

ON THE MARINE ALGAE OF KENT ISLAND, BAY OF FUNDY

KENNETH L. KOETZNER and R. D. WOOD

The extreme tidal amplitudes found in the Bay of Fundy are world famous, and biologists are intrigued by the relationship between organisms and altitudes of such extreme tides. Whereas much of the benthic region of the upper reaches of the bay consists of clean-swept mud, there are scattered rock outcrops along the bay where attached algae can be studied. One such spot is Kent Island, New Brunswick, a fairly small island in the mouth of the Bay of Fundy. It lies just southeast of Grand Manan Island and is one of the Three Island group, located at approximately 44°35' N lat and 66°46'W long.

The junior author (rdw) visited the Bowdoin College Biological Station on Kent Island from June 28 to July 3, 1957, to study the marine algae. The results were compiled, but publication was deferred at the request of a colleague. Now, after nearly a decade during which no apparent conflict of interest was apparent, further delay seemed unjustified; and, at the request of other colleagues, the report is now issued.

During the five days on the island, collecting was done around the entire coastline; but, as work was sharply limited by rains, effort was concentrated in four areas: — on the north shore (N), a boulder-strewn beach; — on the east shore (E), a cobble beach with rocks and tide pools at the low water level; — on the south shore (S), a rocky cliff region; — on the west shore in the Basin (B), a cove exposed as mud flats at extreme low tides. Specimens, both dried and fluid (5% of neutral formalin in seawater), were prepared and are on deposit at the University of Rhode Island. Examination of the specimens and compilation of the data was the primary responsibility of the senior author (klk); while the field work, observations, and final preparation of manuscript were the responsibility of the junior

author (rdw). Classification and nomenclature follow Taylor (1957).

Perhaps the first report of the algae of the island was by Bowers (1942) who identified 35 species, 15 of which were not noted during the present study. Other early reports of algae from the region but not from the island itself are those by Hay (1882) of 33 species and Hay and McKay (1886) for the Bay of Fundy. In addition, there are records by Eaton (1873) for Maine, Klugh (1917) for New Brunswick, Roscoe (1931) for Nova Scotia, Bell and MacFarlane (1933a, b) of 66 species for the Bay of Fundy, Humm (1950) for Newfoundland, and Taylor (1937; 1957) who treated in detail the algae of the entire northeastern coast of North America, including the Bay of Fundy.

The junior writer (rdw) is indebted to Dr. James Moulton of Bowdoin College for the idea and arrangements for the visit; Dr. Charles Huntington, Director of the Bowdoin College Biological Station, and his wife, for their kindness and hospitality; and to that fabulous down east captain who "punched" his way through the impenetrable fog and found Kent Island "by ear."

(E = east shore; B = Basin; N = north shore;
S = south shore; see text for descriptions)

Chlorophyceae

Ulotrichaceae

1. *Ulothrix flacca* (Dillw.) Thuret. E, S. Abundantly matted on rocks at + 11 ft.

Ulvaceae

2. *Enteromorpha clathrata* (Roth) J. Ag. — N, E, S, B, N of Basin.

Variable in habit. Not common.

(2a. *E. compressa* (L.) Grev. — (Bowers, 1942)).

3. *E. erecta* (Lyngb.) J. Ag. — E. Rare.

4. *E. intestinalis* (L.) Link — N, E, S, B, N of Basin.

On rocks and stones. Common.

5. *E. linza* (L.) J. Ag. — E. Rare.

(5a. *E. marginata* J. Ag. — (Bowers, 1942)).

6. *E. minima* Näg. — E. Attached to stones.
7. *E. prolifera* (Müll.) J. Ag. — E, B. Masses attached to rocks in lower littoral. (also Bowers, 1942).
8. *Monostroma fuscum* (Post. & Rupr.) Witt. (f. *blytii* (Aresch.) Collins — N. In wash, rare.
9. *Ulva lactuca* L. — N, E, S. Lower littoral. (also Bowers, 1942).

Prasiolaceae

10. *Prasiola stipitata* Suhr — N, E. Found high in spray zone.

Cladophoraceae

11. *Chaetomorpha melagonium* (Web. & Mohr) Kütz. — Found in midlittoral zone and lower tide pools.
(11a. *C. area* (Dilw.) Kütz. — Bowers, 1942).
12. *Cladophora gracilis* (Griff. ex Harv.) Kütz. — N, E, S, B. Abundant throughout mid and lower littoral zone.
13. *C. rupestris* (L.) Kütz. — N, B. Uncommon, in lower littoral.
14. *C. refracta* (Roth) Kütz. — N, B. Uncommon. (also Bowers, 1942).
15. *Rhizoclonium tortuosum* Kütz. — N. With *Cladophora* sp. in midlittoral tidepools.
16. *Spongomorpha arcta* (Dillw.) Kütz. — E, S. Forming thick, stiff tufts up to 6 in. in diameter, abundant in lower littoral zone.
17. *S. spinescens* Kütz. — S. Uncommon, in association with *S. arcta*. At + 3 ft.

Phaeophyceae

Ectocarpaceae

18. *Ectocarpus confervoides* (Roth) Le Jol. — N, B. Epiphytic on coarser brown algae.
- (18a. *Giffordia granulosa* (J. E. Smith Hamel — (Bower, 1942, as *E. granulosa*)).
19. *Pylaiella littoralis* (L.) Kjellm. — B. On rocks, *Fucus* and *Ascophyllum*.

Ralfsiaceae

20. *Ralfsia fungiformis* (Gunn.) Setch. et Gard. — N, E, S. Forming crusts several inches in diameter on rock, upper littoral zone.

Elachisteaceae

21. *Elachistea fucicola* (Vell.) Aresch. — N, E, S. Attached in dense tufts to *Ascophyllum*.

Chordariaceae

22. *Chordaria flagelliformis* (Müll.) C. Ag. — E, B. Found awash, often mixed with *Dumontia*.
23. *Sphaerotrichia divaricata* (C. Ag.) Kylin. — N of Basin. Occasional, + 9 to + 13 feet.

Desmarestiaceae

24. *Desmarestia aculeata* (L.) Lamour. — N, S, B. Occasional, found in lower littoral.
25. *D. viridis* (Müll.) Lamour. — E. On shells of lower littoral, + 4 ft.

Punctariaceae

- (25a. *Asperococcus echinatus* (Mert.) Grev. — (Bowers, 1942)).
26. *Scytosiphon lomentaria* (Lyngb.) C. Ag. — S. Attached to rocks, + 2 ft.
27. *Punctaria latifolia* Grev. — E, S, B. Common at or below low water.

Dictyosiphonaceae

28. *Dictyosiphon foeniculaceus* (Huds.) Grev. — E, B. Common near low water.

Laminariaceae

29. *Agarum cribrosum* (Mert.) Bory — N. Occasional, in sublittoral region. (also Bowers, 1942).
30. *Alaria esculenta* (L.) Grev. — E, N, S. Fairly common near or below low water. (also Bowers, 1942).
31. *Laminaria agardhii* Kjellm. — N, E, S. Common, found with *Alaria*. (also Bowers, 1942).

32. *L. digitata* (L.) Lamour. — E, S. Common below low water. (also Bowers, 1942).
 (32a. *L. intermedia* Fosl. — (Bowers, 1942)).
 33. *L. longicruris* De La Pyl. — B. Found attached to weir. (also Bowers, 1942).
 34. *L. platymeris* De La Pyl. — E, B. In tide pools on beach at + 2 ft.
 (34a. *L. stenophylla* (Kütz.) J. Ag. — (Bowers, 1942); = *L. digitata* fide Taylor (1957: 185).
 35. *L. sp.* — B. A form similar to *L. agardhii* but with flat stipe, 0.5-2 cm. thick; blade thinner and wider.

Fucaceae

36. *Ascophyllum nodosum* (L.) Le Jol. — N, E, S, B. Common in the entire littoral zone in most areas. (also Bowers, 1942).
 (36a. *A. mackaii* (Turn.) Holms et Batt. — (Bowers, 1942)).
 37. *Fucus edentatus* De La Pyl. — N, E. Form with extremely flattened and broad receptacles. (also Bowers, 1942).
 38. *F. evanescens* C. Ag., prox. — S of Basin. Occasional on rocks in sand. (also Bowers, 1942).
 39. *F. filiformis* Gmelin — N, E. Common in high tide pools. (also Bowers, 1942).
 40. *F. spiralis* L. — N, E, S, B. Common in all areas of the upper littoral zone, often mingling with strand vegetation.
 41. *F. vesiculosus* L. — N, E, S, B. Common throughout the littoral zone (also Bowers, 1942).

Rhodophyceae

Bangiaceae

42. *Porphyra umbilicalis* (L.) J. Ag. — E, S. Occasional in lower littoral. (also Bowers, 1942).

Acrochaetiaceae

43. ?*Acrochaetium daviesii* (Dillw.) Näg. — N.
 (43a. *Kylinia secundata* (Lyngb.) Papenf. — (Bowers, 1942 as *A. secundatum*)).

Dumontiaceae

44. *Dumontia incrassata* (Müll.) Lamour. — E, S. Attached to rock in tide pools, commonly with *Chordaria*.

Squamariaceae

45. *Hildenbrandia prototypus* Nardo — E. Common in tide pools in the upper littoral.

Corallinaceae

46. *Corallina officinalis* L. — E, S. Abundant at or slightly above low water level.

Kallymeniaceae

47. *Euthora cristata* (L.) J. Ag. — S, W. Found awash.

Rhodophyllidaceae

48. *Cystoclonium purpureum* (Huds.) Batt. — N, S. On rocks at low water, with *Porphyra*. (also Bowers, 1942).

Phyllophoraceae

49. *Ahnfeltia plicata* (Huds.) Fries — E, S. Common in the mid to lower littoral zone.
50. *Phyllophora brodiaei* (Turn.) J. Ag. — E, S. Occasional.

Gigartinaceae

51. *Gigartina stellata* (Stackh.) Batt. — E, S. Common to abundant in the mid to lower littoral.

Rhodymeniaceae

52. *Halosaccion ramentaceum* (L.) J. Ag. — N, S. Occasional.
53. *Rhodymenia palmata* (L.) Grev. — E. Common at low water, often attaining length of 1.5 m. (also Bowers, 1942).

Ceramiceae

54. *Ceramium rubrum* (Huds.) C. Ag. — S. Uncommon.
55. *Ptilota serrata* Kütz. — S, B. In wash.

Delesseriaceae

56. *Phycodrys rubens* (Huds.) Batt. — N, S, W. Attached in the lower littoral.

Rhodomelaceae

57. *Polysiphonia harveyi* Bailey — N. Uncommon.
58. *P. lanosa* (L.) Tandy — E, S. Epiphytic on *Asco-phyllum*, forming dense masses.
59. *P. nigrescens* (Huds.) Grev. — E, S. Forming dense growths on rocks in lower littoral.
60. *P. urceolata* (Lightf.) Grev. — N. Uncommon.
61. *Rhodomela confervoides* (Huds.) Silva — N, S. Attached to rocks at lower water.

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NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION,
4175 VETERANS MEMORIAL HIGHWAY,
RONKONKOMA, N.Y. 11779

and

DEPARTMENT OF BOTANY, UNIVERSITY OF RHODE ISLAND,
KINGSTON, R.I. 02881

A WHITE-FLOWERED FORM OF *IRIS LACUSTRIS* FROM ONTARIO. In an open dune hollow within fifty yards of the shoreline north of McNab Point in Bruce County, Ontario, a white-flowered form of the Dwarf Lake Iris, *Iris lacustris* Nutt., was discovered amongst a few hundred blooming plants of the typical form.

It is proposed that this new form be named *Iris lacustris* Nutt. forma *albiflora* Cruise & Catling, forma nova; differt forma typica quad flores albos non caeruleos habet.

Presently known only from the type collection.

Type (Specimen and Color Photograph): Associating with many of the typical form and with *Oryzopsis asperifolia* and *O. pungens*, in moist sand in first dune hollow behind bay north of McNab Point (44° 28' N., 81° 24' W.), U. T. M. G. zone 17, 692243, ca. 2 miles south of Southampton, Saugeen Township, Bruce County, Ontario. 22 May, 1971, P. M. Catling & S. M. McKay, (TRT 168074).

J. E. CRUISE & P. M. CATLING
DEPARTMENT OF BOTANY
UNIVERSITY OF TORONTO
TORONTO 181, ONTARIO, CANADA



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