

STUDIES ON THE TAXONOMY AND DISTRIBUTION OF *SPHAGNUM* VIII. THE FRUITING OF *SPHAGNUM PYLAESII* IN NOVA SCOTIA AND ITS CHROMOSOME NUMBER*

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In an earlier paper we reported on chromosome numbers of some North American species of *Sphagnum* (Maass & Harvey 1973), but were not able to include either *S. pylaesii* Brid. or *S. cyclophyllum* Sull. et Lesq., both of which are currently regarded as members of Sect. *Subsecunda* (subgenus *Isocladus*). These two species differ from all other *Sphagna* in the morphology of their sporophytes, and they were at one time segregated as the genus *Hemitheca* Lindb. (Andrews 1960, 1961). Their gametophytes also have unique properties, such as the presence of membrane pleats, the almost complete lack of pores in the hyaline cells of *S. pylaesii*, and the absence of branches and branch leaves from *S. cyclophyllum*. For these reasons and because of ambiguities in their phylogenetic position (expressed e.g. by Andrews 1912; see also Eddy 1977), their chromosomal relationship to other species of *Sphagnum* was of interest.

Hitherto all species of *Sphagnum* studied have had chromosome numbers of $n=19$ or $n=38$ (see Maass & Harvey 1973 for reference). Sorsa (1956) speculated that the presently known *Sphagna* with the basic chromosome number 19 are possibly derived from ancestors with a lower number, such as $n=9$ (reinterpreted from his figure "4 + 1", p. 13 loc. cit.). Another possibility is that the number 19 was derived from an ancestral $n=10$ by polyploidy with fragmentation of one chromosome to form the so-called m-bodies. We thought that a study of the chromosomes of the relatively isolated *S. pylaesii*-*S. cyclophyllum* group might represent an opportunity to find such an ancestral number.

Although fruiting is extremely rare in these species (Andrews 1960; Maass 1966) we have succeeded in obtaining fruiting sporophytes of *S. pylaesii* in three localities: 1. Halifax County between Purcell's Cove and York Redoubt in a pond by the main highway near Devil's Hill Road, UTM grid reference ME 553387; 2. Shelburne County in a large bog between Jordan Falls and Sable River about 0.5 km north from highway 103, LD 247555; 3. Shelburne County in the Clyde River Valley 6.5 km from highway 3, in bog pools growing mixed with *S. cyclophyllum*, KD 990555. All of the

fruiting material belongs to the heavily branched (i.e. fully developed) and blackish brown tinted form as were the specimens reported from New Jersey (Andrews 1961). Voucher specimens have been deposited in the herbarium of Dalhousie University (DAL). So far *S. cyclophyllum* has not been found fruiting in Nova Scotia, although its gametophytes have been collected from a few localities newly discovered for Canada in 1973 and 1974 (Maass et al., unpublished).

A meiotic count of $n=19$ (Fig 1) was established. This confirms the basic number observed in *Sphagnum* and fails to support speculations based on numbers lower than 19. Although *S. cyclophyllum* remains to be examined, a critical and perhaps rather archaic member of the genus has been eliminated as a candidate for a more primitive chromosome number in the genus *Sphagnum*. Another interesting member of the genus to be studied for its chromosomes is *S. sericeum* C. Muell. endemic to Indomalaysia (the only member of subgenus *Homophylla*). It differs from all other species by the presence of a characteristic leaf apex and is now being regarded as the most primitive *Sphagnum* by Eddy (1977).

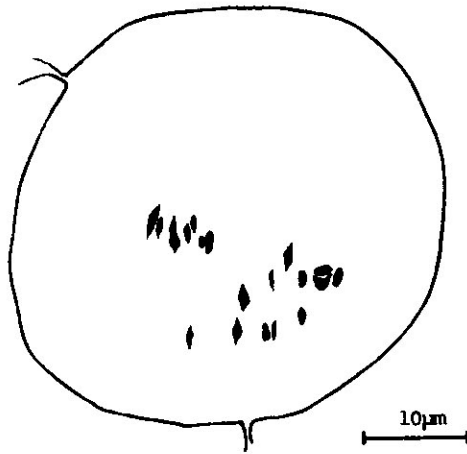


Fig 1. Drawing of metaphase 1 of meiosis in the sporophyte of *Sphagnum pylaesii* showing $n=19$.

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