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A New Species of *Thamnobryum* (Musci: Neckeraceae) from Venezuela, with a Key to the Neotropical Species of *Thamnobryum*

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ABSTRACT. *Thamnobryum liesneri* differs from all other species of *Thamnobryum* in its ligulate to lingulate secondary stem and branch leaves that have exceptionally broad (to 160 μm wide and a third or more of the leaf base width), strongly forked and spurred, subpercurrent costae. It differs from all species of *Porotrichum* and *Porothamnium* in having leaves with very broad costae and short upper cells. A key to the three species of *Thamnobryum* in the Neotropics is given.

Key words: Musci, Neckeraceae, *Thamnobryum*, Venezuela.

Thamnobryum is a handsome genus of frondose or stipitate mosses with 42 species (Crosby et al., 2000) distributed throughout the world. The genus is usually included in the subfamily Thamnioideae of the Neckeraceae (Fleischer, 1905–1906; Brotherus, 1906, 1925; Robinson, 1975; Crum & Anderson, 1981; Vitt, 1984; Enroth, 1989, 1994; Buck, 1998; Buck & Goffinet, 2000). Mönkemeyer (1927), however, placed the genus (as *Thamnium*, an illegitimate name) in its own family. This family (now the Thamnobryaceae) has been expanded by Margadant and During (1982), Walther (1983), Buck and Vitt (1986), Sastre-De Jesús (1987), and Churchill and Linares (1995) to include all members of the Neckeraceae with a frondose or stipitate habit and striate exostomes. As discussed by Buck (1998), however, some thamnoid genera are weakly stipitate, and both striate and papillose exostomes can be found in the thamnoid as well as the neckeroid genera.

The taxonomy of the Thamnioideae is so unsettled that it is difficult to find fault with Robinson's (1975: 56) characterization of them as a ". . . vile group of genera. . . ." This is because the important character states within the group are not discrete, and within this mainly dioicous group that often lacks sporophytes many of its critical characters are sporophytic. In the Neotropics *Thamnobryum* is close to *Porotrichum* and *Porothamnium*. It differs from both genera mainly in having leaves with stronger costae and shorter upper cells (see Robinson, 1975; Sastre-De Jesús, 1987; Buck, 1998).

There are three species of *Thamnobryum* in neotropical South America, one of which is described below as new to science.

Thamnobryum liesneri B. H. Allen & S. P. Churchill, sp. nov. TYPE: Venezuela. Amazonas: Atures, lower forested E slope of unnamed 1760 m peak, 8 km NW of settlement of Yutaje, 3 km W of Río Coro-Coro, W of Serranía de Yutaje, 05°41′N, 66°09′W, *Ronald Liesner & Bruce Holst 21891* (holotype, MO; isotypes, H, NY, US, VEN). Figure 1A–L.

Species haec a congeneris foliis ligulatis-lingulatis, cos-

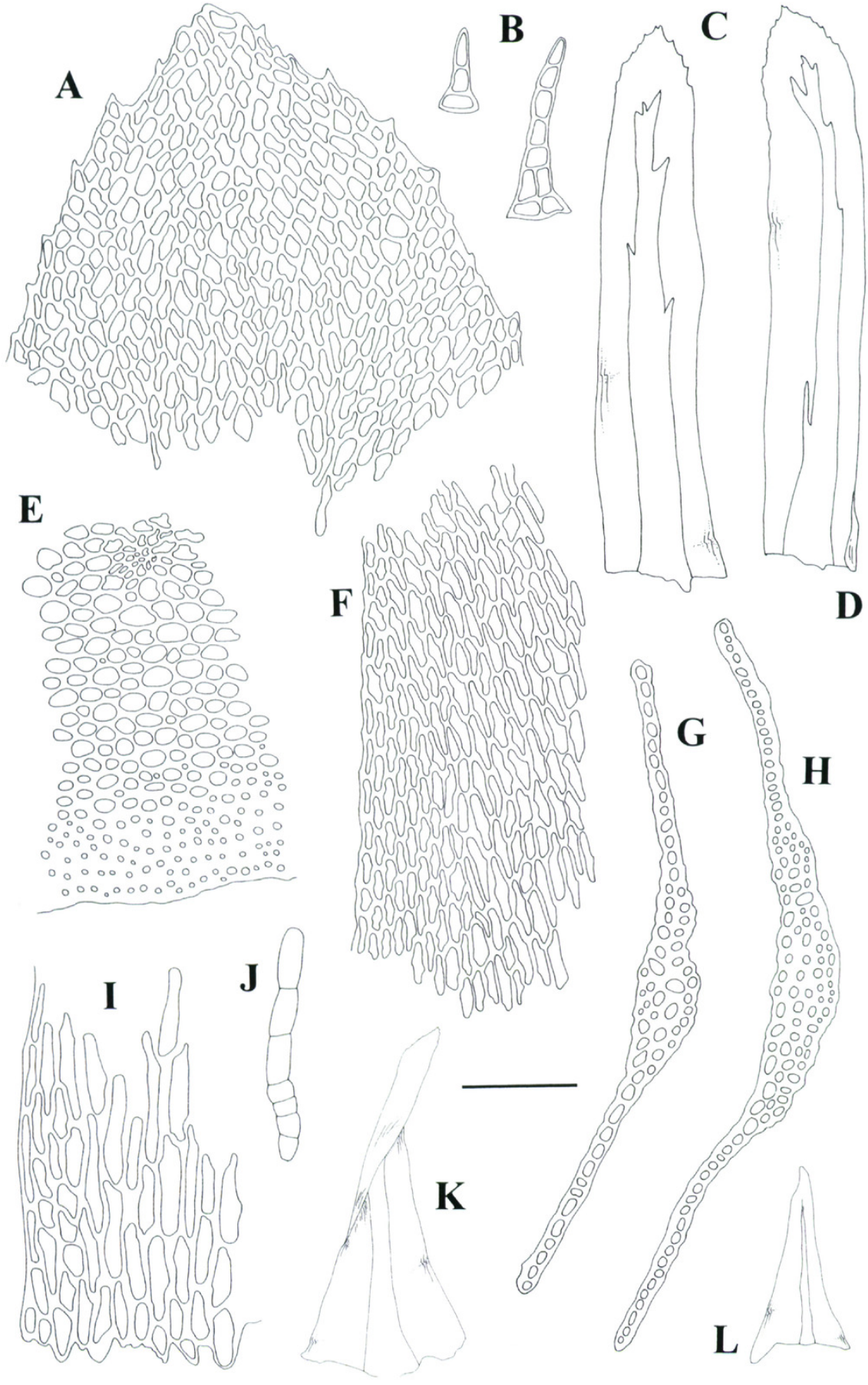

Figure 1. *Thamnobryum liesneri* B. H. Allen & S. P. Churchill. —A. Upper secondary stem leaf apex. —B. Foliose pseudoparaphyllia. —C, D. Upper secondary stem leaves. —E. Cross section of secondary stem. —F. Upper secondary

tis latissimis, calcaratis et furcatis, subpercurrentibusque differt.

Plants slender, dull, light-green, older plants black-brown, in dense, wiry tufts to 4 cm high. Primary stems yellow-red, becoming red-black with age, creeping, in cross section with central strand poorly developed, cortical cells thin-walled, and epidermal cells very thick-walled, to 6 cells thick; rhizoids in circular clusters on the parts of the stems that touch the substrate, red, smooth. Leaves widely spaced, reduced, hastate, to 0.5 mm long, costa single, strong. Secondary stems yellow-red, becoming red-black with age, erect, stipitate below, weakly frondose above, irregularly 1–2 pinnately branched, in cross section central strand weakly developed, cortical cells firm-walled, hyaline, epidermal cells small, thick-walled, golden-yellow to red, in 6–8 rows; foliose pseudoparaphyllia present; axillary hairs 6–7 cells long, lower 3–4 quadrate, upper 2–3 cylindrical, all cells often light red-brown; rhizoids densely clustered at base of secondary stems, red, smooth; secondary stems and branches ending in flagellate tips. Stipe leaves erect to erect-spreading when dry, erect-spreading when wet, widely spaced, reduced, stipe leaves near base hastate, becoming linear-lanceolate above, 1.0–1.8 mm long. Leaves erect to erect-incurved when dry, more spreading when wet, otherwise little changed, well-spaced, ligulate to lingulate, 1.7–2.0 mm long, 0.3–0.4 mm wide, flat to variously concave; apices acute; margins plane to reflexed below, entire in lower ½ to ¾, irregularly toothed to crenulate at apex; lamina unistratose above, uni- or bistratose at base; costae single, very broad (to 160 μm wide at base), subpercurrent (ending 10–20 cells below the apex), often forked at apex, usually spurred below; leaf cells firm-walled, smooth, not porose, apical cells irregularly rhomboid to hexagonal 12–20 × 6–10 μm, upper median cells fusiform-rhomboid, usually obliquely arranged from the costa, basal cells oblong-rectangular, 20–40 × 6–8 μm, alar cells short, weakly differentiated. Dioicous (?). Sporophytes unknown.

Etymology. This species is named for Ronald Lee Liesner, an outstanding vascular plant and bryophyte collector at the Missouri Botanical Garden. Ron Liesner was the actual collector of *Thamnobryum liesneri.*

Habitat. On boulder near stream; 1050–1200 m.

Thamnobryum liesneri differs from all species of *Thamnobryum* familiar to us by its ligulate to lingulate secondary stem and branch leaves that have exceptionally broad (to 160 μm wide and a third or more of the leaf base width), strongly forked and spurred, subpercurrent costae. There are some species of *Thamnobryum* from the Juan Fernandez Islands with costae to 100 μm wide, but these species have ovate-lanceolate or lanceolate leaves with percurrent or excurrent costae. Although the presence of flagellate tips on nearly all the secondary stems and branches of *T. liesneri* seems a distinctive feature of the species, there are many other species of *Thamnobryum* that occasionally have flagellate stem and branch tips. *Thamnobryum liesneri* differs from all species of *Porotrichum* and *Porothamnium* in having leaves with very broad costae and short upper cells.

KEY TO THE NEOTROPICAL SPECIES OF *THAMNOBRYUM*

1. Secondary stem and branch leaves ligulate to lingulate; costae to 160 μm wide at base *T. liesneri* B. H. Allen & S. P. Churchill
1. Secondary stem and branch leaves ovate-ligulate or oblong-ovate; costae 40–60 μm wide at base 2
   2. Secondary stem and branch leaves plicate when dry, ovate-ligulate, 2–4 mm long; stipe leaves 2–3 mm long . . . . . *T. fasciculatum* (Hedwig) I. Sastre
   2. Secondary stem and branch leaves smooth when dry, oblong-ovate, 2–3 mm long; stipe leaves to 1 mm long . . . . . *T. tumidicaule* (K. A. Wagner) F. D. Bowers

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stem leaf median cells and margin. —G. Cross section, upper part of secondary stem leaf. —H. Cross section, lower part of secondary stem leaf. —I. Upper secondary stem leaf basal cells and margin. —J. Axillary hair. —K. Stipe leaf. —L. Primary stem leaf. Scale in mm: bar = 0.05 (B, J); bar = 0.06 (A, E–I); bar = 0.34 (K, L); bar = 0.4 (C, D). All figures from *Liesner & Holst 21891* (holotype).

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