

Taxonomic position of *Leptocladium* and new synonymy in Chinese Amblystegiaceae (Bryopsida)

Johannes Enroth

Enroth, J., Department of Ecology and Systematics, Division of Systematic Biology, P.O. Box 47, FIN-00014 University of Helsinki, Finland

Received 20 December 1996, accepted 20 December 1996

Leptocladium sinense Broth., the single species of its genus and known only from type material from Yunnan, South China, is redescribed and illustrated with line drawings. It is transferred from the Thuidiaceae (original placement) to the Amblystegiaceae and considered closely related to *Platydictya* Berk. *Amblystegiella yunnanensis* Broth. is synonymized with *Amblystegium serpens* (Hedw.) B. S. G. and *Amblystegium sinensis-subtile* C. Müll. with *Platydictya subtilis* (Hedw.) Crum.

Key words: Amblystegiaceae, *Leptocladium*, mosses, nomenclature, *Platydictya*, taxonomy

Leptocladium sinense Broth. was described by Brotherus (1929). Subsequently, no further species have been added to the genus, which has thus remained unispecific. The taxon is only known from the type specimen from Yunnan in South China (cf. Redfearn *et al.* 1996). Since Brotherus, the type has apparently not been examined by anyone.

The original placement of *Leptocladium sinense* was the Thuidiaceae, which in Brotherus's time was understood in a much wider sense than today. Brotherus (1929) compared *L. sinense* with the genera *Leptopterigynandrum* C. Müll. and *Heterocladium* Schimp.: "*Genus novum cum Heterocladio et Leptopterigynandro comparandum, sed inflorescentia autoica, ramis julaceis necnon foliorum forma et structura longe diversum.*" *Leptopterigynandrum* and *Heterocladium* are currently placed in the Leskeaceae and Thuidiaceae respectively (Buck & Crum 1990). I think the taxonomic relationships of *Leptocladium sinense* are completely different: the taxon belongs

to the Amblystegiaceae and is closely related to *Platydictya* Berk.

***Leptocladium sinense* Broth. (Fig. 1)**

Symb. Sin. 4: 97. 3 f. 13. 1929. — Type: China. "Prov. Yünnan bor.-occid.: Prope fines Tibeto-Birmanicas inter fluvios Lu-djiang (Salween) et Djiou-djiang (Irrawadi or. sup.), in jugi Tschiangschel, 27°52', ad rupes", 3 800–4 050 m, 4.VII.1916 *Handel-Mazzetti* 9324, "Diar. Nr. 1767" (holotype H-BR!, isotype H!).

Plants creeping, small, slightly glossy. Stems and branches terete, somewhat julaceous, straight to variably arcuate; many branches caducous. Stems in cross-section elliptic, with relatively small, thick-walled epidermal cells surrounding a layer of similar cortical cells, medullary cells much larger, thin-walled, central strand none. Stem leaves to ca. 0.5 mm long, appressed when dry and scarcely altered upon wetting, somewhat concave, shortly and narrowly decurrent, (broadly)

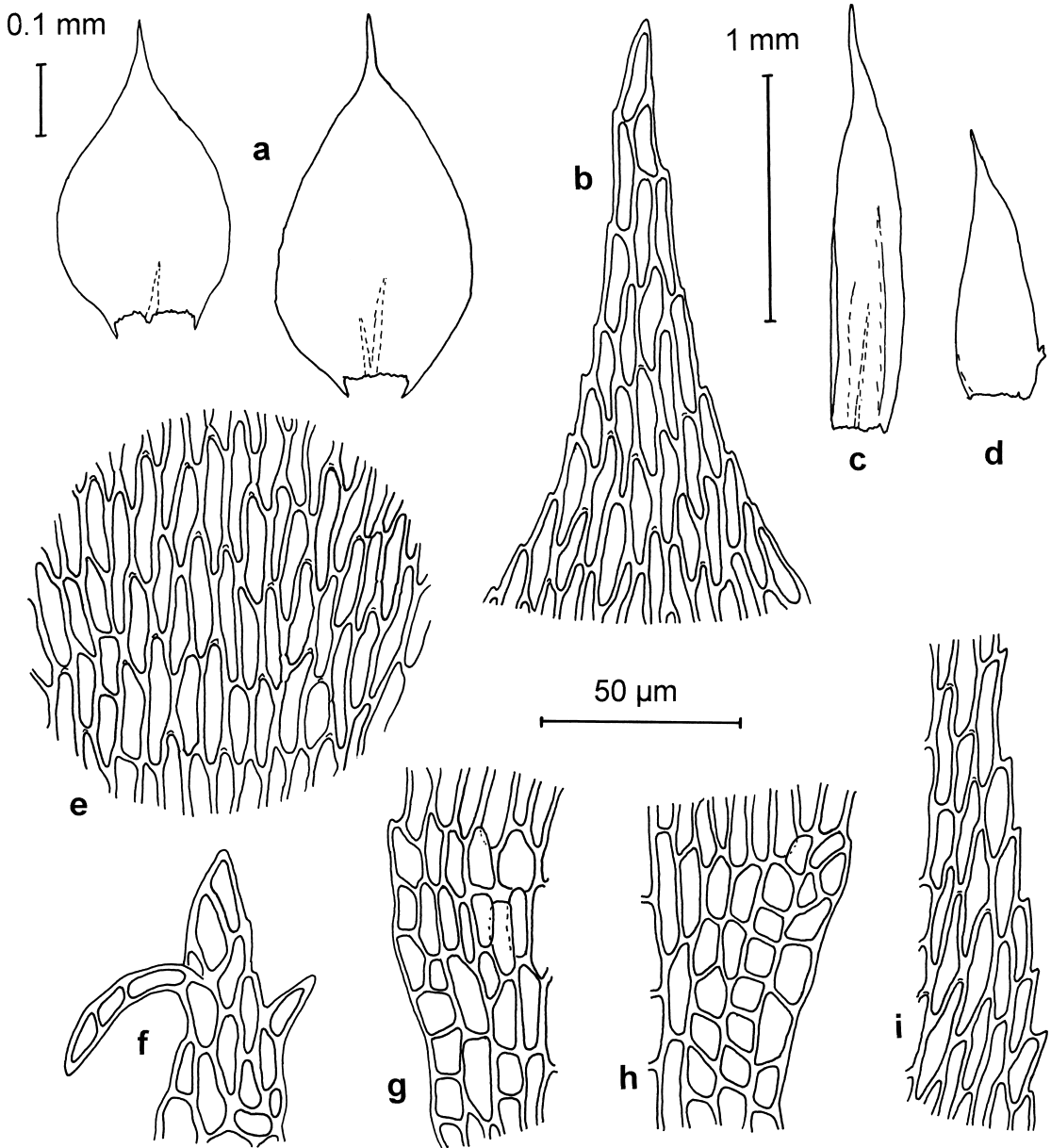


Fig. 1. *Leptocladium sinense* Broth. (from the holotype). — a: Two stem leaves. — b: Apex of stem leaf. — c: Post-fertilization inner perichaetial leaf. — d: Perichaetial leaf with basal marginal lobe. — e: Laminar cells. — f: Pseudoparaphyllium. — g, h: Alar cells. — i: Margin at midleaf. — Use the 1 mm scale for c and d, the 0.1 mm scale for a, and the 50 μm scale for b and e–i.

ovate, narrowed at ca. 3/4 the leaf length to an acuminate, often reflexed acumen. Branch leaves similar but smaller, acumina shorter on the average. Leaf margins plane, entire at base, weakly serrulate elsewhere; costa nearly absent or short and bifurcate to single and reaching near midleaf. Leaf cells slightly prorate; laminar cells elongate,

vermicular, upper and median oblong-linear, ca. $25\text{--}40 \times 5 \mu\text{m}$, basal more rectangular, shorter and slightly wider; marginal cells somewhat shorter than the adjacent laminar cells; alar cells shortly rectangular to quadrate in distinct yet diffusely demarcated groups. Pseudoparaphyllia foliose, often lobed.

Autoicous; gametoezia situated on the stems. Perigonia gemmiform, inner perigonial leaves ca. 0.5 mm long, ecostate, \pm elliptic, apex obtuse to acute. Post-fertilization inner perichaetial leaves to ca. 1.8 mm long, narrowly ovate-lanceolate, plicate, above abruptly narrowed to an acuminate apex; costa faint, single or double, variable in length and sometimes reaching mid-leaf; margins weakly serrulate; some leaves with small basal marginal lobes. Vaginula ca. 0.6 mm long, bearing paraphyses and archegonia. Seta smooth, ca. 1 cm long, dextrorse when dry, brownish red below, orangish above. Capsules poorly preserved, ca. 0.5 mm long, arcuate, horizontal to cernuous. Operculum conical. Calyptra, peristome and spores not observed.

Platydictya has not been monographed, but a detailed regional revision was provided by Kanda (1975). The generic relationships of *Leptocladium sinense* are indicated by the combination of very small plants, autoicous sexual condition, absence of a stem central strand, mostly lobed foliose pseudoparaphyllia, leaves with a relatively weak costa or none at all, slightly prorate laminal cells, and a group of short-rectangular to quadrate alar cells. This combination of gametophyte features characterises *Platydictya* (cf. Kanda 1975). Unfortunately, the sporophytes of *L. sinense* are in too poor a condition for taxonomic judgments.

Although clearly closely related to *Platydictya*, *Leptocladium* merits generic segregation because of the following gametophyte characters: stems and branches julaceous; branches often caducous; leaves shortly decurrent; and laminal cells longer than in any species of *Platydictya*. It is not clear from the present material how common the peculiar basal marginal lobes of some of the perichaetial leaves (Fig. 1d) are, but I have not seen such structures in any other related species. They appear to be "over-developed" marginal teeth.

New synonymy in Chinese *Amblystegiaceae*

The following synonymy was proposed as herbarium annotations by Dr. Ryszard Ochyra. I pub-

lish it with his permission, and because I agree with the taxonomic judgments.

Amblystegium serpens (Hedw.) B. S. G.

Bryol. Eur. 6: 53. 564. 1853 (fasc. 55–56 Mon. 9. 3.). — *Hypnum serpens* Hedw., Spec. Musc. 268. 1801.

Amblystegiella yunnanensis Broth., Symb. Sin. 4: 103. 1929, *syn. nov.* — *Platydictya yunnanensis* (Broth.) Redf. & Tan, Trop. Bryol. 10: 66. 1995. — Type: China. "Prov. Yunnan bor.-occid.: In regionis calide temperate ad fluvium Landsang-djiang (Mekong) umbra nemoris supra vicum Londjre versus Tschoschwa, 28°12', substr. granitico, alt. s. m. ca. 2 700 m.", 15.IX.1915 *Handel-Mazzetti 1488* (H-BR!, sub. no. 8004).

Platydictya subtilis (Hedw.) Crum

Michigan Bot. 3: 60. 1964. — *Leskea subtilis* Hedw., Spec. Musc. 221. 1801. — *Amblystegiella subtilis* (Hedw.) Loeske, Moosfl. Harz. 295. 1903.

Amblystegium sinensi-subtile C. Müll., Nuovo Giorn. Bot. Ital. ser. 2, 3: 123. 1896, *syn. nov.* — *Amblystegiella sinensi-subtilis* (C. Müll.) Broth., Nat. Pflanzenfam. 1(3): 1026. 1908. — *Platydictya sinensi-subtilis* (C. Müll.) Redf. & Tan, Trop. Bryol. 10: 66. 1995. — Type: China. "China interior, provincia Schen-si sept., in medio monte Kuantou-san, inter *Leucodontes*", VII.1894, *Giraldi s. n.* (isotype H-BR!, "determ. Prof. C. Müller sub. no. 845").

REFERENCES

- Brotherus, V. F. 1929: Musci. — In: *Handel-Mazzetti, H.* (ed.), *Symbolae Sinicae* (Botanische Ergebnisse der Expedition der Akademie der Wissenschaften in Wien nach Südwest-China 1914/1918) 4: 1–147, pls. 1–5.
- Buck, W. R. & Crum, H. 1990: An evaluation of familial limits among the genera traditionally aligned with the Thuidiaceae and Leskeaceae. — *Contr. Univ. Michigan Herb.* 17: 55–69.
- Kanda, H. 1975: A revision of the family Amblystegiaceae of Japan I. — *J. Sci. Hiroshima Univ.*, ser. B, div. 2 (Bot.) 15: 201–276.
- Redfearn, P. L., Tan, B. C. & He, S. 1996: A newly updated and annotated checklist of Chinese mosses. — *J. Hattori Bot. Lab.* 79: 163–357.