

## The Distribution of North American Bryophytes The *Sphagnum imbricatum* Russ. Complex

Dale H. Vitt<sup>1</sup> & Robert Gauthier<sup>2</sup>

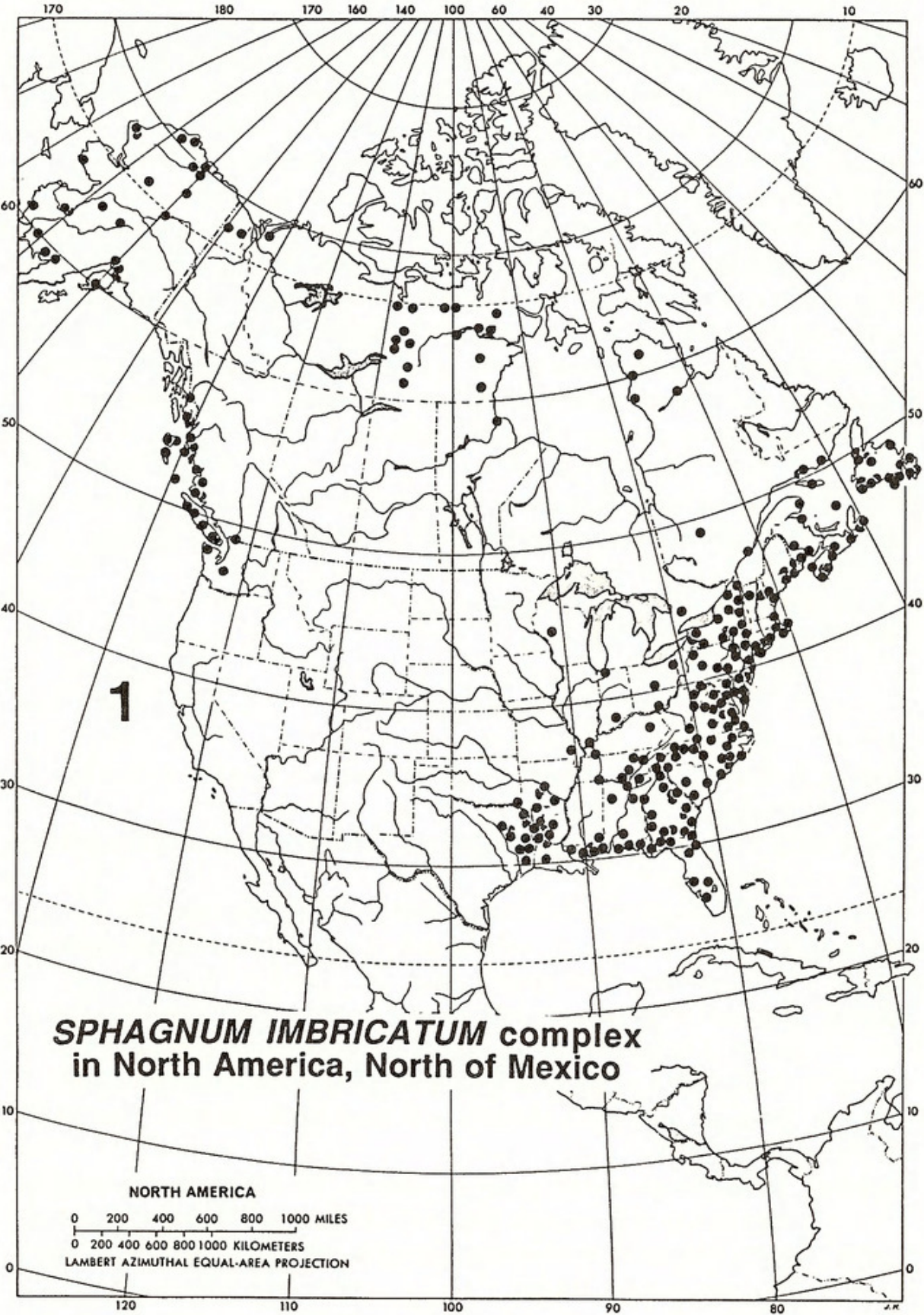
*Sphagnum imbricatum* is a member of the Section *Sphagnum*, and in a broad sense is distinguished by equilaterally-triangular green cells that are exposed only on the concave surface of the leaf, and by hyaline cells that have their side walls ornamented by ridge-like comb fibrils. Based on these features, only *S. portoricense* and *S. henryense* can be confused. These species are distinguished by key characters presented in Crum (1984). As early as 1961, Tallis reported on the presence of two morphological extremes of *S. imbricatum*. These 'bog' and 'fen' types were studied by Green in 1968, who suggested that they were ecological modifications of one species. More recently, the species complex was revised by Kjell Flatberg (1984), who recognized five subspecific taxa, of which three occur in North America. Three years later in 1987, Dick Andrus recognized four of these taxa as distinct species. The 'bog' form he considered as *S. austinii* Sull. in Aust., using Sullivant's name that was based on specimens collected in New Jersey. The temperate 'fen' form was named *S. affine* Ren. & Card. (from New York), whereas the subarctic-arctic form was named in honor of W. C. Steere (as *S. steerei* Andrus). *Sphagnum imbricatum*, itself, is a species not found in North America, it being restricted to eastern Asia.

The world distribution of *S. imbricatum* (*sensu lato*) was shown by Lid (1925) as including western Europe, eastern Asia, and both the northwestern and eastern coasts of North America. He showed it as a distinctly coastal species. In 1963, Tjuremnov mapped the species for the world, showing localities in Asia, from extreme northeastern Siberia south through northeastern China to Korea and Japan. He mapped its' North American occurrence from Labrador and James Bay (both localities that we have not been able to confirm), south in Newfoundland, the Carolinas, Florida, and Cuba. The distribution of *S. imbricatum*, if considered in a broad sense as did Crum (1986), is shown in figure 1. When divided into three species following Andrus (1987), the patterns are as shown in figure 2. *Sphagnum austinii* is found along the west coast of the continent from Washington state north to southernmost Alaska, and along the east coast from Newfoundland south to New Jersey. This is a species of hummocks in ombrotrophic bogs and other oligotrophic habitats and is confined to maritime areas. Kjell Flatberg (1984) suggested that *S.*

<sup>1</sup>Department of Botany, The University of Alberta, Edmonton, Alberta, Canada, T6G 2E9.

<sup>2</sup>Département de phytologie et Herbar Louis-Marie, Faculté des sciences de l'agriculture et de l'alimentation, Université Laval, Québec, Canada, G1K 7P4.







*austinii* may be limited by a high atmospheric humidity caused by fog, precipitation, mist and dew. More recently, Dennis Gignac (1990) has presented data that the critical factor in limiting the distribution of this species is minimum temperature, not water chemistry or precipitation. *Sphagnum affine* is widespread in temperate eastern North America, from the Gulf Coast northward to Newfoundland, Quebec, Ontario, and Wisconsin, and overlaps with *S. austinii* from New Jersey north to Newfoundland. It is rare west of the Appalachian Mountains, and is not known from western North America. In Britain, Hill (1988) reported that he could not document any incidence of these two taxa growing together, while Flatberg (1984) found only a single mixed stand in Norway. Dick Andrus (*pers. com.*) wrote that he likewise has never seen these two taxa growing together. *Sphagnum steerei* occurs in a broad band from northwestern Alaska, eastward to northern Quebec. Its habitat of subarctic meadows is very different than that of either of the other two species, and its distribution does not overlap with either *S. affine* or *S. austinii*.

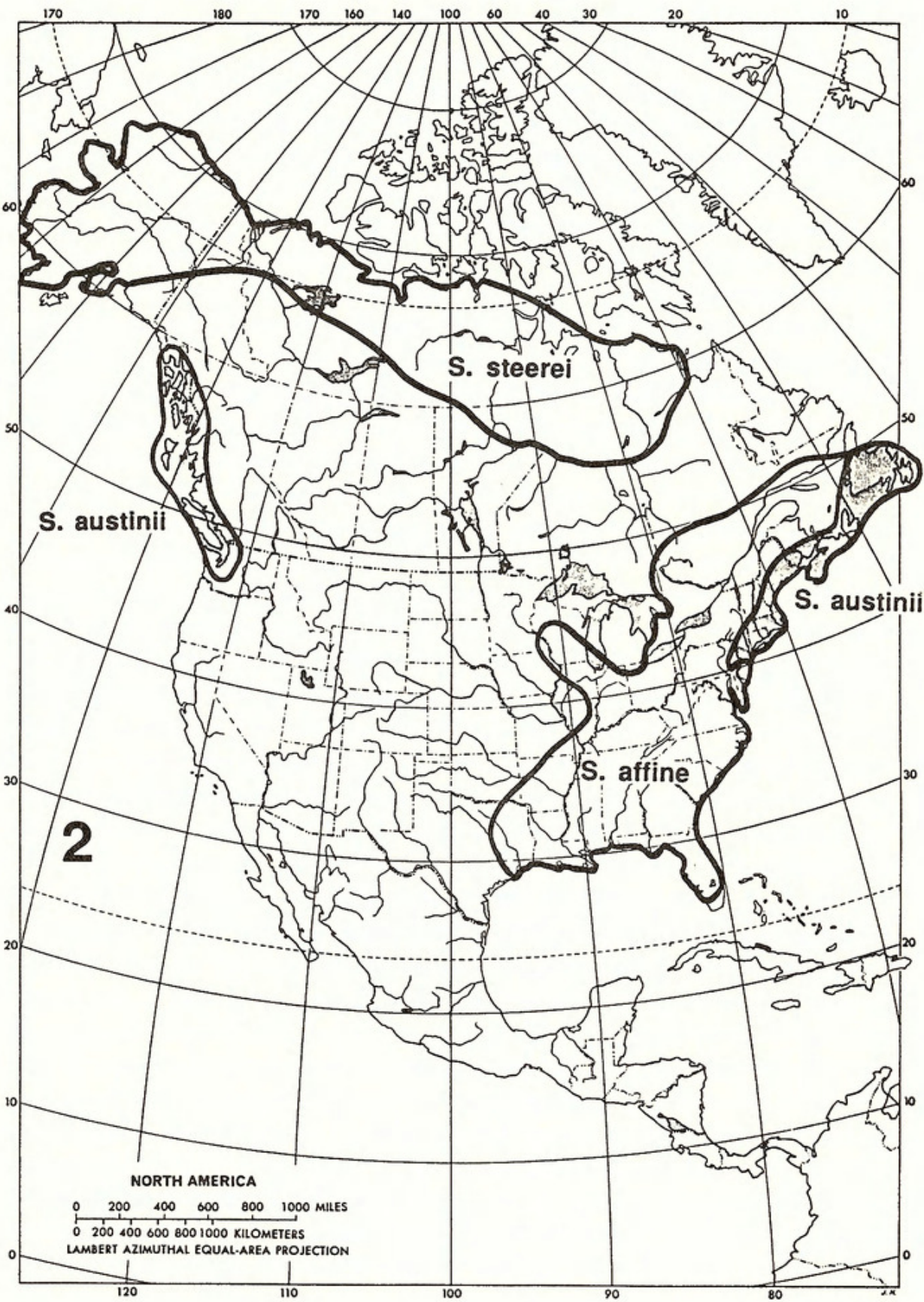
Additional reports, new collections, and range extensions should be sent to the first author. These findings can be reported in future editions of this series.

NEXT SPECIES: *Orthotrichum rupestre* Schwaegr.

### Literature Cited

- Andrus, R. E. 1987. Nomenclatural changes in *Sphagnum imbricatum sensu lato*. *The Bryologist* 90: 217-220.
- Crum, H. A. 1984. Sphagnopsida Sphagnaceae. *North American Flora*, Series II, Part 11: 1-180.
- , 1986. 2. Sphagnaceae. Meddelelser om Groenland, *Bioscience* 18: 1-61.
- Flatberg, K. I. 1984. A taxonomic revision of the *Sphagnum imbricatum* complex. *K. Norske Vidensk. Selsk. Skrift.* 3: 1-80.
- Gignac, L. D. 1990. Habitat limitations and ecotope structure of mire *Sphagnum* in western Canada. Ph.D. Dissertation, University of Alberta, Edmonton.
- Green, B. H. 1968. Factors influencing the spatial and temporal distribution of *Sphagnum imbricatum* Hornsch. ex Russ. in the British Isles. *Jour. Ecol.* 56: 47-58.
- Hill, M. O. 1988. *Sphagnum imbricatum* ssp. *austinii* (Sull.) Flatberg and ssp. *affine* (Ren. & Card.) Flatberg in Britain and Ireland. *Jour. Bryol.* 15: 109-115.
- Lid, J. 1925. An account of the Cymbifolia group of the sphagna of Norway. *Nytt Mag. Naturvid.* 63: 224-259.
- Tallis, J. H. 1962. Some observations on *Sphagnum imbricatum*. *Trans. Brit. Bryol. Soc.* 4: 384-385.
- Tjuremnov, S. N. 1963. On the distribution of *Sphagnum imbricatum*. *Bull. Mosk. Obshch. Isp. Prirody Otd. biol.* 68: 98-109. (in Russian).







Vitt, Dale H. and Gauthier, Robert. 1991. "The distribution of North American bryophytes. The *Sphagnum imbricatum* Russ. complex." *Evansia* 8(1), 18–21.  
<https://doi.org/10.5962/p.346778>.

**View This Item Online:** <https://www.biodiversitylibrary.org/item/312605>

**DOI:** <https://doi.org/10.5962/p.346778>

**Permalink:** <https://www.biodiversitylibrary.org/partpdf/346778>

**Holding Institution**

New York Botanical Garden, LuEsther T. Mertz Library

**Sponsored by**

New York Botanical Garden, LuEsther T. Mertz Library

**Copyright & Reuse**

Copyright Status: In copyright. Digitized with the permission of the rights holder.

Rights Holder: American Bryological and Lichenological Society

License: <http://creativecommons.org/licenses/by-nc-sa/4.0/>

Rights: <http://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.