

SEIROSPORA SEIROSPERMA (HARVEY) DIXON (RHODOPHYTA, CERAMIACEAE) —A FIRST RECORD FOR CANADA*

The marine red alga *Seirospora seirosperma* (Harv.) Dix. is reported for the first time in Canada. Although fairly widely distributed along the Atlantic coast of Europe (Rosenvinge 1923-24; Ardré 1969-70; Parke & Dixon 1976), *S. seirosperma* has been recorded from a much narrower range in the western Atlantic, from New Jersey to Massachusetts (Taylor 1957, as *S. griffithsiana* Harv.; Sears 1971). Further, within Massachusetts, the species is known only from south of Cape Cod, except for a single, early report of it from Salem (near Boston; Harvey 1853). Thus the present record of *S. seirosperma*, in Nova Scotia, is an apparent disjunction of some 650 km in its North American distribution.

Seirospora seirosperma (Figs 1, 2) was collected in October 1983 at Pauls Point (44°34'N, 64°56'W) and Mill Cove (44°35'N, 64°04'W), both in St. Margarets Bay on the Atlantic coast of Nova Scotia. Identification of the species was confirmed by reference to Feldmann-Mazoyer (1940), Taylor (1957) and Dixon (1971). Plants were rare to occasional, epiphytic usually on *Laminaria longicuris* Pyl. and *L. saccharina* (L.) Lamour., less frequently on *Cystoclonium purpureum* (Huds.) Batt., *Polysiphonia nigrescens* (Huds.) Grev. and *Chordaria flagelliformis* (O.F. Müll.) C. Ag. The species was found from 3 to 11 m depth, but plants were larger and more frequent in the 6- to 9-m depth range. Thalli were up to 6 cm tall and usually bore numerous seirosporangia (Fig 2). Even sparingly sporangiate or infertile smaller specimens were readily distinguishable from infertile *Callithamnion corymbosum*, abundant at this time at both sites, by their uninucleate cells, their most robust, pyramidal habit (Fig 1), and their coarser branching with ultimate divisions slightly appressed-corymbose. No reproductive structures other than seirosporangia were seen in material collected from the entire depth range over several weeks in October. Unfortunately, we were unable to follow the subsequent development and ultimate fate of this species in the field. However, in cultures derived from seirospores and apical segments of these plants (C.J. Bird, unpubl.), only an asexual cycle of seirosporangiate plants was obtained, at approximately 3-week intervals (cf. Plattner & Nichols 1977).

The occurrence of *S. seirosperma* in Nova Scotian waters is probably due primarily to supranormal inshore sea temperatures during summer and autumn of the past several years (Lauzier & Hull 1969; Scheibling & Stephenson 1984). The species has been observed in culture to require temperatures in the vicinity of 15°C or higher for growth and sporulation (Plattner & Nichols 1977; C.J. Bird, unpubl.). Sustained sea temperatures in excess of 15°C were noted during late summer and autumn of 1983 along the coast of Nova Scotia (R.E. Scheibling, pers. comm.), including subtidally to 9 m at the collection sites in St. Margarets Bay (C.R. Johnson, unpubl.). At the growth rates observed in cultures of *S. seirosperma*, these thermal conditions undoubtedly would support growth and reproduction of this species in nature, assuming the presence of viable propagules. Indeed, the occurrence of similar autumnal temperatures since 1980 suggests that *S. seirosperma* could have arrived here earlier and may now be more widespread in Nova Scotia than the present report indicates.

A second factor to promote the occurrence of *S. seirosperma* in this area is the recent mass mortality of sea urchins in St. Margarets Bay and elsewhere along the

Nova Scotian coast (Miller & Colodey 1983; Scheibling & Stephenson 1984). This event has reduced the severe grazing of the seafloor by these herbivores and allowed a subtidal algal macroflora to become re-established for the first time in about a decade. Urchin dieback was observed in 1980 at Pauls Point and 1981 at Mill Cove, and impressive recovery of the macroalgal flora has occurred in the ensuing 2-3 years.

Voucher specimens of *S. seirosperma*, NRCC 9618, 9619, 9673 and 9674, are deposited in the herbarium of the National Research Council of Canada, Halifax, N.S.

Acknowledgements

Financial support for field studies was provided by a Natural Sciences and Engineering Research Council operating grant to K.H. Mann. W.P. Young and J. Smith assisted with diving and collecting.

References

- Ardre, F.** 1969-70. Contribution a l'étude des algues marines du Portugal. 1. La flore. *Port. Acta Biol.*, Ser. B, 10: 137-532.
- Dixon, P.S.** 1971. Studies of the genus "Seirospora". *Botaniste* 54: 35-48.
- Feldmann-Mazoyer, G.** 1940. *Recherches sur les Céramiacées de la Méditerranée Occidentale*. Imprimerie Minerva, Alger.
- Harvey, W.H.** 1853. *Nereis Boreali-Americana*. Contributions to the history of the marine algae of North America. II. Rhodosperrmae. *Smithson. Contrib. Knowl.*, Washington, D.C.
- Lauzier, L.M. and Hull, J.H.** 1969. Coastal station data. Temperature along the Canadian Atlantic coast, 1921-1969. *Fish. Res. Board Can. Tech. Rep.* 150.
- Miller, R.J. and Colodey, A.G.** 1983. Widespread mass mortalities of the green sea urchin in Nova Scotia, Canada. *Mar. Biol.* 73: 263-267.
- Parke, M. and Dixon, P.S.** 1976. Check-list of British marine algae—third revision. *J. Mar. Biol. Ass. U.K.* 56: 527-594.
- Plattner, S.B. and Nichols, H.W.** 1977. Asexual development in *Seirospora seirosperma*. *Phytomorphology* 27: 371-377.
- Rosenvinge, L.K.** 1923-24. The marine algae of Denmark. Contributions to their natural history. III. Rhodophyceae III (Ceramiales). *K. Dan. Vidensk. Selsk. Skr.*, 7 Raekke, *Naturvidensk. Math. Afd.* 7: 287-486.
- Scheibling, R.E. and Stephenson, R.L.** 1984. Mass mortality of *Strongylocentrotus droebachiensis* (Echinodermata: Echinoidea) off Nova Scotia, Canada. *Mar. Biol.* 78: 153-164.
- Sears, J.R.** 1971. *Morphology, Systematics and Descriptive Ecology of the Sublittoral Benthic Marine Algae of Southern Cape Cod and Adjacent Islands*. Ph.D. Thesis, Univ. Massachusetts, Amherst.
- Taylor, W.R.** 1957. *Marine Algae of the Northeastern Coast of North America*. 2nd ed. Univ. Michigan Press, Ann Arbor.

C.J. BIRD, Atlantic Research Laboratory, National Research Council of Canada, Halifax, NS B3H 3Z1, C.R. JOHNSON, Biology Department, Dalhousie University, Halifax, NS B3H 4J1

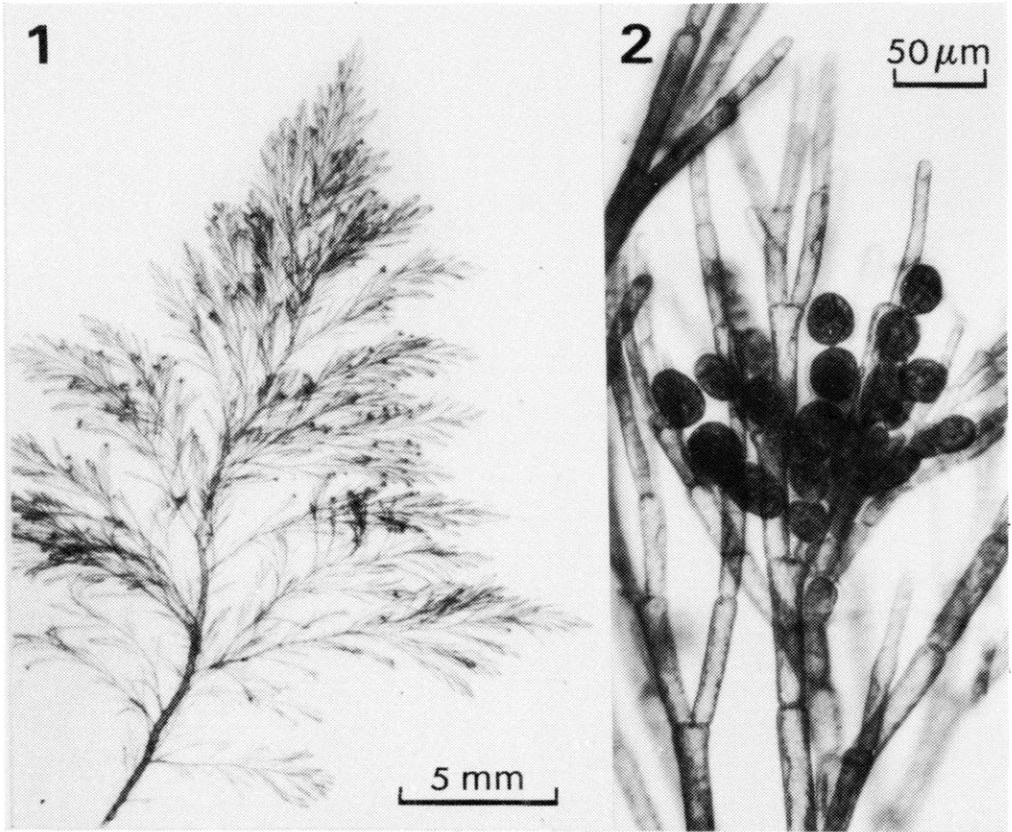


Fig 1: *Seirospora seirosperma*; habit, showing the characteristic pyramidal shape and distinct main axis. The dark spots at the apices of some of the branches are clusters of seirosporangia.

Fig 2: Detail of apical filaments and seirosporangia from the plant in Fig. 1.