

26. RHACHITHECIACEAE H. Robinson

Bernard Goffinet

Plants small, erect, gregarious. **Stems** with [or without] central strand. **Leaves** spatulate, [ovate, oblong, lingulate,] erect spreading when moist, crisped when dry, acute, 1-costate, costa vanishing before apex [minutely excurrent]; laminal cells smooth [papillose], thin-walled, rectangular in proximal half, short-rectangular to isodiametric distally; alar cells not differentiated. **Specialized asexual reproduction** present [or absent] as multicellular gemmae, 1- to 2-seriate, to 7 cells in length, borne on surface of leaves. **Sexual condition** autoicous; perichaetial leaves differentiated [or not]. [**Sporophytes** solitary in perichaetia. **Seta** erect, straight or twisted when dry, curved when moist. **Capsule** immersed to exserted, ribbed, rarely smooth; annulus differentiated or not; endostome teeth fused or not; inner peristomial layer of only 8 or 16 cells, or endostome absent. **Calyptra** cucullate, smooth or papillose, glabrous. **Spores** striate, pitted or papillose].

Genera 7, species 16 (1 in the flora): North America, Mexico, Central America, South America, Europe, Asia, Indian Ocean Islands, primarily in tropical and subtropical regions.

Four fossil species of Rhachithecaceae have been reported from Europe.

Rhachithecaceae also includes the genera *Hypnodontopsis* Z. Iwatsuki & Noguchi, *Jonesiobryum* B. H. Allen & Pursell, *Rhachithecopsis* P. de la Varde, *Tisserantiella* P. de la Varde, *Uleastrum* W. R. Buck, and *Zanderia* Goffinet. Previously considered allied to the Orthotrichaceae, and including genera formerly assigned to that family or the Pottiaceae, the Rhachithecaceae have recently been transferred to the Dicranales (B. Goffinet 1997).

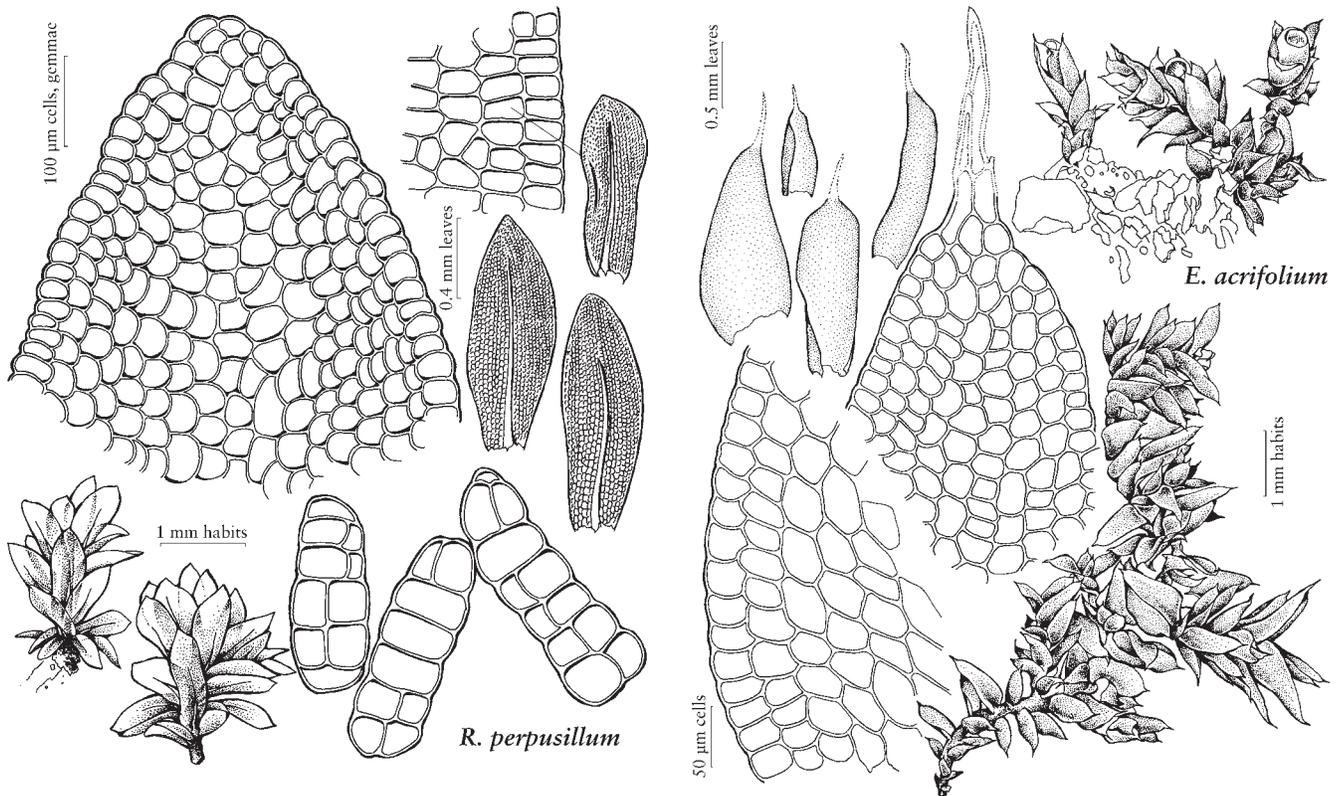
SELECTED REFERENCES Crum, H. A. 1994. Rhachithecaceae. In: A. J. Sharp et al., eds. The moss flora of Mexico. Mem. New York Bot. Gard. 69: 588–590. Goffinet, B. 1997. The Rhachithecaceae: Revised generic circumscription and ordinal affinities. Bryologist 100: 425–439. Zander, R. H., 1978, *Tortula propagulosa* of the United States is *Rhachithecium perpusillum*. Bryologist 81: 458–460.

1. RHACHITHECIUM Le Jolis, Mém. Soc. Sci. Nat. Math. Cherbourg 29: 308. 1895

- [Greek *rhachis*, ridge, and *theke*, case, alluding to ribbed capsule]

Stems with central strand. [**Capsule** exserted, annulus differentiated, 1–2-seriate; endostome teeth fused to 8 teeth, or absent. **Spores** pitted].

Species 4 (1 in the flora): North America, Mexico, South America, Asia, Indian Ocean Islands.



RHACHITHECIUM • ERPODIUM

1. *Rhachithecium perpusillum* (Thwaites & Mitten)
 Brotherus in H. G. A. Engler and K. Prantl, Nat.
 Pflanzenfam. 234/235[1,3]: 1199. 1909 [F]



Zygodon perpusillus Thwaites & Mitten, J. Linn. Soc., Bot. 13: 303. 1873; *Hypnodon perpusillus* (Thwaites & Mitten) Müller Hal.; *Tortula propagulosa* Sharp

Plants rarely to 4 mm. **Stems** typically unbranched. **Leaves** acute, to 1×0.3 mm, margin entire to crenulate; proximal cells to 45×12 μm ; medial and distal cells quadrate to hexagonal, somewhat bulging, 15–25 μm wide, marginal cells often smaller, 6–12 μm ; costa between $\frac{2}{3}$ and $\frac{3}{4}$ of leaf length. **Specialized asexual reproduction** by gemmae, cylindrical to slightly club-shaped, 1–2-seriate, to 160 μm , borne near the base of the leaf. **Sexual condition** autoicous. **Sporophytes** absent in range of the flora.

Dry or as on bark of deciduous trees, primarily elm; moderate elevations; N.C., Tenn., W.Va.; Mexico; South America (Argentina, Brazil); Asia (China, India, Sri Lanka); Indian Ocean Islands (Madagascar).

A single population from North Carolina (Davidson, L. E. Anderson 7818, DUKE) was found to produce gametangia. The perichatium is apical and the perigonium terminates a short, subapical branch. Despite the presence of sex organs, no evidence of sexual reproduction has been found. Perichaetial leaves are not differentiated in this specimen, which may suggest that the differentiation (i.e., longer leaves) occurs following sexual reproduction. The species has only been collected once in recent years (Tennessee, J. A. Churchill 89025, 1989, DUKE). Most collections were made on elm, which has been much decimated in eastern North America. The species is distinguished by its small stature, crisped leaves when dry, thin-walled smooth cells, and abundant laminal gemmae.