWU). Ootacamund (Dodabetta); *c.* 2,660 m, 09.iv.2002; P.K. Verma, A. Alam and N. Sahu; 15380/02 (LWU). Gudulur (Cherambadi); *c.* 1,300-1,400 m; 29.ix.2002; P.K. Verma and A. Alam; 16078/2002, 16079/2002, 16080/2002 (LWU). Ootacamund (Kendurai); *c.* 2,250 m.; 30.ix.2003, P.K. Verma and A. Alam; 16781/2003, 16782/2003, 16785/2003, 16786/2003 (LWU). Coonoor (Near municipal bus stand); *c.* 1,800 m; 16.xi.2006, P.K. Verma and A. Alam; 20020/2006, 20038/2006 (LWU).

Plagiochila junghuhniana is very easily separated from

other species of *Plagiochila* in the Western Ghats as characterized by exclusively bipinnately branched (terminal) plants with oblong-ovate leaves having truncate apex, and margins are rather jagged with up to 11-12 teeth. However, vestigial underleaves are also found, only at the apical shoots. The leaves produce numerous propagules on the ventral surface and one-celled to juvenile multi-celled plantlets may be seen on the same leaf.

ACKNOWLEDGEMENT

The authors are grateful to Ministry of Environment and forests, Govt. of India, New Delhi for financial assistance through AICOPTAX.

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25. LATIN DIAGNOSIS OF *SPIRULINA* (=*ARTHROSPIRA*) *MAHAJANI* MAHAJAN[1]

S.K. MAHAJAN[2]

[1]Accepted May 23, 2007
[2]Botany Department, Government P.G. College, 31, Jain Mandir Path, Khargone 451 001, Madhya Pradesh, India.
Email: mahajan_sk2001@yahoo.com

In an earlier paper Mahajan, S.K. (2004): A new species of *Spirulina* (=*Arthrospira*) *mahajani* Mahajan from Khargone, Madhya Pradesh. *J. Bombay Nat. Hist. Soc. 101(2)*: 294-295. I had given the details of place, date of collection and location of type material in English, but did not include these details in the latin diagnosis, I wish to remedy this omission by giving a latin rendering of these details here.

Spirulina mahajani Mahajan sp. nov.

Trichomata veneta, libre natanti, non constricta, 4.9-5.6 µm lata, extreme leviter angustiora, ordinate et laxe 3-5 spirata (3.4-5.1 spirata), spirae latitudines fere aequalium, 33-44 µm lata et inter se 39-99 µm distantia; cellulae subquadratae, 2.1-3.6 µm longae; vacuolae gaseosae in cytoplasma uniformiter distributae; cellulae extremorum simplices et calyptra singulari plane conica.

ACKNOWLEDGEMENT

The author is grateful to Dr. V.J. Nair, Co-ordinator, AICOPTAX, Centre for Research on Grasses and Bamboos, BSI, Southern Circle, Coimbatore for rendering the latin diagnosis.

26. FIG TREES (*FICUS*), CAPTIVE ELEPHANTS, AND CONSERVATION OF HORNBILLS AND OTHER FRUGIVORES IN AN INDIAN WILDLIFE SANCTUARY[1]

RAGUPATHY KANNAN[2] AND DOUGLAS A. JAMES[3]

[1]Accepted November 05, 2007
[2]Department of Biology, University of Arkansas - Fort Smith, Fort Smith, Arkansas 72913, U.S.A.
Email: rkannan@uafortsmith.edu
[3]Department of Biological Sciences, University of Arkansas, Fayetteville, Arkansas 72701, U.S.A.

Introduction and background

The endangered Great Pied Hornbill *Buceros bicornis* (GPH) is the largest (length: 120 cm; mass: 3 kg) of the nine species of hornbills (Bucerotidae) in India (Ali and Ripley 1987). Its diet is principally fruits, with a preponderance of figs (*Ficus*) (Kannan 1994; Kannan and James 1997, 1999). The species is affected by a variety of problems ranging from destruction of its wet forest habitat to poaching of adults and squabs from nests (Ali and Ripley 1987), and is listed in Schedule I (most protected) of the Indian Wildlife (Protection)



Verma, Praveen Kumar and Srivastava, S C. 2008. "Plagiochila Junghuhniana Sande Lac. - a new Record To Indian Mainland (Nilgiri Hills, Western Ghats)." *The journal of the Bombay Natural History Society* 105, 236–238.

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