

COMMENTS ON *SPHAGNUM HENRYENSE*

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Sphagnum henryense, described by Warnstorf in 1900, has remained to this day unknown or, at best, confused with other look-alike species. The original collection was made in 1898 near the seacoast at Cape Henry, Princess Anne Co., Virginia, by Thomas H. Kearney. In 1911 Warnstorf added to the species a var. *bartlettii* from McDuffie Co., Georgia. Although the variety has been completely ignored, and with good reason, it appears to have been included in Andrews' concept and in the range of distribution that he gave, in 1913, as Delaware, Virginia, Georgia, and Louisiana. In 1938 Andrews characterized the species as strictly oceanic, known from a few coastal localities from Delaware to Louisiana. Blomquist, that same year, mentioned that *Sphagnum henryense* had been found only in the Coastal Plain of the Southeast, but in 1963, in Ruth Breen's *Mosses of Florida*, his statement of range included Nova Scotia and southward along the Coastal Plain to Florida and Louisiana and Cuba. Andrus, in 1974, gave reference to upland localities in New York and Pennsylvania and extended the range along the coast as far west as Texas.

I have not seen material from Texas, but I have seen specimens from coastal areas of New York, New Jersey, Delaware, Maryland, North and South Carolina, Georgia, Florida, and Louisiana. A collection from Hot Spring Co., Arkansas (at 240 ft. elev., Elmore Community, Malvern, *D. Demaree 45318*, in herb. Redfearn), was presumably from the Mississippi Embayment area, a lowland area in effect no more than a northward extension of the Coastal Plain. The species is unquestionably rare and localized in the Coastal Plain, but not limited to it. I have seen a few upland collections, from Magnolia, Massachusetts; Schenectady Co., New York; and Iredell Co., North Carolina. Iredell County is in the North Carolina Piedmont. Lewis Anderson has told me of a collection made in the mountains of North Carolina, in Jackson County (*Anderson 8271*, DUKE). I have not seen the specimen, but a "prominent ridge network" on the commissures of branch leaf hyaline cells makes the identification certain. I can confirm the occurrence in Nova Scotia (in shade, spruce-fir woods near Pond Cove, Brier Island, *W. B. Schofield 1827*, September 30, 1951, DUKE) and Cuba (in a wet place, 700 m. alt., near the headwaters of Arroyo Guayabo, Sierra de Nipe, Oriente province, *Bros. León, Marie-Victorin, Clemente & Alain 19774*, April 4, 1941, DUKE).

The range of *Sphagnum henryense* is like that of many rare plants of the youthful Coastal Plain but also occurring disjunctively in the uplands, especially in areas of known antiquity, in many instances in the mountains of the Southeast, and also in the mountains of tropical America. *Sphagna* of similar distributions and presumably similar phyto-geographic histories include *S. pylaesi*, *S. cyclophyllum*, *S. tenellum*, and *S. perichaetiale*. The occurrence of *S. henryense* in Cuba makes a discovery elsewhere in tropical America likely.

In the field *Sphagnum henryense* greatly resembles *S. palustre*, *S. papillosum*, and *S. imbricatum*. All those species grow together, even intermingled, in the Coastal Plain of North Carolina. Microscopically they are easily distinguished. The special features of *Sphagnum henryense* include the following:

1. The green cells of branch leaves are isosceles-triangular in cross-section, with exposure on the inner surface.
2. The inner walls of hyaline cells of branch leaves where they lie adjacent to green cells are often covered by a network of vermiform ridges. The network, not very prominent at best and sometimes lacking, is most easily observed in longitudinal sections of the leaf base. In cross-sections the ridges give the semblance of very low, blunt papillae.
3. In the lower third to half of the branch leaves the pores on the outer surface of hyaline cells are very numerous (16–26 per cell); they are large, rounded, irregularly arranged in commissural rows or more or less scattered, and often enclosed in sigmoid or loop-like fibrils. In the upper part of the leaf (below the area of extensive resorption), the pores are 5–14 per cell, rather large, and rounded-elliptic.
4. The hyaline cells of the stem leaves are undivided. Most commonly they are short and show considerable resorption on their outer surfaces (resulting in 1, 2 or sometimes 3 large membrane gaps per cell). Hemi-isophyllous expressions, such as the so-called var. *bartlettii*, have much longer, hyaline cells with numerous large, rounded pores on the outer surface.

Sphagnum henryense was not well characterized in Andrews' revision of the North American species of peatmosses, in 1913. His statement that the inner surfaces of the hyaline cells where they overlie the chlorophyll cells are "beset with a network of prominently projecting ridges, especially in the lower part of the leaf" suggests a resemblance to the conspicuously developed comb fibrils of *S. imbricatum*. The pores on the outer surface of the hyaline cells at the base of branch leaves are rather numerous in *S. imbricatum* (11–17 per cell in the middle of the base), and they are rather large, more or less rounded, and often enclosed in looplike or S-shaped fibrils. In the upper part of the leaf, below a large area of extensive resorption, the pores on the outer surface are 2–5 or 7 per cell, elliptic along the commissures but rounded and rather conspicuously grouped in 2's and 3's at adjoining angles. The green cells, as viewed in section, are equilaterally triangular. (The comb fibrils are often very conspicuous, but they are sometimes visible only near the leaf insertion; they are sometimes very poorly developed or even lacking in the so-called var. *affine* Ren. & Card.). The hyaline cells of stem leaves are consistently once-divided.

Sphagnum palustre normally has relatively few pores on the outer surface of hyaline cells throughout the branch leaves, although in some specimens toward the basal margins the pores may be as many as 10 to 13 per cell. They tend to be elliptic or rounded-elliptic, noticeably commissural in arrangement, and only rarely enclosed in loops or S's. More commonly, in the basal part of the leaf the pores are rather few and distinctly elliptic at the commissures but more rounded and noticeably larger at the ends and corners. In the upper part of the leaves, below the area of extensive resorption resulting in membrane gaps, the pores are 2–7 per cell and elliptic, with those at ends and corners rather conspicuously in 2's and 3's as one expects in the section *Sphagnum*; the grouping of corner pores is less conspicuous in *S. henryense* where the commissural pores are larger and more nearly rounded and therefore less differentiated from those of ends and corners. *Sphagnum palustre* has no comb fibrils or ridge reticulum on the commissures of hyaline cells of branch leaves, and it has undivided hyaline cells of stem leaves (as in *S. henryense*).

***Sphagnum henryense* Warnst., Hedwigia 39: 107. 1900.**

S. henryense var. α *Bartlettii* Warnst., Spagn. Univ. 445. 1911.

Plants robust, in deep cushions or hummocks, pale-green or brown. Wood cylinder of stem brown; cortical cells in 3 layers, \pm square or short-rectangular, fibrillose, the outer cells with (1)4–6(9) rounded pores. Stem leaves large, lingulate, rounded at the apex, finely fringed all around; hyaline cells not divided, not at all fibrillose or porose, or with a varying development of fibrils on both surfaces and pores on the outer, sometimes greatly resorbed on the outer surface with 1–3 or more large membrane gaps below and almost complete resorption near the apex, but sometimes with large membrane gaps only at the

apex and/or upper median region and numerous large, rounded or rounded-elliptic pores, mostly along the commissures, in the side regions, across the lower 2/3 of the leaf, or nearly throughout, on the inner surface often with membrane pleats but no membrane gaps. Branches stout, in fascicles of 4–5, 2 spreading; cortical cells in 1 layer, conspicuously fibrillose, with 1–2 large, rounded pores. Branch leaves spreading, broadly ovate, concave-cucullate, roughened at back of the apex because of resorption, denticulate along a single row of apparently linear cells owing to marginal resorption (appearing as a furrow in section); hyaline cells rhomboidal, 6–8:1 at the leaf base, becoming shorter toward the apex, fibrillose, plane or nearly so on the inner surface, slightly to moderately convex on

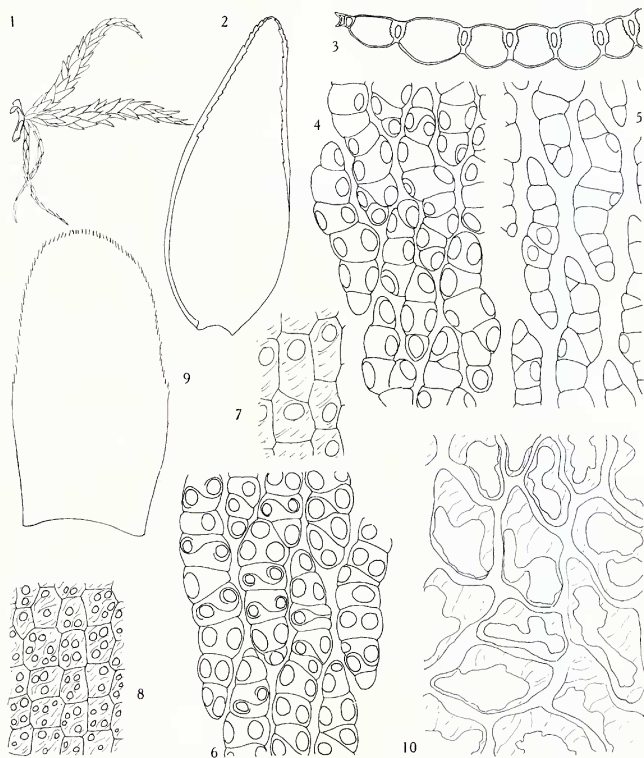


FIG. A. *Sphagnum henryense*. 1. Fascicle of branches, X 2.5 2. Branch leaf, X 24. 3. Branch leaf in cross-section, X 350. 4. Upper cells of branch leaf, outer surface, X 350. 5. Upper cells of branch leaf, inner surface, X 350. 6. Basal cells of branch leaf, outer surface, X 350. 7. Branch cortex, X 103. 8. Stem cortex, X 103. 9. Stem leaf, X 24. 10. Upper median cells of stem leaf, X 350.

the outer, on the outer surface with 4–14 large, rounded-elliptic pores along the commissures above, with the apical pore similar to others or somewhat larger, and about 16–26 large, rounded pores in 2 or rarely 3–4 irregular rows in lower cells; on the inner surface with a few ringed pores in the corners in the upper part of the leaf and large, rounded pores in the middle of cells in the side regions, in a marginal row of cells sometimes as many as 12 in 2 rows, occasionally one or a few large, rounded pores in the leaf middle also; green cells in section narrowly or sometimes nearly equilaterally triangular with the base exposed on the inner surface and the sides somewhat convex, the lumen also triangular, the adjacent walls of hyaline cells with an irregular network of fine ridges, especially noticeable at the leaf base, usually very faint, sometimes fairly conspicuous, evident in cross-section as minute and irregular papillae. Apparently dioicous; antheridia not seen; perichaetial leaves large, oblong-ovate, the cells of upper and marginal portions dimorphous, porose and fibrillose, those toward the base uniformly narrow. Pseudostomata very numerous. Spores 24 μ , very finely papillose-roughened. — Fig. A.

In loose carpets and low cushions on peaty humus in wooded or shrubby swamps, at the edge of ponds or along streams, rarely submerged, along the coast in *Chamaecyparis* swamps, pocosins, and gum-cypress swamps, in distinctly acid habitats southward but in the northern part of its range apparently in minerotrophic habitats (as indicated, on labels, by an apparent association with alders and *Sphagnum teres* at the margins of *Chamaedaphne* mats or in *Chamaecyparis* "carrs"). Occurring inter-ruptedly along the coast from Nova Scotia to Florida and westward to Louisiana and Arkansas; also in uplands in Massachusetts, New York, and North Carolina; Cuba.

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