Hancock, D.A. (1955). The feeding behaviour of starfish on Essex oyster beds. J. mar. biol. Ass. U.K., 34, 313-331.
Hulings, N.C., and Hemlay, D.W. (1963). An investigation of the feeding habits of two species of seastars. Bull. mar. Sci. Gulf Caribb., 13, 354-359.
Hunt, O.D. (1925). The food of the bottom fauna of the Plymouth fishing grounds. J. mar. biol. Ass. U.K., 13, 560-599.
Jensen, M. (1966). The response of two sea-urchins to the sea-star *M. glacialis* (L) and other stimuli. Ophelia, 3, 209-219.
Kvalvagnaes, I. (1972). Tagging of the starfish, *Asterias rubens* (L). Sarsia, 49, 81-88.
Mauzey, K.P., Birkeland, C., Dayton, P.K. (1968). Feeding behaviour of asteroids and escape responses of their prey in the Puget Sound region. Ecology, 49(4), 603-619.
Mortensen, T. (1927). Handbook of the Echinoderms of the British Isles. Oxford.
Nichols, A.R. (1903). A list of Irish echinoderms. Proc. Roy. Ir. Acad., 24B, 231-267.
Pequignat, E. (1966). Skin digestion and epidermal absorption in irregular and regular urchins and their probable relation to the outflow of spherulecoelomocytes. Nature, 210 (5034), 397-399.
Pequignat, E., Tiffon, Y. (1967). Mise en evidence d'une activité amylolytique cutanée chez les echinides. C.r. hebd. Séanc. Acad. Sci., Paris, 364, 3014-3015.
Pequignat, E. (1972). Some new data on skin-digestion and absorption in urchins and sea-stars (*Asterias* and *Henricia*). Mar. Biol., 12, 28-41.
Prouho, H. (1890). Du role des pédicellaires gemmiformes chez les oursins. C.r. hebd. Séanc. Acad. Sci., Paris, 111, 62-64.
Schiemenz, P. (1895-97). How do starfishes open oysters? J. mar. biol. Ass. U.K. 4, 266-285.
Siegel, S. (1956). Nonparametric statistics for the Behavioural Sciences. McGraw-Hill.
Sloan, N.A. (1980). Aspects of the feeding biology of asteroids. Oceanogr. mar. Biol. ann. Rev., 18, 57-124.
Stephens, P.J., Boyle, P.R. (1978). Escape responses of the queen scallop, *Chlamys apercularis* (L). Mar. Behav. Physiol., 5(2), 103-113.
Wood, L. (1968). Physiological and ecological aspects of prey selection of the marine gastropod *Urosalpinx cinerea*. Malacologia 6, 267-320.

Sponges from Roaringwater Bay and Lough Ine

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ABSTRACT

The sponge fauna of Roaringwater Bay and Lough Ine (South Cork) is surveyed. During a number of visits to the area a total of 60 species was found, including some new to Ireland. All species are briefly characterized and their occurrence is noted. Data on the ecological and seasonal distribution conclude the paper.

INTRODUCTION

Sherkin Island (South Cork) has now become an important link in the chain of marine biological stations along the coasts of Europe from the Mediterranean to Norway. Owing to the admirable initiative of Matt and Eileen Murphy with the creation of their Sherkin Island Field Study Centre, it is now possible to study the south-west coast of Ireland based at a field laboratory. The area is of great importance, not the least on account of the rich, diverse fauna and flora, with many Lusitanian and Mediterranean elements prevailing in it. A natural first task is the description of this fauna and flora, and the present paper on the sponges of the area is a contribution to it.

We included in our survey neighbouring Lough Ine, because of the special nature of it (cf. papers by Renouf, 1931, Lilly, c.s., 1953, and Norton, c.s., 1973). A list of sponges from Lough Ine has already been published (Lilly, c.s., 1953), but in view of our own results it is suspected that a number of identifications are wrong. Some comments on this matter will be given elsewhere (Van Soest & Weinberg, 1980). During the survey some species were found which appeared to be new to the Irish fauna; these new records will also be announced elsewhere (Van Soest & Weinberg, 1980). Some help in the identification of living sponges may be obtained from Guiterman (1980).

Collecting methods included shore exploration, wading, snorkelling and SCUBA-diving. Staff members and students from the Institute of Taxonomic Zoology of the University of Amsterdam assisted in the collecting. One of us (RWMS) received financial support from the Field Study Centre. JDG & MS were assisted by a grant from the British Sub-Aqua Club. Mr. Th. van Koolwijk (Univ. of Amsterdam) kindly identified the calcareous sponges. JDG would like to acknowledge the help of Miss S.M. Stone of the British Museum for her help with identification and for ideas contained in Table 2.

DATA ON THE LOCALITIES VISITED

Below a list of localities is given, accompanied by a brief account of their nature. For more extensive data on many of the localities one is referred to Van Soest & Weinberg (1981). In Figure 1 the geographical position of the localities is indicated.

1. Leith Illaun: a semi-exposed part of the west coast of Sherkin Island near to the Field Study Centre. Collecting was done by shore exploration (rock pools) and wading.
2. Jones Island: a small islet in the north of

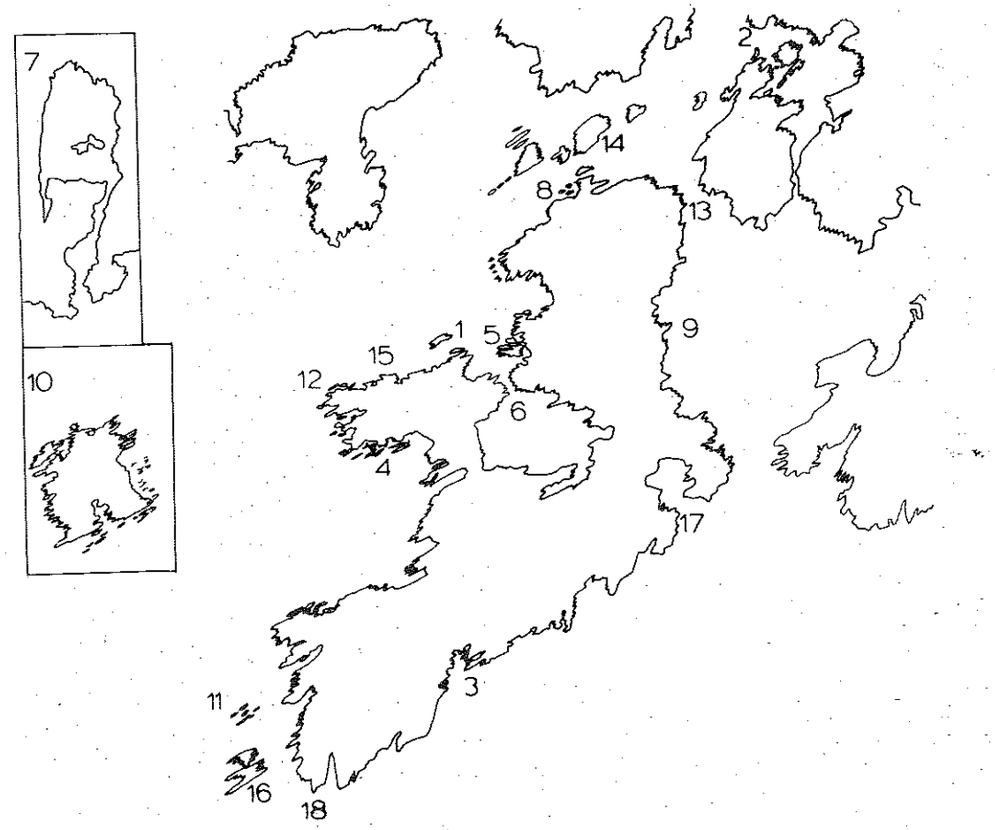

Fig. 1. Map of Sherkin Island and neighbouring Roaringwater Bay; insets: Lough Ine (top), and East Calf Island (bottom). Numbers 1-18 refer to localities described in the text.

Roaringwater Bay in an extremely sheltered environment. The area, consisting of rock ledges sticking out of the mud, was sampled by shore exploration.

3. Foardree Cove: an extremely exposed part of the south coast of Sherkin Island with many rock pools. Shore collecting.

4. Carriganorane: exposed to semi-exposed area just south of the Field Study Centre, with many rock pools and a sheltered bay. Shore collecting, wading and snorkelling.

5. Hake Island: sheltered to semi-exposed area near the entrance to Kinish Harbour (Sherkin Island), with muddy bays, *Zostera*-fields and shallow pools in between rock promontories. Shore collecting, wading and snorkelling.

6. Kinish Harbour Rapids: narrow constriction between Kinish Harbour and the open Roaringwater Bay, with a fast tidal current and large sublittoral boulders. Shore collecting, wading and snorkelling.

7. Lough Ine: visits were made to the Rapids and the adjourning parts of the lough. Shore colecting, wading, snorkelling and SCUBA-diving.

8. North Point (Illaunbeg): the northernmost part of Sherkin Island, a fairly sheltered area with large rocks. Shore collecting.

9. East Coast Sherkin: sheltered rock promontories and sandy bays bordering Baltimore Harbour. Shore collecting.

10. East Calf Island: the northern coast of this islet out in the southern part of Roaringwater Bay consists of rock promontories (extremely to semi-exposed) and sandy bays (semi-sheltered). Shore collecting and SCUBA-diving off the coast at a depth of 10 m (vertical slopes with kelp forest and muddy sand).

11. Off Crab Rock: sublittoral survey using SCUBA-gear just off a group of emerging rocks, at 15-17 m depth, in rock crevices underneath kelp forest.

12. Off Truhane Point: sublittoral survey using SCUBA-gear, off the west coast of Sherkin Island, depth 12 m, sloping rock with kelp forest.

13. The Sound: sublittoral survey using SCUBA-gear and dredges in the tidal channel between Sherkin Island and Spanish Island. Bottom muddy with slopes of rock and gravel.

14. Off Turk Head and Sandy Island: sublittoral survey using SCUBA-gear and dredges of the tidal channels between the north part of Sherkin Island and the mainland. Depth 8-15 m. Bottom muddy with slopes of rock and gravel.

15. Off the Field Study Centre: sublittoral survey using SCUBA-gear and dredges, just off west coast of Sherkin Island. Bottom sandy, rock slopes with kelp forests and muddy sand.

16. Badger Island: sublittoral survey inshore of the island down to a depth of 20 m. Bottom rock.

17. Horseshoe Harbour: survey of rocks on the south-east shore.

18. Curra Point (southernmost point of Sherkin Island): sublittoral survey of rocky slopes.

DEPOSITION OF MATERIAL

The material upon which this paper is based is housed in the reference collection of the Sherkin Island Field Study Centre, or in the collections of the Zoological Museum of Amsterdam (from where it can be borrowed on request), or in the private collection of JDG (obtainable by writing to him).

SYSTEMATIC SECTION

Phylum Porifera

Class Calcarea (calcareous sponges)

Order Clathrinida
Family Clathrinidae

Clathrina coriacea (Montagu, 1812)

Encrusting, tightly woven masses of tubules. Colour variable, white, orange, dark red or light blue. Spicules: triradiates only with rays of up to 100 μm long.

Occurrence: common in crevices and under stones.

Order Leucosolenida
Family Leucosoleniidae

Leucosolenia botryoides (Ellis & Solander, 1786)

Repent or erect, loosely branched tubules. Skeleton consisting of tri- and quadriradiates (rays up to 100 μm long), strengthened by oxea of up to 250 μm.

Occurrence: common.

Order Sycettida
Family Sycettidae

Scypha ciliata (Fabricius, 1780)

Elongate tubiform sponge with apical oscule, fringed with a collar of long stiff spicules. Consistency soft, compressible. Surface papillate, somewhat hairy. Flagellate chambers six-sided in cross section, loosely adhering. Ectosomal oxea thin, up to 10 μm in width, may be spined. Rays of triradiates up to 120 μm. Quadriradiates in the same size range, with apical ray of up to 60 μm.

Occurrence: common.

Scypha coronata (Ellis & Solander, 1786)

Habit indistinguishable from the previous species. Of the spicule complement only the ectosomal oxea are notably different in size: the width measures up to 25 μm. It is only on the evidence of Tuzet (1973) (reproductive behaviour), that both species are upheld here.

Occurrence: probably less common than *S. ciliata*, although no exact data are available as the species has not been distinguished in the field.

Scypha quadrangulata (Schmidt, 1868)

Fusiform, stiff sponge with apical oscule devoid of collar. Surface smooth to slightly rough, due to short tufts of oxea on the distal four-sided cones of the flagellate chambers. Wall of the spongocoel a thick cortex of packed triradiates. Spicules: peripheral oxea up to 450/30-40 μm. Triradiates with rays of up to 70 μm long. No quadriradiates.

Occurrence: found once at Lough Ine, at a depth of 6 m. First record for Ireland (cf. Van Soest & Weinberg, 1980).

Family Grantiidae
Grantia compressa (Fabricius, 1780)
Laterally flattened sponge ('purse sponge') with apical oscule. Surface smooth to slightly rough (due to tufts of oxea). Skeleton with triradiates (rays up to 200 μm), quadriradiates (rays up to 70 μm) and irregular oxea, of which one end may be club-shaped, up to 300 μm.
Occurrence: common, on vertical sides of rocks or epiphytic.
Aphroceras ensata (Bowerbank, 1866)
Upright, mostly rounded, but irregularly shaped sponge of hard consistency, with apical oscule. Surface smooth due to a layer of tangential oxea. Spicules: huge ectosomal oxea up to 1800/75 μm; robust triradiates with rays of up to 160 μm; quadriradiates in the same size range.
Occurrence: rare.
Leuconia aspera (Schmidt, 1862)
Small, globular, spinous sponge with apical oscule. Consistency hard and fragile. Spicules: huge ectosomal oxea up to 1200/50 μm; triradiates with rays of up to 200 μm; quadriradiates with rays up to 380 μm, apical ray up to 70 μm.
Occurrence: found once at East Calf Island in crevice between rocks at LWS-level. This is the first record from Ireland (cf. Van Soest & Weinberg, 1980).
Leuconia nivea (Grant, 1825)
Massively encrusting sponge with hard consistency. Surface smooth. Skeleton dominated by huge triradiates with rays up to 1000/80 μm. Next to these there are small irregular oxea up to 50/2 μm. Spongocoel lined by small quadriradiates with rays up to 60 μm (cf. Burton, 1963: 273).
Occurrence: common under stones.

Class Demospongiae

Subclass Homoscleromorpha
Order Homosclerophorida
Family Plakinidae
Plakina monolopha Schulze, 1880
Thin, smooth, greyish-yellow crusts, with dark, evenly distributed spots (entrances of pseudoscules); several square cm in lateral expansion, a few millimetres in thickness. Spiculation consisting solely of triactine and diactine forms of irregular shape and ray number, 30-60/2-4 μm.
Occurrence: under boulders in Lough Ine, most abundant beyond the rapids, especially below the cliff at the south shore.

Subclass Tetractinomorpha
Order Astrophorida
Family Stellettidae
Stryphnus ponderosus (Bowerbank, 1866)
Brownish encrustations with smooth surface. Distinct smell of rotting fish. Skeleton consisting of huge radiating oxea 1250/30 μm, dichotriaenes 1000/25 μm, protriaenes 250/6 μm, amphiasters and oxyasters 10-20 μm (cf. Arndt, 1935: 27).
Occurrence: under boulders in Lough Ine, occasional.

Family Geodiidae
Pachymatisma johnstonia (Bowerbank, 1842)
Irregular semiglobular sponge with a hard dark greyish crust and a light yellow choanosome. Fields of oscules distributed irregularly over the smooth surface. Size may be up to 20 cm in diameter. Skeleton consisting of a peripheral layer of sterrasters 90-130/50-80 μm, acanthose oxyasters 35-52 μm, and acanthose microrhabds 13-25/4-6 μm, supported by radiating strongyles 600-3000/30-45 μm, and long-rayed orthotrianes 700/25 μm.
Occurrence: common in the sublittoral, rare in the infralittoral fringe, underneath boulders.

Order Hadromerida
Family Tethyidae
Tethya aurantium (Pallas, 1766)
The well-known 'Orange-sponge'. The skeleton consists of strong bundles of radiating styles and oxea 1750-2200/12-20 μm, carrying a crust of strongylasters 7-12 μm; the bundles end in surface warts; sphaerasters 15-30 μm lie scattered in between the megascleres.
Occurrence: intralittoral records only from both rapid area; sublittorally not uncommon. Distinct preference for strong currents in otherwise sheltered environments.

Family Polymastiidae
Polymastia mamillaris (Müller, 1806)
This species is characterized by its long laterally flattened blunt ending papillae, and rough surface. The skeleton consists of strong bundles of tylostyles of widely different sizes up to

550/9 μm, arranged in a radiating fashion. This species resembles *P. boletiformis* (cf. below). For the differences between the two cf. Table 1.
Occurrence: not uncommon; distinct preference for sediment rich environments.
Polymastia boletiformis (Lamarck, 1814)
This differs from the above in the smoother surface, with papillae ending in a point, and less developed skeletal bundles (cf. Table 1, Fig. 2).
Occurrence: Only known from sublittoral stations (Curra Point, Crab Rock, and Badger Island). Distinct preference for sloping substrates; replaced by *P. mamillaris* on horizontal substrate.

TABLE 1

Differences between *Polymastia* spp. found in Roaringwater Bay

	P. mamillaris	*P. boletiformis*
Surface	rough	smooth
Texture	firm	less firm
Papillae	often thin-walled, blunt (when preserved papillae mostly remain upright)	thick-walled, pointed (when preserved papillae collapse)
Skeleton	strong spicule bundles radiate to surface, in between amorphous tissue	wavy, thin spicule bundles; tissue a honeycombe
Habitat	prefers horizontal substrate	prefers sloping substrate

Fig. 2. Habits in cross-section of *Polymastia* spp.; left *P. mamillaris*, right *P. boletiformis*.

Family Suberitidae
Subrites domuncula (Olivi, 1792) (Syn.: *Ficulina ficus* of authors)
Globular, orange sponge with a perfectly smooth surface. Size may be considerable when seen alive: up to 40 cm in diameter in Lough Ine. Skeleton consisting of tylostyles 100-500/5-10 μm, arranged in confusion with a tendency to lie in ill-defined reticulate tracts except for the regular dermal palisade. Rare microrhabds 15-50 μm. The species resembles *Suberites carnosus* (cf. below and Table 2).
Occurrence: common, in sheltered water.
Suberites carnosus (Johnston, 1842)
Differs from the preceding species by the smaller size and plumose surface bundles (instead of dermal palissade). Spicules more restricted in size range. No microrhabds (cf. Table 2 and Fig. 3 for differences).
Occurrence: common at Crab Rock, sublittoral, in open water.

Fig. 3. Perpendicular sections of peripheral skeleton in *Suberites* spp.; left *S. domuncula*, right *S. carnosa*.

Prosuberites epiphytum (Lamarck, 1816)
Thin yellow crusts on barnacles and other hard substrates. The skeleton consists of tylostyles with peculiar pin-shaped heads 175-450/3-7 μm. *Laxosuberites incrustans* Stephens, 1916 may be synonymous, although the tylostyle diameter is given as 8-10 μm.
Occurrence: found once in Lough Ine (second record for Ireland, not mentioned by Lilly, c.s., 1953) (cf. Van Soest, 1977: 266, Fig. 2).

Family Clionidae
Cliona celata (Grant, 1826)
The common boring sponge, occurring in three phases: a-stage with only orange or yellow papillae protruding from the substrate; b-stage with the substrate between the papillae covered by a thin orange encrustation; c-stage in which the whole substrate has been eroded and the sponge manifesting itself as a papillated yellow-orange globe. Spicules: thin tylostyles 200-300/2-8 μm, arranged in a somewhat plumose fashion, and spirasters 20-25 μm, which appear to be absent in the c-stage.
Occurrence: common.

Order Axinellida
Family Axinellidae
Stelligera stuposa (Montagu, 1818)
Ramose sponge, brownish, exuding slime when taken out of the water. The skeleton consists of

TABLE 2

Differences between *Suberites domuncula* (= *Ficulina ficus*) and *Suberites carnosus*

	S. domuncula	*S. carnosus*
Form	irregular lump	fig-shaped or spherical
Surface skeleton	spicules form a palisade	plumose bundles of spicules, not forming a palisade
Choanosomal skeleton	tending to form an ill-defined reticulum	irregularly arranged
Size range of spicules	great	much more restricted
Microscleres	centrotylote oxea (microrhabds) among surface palisade (may be lost)	no microrhabds
Habitat	sheltered	open waters

an axis of styles (up to 2 mm long) with small euasters (about 10 μm) at the surface.
Occurrence: Frequent at most sublittoral sites, but never common.

Family Raspailiidae
Raspailia hispida (Montgu, 1818) (syn.: *R. pumila* (Bowerbank, 1866))
Small, brownish grey bushes with dichotomously branched, blunt-ending ramifications. Surface rough, due to giant megascleres protruding beyond the ectosome. Consistency fairly soft. Skeleton: styles and tylostyles (1000-1400/5-19 μm), oxea (250-380/2-4 μm) and acanthotylostyles (90-120/5-6 μm) (cf. Van Soest, 1977: 267, Fig. 3, Pl. 3A).
Occurrence: not uncommon in sublittoral sites, rare in the infralittoral fringe (only found at Kinish Harbour Rapids). Very large specimens occur in Lough Ine. We consider *R. hispida* to have a large variation, including forms known as *R. ramosa* (Bowerbank, 1866) and *R. pumila* (Bowerbank, 1866).

Subclass Ceractinomorpha
Order Halichondrida
Family Halichondriidae
Halichondria panicea (Pallas, 1766)
The common bread-crumb sponge, with its characteristic chimney-like oscules and smooth surface. Morphology and colour are extremely variable, depending on the environmental conditions. Ectosomal skeleton uniformly confused (cf. Hartman, 1958). Spicules: oxea (250-350/4-10 μm).
Occurrence: dominant in the intertidal as well as in the sublittoral, although it is rather intolerant of heavy siltation.
Remark: Among the many growth forms of this species, the one found in the Sound (on the slopes of the tidal channel) is quite striking: thick, large tubes with wide oscules, dark greenish in colour.
Halichondria bowerbanki Burton, 1930a
Hartman (1958) and Graat-Kleeton (1963) gave excellent illustrations of this species. It differs from *H. panicea* primarily in habit, being stringy to thinly ramose with a dullef colour, often slightly transparent; oscular chimneys are absent. The ectosomal skeleton contains spicule bundles with small areas devoid of spicules in between.
Occurrence: common, particularly under boulders and in heavily sedimented areas.
Halichondria reticulata (Bowerbank, 1866)
Thick, smooth crusts of tough consistency. Oscules flush. Ectosomal skeleton a strongly developed cortex with multispicular tracts forming a regular reticulation. Choanosomal skeleton confused with vague spicule tracts perpendicular to the surface. Spicules: oxea 230-320/5-13 μm (cf. Bowerbank, 1874: Pl. 31).
Occurrence: found once under boulders in Lough Ine (not reported by Lilly, c.s., 1953). The species is considered synonymous with *H. panicea* by Arndt, 1935, but this is obviously incorrect.

Family Hymeniacidonidae
Hymeniacidon perlevis (Montagu, 1818)
This species is probably polytypic; future studies are expected to reveal that it consists of more than one species. For the time being we have to consider all the orange-red sponges with a confused skeleton (tending to form thin bundles) of styles as one. Both smooth and tuberculate to papillate specimens were found, and colours may range from light yellow to blood-red. Styles 180-390/3-12 μm (cf. Van Soest, 1977: 270, Fig. 5, Pl. 3D).
Occurrence: extremely common in the intertidal, particularly in more silted environments. Confusion of this species with *Rhaphidostyla kitchingi* Burton, 1930, may occur easily.
Hemimycale columella (Bowerbank, 1874)
Massive with a very characteristic surface pattern of circular light coloured rims, colour red-pink. Skeleton consisting of strongyles and styles, 350-400/5-8 μm, arranged into thick tracts.
Occurence: found only once by K. Hiscock at 15-20 m in Roaringwater Bay (*teste* specimen in Sherking Island Field Study Centre reference collection). Care should be taken to avoid confusion with *Phorbas* spec. which has dark coloured rims.
Rhaphidostyla incisa (Schmidt, 1880)
A wedge-shaped, light yellow-orange sponge with a sticky, tuberculate upper surface and smooth sides. Skeleton consisting of tracts of very long styles, 1500-2000/10 μm, radiating towards the periphery (cf. Van Soest & Weinberg, 1980).
Occurrence: collected once by Miss C. van Duyl and Mr. J. Lee at 6 m in the narrows between Sherkin Island and Sandy Island. This species is until now known only from the Western Mediterranean (e.g. Boury-Esnault, 1959), and thus represents the first record for Ireland and the northern Atlantic. The present specimen has been compared to preserved Mediterranean specimens in the collections of the Zoological Museum of Amsterdam. There is one other *Rhaphidostyla* species known from the British Isles, viz. *R. kitchingi* Burton, 1935; this species has unusually small styles (220/3 μm, cf. below).
Rhaphidostyla kitchingi (Burton, 1925)
Shape ill-defined, branched or lump-like. Consistency soft, not bristly. Tissue turns liquid when stirred with a needle. Colour orange, brown, yellow. Skeleton of whispy bundles of thin, often hair-like styles, up to 220 μm long (styles of *Hymeniacidon perlevis* are longer and thicker, also *H. perlevis* turns dark after some time in alcohol).
Occurrence: common in sheltered sublittoral sites. It formed a distinct zone at the south end of Lough Ine. This is the first record from Ireland.

Order Poecilosclerida
Family Mycalidae
Mycale contareni (Von Martens, 1824)
A light brown, tuberculate cushion of firm consistency. The skeleton consists of thick spicule tracts cemented by spongin. The spiculation is composed of tylostyles, 225-360/6 μm, two categories of sigmata, 16-22 and 43-61 μm, toxa, 42-62 μm, and three categories of anisochelae, 12-14, 18-23 and 31-42 μm (cf. also Buizer & Van Soest, 1977).
Occurrence: common under boulders in large pools and bays with oxygenated sediment.

Family Biemnidae
Biemna variantia (Bowerbank, 1866)
A thin brownish encrustation. Skeleton: plumose tracts of peculiarly bent styles, 245-597/7-17 μm, complemented by rhaphides 41-162 μm and two categories of sigmata 12-26 and 69-89 μm, the smaller ones known as 'commata' (cf. Bowerbank, 1874: Pl. 33).
Occurrence: found twice, at Hake Island and under boulders in Lough Ine. This is the first record for Ireland, although it is fairly common in the North Atlantic and United Kingdom.

Family Crellidae
Spanioplon armaturum (Bowerbank, 1866)
A distinctive bright ochrous yellow, smooth encrustation, often on *Chlamys* and other molluscs. Skeleton: vague tracts of thin styles, 220-300/3-5 μm, echinated by acanthostyles, 75/2-4 μm (cf. Bowerbank, 1874: Pl. 34).
Occurrence: common in Lough Ine under boulders; not found elsewhere so far.

Family Myxillidae

Myxilla incrustans (Johnston, 1842)

Thick massive crusts of firm consistency, yellow or orange in colour. Surface a labyrinth, walls and subdermal cavities covered by a thin ectosomal membrane. Skeleton an isodictyal meshwork of acanthostyles, 125-170/11-15 μm. Ectosomal skeleton of tornotes, 130-150/3-5 μm; furthermore sigmata, 15-40 μm, and isochelae of a distinctive spatulate form, 20-30 μm.

Occurrence: common in Lough Ine, rare in Roaringwater Bay.

Myxilla rosacea (Lieberkühn, 1859).

This species differs from *M. incrustans* mainly in the tornote apices, which are slightly tylote and microspined, whereas these of *M. incrustans* are straight with only two distinct spines (cf. Fig. 4). Colour is often pink, but may be yellow.

Occurrence: found once at Curra Point.

Fig. 4. Tornote endings in *Myxilla* spp.; left *M. rosacea*, right *M. incrustans*.

Menyllus ingalli (Bowerbank, 1866)

Yellow or brown encrustations with an irregular surface. Skeleton consisting of an ill-defined branching net-work of acanthostyles 180-241/5-9 μm, dermal tornotes, 188-211/1·5-2 μm, anisochelae, 19-25 μm, and peculiar bipocillae, 7-16 μm (cf. Bowerbank, 1874: Pl. 78).

Occurrence: under boulders in Lough Ine; common at Badger Island.

Family Hymedesmiidae

Hymedesmia pansa (Bowerbank, 1882)

Thin, soft, brownish encrustations. Skeleton consisting of acanthostyles of two sizes, 222-280/4-7 μm and 75-97/3-7 μm, standing upright on the substrate. Ectosomal skeleton: anisotornotes, 168-206/2-3 μm, and isochelae, 17-24 μm.

Occurrence: fairly common under stones and on *Laminaria* holdfasts.

Note: The *Hymedesmia* species are difficult to identify, and the systematics of this genus needs revision. The present identification has been made by using the key constructed by Burton (1930b).

Hymedesmia brondstedti (Burton, 1930b)

Thin, brown slippery crust. Surface can be seen under the stereomicroscope to be full of small pits; it looks like a net curtain. Oscules have clear lines radiating from them showing the position of underlying water channels. Skeleton of acanthostyles erect on the substrate and ectosomal and choanosomal strongyles, which may be slightly tylote at both ends. No chelae.

Occurrence: Encrusting *Laminaria*-stipes and stones in the shallow sublittoral at Curra Point (25 m) and in Lough Ine.

Family Anchinoidae

Pronax plumosus (Montagu, 1818) (syn.: *Stylostichon p.*)

Light brown-orange, tough, massive encrustations with a rugose surface. The skeleton consists of plumose tracts of acanthostyles, 170-210/8-9 μm, ectosomal acanthostyles and oxeote tornotes, 140-160/6-7 μm, and isochelae, 20 μm (cf. Arndt, 1935: 80).

Occurrence: fairly common under boulders and in crevices.

Pronax dives (Topsent, 1891) (syn.: *Stylostichon d.*)

Brownish, massive encrustation with rugose surface. Skeleton: plumose, thick tracts of acanthostyles, 180-220/8-10 μm, thin straight ectosomal tornotes, 135/2 μm, isochelae, 18-25 μm, and sigmata, 25-45 μm.

Occurrence: found once under boulders in Lough Ine. It has not been reported by Lilly, c.s. (1953), and represents the first record for Ireland (cf. Van Soest & Weinberg, 1980).

Phorbas fictitius (Bowerbank, 1866)

Massive, dark rosy red, smooth sponge of tough consistency. Skeleton plumose with high spicular density. Spicules: ectosomal tornotes, 230-300/3-5 μm, acanthotylostyles, 120-370/5-8 μm, and isochelae, 17-25 μm (cf. Bowerbank, 1874: Pl. 23, 82).

Occurrence: not uncommon under boulders in Lough Ine, absent elsewhere.

Phorbas spec. (aff. *P. stylata* Burton, 1930)

The surface of this encrusting species is covered in circular areas with raised rims, 1-1·5 mm in diameter. Oscules slightly raised on shallowly sloping cones. Colour red-brown. Skeleton consisting of ill-defined vertical bundles of acanthostyles, spined only at the base, up to 330 μm long. Echinating acanthostyles completely spined, up to 110 μm long. Ectosomal tornotes with

both ends oxeote, up to 230 μm long, forming a rosette around each pore area, the rosettes 0·7-0·9 mm in diameter. Isochelae with a small central point are about 22 μm long. The present specimen agrees with *P. stylata* in every aspect except for the tornotes, which should be stylote.

Occurrence: Curra Point, 25 m.

Family Clathriidae

Microciona atrasanguinea (Bowerbank, 1866)

A reddish, tuberculate to brushy encrustation. Skeleton: plumose, spongin-rich tracts of acanthotylostyles, 75-250/5 μm, and smooth styles, 250-520/10 μm; ectosomal skeleton of smooth styles, 65-350/2-12 μm; microscleres: isochelae, 10-15 μm, and deeply bent toxa, 35-110 μm (cf. Arndt, 1935: 78).

Occurrence: under boulders, rare.

Microciona strepsitoxa (Hope, 1889)

Reddish, thin encrustations with smooth surface. Spiculation of tylostyles, 195-444/2-16 μm, acanthotylostyles, 116-192/3-7 μm, isochelae, 15-19 μm, and two categories of toxa: small deeply bent ones, 70 μm, and long straight ones with a spiral twist, 130-319 μm (cf. Van Soest & Weinberg, 1980).

Occurrence: under boulders in Lough Ine common, elsewhere rare. The present records are the first from Ireland.

Microciona spinarcus (Carter, 1889)

Yellowish, thin encrustations with irregular surface. Spiculation of ectosomal tylostyles, 150-230/1 μm, acanthotylostyles, 90-380/3-12 μm, isochelae, 7-12 μm, and large thick toxa with heavily acanthose apices, 60-350 μm (cf. Van Soest & Weinberg, 1980).

Occurrence: not uncommon under boulders in Lough Ine, absent elsewhere. This is the first record from Ireland.

Ophlitaspongia seriata (Grant, 1826)

Tough, fairly thick, blood-red encrustations with a smooth surface, oscules evenly distributed, flush with surface. Skeleton: a beautifully regular isodictyal mesh work of spongin fibres cored by thick smooth styles, 100-160/9-12 μm, and echinated by thick toxa 50-150 μm (cf. Arndt, 1935: 2).

Occurrence: common under stones and in crevices.

Plocamilla coriacea (Bowerbank, 1866)

Yellow encrustations. Skeleton consisting of an isodictyal reticulation of acanthostrongyles, 70-160/7 μm, and smooth tylostyles with acanthose heads, 200-310/7 μm, covered by an ectosomal skeleton of styles, 130-180/1-3 μm. Microscleres: toxa, 50-120 μm, and isochelae, 12-22 μm (cf. Bowerbank, 1874: Pl. 76).

Occurrence: not uncommon under boulders in Lough Ine, absent elsewhere.

Amphilectus fucorum (Esper, 1794)

Massive to digitate, soft, orange sponge, with a hispid surface. Skeleton: an isodictyal reticulation of styles, 140-200/2-5 μm; no special ectosomal skeleton. Microscleres: isochelae, 15-20 μm (cf. Arndt, 1935: 53).

Occurrence: fairly common, especially in the Sound.

Order Haplosclerida

Family Haliclonidae

Remark: The species described below all belong to the closely related genera *Adocia, Haliclona* and *Reniera,* the taxonomy of which is still in a state of turmoil. The present material has been examined carefully (cf. Table 3) and compared with descriptions given by Johnston (1842), Bowerbank (1864, 1866, 1874 and 1882), Topsent (1891, 1894), and Burton (1926, 1930b), but the results are still to be regarded with considerable reserve. Question marks should be put notably at the identification of *Haliclona montagui* (Bowerbank, 1866) (the original description mentions spicules much more robust than those of our specimens), *Reniera macandrewii* (Bowerbank, 1866) (original description mentions an irregular surface, while it is smooth in our material), *Reniera rosea* (Bowerbank, 1866) (which needs comparison with *Haliclona permollis* (Bowerbank, 1866), *Reniera aquaeductus* Schmidt, 1862 and *Reniera cinerea* (Grant, 1835)), and *Reniera peachi* (Bowerbank, 1866) (which needs comparison to *R. cinerea*).

Also the generic definitions are by no means unchallengeable, although recent attempts have been made to clarify them (Griessinger, 1971; Wiedenmayer, 1977; Van Soest, 1980). It is high time a complete revision of western European Haplosclerids is undertaken, as many of the genera of this order have European type species.

Adocia simulans (Johnston, 1842)

Repent ramose, firm, brittle sponges with flush oscules, brownish or greenish in colour.

TABLE 3

Characteristics of Haplosclerid species from Roaringwater Bay and Lough Ine

A.s. = *Adocia simulans*, H.o. = *Haliclona oculata*, H.lim. = *Haliclona limbata*, H.loos. = *Haliclona loosanoffi*, H.m. = *Haliclona montagui*, R.v. = *Reniera viscosa*, R.i. = *Reniera indistincta*, R.m. = *Reniera macandrewii*, R.r. = *Reniera rosea*, R.p. = *Reniera peachi*

	A.s.	H.o.	H.lim.	H.loos.	H.m.	R.v.	R.i.	R.m.	R.r.	R.p.
Habit	repent-ramose	ramose bushlike	lobate hispid	encrust.-tubuli ferous	encrust.-ramose	massive, volcanoe-shaped oscules	massive, flat, corrugated	massive, flat, smooth	encrust., ramose	lobate
Consistency	firm, brittle	soft	soft	soft	very soft	firm, friable mucous	firm, mucous	firm	soft	soft
Colour	brown-greenish	greyish rosy brown	brown	light brown	light brown	brown (violet)	pale yellow, greyish brown	light brown	pink	violet
Ectosomal skeleton	regular	absent	absent	absent	absent	irregular	irregular	regular	irregular	irregular
Skeletal plan	multispic.	paucispic.	paucispic.	paucispic.	unispic.	multispic.	multispic.	unispic.	paucispic.	unispic.
Spongin	+ −	+ −	+ +	+	+ (+)	−	−	−	−	−
Spicule size	100-150 by 8-12	100-200 by 5-13	55-100 by0·5-3	60-90 by 1·5-3	75-120 by 3-5	150-170 by 6-8	115-130 by 2-6	110-180 by 7-11	140-160 by 3-4	90-100 by 3-7

Ectosomal unispicular tangential reticulation. Choanosomal skeleton of multispicular primary fibres. Spicules oxea, stout, cigar-shaped, 100-150/8-12 μm (cf. Bowerbank, 1874: Pl. 51).
Occurrence: common.

Haliclona oculata (Pallas, 1766)

Ramose, bush-like greyish rose-brown sponges of soft consistency; surface micro-hispid, velvety. Oscules in rows on the branches. Skeleton containing moderate amounts of spongin. Skeletal primary tracts with 1-3 spicules per cross-section. Oxea short and thick, cigar-shaped, 100-200/5-13 μm (cf. Bowerbank, 1874: Pl. 66).
Occurrence: found once by K. Hiscock at Sandy Island (*teste* a specimen in the reference collection of the Field Study Centre); a second specimen turned up at Crab Rock.

Haliclona limbata (Montagu, 1818)

Brown lobate sponges, with relatively large apical oscules and a strongly hispid surface. Skeleton consisting of a reticulation of spongin fibres cored by thin oxeote spicules, 55-100/0·5-3 μm (cf. Bowerbank, 1874: Pl. 67).
Occurrence: common.

Haliclona loosanoffi (Hartman, 1958)

Encrusting to tubuliferous, light brown sponge, with a microhispid surface. Skeleton consisting of primary lines with 1-3 spicules per cross-section, almost completely enveloped in spongin. Oxea thin and short, 60-90/1·5-3 μm. Characteristic for the species is a basal layer of yellow gemmules, which are, however, not present throughout the year.
Occurrence: found once encrusting a *Mytilus* shell in the rapids of Lough Ine. It is known from the east coast of North America and from Holland (cf. Van Soest, 1976). This is the first record for Ireland (cf. Van Soest & Weinberg, 1979).

Haliclona montagui (Bowerbank, 1866)

Encrusting or ramose, light brown sponges with violet tinges. Consistency very soft and limp. Encrusting specimens may have osculiferous cones. Skeleton delicate, with a fair amount of spongin. Primary lines wavy, 1-2 spicules per cross-section. Spicules 75-120/3-5 μm (cf. Bowerbank, 1874: Pl. 68).
Occurrence: found at Hake Island and Lough Ine.
Remark: The skeleton of this species resembles that of *H. loosanoffi*. Habit, consistency and fine surface texture, however, render it clearly distinct.

Reniera viscosa (Topsent, 1899)

Brown, massive sponge, discolouring to violet when exposed to the air. Oscules on high volcano-shaped cones. Ectosome mucous. Consistency firm, friable. Skeleton close-meshed, with multispicular (up to 8) primary fibres and single interconnecting ones. Spicules 150-170/6-8 μm.
Occurrence: found once in Roaringwater Bay (Truhane Point), at 12 m, by Drs. S. Weinberg and Drs. D.A.G. Buzer. It is the first record for Ireland (cf. Van Soest & Weinberg, 1980).
Remark: This species resembles *Reniera indistincta* (cf. below) in mucus production and skeletal features. However, *R. indistincta*, does not form volcano-shaped cones and is soft in consistency.

Reniera indistincta (Bowerbank, 1866)

Massively encrusting sponges with an irregular surface, pale yellow to greyish brown in colour; mucous ectosome. Consistency firm to soft, somewhat friable. Skeleton close meshed with primaries of up to 4 spicules in cross-section. Ectosomal skeleton vague, consisting of random spicules strewn tangentially in a thick mucous layer. Oxea 115-130/2-6 μm (cf. Bowerbank, 1874: Pl. 51).
Occurrence: found at Lough Ine under boulders.

Reniera macandrewii (Bowerbank, 1866)

Massive, light brown encrustation of firm consistency. Surface smooth, oscules flush. Skeleton largely unispicular. Oxea stout: 110-180/7-11 μm (cf. Bowerbank, 1874: Pl. 49).
Occurrence: common.

Reniera rosea (Bowerbank, 1866)

Encrusting or repent-ramose with upright branches of 5 mm in diameter. Oscules on the branches. Pink or rosy light brown. Consistency soft, limp. Skeleton a largely unispicular reticulation with vague multispicular tracts. Oxea: 140-160/3-4 μm (cf. Bowerbank, 1874: Pl. 49).
Occurrence: found only under boulders in Lough Ine.

Reniera peachi (Bowerbank, 1866)

An encrusting, lobate, soft sponge with violet colour. Skeleton a unispicular reticulum. Oxea 90-100/3-7 μm (cf. Bowerbank, 1874: Pl. 48).

TABLE 4

The occurrence of sponges of Roaringwater Bay and Lough Ine at different stations (numbers 1 to 18; for details cf. text) and in different months (a to d; a = July, b = August, c = September, d = October)

Species	1 a b c d	2 a b c d	3 a b c d	4 a b c d	5 a b c d	6 a b c d	7 a b c d	8 b	9 b	10 b	11 b	12 b	13 d	14 bd	15 b	16 b	17 b	18 b
Leucosolenia botryoides	– – – –	– x – x	– – – –	x x – –	– x – –	x x – x	x x – –	–	x	x	–	–	–	– –	–	–	–	–
Clathrina coriacea	x – – –	– – – –	– – – –	x x – x	– x – –	– x – –	x x x x	–	–	–	–	–	–	– –	–	–	–	–
Scypha ciliata (+ *S.cor.*)	– x – –	– x – –	– x – x	x – – –	x x – x	x x x x	– x – –	–	–	x	–	–	–	– –	–	–	–	–
Scypha quadrangulata	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– x – –	–	–	–	–	–	–	– –	–	–	–	–
Grantia compressa	– x – –	– x x –	– – – x	– – – x	– – – –	– – – –	– – – –	x	x	x	–	–	–	– –	–	–	–	–
Aphroceras ensata	– – – –	– – – –	– – – –	– – – x	– – – x	– – – –	– – – –	–	–	x	–	–	–	– –	–	–	–	–
Leuconia aspera	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	–	–	x	–	–	–	– –	–	–	–	–
Leuconia nivea	x x x –	– – – –	– – – –	x x – x	x x – –	x x x x	x x x x	–	–	–	–	–	–	– –	–	–	–	–
Plakina monolopha	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– x – x	–	–	–	–	–	–	– –	–	–	–	–
Stryphnus ponderosus	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– – – x	–	–	–	–	–	–	– –	–	–	–	–
Pachymatisma johnstonia	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	x x – x	–	–	–	x	–	–	– –	x	–	–	–
Tethya aurantium	– – – –	– – – –	– – – –	– – – –	– – – –	– – x x	– – – x	–	–	–	–	–	–	– x	–	–	–	–
Polymastia mamillaris	– – – x	x – – –	– – – –	– – – –	– – – x	x x x x	– – – –	–	–	–	–	–	–	– x	–	–	–	–
Polymastia boletiformis	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	–	–	–	x	–	–	– –	–	x	–	x
Suberites domuncula	– – – x	– – – –	– – x –	– – – –	– – – x	x x x x	x x x x	–	–	–	–	–	–	– x	–	–	–	–
Suberites carnosus	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	–	–	–	x	–	–	– –	–	–	–	–
Prosuberites epiphytum	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– – – x	–	–	–	–	–	–	– –	–	–	–	–
Cliona celata	– – – –	– – – –	– – – –	– – – –	– – – –	– – – x	– – – x	–	–	–	x	x	x	x–	x	–	–	–
Stelligera stuposa	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– x – –	–	–	–	x	–	x	x–	–	x	–	x
Raspailia hispida	– – – –	– – – –	– – – –	– – – –	– – – –	– – – x	– – – –	–	–	–	–	–	–	–x	–	–	–	–
Halichondria panicea	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x	x	x	–	–	x	x–	x	–	–	–
Halich. bowerbanki	x x x x	x x x x	– – – –	x x x x	x x x x	x x x x	x x x x	–	–	x	–	–	–	– –	–	–	–	–
Halich. reticulata	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– – – x	–	–	–	–	–	–	– –	–	–	–	–
Hymeniacidon perlevis	x x x x	x x x x	x x – x	x x x x	x x x x	x x x x	x x x x	x	x	x	–	–	x	–x	–	–	–	–
Hemimycale columella	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	–	–	–	–	–	–	–x	–	–	–	–
Rhaphidostyla incisa	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	–	–	–	–	–	–	–x	–	–	–	–
Rhaphidostyla kitchingi	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– x – –	–	–	–	–	–	–	x–	–	–	–	–
Mycale contareni	– – – –	– – – –	– – – –	– – x x	– – x x	– – – x	x – – x	–	–	x	–	–	–	– –	–	–	–	–

Species	1 a b c d	2 a b c d	3 a b c d	4 a b c d	5 a b c d	6 a b c d	7 a b c d	8 b	9 b	10 b	11 b	12 b	13 d	14 bd	15 b	16 b	17 b	18 b
Biemna variantia	– – – –	– – – –	– – – –	– – – –	– – x –	– – – –	– x – –	–	–	–	–	–	–	– –	–	–	–	–
Spanioplon armaturum	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– x – x	–	–	–	–	–	–	– –	–	–	–	–
Myxilla incrustans	– – – –	– – – –	– – – –	– – – –	– – – x	– – – –	– x – x	–	–	–	–	–	–	– –	–	–	–	–
Myxilla rosacea	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	–	–	–	–	–	–	– –	–	–	–	x
Menyllus ingalli	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– – x –	–	–	–	–	–	–	– –	–	x	–	–
Hymedesmia pansa	– x x –	– – – –	– – – –	x x x –	– x x –	– x x x	x x – –	–	x	x	–	–	–	– –	–	–	–	–
Hymedesmia brondstedti	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– x – –	–	–	–	–	–	–	– –	–	–	–	x
Pronax plumosus	– – – –	– – – –	– – – –	– – x –	– – x x	– – x –	– x x x	–	–	–	–	–	–	–x	–	–	–	–
Pronax dives	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– – – x	–	–	–	–	–	–	– –	–	–	–	–
Phorbas fictitius	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– x – x	–	–	–	–	–	–	– –	–	–	–	–
Phorbas spec.	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	–	–	–	–	–	–	– –	–	–	–	x
Microciona atrasanguinea	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– x – –	–	–	x	–	–	–	– –	–	–	–	–
Microciona strepsitoxa	– – – –	– – – –	– – – –	– – – –	– – – x	– – – –	– x x x	–	–	–	–	–	–	– –	–	–	–	–
Microciona spinarcus	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– x – x	–	–	–	–	–	–	– –	–	–	–	–
Ophlitaspongia seriata	x – – –	– – – –	x – x –	x x x –	x x x x	x – x x	– x x x	–	–	x	–	–	–	– –	–	–	–	–
Plocamilla coriacea	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– x x x	–	–	–	–	–	–	– –	–	–	–	–
Amphilectus fucorum	– – – –	– – – –	– – – –	– – – x	– – – –	– – – –	x x x x	–	–	–	–	–	x	x–	–	–	–	–
Adocia simulans	x – x x	– – – –	– – – –	x x x x	x x x x	x x x –	x x x x	–	–	–	–	–	–	– –	–	–	–	–
Haliclona oculata	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	–	–	–	x	–	–	– –	–	–	–	–
Haliclona limbata	– x – x	– – – –	– – – –	– x – –	– x – –	– x – x	– x – –	–	–	x	–	–	–	– –	–	–	–	–
Haliclona loosanoffi	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– – x –	–	–	–	–	–	–	– –	–	–	–	–
Haliclona montagui	– – – –	– – – –	– – – –	– – x x	– x x –	– – – –	– x – x	–	–	x	–	–	–	– –	–	–	–	–
Reniera viscosa	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	–	–	–	–	x	–	– –	–	–	–	–
Reniera indistincta	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– x – x	–	–	–	–	–	–	– –	–	–	–	–
Reniera macandrewii	– x – –	– – – –	– – – –	– x – x	– – – x	– – – –	x x x x	–	x	x	–	–	–	– –	–	–	–	–
Reniera rosea	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– – – x	–	–	–	–	–	–	– –	–	–	–	–
Reniera peachi	– – – –	– – – –	– – – –	– – – –	– – – x	– – – –	– – – –	–	–	–	–	–	–	– –	–	–	–	–
Aplysilla rosea	– – – –	– – – –	– – – –	– – – –	– x – –	– x – –	– – – –	–	–	–	–	–	–	– –	–	–	–	–
Aplysilla sulfurea	– – – –	– – – –	– – – –	– – – –	– – – –	– – – –	– – – x	–	–	–	–	–	–	– –	–	–	–	–
Halisarca dujardini	– – – x	– – – –	– – – –	– – – x	– x – x	– – – –	– – – –	x	–	–	–	–	–	– –	–	–	–	–
Dysidea fragilis	x – x –	– – – –	– – – –	x x x x	x x x x	x x x x	x x x x	–	–	–	–	–	–	xx	–	–	–	–

Occurrence: found once at Hake Island, under stones in tidal pool.

Order Dendroceratida
Family Aplysillidae
Aplysilla rosea (Schulze, 1878)
Rose-red encrustations with conulose surface. Skeleton consisting of dendritic spongin fibres, 50-300 μm in width (cf. Arndt, 1935: 110).
Occurrence: seasonally common, but mostly rare.
Aplysilla sulfurea (Schulze, 1878)
Yellow encrustations with a conulose surface. Skeleton consisting of dendritic spongin fibres, 50-300 μm in width (cf. Arndt, 1935: 110).
Occurrence: found once under boulders in the rapids of Lough Ine.

Family Halisarcidae
Halisarca dujardini (Johnston, 1842)
Encrusting, yellowish brown, very soft sponges. Skeleton absent (cf. Arndt, 1935: 109).
Occurrence: seasonally common, often epiphytic.

Order Dictyoceratida
Family Dysideidae
Dysidea fragilis (Montagu, 1818)
Greyish purple, strongly conulose sponges, with a massive to lobate habit. Oscules on apices of lobes. Skeleton consisting of a reticulation of spongin fibres heavily filled with sand grains, debris and broken spicules, 50-300 μm in width.
Occurrence: common.

REMARKS ON DISTRIBUTION AND AUTECOLOGY

Table 4 lists the local and seasonal distribution of the sponges. From this we may infer ecological preferences, rarity and seasonal occurrence.
Rare species:
Scypha quadrangulata, Leuconia aspera, Stryphnus ponderosus, Prosuberites epiphytum, Rhaphidostyla incisa, Biemna variantia, Menyllus ingalli, Pronax dives, Haliclona loosanoffi, Reniera rosea, R. viscosa, R. peachi, Aplysilla sulfurea.
Locally common species confined to one site only:
Plakina monolopha, Microciona spinarcus, Spanioplon armaturum, Phorbas fictitius, Plocamilla coriacea, Reniera indistincta (all found only in Lough Ine).
Seasonally common species:
Raspailia pumila (October), *Microciona atrasanguinea* (August), *Aplysilla rosea* (August).
Species occurring above L.W.S.:
Clathrina coriacea, Leucosolenia bothryoides, Scypha ciliata, Grantia compressa, Leuconia nivea, Tethya aurantium, Polymastia mamillaris, Suberites domuncula, Halichondria panicea, Hymeniacidon perlevis, Adocia simulans, Haliscarca dujardini
Species confined to sheltered environments:
Polymastia mammillaris, Suberites domuncula, Raspailia pumila, Halichondria bowerbanki.

DISCUSSION

It is becoming more and more apparent, that the absence of a good identification guide to the shallow water sponges of the British Isles is seriously hampering any field study of the sponges of this area. One has to fall back to Arndt's (1935) guide to the North Sea sponges, which has now become outdated and lacks descriptions of many common species of the Atlantic coasts. The alternative is to go through a multiplicity of publications dealing with bits and pieces, spread widely over a range of scientific journals. Until this guide is produced, it remains very confusing to publish lists of species, without descriptions, such as those of Lilly, c.s. (1953), Norton, c.s. (1973), and Könnecker (1973), as it is impossible to say whether these identifications conform with each other.

REFERENCES

Arndt, W. (1935). Porifera. Tierw. Nord-Ostsee, 3(a), 1-140.

Boury-Esnault, N. (1959). Les spongiaires des fonds rocheux de Banyuls-sur-Mer. Ecologie et Systématique. Thèse Univ. Paris, 152 pp., 8 pls. (mimeogr.).

Bowerbank, J.S. (1864). A monograph of the British Spongiadae, I. Ray Society, London, 290 pp., 37 pls.

Bowerbank, J.S. (1866). A monograph of the British Spongiadae, II. Ray Society, London, 388 pp.

Bowerbank, J.S. (1874). A monograph of the British Spongiadae, III. Ray Society, London, 367 pp., 92 pls.

Bowerbank, J.S. (1874). A monograph of the British Spongiadae, IV. Ray Society, London, 250 pp., 17 pls.

Buizer, D.A.G. & Soest, R.W.M. van (1977). Mycale micracanthoxea nov. spec. (Porifera, Poecilosclerida) from the Netherlands. Neth. J. Sea Res., 11(3/4), 297-304.

Burton, M. (1926). Observations on some British species of sponges belonging to the genus *Reniera*. Ann. Mag. nat. Hist., Ser. 9, 17, 415-24.

Burton, M. (1930a). Additions to the sponge fauna at Plymouth. J. mar. biol. Ass. U.K., 16, 489-507.

Burton, M. (1930b). Norwegian sponges from the Norman collection. Proc. Zool. Soc. London, 1930. 487-546.

Burton, M. (1935). Notes on British sponges, with a description of a new genus and species. Ann. Mag. nat. Hist., Ser. 10, 15, 651-653.

Burton, M. (1963). A revision of the classification of the calcareous sponges. Brit. Mus. Nat. Hist., London, 693 pp.

Graat-Kleeton, G. (1965). Les Halichondria de Roscoff. Proc. Kon. Akad. Wetensch., (C), 68(3), 166-174.

Griessinger, J.-M. (1971). Etude des Réniérides de Méditerranée (Démosponges Haplosclérides). Bull. Mus. nat. Hist. nat., (3), 3 (Zoologie 3), 97-182.

Guiterman, J.D. (1980). Guide to the identification of some common British sponges. Underwater Conservation Society.

Hartman, W.D. (1958). Natural History of the marine sponges of southern New England. Peabody Mus. nat. Hist. Bull., 12, 1-155.

Johnston, G. (1842). History of British sponges and Lithophytes. Lizars, Edinburgh, 264 pp., 25 pls.

Könnecker, G. (1973). Littoral and benthic investigations on the west coast of Ireland. I. (Section A: Faunistic and ecological studies). The sponge fauna of Kilkieran Bay and adjacent areas. Proc. roy. Irish Acad., (B), 73, 451-472.

Lilly, S.J., Sloane, F., Basindale, R., Ebling, F.J. & Kitching, J.A. (1953). The ecology of the Lough Ine rapids with special reference to water currents. IV. The sedentary fauna of sublittoral boulders. J. Anim. Ecol., 22, 87-122.

Norton, T.A., Hiscock, K. & Kitching, J.A. (1977). The ecology of Lough Ine. XX. The Laminaria forest at Carrigathorna. J. Ecol., 65, 919-941.

Renouf, L.P.W. (1931). Preliminary work of a new biological station (Lough Ine, Co. Cork, I.F.S.). J. Ecol., 19(2), 410-438.

Soest, R.W.M. van (1976). First European record of *Haliclona loosanoffi* Hartman, 1958 (Porifera, Haplosclerida), a species hitherto known only from the New England coast (U.S.A.). Beaufortia, 24(316), 177-187.

Soest, R.W.M. van (1977). Marine and freshwater sponges of the Netherlands. Zool. Meded., 50 (16), 262-273.

Soest, R.W.M.van (1980). Marine sponges from Curaçao and other Caribbean localities. Part II. Haplosclerida (Porifera, Demospongea). Stud. Fauna Curaçao Caribb. Islands, 62, 1-173.

Soest, R.W.M. van & Weinberg, S. (1980). A note on the sponges and octocorals from Sherkin Island and Lough Ine, Co. Cork. Ir. Nat. J., 20, 1-15.

Soest, R.W.M. van & Weinberg, S. (1981). Preliminary report on the marine hard substrate communities of Roaringwater Bay. Journal of Sherkin Island, 1(2).

Topsent, E. (1891). Essai sur la faune des spongiaires de Roscoff. Arch. Zool. exp. gén., 9, 523-554.

Topsent, E. (1894). Étude sur la faune des spongiaires du Pas-de-Calais suivie d'une application de la nomenclature actuelle à la monographie de Bowerbank. Rev. Biol. Nord France, 7, 6-28.

Tuzet, O. (1973). Eponges calcaires. In: P.P. Grassé, ed. Traité de Zoologie, III. Spongiaires. Masson, Paris, 716 pp.