Genus **Leptocladiella** Fleisch. 1923

Andrews (1954) synonymized *Leptocladiella* with *Leptohymenium* Schwaegr., but as explained by Noguchi (1972b), this is an error. We here retain *Leptocladiella* since the following new species closely fits within its circumscription.

Leptocladiella flagellaris T. Kop. & Norris *species nova* (figs. 2-4).

Plantae dioicae, pusillae ad mediocres, laxe caespitosae vel implicatae, juvenes virides, veteriores flavovirentes. Caules primari prostrati per rhizoidea ad substrato affixi, secundari infra pinnatim ramosi, supra deminutati et flexuosi ramis nullis. Rhizoidea infra angulum alterum insertionis foliorum (non in costa) solum in caulibus primaris et basibus secundariorum fasces inserta. Pseudoparaphyllia ovato-lanceolata, rotunda vel transverse elliptica, basin rami poculiformia cingentia. Folia caulium primariorum et in basi secundariorum 0.5-0.8 mm longa basinque circa 0.4 mm lata, e basi late ovata versus apicem acuminata et falcato-secunda acuminata; folia caulium superiorum et ramorum parviora, paulum falcata vel stricta, ovato-lanceolata vel triangularia; omnia imbricata, non decurrentia, marginibus planis in apice serratis, costis nullis vel duabus brevissimis. Trichomata axillaria 1-2 in foliis insidentia, cellulis duabus superioris elongatis et brunneolis, una inferiore quadrata et hyalina. Cellulae laminares medianae circa 5 μm lata, 50-77 μm longa, lineares, paulum in extremis utrisque mamillatae; basales breviores latioresque; alares magnae, inflatae, conspicuo aggregatae. Plantae masculae vel antheridia ignotae. Perichaetia in caulibus primaris et in basibus secundariorum, foliis ovato-lanceolatis, circa 3 mm longis, acuminate piliferis, rectis et plicatis. Seta circa 4 cm longa, infra rufescens, supra pallidior; theca circa 4 mm longa, ovata, operculo rostrato, collo iuvene rubello, veteri brunneo. Peristomium duplex, haplolepideum. Sporae 12 μm diametris.

Type: Papua New Guinea. Morobe Prov.: Mt. Sarawaket Southern Range 2.5 km SSW of Iloko. In rich montane forest along trail between Iloko and Mt. Sarawaket, alt. 1900-2100m, 147°1O'E, 6°17´S, on moist, diffusely lit log, 11.VII.1981 *Daniel H. Norris* 63839 (H, holotype; HSC, LAE, isotypes).

Plants small to medium sized, loosely caespitose or forming mats, green when young, yellow-green when older, regularly once pinnate, to 2 cm long with the branches to 0.5 cm; branches and sometimes even stems very much attenuated at the apices; branches spreading from the stems nearly at 90 angles, inserted laterally on stems and with perennating stems arising dorsally. Rhizoids on the primary stem and at base of secondary stem only, arising from the stem at the median abaxial insertion of the leaf, densely fascicled, red-brown, smooth, sparingly branched; paraphyllia lacking; inner pseudoparaphyllia ovate-lanceolate, orbicular or broader than long, forming a cuplike structure around the branch base; axillary hairs to one to two per leaf, formed by two brownish elongate apical cells and one hyaline ± quadrate basal cell. Cross-section of stem circular, central strand present, inner cortex ca. 5 rows, outer cortex 3-5 rows of cells, epidermal cells small, thick-walled. Leaves little modified upon drying, median cells 4-5 μm broad, 10-15:1, smooth, rather thick-walled (lumen/wall ratio about 3:1) and not much porose; alar region with a few nearly isodiametric cells and 1-2 abruptly enlarged (20-25 x 40-50 μm) on basal decurrency (usually left on stem with dissection), ecostate or with the costa short and double; stem leaves oblong-ovate, often somewhat falcate, to 0.8mm long, 1.4-1.8:1, broadest at base, erect-ascending with apices somewhat spreading; margin serrulate to base, often minutely so, plane throughout. Branch leaves deltoid-lanceolate, to 0.4 mm long, 2-2.5:1, uniformly appressed to stem, margin plane to basally slightly recurved, serrate to serrulate to the base with the cells of the teeth with apical thickenings; apical cells of branch leaves 1-3:1, gradually more elongate below.

Plant dioicous; perichaetial leaves with length and cell areolation like that of vegetative leaves, to 1.4:1, plicate, ovate at base and more or less abruptly contracted to an acumen about as long as base; margin plane, nearly entire; archegonia numerous, to 0.4 mm long; paraphyses slightly longer, bluntly acute at apex. Seta ca. 4 cm long, reddish brown below, paler above; capsule ca. 4 mm, ovoid, lid rostrate, neck differentiated, reddish when young, old capsule brown, stomata cryptoporous. Exothecial cells 17-42 x

40-75 μm, elongated-hexagonal to rectangular, thick-walled. Annulus present. Peristome complete, teeth striate at base, papillose in upper part and with distinct zigzag line; basal membrane of the endostome ca. 1/3 of the height of the peristome; segments narrow, as high as exostome teeth, with narrow longitudinal perforations; cilia 3-4, nodose and papillose. Spores ca. 12 μm.

Until now the genus *Leptocladiella* has been considered monotypic. Its type species is *L. psilura* (Mitt.) Fleisch., which ranges from NW Himalaya to Yunnan in China. *L. psilura* and *L. flagellaris* differ in several characters. *L. flagellaris* has fragile branches and, therefore, every herbarium packet contains a number of detached branches. *L. psilura* is not regularly pinnate and its branches are arcuate. Its leaves are straight or only slightly curved, and one to two costae are regularly present even on small leaves. The leaf margins in *L. psilura* are long decurrent by many elongate cells, while the leaves in *L. flagellaris* have one large decurrent cell at most. As pointed out by Noguchi (1972a) *L. psilura*, in contrast to *L. flagellaris*, has no central strand in the stem. Also, the sporophytes differ: *L. psilura* has a shorter seta and a smaller only slightly arcuate capsule, but the peristomes are essentially similar with narrowly perforated segments and cilia (specimen studied: India. NW Himalaya, *Bahadru 6281*, H-BR).

In spite of all these differences between *L. psilura* and *L. flagellaris* we prefer to describe this new species in the genus *Leptocladiella* rather than either describing a new genus for it, or combining it in *Macrothamnium*, or in some hypnaceous genus.

The numerous branches pinnately branched in the lower part and unbranched in the upper part give *L. flagellaris* a very characteristic habit macroscopically recognizable in the field.

L. flagellaris is locally common (Fig. 4) on the Huon Peninsula at the altitudes of 1800-3600 m. It rather exclusively inhabits primary rain forests. 18 of our localities belong to this category. The high elevation collections came from tree fem savannahs and scrub (5), and once it was taken on open grassland, "kunai". Its preferable substrate is rotten wood such as logs and stumps (19 specimens), but it occurs as epiphyte on twigs (8), on bush (3) and on base of *Marattia* (1). It was taken twice from a boulder, and once on soil.

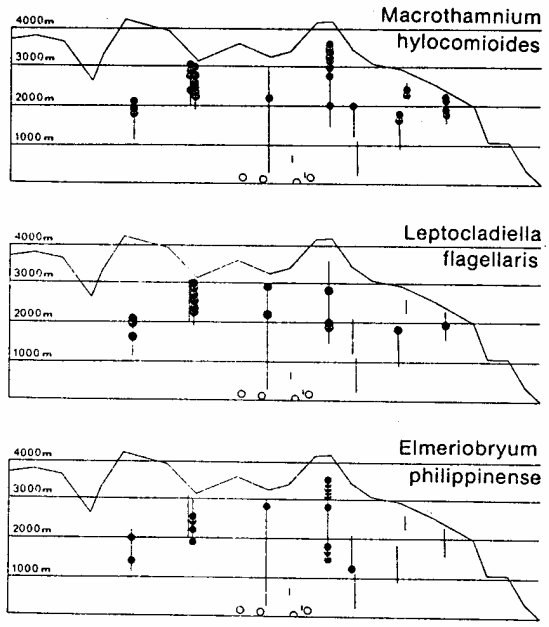

Fig. 4. The altitudinal distribution of *Macrothamnium hylocomioides* Fleisch., *Leptocladiella flagellaris* T. Kop. & Norris and *Elmeriobryum philippinense* Broth. on the Huon Peninsula (dots). Compare with fig. 4 in Koponen & Norris (1983).

Range on the Huon Peninsula (paratypes): *2b.* 33466. *2d. 33822. 2e.* 33847. *2h.* 34052. *2o.* 34317. *2s.* 63991. *2u. 64225. 2w.* 64378. *2y.* 64753. *3b.* 29479. *3f.* 29798. *3h.* 60182, 60253. *3l* .60905, 60956, 61024. *4b.* 563, 576A. *4i.* 67071. *6p.* 33002, 33071. *6z.* 63440. *6A.* 63571, 63642, 63707, 63838. *9d. 30320,* 61505, 61619, 61620, 61622. 10o. 59972. *10p.* 59994.

Range in Western Melanesia: First record.

Total range: Endemic to New Guinea.