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LITTORAL AND BENTHIC INVESTIGATIONS ON THE WEST COAST OF IRELAND, X. MARINE ALGAE OF THE NORTHERN SHORES OF THE BURREN, CO. CLARE.

By

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ABSTRACT

The topographical features of the shores in the immediate vicinity of the recently established field laboratory at Finavarra, County Clare, are briefly described. Annotated lists of benthic species of Rhodophyta, Phaeophyta and Chlorophyta are given.

Introduction

Thanks to the generosity of the Clare County Development Committee two field laboratories have been built in the Burren for University College, Galway. The smaller of these is situated on the Finavarra peninsula (grid reference M26 12) overlooking a shore which for more than a decade has been recognised as one with great potential for detailed intertidal investigations. The laboratory, which has been in operation since April 1973, was sited with this in mind and was designed and equipped primarily as a centre for the study of eulittoral and shallow-water benthic marine organisms in their natural environment. Autecological and synecological studies are already in progress and further work on the growth and rhythmic behaviour of species *in situ* is envisaged, particularly on shores of the Finavarra peninsula which are within easy walking distance of the laboratory (Fig. 1b).

Study Area

The north-facing Flaggy Shore is a series of flat limestone terraces with shallow pools which are most frequent at the lower levels. At the higher levels of this shore there are low cliffs with boulder beaches below them. Near the laboratory the direction of the coastline changes and the shore becomes less steep, while the line of the terraces continues as the intertidal platform, Carrickadda. Here the sandy bottoms of shallow pools and channels in the lower eulittoral zone are the habitats of many of the most interesting algal species. Where the channels widen, near low water of spring tides, the sand is compact, fine and silty and small patches of *Zostera marina* L. occur. As long as these channels are uncovered a slow downward flow of water is maintained

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in them. Some seepage of freshwater may take place, but there is no evidence to suggest that this has any effect on the vegetation of the pools. The sand at the higher levels on Carrickadda consists of rather coarse fragments of shells and coralline algae, which in rough weather may temporarily bury the algae growing at this level.

Carrickadda is separated from the storm beach in front of the laboratory by an area of sand with scattered rocks and boulders. Where the angle of the coastline changes again an extensive *Zostera* meadow stretches from E.L.W.S. downwards. The intertidal rocks and boulders become more crowded towards the martello tower at Finavarra Point, where the shore is steep and rugged with pockets of coarse sand similar to that in the channels described above.

The south-facing shore of Finavarra Point is flat. Low rocky areas alternate with silty beaches and *Zostera* meadows. A sand spit just beyond Gortnagreenan is backed by a sheltered brackish lagoon. Nearby a long established, but now little used, shellfish store with derelict concrete tanks is situated close to a breakwater with the remains of a bridge across the rapids at the outflow from the Lobster Pond. This pond lies between Scanlan's Island and the Finavarra peninsula. The shores of the pond are muddy, with stones and low rocky outcrops supporting a fairly heavy algal cover. A causeway at Cregnacorra makes it possible to cross to the island except when the tide is extremely high. On the western shore of the island low cliffs of boulder clay face the sea. The sandy beach below them becomes increasingly rocky towards Srucorrafaan (sruth=current, carra=stony place, fán=slope). As the name suggests strong currents flowing over a stony sill occur at this point where the channel between the south-eastern shore of the island and the mainland connects with the sea. The channel widens near Muckinish and extensive banks of 'maerl' *Phymatolithon calcareum* harbour an unusually dense population of purple sea urchins *Paracentrotus lividus* (Lamarck) (Keegan 1974). There is also some accumulation of "coral sand" at Srucorrafaan.

Small patches of saltmarsh with *Halimione portulacoides* (L.) Aell., an angiosperm which is said to be rare in the West of Ireland (Webb 1977), occur beside the roadway near Donoghmore O'Daly's monument at Parkmore.

Lough Murree is a brackish water lake situated on the Finavarra peninsula. At one point its shoreline is less than 100 m from the sea. Nevertheless there is no direct contact between the lake and the sea. The flora of the lake, while not rich, is interesting (Moore *et al.*, 1975, Pybus and Pybus in prep.).

A small tidal pool north of Lough Murree and about 250 m from the seashore provides an interesting contrast. It is situated in an area where damp pasture adjoins limestone terraces. The pool is in direct subterranean contact with the sea via a fissure system. The flora of the pool and of some open fissures is typically marine, though the number of species present is very small.

Few comprehensive lists of algae from the west coast of Ireland have been published in recent times. The most substantial list to include plants from the present study area was that produced by members of the Third International Seaweed Symposium (Burrows and Dixon 1959) and only one of their sampling sites was within this area. Ryland and Nelson-Smith (1975) discussed the zonation of some inter-tidal algae on the Finavarra peninsula while Pybus (1977) presented a list of



FIG. 1a—Location of study area in Ireland and of sites mentioned in connection with List II.

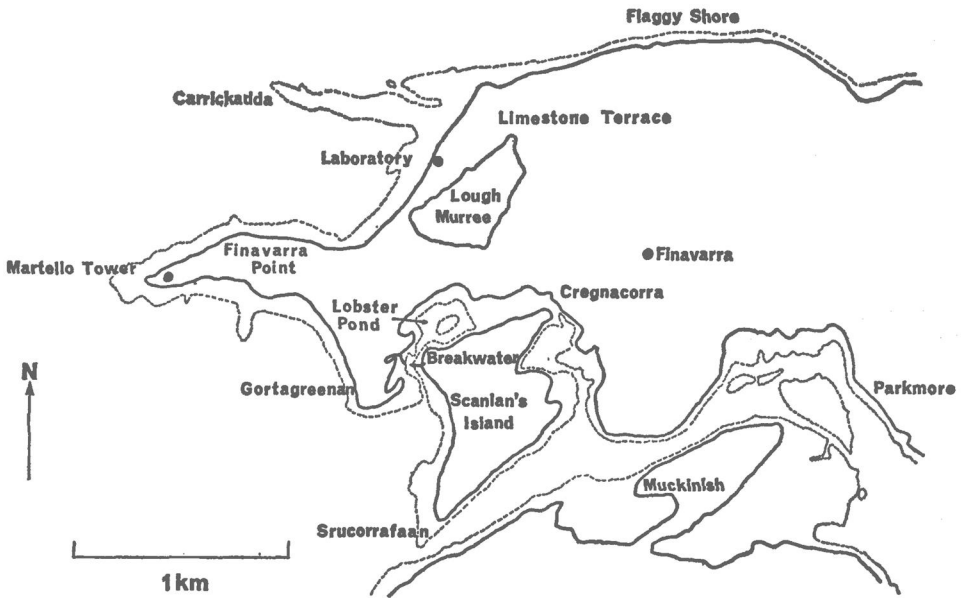


FIG. 1b—Location of sites on the Finavarra coast, mentioned in connection with List I.

plants found colonising artificial substrata in the sea off Finavarra and Illaunloo, an islet shown in Fig. 1a.

The present inventory consists of two lists. All the eulittoral algae in the first list were found in the areas described above, the majority of them on Carrickadda. The sublittoral species were collected by diving off the Flaggy Shore, Carrickadda or in the vicinity of Illaunloo.

Even in calm weather surf is usually evident at the tip of Carrickadda, although the degree of exposure on the platform is generally very moderate (6 on the Ballantine Scale) according to Ryland and Nelson-Smith (1975). It is not surprising that many species characteristic of exposed shores are absent. However several of these have been found at Black Head (exposure 2/3), which is only 30 km distant by road from the laboratory (Fig 1a). These together with a few others found chiefly on the Aran Islands, are presented in the second list. Nomenclature throughout follows that of Parke and Dixon (1976). Species not previously published as Irish are marked*. Numbers in brackets refer to notes which follow the lists.

1. Algae found in the area shown in Fig. 1b, or near Illaunloo (Fig. 1a.)

RHODOPHYTA

Floridiophyceae

- | | |
|---|--|
| <i>Audouinella chylocladiae</i> (Batt.) Dixon | <i>C. tetricum</i> (Dillw.) S. F. Gray |
| <i>A. corymbifera</i> (Thur. in Le Jol.) Dixon | <i>Callocolax neglectus</i> Schmitz ex Batt. Drift |
| <i>A. daviesii</i> (Dillw.) Woelkerling | <i>Callophyllis laciniata</i> (Huds.) Kütz. |
| <i>A. floridula</i> (Dillw.) Woelkerling | <i>Catanella caespitosa</i> (With.) Dixon et |
| <i>A. membranacea</i> (Magn.) Papenf. | L. Irvine (2) |
| <i>A. microscopica</i> (Näg. in Kütz.) | <i>Ceramium ciliatum</i> (Ellis) Ducluz. |
| Woelkerling | <i>C. echinotum</i> J. Ag. |
| <i>A. parvula</i> (Kylin) Dixon | <i>C. rubrum</i> (Huds.) C. Ag. |
| <i>A. rhipidandra</i> (Rosenv.) Dixon | <i>C. shuttleworthianum</i> (Kütz.) Rabenh. |
| <i>A. rosulata</i> (Rosenv.) Dixon | <i>C. strictum</i> Harv. |
| <i>A. secundata</i> (Lyngb.) Dixon | <i>Champia parvula</i> (C. Ag.) Harv. |
| <i>A. thuretii</i> (Born.) Woelkerling | <i>Chondria dasyphylla</i> (Woodw.) C. Ag. |
| <i>A. virgatula</i> (Harv.) Dixon | <i>C. tenuissima</i> (Good. et Woodw.) C. Ag. (3) |
| <i>Ahnfeltia plicata</i> (Huds.) Fries | <i>Chondrus crispus</i> Stackh. |
| <i>Antithamnion plumula</i> (Ellis) Thur. in | <i>Choreocolax polysiphoniae</i> Reinsch |
| Le Jol | <i>Choreonema thuretii</i> (Born.) Schmitz |
| <i>A. spirographidis</i> Schiffner | <i>Chylocladia squarrosa</i> (Kütz.) Le Jol. |
| <i>Apoglossum ruscifolium</i> (Turn.) J. Ag. | <i>C. verticillata</i> (Lightf.) Bliding |
| <i>Asparagopsis armata</i> Harv. (1) | <i>Corallina elongata</i> Ellis in Solander |
| <i>Bonnemaïsonia asparagoides</i> (Woodw.) | <i>C. officinalis</i> L. |
| C. Ag. | <i>Cordylecladia erecta</i> (Grev.) J. Ag. |
| <i>B. hamifera</i> Hariot (1) | <i>Corynospora pedicellata</i> (Sm.) J. Ag. |
| <i>Bostrychia scorpioides</i> (Huds.) Mont. | <i>Cruoria pellita</i> (Lyngb.) Fries |
| <i>Broggiartella byssoides</i> (Good. et Woodw.) | <i>Cryptopleura ramosa</i> (Huds.) Kylin ex Newton |
| Schmitz (2) | <i>Cystoclonium purpureum</i> (Huds.) Batt. |
| <i>Calliblepharis ciliata</i> (Huds.) Kütz. Drift | <i>Dasya corymbifera</i> J. Ag. |
| <i>C. jubata</i> (Good. et Woodw.) Kütz. | <i>D. hutchinsiae</i> Harv. in Hook. |
| <i>Callithamnion corymbosum</i> (Sm.) Lyngb. | <i>Delesseria sanguinea</i> (Huds.) Lamour. |
| <i>C. hookeri</i> (Dillw.) S. F. Gray | <i>Dermatolithon hapalidioides</i> (Crouan frat.) |
| <i>C. tetragonum</i> (With.) S. F. Gray | Fosl. |

Dilsea carnosa (Schmidel) O. Kuntze
Dudresnaya verticillata (With.) Le Jol.
 Drift
Dumontia incrassata (O. F. Müll.) Lamour.
Fosliella farinosa (Lamour.) Howe
F. lejolisii (Rosan.) Howe
F. minutula (Fosl.) Ganesan
Furcellaria lumbricalis (Huds.) Lamour.
Gastroclonium ovatum (Huds.) Papenf.
Gelidium latifolium (Grev.) Born. et Thur.
G. pusillum (Stackh.) Le Jol.
Gigartina acicularis (Wulf.) Lamour (4)
G. stellata (Stackh. in With.) Batt.
Grateloupia filicina (Lamour.) C. Ag.
Gracilaria verrucosa (Huds.) Papenf.
Griffithsia corallinoides (L.) Batt.
G. flosculosa (Ellis) Batt.
Gymnogongrus griffithsiae (Turn.) Mart.
G. crenulatus (Turn.) J. Ag.
Halipylon squamatum (L.) Johansen, L.
 Irvine et Webster (5)
Halurus equisetifolius (Lightf.) Kütz.
Harveyella mirabilis (Reinsch) Reinke
Helminthocladia calvadosii (Lamour. ex Duby)
 Setch. (2)
Helminthora divaricata (C. Ag.) J. Ag.
Heterosiphonia plumosa (Ellis) Bart. Drift
Hildenbrandia crouanii J. Ag. (2)
H. rubra (Sommerf.) Menegh.
Hypoglossum woodwardii Kütz.
Jania corniculata (L.) Lamour.
J. rubens (L.) Lamour.
Kallymenia reniformis (Turn.) J. Ag.
Laurencia hybrida (DC) Lenorm. ex Duby
L. obtusa (Huds.) Lamour.
L. pinnatifida (Huds.) Lamour.
Lithophyllum incrustans Phil.
Lithothamnium corallioides Crouan frat. (6)
Lomentaria articulata (Huds.) Lyngb.
L. clavellosa (Turn.) Gaill.
Melobesia membranacea (Espr.) Lamour.
Membranoptera alata (Huds.) Stackh.

Mesophyllum lichenoides (L.) Lemoine
Nemalion helminthoides (Vel. in With.) Batt.
Nitophyllum punctatum (Stackh.) Grev.
Palmaria palmata (L.) O. Kuntze
Petrocelis cruenta J. Ag.
Peyssonelia rubra (Grev.) J. Ag. (7)
Phycodrys rubens (L.) Batt.
Phyllophora crispa (Huds.) Dixon
P. pseudoceranoides (S. G. Gmel.) Newr. et
 A.R.A. Taylor
Phymatolithon calcareum (Pall.) Adey et
 McKibbin (6)
P. laevigatum (Fosl.) Fosl. (6)
P. lenormandii (Aresch. in J. Ag.) Adey (6)
Plocamium cartilagineum (L.) Dixon
Plumaria elegans (Bonnem.) Schmitz
Polyides rotundus (Huds.) Grev.
Polymeura gmelinii (Lamour.) Kylin
Polysiphonia brodiaei (Dillw.) Spreng.
P. elongata (Huds.) Spreng.
P. fibrillosa (Dillw.) Spreng.
P. fruticulosa (Wulf.) Spreng.
P. lanosa (L.) Tandy
P. nigra (Huds.) Batt.
P. nigrescens (Huds.) Grev.
P. urceolata (Lightf. ex Dillw.) Grev.
P. violacea (Roth) Spreng.
Pterocladia capillacea (S.G. Gmel.) Born et
 Thur.
Pterosiphonia parasitica (Huds.) Falkenb.
P. thuyoides (Harv. in Mackay) Schmitz
Ptilota plumosa (Huds.) C. Ag.
Ptilothamnion pluma (Dillw.) Thur. in Le Jol.
Rhodomela confervoides (Huds.) Silva
Rhodophyllis divaricata (Stackh.) Papenf. (2)
Rhodophysema georgii Batt.
Rhodymenia pseudopalmata (Lamour.) Silva
Spermothamnion repens (Dillw.) Rosenv.
Sphaerococcus coronopifolius Stackh.
Spyridia filamentosa (Wulf.) Harv. in
 Hook. (8)

Bangiophyceae

Asterocystis ramosa (Thwaites in Harv.)
 Gobi ex Schmitz
Bangia atropurpurea (Roth) C. Ag.
Erythrotrichia bertholdii Batt.
E. carnea (Dillw.) J. Ag.
E. ciliaris (Carm. ex Harv. in Hook.) Thur.
 in Le Jol.

Goniotrichum alsidii (Zanard.) Howe
Porphyra leucosticta Thur. in Le Jol.
P. linearis Grev.
P. purpurea (Roth) C. Ag.
P. umbilicalis (L.) J. Ag.

PHAEOPHYTA

Phaeophyceae

- Acrothrix gracilis* Kylin (9)
Arthrocladia villosa (Huds.) Duby
Ascophyllum nodosum (L.) Le Jol.
Asperococcus compressus Griff. ex Hook.
A. fistulosus (Huds.) Hook.
A. turneri (Sm.) Hook.
Carpomitra costata (Stackh.) Batt. (10)
Chorda filum (L.) Stackh.
Chordaria flagelliformis (O.F.Müll.) C.Ag.
Cladosiphon contortus (Thur. in Le Jol.)
 Kylin
C. zosteræ (J.Ag.) Kylin
Cladostephus spongiosus (Huds.) C.Ag. f.
spongiosus
C. spongiosus (Huds.) C.Ag. f. *verticillata*
 (Lightf.) P.v.R.
Corynophlaea crispa (Harv.) Kuck.
Culleria multifida (Sm.) Grev.
Cystoseira baccata (Gmel.) Silva
C. foeniculacea (L.) Grev.
C. nodicaulis (With.) Roberts
C. tamariscifolia (Huds.) Papenf.
Demarestia aculeata (L.) Lamour.
D. ligulata (Lightf.) Lamour. (11)
Dictyopteris membranacea (Stackh.) Batt.
Dictyosiphon foeniculaceus (Huds.) Grev.
Dictyota dichotoma (Huds.) Lamour.
Dilophus spiralis (Mont.) Hamel (12)
Ectocarpus fasciculatus Harv.
E. siliculosus (Dillw.) Lyngb.
Elachista flaccida (Dillw.) Aresch.
E. fucicola (Vell.) Aresch.
E. scutulata (Sm.) Aresch.
Eudesme virescens (Carm. ex Harv. in Hook.)
 J.Ag.
Feldmannia simplex (Crouan frat.) Hamel
Fucus ceranoides L.
F. muscoides (Cotton) Feldm. et Magne (13)
F. serratus L.
F. spiralis L.
F. vesiculosus L.
Giffordia granulosa (Sm.) Hamel (2)
G. hinksiae (Harv.) Hamel
Giraudia sphacelarioides Derb. et Sol. in
 Castagne
Halidrys siliquosa (L.) Lyngb.
- Halopteris flicina* (Grat.) Kütz.
H. scoparia (L.) Sauv.
Hecatonema foecundum (Strömf.) Lois.
H. hispanicum (Sauv.) Lois.*
Himantalia elongata (L.) S.F. Gray
Laminaria digitata (Huds.) Lamour.
L. hyperborea (Gunn.) Fosl.
L. saccharina (L.) Lamour.
Leathesia difformis (L.) Aresch.
Leblondiella densa (Batt.) Hamel
Litosiphon filiformis (Reinke) Batt.
L. pusillus (Carm. ex Hook.) Harv. (2)
Mesogloia vermiculata (Sm.) S. F. Gray
Mikrosyphar polysiphoniae Kuck.
M. porphyrae Kuck.
Myrionema magnusii (Sauv.) Lois.
M. strangulans Grev.
Myriotrichia clavæformis Harv.
M. filiformis Harv.
Pelvetia canaliculata (L.) Dene et Thur.
Petalonia fascia (O. F. Müll.) O. Kuntze
P. zosterifolia (Reinke) O. Kuntze
Pilayella littoralis (L.) Kjellm.
Punctaria crispata (Kütz.) Batt.*
P. tenuissima (C.Ag.) Grev.
Ralfsia clavata (Harv. in Hook.) Crouan
 frat. (2)
R. verrucosa (Aresch.) J.Ag.
Saccorhiza polyschides (Lightf.) Batt.
Sawageaugloia griffithsiana (Grev. ex Harv.
 in Hook.) Hamel ex Kylin
Scytosiphon lomentaria (Lyngb.) Link
Spermatochnus paradoxus (Roth.) Kütz.
Sphacelaria bipinnata (Kütz.) Sauv. (2)
S. cirrosa (Roth) C.Ag.
S. fusca (Huds.) S. F. Gray (2)
S. plumigera Holm Drift
S. plumosa Lyngb.
S. radicans (Dillw.) C.Ag. (2)
Spongonema tomentosum (Huds.) Kütz.
Sporochnus pedunculatus (Huds.) C.Ag.
Stictyosiphon griffithsianus (Le Jol.) Holm.
 et Batt.
Stilophora rhizoides (Turn.) J.Ag.
Taonia atomaria (Woodw.) J.Ag.
Tilopteris mertensii (Turn. in Sm.) Kütz. (14)

CHLOROPHYTA

Chlorophyceae

- Blidingia marginata* (J.Ag.) P. Dang.
Bolbocoleon piliferum N. Pringsh.
- Bryopsis hypnoides* Lamour.
Chaetomorpha capillaris (Kütz.) Berg.

<i>C. melagonium</i> (Web. et Mohr) Kütz.	<i>E. ramulosa</i> (Sm.) Hook.
<i>Cladophora albida</i> (Huds.) Kütz.	<i>Epicladia frustrae</i> Reinke
<i>C. hutchinsiae</i> (Dillw.) Kütz.	<i>Monostroma grevillei</i> (Thur.) Wittr.
<i>C. laetevirens</i> (Dillw.) Kütz.	<i>Ostreobium quekettii</i> Born. et Flah.
<i>C. pellucida</i> (Huds.) Kütz. (2)	<i>Percursaria percurta</i> (C.Ag.) Rosenv.
<i>C. rupestris</i> (L.) Kütz.	<i>Phaeophila viridis</i> (Reinke) Burrows
<i>Codiolum</i> phases (15)	<i>Pseudopringsheimia confluens</i> (Rosenv.) Wille
<i>Codium fragile</i> (Sur.) Hariot subsp. <i>tomentosoides</i> (Goor) Silva	<i>Rhizoclonium riparium</i> (Roth) Harv.
<i>C. tomentosum</i> Stackh.	<i>Spongomorpha aeruginosa</i> (L.) Hoek
<i>C. vermilana</i> (Olivi) Chiaje	<i>Tellamia intricata</i> Batt.
<i>Endoderma perforans</i> Huber	<i>Ulothrix consociata</i> Wille (16)
<i>Enteromorpha clathrata</i> (Roth) Grev.	<i>U. flacca</i> (Dillw.) Thur. in Le Jol.
<i>E. compressa</i> (L.) Grev.	<i>U. speciosa</i> (Carm. ex Harv. in Hook.) Kütz.
<i>E. flexuosa</i> (Wulf. ex Roth) J.Ag.	<i>U. subflaccida</i> Wille
<i>E. intestinalis</i> (L.) Link	<i>Ulva lactuca</i> L.
<i>E. linza</i> (L.) J.Ag.	<i>U. olivascens</i> P. Dang.*
<i>E. prolifera</i> (O. F. Müll.) J.Ag.	<i>Urospora bangioides</i> (Harv.) Batt.

CHRYSTOPHYTA

Xanthophyceae

Vaucheria piloboloides Thur. (17)

II. Algae found at Black Head and the Aran Islands, but not recorded for the area shown in Fig. 1b.

A = Aran, B = Black Head, S = Sublittoral

RHODOPHYTA

Florideophyceae

<i>Acrosorium uncinatum</i> (Turn.) Kylin	A	<i>Lomentaria orcadensis</i> (Harv.) Coll. ex Taylor	A Sub
<i>Halarachnion ligulatum</i> (Woodw.) Kütz.	A Drift	<i>Pterosiphonia complanata</i> (Clem.) Falkenb.	A
<i>Fosliella limitata</i> (Fosl.) Ganesan.	B	<i>Sphondylothamnion multifidum</i> (Huds.) Nag.	A

Bangiophyceae

Colacodictyon reticulatum
(Batt.) J. Feld. (11) A

PHAEOPHYTA

Phaeophyceae

<i>Alaria esculenta</i> (L.) Grev.	A B	<i>Desmarestia dresnayi</i> Lamour. ex Leman (11)	A Sub
<i>Bifurcaria bifurcata</i> Ross	A B	<i>Sorapion simulans</i> Kuck.*	B

CHLOROPHYTA

Chlorophyceae

<i>Chaetomorpha linum</i>	A	<i>Derbesia marina</i> (Lyngb.) Solier	A Sub
(O.F. Mull.) Kutz.	A	<i>Spongomorpha arcta</i> (Dillw.) Kutz.	A B
<i>Codium adhaerens</i> (Cabr.) C.Ag.	A	<i>Prasiola stipitata</i> Suhr in Jessen	A
<i>Codium fragile</i> (Sur.) Hariot		<i>Urospora penicilliformis</i>	
subsp. <i>atlanticum</i> (Cotton)		(Roth) Aresch.	B
Silva	A (18)		

NOTES

(1) There are many references in the literature to the mode of occurrence of the gametangial (*Asparagopsis* and *Bonnemaisonia*) and the tetrasporangial (*Falkenbergia* and *Trailiella*) phases of *A. armata* and *Bonnemaisonia* on the north Atlantic coast (see Dixon and Irvine 1977). Differences between the presumed ecological preferences of the phases, as well as their marked potential for vegetative propagation, and accounts of the presence and absence of reproductive organs have been the subject of comment by several authors.

In Finavarra the gametangial phase of *Asparagopsis* has been found occasionally at the southern extremity of Carrickadda. The material consisted of a few sterile fronds entangled with *Ulva* and other algae. The tetrasporangial phase is much more widespread both here and in the Greater Galway Bay area. At times it is the most common, small, filamentous red alga in the Carrickadda channels. On one occasion (October 1976) tetraspores were present. This would seem to be the first record of their occurrence in Ireland.

The gametangial phase of *B. hamifera* occurs frequently and the bright cerise colour of the fronds in spring and early summer makes it conspicuous in the channels. It is most often found entangled with the relatively rigid and profusely branched fronds of *Cystoseira* species, possibly because these form a suitable anchorage for the modified hooked axes. For more than a decade nothing but sterile material has been found on Carrickadda, or indeed anywhere in the Galway Bay area. However plants bearing cystocarps, which appeared to be abortive and lacked carposporangia, had been found in Aran and Connemara in the period 1938–44. Early in June 1976 spermatangial plants were found and by the end of the month others bore cystocarps with what appeared to be well-developed, narrow, pear-shaped carposporangia. Similar plants were also found in 1977 and 1978.

At least as far as the intertidal area of the Galway and Clare coasts is concerned the tetrasporangial phase (*Trailiella*) is rare. A few tufts of sterile material were found on *Corallina officinalis* on Carrickadda and one or two more were present with *Sphacelaria* spp. and *Chondria dasyphylla* which had been collected sublittorally. No tetrasporangia were found.

(2) Collected and identified by Dr. D. E. G. Irvine, Polytechnic of North London, and Mrs. L. M. Irvine, British Museum (Natural History), London.

(3) In this area *Chondria tenuissima* is always clearly distinguishable from *C. dasyphylla*. The latter is more widespread in Ireland and is usually present wherever *C. tenuissima* is found. Apart from morphological differences there are also differences

in seasonal behaviour. Specimens of *C. dasyphylla*, although more plentiful in summer than autumn, may be found throughout the year, while *C. tenuissima* dies away in December and does not reappear until late June. Harvey's (1849) description of the habitat and behaviour, which is based on collections from the south coast of England, is applicable to the plants observed at Finavarra and further north in Connemara.

(4) See De Valera (1958).

(5) See Webster (1972) and Johansen *et al.* (1973).

(6) Collected and identified by Mr P. Cooke, Department of Botany, University College, Galway.

(7) Plants fitting the description given in Newton (1931) for *Peysonnellia rubra* J. G. Agardh have been found on Finavarra Point, in pools at Black Head and on the Galway coast. They were found growing either on the bare limestone (in Clare) or on *Lithothamnium* and appeared to be attached to the substratum by unicellular rhizoids. Vegetative thalli were between 80 and 100 μm thick (4 to 8 cells) and were composed of regular series of cells. Basal cells were angular or rounded, but were usually somewhat elongated. The upper layers of cells were more isodiametric, rounded and smaller than the basal cells. The external nemathecium were about 75 μm thick. Oblong tetrasporangia were not in good condition and the spores appeared, at least in one instance, to be cruciate. No evidence of calcification was observed.

(8) Cotton (1912) commented on the absence from Irish shores of *Spyridia filamentosa*. The first authenticated record of the species in this country is that by Burrows and Dixon (1959), who found drift material at Garryroe (L95 26) and at Salthill (M29 23). In May 1967 numerous specimens were observed cast ashore at Parkmore (M35 20), a land-locked inlet close to Tawin Island. This mass of driftweed was largely composed of the aegagropilous form of *Polyides rotundus*, *Spyridia* being the most common filamentous red alga present. Further specimens were found *in situ* near Seaweed Point, Salthill (M26 22), in November 1971, and on Carrickadda in December 1974.

The only reproductive material has been tetrasporic plants found on Carrickadda in August 1973. It is worth noting that material from Parkmore kept in jars of seawater for more than three years formed numerous secondary attachment organs.

(9) See Casley (1974).

(10) The first specimens of *Carpomitra costata* found in this area were collected with *Desmarestia dresnayi* (see note 11) at a depth of 30 m off Inishmore, the largest of the Aran Islands, in 1971. Subsequently plants have been recorded sublittorally off Carrickadda.

(11) In the Galway Bay area three apparently distinct entities have been found within the ligulate section of the genus *Desmarestia*. These correspond to branched *D. ligulata* var. *ligulata* and branched and unbranched *D. ligulata* var. *firma* (Chapman 1972). *D. ligulata* var. *ligulata* is quite a common member of the shallow sublittoral flora, but each of the other two entities has been recorded only once. The branched *D. ligulata* var. *firma* was found together with *D. ligulata* var. *ligulata* in August 1961, drifting near the shore of Inisheer, the smallest of the Aran Islands. The unbranched *D. ligulata* var. *firma* was collected by Dr J. Mercer (Department of Zoology, University College, Galway) in December 1971, from an attached population at a depth of 30m off Inishmore. This would seem to correspond to the

D. dresnayi Lamour. ex Laman. described by Drew and Robertson (1974) from Co. Kerry.

The plants of both varieties in the Inisheer collections were heavily infested by *Colacodictyon reticulatum*, while a few small patches of this alga were present in the larger of the specimens of *D. ligulata* var. *firma* from Inishmore. Judging from their texture and the season of the year in which they were found (Chapman 1972), the Inishmore plants were still young.

(12) See Pybus (1974).

(13) *Fucus muscooides* was found growing in an area of seawater seepage between Lough Murree and the Flaggly Shore.

(14) See de Valera (1960).

(15) Various *Codiolum* stages were collected from decalcified molluscan shells. See Wilkinson and Burrows (1972) regarding the taxonomic status of these entities.

(16) Plants of *Ulothrix consociata* were found in a muddy littoral fringe area of Parkmore in 1974. They have not been recorded subsequently.

(17) See Cullinane (1974).

(18) See Parkes (1975).

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CORRIGENDA

Page 265, line 11. For *C. vermilana* read *C. vermilara*.
Page 268, reference 6. For *topological* read *topographical*.