

**Marine Nature Conservation Review**

**Sectors 15 and 3**

**Sealochs in north-west Scotland**

**Area summaries**

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with additional text by

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**2005**

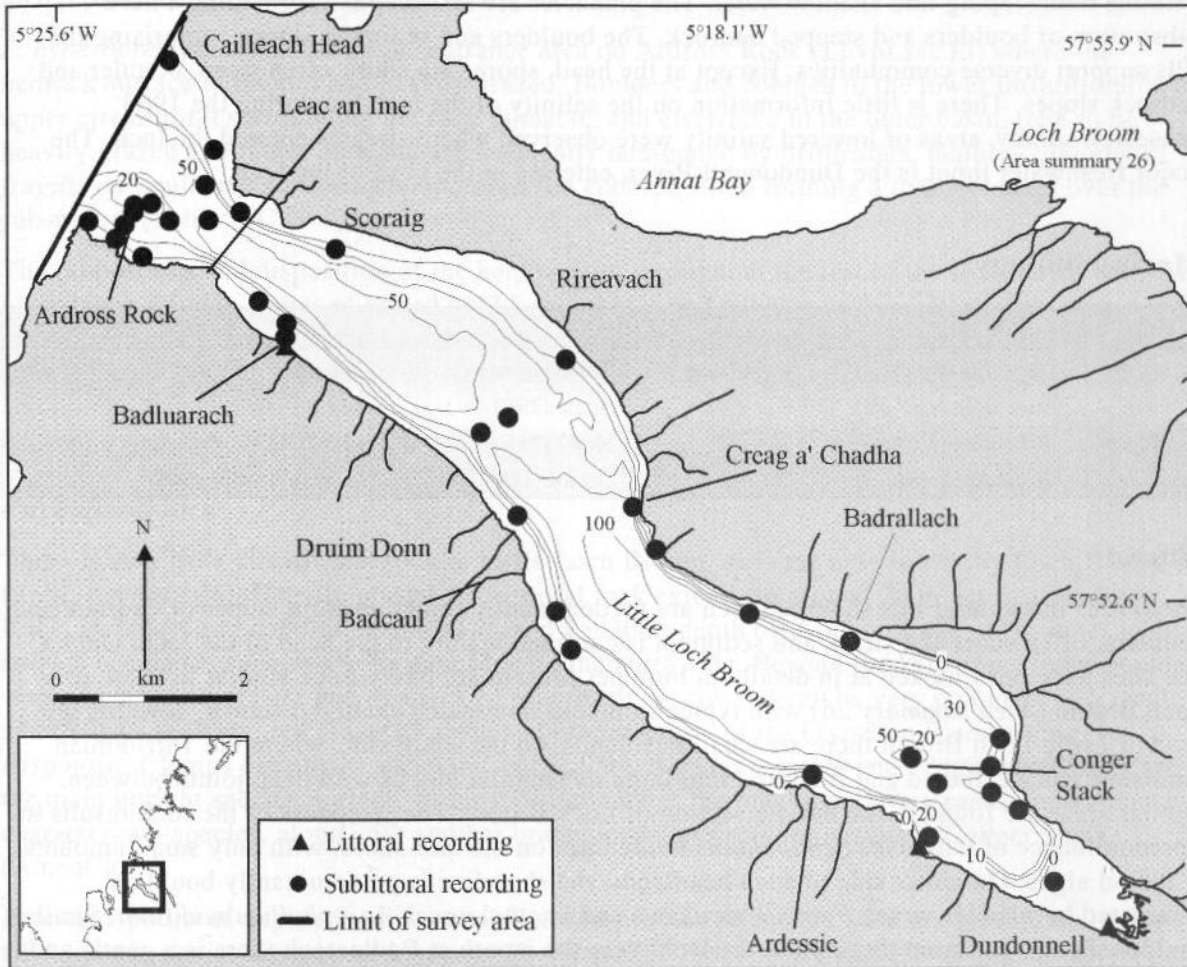
**Series editor: David Connor**

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## Little Loch Broom

## Location

Position (centre)	NH 030 923	57°52.6'N 05°19.3'W
Administrative area	Highland	
Conservation agency/area	Scottish Natural Heritage	North Areas



**Figure 25.1** Main features of the area, showing sites surveyed.

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## Physical features

Physiographic type	Fjordic sealoch
Length of coast	36.6 km (37.6 km including islands)
Length of inlet	14.3 km
Area of inlet	24.2 km <sup>2</sup>
Bathymetry	Maximum depths: outer basin 78 m; inner basin 115 m
Wave exposure	Exposed to sheltered
Tidal streams	Very weak generally; moderately strong at springs on outer sill (1 knot) and between Stattic Point and Ardross Rock at entrance (1.5 knot)
Tidal range	4.5 m (mean springs); 1.8 m (mean neaps) (Ullapool)
Salinity	No data. Probably fully marine to variable

## Introduction

Little Loch Broom has a simple elongate shape characteristic of fjordic lochs. South of the head of the loch is An Teallach, one of the highest mountains in north-west Scotland and the loch is surrounded by steep hillsides of Torridonian sandstone. The loch has two deep basins separated by a deep sill at 34 m. Another deep sill at 38 m lies across the entrance to the loch, marked by Ardross Rock, a submerged pinnacle reaching to within a few metres of the surface. A similar but more extensive pinnacle, Conger Stack, lies near the head of the loch. Apart from the mouth beyond the outer sill, Little Loch Broom is sheltered and the loch bottom predominantly muddy with the mud sloping into shallow water. The pinnacles are an exception, providing a hard substratum of boulders and stepped bedrock. The boulders and sediment slopes comprising the sills support diverse communities. Except at the head, shores are short, often steep, boulder and bedrock slopes. There is little information on the salinity of the loch but during the 1988 Seasearch survey, areas of lowered salinity were observed where streams entered the loch. The major freshwater input is the Dundonnell River, entering at the head of the loch.

## Marine biology

Marine biological surveys				
	Survey methods	No. of sites	Date(s) of survey	Source
Littoral	Recording (epibiota)	3	August 1978	Smith 1978
Sublittoral	Recording (epibiota)	12	May 1991	Holt 1991
	Recording (epibiota)	25	October 1988	Gubbay & Nunn 1988

### Littoral

The shores throughout this sheltered loch are predominantly rather uniform slopes of bedrock and boulders, often short and steep, and sediment is confined mainly to the head of the loch. Only a few sites have been looked at in detail but biotopes present are likely to be similar to those in Loch Broom (*Area summary 26*) with typically furoid-dominated sheltered shores. Towards the head of Little Loch Broom there are small headlands, on the south side, where the Torridonian sandstone has weathered and fractured into large rectangular blocks with deep joints between. Similar areas are found in the middle section of Loch Broom. The steepness of the rock results in a predominance of barnacles *Semibalanus balanoides* on the mid-shore, with only small amounts of furoid algae. On either side of such headlands, the shoreline is predominantly boulders dominated by bladder wrack *Fucus vesiculosus* and knotted wrack *Ascophyllum nodosum*. Similar boulder shores are found throughout the loch; near the mouth at Badluarach there is a gentle and even boulder slope displaying a clear zonation of furoids in the usual sequence.

At the head of Little Loch Broom, where the Dundonnell River enters, there is an extensive littoral area of coarse gravel and pebbles around 1 km<sup>2</sup> in extent, with saltmarsh at the very head. The shore here is crossed by numerous river channels and there is considerable freshwater influence. In the sediment are lugworms *Arenicola marina* and cockles *Cerastoderma edule* and there are patches of mussels *Mytilus edulis* on the surface. Near the river channels *Fucus ceranoides*, a furoid tolerant of brackish conditions, thrives along with green algae such as *Enteromorpha* sp. and the mud-snail *Hydrobia ulvae*. This type of shore is found at the heads of many other lochs in north-west Scotland.

### Sublittoral

#### Sublittoral rock

Steep sublittoral bedrock is not a major feature of Little Loch Broom and there appear to be no deep sublittoral cliffs. In the mouth of the loch, and on Ardross Rock and Conger Stack, there are areas of stepped bedrock with silted ledges extending to around 5–15 m depth, generally giving

way to boulders. Rock slopes throughout much of the rest of the loch are predominantly boulders, sometimes preceded by a short bedrock slope and often lying on muddy sediment. The rock-sediment boundary is generally shallow, and in the inner basin east of Badrallach sediment often extends up into the littoral.

#### *Infralittoral rock*

Even at the entrance to Little Loch Broom, wave exposure is only moderate and there are no exposed *Laminaria hyperborea* kelp forests. Instead, *L. hyperborea* and *L. saccharina* occur as mixed forests extending far into the loch.

*L. hyperborea* predominates in the entrance area on Ardross Rock (LhypLsac.Ft) where the bedrock surface is smooth and heavily grazed. Boulders and cobbles in the lower infralittoral and upper circalittoral surrounding the rock pinnacle, and elsewhere in the outer basin, tend to be heavily grazed and rather bare and are frequently dominated by brittlestars, mainly *Ophiothrix fragilis* on boulders and *Ophiocomina nigra* on cobbles, often forming a living blanket over the substratum (EchBriCC).

The proportions and disposition of the kelp species throughout the rest of the loch varies with the topography. Muddy slopes of mixed boulders, cobbles and pebbles in the shelter of the upper loch are dominated by *L. saccharina* forests. Below the headland of Cadha nam Muc there is a steep slope of large boulders dominated by the annual kelp *Saccorhiza polyschides*, with only a small amount of *L. hyperborea* present as a band above this (LhypLsac.Ft). In general *S. polyschides* occurs as scattered clumps in mixed kelp forest.

#### *Circalittoral rock*

There is very little circalittoral rock in Little Loch Broom, as is the case in nearby Loch Broom (Area summary 26). Heavily grazed circalittoral rock extends to around 20 m depth at Ardross Rock. Boulders and cobbles extend to around 25–30 m depth off Conger Stack in the inner loch and off headlands such as Cadha nam Muc on the north side. Beyond the kelp zone, these boulder slopes appear rather bare due to a lack of prominent species but can be very colourful as a result of extensive pink and red crusts of algae and orange crusts of the bryozoan *Parasmittina trispinosa*. Clumps of solitary ascidians, particularly *Ascidia mentula* and *Ciona intestinalis*, are the main upright species present. At most of these sites, the brachiopod *Neocrania anomala* is a characteristic species, along with another brachiopod *Terebratulina retusa* at Conger Stack (AmenCio).

Extensive plains of angular boulders, cobbles and pebbles on muddy sand are present on the two sills that run across the loch at depths of 30–40 m. The first sill lies just east of the narrowest part of the loch in the mouth and the second runs across the middle of the loch, from around Druim Donn on the south side to just south of Rireavach on the north side. These areas have a high diversity of species both on the rocks and in the sediment, probably as a result of increased water movement over the sills. Featherstars *Leptometra celtica* and *Antedon petasus* cling to the tops of the rocks amongst a variety of hydroids and associated nudibranchs (AntAsH). The rock surfaces are heavily colonised by a number of calcareous tubeworms, especially *Pomatoceros triqueter*, *Protula tubularia*, *Serpula vermicularis* and, on the inner sill, *Placostegus tridentatus*. Sediment between the rocks supports a number of holothurians, including *Thyone fusus*, *Psolus phantapus* and *Leptopentacta elongata* and brittlestars *Amphiura* spp., along with other widespread sediment species (ModHo).

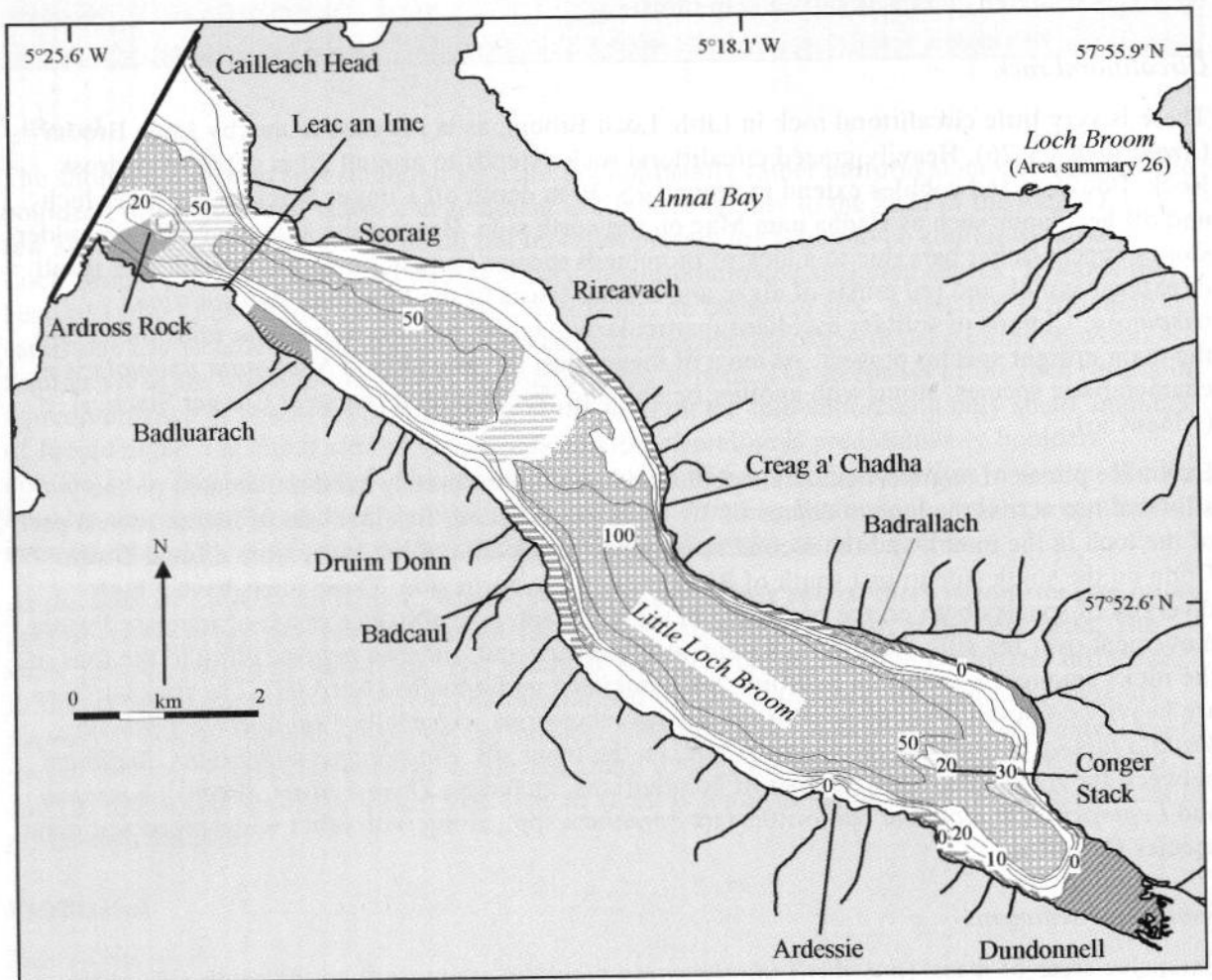
#### *Sublittoral sediments*

Extensive areas of maerl (possibly *Lithothamnion glaciale*) are present on the south side of the loch entrance, seaward of the first sill between Ardross Rock and the mainland, and inside the sill along the coast between Leac an Ime and Badluarach (Lgla). The maerl inside the sill lies on coarse sand and is stabilised by a bed of the file shell *Limaria hians*. This spectacular mollusc

uses its long, sticky orange tentacles to collect surface material and build extensive 'galleries' to live in, binding the material with its byssal threads (Lim). Similar beds have been found in other Scottish sealochs, including Loch Broom (Area summary 26) and Loch Glencoul (Area summary 28), and are of considerable marine biological interest.

Throughout the rest of Little Loch Broom, sediments are mostly fine and muddy. The sediment slope starts in shallow water around much of the loch, extending up into the littoral towards the head of the loch and is often quite steep. Shallow sediments around the edges of the loch at the top of the slope are mostly clean, fine sand. Moving deeper, there is a gradation through sandy mud and muddy sand onto soft mud. Shallow sediments down to around 10 m depth are characterised by filamentous and foliose algae such as brown ectocarpoids, *Desmarestia viridis* and bootlace weed *Chorda filum* (Lsac.X), with razor clams *Ensis* sp. and the burrowing anemone *Cerianthus lloydii* frequent in the sediment.

At very sheltered sites, such as on the north coast south of Badrallach, there are loose-lying masses of the mat-forming red algae *Trilliella* and *Phyllophora crispa* (Tra). Muddier sediments below around 10–20 m are characterised by increasing numbers of sea-pens *Virgularia mirabilis* and *Pennatula phosphorea* and at some sites the turret shell *Turritella communis*, and in areas where there are whole shells and stones for attachment in the sediment, ascidians such as *Asciella aspersa* (VirOph; VirOph.HAs). These soft sediments grade into even softer and well-burrowed mud, and the deepest areas of both basins are probably burrowed by Norway lobsters *Nephrops norvegicus*, as in other similar lochs (SpMeg). All these sediment types are widespread



**Figure 25.2** Indicative distribution of the main biotopes in the area (based on data from survey sites shown in Figure 25.1, cited literature and additional field observations).

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throughout west coast sealochs but Little Loch Broom has more shallow sediment than most. The relatively scarce echiuran worm *Amalosoma eddystonense* was recorded at several sites in muddy sediments throughout Little Loch Broom during the 1991 MNCR survey.

## Nature conservation

Conservation sites		
Site name	Status	Main features
Wester Ross	NSA	Landscape (part of south shore)

## Human influences

### Coastal developments and uses

Little Loch Broom is generally remote and undeveloped with only scattered crofts and groups of buildings. There is a hotel and garage at Dundonnell at the head of the loch. The A832 road runs along the south side of the inner loch. On the north side a minor road extends as far as Badrallach. Beyond this a path leads to Scoraig where there is a small isolated community.

### Marine developments and uses

There is a small concrete jetty at Badluarach on the south side and also at Scoraig on the north side, and a passenger ferry runs between the two, once a day to once a week according to the time of year.

At the time of the 1991 MNCR survey, four leases for Atlantic salmon farming were in operation, plus three for shellfish sites. There is also a hatchery at Ardessie. Admiralty chart 2500 (1990) shows ten cage sites spread out along both sides of Little Loch Broom from the mouth to near the head.

## References and further reading

- Gubbay, S. & Nunn, J. 1988. Seasearch survey of Loch Broom and Little Loch Broom. (Contractor: Marine Biological Consultants, Ross-on-Wye.) *Nature Conservancy Council, CSD Report*, No. 898. (MBC Report, No. SS/3/88.)
- Holt, R.H.F. 1991. Surveys of Scottish sealochs. Lochs Laxford, Inchard, Broom and Little Loch Broom. (Contractor: University Marine Biological Station, Millport.) *JNCC Report*, No. 16.
- Nunn, J. 1990. The molluscan fauna of Loch Broom and Little Loch Broom, Scotland. *Conchologists' Newsletter*, **113**, 276–279.
- Smith, S.M. 1978. Shores of Wester Ross, with emphasis on the Mollusca of rocky shores. (Contractor: S.M. Smith, Edinburgh.) *Nature Conservancy Council, CSD Report*, No. 227.

## Sites surveyed

- Survey 35: 1991 UMBSM Lochs Laxford, Inchard, Broom and Little Loch Broom survey (Holt 1991).
- Survey 54: 1988 Seasearch: Loch Broom and Little Loch Broom sublittoral survey (Gubbay & Nunn 1988).
- Survey 86: 1978 Smith Wester Ross littoral survey (Smith 1978).

<b>Littoral sites</b>					
Survey	Site	Place	Grid reference	Latitude/longitude	Biotopes recorded
86	1	Dundonnell, Little Loch Broom, Wester Ross	NH 088 883	57°50.6'N 05°13.3'W	FX
86	2	Camasnagaul, Little Loch Broom, Wester Ross	NH 067 892	57°51.0'N 05°15.4'W	F
86	3	Badluarach Jetty, Little Loch Broom, Wester Ross	NG 996 948	57°53.8'N 05°22.9'W	F

<b>Sublittoral sites</b>					
Survey	Site	Place	Grid reference	Latitude/longitude	Biotopes recorded
35	56	Ardross Rock, Little Loch Broom	NG 979 963	57°54.6'N 05°24.7'W	FaS; Oph; LhypLsac.Ft
35	57	N of Red Cliffs caves, outer Little Loch Broom	NG 978 961	57°54.5'N 05°24.8'W	VirOph; VirOph.HAs
35	58	Outer sill, Little Loch Broom	NG 987 962	57°54.6'N 05°23.8'W	AntAsH
35	59	S Leac an Ime, Little Loch Broom	NG 996 950	57°54.0'N 05°22.9'W	Lim; Phy.R
35	60	S of Scoraig, Little Loch Broom	NH 001 958	57°54.4'N 05°22.4'W	AfilEcor
35	61	NE Druim Donn, Little Loch Broom	NH 017 938	57°53.4'N 05°20.6'W	ModHo
35	62	S Rireavach, Little Loch Broom	NH 027 946	57°53.8'N 05°19.7'W	VirOph.HAs; Lsac.Pk
35	63	S of Cadha nam Muc, Little Loch Broom	NH 037 925	57°52.7'N 05°18.5'W	AmenCio; Sac; LsacX; Lhyp.Pk; EchBriCC
35	64	E of Badcaul, Little Loch Broom	NH 026 918	57°52.3'N 05°19.7'W	Peri; Lhyp.Pk
35	65	S of Badrallach, Little Loch Broom	NH 059 914	57°52.2'N 05°16.3'W	LsacX; Tra
35	66	Conger Stack, Little Loch Broom	NH 066 901	57°51.5'N 05°15.6'W	AmenCio
35	67	Sròn Creag na Ceapaich, Little Loch Broom	NH 074 900	57°51.5'N 05°14.7'W	SpMeg; VirOph.HAs; EcorEns
54	23	N of Badbea, Little Loch Broom	NH 028 914	57°52.1'N 05°19.5'W	
54	24	S of Leac an Ime, Little Loch Broom	NG 993 953	57°54.1'N 05°23.2'W	
54	25	NW of Corran Sgoraig, Little Loch Broom	NG 987 966	57°54.8'N 05°23.9'W	
54	26	N of Durnamuck, Little Loch Broom	NH 021 940	57°53.5'N 05°20.3'W	
54	27	N of Carn Dhonnchaidh, Little Loch Broom	NH 022 929	57°52.9'N 05°20.1'W	
54	28	Sròn Creag na Ceapaich, Little Loch Broom	NH 075 898	57°51.3'N 05°14.6'W	
54	29	S of Sròn Creag na Ceapaich, Little Loch Broom	NH 078 896	57°51.2'N 05°14.3'W	
54	30	S of Kildonan, Little Loch Broom	NH 076 904	57°51.7'N 05°14.6'W	
54	31	Ardessie, Little Loch Broom	NH 055 900	57°51.4'N 05°16.7'W	
54	32	Camusnagaul, Little Loch Broom	NH 068 893	57°51.1'N 05°15.3'W	
54	33	Head of loch, Little Loch Broom	NH 082 888	57°50.8'N 05°13.9'W	
54	34	W of Sròn Creag na Ceapaich, Little Loch Broom	NH 069 899	57°51.4'N 05°15.3'W	
54	35	Conger Stack, Little Loch Broom	NH 066 902	57°51.5'N 05°15.6'W	
54	36	W of Badrallach, Little Loch Broom	NH 048 918	57°52.3'N 05°17.5'W	
54	37	Creag a'Chadha, Little Loch Broom	NH 035 930	57°53.0'N 05°18.8'W	
54	38	Near Ardross Rock, Little Loch Broom	NG 979 963	57°54.6'N 05°24.7'W	
54	39	Red Cliffs, Little Loch Broom	NG 977 960	57°54.4'N 05°24.8'W	
54	40	W of Cnoc Sgoraig, Little Loch Broom	NG 988 970	57°55.0'N 05°23.8'W	
54	41	Sròn a Gheodha Dubh, Little Loch Broom	NG 983 980	57°55.5'N 05°24.3'W	
54	42	White Cliffs, Little Loch Broom	NG 980 958	57°54.3'N 05°24.5'W	
54	43	W of Corran Sgoraig, Little Loch Broom	NG 991 963	57°54.6'N 05°23.4'W	

**Sublittoral sites**

<i>Survey</i>	<i>Site</i>	<i>Place</i>	<i>Grid reference</i>	<i>Latitude/longitude</i>	<i>Biotopes recorded</i>
54	44	SW of Ardross Rock, Little Loch Broom	NG 983 962	57°54.5'N 05°24.3'W	
54	45	Ardross Rock, Little Loch Broom	NG 981 964	57°54.6'N 05°24.5'W	
54	46	Stattic Point, Little Loch Broom	NG 974 962	57°54.5'N 05°25.2'W	
54	47	Badluachrach Jetty, Little Loch Broom	NG 996 949	57°53.9'N 05°22.9'W	

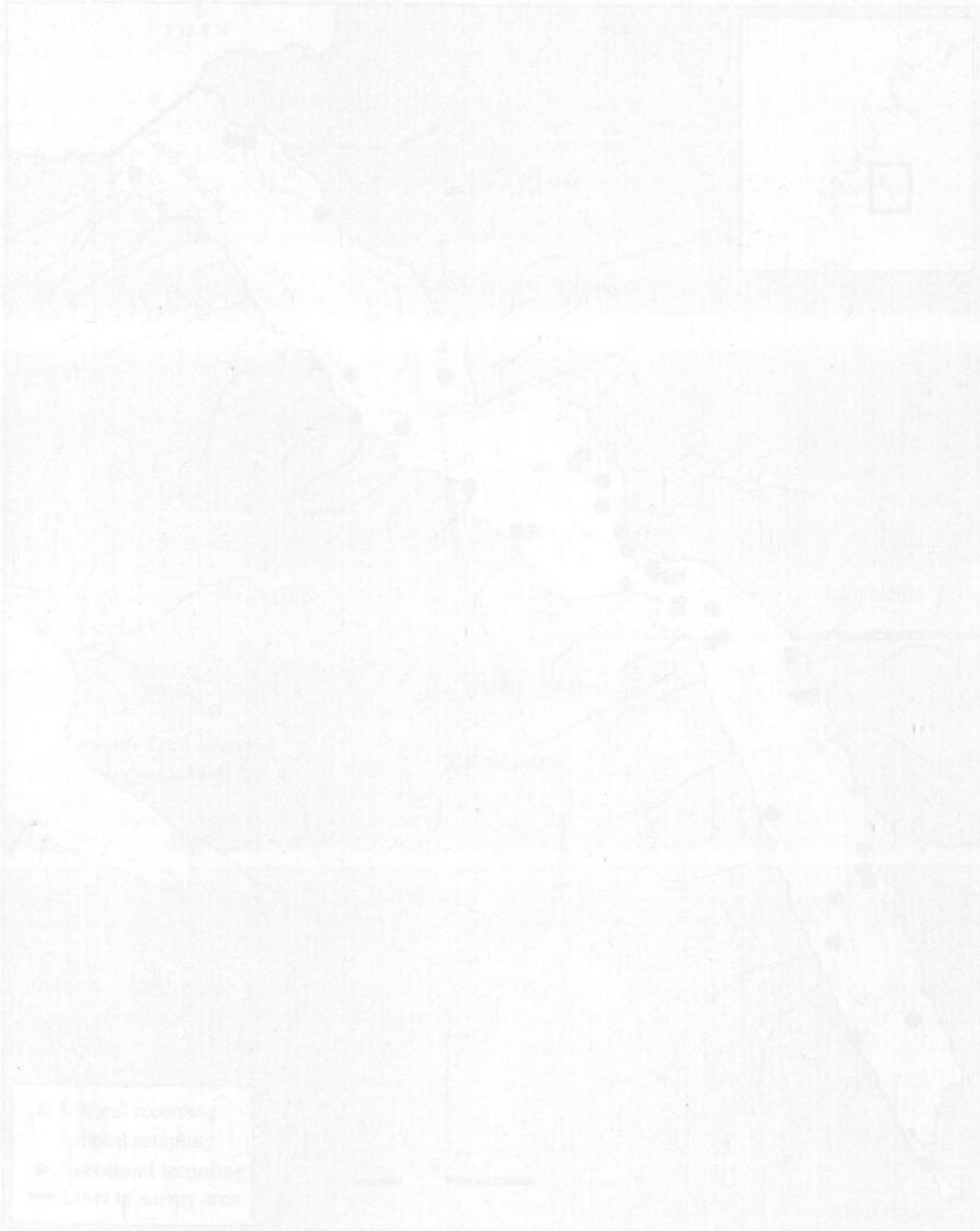


Figure 25.1. Main features of the area showing sites surveyed.

Compiled by: Frances Dipper

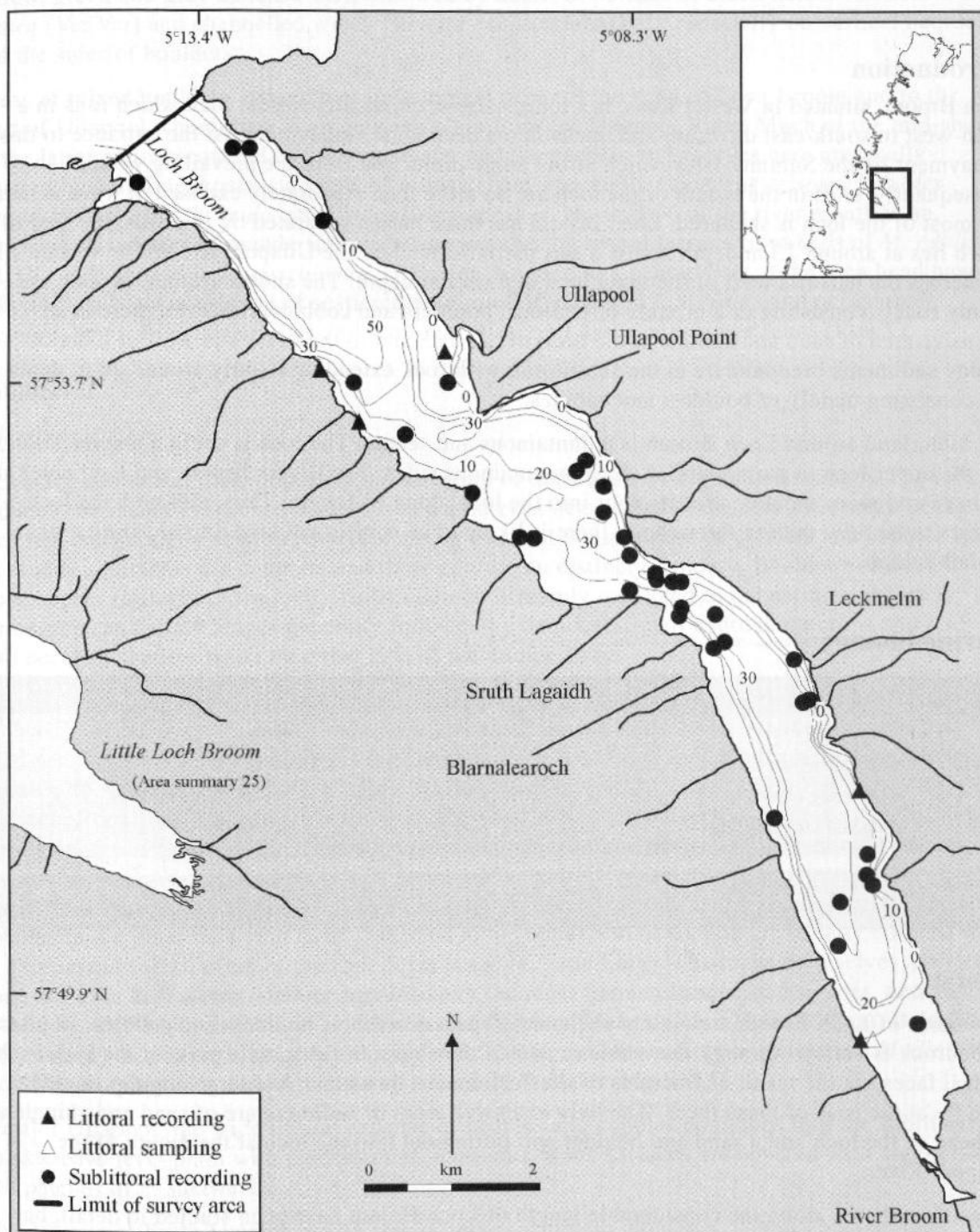


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## Loch Broom

## Location

Position (centre)	NH 140 922	57°52.6'N 05°08.1'W
Administrative area	Highland	
Conservation agency/area	Scottish Natural Heritage	North Areas



**Figure 26.1** Main features of the area, showing sites surveyed.

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Physical features	
<i>Physiographic type</i>	Fjordic sealoch
<i>Length of coast</i>	40.8 km (41.3 km including islands)
<i>Length of inlet</i>	15.8 km
<i>Area of inlet</i>	18.5 km <sup>2</sup>
<i>Bathymetry</i>	Maximum depths: outer basin 76 m; middle basin 27 m; inner basin 51 m
<i>Wave exposure</i>	Moderately exposed to very sheltered
<i>Tidal streams</i>	Very weak generally; Sruth Lagaidh constriction 1 knot on springs
<i>Tidal range</i>	4.5 m (mean springs); 1.8 m (mean neaps) (Ullapool)
<i>Salinity</i>	Fully marine; locally reduced near freshwater inflow

## Introduction

Loch Broom, situated in Wester Ross, is a long, narrow, classically fjordic loch which runs in a north-west to south-east direction and opens into a deep wide embayment. At the entrance to this embayment lie the Summer Isles which afford some protection from the prevailing winds. Consequently, sites in the mouth of the loch are no more than moderately exposed to wave action, and most of the loch is sheltered. Loch Broom has three basins separated by two sills, the first of which lies at around 13 m depth across a spit partly formed by the Ullapool River. The second sill lies across the narrows west of the inner loch at a similar depth. The shores around the loch are mainly rocky, consisting of a mixture of bedrock, boulders and cobbles. However, there is an extensive area of sand and shingle at the head of the loch and to the north and west of Ullapool. Muddy sediments predominate in the sublittoral, with rock extending to only around 20 m depth and consisting mainly of boulders and cobbles.

The hinterland around Loch Broom is mountainous and scenic. The loch is set in a glacial valley, and the upper loch in particular has steep mountainous sides. The Rivers Broom and Lael enter at the head and many smaller streams pour into the loch along its length. Thus, although the loch appears to be fully marine throughout, there is likely to be some local lowering of salinity when rainfall is high.

## Marine biology

Marine biological surveys				
	<i>Survey methods</i>	<i>No. of sites</i>	<i>Date(s) of survey</i>	<i>Source</i>
<i>Littoral</i>	Recording (epibiota)	5	May 1991	Holt (1991)
	Recording (epibiota)	1	September 1988	Gubbay & Nunn (1988)
	Infaunal sampling (core + granulometry)	1	May 1991	Holt (1991)
<i>Sublittoral</i>	Recording (epibiota)	15	May 1991	Holt (1991)
	Recording (epibiota)	21	September 1988	Gubbay & Nunn (1988); Nunn (1990)

### Littoral

The shores of Loch Broom are mainly sheltered slopes of bedrock, boulders and cobbles. In places the bedrock is vertical through the whole or part of the shore. In the middle parts of the loch such vertical faces are the result of fractures of the Torridonian limestone, and large angular boulders often lie at the base of these faces. The only extensive areas of sediment are of sand and shingle at the head of the loch and a sand and boulder spit jutting out into the loch at the mouth of the Ullapool River.

Only a few shores along the considerable length of Loch Broom have been studied in detail, but those that have been surveyed show zonation typical of moderately exposed and sheltered shores in Scottish sealochs. The sheltered nature of the loch means that most rocky shores are fucoid-dominated with bands or mixtures of bladder wrack *Fucus vesiculosus* and knotted wrack

*Ascophyllum nodosum* on the mid-shore and *Fucus serratus* on the lower shore (Fves; Asc.Asc; Fser.Fser). However, vertical bedrock walls, found at several sites throughout the loch, are all barnacle and limpet-dominated, mainly by *Semibalanus balanoides* and *Patella vulgata* (BPat.Sem), often with clumps of mussels *Mytilus edulis*. There may also be sparse patches of *F. vesiculosus* and *A. nodosum*. Sparse filamentous and foliose red algae and the sponge *Halichondria panicea* can be present in the lower zones (Fser.R). Moderately exposed upward-facing bedrock supports a similar mixture of species but with more *F. vesiculosus* (FvesB).

Bedrock and boulders in the supralittoral throughout Loch Broom have a colourful cover of yellow, green and grey lichens (YG), followed by bands or patches of black lichen *Verrucaria maura* (Ver.Ver) and channelled wrack *Pelvetia canaliculata* (Pel), especially on vertical bedrock and the sides of boulders.

Areas of mixed boulders and cobbles on sediment occur at the head of Loch Broom and to the west of Ullapool where there is an outwash plain from the Ullapool River. Much of the mid-shore of the latter plain is covered by standing water and the pebbles and cobbles here are totally covered by coralline crusts and a turf of foliose algae, especially *Chondrus crispus*, *Polyides rotundus*, *Laurencia hybrida* and *Cladophora rupestris*. North-west of the river mouth is an extensive raised area of muddy shingle bound together by byssal threads from beds of *M. edulis* (MytX) and covered in *F. vesiculosus*. The extensive sand and pebble flats at the loch head have a restricted epibiota consisting of scattered clumps of *Mytilus* and *F. serratus* and occasional lugworm *Arenicola marina* casts and sand-mason worm *Lanice conchilega* tubes (FserX).

## Sublittoral

### Infralittoral rock

Extensive sublittoral rock slopes are not a feature of this sediment-dominated sealoach. The rock-sediment boundary is reached by 15–20 m depth, even near the entrance, and over much of the loch lies considerably shallower. Mixed slopes of small boulders and/or cobbles and pebbles lying on muddy sediments are common and there is often no distinct boundary. Boulder and cobble slopes occur throughout the loch, whilst bedrock is mainly restricted to the entrance where it forms steps and silted ledges generally followed by boulders. Small bedrock outcrops and reefs also occur in shallow water on either side of the middle basin.

The dominant kelp throughout Loch Broom is *Laminaria saccharina* and there are no typically exposed *L. hyperborea* forests. The latter kelp occurs mixed with *L. saccharina* or as a narrow band near the top of the rock slope, along with some *Alaria esculenta* at sites near the entrance. Dense kelp forest extends only to around 5 m depth, followed by sparse kelp often to the limit of the rock. Rock surfaces beneath the kelp in the outer loch are mostly heavily grazed and have no thick growths of foliose algae. Instead, encrusting algae and brown and red filamentous algae predominate (EchBriCC), with the ascidian *Ascidia mentula* commonly found between the boulders and the squat lobster *Munida rugosa* between and beneath them. Dense boulders and cobbles in the inner loch tend to be restricted to the upper 5 m or so, and are usually covered with *L. saccharina* forest, often of the cape form (Lsac.Ft; Lsac.Ldig). The rocks themselves are rather bare, with the keel worm *Pomatoceros triqueter* the most frequently recorded species, and are grazed by urchins, both *Echinus esculentus* and *Psammechinus miliaris* (LsacRS.Psa). Below this, steep muddy slopes with variable amounts of boulders, cobbles and the horse mussel *Modiolus modiolus* drop away to a muddy plain at around 20 m depth (ModHAs).

West of Ullapool, the wide littoral expanse of pebbles and cobbles continues into the sublittoral as an extensive level plain with patches of *M. modiolus*. Rock surfaces are covered with algal crusts and patches of *L. saccharina*.

The narrows at Sruth Lagaidh are an area of mixed sediment, boulders, cobbles and pebbles characterised by beds of the file shell *Limaria hians* and *M. modiolus*. This is perhaps the most interesting area in the whole loch and is described in greater detail below.

### *Circalittoral rock*

Circalittoral rock is scarce in Loch Broom and consists mainly of rather bare cobbles, boulders and pebbles on muddy sediment, following on from infralittoral boulder slopes. These slopes are silty, grazed and rather lacking in species variety. *Modiolus modiolus*, *Pomatoceros triqueter*, *Munida rugosa* and coralline crusts predominate (ModHAs; ModHo).

### *Sublittoral sediment*

The great majority of the seabed in Loch Broom consists of muddy sediments. The rock-sediment boundary occurs at relatively shallow depths (see above) and sediments may even extend up to interface with littoral rock. The inner basin of the loch is very sheltered from wave action and relatively deep over most of its area. The seabed is therefore predominantly a flat or gently sloping plain of soft mud between about 20 m and 40 m depth with small pockets down to 50 m. As in many other similar lochs, these muds are characterised by beds of sea-pens, notably *Pennatula phosphorea*. The giant sea-pen *Funiculina quadrangularis* occurs within diving depths but is probably more abundant in deeper areas (SpMeg.Fun). At some locations the mud is heavily burrowed, mainly by Norway lobster *Nephrops norvegicus*. Around the edges of this basin there is generally a fairly steep slope from the littoral down to the mud-plain. The typical pattern is a gentle slope to 5–10 m depth followed by a steeper slope until it levels out at around 20 m. Generally the steeper slope is a mixture of muddy sediments, boulders and cobbles, but in places, such as on the east side just north of Leckmelm, this slope consists almost entirely of sediment. Here, the shallow sediment plain at the top of the slope consists of fine mud heaped up into a lunar landscape by lugworms *Arenicola marina* (EcorEns), and at the head of the loch, the seabed is of soft glutinous mud (PhiVir). Between the shallows and the deep mud-plain are a range of muddy sand slopes, either rather bare or with scattered sea-pens *Virgularia mirabilis* and *P. phosphorea*. Other common species include the turret shell *Turritella communis* and the burrowing anemone *Cerianthus lloydii*.

In the middle basin, and particularly in the more exposed outer basin, shallow sediments tend to be sandier, and where stones and shells are present on the surface, a variety of algae such as the filamentous red *Pterosiphonia parasitica* and sugar kelp *L. saccharina* grow attached to them (Lsac.X). However, the central areas are very deep and thus sheltered, and the seabed is similar to deep areas in the inner loch, with soft mud and sea-pen communities.

In the tide-swept narrows between the middle and inner basins a mixed substratum of muddy shell-gravel, pebbles and cobbles supports beds of the file shell *Limaria hians* (Lim). This spectacular bivalve uses its numerous long, orange, non-retractable tentacles to consolidate the sediment and stones into extensive galleries, providing attachment for hydroids, ascidians and, in shallow water, algae. The horse mussel *Modiolus* also provides an attachment site for other epifauna and occurs in the same area as the *Limaria* and at other sites in the middle basin (ModHAs; ModHo). An area of sparse maerl (Lcor) has been found on the south side of the middle basin.

Coarse sand with shell debris and stones occurs around the edges of the outer loch near the entrance.

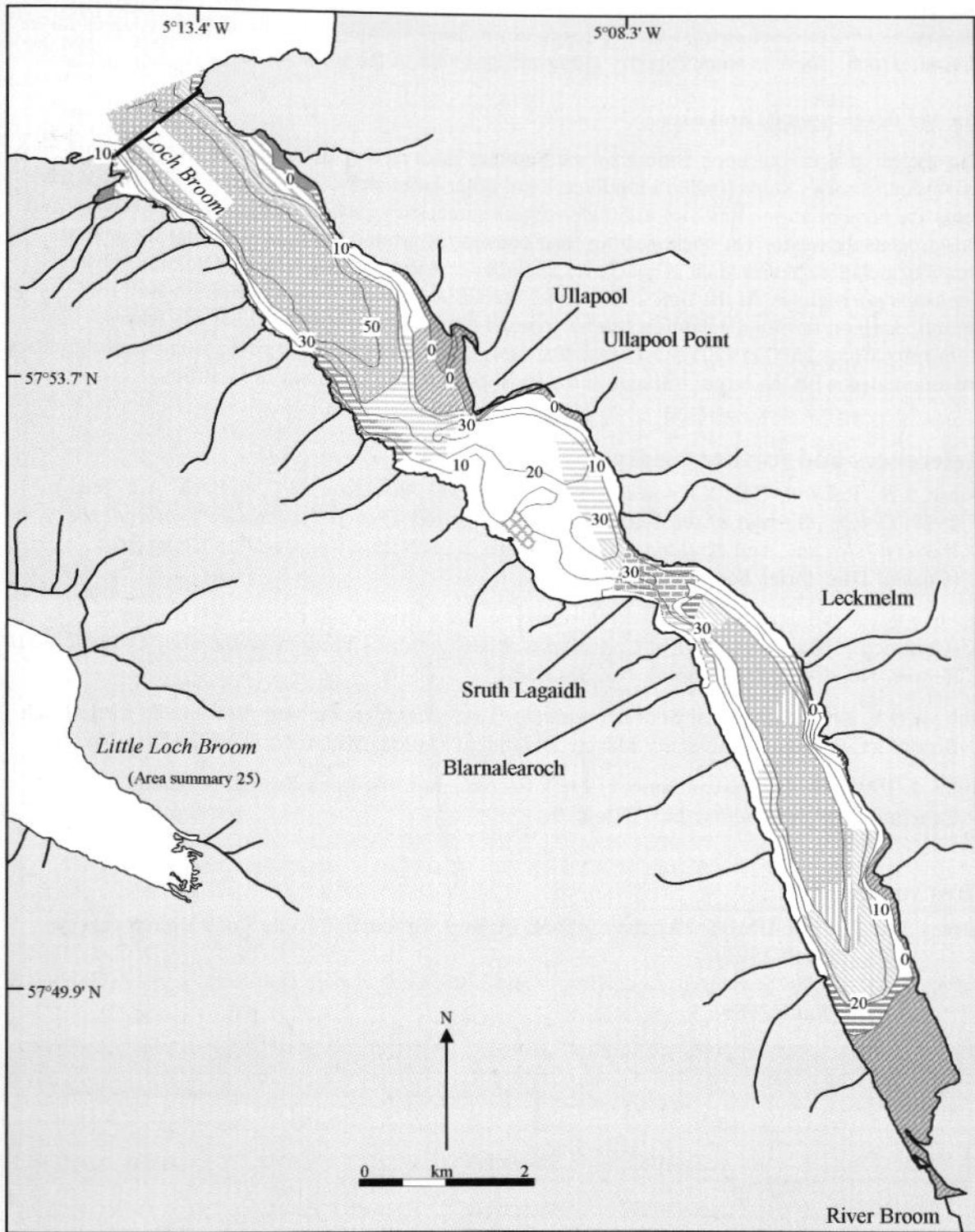
## **Nature conservation**

There are no designated conservation sites in the area at present.

## **Human influences**

### **Coastal developments and uses**

Ullapool, the largest mainland town in Sector 15, with a population of 1,100 (Barne *et al.* 1997), is situated on the north side of Loch Broom. This busy port has been extended and modernised to



**Figure 26.2** Indicative distribution of the main biotopes in the area (based on data from survey sites shown in Figure 26.1, cited literature and additional field observations).

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allow it to handle larger ferries. It serves as the main link to the Outer Hebrides with a daily vehicle service to Stornoway in Lewis. Local ferries also run to the nearby Summer Isles and across the loch from Ullapool to the remote south-west side of the loch. Consequently many visitors are attracted to Ullapool. Development around the rest of the loch is confined to a number of small villages, crofts and groups of houses. The main A835 Inverness-Ullapool road runs along

the east side of the loch, whilst the west side of the inner loch is served by a minor road as far as Blarnalearoch. There is some forestry along the east side of the inner loch.

### Marine developments and uses

The shelter afforded to Loch Broom by the Summer Isles means that it is used as a safe anchorage by Russian factory ships (called klondikers) and other large ships. Although usually only a few ships are present at one time, up to 60 klondikers sometimes anchor. They discharge sewage and fish-processing waste. The local fishing fleet consists of around ten boats working the inshore areas for pelagic species such as mackerel *Scomber scombrus* and fishing for Norway lobster *Nephrops norvegicus*. At the time of the 1991 MNCR survey, there was one site leased for Atlantic salmon farming, a salmon hatchery near Leckmelm and five shellfish site leases. Admiralty Chart 2500 (1990) shows five fish-farm sites and three other sites. Small landing jetties are associated with the larger villages and with some of these mariculture facilities.

### References and further reading

- Barne, J.H., Robson, C.F., Kaznowska, S.S., Doody, J.P., Davidson, N.C. & Buck, A.L. (eds.) 1997. *Coasts and seas of the United Kingdom. Regions 15 & 16 North-west Scotland: the Western Isles and west Highland*. Peterborough, Joint Nature Conservation Committee. (Coastal Directories Series.)
- Gubbay, S., & Nunn, J. 1988. Seasearch survey of Loch Broom and Little Loch Broom. (Contractor: Marine Biological Consultants, Ross-on-Wye.) *Nature Conservancy Council, CSD Report*, No. 898. (MBC Report, No. SS/3/88.)
- Holt, R.H.F. 1991. Surveys of Scottish sealochs. Lochs Laxford, Inchard, Broom and Little Loch Broom. (Contractor: University Marine Biological Station, Millport.) *JNCC Report*, No. 16.
- Nunn, J. 1990. The molluscan fauna of Loch Broom and Little Loch Broom, Scotland. *Conchologists' Newsletter*, **113**, 276–279.

### Sites surveyed

- Survey 35: 1991 UMBSM Lochs Laxford, Inchard, Broom and Little Loch Broom survey (Holt 1991).
- Survey 54: 1988 Seasearch: Loch Broom and Little Loch Broom sublittoral survey (Gubbay & Nunn 1988).

Littoral sites					
Survey	Site	Place	Grid reference	Latitude/longitude	Biotopes recorded
35	36	Shore at head, Loch Broom	NH 168 865	57°49.8'N 05°05.0'W	AscX; FvesX; Fspi; Asc.VS; FserX; Pel
35	41	Shore W of Cnoc na h-Iolaire, Loch Broom	NH 168 893	57°51.4'N 05°05.2'W	YG; MytB; Fser.R; Ver.B
35	50	Shore NW of Ullapool, Loch Broom	NH 120 944	57°54.0'N 05°10.3'W	AscX; FserX; MytX
35	51	Shore N of Aultnaharrie Ferry House, NE side, Loch Broom	NH 105 942	57°53.8'N 05°11.7'W	AscX; FvesX; Ver.Ver; Fspi; FserX; Pel
35	52	Shore N of Aultnaharrie Ferry House, NW side, Loch Broom	NH 110 936	57°53.5'N 05°11.2'W	YG; Fves; SR; PelB; BPat.Sem

Sublittoral sites					
Survey	Site	Place	Grid reference	Latitude/longitude	Biotopes recorded
35	37	Head of loch, W side, Loch Broom	NH 169 886	57°51.0'N 05°05.1'W	VirOph.HAS; PhiVir
35	38	E Letters, Loch Broom	NH 166 881	57°50.7'N 05°05.4'W	SpMeg.Fun

<b>Sublittoral sites</b>					
<i>Survey</i>	<i>Site</i>	<i>Place</i>	<i>Grid reference</i>	<i>Latitude/longitude</i>	<i>Biotores recorded</i>
35	39	W of Balnoster, Loch Broom	NH 169 884	57°50.8'N 05°05.1'W	VirOph; ModHAs; LsacRS.Psa
35	40	NW of Ardindrean, Loch Broom	NH 158 890	57°51.2'N 05°06.2'W	ModHo
35	42	W Leckmelm, Loch Broom	NH 162 904	57°51.9'N 05°05.8'W	SpMeg.Fun; VirOph; Lsac.Ldig; EcorEns
35	43	E of ruined fort (Dùn Lagaidh), Loch Broom	NH 151 914	57°52.4'N 05°07.0'W	VirOph
35	44	NW Blarnalearoch, Loch Broom	NH 151 910	57°52.2'N 05°07.0'W	FaMS; ModHAs; LsacRS.Psa
35	45	N of Blarnalearoch, Loch Broom	NH 147 914	57°52.4'N 05°07.4'W	Lim
35	46	Narrows Sruth Lagaidh, Loch Broom	NH 145 918	57°52.6[']N 05°07.7[']W	Lim
35	47	W Corry Point, Loch Broom	NH 141 923	57°52.9'N 05°08.1'W	VirOph.HAs; Lsac.Ft; LsacX; EchBriCC
35	48	SE Rubha Buidhe, Loch Broom	NH 129 923	57°52.8'N 05°09.3'W	LsacX; Lcor
35	49	SW of Torranacosh, Loch Broom	NH 135 930	57°53.3'N 05°08.6'W	SpMeg.Fun; BrAs
35	53	Below Cnoc na Moine, Loch Broom	NH 106 959	57°54.7'N 05°11.8'W	VirOph.HAs; EchBriCC
35	54	SW Rhue, outer Loch Broom	NH 096 968	57°55.2'N 05°12.9'W	VirOph.HAs; Lsac.Ft; Sac; Lsac.Pk
54	1	Rubha Aird an Tuirc, Loch Broom	NH 175 867	57°49.9'N 05°04.4'W	
54	2	Rubh an Olan, Loch Broom	NH 170 883	57°50.8'N 05°05.0'W	
54	3	Dùn Lagaidh, Loch Broom	NH 142 917	57°52.5'N 05°08.0'W	
54	4	Blarnalearoch, Loch Broom	NH 153 911	57°52.2'N 05°06.8'W	
54	5	Camas an Daimh, Loch Broom	NH 148 918	57°52.6'N 05°07.4'W	
54	6	Leckmelm Farm, Loch Broom	NH 162 904	57°51.9'N 05°05.9'W	
54	7	Letters, Loch Broom	NH 166 876	57°50.4'N 05°05.4'W	
54	8	Tigh na Coille, Loch Broom	NH 161 909	57°52.1'N 05°06.0'W	
54	9	Sruth Lagaidh, Loch Broom	NH 145 919	57°52.6'N 05°07.7'W	
54	10	Camas an Daimh, Loch Broom	NH 147 918	57°52.6'N 05°07.5'W	
54	11	Rubha Buidhe, Loch Broom	NH 123 928	57°53.1'N 05°09.9'W	
54	12	N of White House, Loch Broom	NH 137 932	57°53.3'N 05°08.5'W	
54	13	Corry Point, Loch Broom	NH 142 921	57°52.7'N 05°08.0'W	
54	14	Dùn Lagaidh (E), Loch Broom	NH 148 915	57°52.4'N 05°07.3'W	
54	15	N of Corry Point, Loch Broom	NH 139 926	57°53.0'N 05°08.3'W	
54	16	Point S of Rubha Buidhe, Loch Broom	NH 131 923	57°52.8'N 05°09.1'W	
54	17	Gadcaisceig, Loch Broom	NH 139 929	57°53.2'N 05°08.3'W	
54	18	Rhue, Loch Broom	NH 098 968	57°55.2'N 05°12.7'W	
54	19	Rubha Camas a'Mhaoraich, Loch Broom	NH 085 964	57°54.9'N 05°13.9'W	
54	20	Buckle Patch, Loch Broom	NH 110 941	57°53.7'N 05°11.3'W	
54	21	N of Ferry House, Loch Broom	NH 116 935	57°53.4'N 05°10.7'W	
54	22	W of Ullapool (port buoy), Loch Broom	NH 121 941	57°53.8'N 05°10.2'W	

NOTE: Biotope data not available in MNCR database for Survey 54.

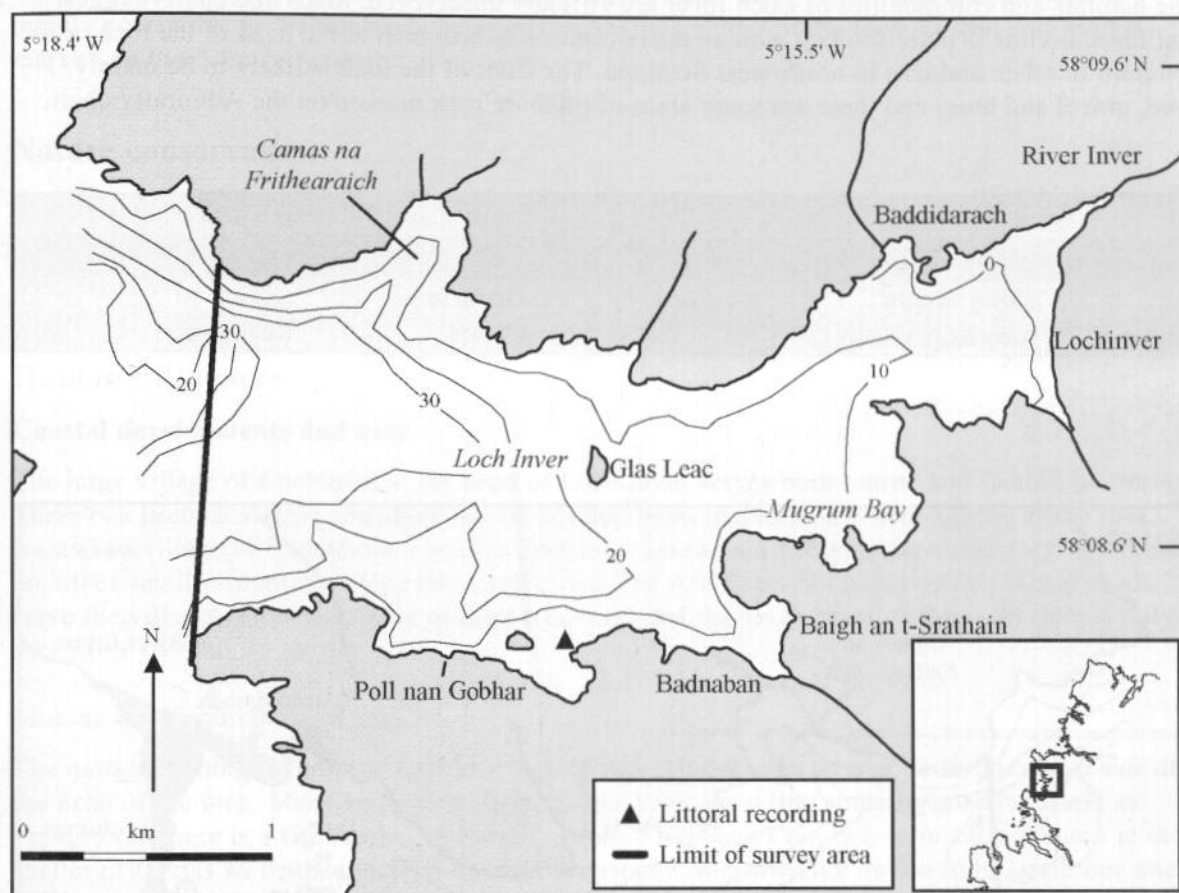
Compiled by: Frances Dipper

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## Loch Inver

## Location

Position (centre)	NC 075 218	58E08.6'N 05E16.2'W
Administrative area	Highland	
Conservation agency/area	Scottish Natural Heritage	North Areas



**Figure 27.1** Main features of the area, showing sites surveyed.

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## Physical features

Physiographic type	Open sealoch
Length of coast	14.6 (14.9 km including islands)
Length of inlet	4 km
Area of inlet	3.9 km <sup>2</sup>
Bathymetry	Maximum depth 45 m
Wave exposure	Moderately exposed to sheltered
Tidal streams	No data; probably weak throughout loch
Tidal range	4.2 m (mean springs); 1.8 m (mean neaps)
Salinity	Fully marine



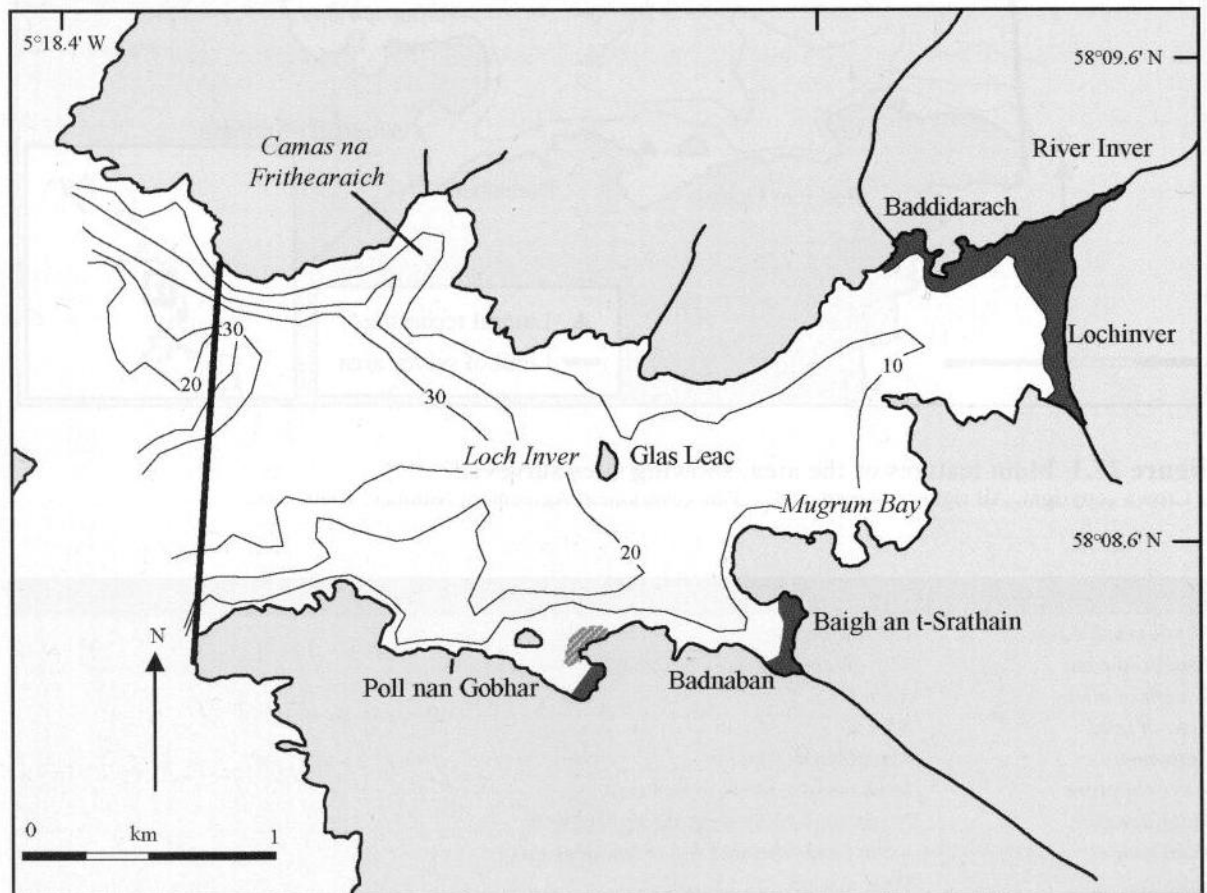
## Introduction

Loch Inver is a small open sealoch lying to the north of Enard Bay. It is relatively shallow with a maximum depth of around 45 m and has no sills or basins. The loch runs roughly west-east and has a wide mouth partly protected by Soyea Island which lies immediately to the west. The coastline is sinuous and indented and there are a number of small islets dotted around the edges, plus one, Glas Leac, in the centre. The open nature of the loch means that tidal streams are likely to be slight, although there is no information available on this. The River Inver, noted for its angling, enters the loch at its head and probably has some local estuarine influence.

The habitats and communities of Loch Inver are virtually unsurveyed. Maps and charts suggest that the shoreline is mainly rocky with an area of intertidal sediment at the head of the loch, as is common in other sealochs in north-west Scotland. The floor of the loch is likely to be mainly sand, gravel and mud, and there are some areas of offshore rock marked on the Admiralty chart.

## Marine biology

Marine biological surveys				
	Survey methods	No. of sites	Date(s) of survey	Source
Littoral	Recording (epibiota)	1	April 1979	Smith (1981)



**Figure 27.2** Indicative distribution of the main biotopes in the area (based on data from survey sites shown in Figure 27.1, cited literature and additional field observations).

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## Littoral

From the charts and maps available, it appears that the shoreline is predominantly rocky, with sediment restricted to an area at the head of the loch where the River Inver enters, and to small bays mainly along the south coast. The only marine biological survey information available is from the sheltered bay at Badnaban on the south coast. The shore here is a mixture of bedrock, boulders and muddy sand with furoid algae predominating on the rocks.

## Sublittoral

There is no information available on the sublittoral of Loch Inver. Sediments are likely to be mainly coarse due to the relatively exposed and shallow nature of the loch. Gravel and sand are marked on the Admiralty chart.

## Nature conservation

### Conservation sites

Site name	Status	Main features
Assynt-Coigach	NSA	Landscape

## Human influences

### Coastal developments and uses

The large village of Lochinver at the head of Loch Inver serves both tourist and fishing interests. There is a lifeboat station and some tourist development, including a visitor centre, along the front. The village of Baddidarach adjoins Lochinver on the north-east coast of the loch and there are other small settlements along the south coast. The A837 serves Lochinver and minor roads serve the villages. However, most of the north coast and the south coast of the outer loch is only accessible by boat.

### Marine developments and uses

The modern fishing harbour of Lochinver occupies a relatively large area on the southern side at the head of the loch. Many boats land their catches here, including some from as far afield as France, and there is a fish market. Admiralty Chart 2504 shows ten fish-farm sites situated in the shelter of Camas na Frithearaich on the north coast and Mugrum Bay on the south, with one site at Poll nan Gobhar.

## References and further reading

Smith, S.M. 1981. Littoral Mollusca of west Sutherland and Coigach. *Nature Conservancy Council, CSD Report*, No. 358.

## Sites surveyed

Survey 88: 1978 Smith west Sutherland and Coigach littoral mollusc survey (Smith 1981).

Littoral sites					
Survey	Site	Place	Grid reference	Latitude/longitude	Biotopes recorded
88	16	Badnaban, Loch Inver, Enard Bay.	NC 074 213	58E08.3'N 05E16.3'W	SS

Compiled by: Frances Dipper

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## Lochs a' Chàirn Bhàin, Glendhu and Glencoul

## Location

Position (centre)	NC 229 339	58°15.5'N 05°01.2'W
Administrative area	Highland	
Conservation agency/area	Scottish Natural Heritage	North Areas

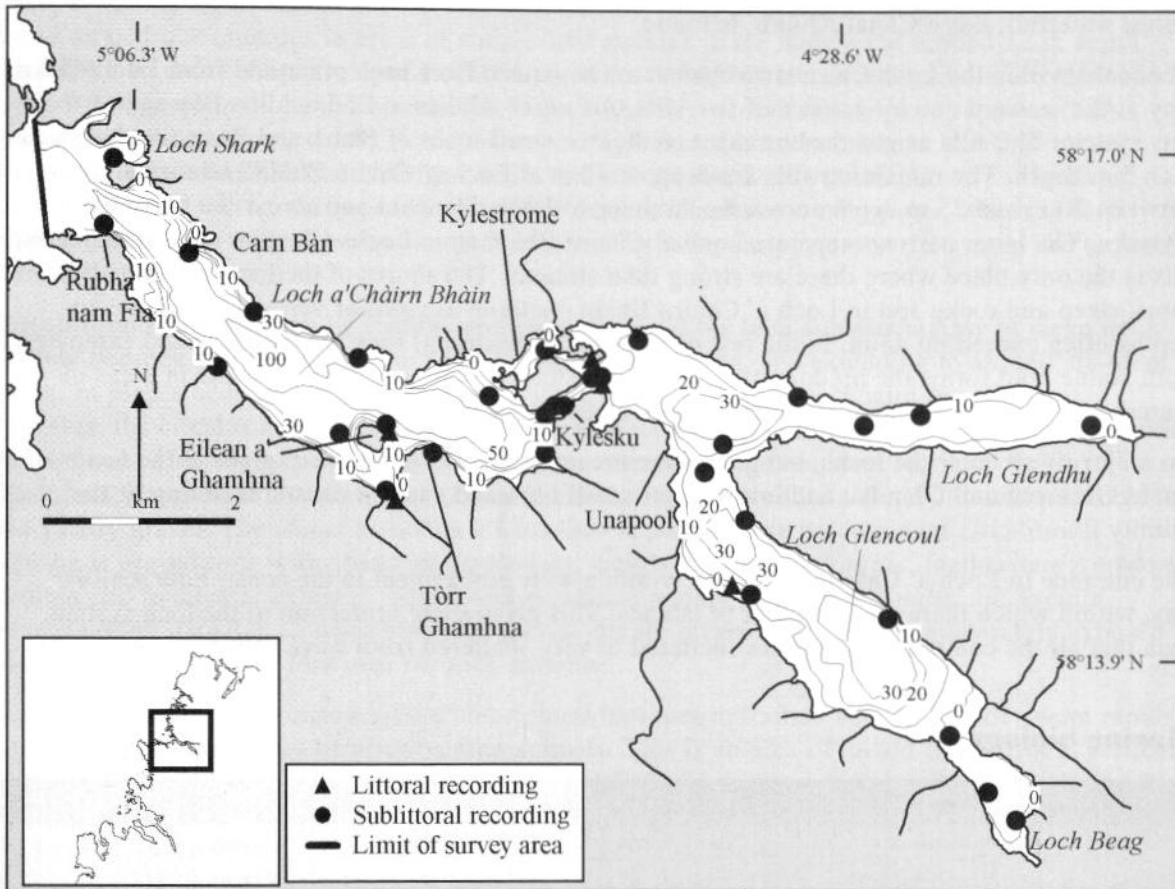


Figure 28.1 Main features of the area, showing sites surveyed.

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## Physical features

Physiographic type	Fjordic sealoch
Length of coast	51.6 km (55.6 km including islands)
Length of inlet	13.7 km
Area of inlet	15.2 km <sup>2</sup> (14.9 km <sup>2</sup> excluding islands)
Bathymetry	Maximum depths: 111 m in a' Chàirn Bhàin; 48 m in Glendhu; 45 m in Glencoul
Wave exposure	Sheltered to very sheltered
Tidal streams	Very weak in main basins; moderately strong (2.5 knots) in narrows at Kylesku
Tidal range	4.2 m (mean springs); 1.8 m (mean neaps) (Loch Nedd)
Salinity	Fully marine but likely to be reduced in inner lochs (Glendhu and Glencoul) when freshwater input is high

## Introduction

This system of three lochs is known collectively as Loch Cairnbawn. The three lochs making up the system form a 'Y' shape, constricted in the middle by the Caolas Cumhainn narrows at Kylesku. The A894 main coast road bridges the narrows here, where there was formerly a ferry. A small sheltered inlet, Loch Shark, opens into Loch a' Chàirn Bhàin near its mouth and the shallow Loch Beag lies at the head of Loch Glencoul. Each of the three main lochs is long and narrow and together they form one of the longer sealoch systems on the north-west coast of Scotland. Like Loch Inchard (*Area summary* 30), the system lies on a wide belt of Lewisian gneiss and is surrounded by wild and beautiful hills. Beyond the head of Loch Beag is a glen where Britain's tallest waterfall, Eas a Chùal Aluinn, is found.

The lochs within the Loch Cairnbawn system are separated from each other and from Eddrachillis Bay at the seaward end by a series of five sills. A further sill lies in Eddrachillis Bay seaward of this system. The sills across the entrances to the two small lochs of Shark and Beag are shallower than 5 m depth. The remaining sills are deep, at 42 m at Loch a' Chàirn Bhàin entrance and between 20 m and 25 m depth across the entrance to Loch Glencoul and across the narrows at Kylesku. The latter narrows separate Loch a' Chàirn Bhàin from Lochs Glendhu and Glencoul and this is the only place where there are strong tidal streams. The shores of the lochs are mostly short, steep and rocky and in Loch a' Chàirn Bhàin continue as steep or vertical rock faces to depths often exceeding 45 m. In the rest of the system sublittoral rock slopes are not so extensive. Soft, stable mud forms the predominant seabed substratum, with coarser sediments in areas of increased water movement at the sills and especially in the narrows.

No major rivers enter the lochs, but numerous streams come down the steep glens at the heads of Lochs Glencoul and Glendhu and into various small bays and cause localised lowering of the salinity.

The entrance to Loch a' Chàirn Bhàin lies within a wide embayment in the coast, Eddrachillis Bay, within which there are a number of islands. This gives some protection to the loch system, such that all the component lochs are sheltered to very sheltered from wave action.

## Marine biology

Marine biological surveys				
	Survey methods	No. of sites	Date(s) of survey	Source
Littoral	Recording (epibiota)	4	October 1988	Davies (1989)
	Recording (epibiota)	2	April 1979	Smith (1981)
Sublittoral	Recording (epibiota)	31	October 1988	Davies (1989)
	Recording (photography)	1	1970s	Dipper (1981)

### Littoral

The shores throughout the Loch Cairnbawn system are fairly uniform and entirely rocky, apart from very small bays and indentations where there are patches of muddy shell-gravel on the lower shore. Boulders and cobbles usually overlie the sediment on the mid-shore at such sites. The slope of the shores is variable but steep to vertical bedrock and boulder shores, continuing down into the sublittoral, are common as in other fjordic sealochs. Few littoral sites have been studied in detail but those that have show the furoid domination typical of sheltered sealochs in Scotland. Steep bedrock in the littoral fringe supports rich growths of lichens, particularly where there are overhanging trees (YG). The black lichen *Verrucaria maura* (Ver) commonly forms a band above a zone of channelled wrack *Pelvetia canaliculata* and spiral wrack *Fucus spiralis* (Pel; Fspi). The eulittoral is dominated mainly by knotted wrack *Ascophyllum nodosum* with varying amounts of bladder wrack *Fucus vesiculosus* (Asc) and on the lower shore, toothed wrack *Fucus serratus* (Fserr) and the kelp *Laminaria digitata*.

## Sublittoral

### *Loch a' Chàirn Bhàin*

Infralittoral areas on the few moderately exposed headlands in the entrance to the loch, such as at Rubha nam Fias, consist mainly of steep bedrock with *Laminaria hyperborea* kelp forest extending to around 15 m depth (Lhyp.Ft). *L. hyperborea* forests also occur along both north and south coasts of the loch for up to one-third of the way into this arm of the loch system. However, with increasing shelter *Laminaria saccharina* dominates the infralittoral on bedrock and boulders down to around 12 m depth (Lsac.Ft). At some sites the rock surface and kelp stipes have a dense cover of foliose algae, whilst at others the surfaces are silted or grazed. *L. hyperborea* is also found on bedrock outcrops in areas of strong tidal streams in the narrows at around 12 m depth (Lhyp.Pk). In the sheltered inlet of Loch Shark, bedrock and boulders are dominated by the cape form of *L. hyperborea*. A cobble and shell slope at the west end of the narrows supports thick growths of foliose algae, mainly *Plocamium cartilagineum*, *Phycodrys rubens* and *Callophyllis laciniata*, to around 22 m depth. It is possible that these annual growths might vary in species composition and density from year to year. The starfish *Hippasteria phrygiana*, which is very seldom recorded in inshore waters around mainland Britain, was present in the area at the time of the 1988 MNCR survey.

Circalittoral bedrock along both north and south coasts of the loch consists mainly of steep to vertical bedrock slopes, continuing down from the infralittoral, and extending to around 30–45 m depth. In places bedrock continues from the shore down to the interface with the sediment. However, the circalittoral rock is frequently terraced with areas of muddy gravel interspersed with the bedrock. The lower circalittoral at Carn Bàn consists of large boulders on mud. At Tòrr Ghamhna, just west of the rapids, circalittoral bedrock is followed by a slope of boulders, cobbles and finally gravel. The island of Eilean a'Ghamhna is similar. The predominant circalittoral biotope is grazed rock with abundant brittlestars, mainly *Ophiothrix fragilis*, featherstars *Antedon petasus* and to a lesser extent *A. bifida*, and ascidians, mainly *Ciona intestinalis* and *Ascidia mentula* (Oph; FaAlC). Considerable amounts of silt are present even off the moderately exposed headland of Rubha nam Fias near the loch entrance.

In contrast to the rather impoverished circalittoral biotopes described above, the tide-swept rapids area has rich communities of filter-feeding animals. This is an area of mixed flat bedrock, vertical rocky walls, boulders, cobble and shell-gravel. Vertical and steep rock walls, slopes and buttresses have an almost complete cover of dead-man's fingers *Alcyonium digitatum*, often extending from the lower infralittoral to the lower circalittoral (around 8–33 m depth) (AlcC). The keel worm *Pomatoceros triqueter* forms an understorey on all the rock surfaces and a variety of sponges, such as *Cliona celata*, *Pachymatisma johnstonia* and *Myxilla incrustans*, are present, especially at the northern end of the rapids. *C. intestinalis* is common and patches of steep rock covered by this ascidian and with abundant *Antedon* sp. were present on the north-west wall at the time of the 1988 MNCR survey. This change from *Alcyonium* dominance may be due to local reductions in water movement. Areas of smooth, upward-facing bedrock plain and boulders in the centre of the channel appear to be too scoured for *A. digitatum* and support instead encrusting coralline algae, *P. triqueter*, hydroids such as *Halecium halecinum* and *Nemertesia* spp., and *C. intestinalis* and *Antedon* spp. At the entrance to the narrows, where tidal streams are less strong, the black brittlestar *Ophiocoma nira* is abundant on flat bedrock (Oph).

The steep rocky sides of the loch mean that there are no extensive areas of shallow sediment in this basin of the loch system. Deep, soft mud predominates and supports communities of the sea-pens *Pennatula phosphorea* and *Funiculina quadrangularis*, the latter generally in the deeper areas (SpMeg.Fun). Coarser muddy shell-gravel and muddy sand are found around the edges of the loch where the rock meets the sediment plain or slope. Sublittoral bedrock slopes often have wide ledges overlain by shell-gravel deep enough to support the sea-pen *Virgularia mirabilis* (VirOph). Where there are boulder slopes, these are often mixed in with cobbles and muddy gravel. Shallow, soft mud with a surface film of diatoms is found in Loch Shark, and, at this site, supports very few animals. Similar very soft mud occurs at the head of Loch Beag.

The Caolas Cumhainn narrows at Kylesku are the only area where extensive coarse sand and gravel are present. Small patches of maerl are found at the Loch a' Chàirn Bhàin end of the channel (Phy.HEc). These coarse sands support communities of bivalves, including *Circomphalus casina* and *Ensis arcuatus* and the burrowing holothurian *Neopentadactyla mixta* (Ven.Neo).

#### Loch Glendhu

Infralittoral rock in this arm of the loch system consists of both bedrock and boulder slopes with *Laminaria saccharina* forest extending to around 10 m depth. Rock surfaces and kelp stipes are intensely grazed by the urchin *Psammechinus miliaris* and appear rather bare (LsacRS.Psa). Near the head of the loch, the serpulid tubeworm *Serpula vermicularis* is common on rock surfaces near the sediment interface.

The seabed in the shallow basin of Loch Glendhu consists mainly of a gradually sloping plain of muddy sand to sandy mud. The sediment begins at about 12 m depth but this reduces to around 6 m depth near the head of the loch. In general, the sediment contains large amounts of broken and empty shells, and scattered stones, and is of a type widespread in shallow sheltered areas of sealochs. The species present vary slightly with the sediment grade but include the sea-pens *Virgularia mirabilis* and in the muddier deeper areas, *Pennatula phosphorea*, scallops *Pecten maximus* and *Aequipecten opercularis*, turret shells *Turritella communis* and brittlestars *Ophiura* sp., *Amphiura* sp. and *Ophiocomina nigra* (VirOph). At the head of Loch Glendhu the sediment is muddier and supports species such as the opisthobranch *Philine aperta* and the anemone *Sagartiogeton laceratus* (PhiVir). Patches of the horse mussel *Modiolus modiolus* are also present at sites near the head of the loch and these provide a substratum for ascidians, and hydroids such as *Nemertesia* spp. (ModHAs).

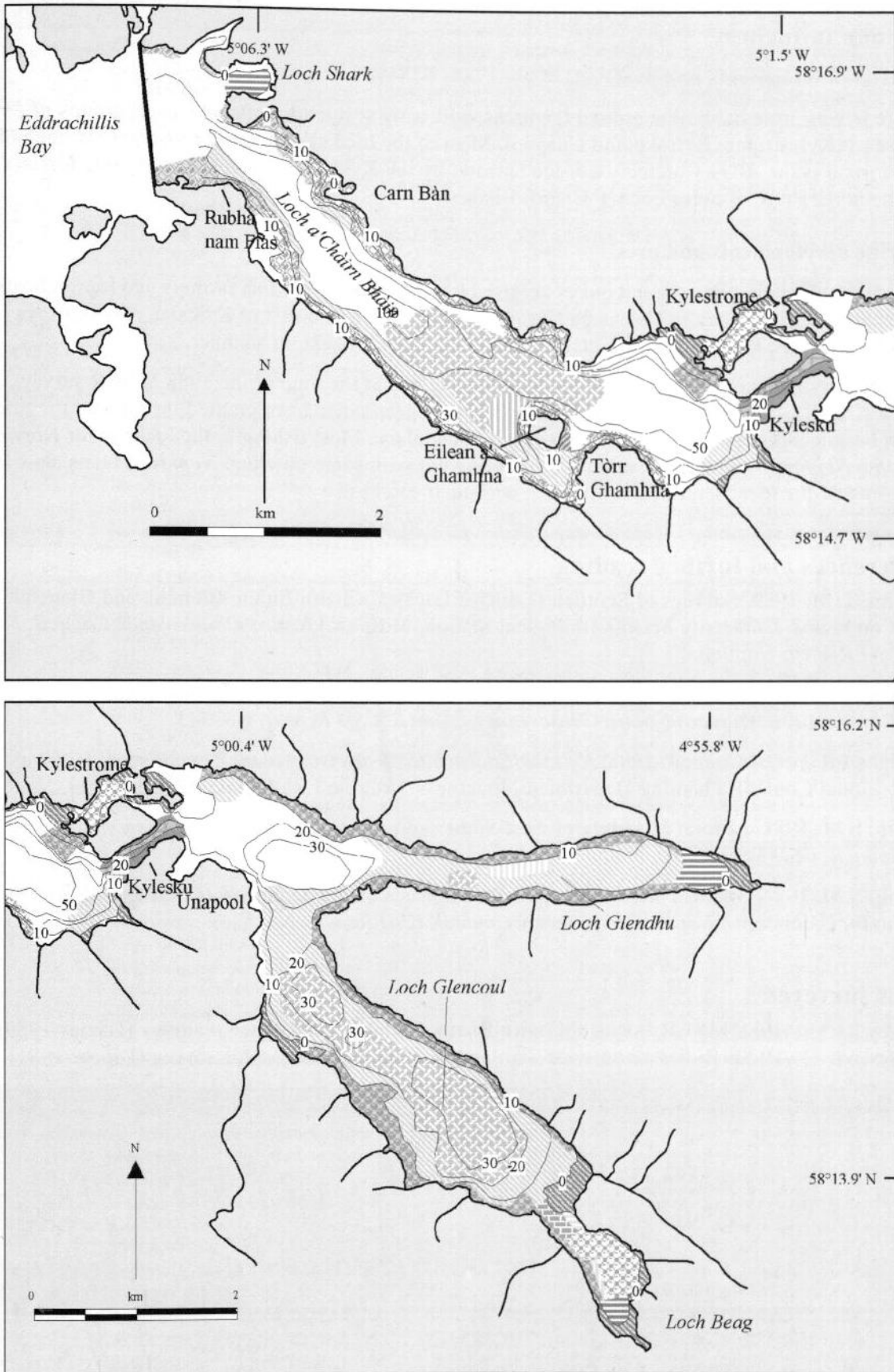
#### Loch Glencoul

Steep and relatively short bedrock or boulder slopes predominate in the infralittoral on the north side of the loch and support a rather sparse *Laminaria saccharina* forest to around 10 m depth, or less where the slope is steep. The boulders often have sediment between them and at the head of Loch Beag, boulders overlie mud to depths of between 1 m and 8 m and support only sparse *L. saccharina*. Rock surfaces are heavily grazed and urchins *Psammechinus miliaris* and brittlestars *Ophiothrix fragilis* are common (LsacRS.Psa). Foliose algae grow only sparsely and encrusting algae, especially *Lithothamnion glaciale*, cover much of the rock surface.

The wider basin of Loch Glencoul has very similar muddy sediments to Loch Glendhu but the central area is deeper and the sediment is therefore mostly soft mud below about 20 m depth. In general this supports beds of *Pennatula phosphorea* and is well-burrowed (SpMeg). The burrowing goby *Lesueurigobius friesii* was common at a site off the middle of the south shore during the 1988 MNCR survey. Rocky slopes are more extensive in this arm of the loch system and sediment is not reached until between 15 m and 20 m depth. The narrow, shallow channel separating Loch Glencoul from the small but deep basin of Loch Beag is an area of coarse sand with a dense bed of brittlestars *O. fragilis*. This is the only site in the loch system where the file shell *Limaria hians* has been recorded (Lim). At the head of Loch Beag the sediment slope begins at shallow depths and very soft mud with the opisthobranch *Philine aperta* extends from 1 m to around 9 m depth (PhiVir). Patches of *Modiolus* are also present here.

## Nature conservation

Conservation sites		
Site name	Status	Main features
Ardvar Woodland	SSSI; NCR	Botanical (deciduous woodland adjoining coast)
Glencoul	GCR	Geological
Assynt-Coigach	NSA	Landscape



**Figure 28.2** Indicative distribution of the main biotopes in the area (based on data from survey sites shown in Figure 28.1, cited literature and additional field observations).  
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## Human influences

### Coastal developments and uses

There is very little habitation around the lochs, with only scattered crofts and small groups of houses at Kylestrome, Kylesku and Unapool. Most of the loch system has no road access; the only major road is the A894 which crosses the narrows by the Kylesku Bridge. There is some forestry on the north shore of outer Loch a' Chàirn Bhàin.

### Marine developments and uses

A number of small slipways and quays are used by local fishermen, fish farmers and tourist boats. There is a concrete quay in Camas na Cusaig, a small inlet to the east of Kylesku, and slipways which served the former ferry. Sightseeing trips run from Kylesku in summer.

The loch system is extensively used for fish farming and at the time of the 1988 MNCR survey, seven Atlantic salmon cage site and five shellfish site leases had been granted throughout the three main basins, although not all sites had equipment in place. Most fishing in the lochs is for Norway lobsters *Nephrops norvegicus*, mainly by creeling but with some trawling. *Nephrops* boats also fish outside the loch, returning to Kylesku with their catches.

## References and further reading

- Davies, L.M. 1989. Surveys of Scottish sealochs: Lochs a' Chàirn Bhàin, Glendhu and Glencoul. (Contractor: University Marine Biological Station, Millport.) *Nature Conservancy Council, CSD Report*, No. 983.
- Dipper, F. 1981. Gordon Ridley's underwater photographs of north-west Scotland: an analysis. (Contractor: F. Dipper.) *Nature Conservancy Council, CSD Report*, No. 343.
- Highland Regional Council. 1988. *Kylesku/Eddrachillis framework plan*. Unpublished, Highland Regional Council, Planning Department, Inverness. (Marine Fish Farming Policy Paper, No. 6.)
- Smith, S.M. 1981. Littoral Mollusca of west Sutherland and Coigach. *Nature Conservancy Council, CSD Report*, No. 358.
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## Sites surveyed

- Survey 24: 1988 MNCR Lochs a' Chàirn Bhàin, Glendhu and Glencoul survey (Davies 1989).
- Survey 63: 1970s Ridley north-west Scotland sublittoral photographic survey (Dipper 1981).

Littoral sites					
Survey	Site	Place	Grid reference	Latitude/longitude	Biotopes recorded
24	17	Shore at Poll a'Ghamhna, Loch a' Chàirn Bhàin	NC 208 327	58°14.8'N 05°03.2'W	AscX; FvesX; YG; Ver.Ver; FserX; Pel
24	18	NE shore of Eilean Ghamhna, Loch a' Chàirn Bhàin	NC 207 334	58°15.1'N 05°03.3'W	Cor; Ver.Ver; Fspi; Asc.Asc; Fser.Fser; Ldig.Ldig; Pel
24	39	S shore, Eilean Rairidh, Loch a' Chàirn Bhàin	NC 166 350	58°15.9'N 05°07.6'W	Cor; Fves; Fser.Fser; Ldig.Ldig; Pel
24	41	Loch a' Chàirn Bhàin system	NC 230 340	58°15.5'N 05°01.0'W	SpR; CvOv
88	9	Kylesku, Loch a' Chàirn Bhàin	NC 229 342	58°15.6'N 05°01.1'W	SacR; Gv
88	10	Loch Glencoul	NC 244 318	58°14.4'N 04°59.5'W	VirOphPmax; CSaMu

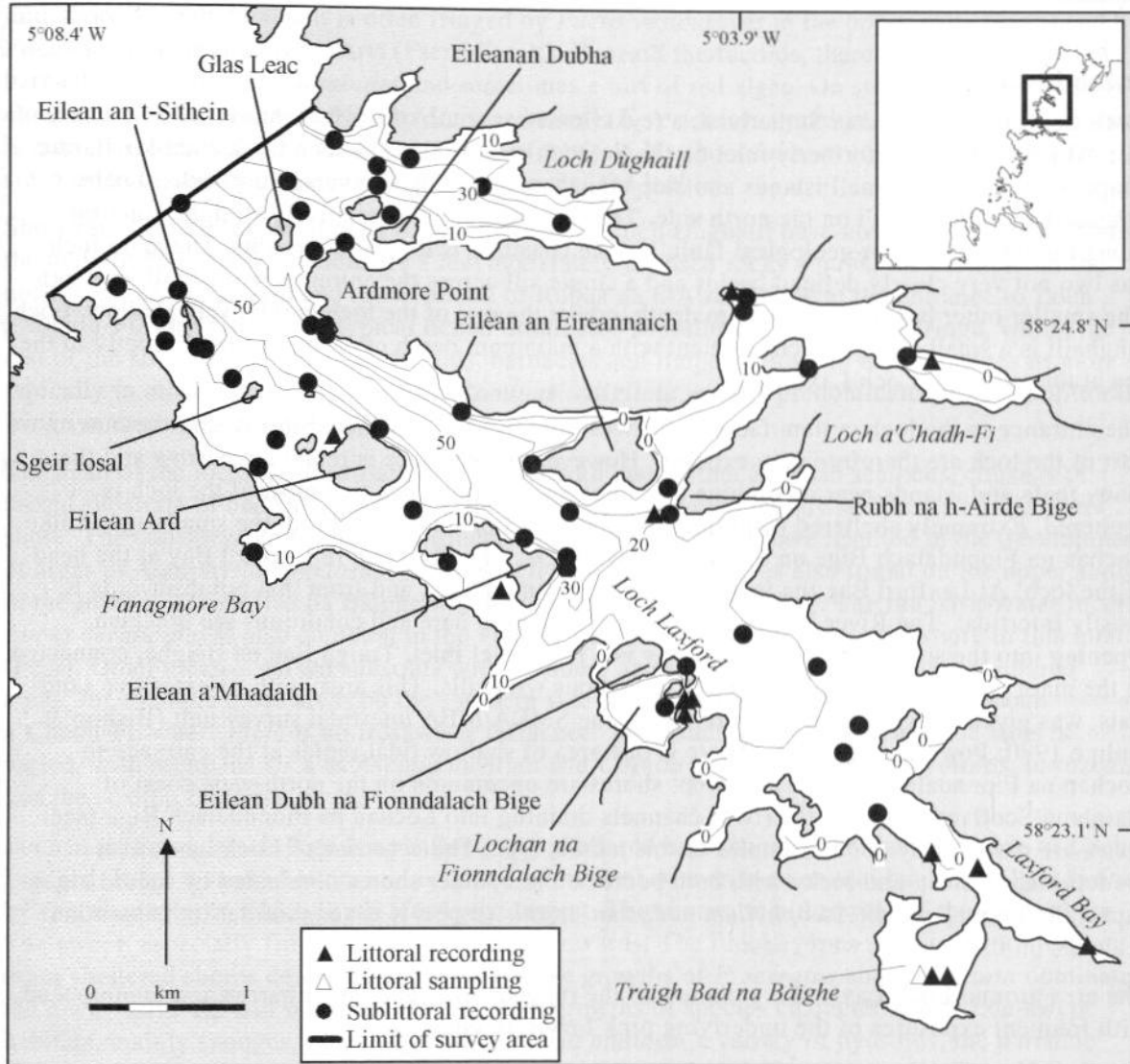


Sublittoral sites					
Survey	Site	Place	Grid reference	Latitude/longitude	Biotopes recorded
24	1	Head of Loch Beag, Loch Glencoul	NC 274 293	58°13.1'N 04°56.3'W	MarMu; Fserr.VS; PhiVir; LsacRS.Psa
24	2	Middle of SW side, Loch Beag, Loch Glencoul	NC 271 296	58°13.2'N 04°56.6'W	NeoPro; LsacRS.Psa
24	3	W of Eilean Ard, Loch Glencoul	NC 267 302	58°13.6'N 04°57.0'W	Oph
24	4	W side, opposite Unapool House, Loch Glencoul	NC 246 325	58°14.7'N 04°59.3'W	NeoPro; Oph; LsacRS.Psa
24	5	NE of Con'a Chreag, Loch Glencoul	NC 246 317	58°14.3'N 04°59.2'W	SpMeg.Fun
24	6	Opposite Liath Bhad, Loch Glencoul	NC 262 314	58°14.2'N 04°57.6'W	SpMeg; Oph; LsacRS.Psa
24	8	Eilean Rairidh, Loch a' Chàirn Bhàin	NC 163 352	58°16.0'N 05°07.9'W	FaAIC; Ven.Neo; CorMetAlc
24	9	Rubha nam Fias, Loch a' Chàirn Bhàin	NC 177 356	58°16.2'N 05°06.5'W	FaAIC; VirOph.HAS; Lhyp.Ft
24	10	Loch Shark, Loch a' Chàirn Bhàin	NC 178 363	58°16.6'N 05°06.4'W	MarMu; Lhyp.Ft
24	11	SE of Carn Bàn, Loch a' Chàirn Bhàin	NC 194 347	58°15.8'N 05°04.7'W	NeoPro; AntAsH; Lsac.Pk
24	12	Middle of SW side, Loch a' Chàirn Bhàin	NC 189 341	58°15.5'N 05°05.2'W	NeoPro; VirOph.HAS; LhypGz.Ft; LhypLsac.Pk
24	13	Rubha Ghallascaig, Loch a' Chàirn Bhàin	NC 204 342	58°15.6'N 05°03.6'W	NeoPro; Lsac.Ft; AntAsH
24	14	NW of Eilean a'Ghamhna, Loch a' Chàirn Bhàin	NC 202 334	58°15.1'N 05°03.8'W	SpMeg.Fun
24	15	NE of Eilean a'Ghamhna, Loch a' Chàirn Bhàin	NC 207 335	58°15.2'N 05°03.3'W	AntAsH; Ldig.Ldig; Lsac.Ft; Lhyp.Ft; Tra
24	16	Poll a'Ghamhna, Loch a' Chàirn Bhàin	NC 207 328	58°14.8'N 05°03.3'W	AmenCio; VirOph.HAS
24	19	N of Torr Ghamhna, Loch a' Chàirn Bhàin	NC 212 332	58°15.0'N 05°02.8'W	AmenCio; AntAsH
24	20	W of Garbh Eilean, Loch a' Chàirn Bhàin	NC 218 338	58°15.4'N 05°02.2'W	AmenCio; LsacRS.Psa
24	21	Mouth, Loch Glendhu	NC 243 333	58°15.2'N 04°59.6'W	VirOph.HAS
24	22	NE of Eilean na Rainich, Loch Glendhu	NC 234 344	58°15.7'N 05°00.6'W	AmenCio; VirOph; LsacRS.Psa
24	23	N of Garbh Eilean, Loch a' Chàirn Bhàin	NC 224 343	58°15.7'N 05°01.6'W	Tra; Lhyp.Ft
24	24	E end of narrows, Kylesku, Loch a' Chàirn Bhàin	NC 229 340	58°15.5'N 05°01.1'W	AmenCio; Oph; AlcC
24	25	Kylesku narrows, middle section, Loch a' Chàirn Bhàin	NC 226 337	58°15.3'N 05°01.4'W	IGS; Oph; FaAIC
24	26	Maldie, Loch Glendhu	NC 251 338	58°15.5'N 04°58.8'W	NeoPro; VirOph; LsacRS.Psa
24	27	Middle of N side, Loch Glendhu	NC 264 336	58°15.4'N 04°57.5'W	VirOph.HAS; LsacRS.Psa
24	28	Head, Loch Glendhu	NC 282 335	58°15.4'N 04°55.7'W	PhiVir; LsacRS.Psa
24	29	Middle of loch, Loch Glendhu	NC 258 335	58°15.3'N 04°58.1'W	SpMeg; ModHAS
24	30	NW of Cnoc na Cairidh, Loch a' Chàirn Bhàin	NC 224 332	58°15.1'N 05°01.6'W	NeoPro; VirOph; LhypGz
24	31	SE Garbh Eilean, W end of Kylesku narrows, Loch a' Chàirn Bhàin	NC 224 336	58°15.3'N 05°01.6'W	Oph; Phy.HEC; AlcC; Lhyp.Ft; EphR; LhypGz.Pk
24	32	N wall, middle of Kylesku narrows, Loch a' Chàirn Bhàin	NC 225 337	58°15.3'N 05°01.5'W	AlcC; Ant; Ven
24	33	Entrance to loch, Loch Glencoul	NC 241 330	58°15.0'N 04°59.8'W	VirOph.HAS
24	40	Rubh'an Urpuill, Loch a' Chàirn Bhàin	NC 186 353	58°16.1'N 05°05.5'W	Oph; VirOph; FaMx; LhypGz.Pk
63	8	Kylesku ferry, Loch a' Chàirn Bhàin	NC 230 340	58°15.5'N 05°01.0'W	SS

## Lochs Laxford and Dùghail

## Location

Position (centre)	NC 204 496	58°23.9'N 05°4.2'W
Administrative area	Highland	
Conservation agency/area	Scottish Natural Heritage	North Areas



**Figure 29.1** Main features of the area, showing sites surveyed.

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Physical features	
<i>Physiographic type</i>	Fjardic sealoch
<i>Length of coast</i>	46.0 km (62.3 km including islands)
<i>Length of inlet</i>	7.8 km
<i>Area of inlet</i>	12.3 km <sup>2</sup> (11.4 km <sup>2</sup> excluding islands)
<i>Bathymetry</i>	Maximum depth 67 m
<i>Wave exposure</i>	Very exposed to extremely sheltered
<i>Tidal streams</i>	Weak to very weak generally; strong in Sruth Mór (5–6 knots)
<i>Tidal range</i>	4.2 m (mean springs); 1.6 m (mean neaps) (Loch Laxford))
<i>Salinity</i>	Fully marine to reduced

## Introduction

Loch Laxford is situated in Sutherland, a few kilometres south of Loch Inchar (*Area summary* 30), which is the most northerly inlet on the Scottish west coast. The loch has a complex fjardic shape with numerous small islands and side branches, including two subsidiary lochs, Lochs Dùghaill and a'Chadh-Fi on the north side. The central channel is relatively straight, running along the line of a major geological fault, but the coastline is long and tortuous. The main loch has two not very clearly defined basins and a single sill across the entrance rising to 40 m depth. The smaller outer basin drops to 67 m depth, whilst the rest of the loch is relatively shallow. Loch Dùghaill is a small elongated embayment with a maximum depth of 32 m, opening directly to the sea at the mouth of Loch Laxford.

The entrance to the loch system faces north-west into the North Minch. Sites within the outermost part of the loch are therefore very exposed. However, the entrance is relatively narrow and the many reefs and islands near it combine to reduce wave action such that most of the loch is sheltered. Extremely sheltered conditions are found in Loch a'Chadh-Fi, in the small lagoon-like Lochan na Fionndalach Bige on the south coast of Loch Laxford and in Laxford Bay at the head of the loch. At Laxford Bay the loch narrows to around 400 m, and from that point inwards is mostly intertidal. The River Laxford drains over the shore here and conditions are brackish. Opening into the south side of Laxford Bay is a high-level inlet, Tràigh Bad na Bàighe, connected to the main loch by a channel and series of lagoons with sills. This area, with its extensive sand-flats, was given a high conservation rating by the SMBA/MBA intertidal survey unit (Bishop & Holme 1980; Powell *et al.* 1980). There is one area of shallow tidal rapids at the entrance to Lochan na Fionndalach Bige. Tide-swept shores are uncommon on the north-west coast of mainland Scotland although the (two) channels draining into Lochan na Fionndalach Bige (see map), are particularly good examples of this habitat type. The coastline of Loch Laxford is predominantly steep and rocky with both bedrock and boulder shores dominated by furoid algae, especially knotted wrack *Ascophyllum nodosum*. In this respect it is very similar to many other sealochs on the Scottish west coast.

The area around Loch Laxford is remote and the rugged landscape rather barren and hummocked with frequent exposures of the underlying pink Lewisian gneiss.

## Marine biology

Marine biological surveys				
	<i>Survey methods</i>	<i>No. of sites</i>	<i>Date(s) of survey</i>	<i>Source</i>
<i>Littoral</i>	Recording (epibiota)	9	May 1991	Holt (1991)
	Recording (epibiota)	2	July 1984	Smith (1985)
	Recording (epibiota)	1	April 1979	Smith (1981)
	Recording (epibiota)	3	April/August 1979	Powell <i>et al.</i> (1980)
	Sampling (grab)	1	May 1991	Holt (1991)
<i>Sublittoral</i>	Recording (epibiota)	22	May 1991	Holt (1991)
	Recording (epibiota)	28	July 1984	Smith (1985)

## Littoral

### *Littoral rock*

The majority of the shoreline throughout this complex loch consists of fairly uniform sheltered to very sheltered bedrock and boulder slopes. These are furoid-dominated and characterised by dense blankets of knotted wrack *Ascophyllum nodosum* in the mid-shore zone. Zonation patterns are similar to those seen in many other lochs on the north-west mainland coast. Lichens, particularly *Verrucaria maura*, dominate the supralittoral and upper littoral fringe (Ver.Ver). Below this are zones of channelled wrack *Pelvetia canaliculata* and *Fucus spiralis* (Pel; Fspi). The mid-shore *Ascophyllum* belt is often fringed by *Fucus vesiculosus* in the upper parts (Fves) and by *Fucus serratus* in the lower parts (Fserr; FserX). Beneath the furoids, there is often a cover of barnacles *Semibalanus balanoides* and sometimes a turf of red algae. On steep rock, for example along parts of the channel of Sruth Mór (see below), *F. vesiculosus* predominates and *A. nodosum* is rare. There may also be bands or patches of mussels *Mytilus edulis*, as for example along the steep bedrock shores in Laxford Bay at the head of the loch.

Shores in the outer exposed parts of the loch and in Loch Dùghail have not been surveyed. Within the main body of the loch there are a few moderately exposed rocky shores, for example on the north-west of Eilean Ard and the headland of Rubha na h-Airde Bighe at the entrance to Loch a'Chadh-Fi. These show the typical lichen-dominated supralittoral and littoral fringe, whilst the rest of the shore is dominated by furoids, barnacles and limpets, either in distinct zones or more typically in mosaics (FvesB). The kelp *Laminaria digitata* usually predominates in the sublittoral fringe at these sites (Ldig.Ldig).

The head of the loch, Laxford Bay, in common with many other Scottish sealochs, consists of mixed substrata of bedrock, boulders and cobbles with gravelly, muddy sediments on the lower shore. The considerable freshwater influence and extreme shelter have resulted in the development of areas of *Ascophyllum nodosum* ecad. *mackii* (AscX.mac). This is also found on the upper shore in the inlet of Tràigh Bad na Bàighe which connects with Laxford Bay. The brackish-water furoid *Fucus ceranoides* is also common in the vicinity of streams running across the shore in this inlet (Fcer). Other areas of mixed substrata with boulders on sediment are found in very sheltered areas, for example those areas on the southern side of the loch and the inner parts of Loch a'Chadh-Fi, where there is no freshwater influence. The underboulder fauna at these sites is varied, with ascidians such as *Ascidia mentula* and *Corella parallelogramma*, hydroids, bryozoans and the scallop *Chlamys nivea*.

Lochan na Fionndalach Bige is a shallow, very sheltered lagoonal inlet on the south side of Loch Laxford. It has a sandy bottom and is dotted with small islands used as seal haul-outs. It is drained by two channels, of which Sruth Mór is the largest. The shores on either side of the channel are tide-swept, especially from mid-shore level downwards. The furoid zones are similar to those on other sheltered shores described above, but dense growths of *F. serratus* and *L. digitata* dominate the lower eulittoral and sublittoral fringe. Rich growths of species characteristic of tide-swept habitats, mainly sponges, especially *Halichondria panicea*, a variety of hydroids, the barnacle *Balanus crenatus*, bryozoans including *Alcyonidium* sp. and ascidians, especially *Botryllus schlosseri* and *Botrylloides leachi*, grow on ledges, in crevices, on the sides of boulders and on kelp stipes in this zone (Fserr.T).

### *Littoral sediment*

Sediment shores are almost entirely confined to the head of Loch Laxford. Here, typical sheltered shores of muddy gravel, cobbles and boulders are found and support populations of furoids, including *Ascophyllum nodosum*, along with mussels *Mytilus edulis* and polychaetes, especially the lugworm *Arenicola marina* (AscX). The most important area for sediments is Tràigh Bad na Bàighe. This sheltered littoral inlet, a little under 1 km<sup>2</sup> in extent, consists mostly of sand-flats influenced to some extent by freshwater streams. It is the only extensive sheltered sediment shore in the northern part of the west coast. It supports a community visually dominated by casts of

lugworms *A. marina*. Other common infauna include ragworms *Hediste diversicolor*, the amphipod *Corophium volutator* and the bivalves *Macoma balthica* and cockle *Cerastoderma edule* (HedMac.Are). Local variations in numbers and species of infauna are related to variations in sediment grade. The narrow entrance to this inlet is tide-swept and the predominantly gravelly mud in the mid-eulittoral is dominated by a dense bed of *M. edulis* (MytX). The most tide-swept areas consist of clean gravel dominated by *Fucus serratus* (FserX.T).

### Sublittoral

Steep and vertical bedrock slopes extend along the whole length of Loch Laxford along the southern side of the deep main channel. The islands along this side of the loch, such as Eilean a'Mhadaidh, have steep cliffs on their north side extending to between 20 m and 40 m depth and broken bedrock and boulder slopes to around 10–15 m depth on their sheltered sides. Steep bedrock and boulder slopes also predominate on the northern side of the loch. Similar steep cliffs are present at exposed sites around the islands and skerries at the entrance to Loch Dùghail. A very exposed pinnacle of rock, Bodha Druim, lies in the middle of the entrance to Loch Laxford, rising from around 40 m to 5 m depth. Shorter bedrock and boulder slopes extend to around 5–10 m depth in Loch a'Chadh-Fi and other very sheltered areas. The extent of the rock slopes means that shallow sediments are mostly restricted to sheltered areas on the south side of Loch Laxford. The majority of the seabed consists of deep coarse sediments in the outer reaches and muds in the middle and inner reaches.

### Loch Laxford

In the exposed outer loch the bedrock is dominated by *Laminaria hyperborea* kelp forest extending to around 12 m depth and kelp park to between 15 m and 20 m depth (Lhyp). At Bodha Druim there is a rich undergrowth of foliose algae, and the kelp stipes support dense growths of epiphytic algae such as *Phycodrys rubens*, *Cryptopleura ramosa* and *Heterosiphonia plumosa*. The hydroid *Tubularia indivisa*, the jewel anemone *Corynactis viridis* and various polyclinid ascidians extend up from the circalittoral well into the upper infralittoral at these very exposed sites and at moderately exposed sites where vertical surfaces predominate (CorMetAlc). *L. hyperborea* remains the dominant kelp on bedrock and large boulders throughout the main body of the loch, but at the majority of sites the rock surfaces beneath the kelp forest and park are heavily grazed by the sea urchin *Echinus esculentus*. Foliose algae are restricted to crevices and inaccessible gullies, and only robust species such as encrusting coralline algae and the keel worm *Pomatoceros triqueter* survive (LhypGz). A few sheltered sites seem to escape urchin grazing and a reasonably diverse algal understory and stipe flora are recorded from, for example, Rubh na h-Airde Bige. Steep and vertical kelp-dominated bedrock at some sheltered sites may also support dense patches of ascidians, mainly *Ciona intestinalis* (AmenCio), in the lower infralittoral and extending down into the circalittoral. At sheltered sites within the inner half of the loch, *L. hyperborea* is often of the cape variety. *L. hyperborea* kelp forest is also present on steep rock along the main channel even within the inner part of the loch at least as far as Eilean Dubh na Fionndalach Bige. However, in very sheltered areas such as Loch a'Chadh-Fi, and behind Eilean a'Mhadaidh, it is replaced by a dense forest of *Laminaria saccharina* (Lsac.Ft). *L. saccharina* may also replace or be mixed in with *L. hyperborea* at moderately exposed sites where the rock is mixed boulders, sediment and bedrock (LhypLsac). At the shallow head of the loch, the seabed consists of mixtures of boulders, cobbles, pebbles, gravel and sand, dominated by a very silty cape-form *L. saccharina* kelp forest.

Rich circalittoral turf communities, more characteristic of open coast areas, are present on the pinnacle of Bodha Druim, below about 15 m depth, and include the bryozoans *Flustra foliacea* and *Securiflustra securifrons*, sponges *Cliona celata* and *Axinella infundibuliformis*, *C. viridis* and *Antedon* sp. Inside the entrance, bedrock cliffs and slopes extend to between 13 m and 30 m depth off the north shore around Ardmore peninsula and off the sides of islands, such as the rocks north-west of Eilean Ard, which face the deep central channel. In contrast to the rich growths found on Bodha Druim, the moderately exposed circalittoral communities here experience intense grazing, mainly by *Echinus* sp., and the rock surfaces appear rather bare apart from a covering of pink

encrusting algae, *P. triqueter* and sometimes ascidians *C. intestinalis* (FaAIC). Sheltered, circalittoral, steep and stepped bedrock is found down to around 30 m depth in the middle reaches of the loch and exceptionally to 40 m depth off areas such as Eilean a'Mhadaidh bordering the deep central channel. The rock surfaces are silty and in general support rather impoverished communities consisting of a few species, such as the brachiopod *Neocrania anomala* which may be abundant, the encrusting bryozoan *Parasmittina trispinosa*, *C. intestinalis*, *Antedon* sp. and algal crusts (FaAIC). Similar biotopes are found on rock outcrops on muddy sediment, for example in the channel to the south of Eilean an Eireannaich. In the middle and inner parts of the loch, boulder and cobble slopes are common and where these extend into the circalittoral, they also support impoverished communities, with ascidians such as *Ascidia mentula* and *C. intestinalis* predominant (AmenCio).

The changing exposure gradient along the length of the loch, together with the numerous bays and inlets, means that a wide variety of sediments grade into one another along the length of the loch. In the outer more exposed reaches, clean coarse sand-plains with shelly gravel predominate. These sediments typically support the holothurians *Neopentadactyla mixta* and *Thyone* sp., the hydroid *Corymorpha nutans*, the heart urchins *Echinocardium flavescens* and *Spatangus purpureus*, and bivalves including scallops *Pecten maximus* (Ven.Neo). Off the Ardmore peninsula these sediments occur at around 30 m depth below the rock slopes, whilst in more sheltered areas on the opposite side of the loch behind Eilean an t-Sithein, sediment extends to 12 m depth.

In the area between the head of Ardmore Point and Glas Leac, a group of small islands and rocks just to the north-west, maerl *Phymatolithon calcareum* occurs in the troughs of duned shell-gravel (Phy). Similarly, maerl occurs on the south side of the loch off the north side of Sgeir Iosal and probably in other as yet unsurveyed sites. Small amounts of maerl and coarse sand have also been recorded in the tide-swept Sruth Mór.

Coarse sand and gravel sediments also occur in the middle reaches of the loch between islands such as Eilean a'Mhadaidh. These are mostly in shallower water between about 5 m and 10 m depth and *L. saccharina* grows attached to stones and shells when these are present, along with a variety of filamentous brown and red algae. The razor clam *Ensis arcuatus* is characteristic of the infauna in these sediments (Lsac.X).

Further into the loch, sediments between about 10 m and 30 m depth tend to be predominantly gravelly muds, the proportions of the various sediments varying between sites. There is a gradation from coarser to finer with increasing depth and reduction in exposure to wave action further along the loch. This type of sediment is typical of many sea lochs and a range of species commonly found in muddy sediments is present, including the turret shell *Turritella communis*, the burrowing anemone *Cerianthus lloydii*, scallops *P. maximus* and brittlestars such as *Amphiura* sp. and *Ophiura* sp. (VirOph). Within the loch, this sediment is widespread and occurs at least from west of Eilean Ard to east of Eilean an Eireannaich.

As would be expected, soft muds are found in extremely sheltered areas. Most of the seabed in Loch a'Chadh-Fi consists of very soft mud, often covered by a thin diatom film. An interesting feature of this area is the presence of particularly dense beds of the anemone *Sagartiogeton laceratus* in a narrow band between 17 m and 20 m depth. The snake blenny *Lumpenus lumpretaeformis*, which usually occurs in burrows in deeper water, is also relatively common. Inhabitants of this mud include the sea-pens *Virgularia mirabilis* and *Pennatula phosphorea*, *C. lloydii*, *T. communis*, hermit crabs in empty shells of the latter and bivalves including *P. maximus*, *Mya arenaria* and *Arctica islandica*. Shallower than about 10 m depth, empty bivalve shells provide a substratum for the ascidians *Asciidiella aspersa* and *A. mentula*.

In the shallow water at the head of Loch Laxford and behind Eilean a'Mhadaidh, similarly soft but well-worked mud with *Arenicola* casts and terebellids is the main sediment, sometimes characterised by the opisthobranch *Philine aperta* (PhiVir). Soft muds, burrowed by animals such as Norway lobster *Nephrops norvegicus* are present in deeper water in the lee of islands in the middle reaches of the loch (SpMeg). The deep central basin running along the main axis of the

outer loch has not been surveyed but may not be soft sediment as 'rock' is indicated on the Admiralty chart.

### Loch Dùghaill

Most of the exposed sides of the islands and skerries in the mouth of the loch have steep or vertical bedrock cliffs extending throughout the infralittoral into the circalittoral. *Laminaria hyperborea* kelp predominates on the rock where it is not too steep but many of the vertical infralittoral rock faces are animal-dominated. The anemone *Corynactis viridis* and plumose anemone *Metridium senile*, featherstars *Antedon* sp. and foliose algae may all cover different parts of the rock faces (CorMet.Alc). Moderately exposed bedrock and boulder slopes along the north coast and within the inner half of the loch support dense *L. hyperborea* kelp forest, heavily grazed in places, or with only the lower infralittoral showing heavy grazing (Lhyp.Ft; LhypGz).

The most exposed sites in the mouth of the loch are on the north side of Eileanan Dubha. Cliffs extend well into the circalittoral to depths of between 25 m and 45 m. These are spectacular but do not support the rich faunal turfs seen on the very exposed Bodha Druim in the mouth of Loch Laxford. The rock surfaces are either grazed or scoured and are similar in species composition to moderately exposed circalittoral bedrock inside Loch Laxford. Large areas tend to be dominated by either *Antedon* sp., the brittlestar *Ophiocomina nigra* or *C. viridis* with underlying coralline algal crusts, *Pomatoceros triqueter* and sometimes the cup coral *Caryophyllia smithii* (FaAIC). At other sites within the mouth on the north side and within the shelter of the skerries on the south side, boulder and bedrock slopes do not extend much below 15 m depth, and deep circalittoral rock is absent.

Sediments along the shallow edges of the outer exposed half of the loch are mostly clean coarse sands with *Ensis* sp., *Pecten maximus* and algae attached to stones (Lsac.X) and are similar to those found in the outer parts of Loch Laxford. The deeper areas in the inner sheltered part are mostly soft, burrowed mud with *Virgularia mirabilis*, *Nephrops norvegicus* and hermit crabs in *Turritella* shells (SpMeg).

## Nature conservation

### Conservation sites

Site name	Status	Main features
Loch Laxford	SAC	Large shallow inlets and bays
Loch Laxford	MCA	Marine biological
Loch Laxford	SSSI	Geological
North-west Sutherland	NSA	Landscape

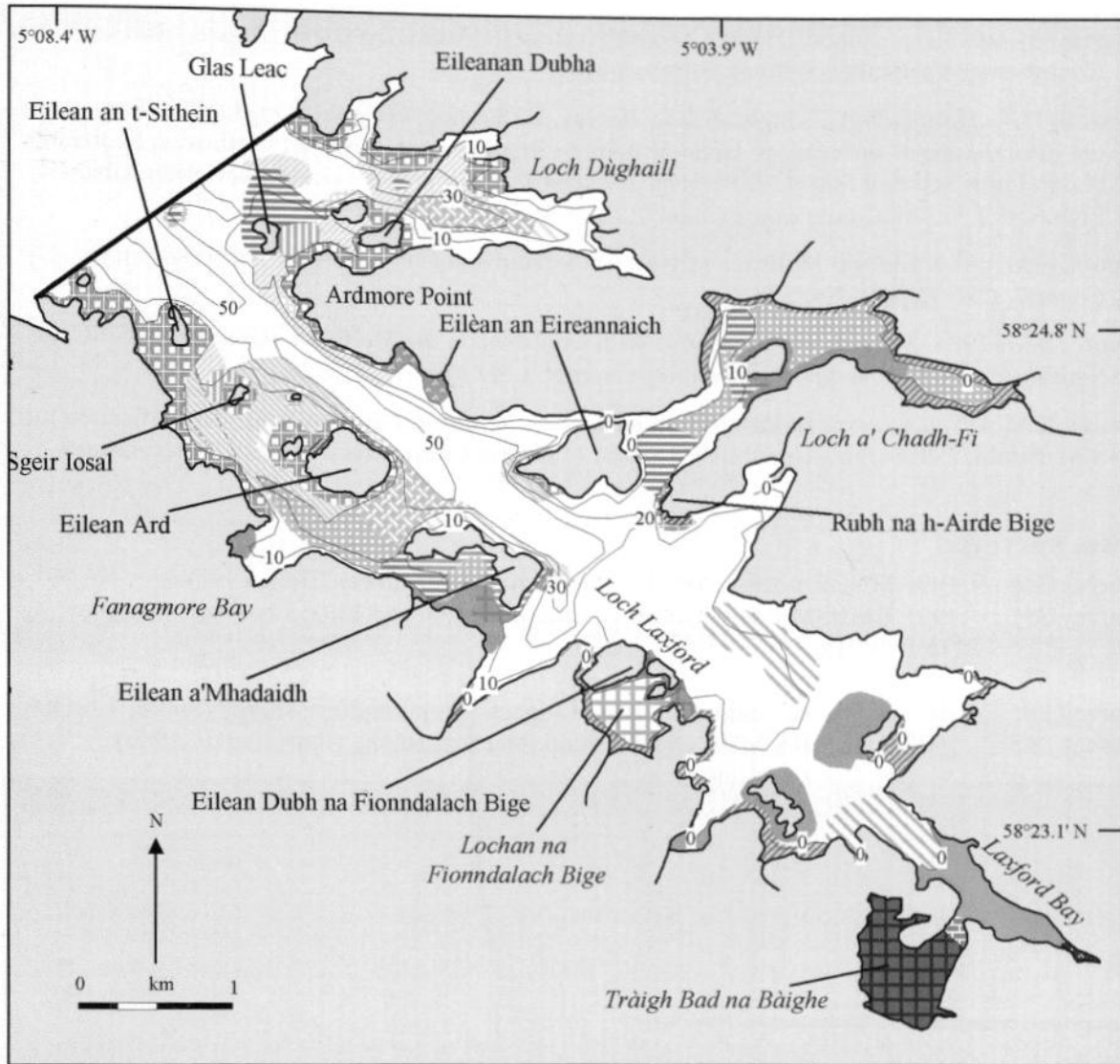
## Human influences

### Coastal developments and uses

The A838 and A894 roads run alongside the heads of Laxford Bay and Tràigh Bad na Bàighe respectively. Elsewhere only a few minor roads serve the few small crofting settlements around some of the inlets on the loch. There is an adventure school on the south shore of Loch a'Chadh-Fi. The large number of 'venturers' who visit the school participate in a variety of activities which include canoeing and sailing in the loch.

### Marine developments and uses

At the time of the 1991 MNCR survey, seven leases for Atlantic salmon farm sites and four for shellfish sites had been granted. Admiralty Chart 2503 (1989) shows eight fish-farm sites in Loch Laxford and two other sites in Loch Dùghaill. There are several small slipways and quays around the loch, including Laxford Quay in Laxford Bay and at Fanagmore Bay on the south side towards



**Figure 29.2** Indicative distribution of the main biotopes in the area (based on data from survey sites shown in Figure 29.1, cited literature and additional field observations).

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the loch entrance. Local boats work the loch mainly for crustaceans, including Norway lobsters *Nephrops norvegicus*, lobsters *Homarus gammarus* and crabs.

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### Sites surveyed

- Survey 34: 1991 MNCR Loch Laxford and Inchard littoral survey (Holt, 1991).
- Survey 35: 1991 UMBSM Lochs Laxford, Inchard, Broom and Little Loch Broom survey (Holt 1991).
- Survey 55: 1984 Smith west Sutherland survey (Smith, 1985).
- Survey 88: 1979 Smith west Sutherland and Coigach littoral mollusc survey (Smith, 1981).
- Survey 265: 1970–80 SMBA/MBA Great Britain intertidal survey (Powell *et al.* 1980).

Littoral sites					
Survey	Site	Place	Grid reference	Latitude/longitude	Biotores recorded
34	1	Tràigh Bad na Bàighe, Loch Laxford	NC 223 470	58°22.5'N 05°02.3'W	HedMac.Are; AscX.mac; FserX.T; PCer; Ver.Ver; Asc.VS; FcerX; NVC SM13; MytX; Pel
34	2	Head of loch, Loch Laxford	NC 233 472	58°22.6'N 05°01.3'W	AscX; AscX.mac; Pel; Ver.Ver; FcerX; NVC SM13
34	3	Laxford Bay, Loch Laxford	NC 223 478	58°22.9'N 05°02.3'W	Ver.Ver; Fves; Fspi; Asc.Asc; Asc.VS; Fserr.VS; Pel
34	4	Sruth Mór, Loch Laxford	NC 205 490	58°23.5'N 05°04.2'W	Ver.Ver; Fves; Asc.Asc; Fserr.T; Ldig.T; Pel; BPat.Sem
34	5	Fiondle – Eilean na Carraig, Loch Laxford	NC 195 495	58°23.8'N 05°05.3'W	Ver.Ver; Fves; Fspi; Asc.Asc; Ldig.Ldig.Bo; FserX; Pel
34	6	Rubh na h-Airde Bige, Loch a'Chadh-Fi, Loch Laxford	NC 205 500	58°24.1'N 05°04.3'W	Ver.Ver; Fves; Fspi; Asc.Asc; Fser.Fser; Ldig.Ldig; Pel; BPat.Sem
34	7	Ardmore, Loch a'Chadh-Fi, Loch Laxford	NC 209 514	58°24.8'N 05°03.9'W	Ver.Ver; Fves; Fspi; Asc.Asc; Pel; Fserr
34	8	Portlevorchy narrows, Loch a'Chadh-Fi, Loch Laxford	NC 223 510	58°24.6'N 05°02.5'W	Ver.Ver; Fspi; Asc.Asc; Fser.Fser; Ldig.Ldig; Pel
34	9	Skerricha Bay, Loch a'Chadh-Fi, Loch Laxford	NC 223 510	58°24.6'N 05°02.5'W	AscX; YG; Ver.Ver; Fspi; Fser.Fser; Ldig.Ldig; Pel
55	6	Head, Loch Laxford	NC 228 477	58°22.9'N 05°01.8'W	AscX
55	7	Sruth Mór, Loch Laxford	NC 207 487	58°23.4'N 05°04.0'W	FX
88	6	Sruth Mór, Loch Laxford	NC 207 487	58°23.4'N 05°04.0'W	
265	67	Eilean Ard, Loch Laxford	NC 184 505	58°24.3'N 05°06.5'W	MLR
265	118	Sruth Mór, Loch Laxford	NC 207 488	58°23.4'N 05°04.0'W	SLR
265	120	Tràigh Bad na Bàighe, Loch Laxford	NC 224 470	58°22.5'N 05°02.2'W	HedMac

## Sublittoral sites

Survey	Site	Place	Grid reference	Latitude/longitude	Biotores recorded
35	1	Laxford Bay, Loch Laxford	NC 219 480	58°23.1'N 05°02.7'W	EcorEns
35	2	Lagoon channel, E Foindle, Loch Laxford	NC 205 487	58°23.4'N 05°04.2'W	Lgla; HalXX
35	3	NW of Rubha na Bà, Laxford, Loch Laxford	NC 207 490	58°23.5'N 05°04.0'W	AmenCio; VirOph; Lhyp.Ft; Lsac.Pk
35	4	E of Eilean a'Mhadaidh, Loch Laxford	NC 199 497	58°23.9'N 05°04.9'W	AntAsh; Ldig.Ldig; LhypLsac.Ft; LsacX; LhypGz.Pk
35	5	Rubh na h-Airde Bige, Loch a'Chadh-Fi, Loch Laxford	NC 206 500	58°24.1'N 05°04.2'W	LhypLsac.Ft; LsacX
35	6	SE of Eilean Eireannaich, Loch a'Chadh-Fi, Loch Laxford	NC 205 501	58°24.2'N 05°04.2'W	SpMeg
35	7	E of Ardmore, Loch a'Chadh-Fi, Loch Laxford	NC 210 513	58°24.8'N 05°03.8'W	SpMeg; CMU; PhiVir; LsacRS.Psa; EchBriCC
35	8	SW of Eilean a'Chadh-Fi, Loch a'Chadh-Fi, Loch Laxford	NC 214 509	58°24.6'N 05°03.4'W	Lsac.Ft; LsacX
35	9	Channel SE Portlevorchy, Loch a'Chadh-Fi, Loch Laxford	NC 221 510	58°24.7'N 05°02.7'W	Lsac.Ft
35	10	S Eilean an Eireannaich, Loch Laxford	NC 199 500	58°24.1'N 05°04.8'W	VirOph; NeoPro
35	11	W Eilean an Eireannaich, Loch Laxford	NC 197 503	58°24.2'N 05°05.1'W	AmenCio; VirOph; Lhyp.Pk
35	12	SW Eilean a'Mhadaidh, Loch Laxford	NC 191 496	58°23.9'N 05°05.7'W	IMX; PhiVir; Lsac.Ft
35	13	SW of Eilean Ard, Loch Laxford	NC 189 500	58°24.0'N 05°05.9'W	SpMeg
35	14	SE of Sgeir Iosal, Loch Laxford	NC 180 504	58°24.3'N 05°06.8'W	AmenCio; VirOph; LhypGz.Ft
35	15	Sgeir NW of Eilean Ard, Loch Laxford	NC 182 508	58°24.5'N 05°06.7'W	FaAIC; VirOph; CorMetAlc; Lhyp
35	16	S of Ardmore Point, Loch Laxford	NC 185 511	58°24.6'N 05°06.3'W	FaAIC; Ven.Neo; LhypGz.Pk
35	17	SE Eilean an t-Sithein, Loch Laxford	NC 175 510	58°24.6'N 05°07.4'W	Ven.Neo; Lhyp.Ft
35	18	Bodha Druim, Loch Laxford	NC 174 519	58°25.1'N 05°07.6'W	LhypR.Ft; AlcSec; CorMetAlc; Ant
35	19	NW of Ardmore Point, Loch Laxford	NC 182 516	58°24.9'N 05°06.7'W	Phy.HEc
35	20	N Eileanan Dubha, Loch Dùghaill	NC 186 522	58°25.2'N 05°06.3'W	FaAIC; CorMetAlc
35	21	Skerry, mid N shore of Loch Dùghaill	NC 193 521	58°25.2'N 05°05.5'W	Lhyp.Ft; LsacX; LhypGz.Pk
35	22	E end of loch, Loch Dùghaill	NC 198 518	58°25.1'N 05°05.0'W	AmenCio; SpMeg
55	15/1	Loch Laxford	NC 218 486	58°23.4'N 05°02.9'W	LsacX
55	16/1	Loch Laxford	NC 173 514	58°24.8'N 05°07.6'W	ECR; LhypGz.Pk
55	17/1	Loch Laxford	NC 196 498	58°24.0'N 05°05.1'W	FaSwV
55	18/1	Loch Dùghaill	NC 184 525	58°25.4'N 05°06.6'W	XKScrR
55	15/2	Loch Laxford	NC 210 492	58°23.7'N 05°03.7'W	SS
55	16/2	Loch Laxford	NC 173 511	58°24.6'N 05°07.6'W	IR
55	17/2	Loch Laxford	NC 199 496	58°23.9'N 05°04.9'W	XKScrR
55	18/2	Loch Dùghaill	NC 189 523	58°25.3'N 05°06.0'W	LhypGz.Pk
55	15/3	Loch Laxford	NC 215 490	58°23.6'N 05°03.2'W	IGS
55	17/3	Loch Laxford	NC 187 511	58°24.7'N 05°06.2'W	MCR; Lhyp
55	18/3	Loch Dùghaill	NC 186 521	58°25.2'N 05°06.3'W	CorMetAlc
55	19/3	Loch Laxford	NC 182 512	58°24.7'N 05°06.6'W	IGS; LhypGz
55	20/3	Loch a'Chadh-Fi, Loch Laxford	NC 211 514	58°24.9'N 05°03.7'W	CMU
55	15/4	Loch Laxford	NC 217 484	58°23.3'N 05°03.0'W	LsacX
55	16/4	Loch Laxford	NC 172 512	58°24.7'N 05°07.7'W	CR; IR
55	18/4	Loch Dùghaill	NC 187 519	58°25.1'N 05°06.1'W	Lhyp
55	19/4	Loch Laxford	NC 183 512	58°24.7'N 05°06.6'W	CGS; LhypGz
55	20/4	Loch Laxford	NC 177 508	58°24.5'N 05°07.2'W	LhypGz; Phy
55	16/5	Loch Dùghaill	NC 184 517	58°25.0'N 05°06.4'W	Ant; Lhyp

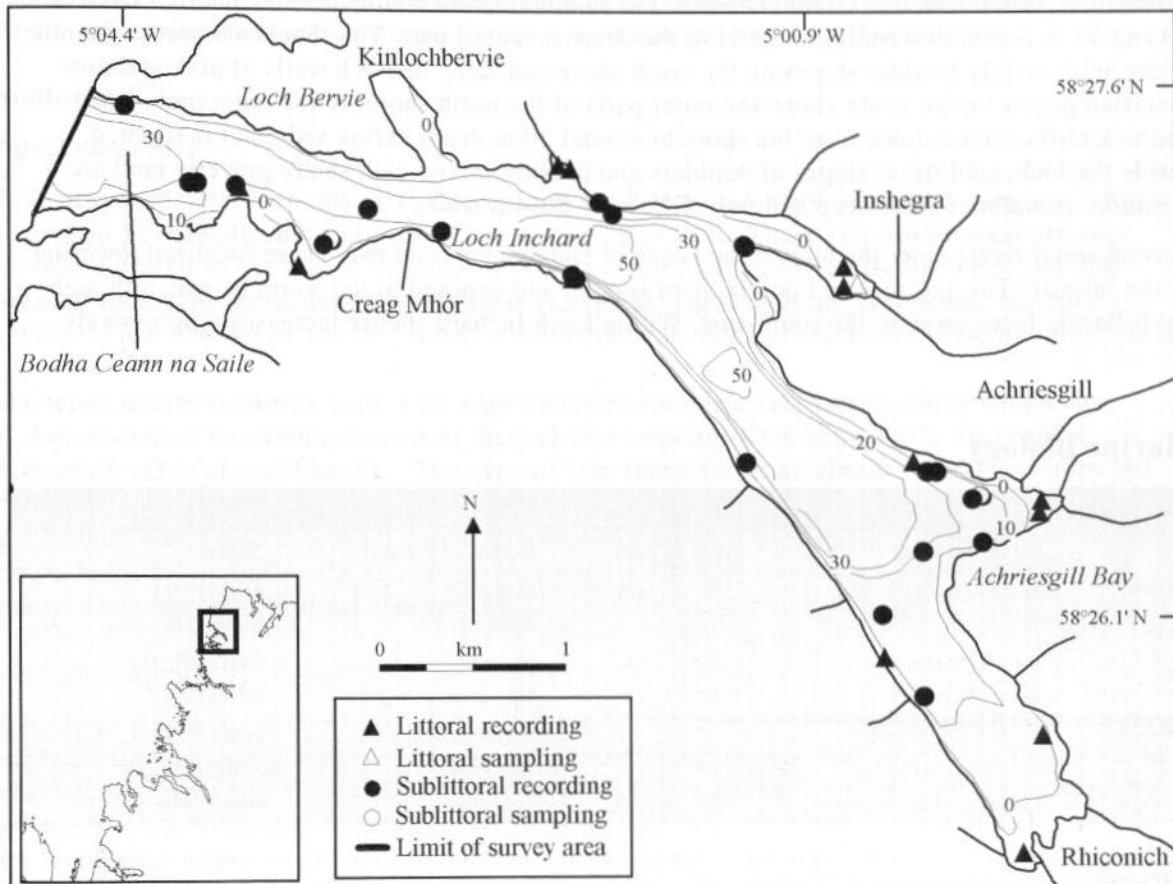
<b>Sublittoral sites</b>						
<i>Survey</i>	<i>Site</i>	<i>Place</i>	<i>Grid reference</i>	<i>Latitude/longitude</i>	<i>Biotopes recorded</i>	
55	18/5	Loch Laxford	NC 175 510	58°24.6'N 05°07.3'W	IGS; LhypGz.Pk	
55	19/5	Loch Laxford	NC 178 497	58°23.9'N 05°07.0'W	LsacX	
55	16/6	Loch Dùghaill	NC 180 521	58°25.2'N 05°06.9'W	XKScrR	
55	18/6	Loch Laxford	NC 191 509	58°24.6'N 05°05.8'W	SedK	
55	16/7	Loch Dùghaill	NC 181 519	58°25.1'N 05°06.8'W	CorMetAlc	
55	18/7	Loch Laxford	NC 179 502	58°24.2'N 05°07.0'W	Lhyp	

30

## Loch Inchar

## Location

Position (centre)	NC 235 553	58°27.1'N 05°01.7'W
Administrative area	Highland	
Conservation agency/area	Scottish Natural Heritage	North Areas



**Figure 30.1** Main features of the area, showing sites surveyed.

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## Physical features

Physiographic type	Fjordic sealoch
Length of coast	19.9 km
Length of inlet	6.7 km
Area of inlet	4.0 km <sup>2</sup>
Bathymetry	Maximum depth 65 m
Wave exposure	Exposed at mouth; body of loch sheltered to very sheltered
Tidal streams	Weak to very weak; slight to moderate in narrow parts of entrance
Tidal range	4.2 m (mean springs); 1.7 m (mean neaps) (Loch Bervie)
Salinity	Fully marine

## Introduction

Loch Inchard is the most northerly inlet on the west coast of mainland Scotland, situated about 20 km south of Cape Wrath. It is typically fjordic in character with a long narrow shape (average width 0.6 km) and fairly steep sides. Loch Bervie is a narrow inlet about 0.5 km long situated on the north side. The modern fishing port of Kinlochbervie lies at the head of this branch and this part of the loch has been modified to form a fishing harbour. The outer part of Loch Inchard runs almost west-east and the inner part north-west to south-east, forming an open curve. The hills surrounding the loch are of Lewisian gneiss and are generally eroded and rounded. Loch Inchard has a single basin and a quite pronounced sill at about 22 m depth near the mouth with a small submerged pinnacle Bodha Ceann na Saile. The predominantly muddy bottom mainly lies between 20 and 40 m depth, descending to 65 m in the deepest central part. The shores are predominantly rocky, with mainly boulder slopes on the north shore and steep bedrock walls of pink and grey Lewisian gneiss on the south shore and outer parts of the north shore. In the outer loch, steep bedrock cliffs extend down from the shore to around 30 m depth before sediment is reached. Inside the loch, sublittoral slopes of boulders and cobbles mixed with shelly gravelly mud are common, sometimes with steep bedrock cliffs in shallower water.

Several small rivers enter the loch at the heads of embayments and may cause localised lowering of the salinity. The entrance to Loch Inchard is open and exposed to the North Minch, although Loch Bervie faces away to the south-east. Within Loch Inchard shelter increases progressively towards the head.

## Marine biology

Marine surveys				
	Survey methods	No. of sites	Date(s) of survey	Source
<i>Littoral</i>	Recording (epibiota)	4	May 1991	Holt (1991)
	Recording (epibiota)	1	April 1979	Smith (1981)
	Recording (epibiota)	9	Not stated	Jones (1975)
	Sampling (grab)	1	May 1999	Holt (1991)
<i>Sublittoral</i>	Recording (epibiota)	13	May 1991	Holt (1991)
	Recording (epibiota)	10	July 1984	Smith (1985)
	Sampling (suction sampling)	2	May 1991	Holt (1991)

### Littoral

#### *Littoral rock*

The shores of Loch Inchard are characteristically short and steep or vertical, composed predominantly of bedrock and boulders and backed by low bedrock cliffs. The north shore from Loch Bervie inwards consists mainly of boulders with some areas of mixed bedrock and boulders. The south shore and the outer part of the north shore are mainly steep or vertical bedrock. The inner north-west to south-east lying part of the loch is sheltered from wave action and the shores are largely dominated by knotted wrack *Ascophyllum nodosum* (Asc) occupying a wide zone in the mid and lower eulittoral. Other furoid zones are mostly narrow and compressed but can be clearly distinguished, especially on bedrock shores. The upper littoral fringe is dominated by a band of black lichen *Verrucaria maura* (Ver.Ver) followed by a lower zone of channelled wrack *Pelvetia canaliculata* with the periwinkle *Littorina saxatilis* (Pel). Spiral wrack *Fucus spiralis* (Fspi) and bladder wrack *Fucus vesiculosus* may form a band in the upper eulittoral above the *A. nodosum*, especially on vertical rock. The furoid cover on vertical rock is often underlain by extensive mussels *Mytilus edulis*, for example on vertical sides of north shore boulders, and *Mytilus* may extend lower than the seaweed cover. The outer east-west-lying basin of the loch is exposed to wave action and the eulittoral of the predominantly bedrock shores is dominated by *Fucus vesiculosus* f. *linearis*, barnacles, mainly *Semibalanus balanoides*, and *M. edulis*.

Freshwater run-off in most of the inner loch bays, especially at Rhiconich at the loch head, Achreisgill and Inshegra has allowed the development of beds of the brackish-water tolerant fucoid *Fucus ceranoides* (Fcer) along with the green algae *Ulva* sp. and *Enteromorpha* sp. and various molluscs tolerant of lowered salinity. Small areas of the free living *A. nodosum* ecad *mackii* were present in these areas at the time of Jones' (1975) survey (AscX.mac).

#### *Littoral sediment*

There are no large areas of littoral sediment within Loch Inchar. However, at the head of the loch, in Loch Bervie and in small embayments, there are patches of muddy shell gravel and sand on the lower shore. These support a limited infauna of polychaetes and bivalves, mainly lugworms *Arenicola marina*, sand mason worms *Lanice conchilega* and the clam *Mya arenaria*.

### **Sublittoral**

#### *Infralittoral rock*

In the exposed outer loch, the main kelp species is *Laminaria hyperborea* which grows as a forest to around 12 m depth and continues as a park to around 18 m. These kelp forest areas are very intensely grazed by the urchin *Echinus esculentus* resulting in rather bare kelp stipes and large areas of rock with encrusting coralline algae (LhypGz). These sites are very scenic but have a relatively low number of species, except where many crevices and cracks are present within which algae and attached animals can grow safely. To the east of Loch Bervie, Loch Inchar is more sheltered and the dominant kelp is the cape form of *Laminaria saccharina*, along with some *L. hyperborea* in the middle reaches of the loch and sometimes the annual kelp *Saccorhiza polyschides* (LhypLsac; Lsac.Ft.). This type of kelp forest forms an almost complete canopy but here grows thickly only to around 5 m depth and again the underlying surfaces are intensely grazed and rather bare except for coralline crusts. Towards the head of the loch, where there may be some freshwater influence, *L. saccharina* grows less thickly and the main grazer here is the urchin *Psammechinus miliaris* (LsacRS.Psa).

#### *Circalittoral rock*

Circalittoral rock occurs in the outer exposed parts of Loch Inchar below about 18 m. All surfaces are intensely grazed by urchins and brittlestars and appear bare apart from a covering of encrusting algae which gives them a pink or reddish tinge, and keel worms, mainly *Pomatoceros triqueter* (FaAlc). Sheltered steep and overhanging cliff faces are found in the middle reaches of the south side. These do not have rich turfs of sessile species but algal crusts and scattered patches of silt-tolerant species such as dead-man's fingers *Alcyonium digitatum* and the anemones *Protanthea simplex* and *Metridium senile*. Circalittoral boulder slopes and patches within the middle and inner parts of the loch support similar communities and in particular the parchment tubeworm *Chaetopterus variopedatus* with attached *P. simplex* and ascidians (NeoPro).

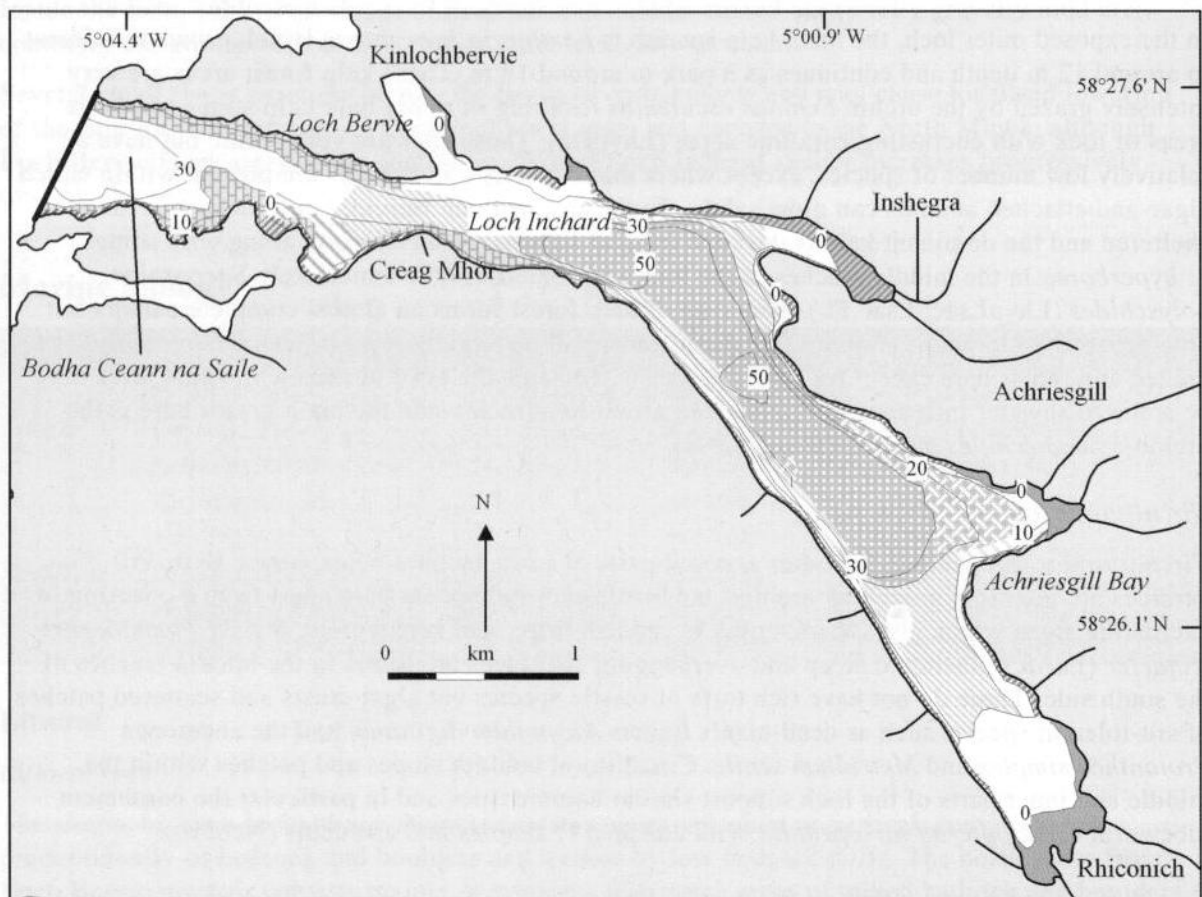
#### *Circalittoral sediment*

The steep rocky walls of Loch Inchar continue into the sublittoral for some distance and consequently there is very little sediment extending into shallow water above about 10 m. Areas around the sill and in the exposed and relatively shallow outer part of the loch have a firm, stable sand bottom. In the small sheltered bay near the mouth west of Creag Mhór, the sand supports populations of the heart urchin *Echinocardium cordatum* and burrowing sea cucumber *Labidoplax digitata* (EcorEns). Deeper areas in the middle of the channel are more mobile and support widespread sediment species including the bivalve *Arctica islandica*, the brittlestar *Ophiura* sp. and the burrowing anemone *Cerianthus lloydii* (VirOph).

Sediments within the middle and inner parts of the loch are muddy sands and muds, the muddiness increasing both with increased shelter within the loch and with increased depth. The change from rocky slope to sediment is generally not abrupt; instead the amount of sediment on

and between the rocks gradually increases. The deeper basins below about 25 m consist of very soft, well-worked and mounded mud with Norway lobster *Nephrops norvegicus* burrows (SpMeg). At shallower depths, between the rock slopes and the deep central areas, sediment varies from muddy sand to sandy mud with sea pens and brittlestars (VirOph) or, in shallower water, scattered filamentous algae and *Laminaria saccharina* on pebbles and shells (Lsac.X).

The sheltered middle and inner parts of Loch Inchar support a distinct community that appears to be widespread on both rocky and soft mud substrata. The basis of the community is the parchment tubeworm *Chaetopterus variopedatus* to which are attached *P. simplex*, the fanworm *Sabella pavonina* and various ascidians, sponges and hydroids (NeoPro). This biotope has been recorded in many other fjordic sealochs in Scotland but is particularly well developed here and is not found in nearby lochs such as Laxford (Area summary 29) or Broom (Area summary 26). Loch Inchar is, however, unusual in supporting dense populations of *C. variopedatus* which lie on the sediment surface.



**Figure 30.2** Indicative distribution of the main biotopes in the area (based on data from survey sites shown in Figure 30.1, cited literature and additional field observations).

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**Nature conservation**

Conservation sites		
Site name	Status	Main features
North-west Sutherland	NSA	Landscape (south shore of inner Loch Inchar)

## Human influences

### Coastal developments and uses

Kinlochbervie, on the northern side of the loch, is a fishing port modernised in 1989, where boats land their catches. Around the rest of Loch Inchard there are only small crofts and cottages served by the B801 along the north side. Much of the land to the north of Kinlochbervie is within the John Muir Trust's Sandwood Estate.

### Marine developments and uses

Admiralty Chart 2503 (1989) shows seven fish farm sites throughout the loch. At the time of writing there was a sewer outfall to the east of the entrance to Loch Bervie, which received primary treatment.

The fishing fleet in Kinlochbervie has reduced in recent years in spite of the modernised facilities, and at the time of the 1991 MNCR survey, stood at 20 boats bringing in 1000 boxes on a landing night. Fish are landed from around St Kilda, the North Sea and the North Minch and smaller boats work Loch Inchard for *Nephrops norvegicus*, lobsters *Homarus gammarus*, velvet swimming crabs *Necora puber* and dogfish *Scyliorhinus canicula*. Some boat owners have turned to tourism and operate diving, bird- and seal-watching trips.

## References and further reading

- Highland Regional Council. 1988. *Loch Inchard framework plan*. Unpublished, Highland Regional Council, Planning Department, Inverness. (Marine Fish Farming Policy Paper, No. 5.)
- Holt, R.H.F. 1991. Surveys of Scottish sealochs. Lochs Laxford, Inchard, Broom and Little Loch Broom. (Contractor: University Marine Biological Station, Millport.) *JNCC Report*, No. 16.
- Jones, A.M. 1975. *A littoral survey of Loch Inchard, Sutherland*. Unpublished, University of Dundee, Department of Biological Sciences. (Centre for Industrial Research and Consultancy Report.)
- Smith, S.M. 1981. Littoral Mollusca of west Sutherland and Coigach. *Nature Conservancy Council, CSD Report*, No. 358.
- Smith, S.M. 1985. *A survey of the shores and shallow sublittoral of west Sutherland*. (Contractor: S.M. Smith, Edinburgh.) Unpublished report to Nature Conservancy Council, Peterborough.

## Sites surveyed

- Survey 34: 1991 MNCR Loch Laxford and Inchard littoral survey (Holt 1991).
- Survey 35: 1991 UMBSM Lochs Laxford, Inchard, Broom and Little Loch Broom survey (Holt 1991).
- Survey 55: 1984 Smith west Sutherland survey (Smith 1985).
- Survey 88: 1979 Smith west Sutherland and Coigach littoral mollusc survey (Smith 1981).
- Survey 96: 1975 University of Dundee Loch Inchard littoral survey (Jones 1975).

Littoral sites					
Survey	Site	Place	Grid reference	Latitude/longitude	Biotopes recorded
34	16	W of Stachan Ghille Pheadair, Loch Inchard	NC 231 551	58°26.9'N 05°01.9'W	Ver.Ver; Fspi; Asc.Asc; Fser.Fser; Ldig.Ldig; SR; Pel
34	17	Inshegra Bay, Loch Inchard	NC 244 552	58°27.0'N 05°00.5'W	AscX; FvesX; LMX; Ver.Ver; Fspi; FserX; MytX; Pel
34	18	S of Cnoc a Gheannaln, Loch Inchard	NC 247 544	58°26.5'N 05°00.2'W	Fves; Fspi; Asc.Asc; Pel
34	19	N of Achlyness, Loch Inchard	NC 246 533	58°25.9'N 05°00.2'W	Fves; Asc.Asc; Fser.Fser; Pel; BPat.Sem



<b>Littoral sites</b>					
<i>Survey</i>	<i>Site</i>	<i>Place</i>	<i>Grid reference</i>	<i>Latitude/longitude</i>	<i>Biotopes recorded</i>
88	5	Achriesgill, Loch Inchard	NC 253 540	58°26.4'N 04°59.5'W	
96	1	Achriesgill Water inlet, Loch Inchard	NC 254 541	58°26.4'N 04°59.4'W	AscX.mac; Ver.Ver; Fcer; Asc.VS
96	2	Loch Innis na Bà Buidhe inlet, Loch Inchard	NC 228 558	58°27.2'N 05°02.2'W	Ver.Ver; Fcer; Asc.VS; Pel
96	3	Headland near Loch Innis na Bà Buidhe inlet, Loch Inchard	NC 230 558	58°27.2'N 05°02.0'W	Ver.Ver; Fspi; Asc.Asc; Fser.Fser; Ldig.Ldig; Pel
96	4	Loch Sheigra inlet, Loch Inchard	NC 244 553	58°27.0'N 05°00.5'W	Ver.Ver; Asc.Asc; Fser.Fser; Pel
96	5	Shore inner region, Loch Inchard	NC 213 557	58°27.1'N 05°03.7'W	MytB; Ver.B; Ala; BPat.Cht; BPat.Sem
96	6	Rhimichie, Loch Inchard	NC 246 533	58°25.9'N 05°00.2'W	Ver.Ver; Asc.Asc; Fser.Fser; Pel
96	7	S of Creag an Fhithich, Loch Inchard	NC 254 529	58°25.7'N 04°59.4'W	Ver.Ver; Asc.Asc; Pel
96	8	W of Mol Ban Mór, Loch Inchard	NC 216 553	58°26.9'N 05°03.4'W	Ver.Ver; Fspi; Asc.Asc; Fser.Fser; Pel; BPat.Sem
96	9	Open coast tip at Rhiconich, Loch Inchard	NC 253 523	58°25.4'N 04°59.5'W	AscX; Fcer

<b>Sublittoral sites</b>					
<i>Survey</i>	<i>Site</i>	<i>Place</i>	<i>Grid reference</i>	<i>Latitude/longitude</i>	<i>Biotopes recorded</i>
35	24	Rubha na Leacaig, Loch Inchard	NC 207 561	58°27.4'N 05°04.4'W	FaAIC; LhypGz.Ft; LhypGz.Pk
35	25	Bodha Ceann na Saile, Loch Inchard	NC 210 557	58°27.2'N 05°04.0'W	FaAIC; LhypGz.Pk
35	26	Bay E of Rubha Mol Bhàin, Loch Inchard	NC 217 554	58°27.0'N 05°03.3'W	EcorEns
35	27	Centre channel S Rubha nan Eun, Loch Inchard	NC 219 555	58°27.1'N 05°03.0'W	VirOph.HAS
35	28	E of Creag Mhór, Loch Inchard	NC 230 552	58°26.9'N 05°02.0'W	NeoPro; VirOph; Ldig.Ldig
35	29	SW of Badcall, Loch Inchard	NC 231 556	58°27.2'N 05°01.8'W	NeoPro; VirOph; LhypLsac.Ft
35	30	Rubha na Cloiche Lomaidh, Loch Inchard	NC 239 554	58°27.1'N 05°01.0'W	XKScrR; LsacX; Lsac.Pk
35	31	Opposite Rhuvoult, Loch Inchard	NC 239 543	58°26.5'N 05°01.0'W	NeoPro; VirOph; LsacRS.Psa
35	32	NW Achriesgill Bay, Loch Inchard	NC 248 542	58°26.5'N 05°00.0'W	NeoPro; LsacRS.Psa
35	33	W of Achriesgill Bay, Loch Inchard	NC 248 538	58°26.2'N 05°00.1'W	SpMeg
35	34	S Achriesgill Bay, Loch Inchard	NC 250 541	58°26.4'N 04°59.8'W	SpMeg; NeoPro
35	35	NW Achlyness, Loch Inchard	NC 245 535	58°26.1'N 05°00.3'W	VirOph.HAS; LsacRS.Psa
55	21/1	S of Cnoc na h-Eannaiche, Loch Inchard	NC 210 557	58°27.2'N 05°04.0'W	SedK
55	22/1	W Achriesgill, Loch Inchard	NC 248 542	58°26.5'N 05°00.1'W	CMX
55	21/2	S of Cnoc na h-Eannaiche, Loch Inchard	NC 212 557	58°27.2'N 05°03.8'W	Lhyp.Ft
55	22/2	Off Cnoc na Caillich, Loch Inchard	NC 232 556	58°27.2'N 05°01.8'W	VirOph; Lsac
55	21/3	N of Creag Mhór, Loch Inchard	NC 223 554	58°27.1'N 05°02.7'W	CGS; LhypGz; FaAIC
55	21/4	N of Achlyness, Loch Inchard	NC 248 531	58°25.8'N 05°00.0'W	LsacRS.Psa
55	21/5	Rubha na Cloiche Lomaidh, Loch Inchard	NC 238 554	58°27.1'N 05°01.1'W	SS; IR
55	21/6	Achriesgill Bay, Loch Inchard	NC 252 538	58°26.3'N 04°59.5'W	NeoPro; LsacRS.Psa
55	22/7	E of Creag Mhór, Loch Inchard	NC 230 552	58°27.0'N 05°02.0'W	SS; IR

Compiled by: Frances Dipper

**Location**

<i>Position (centre)</i>	NC 437 598	58°30'N 04°41'W
<i>Administrative area</i>	Highland	
<i>Conservation agency/area</i>	Scottish Natural Heritage	North Areas

**Physical features**

<i>Physiographic type</i>	Fjordic sealoch
<i>Length of coast</i>	53.6 km (60.0 km including islands)
<i>Length of inlet</i>	14.6 km
<i>Area of inlet</i>	33.0 km <sup>2</sup> (32.7 km <sup>2</sup> excluding islands)
<i>Bathymetry</i>	Maximum depth 68 m
<i>Wave exposure</i>	Very exposed to sheltered
<i>Tidal streams</i>	Very weak to weak
<i>Tidal range</i>	4.0 m (mean springs); 1.9 m (mean neaps) (Portnancon)
<i>Salinity</i>	Fully marine; possibly variable at head

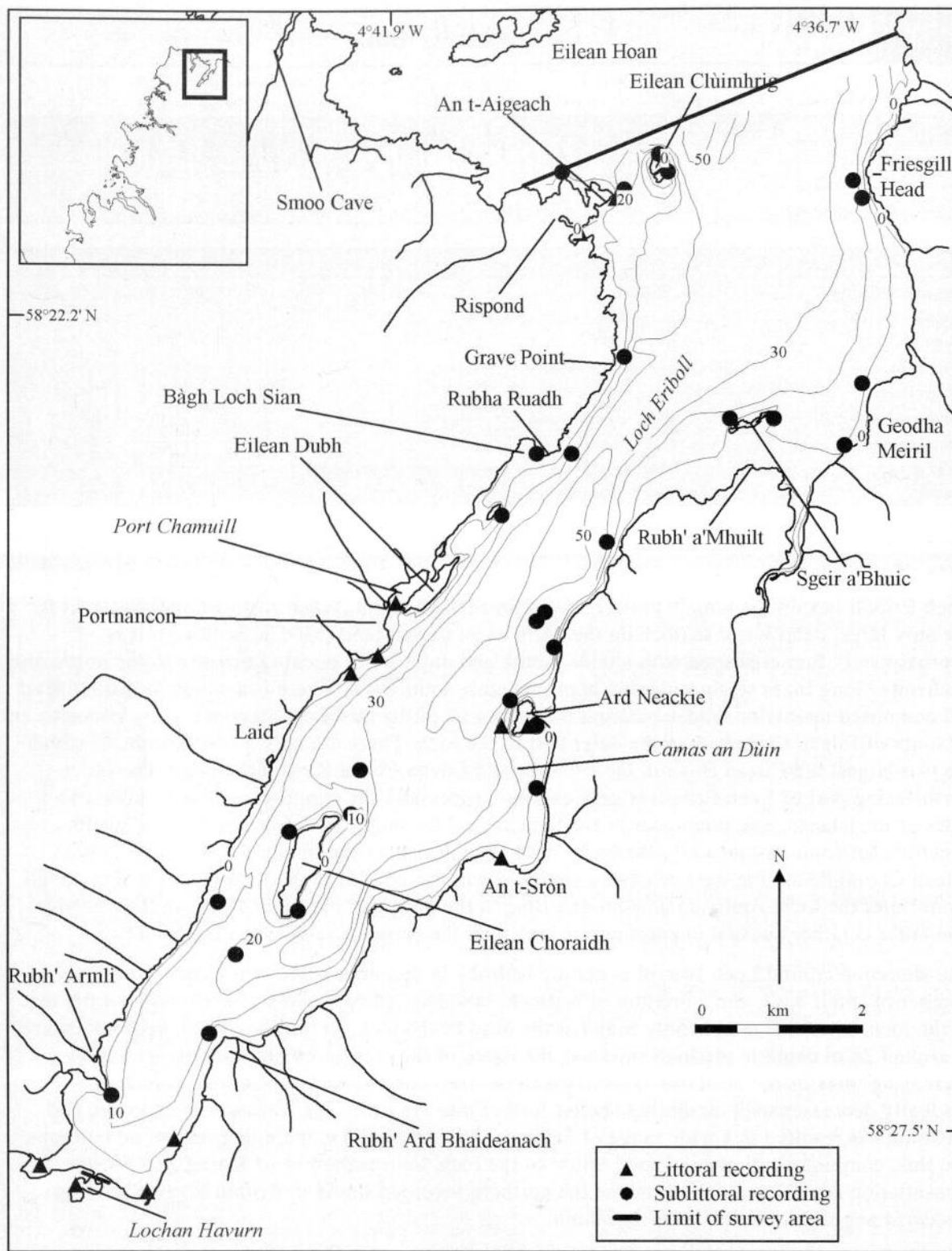
**Introduction**

Loch Eriboll lies on the remote north coast of Sutherland about 25 km east of Cape Wrath. It is the only large, deep-water sealoch on the north coast of Scotland (MNCR Sector 3). It is approximately funnel-shaped with a wide mouth and outer basin opening directly to the north, and a narrower long inner section running approximately south-west. There is a single indistinct deep sill composed mainly of sand separating the main part of the loch from the open sea a kilometre or so south of Eilean Clùimhrig in the outer part of the loch. There are only a few islands, of which the two largest are Eilean Hoan in the entrance and Eilean Choraidh near the head. The outer north-facing part of Loch Eriboll is very exposed, especially the fringing headlands and north sides of the islands. The remainder of the loch has a very short direct fetch but strong swells penetrate for some distance into the loch. Weak tidal streams of around 0.5 knot run between Eilean Choraidh and the west coast and similarly past the islands in the loch entrance. Two small rivers enter the loch, Amhainn an t-Stratha Bhig at the head and the River Hope on the east side. The latter is rather unusual in entering the loch near the entrance rather than the head.

The shoreline around Loch Eriboll is mainly bedrock in the outer parts, with coarse sand in a number of small bays, and a mixture of bedrock, boulders, shingle and gravel throughout the rest of the loch. Intertidal mud is only found at the head of the loch. In the sublittoral, bedrock extends to around 25 m depth in the loch entrance, the depth of the rock/sediment interface gradually decreasing towards the head of the loch. Likewise, the coarseness of sublittoral sediments gradually decreases with increasing shelter further into the loch. The variation in exposure and substrata has resulted in a wide range of habitats and communities, including limestone outcrops and this, combined with the unspoilt nature of the loch, has resulted in its listing as a Marine Consultation Area. Loch Eriboll marks the northern recorded limits in Britain for two red algae, *Naccaria wiggii* and *Schmitzia hiscockiana*.

At the head of Loch Eriboll is Lochan Havurn, a double-pooled lagoonal system separated from the loch proper by a shingle ridge overtopped at high tides (Covey *et al.* 1998).

The hinterland is mountainous and steep. The underlying geology includes Durness limestone and in the east there are limestone cliffs and caves, while limestone outcrops are also found in the sublittoral.



**Figure 31.1** Main features of the area, showing sites surveyed.

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## Marine biology

Marine biological surveys				
	Survey methods	No. of sites	Date(s) of survey	Source
Littoral	Recording (epibiota)	12	September 1974	Jones (1975)
Sublittoral	Recording (epibiota)	29	August 1986	Moss (1986)

### Littoral

#### Littoral rock

The shoreline around Loch Eriboll is predominantly bedrock in the outer parts, north of Rubha Ruadh on the west coast, and north of the peninsula of Ard Neackie on the east coast. The shores around Eilean Choraigh are also mainly bedrock. The remaining inner shores consist of a mixture of boulders, shingle and gravel with some bedrock areas. The east coast bedrock is almost all exposed and consists mainly of steep, often vertical rock faces dominated by barnacles *Semibalanus balanoides* and mussels *Mytilus edulis*. There is a well-developed lichen zone with *Verrucaria maura* abundant at the more exposed sites and reduced where there is any shelter. The west coast is the lee shore and the bedrock shores in the outer parts are therefore, in general, more sheltered than those at the same level on the east coast. However, the shoreline between the headland of An t-Aigeach at the mouth of the loch and Rispond to the south is exposed and consists of extremely broken rock with numerous gullies. This provides localised shelter, but in general this part of the coastline has similar barnacle-dominated biotopes to the eastern shore, with *S. balanoides*, limpets *Patella vulgata* and *Patella aspersa*, and *M. edulis*. Slightly less exposed bedrock shores are found on headlands along the west coast at Rubha Ruadh and further south at Eilean Dubh, and also on the north side of the Ard Neackie peninsula on the east coast. These shores too have a prevalence of barnacles but also have a patchy cover of channelled wrack *Pelvetia canaliculata* and *Fucus vesiculosus* f. *linearis* in the eulittoral zone. Dabberlocks *Alaria esculenta* is present in the sublittoral fringe at sites at least as far into the loch as Sgeir a'Bhuic and sometimes as deep as 5 m, another indication of the very exposed nature of the outer part of this loch.

The western face of the Ard Neackie peninsula is dominated by red algae, especially *Palmaria palmata*, *Mastocarpus stellatus* and encrusting coralline algae. *S. balanoides* is also common but localised. The rock faces are heavily pitted and thus provide many microhabitats for molluscs and encrusting species, as do the high-level rockpools. Sheltered bedrock is found on the east side of the peninsula where typical furoid-dominated shores occur, with *P. canaliculata* at the higher levels and *Ascophyllum nodosum* predominant over the mid-shore. Red algae are well developed on the lower shore and kelp *Laminaria digitata* is abundant in the sublittoral fringe. This peninsula provides a variety of bedrock habitats and was considered by Jones (1975) to be the most biologically interesting intertidal site in the area.

Boulder, shingle and gravel shores predominate throughout the inner two-thirds or so of Loch Eriboll. These mixed substrata often overlie gently inclined bedrock, for example just north of Portnancon. Where sufficient stable boulders or consolidated smaller rocks are present, usually below mid-tide level, these sheltered shores are furoid-dominated and *A. nodosum* is predominant along most of the western shoreline south of Portnancon and patchily along the eastern shoreline south of Ard Neackie. On some shores a typical sheltered shore sequence of *P. canaliculata*, *Fucus spiralis*, *F. vesiculosus* and/or *A. nodosum*, *Fucus serratus* and *Laminaria* spp. occurs. Barnacles are also often present, especially at higher levels. Gravel and shingle shores at the head of the loch are species-poor, supporting only low numbers of the isopods *Ligia oceanica* and *Jaera* sp., amphipods *Gammarus* spp., *Talitrus saltator* and *Orchestia gammarellus* and the periwinkle *Littorina saxatilis*. However, stable gravel and shingle on the upper shore, such as at the south-east end of the loch, supports greater numbers of these species and littorinids are abundant on the gravel shores in Portnancon due to the sheltered nature of the site. Typical lichen

zones are present at the top of these sheltered shores but are restricted to narrower vertical ranges than at exposed sites in the mouth of the loch, due to the lack of wave splash. At Port Chamuill, a freshwater stream runs across the shore and localised communities of euryhaline species such as *Fucus ceranoides* are present. These mixed substrata shores have a greater diversity and density of species along the more sheltered western coast than along the more wave-exposed east coast.

#### *Littoral sediment*

There are no extensive sediment shores within the loch. Areas of sand occur at extreme low water along many of the mixed substrata shores of the inner part of the loch. Muddy gravels, muddy sand and mud are only found in the extreme shelter of the innermost parts of small inlets, such as Polla Ford at the head of the loch and Port Chamuill and Rispond Bay on the west coast. Muddy sand areas support low densities of cockles *Cerastoderma edule*, lugworms *Arenicola marina* and the amphipod *Bathyporeia pilosa*. Patches of pure mud support the mud shrimp *Corophium volutator*.

#### **Sublittoral**

In the outer exposed parts of the loch, bedrock extends to depths of up to 25 m or more close to the shore, before giving way to pebbles or sand. The slope of the bedrock varies but is generally steep in the outer parts, and cliffs and broken bedrock with numerous gullies are common, especially at the more exposed sites. Although bedrock is predominant, slopes of large boulders occur in places, and to the south of Ard Neackie boulder slopes are predominant with only occasional outcrops of bedrock. Moving towards the head of the loch, the depth of the rock/sediment boundary gradually decreases as shelter increases until, south of Ard Neackie, rock generally extends to less than 8 m depth. The region off the east coast between Friesgill Head and Geodha Meiril in the outer loch differs from the areas to both north and south in that there is an extensive plateau of sand, boulder and bedrock outcrops at about 10–18 m depth. This forms part of the indistinct sill that runs across this part of the loch. There do not appear to be any areas of circalittoral rock away from the coast.

#### *Sublittoral rock*

The exposed nature of Loch Eriboll is indicated by the fact that *Laminaria hyperborea* kelp forests predominate on infralittoral bedrock and large boulders where the loch narrows slightly close to the shore of Rubha Ruadh.. Further south, with increasing shelter, *Laminaria saccharina* becomes the dominant kelp and dense *L. hyperborea* is restricted to a narrow band above 2 m in the region of the Ard Neackie peninsula. Beyond this there is little suitable substratum for *L. hyperborea*. However, dense *L. hyperborea* is also found on the north side of Eilean Choraiddh and as a narrow band on bedrock cliffs to around 5 m depth at the south end of the island. The north-facing side of this island is probably more exposed than it would appear from its position in the loch. In the outer parts of the loch, including Eilean Clùimhrig, *L. hyperborea* extends to around 15 m with dense kelp forest gradually becoming kelp park (Lhyp.Pk). At many sites the rock surfaces are intensely grazed by the urchin *Echinus esculentus* but there are often dense growths of epiphytic algae on the kelp stipes. Further into the loch, grazing pressure appears to be less but the rock surfaces are sometimes silty. Cliff faces and the sides of gullies throughout the exposed areas of the loch support dead-man's fingers *Alcyonium digitatum*, sometimes forming a dense and colourful display, along with the featherstar *Antedon bifida*, ascidians and a turf of hydroids and bryozoans. Sponges are sometimes present but are not abundant within the loch. Upward-facing rock surfaces under the kelp tend to have a rather restricted epifauna of hard and encrusting species, such as the bryozoan *Parasmittina trispinosa* and encrusting coralline algae, especially where grazing pressure is high. Where grazing pressure is not intense, foliose algae may extend below the lower limit of the kelp to a depth that becomes progressively shallower with distance into the loch. About half-way into the loch, just north of Ard Neackie, foliose algae extend to around 17 m depth.

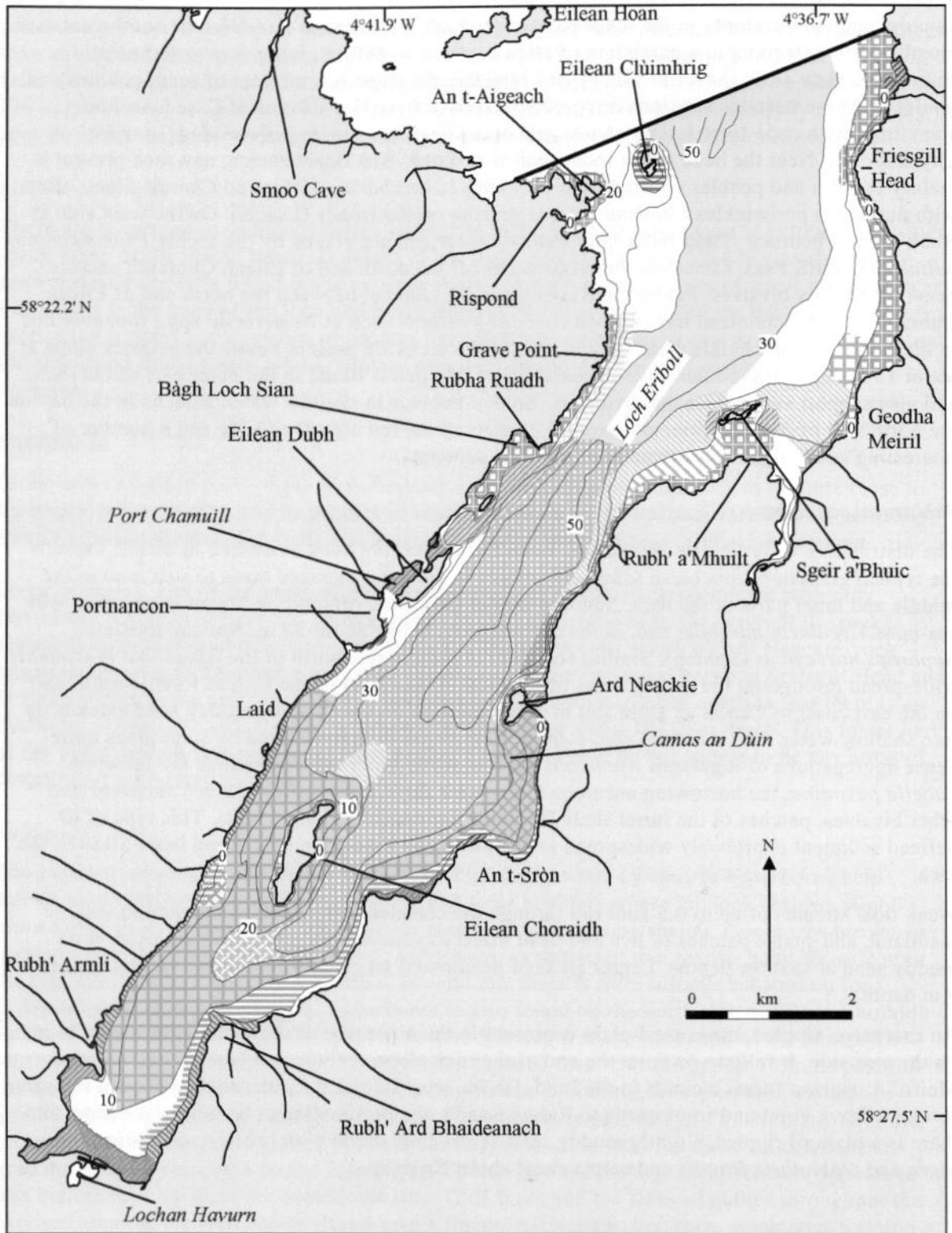
Boulder and cobble slopes in the inner parts of the loch from around Ard Neackie southwards are mostly short, extending to a maximum of 10 m depth or so before giving way to sediment. In some bays, such as on the north side of Ard Neackie, the slope is a mixture of sand, pebbles and boulders. These unstable substrata are predominantly covered by a forest of *L. saccharina*, sometimes with cape-form *L. hyperborea* and occasional *Saccorhiza polyschides* (Lsac.Ft; LhypLsac.Ft). Near the head of the loch, such as at Rubh' Ard Bhaideanach, any rock present is mainly cobbles and pebbles covered with very silty *L. saccharina* forest and *Chorda filum*, often with numerous periwinkles *Littorina littorea* grazing on the fronds (LsacX). On the west side at Rubh' Armlì, bedrock ridges outcrop in shallow water and are grazed by the urchin *Psammechinus miliaris* (LsacRS.Psa). Limestone outcrops occur off the north end of Eilean Choraidh and are heavily bored by bivalves. Pebbles and cobbles in the channel between the north end of Eilean Choraidh and the mainland have a good cover of hydroids such as *Nemertesia* spp., probably due to the faster currents in this area. Cobble and pebble areas are present below the bedrock slope at about 15 m depth around the wave-exposed skerry of Sgeir a' Bhuic in the outer part of the loch, and also support small algae and hydroids (EphR). Pebbles in shallow water, such as in the bay on the north side of Ard Neackie, are covered by mats of the red alga *Trilliella* and a number of interesting small algae characteristic of unstable substrata.

#### *Sublittoral sediment*

The distribution of sediments throughout Loch Eriboll has not been examined in detail. There is the typical gradation from clean sand and pebbles in the outer exposed areas to soft mud in the middle and inner parts of the loch. South of Eilean Choraidh, offshore sediment is soft mud with sea-pens *Virgularia mirabilis* and, in the deepest parts below about 30 m, Norway lobsters *Nephrops norvegicus* (SpMeg). Similar sediment is present just north of the island and is probably widespread throughout the deeper areas of the loch. At the head of the loch at Rubh' Armlì, and on the east coast in Camas an Dùin and in sheltered bays on both coasts, muddy sand extends up into shallow water. The sediment above about 10 m depth is characterised by sometimes quite dense aggregations of lugworms *Arenicola marina*, while other species include the fanworm *Sabella pavonina*, the burrowing anemone *Cerianthus lloydii*, the scallop *Pecten maximus* and other bivalves, patches of the turret shell *Turritella communis* and algal mats. This type of ill-defined sediment is probably widespread in shallow water throughout sheltered inner areas of the loch.

Weak tidal streams of up to 0.5 knot run through the channel between Eilean Choraidh and the mainland, and sparse patches of live and dead maerl *Phymatolithon calcareum* are present on muddy sand at shallow depths. Larger areas of dead maerl fragments overlie the sand at around 9 m depth.

An extensive, rippled, clean sand-plain is present in the outer part of the loch below about 10 m, on the east side. It follows on from the end of the rock slope at Cnoc nan Gobhar and Geodha Meiril. *A. marina* forms mounds in the sand. On the west side of the outer loch at around the same level, at Grave Point and southwards to Rubha Ruadh, the rock/sediment boundary is deeper and there is a plain of rippled, slightly muddy sand at 20–25 m depth with brittlestars *Ophiocoma nigra* and *Ophiothrix fragilis* and empty razor shells *Ensis* sp.



**Figure 31.2** Indicative distribution of the main biotopes in the area (based on data from survey sites shown in Figure 31.1, cited literature and additional field observations).

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## Nature conservation

Conservation sites		
Site name	Designation	Main features
Loch Eriboll	MCA	Marine biological
Eriboll	SSSI/GCR	Geological
An t-Sròn	GCR	Geological
Lochan An Druim	GCR	Geological
Inverhope	SSSI	
Eilean Hoan	RSPB	Ornithological
Loch Eriboll	AGLV	Landscape (part of eastern shore)

## Human influences

### Coastal developments and uses

The coastline is mostly undeveloped and largely accessible only by boat. The A838 main coast road runs around Loch Eriboll but mostly at some distance from the shoreline and there are a few dwellings strung out along the route. One of these on the western shore at Laid is a farm park with rare breeds of farm animals. The village of Durness lies to the west outside the loch entrance and has a visitor centre with displays on the geology of the area. Just to the east of the village is Smoo Cave, a tourist attraction reached by a flight of steps and stepping stones. The limestone of which this area is composed provides good grazing in comparison with nearby acid moorland. Much of the rest of the hinterland around the loch is steep and mountainous with a narrow flatter coastal strip.

### Marine developments and uses

Access to Loch Eriboll is possible via the small natural harbour at Rispond on the north-west side, but this dries out at low water. There is another small harbour and a pier at Portnancon on the west side and a crumbling pier at Ard Neackie, a protruding rugged outcrop on the east side. During World War II the loch was an assembly point for North Atlantic convoys (whose crews nicknamed it 'Loch 'Orrible') but there is now very little boat traffic. A few pleasure craft use the area and there is some potting for crabs and lobsters *Homarus gammarus* and dredging for scallops. The latter are also collected by divers. Otherwise, the loch is not fished commercially. At the time of the 1986 survey (Moss 1986), there were no fish farms in the loch but there are now farms to the west of Eilean Choraidh and on the east side of the loch in the shelter of Camas an Dùin. There is a scallop farm at Ard Neackie. A recent Framework Plan (by Highland Council) includes the possibility of developing a coastal superquarry.

## References and further reading

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- Jones, A.M. 1975. *A littoral survey of the Loch Eriboll area, Sutherland*. Unpublished, University of Dundee, Department of Biological Sciences. (Centre for Industrial Research and Consultancy Report.)
- Moss, D. 1986. Report of a sublittoral survey of Loch Eriboll (Sutherland). (Contractor: University of Manchester, Department of Mathematics.) *Nature Conservancy Council, CSD Report*, No. 697.
- Nature Conservancy Council. 1990. *Marine Consultation Areas: Scotland*. Unpublished, Nature Conservancy Council (Scotland), Edinburgh.



## Sites surveyed

Survey 56: 1986 MCS Loch Eriboll sublittoral survey (Moss, 1986).

Survey 89: 1974 University of Dundee Loch Eriboll littoral survey (Jones, 1975).

Littoral sites					
Survey	Site	Place	Grid reference	Latitude/longitude	Biotores recorded
89	1	N of Portnancon, Loch Eriboll	NC 430 604	58°30.2'N 04°41.6'W	BF; L
89	2	S of Portnancon, Loch Eriboll	NC 427 602	58°30.1'N 04°41.9'W	F; Tal; L; Lsac.Ldig; EcorEns; BPat.Sem
89	3	Port Chamuill, Loch Eriboll	NC 432 610	58°30.5'N 04°41.5'W	L; FcerX; Lsac.Ldig; Asc; Pel; Fserr
89	4	Polla Ford, Loch Eriboll	NC 392 546	58°27.0'N 04°45.3'W	Mu; L; PCer; FcerX; Asc; Pel; Fserr
89	5	Bay near Lochan Havurn, Loch Eriboll	NC 397 543	58°26.8'N 04°44.8'W	F
89	6	Rispond Bay, Loch Eriboll	NC 453 652	58°32.8'N 04°39.5'W	F; Ldig
89	7	An t-Aigeach, Loch Eriboll approaches	NC 457 656	58°33.0'N 04°39.1'W	L; MB; Ldig
89	8	An t-Sròn, Loch Eriboll	NC 444 581	58°29.0'N 04°40.1'W	F; L
89	9	S end of loch, Loch Eriboll	NC 407 547	58°27.1'N 04°43.8'W	F; Tal; L; Lsac.Ldig
89	10	S end of loch, Loch Eriboll	NC 404 543	58°26.8'N 04°44.1'W	Sh
89	12	Ard Neackie (inner), Loch Eriboll	NC 447 597	58°29.8'N 04°39.9'W	F; L; Ldig
89	13	Ard Neackie (outer), Loch Eriboll	NC 444 596	58°29.8'N 04°40.2'W	BF; Rkp; L; Ldig

Sublittoral sites					
Survey	Site	Place	Grid reference	Latitude/longitude	Biotores recorded
56	1	Grave Point, Loch Eriboll	NC 458 638	58°32.1'N 04°38.9'W	Oph; FaAlC; LhypGz.Pk
56	2	Rubha Ruadh, Loch Eriboll	NC 452 627	58°31.5'N 04°39.5'W	Ant; Oph; LhypGz.Ft
56	3	Ard Neackie N, Loch Eriboll	NC 445 599	58°29.9'N 04°40.1'W	FaAlC; Lhyp.Ft; AlcByH; Lhyp.Pk; Phy
56	4	Eilean Choraìdh SE, Loch Eriboll	NC 421 575	58°28.6'N 04°42.4'W	Lhyp.Ft; LsacX
56	5	Eilean Choraìdh NW, Loch Eriboll	NC 420 584	58°29.1'N 04°42.6'W	IMX
56	6	Eilean Clùimhriag E, Loch Eriboll	NC 463 659	58°33.2'N 04°38.5'W	LhypGz.Pk
56	7	An t-Aigeach, Loch Eriboll	NC 458 657	58°33.1'N 04°39.0'W	SedK; Lhyp.Ft
56	10	Tòrr na Bithe, Loch Eriboll	NC 450 605	58°30.3'N 04°39.6'W	CMX; Lsac.Ft; Lhyp.Ft; Lsac.Pk
56	11A	Geodh' an Sgadin (a), Loch Eriboll	NC 449 609	58°30.5'N 04°39.7'W	LsacX; EchBriCC
56	11B	Geodh' an Sgadin (b), Loch Eriboll	NC 448 608	58°30.4'N 04°39.8'W	FaMx; LhypLsac.Ft; LsacX; Tra
56	12	Sgeir a'Bhuic NW, Loch Eriboll	NC 470 631	58°31.7'N 04°37.6'W	FoSwCC; VirOph.HAs; AlcByH; Ant
56	13	Sgeir a'Bhuic E, Loch Eriboll	NC 475 631	58°31.7'N 04°37.1'W	LhypGz.Ft; EphR; LhypGz.Pk
56	14	Lighthouse, Loch Eriboll	NC 456 617	58°30.9'N 04°39.0'W	SS; EcorEns; LhypGz.Ft; AlcByH; XKScrR
56	19A	Friesgill Head N, Loch Eriboll	NC 484 658	58°33.2'N 04°36.3'W	KR; HalXX
56	19B	Friesgill Head S, Loch Eriboll	NC 485 656	58°33.1'N 04°36.2'W	KR; SedK
56	20	Cnoc nan Gobhar, Loch Eriboll	NC 485 635	58°32.0'N 04°36.1'W	IGS; Lhyp.Ft; XKScrR
56	21	Geodha Meiril, Loch Eriboll	NC 483 628	58°31.6'N 04°36.3'W	FaS; Lhyp.Ft
56	22	Eilean Clùimhriag N, Loch Eriboll	NC 462 661	58°33.3'N 04°38.6'W	LhypR.Ft; FaAlC; AlcByH
56	23	Rubh' Armlì, Loch Eriboll	NC 400 554	58°27.4'N 04°44.5'W	IMS; LsacRS.Psa
56	24	Rubh' Ard Bhaideanach, Loch Eriboll	NC 411 561	58°27.8'N 04°43.4'W	Lsac.Ft; PhiVir; ModHAs
56	25	Buoy chain, Loch Eriboll	NC 428 591	58°29.5'N 04°41.8'W	VirOph; FaV; Lsac.Ft
56	26	Rispond N, Loch Eriboll	NC 451 659	58°33.2'N 04°39.7'W	FaS; LhypGz; AlcByH
56	28	Eilean Choraìdh NE, Loch Eriboll	NC 427 586	58°29.2'N 04°41.9'W	Lhyp.Ft; LsacX

<b>Sublittoral sites</b>					
<i>Survey</i>	<i>Site</i>	<i>Place</i>	<i>Grid reference</i>	<i>Latitude/longitude</i>	<i>Biotopes recorded</i>
56	29	W channel, Eilean Choraith, Loch Eriboll	NC 412 576	58°28.6'N 04°43.4'W	Lcor
56	30	S basin anchorage, Loch Eriboll	NC 414 570	58°28.3'N 04°43.1'W	SpMeg
56	31	Bàgh Loch Sian, Loch Eriboll	NC 448 627	58°31.5'N 04°39.9'W	IMX; LhypLsac.Ft; Lhyp
56	32	Eilean Dubh, Loch Eriboll	NC 444 620	58°31.1'N 04°40.3'W	Lhyp.Ft; AlcByH; LsacX
56	33	Camas an Dùin, Loch Eriboll	NC 448 589	58°29.4'N 04°39.7'W	Lsac.Ft; LsacX
56	34	Ard Neackie S, Loch Eriboll	NC 448 596	58°29.8'N 04°39.8'W	FaMS; Lsac.Ldig; LhypLsac.Ft

## Appendix A

## Biotopes classification

A hierarchical classification of the biotopes recorded in the sealochs of MNCR Sectors 15 and 3 during the surveys given in Table 1 (Sources of field survey information), together with their higher types, is given below. The biotopes listed are derived from the MNCR national marine biotope classification version 97.06 (Connor *et al.* 1997a, b). Records of biotopes noted in the text but not shown here come from additional published sources cited in the individual area summaries. Species nomenclature follows Howson & Picton (1997).

Higher code	Biotope code	Biotope
LR		<b>LITTORAL ROCK (and other hard substrata)</b>
LR.L		<b>Lichens or algal crusts</b>
LR.L	YG	Yellow and grey lichens on supralittoral rock
LR.L	Pra	<i>Prasiola stipitata</i> on nitrate-enriched supralittoral or littoral fringe rock
LR.L	Ver	<i>Verrucaria maura</i> on littoral fringe rock
LR.L	Ver.Por	<i>Verrucaria maura</i> and <i>Porphyra umbilicalis</i> on very exposed littoral fringe rock
LR.L	Ver.B	<i>Verrucaria maura</i> and sparse barnacles on exposed littoral fringe rock
LR.L	Ver.Ver	<i>Verrucaria maura</i> on moderately exposed to very sheltered upper littoral fringe rock
LR.L	Chr	Chrysophyceae on vertical upper littoral fringe soft rock
ELR		<b>Exposed littoral rock (MUSSEL/BARNACLE SHORES)</b>
ELR.MB		<b><i>Mytilus</i> (mussels) and barnacles</b>
ELR.MB	MytB	<i>Mytilus edulis</i> and barnacles on very exposed eulittoral rock
ELR.MB	BPat	Barnacles and <i>Patella</i> spp. on exposed or moderately exposed, or vertical sheltered, eulittoral rock
ELR.MB	BPat.Cht	<i>Chthamalus</i> spp. on exposed upper eulittoral rock
ELR.MB	BPat.Lic	Barnacles and <i>Lichina pygmaea</i> on steep exposed upper eulittoral rock
ELR.MB	BPat.Cat	<i>Catenella caespitosa</i> on overhanging, or shaded vertical, upper eulittoral rock
ELR.MB	BPat.Fvesl	Barnacles, <i>Patella</i> spp. and <i>Fucus vesiculosus</i> f. <i>linearis</i> on exposed eulittoral rock
ELR.MB	BPat.Sem	<i>Semibalanus balanoides</i> on exposed or moderately exposed, or vertical sheltered, eulittoral rock
ELR.FR		<b>Robust furoids or red seaweeds</b>
ELR.FR	Him	<i>Himanthalia elongata</i> and red seaweeds on exposed lower eulittoral rock

Higher code	Biotope code	Biotope
MLR		<b>Moderately exposed littoral rock (BARNACLE/FUCOID SHORES)</b>
MLR.BF		<b>Barnacles and fucoids (moderately exposed shores)</b>
MLR.BF	PelB	<i>Pelvetia canaliculata</i> and barnacles on moderately exposed littoral fringe rock
MLR.BF	FvesB	<i>Fucus vesiculosus</i> and barnacle mosaics on moderately exposed mid-eulittoral rock
MLR.BF	Fser.R	<i>Fucus serratus</i> and red seaweeds on moderately exposed lower eulittoral rock
MLR.BF	Fser.Fser	Dense <i>Fucus serratus</i> on moderately exposed to very sheltered lower eulittoral rock
MLR.BF	Fser.Fser.Bo	<i>Fucus serratus</i> and under-boulder fauna on lower eulittoral boulders
MLR.R		<b>Red seaweeds (moderately exposed shores)</b>
MLR.R	XR	Mixed red seaweeds on moderately exposed lower eulittoral rock
MLR.R	Mas	<i>Mastocarpus stellatus</i> and <i>Chondrus crispus</i> on very to moderately exposed lower eulittoral rock
MLR.R	Mas	<i>Osmundea</i> ( <i>Laurencia</i> ) <i>pinnatifida</i> and <i>gelidium pusillum</i> on moderately exposed eulittoral rock
MLR.Eph		<b>Ephemeral green or red seaweeds (freshwater or sand-influenced)</b>
MLR.Eph	Ent	<i>Enteromorpha</i> spp. on freshwater-influenced or unstable upper eulittoral rock
MLR.Eph	Rho	<i>Rhodothamniella floridula</i> on sand-scoured lower eulittoral rock
MLR.MF		<b>Mytilus (mussels) and fucoids (moderately exposed shores)</b>
MLR.MF	MytFves	<i>Mytilus edulis</i> and <i>Fucus vesiculosus</i> on moderately exposed mid-eulittoral rock
MLR.MF	MytFR	<i>Mytilus edulis</i> , <i>Fucus serratus</i> and red seaweeds on moderately exposed lower eulittoral rock
SLR		<b>Sheltered littoral rock (FUCOID SHORES)</b>
SLR.F		<b>Dense fucoids (stable rock)</b>
SLR.F	Pel	<i>Pelvetia canaliculata</i> on sheltered littoral fringe rock
SLR.F	Fspi	<i>Fucus spiralis</i> on moderately exposed to very sheltered upper eulittoral rock
SLR.F	Fves	<i>Fucus vesiculosus</i> on sheltered mid-eulittoral rock

Higher code	Biotope code	Biotope
SLR.F	Asc	<i>Ascophyllum nodosum</i> on very sheltered mid-eulittoral rock
SLR.F	Asc.Asc	<i>Ascophyllum nodosum</i> on full salinity mid-eulittoral rock
SLR.F	Asc.T	<i>Ascophyllum nodosum</i> , sponges and ascidians on tide-swept mid-eulittoral rock
SLR.F	Asc.VS	<i>Ascophyllum nodosum</i> and <i>Fucus vesiculosus</i> on variable salinity mid-eulittoral rock
SLR.F	Fserr	<i>Fucus serratus</i> on sheltered lower eulittoral rock
SLR.F	Fserr.T	<i>Fucus serratus</i> , sponges and ascidians on tide-swept lower eulittoral rock
SLR.F	Fserr.VS	<i>Fucus serratus</i> and large <i>Mytilus edulis</i> on variable salinity lower eulittoral rock
SLR.F	Fcer	<i>Fucus ceranoides</i> on reduced salinity eulittoral rock
SLR.FX		<b>Furoids, barnacles or ephemeral seaweeds (mixed substrata)</b>
SLR.FX		Barnacles and <i>Littorina littorea</i> on unstable eulittoral mixed substrata
SLR.FX	FvesX	<i>Fucus vesiculosus</i> on mid-eulittoral mixed substrata
SLR.FX	AscX	<i>Ascophyllum nodosum</i> on mid-eulittoral mixed substrata
SLR.FX	AscX.mac	<i>Ascophyllum nodosum</i> ecad. <i>mackaii</i> beds on extremely sheltered mid-eulittoral mixed substrata
SLR.FX	FserX	<i>Fucus serratus</i> on lower eulittoral mixed substrata
SLR.FX	FserX.T	<i>Fucus serratus</i> with sponges, ascidians and red seaweeds on tide-swept lower eulittoral mixed substrata
SLR.FX	EphX	Ephemeral green and red seaweeds on variable salinity or disturbed eulittoral mixed substrata
SLR.FX	FcerX	<i>Fucus ceranoides</i> on reduced salinity eulittoral mixed substrata
SLR.MX		<b><i>Mytilus</i> (mussel) beds (mixed substrata)</b>
SLR.MX	MytX	<i>Mytilus edulis</i> beds on eulittoral mixed substrata
<b>Littoral rock (other)</b>		
<b>Rockpools</b>		
LR.Rkp		
LR.Rkp	G	Green seaweeds ( <i>Enteromorpha</i> spp. and <i>Cladophora</i> spp.) in upper shore rockpools
LR.Rkp	Cor	<i>Corallina officinalis</i> and coralline crusts in shallow eulittoral rockpools
LR.Rkp	FK	Furoids and kelps in deep eulittoral rockpools
LR.Rkp	SwSed	Seaweeds in sediment (sand or gravel)-floored eulittoral rockpools

Higher code	Biotope code	Biotope
LR.Ov		<b>Overhangs and caves</b>
LR.Ov	SR	Sponges and shade-tolerant red seaweeds on overhanging lower eulittoral bedrock
LR.Ov	SByAs	Sponges, bryozoans and ascidians on deeply overhanging lower shore bedrock
LS		<b>Littoral sediments</b>
LGS		<b>Littoral gravels and sands</b>
LGS.Sh		<b>Shingle (pebble) and gravel shores</b>
LGS.Sh	BarSh	Barren shingle or gravel shores
LGS.S		<b>Sand shores</b>
LGS.S	Tal	Talitrid amphipods in decomposing seaweed on strand-line
LGS.S	BarSnd	<b>Barren coarse sand shores</b>
LGS.S	AEur	Burrowing amphipods and <i>Eurydice pulchra</i> in well-drained clean sand shores
LGS.S	AP	Burrowing amphipods and polychaetes in clean sand shores
LGS.S	AP.P	Burrowing amphipods and polychaetes (often with <i>Arenicola marina</i> ) in clean sand shores
LGS.S	AP.Pon	Burrowing amphipods <i>Pontocrates</i> spp. and <i>Bathyporeia</i> spp. in lower shore clean sand
LGS.S	Lan	Dense <i>Lanice conchilega</i> in tide-swept lower shore sand
LMS		<b>Littoral muddy sands</b>
LMS.MS		<b>Muddy sand shores</b>
LMS.MS	BatCor	<i>Bathyporeia pilosa</i> and <i>Corophium</i> spp. in upper shore slightly muddy fine sand shores
LMS.MS	Pcer	Polychaetes and <i>Cerastoderma edule</i> in fine sand and muddy sand shores
LMS.MS	MacAre	<i>Macoma balthica</i> and <i>Arenicola marina</i> in muddy sand shores
LMS.MS	MacAre.Mare	<i>Arenicola marina</i> , <i>Macoma balthica</i> and <i>Mya arenaria</i> in muddy sand shores
LMU		<b>Littoral muds</b>
LMU.Sm		<b>Saltmarsh</b>
LMU.Sm	NVC SM8	<i>Salicornia</i> spp.
LMU.Sm	NVC SM13	<i>Puccinellia maritima</i>

Higher code	Biotope code	Biotope
LMU.Sm	NVC SM13	Sub-communities of <i>Puccinellia maritima</i> saltmarsh with <i>Limonium vulgare</i> and <i>Armeria maritima</i> ; <i>Puccinellia maritima</i> with <i>Glaux maritima</i> co-dominant in species-poor vegetation; <i>Puccinellia maritima</i> with <i>Plantago maritima</i> and/or <i>Armeria maritima</i>
LMU.SMu	HedMac	<i>Hediste diversicolor</i> and <i>Macoma balthica</i> in sandy mud shores
LMU.SMu	HedMac.Are	<i>Hediste diversicolor</i> , <i>Macoma balthica</i> and <i>Arenicola marina</i> in muddy sand or sandy mud shores
LMU.SMu	HedMac.Pyg	<i>Hediste diversicolor</i> , <i>Macoma balthica</i> and <i>Pygospio elegans</i> in sandy mud shores
LMU.Mu		<b>Soft mud shores</b>
LMX		<b>Littoral mixed sediments</b>
LMX	MytFab	<i>Mytilus edulis</i> and <i>Fabricia sabella</i> in poorly-sorted muddy sand or muddy gravel shores
IR		<b>INFRALITTORAL ROCK (and other hard substrata)</b>
EIR		<b>Exposed infralittoral rock</b>
EIR.KFaR		<b>Kelp with cushion fauna, foliose red seaweeds or coralline crusts (exposed rock)</b>
EIR.KFaR	Ala	<i>Alaria esculenta</i> on sublittoral fringe bedrock
EIR.KFaR	Ala.Myt	<i>Alaria esculenta</i> , <i>Mytilus edulis</i> and coralline crusts on very exposed sublittoral fringe bedrock
EIR.KFaR	Ala.Ldig	<i>Alaria esculenta</i> and <i>Laminaria digitata</i> on exposed sublittoral fringe bedrock
EIR.KFaR	LhypFa	<i>Laminaria hyperborea</i> forest with a faunal cushion (sponges and polyclinids) and foliose red seaweeds on very exposed infralittoral rock
EIR.KFaR	LhypR.Ft	<i>Laminaria hyperborea</i> forest with dense foliose red seaweeds on exposed upper infralittoral rock
EIR.KFaR	LhypR.Pk	<i>Laminaria hyperborea</i> park with dense foliose red seaweeds on exposed lower infralittoral rock
EIR.KFaR	LsacSac	<i>Laminaria saccharina</i> and/or <i>Saccorhiza polyschides</i> on exposed infralittoral rock
EIR.KFaR	FoR	Foliose red seaweeds on exposed or moderately exposed lower infralittoral rock
EIR.SG		<b>Robust faunal cushions and crusts (surge gullies &amp; caves)</b>
EIR.SG	SCAn	Sponge crusts and anemones on wave-surged vertical infralittoral rock
EIR.SG	SCAs	Sponge crusts and colonial ascidians on wave-surged vertical infralittoral rock
EIR.SG	SCAs.DenCla	<i>Dendrodoa grossularia</i> and <i>Clathrina coriacea</i> on wave-surged vertical infralittoral rock

Higher code	Biotope code	Biotope
EIR.SG	SCAs.ByH	Sponge crusts, colonial (polyclinal) ascidians and a bryozoan/hydroid turf on wave-surged vertical or overhanging infralittoral rock
EIR.SG	CC	<i>Balanus crenatus</i> and/or <i>Pomatoceros triqueter</i> with spirorbid worms and coralline crusts on severely scoured infralittoral rock
MIR		<b>Moderately exposed infralittoral rock</b>
MIR.KR		<b>Kelp with red seaweeds (moderately exposed rock)</b>
MIR.KR	Ldig	<i>Laminaria digitata</i> on moderately exposed or tide-swept sublittoral fringe rock
MIR.KR	Ldig.Ldig	<i>Laminaria digitata</i> on moderately exposed sublittoral fringe rock
MIR.KR	Ldig.Ldig.Bo	<i>Laminaria digitata</i> and under-boulder fauna on sublittoral fringe boulders
MIR.KR	Ldig.T	<i>Laminaria digitata</i> , ascidians and bryozoans on tide-swept sublittoral fringe rock
MIR.KR	Lhyp	<i>Laminaria hyperborea</i> and foliose red seaweeds on moderately exposed infralittoral rock
MIR.KR	Lhyp.Ft	<i>Laminaria hyperborea</i> forest and foliose red seaweeds on moderately exposed upper infralittoral rock
MIR.KR	Lhyp.Pk	<i>Laminaria hyperborea</i> park and foliose red seaweeds on moderately exposed lower infralittoral rock
MIR.KR	Lhyp.TFt	<i>Laminaria hyperborea</i> forest, foliose red seaweeds and a diverse fauna on tide-swept upper infralittoral rock
MIR.KR	Lhyp.TPk	<i>Laminaria hyperborea</i> park with hydroids, bryozoans and sponges on tide-swept lower infralittoral rock
MIR.GzK		<b>Grazed kelp with algal crusts</b>
MIR.GzK	LhypGz	Grazed <i>Laminaria hyperborea</i> with coralline crusts on infralittoral rock
MIR.GzK	LhypGz.Ft	Grazed <i>Laminaria hyperborea</i> forest with coralline crusts on upper infralittoral rock
MIR.GzK	LhypGz.Pk	Grazed <i>Laminaria hyperborea</i> park with coralline crusts on lower infralittoral rock
MIR.SedK		<b>Sand or gravel-affected or disturbed kelp and seaweed communities</b>
MIR.SedK	Sac	<i>Saccorhiza polyschides</i> and other opportunistic kelps on disturbed sublittoral fringe rock
MIR.SedK	LsacChoR	<i>Laminaria saccharina</i> , <i>Chorda filum</i> and dense red seaweeds on shallow unstable infralittoral boulders and cobbles
MIR.SedK	XKScrR	Mixed kelps with scour-tolerant and opportunistic foliose red seaweeds on scoured or sand-covered infralittoral rock
MIR.SedK	EphR	Ephemeral red seaweeds and kelps on tide-swept mobile infralittoral cobbles



Higher code	Biotope code	Biotope
MIR.SedK	HalXK	<i>Halidrys siliquosa</i> and mixed kelps on tide-swept infralittoral rock with coarse sediment
MIR.SedK	PolAhn	<i>Polyides rotundus</i> , <i>Ahnfeltia plicata</i> and <i>Chondrus crispus</i> on sand-covered infralittoral rock
SIR		<b>Sheltered infralittoral rock</b>
SIR.K		<b>Silted kelp (stable rock)</b>
SIR.K	LhypLsac	Mixed <i>Laminaria hyperborea</i> and <i>L. saccharina</i> on sheltered infralittoral rock
SIR.K	LhypLsac.Ft	Mixed <i>Laminaria hyperborea</i> and <i>L. saccharina</i> forest on sheltered upper infralittoral rock
SIR.K	LhypLsac.Pk	Mixed <i>Laminaria hyperborea</i> and <i>L. saccharina</i> park on sheltered lower infralittoral rock
SIR.K	Lsac	<i>Laminaria saccharina</i> on very sheltered infralittoral rock
SIR.K	Lsac.Ldig	<i>Laminaria saccharina</i> and <i>L. digitata</i> on sheltered sublittoral fringe rock
SIR.K	Lsac.Ft	<i>Laminaria saccharina</i> forest on very sheltered upper infralittoral rock
SIR.K	Lsac.Pk	<i>Laminaria saccharina</i> park on very sheltered lower infralittoral rock
SIR.K	Lsac.T	<i>Laminaria saccharina</i> , foliose red seaweeds, sponges & ascidians on tide-swept infralittoral rock
SIR.K	Lsac.Cod	Sparse <i>Laminaria saccharina</i> with <i>Codium</i> spp. and sparse red seaweeds on heavily silted very sheltered infralittoral rock
SIR.K	EchBriCC	Echinus, brittlestars and coralline crusts on grazed lower infralittoral rock
SIR.K	LsacRS	<i>Laminaria saccharina</i> on reduced or low salinity infralittoral rock
SIR.K	LsacRS	Sparse <i>Laminaria saccharina</i> with dense filamentous red seaweeds, sponges and <i>Balanus crenatus</i> on tide-swept variable salinity infralittoral rock
SIR.K	LsacRS.Psa	<i>Laminaria saccharina</i> and <i>Psammechinus miliaris</i> on reduced salinity grazed infralittoral rock
SIR.EstFa		<b>Estuarine faunal communities (shallow rock/mixed substrata)</b>
SIR.EstFa	MytT	<i>Mytilus edulis</i> beds on reduced salinity tide-swept infralittoral rock
SIR.Lag		<b>Submerged fucoids, green and red seaweeds (lagoonal rock)</b>
SIR.Lag	FchoG	Mixed fucoids, <i>Chorda filum</i> and green seaweeds on reduced salinity infralittoral rock
SIR.Lag	PolFur	<i>Polyides rotundus</i> and/or <i>Furcellaria lumbricalis</i> on reduced salinity infralittoral rock
SIR.Lag	FcerEnt	<i>Fucus ceranoides</i> and <i>Enteromorpha</i> spp. on low salinity infralittoral rock

Higher code	Biotope code	Biotope
<b>Infralittoral rock (other)</b>		
IR.FaSwV		<b>Fauna and seaweeds (shallow vertical rock)</b>
IR.FaSwV	CorMetAlc	<i>Corynactis viridis</i> , <i>Metridium senile</i> and <i>Alcyonium digitatum</i> on exposed or moderately exposed vertical infralittoral rock
IR.FaSwV	AlcByH	<i>Alcyonium digitatum</i> and a bryozoan, hydroid and ascidian turf on moderately exposed vertical infralittoral rock
IR.FaSwV	AlcByH.Hia	<i>Hiatella arctica</i> , bryozoans and ascidians on vertical infralittoral soft rock
CR		<b>CIRCALITTORAL ROCK (and other hard substrata)</b>
ECR		<b>Exposed circalittoral rock</b>
ECR.EFa		<b>Faunal crusts or short turfs (wave-exposed rock)</b>
ECR.EFa	CCParCar	Coralline crusts, <i>Parasmittina trispinosa</i> , <i>Caryophyllia smithii</i> , <i>Haliclona viscosa</i> , polyclinids and sparse <i>Corynactis viridis</i> on very exposed circalittoral rock
ECR.EFa	CorCri	<i>Corynactis viridis</i> and a crisiid/ <i>Bugula/Cellaria</i> turf on steep or vertical exposed circalittoral rock
ECR.EFa	PomByC	<i>Pomatoceros triqueter</i> , <i>Balanus crenatus</i> and bryozoan crusts on mobile circalittoral cobbles and pebbles
ECR.Alc		<b>Alcyonium-dominated communities (tide-swept/vertical)</b>
ECR.Alc	AlcTub	<i>Alcyonium digitatum</i> with dense <i>Tubularia indivisa</i> and anemones on strongly tide-swept circalittoral rock
ECR.Alc	AlcMaS	<i>Alcyonium digitatum</i> with massive sponges ( <i>Cliona celata</i> and <i>Pachymatisma johnstonia</i> ) and <i>Nemertesia antennina</i> on moderately tide-swept exposed circalittoral rock
ECR.Alc	AlcSec	<i>Alcyonium digitatum</i> with <i>Securiflustra securifrons</i> on weakly tide-swept or scoured moderately exposed circalittoral rock
ECR.Alc	AlcC	<i>Alcyonium digitatum</i> , <i>Pomatoceros triqueter</i> , algal and bryozoan crusts on vertical exposed circalittoral rock
ECR.BS		<b>Barnacle, cushion sponge and <i>Tubularia</i> communities (very tide-swept/wave-sheltered)</b>
ECR.BS	TubS	<i>Tubularia indivisa</i> , sponges and other hydroids on tide-swept circalittoral bedrock
MCR		<b>Moderately exposed circalittoral rock</b>
MCR.XFa		<b>Mixed faunal turfs (moderately exposed rock)</b>

Higher code	Biotope code	Biotope
MCR.XFa	ErSSwi	Erect sponges and [ <i>I</i> ] <i>Swiftia pallida</i> on slightly tide-swept moderately exposed circalittoral rock
MCR.XFa	SNemAdia	Sparse sponges, <i>Nemertesia</i> spp. <i>Alcyonidium diaphanum</i> and <i>Bowerbankia</i> spp. on circalittoral mixed substrata
MCR.XFa	ErSPbolSH	Cushion sponges ( <i>Polymastia boletiformis</i> , <i>Tethya</i> ), branching sponges, <i>Nemertesia</i> spp. and <i>Pentapora foliacea</i> on moderately exposed circalittoral rock
MCR.ByH		<b>Bryozoan/hydroid turfs (sand-influenced)</b>
MCR.ByH	Flu.Flu	<i>Flustra foliacea</i> and other hydroid/bryozoan turf species on slightly scoured circalittoral rock or mixed substrata
MCR.ByH	Flu.Hocu	<i>Haliclona oculata</i> and <i>Flustra foliacea</i> with a rich faunal turf on tide- swept sheltered circalittoral mixed substrata
MCR.ByH	Urt	<i>Urticina feline</i> on sand – affected circalittoral rock
MCR.ByH	Urt.Cio	<i>Urticina feline</i> and <i>Ciocalypta penicillus</i> on sand – covered circalittoral rock
MCR.ByH	Flu.HByS	<i>Flustra foliacea</i> with hydroids, bryozoans and sponges on slightly tide-swept circalittoral mixed substrata
MCR.ByH	Flu.SerHyd	<i>Sertularia argentea</i> , <i>S. cupressina</i> and <i>Hydrallmania falcata</i> on tide-swept circalittoral cobbles and pebbles
MCR.M		<b>Mussel beds (open coast circalittoral rock/mixed substrata)</b>
MCR.M	MytHAs	<i>Mytilus edulis</i> beds with hydroids and ascidians on tide-swept moderately exposed circalittoral rock
MCR.M	ModT	<i>Modiolus modiolus</i> beds with hydroids and red seaweeds on tide-swept circalittoral mixed substrata
MCR.Bri		<b>Brittlestar beds</b>
MCR.Bri	Oph	<i>Ophiothrix fragilis</i> and/or <i>Ophiocomina nigra</i> beds on slightly tide-swept circalittoral rock or mixed substrata
MCR.Bri	Oph.Oacu	<i>Ophiopholis aculeata</i> beds on slightly tide-swept circalittoral rock or mixed substrata
MCR.GzFa		<b>Grazed fauna (moderately exposed or sheltered rock)</b>
MCR.GzFa	FaAIC	Faunal and algal crusts, <i>Echinus esculentus</i> , sparse <i>Alcyonium digitatum</i> and grazing-tolerant fauna on moderately exposed circalittoral rock
MCR.GzFa	FaAIC.Abi	Faunal and algal crusts, <i>Echinus esculentus</i> , sparse <i>Alcyonium digitatum</i> , <i>Abietinaria abietina</i> and grazing-tolerant fauna on moderately exposed circalittoral rock
SCR		<b>Sheltered circalittoral rock</b>
SCR.BrAs		<b>Brachiopod and solitary ascidian communities (sheltered rock)</b>

Higher code	Biotope code	Biotope
SCR.BrAs	AntAsH	<i>Antedon</i> spp., solitary ascidians and fine hydroids on sheltered circalittoral rock
SCR.BrAs	SubSo As	<i>Suberites</i> spp. and other sponges with solitary ascidians on very sheltered circalittoral rock
SCR.BrAs	AmenCio	Solitary ascidians, including <i>Ascidia mentula</i> and <i>Ciona intestinalis</i> , on very sheltered circalittoral rock
SCR.BrAs	AmenCio.Met	Large <i>Metridium senile</i> and solitary ascidians on grazed very sheltered circalittoral rock
SCR.BrAs	Aasp	<i>Ascidiella aspersa</i> on sheltered circalittoral rocks on muddy sediment
SCR.BrAs	NeoPro	<i>Neocrania anomala</i> and <i>Protanthea simplex</i> on very sheltered circalittoral rock
SCR.Mod		<b>Sheltered <i>Modiolus</i> (horse-mussel) beds</b>
SCR.Mod	ModHAs	<i>Modiolus modiolus</i> beds with fine hydroids and large solitary ascidians on very sheltered circalittoral mixed substrata
<b>Circalittoral rock (other)</b>		
CR.FaV		<b>Faunal turfs (deep vertical rock)</b>
CR.FaV	Ant	<i>Antedon bifida</i> and a bryozoan/hydroid turf on steep or vertical circalittoral rock
CR.Cv		<b>Caves and overhangs (deep)</b>
SS		<b>SUBLITTORAL SEDIMENTS</b>
IGS		<b>Infralittoral gravels and sands</b>
IGS.Mrl		<b>Maerl beds (open coast/clean sediments)</b>
IGS.Mrl	Phy	<i>Phymatolithon calcareum</i> maerl beds in infralittoral clean gravel or coarse sand
IGS.Mrl	Phy.R	<i>Phymatolithon calcareum</i> maerl beds with red seaweeds in shallow infralittoral clean gravel or coarse sand
IGS.Mrl	Phy.HEc	<i>Phymatolithon calcareum</i> maerl beds with hydroids and echinoderms in deeper infralittoral clean gravel or coarse sand
IGS.Mrl	Lgla	<i>Lithothamnion glaciale</i> maerl beds in tide-swept variable salinity infralittoral gravel
IGS.FaG		<b>Shallow gravel faunal communities</b>
IGS.FaG	HalEdw	<i>Halcampa chrysanthellum</i> and <i>Edwardsia timida</i> on sublittoral clean stone gravel
IGS.FaG	Sell	<i>Spisula elliptica</i> and venerid bivalves in infralittoral clean sand or shell gravel

Higher code	Biotope code	Biotope
IGS.FaS		<b>Shallow sand faunal communities</b>
IGS.FaS	Mob	Sparse fauna in marine infralittoral mobile clean sand
IGS.FaS	NcirBat	<i>Nephtys cirrosa</i> and <i>Bathyporeia</i> spp. in infralittoral sand
IGS.FaS	Lcon	Dense <i>Lanice conchilega</i> and other polychaetes in tide-swept infralittoral sand
IGS.FaS	ScupHyd	<i>Sertularia cupressina</i> and <i>Hydrallmania falcata</i> on tide -swept sublittoral cobbles or pebbles in coarse sand
IGS.FaS	FabMag	<i>Fabulina fabula</i> and <i>Magelona mirabilis</i> with venerid bivalves in infralittoral compacted fine sand
IGS.EstGS		<b>Estuarine sublittoral gravels and sands</b>
IGS.EstGS	MobRS	Sparse fauna in reduced salinity infralittoral mobile sand
IGS.EstGS	Ncir	<i>Nephtys cirrosa</i> and fluctuating salinity-tolerant fauna in reduced salinity infralittoral mobile sand
IGS.EstGS	NeoGam	<i>Neomysis integer</i> and <i>Gammarus</i> spp. in low salinity infralittoral mobile sand
CGS		<b>Circalittoral gravels and sands</b>
CGS	Ven	Venerid bivalves in circalittoral coarse sand or gravel
CGS	Ven.Bra	Venerid bivalves and <i>Branchiostoma lanceolatum</i> in circalittoral coarse sand with shell gravel
CGS	Ven.Neo	<i>Neopentadactyla mixta</i> and venerid bivalves in circalittoral shell gravel or coarse sand
IMS		<b>Infralittoral muddy sands</b>
IMS.Sgr		<b>Seagrass beds (sublittoral/lower shore)</b>
IMS.Sgr	Zmar	<i>Zostera marina/angustifolia</i> beds in lower shore or infralittoral clean or muddy sand
IMS.Sgr	Rup	<i>Ruppia maritima</i> in reduced salinity infralittoral muddy sand
IMS.FaMS		<b>Shallow muddy sand faunal communities</b>
IMS.FaMS	EcorEns	<i>Echinocardium cordatum</i> and <i>Ensis</i> sp. in lower shore or shallow sublittoral muddy fine sand
CMS		<b>Circalittoral muddy sands</b>
CMS	AbrNucCor	<i>Abra abra</i> , <i>Nucucula nitida</i> and <i>corbula gibba</i> in circalittoral muddy sand or slightly mixed sediment
CMS	AfilEcor	<i>Amphiura filiformis</i> and <i>Echinocardium cordatum</i> in circalittoral clean or slightly muddy sand

Higher code	Biotope code	Biotope
CMS	VirOph	<i>Virgularia mirabilis</i> and <i>Ophiura</i> spp. on circalittoral sandy or shelly mud
CMS	VirOph.HAs	<i>Virgularia mirabilis</i> and <i>Ophiura</i> spp. with hydroids and ascidians on circalittoral sandy or shelly mud with shells or stones
IMU		<b>Infralittoral muds</b>
IMU.Ang		<b>Angiosperm communities (lagoons)</b>
IMU.MarMu		<b>Shallow marine mud communities</b>
IMU. MarMu	TubeAP	Semi-permanent tube-building amphipods and polychaetes in sublittoral mud or muddy sand
IMU.MarMu	AreSyn	<i>Arenicola marina</i> and synaptid holothurians in extremely shallow soft mud
IMU.MarMu	PhiVir	<i>Philine aperta</i> and <i>Virgularia mirabilis</i> in soft stable infralittoral mud
IMU.MarMu	Ocn	<i>Ocnus planci</i> aggregations on sheltered sublittoral muddy sediment.
IMU.EstMu		<b>Estuarine sublittoral muds</b>
CMU		<b>Circalittoral muds</b>
CMU	SpMeg	Sea-pens and burrowing megafauna in circalittoral soft mud
CMU	SpMeg.Fun	Sea-pens, including <i>Funiculina quadrangularis</i> , and burrowing megafauna in undisturbed circalittoral soft mud
CMU	Beg	<i>Beggiatoa</i> spp. on anoxic sublittoral mud
IMX		<b>Infralittoral mixed sediments</b>
IMX.KSw		<b><i>Laminaria saccharina</i> (sugar kelp) and filamentous seaweeds (mixed sediment)</b>
IMX.KSw	LsacX	<i>Laminaria saccharina</i> , <i>Chorda filum</i> and filamentous red seaweeds on sheltered infralittoral sediment
IMX.KSw	Tra	Mats of <i>Trailliella</i> sp. on infralittoral muddy gravel
IMX.KSw	Pcri	Loose-lying mats of <i>Phyllophora crispa</i> on infralittoral muddy sediment
IMX.KSw	FiG	Filamentous green seaweeds on low-salinity infralittoral mixed sediment or rock
IMX.MrlMx		<b>Maerl beds (muddy mixed sediments)</b>
IMX.MrlMx	Lcor	<i>Lithothamnion corallioides</i> maerl beds on infralittoral muddy gravel

Higher code	Biotope code	Biotope
IMX.FaMx		<b>Shallow mixed sediment faunal communities</b>
IMX.FaMx	VsenMtru	<i>Venerupis senegalensis</i> and <i>Mya truncata</i> in lower shore or infralittoral muddy gravel
IMX.FaMx	Lim	<i>Limaria hians</i> beds in tide-swept sublittoral muddy mixed sediment
CMX		<b>Circalittoral mixed sediments</b>
CMX	ModHo	Sparse <i>Modiolus modiolus</i> , dense <i>Cerianthus lloydii</i> and burrowing holothurians on sheltered circalittoral stones and mixed sediment

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## Appendix B

## Biotopes recorded in each area

The biotopes recorded in each area, using the data listed in Table 1, are summarised below. Biotope codes are given according to MNCR classification version 97.06 (Connor *et al.* 1997a, b).

Numbers refer to the *area summaries* as follows:

- |     |                                     |     |   |
|-----|-------------------------------------|-----|---|
| 1.  | Kentra Bay                          | 17. | Uig Bay                                     |
| 2.  | Loch Moidart                        | 18. | Loch Portree                                |
| 3.  | Loch Ailort                         | 19. | Loch Sligachan                              |
| 4.  | Loch nan Uamh                       | 20. | Loch Ainort                                 |
| 5.  | Loch nan Ceall                      | 21. | Lochs Carron and Kishorn                    |
| 6.  | Loch Nevis                          | 22. | Lochs Torridon and Shieldaig                |
| 7.  | Loch Hourn                          | 23. | Loch Gairloch                               |
| 8.  | Loch Alsh, Loch Duich and Loch Long | 24. | Loch Ewe                                    |
| 9.  | Lochs Eishort and Slapin            | 25. | Little Loch Broom                           |
| 10. | Loch Scavaig and Soay Sound         | 26. | Loch Broom                                  |
| 11. | Loch Brittle                        | 27. | Loch Inver                                  |
| 12. | Loch Eynort                         | 28. | Lochs a' Chàirn Bhàin, Glendhu and Glencoul |
| 13. | Lochs Bracadale and Harport         | 29. | Lochs Laxford and Dùghail                   |
| 14. | Loch Pooltiel                       | 30. | Loch Inchard                                |
| 15. | Lochs Dunvegan and Bay              | 31. | Loch Eriboll                                |
| 16. | Lochs Greshornish and Snizort Beag  |     |   |

	Area	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<i>Littoral rock</i>																	
LR						•											
L																	
YG		•		•	•	•			•					•			
Pra																	
Ver																	
Ver.Por																	
Ver.B														•			
Ver.Ver		•		•	•	•			•					•			
Chr																	
ELR						•											
MB																	
MytB														•			
BPat																	
BPat.Cht					•									?			
BPat.Lic																	
BPat.Fvesl																	
BPat.Sem				•					•					•			
Fdis																	
Coff																	
Him														•			
MLR				•	•	•			•								
BF																	
PelB									•					•			
FvesB				•					•					•			
Fser.R														•			
Fser.Fser		•				•			•			•		•			
Fser.Fser.Bo														•		•	
R					•	•											



Area	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
XR																
Mas																
Ent																
SLR		•	•		•											
F		•	•			•	•									
Pel	•	•	•	•	•			•					•			
Fspi		•	•	•	•			•					•			
Fves	•	•		•				•					•			
Asc		•													•	
Asc.Asc			•	•				•					•			•
Asc.T					•			•								
Asc.VS		•						•								
Fserr		•	•					•								
Fserr.T			•		•			•								
Fserr.VS								•								
FX						•										
FvesX		•	•					•				•	•			
AscX		•						•					•			
AscX.mac		•	•		•			•					•			
FserX					•			•					•			
FserX.T																
EphX			•													
FcerX		•						•					•			
MytX			•				•	•								
Myt.Fves																
Myt.Fr																
Rkp								•								
G													•			
Ov																
Cor								•					•			
FK								•					•			
SwSed			•													
SR	•															
SByAs			•	•				•					•			
<i>Littoral sediment</i>																
LS																
LGS			•													
Pol	•															
Sh					•											
S																
Tal																
BarSnd																
AEur																
AP																
AP.P																
AP.Pon			•													
Lan		•		•	•											
OI																
LMS																
PCer				•				•					•			
MacAre		•	•					•								
MacAre.Mare																
LMU																
Sm																
NVC SM8																
NVC SM13		•														
HedMac		•														
HedMac.Are		•	•													

Area	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Mu																
HedOl																
LMX		•	•	•	•											
MytFab													•			
<i>Sublittoral rock</i>																
IR																
Ala																
Ala.Myt																
Ala.Ldig			•	•									•			
LhypFa																
LhypR.Ft													•			
LhypR.Pk																
LsacSac				•		•										
FoR																
FoSwCC																
SCAs								•								
SCAs.DenCla																
SCAs.ByH																
SC																
CC.BalPom																
MIR																
KR																•
Ldig								•								•
Ldig.Ldig								•			•		•			•
Ldig.Ldig.Bo																•
Ldig.T	•							•								
Lhyp				•			•									•
Lhyp.Ft		•	•	•	•			•	•	•	•	•	•	•	•	•
Lhyp.Pk				•				•		•	•		•			•
Lhyp.TFt			•	•				•								
Lhyp.TPk							•	•								
LhypGz								•			•		•	•		•
LhypGz.Ft				•		•		•	•				•			
LhypGz.Pk				•		•		•			•		•		•	•
SedK				•				•	•							
Sac								•								•
LsacChoR																•
XKScrR		•	•		•					•	•		•			
EphR		•	•	•		•		•				•				•
HalXK					•						•					
PolAhn	•															
SIR																•
K			•			•	•						•			•
LhypLsac						•							•		•	•
LhypLsac.Ft		•				•		•					•			•
LhypLsac.Pk								•					•			•
Lsac			•			•	•								•	•
Lsac.Ldig								•								•
Lsac.Ft		•	•	•		•		•	•					•	•	
Lsac.Pk		•	•	•		•	•		•	•			•		•	•
Lsac.T		•	•		•											
Lsac.Cod																
EchBriCC																
LsacRS.Psa			•				•	•								
MytT								•								
FaSwV		•					•			•				•	•	
CorMetAlc				•						•			•		•	
AlcByH													•			

	Area 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CCParCar													•			
CR																
ECR																
PomByC																
AlcMaS								•								
AlcTub								•								
AlcSec																
AlcC								•								
TubS								•								
MCR		•														
ErSSwi						•	•			•					•	
Flu.Flu																
Flu.HbyS		•														
Flu.SerHyd		•														
Mus																
ModT								•								
Oph			•			•	•	•					•		•	
Oph.Oacu								•								
GzFa																
FaAlC				•						•	•		•			•
FaAlC.Abi																
SCR								•								
BrAs						•	•	•								
AntAsH				•		•	•	•			•				•	
SubSoAs																
AmenCio		•	•			•		•					•		•	•
AmenCio.Met													•			•
NeoPro			•			•		•								
ModHAs						•		•								
FaV																
Ant																
Bug																
<i>Sublittoral sediment</i>																
SS																•
IGS			•										•		•	•
Phy	•	•	•		•			•	•				•			
Phy.R	•	•	•		•			•					•			
Phy.HEc		•	•					•				•	•		•	
Lgla																
HalEdw								•								
FaG																
Sell																
FaS					•											
Mob																
NcirBat																
ScupHyd																
Lcon												•	•			
FabMag																
CGS			•													•
Ven													•			
Ven.Neo		•		•						•	•		•		•	
IMS									•				•		•	•
Zmar		•	•	•					•		•					
FaMS							•	•								
EcorEns		•	•	•		•	•				•	•	•		•	
SpiSpi																
Cap																
CMS							•								•	•

	Area	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
AbrNucCor																	
AfilEcor			•											•			
VirOph			•	•			•	•	•			•		•		•	•
VirOph.HAs			•	•			•	•	•		•			•		•	•
IMU																•	
MarMu								•					•				
EstMu																	
TubeAP																	
AreSyn			•			•											
PhiVir			•			•	•	•	•				•	•		•	•
Ocn																	
CMU			•				•	•	•								
SpMeg			•	•	•			•	•			•		•	•	•	•
SpMeg.Fun							•	•	•						•	•	•
Beg			•						•								
IMX								•			•?			•		•	•
LsacX			•	•	•		•	•	•	•			•	•	•	•	•
Tra			•						•	•			•				•
Peri								•	•								
Lcor			•								•			•			
FaMx																	
VsenMtru			•														
Lim									•								
CMX							•	•	•								
ModMx																	
ModHo									•								

	Area 17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
<i>Littoral rock</i>															
L															•
YG		•					•	•		•		•	•		
Pra								•							
Ver												•			
Ver.Por															
Ver.B										•				•	
Ver.Ver		•					•	•		•		•	•	•	
Chr		•													
ELR						•	•	•							
MB															•
MytB							•			•				•	
MLR								•							
Rho								•							
BPat															
BPat.Cht							•	•						•	
BPat.Lic															
BPat.Fvesl															
BPat.Sem		•					•	•		•			•	•	•
Fdis															
Coff															
Him															
MLR					•	•	•	•						•	
BF															•
PelB		•					•	•		•					
FvesB							•	•		•					
Fser.R							•	•		•					
Fser.Fser								•		•		•	•	•	
Fser.Fser.Bo								•							
MytFves							•								
R								•							
XR								•							
Mas															
Ent															
MytFves							•								
SLR					•	•		•							
F		•			•			•	•				•		•
Pel		•					•	•		•		•	•	•	•
Fspi							•	•		•		•	•	•	
Fves								•		•		•	•	•	
Asc														•	•
Asc.Asc		•				•	•			•		•	•	•	
Asc.T															
Asc.VS										•			•	•	
Fserr												•	•		•
Fserr.T						•							•		
Fserr.VS								•				•	•		
FX			•		•				•					•	
Fcer															•
FvesX							•	•		•		•		•	
AscX		•								•		•	•	•	
AscX.mac		•					•						•	•	
FserX										•		•	•	•	
FserX.T													•		
EphX															
FcerX													•		•
MytX			•							•			•	•	
Rkp					•			•							•

	Area	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Ov			•													
G																
Cor							•	•					•			
FK							•	•								
SwSed																
SR															•	
SByAs																
<i>Littoral sediment</i>																
LS																
LGS						•	•									
Sh																•
S							•									
Tal									•							•
BarSnd									•	•						
AEur									•	•						
AP		•														
AP.P									•	•						
AP.Pon									•	•						
Lan						•			•							
OI																
LMS							•									
PCer									•					•		•
MacAre																
NVC SM13														•		
HedMac							•							•		
HedMac.Are														•		
Mu																•
HedOI																
LMX		•				•									•	
<i>Sublittoral rock</i>																
IR						•	•							•	•	
Ala									•						•	
Ala.Myt																
Ala.Ldig									•							
LhypFa																
LhypR.Ft							•							•		•
LhypR.Pk																
LsacSac																
FoR									•							
FoSwCC																•
SCAs																
SCAs.DenCla																
SCAs.ByH																
SC																
CC.BalPom																
MIR																
KR																•
Ldig			•													•
Ldig.Ldig									•				•	•	•	
Ldig.Ldig.Bo														•		
Ldig.T							•							•		
Lhyp							•	•	•					•		•
Lhyp.Ft							•	•					•	•	•	•
Lhyp.Pk		•					•			•				•		•
Lhyp.TFt																
EphR						•										
Lhyp.TPk							•									
LhypGz						•	•	•	•				•	•	•	•

Area	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
LhypGz.Ft							•	•				•	•	•	•
LhypGz.Pk						•	•	•				•	•	•	•
SedK					•	•		•					•	•	•
Sac								•	•	•					
LsacChoR															
XKScrR					•	•	•	•					•	•	•
EphR					•			•				•			•
HalXX													•		•
PolAhn															
K					•										
LhypLsac			•			•	•	•						•	
LhypLsac.Ft							•	•	•				•	•	•
LhypLsac.Pk												•			
Lsac					•	•	•	•						•	
Lsac.Ldig						•		•		•					•
Lsac.Ft	•			•			•	•		•		•	•	•	•
Lsac.Pk	•	•					•	•	•	•		•	•	•	•
Lsac.T															
Lsac.Cod															
EchBriCC									•	•			•		•
LsacRS.Psa				•						•		•	•	•	•
FaSwV		•			•			•					•		
CorMetAlc												•	•		
AlcByH							•								•
CR					•	•							•		
ECR													•		
PomByC															
Alc					•										
AlcSec													•		
AlcC						•						•			
MCR						•		•					•		
ErSSwi		•													
Flu.Flu															
Flu.HbyS															
Flu.SerHyd															
Mus															
ModT					•										
Oph						•		•	•			•			•
FaAIC						•	•	•				•	•	•	•
FaAIC.Abi															
SCR							•	•							
BrAs					•		•			•					
AntAsH							•	•	•			•	•		
AmenCio		•					•	•	•			•	•		
AmenCio.Met				•	•			?							
Aasp							•	•							
NeoPro					•							•	•	•	
ModHAs			•	•						•		•			•
FaV						•									•
Ant												•	•		•
Bug															
<i>Sublittoral sediment</i>															
SS					•	•						•	•	•	•
IGS					•			•				•	•		•
MRL								•							
Phy					•	•	•	•					•		•
Phy.R									•						
Phy.HEc							•	•				•	•		

Area	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Lgla									•				•		
FaG															
Sell															
FaS								•	•						•
Mob															
NcirBat															
ScupHyd															
Leon															
FabMag															
CGS													•	•	
Ven												•			
Ven.Neo							•	•				•	•		
IMS		•					•								•
Zmar				•	•	•	•								
FaMS						•				•					•
EcorEns							•	•	•	•			•	•	•
SpiSpi															
Cap															
CMS		•					•								
AbrNucCor															
AfilEcor									•						
VirOph		•	•		•	•	•	•	•	•		•	•	•	•
VirOph.HAS				•			•	•	•	•		•		•	•
IMU					•										
MarMu												•			
TubeAP															
AreSyn															
PhiVir			•		•	•				•		•	•		•
Ocn															
CMU						•		•					•		
SpMeg	•	•	•	•	•	•	•	•	•			•	•	•	•
SpMeg.Fun		•			•	•				•		•			
Beg							•	•							
IMX					•								•		•
LsacX	•	•	•		•	•	•	•	•	•			•	•	•
Tra				•	•	•	•	•	•			•			•
Peri							•	•	•						
Lcor				•				•		•					•
FaMx							•	•				•			•
VsenMtru					•										
Lim									•	•		•			
CMX			•											•	•
ModMx															
ModHo								•	•	•					
Lim												•			

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## Appendix C

## Species recorded

All taxa recorded during the surveys given in Table 1 (Sources of field survey information), excepting for *Atrina fragilis* (S. Scott, pers. comm.) are listed below; records of species noted in the text but not shown here come from additional published sources noted in the individual area summaries. Marine species nomenclature follows Howson & Picton (1997); that for higher plants follows Stace (1991), and that for lichens follows Purvis *et al.* (1992).

Numbers refer to the *area summaries* as follows:

- |  |   |
|--|---|
| 1. Kentra Bay                          | 17. Uig Bay                                     |
| 2. Loch Moidart                        | 18. Loch Portree                                |
| 3. Loch Ailort                         | 19. Loch Sligachan                              |
| 4. Loch nan Uamh                       | 20. Loch Ainort                                 |
| 5. Loch nan Ceall                      | 21. Lochs Carron and Kishorn                    |
| 6. Loch Nevis                          | 22. Lochs Torridon and Shieldaig                |
| 7. Loch Hourn                          | 23. Loch Gairloch                               |
| 8. Loch Alsh, Loch Duich and Loch Long | 24. Loch Ewe                                    |
| 9. Lochs Eishort and Slapin            | 25. Little Loch Broom                           |
| 10. Loch Scavaig and Soay Sound        | 26. Loch Broom                                  |
| 11. Loch Brittle                       | 27. Loch Inver                                  |
| 12. Loch Eynort                        | 28. Lochs a' Chàirn Bhàin, Glendhu and Glencoul |
| 13. Lochs Bracadale and Harport        | 29. Lochs Laxford and Dùghail                   |
| 14. Loch Pooltiel                      | 30. Loch Inchard                                |
| 15. Lochs Dunvegan and Bay             | 31. Loch Eriboll                                |
| 16. Lochs Greshornish and Snizort Beag |   |

## PORIFERA

<i>Clathrina coriacea</i>	6, 7, 8, 9, 10, 13, 19, 29
<i>Leucosolenia</i> sp.	6, 7, 8, 13, 28, 29
<i>Leucosolenia botryoides</i>	2, 4, 5, 6, 8, 10, 11, 12, 13, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, 29, 30
<i>Leucosolenia complicata</i>	1, 3, 8, 29
<i>Leucosolenia variabilis</i>	30
<i>Scypha</i> sp.	7, 8
<i>Scypha ciliata</i>	2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 15, 16, 18, 21, 22, 23, 24, 26, 29
<i>Leuconia</i> sp.	22, 29
<i>Leuconia caminus</i>	5
<i>Leuconia nivea</i>	1, 5, 13
<i>Grantia compressa</i>	3, 5, 7, 8, 13, 21, 22, 24, 29, 30
Demospongiae indet.	28
<i>Oscarella lobularis</i>	22
<i>Pachymatisma johnstonia</i>	2, 3, 7, 8, 9, 10, 11, 13, 22, 28, 29
<i>Macandrewia azorica</i>	26
<i>Tethya aurantium</i>	9
<i>Suberites</i> sp.	8, 11, 15
<i>Suberites carnosus</i>	1, 2, 3, 4, 6, 7, 8, 9, 13, 15, 16, 24, 25, 28
<i>Suberites ficus</i>	2, 3, 4, 5, 6, 7, 8, 13, 15, 16, 17, 21, 22, 23, 24, 25, 26, 28, 29, 30

<i>Polymastia</i> sp.	22
<i>Polymastia boletiformis</i>	3, 6, 7, 12, 13, 14, 15, 24, 29
<i>Polymastia mamillaris</i>	2, 3, 24
<i>Cliona celata</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 21, 22, 23, 24, 25, 26, 28, 29
Axinellidae indet.	16
<i>Axinella infundibuliformis</i>	6, 7, 8, 10, 21, 28, 29
<i>Phakellia ventilabrum</i>	7
<i>Stelligera rigida</i>	2, 3, 7, 8, 24
<i>Stelligera stuposa</i>	8, 29
<i>Raspailia hispida</i>	7
<i>Halichondria bowerbanki</i>	2, 6, 7, 8, 24, 28
<i>Halichondria panicea</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 13, 15, 16, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Hymeniacion perleve</i>	1, 2, 3, 4, 5, 8, 13, 18, 21, 22, 23, 24, 28, 29, 30
<i>Hymeniacion sanguinea</i>	29
<i>Rhaphidostyla kitchingi</i>	28
<i>Mycale</i> sp.	8, 16, 28
<i>Mycale lingua</i>	8, 28
<i>Mycale rotalis</i>	2, 5, 24, 30
<i>Esperiopsis fucorum</i>	2, 3, 5, 6, 7, 13, 21, 26, 30
<i>Myxilla</i> sp.	8
<i>Myxilla fimbriata</i>	8

<i>Myxilla incrustans</i>	1, 2, 3, 4, 5, 6, 7, 8, 10, 13, 21, 22, 23, 24, 28, 29, 30	<i>Halecium halecinum</i>	2, 3, 4, 6, 7, 8, 10, 13, 15, 16, 18, 20, 23, 24, 25, 26, 28, 29, 30
<i>Iophonopsis nigricans</i>	3, 8, 24, 28	<i>Halecium muricatum</i>	26
<i>Iophon hyndmani</i>	24	<i>Halecium plumosum</i>	2
<i>Hymedesmia</i> sp.	28	<i>Halecium sessile</i>	23
<i>Hymedesmia pansa</i>	28	<i>Aglaophenia</i> sp.	21, 22
<i>Hymedesmia paupertas</i>	4, 6, 7, 8, 13, 16, 24, 25, 28, 29, 30	<i>Aglaophenia pluma</i>	5, 15
<i>Hemimycale columella</i>	2, 8	<i>Lytocarpia myriophyllum</i>	6
<i>Ophlitaspongia seriata</i>	1, 13	Plumulariidae indet.	8
<i>Microciona</i> sp.	23	<i>Antennella secundaria</i>	2
<i>Microciona armata</i>	8	<i>Halopteris catharina</i>	2, 4, 6, 7, 8, 16, 18, 23, 24, 25, 26, 28, 29
<i>Haliclona</i> sp.	2, 3, 4, 10, 13, 29	<i>Kirchenpaueria pinnata</i>	1, 2, 3, 4, 5, 6, 7, 8, 10, 12, 13, 15, 16, 18, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Haliclona cinerea</i>	29	<i>Kirchenpaueria similis</i>	24
<i>Haliclona fistulosa</i>	5	<i>Nemertesia</i> sp.	12, 15, 22, 29
<i>Haliclona rosea</i>	22	<i>Nemertesia antennina</i>	1, 2, 3, 4, 6, 8, 10, 11, 12, 13, 15, 16, 18, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Haliclona urceolus</i>	7, 8, 16, 23, 26, 28, 30	<i>Nemertesia ramosa</i>	1, 2, 3, 6, 7, 8, 10, 11, 12, 13, 15, 16, 19, 20, 21, 22, 23, 23, 24, 25, 26, 28, 29, 30
<i>Haliclona viscosa</i>	2, 4, 8, 12, 13, 29	<i>Plumularia setacea</i>	2, 4, 5, 6, 8, 10, 13, 15, 16, 17, 20, 22, 23, 24, 25, 26, 28, 29
<i>Dysidea fragilis</i>	1, 2, 7	<i>Polyplumaria frutescens</i>	6, 7, 8, 10, 23, 24, 28
<i>Aplysilla rosea</i>	2, 7	Sertulariidae indet.	22
<i>Aplysilla sulfurea</i>	2, 15, 30	<i>Abietinaria abietina</i>	2, 3, 8, 13, 15, 25, 28, 29, 30
<i>Halisarca dujardini</i>	1, 13, 24, 28, 29	<i>Abietinaria filicula</i>	1, 2, 3, 4, 24, 28, 29
Porifera indet. (crusts)	3, 6, 8, 22, 24, 25, 26, 28, 29, 30	<i>Amphisbetia operculata</i>	7
<b>CNIDARIA</b>		<i>Diphasia</i> sp.	8
Stauromedusae indet.	29	<i>Diphasia pinaster</i>	10
<i>Haliclystus auricula</i>	6	<i>Diphasia rosacea</i>	2, 7, 29
<i>Lucernaria</i> sp.	30	<i>Dynamena pumila</i>	1, 3, 4, 5, 8, 13, 21, 22, 23, 24, 26, 29, 30
<i>Lucernariopsis campanulata</i>	4	<i>Hydrallmania falcata</i>	2, 3, 15, 26, 29
<i>Cyanea capillata</i>	9, 14, 21, 22, 24, 25, 29	<i>Sertularella gayi</i>	2, 6, 7, 10, 15, 23
<i>Cyanea lamarckii</i>	14, 21, 23	<i>Sertularella polyzonias</i>	6, 7, 8, 9, 13, 20, 22, 23, 24, 26, 30
<i>Aurelia aurita</i>	7, 8, 10, 14, 15, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Sertularia</i> sp.	13, 26, 29, 30
<i>Rhizostoma octopus</i>	7, 8, 9, 22, 25, 29	<i>Sertularia argentea</i>	2, 3, 5, 6, 8, 10, 18, 20, 24, 25, 26, 28, 29, 30
Hydrozoa indet.	3, 4, 7, 8, 13, 16, 18, 21, 22, 24, 25, 29	<i>Clytia hemisphaerica</i>	26, 28
<i>Corymorpha nutans</i>	13, 14, 22, 23, 24, 25, 29	<i>Hartlaubella gelatinosa</i>	6, 7
<i>Tubularia indivisa</i>	6, 7, 8, 21, 29	<i>Laomedea calceolifera</i>	9
<i>Tubularia larynx</i>	8, 22, 29	<i>Laomedea flexuosa</i>	2, 3, 4, 29, 30
<i>Coryne</i> sp.	29	<i>Obelia</i> sp.	1, 2, 3, 4, 5, 6, 8, 10, 11, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 26, 28, 29
<i>Coryne pusilla</i>	1, 8, 24, 30	<i>Obelia dichotoma</i>	2, 6, 8, 10, 11, 13, 14, 15, 16, 17, 18, 20, 23, 24, 25, 26, 28, 29, 30
<i>Sarsia eximia</i>	8, 21, 29	<i>Obelia geniculata</i>	2, 3, 4, 5, 6, 7, 8, 9, 10, 13, 14, 16, 17, 21, 22, 23, 24, 26, 28, 29, 30
<i>Eudendrium</i> sp.	2, 3, 6, 8, 23, 24, 29, 30	<i>Obelia longissima</i>	2, 4, 8, 10, 14, 24
<i>Eudendrium rameum</i>	8, 22	<i>Orthopyxis integra</i>	8
<i>Eudendrium ramosum</i>	3, 4, 6, 8, 16	<i>Rhizocaulus verticillatus</i>	2, 7, 8, 10, 15, 23, 24, 25, 26, 28
<i>Leuckartiara octona</i>	23, 24	Anthozoa indet.	23, 29
<i>Bougainvillia ramosa</i>	1, 2, 3, 4, 6, 8, 23, 24, 25, 26, 28, 29, 30		
<i>Garveia nutans</i>	23		
<i>Rathkea octopunctata</i>	21		
<i>Hydractinia echinata</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 13, 15, 16, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30		
<i>Clava</i> sp.	5		
<i>Clava multicornis</i>	1, 8, 21, 22, 24, 29, 30		
<i>Phialella quadrata</i>	24		
<i>Lafoea dumosa</i>	6		
<i>Halecium</i> sp.	8		
<i>Halecium beanii</i>	2, 4, 6, 7, 8, 23, 24		

<i>Sarcodictyon roseum</i>	4, 7, 23, 28	<i>Halcampa chrysanthellum</i>	3, 5, 8, 12, 15
<i>Alcyonium digitatum</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30,	<i>Edwardsia</i> sp.	25, 3
<i>Swiftia pallida</i>	6, 8, 10, 15	<i>Edwardsia claparedii</i>	3, 4, 6, 8, 12, 13, 15, 23, 24, 30
<i>Funiculina quadrangularis</i>	6, 7, 8, 14, 15, 16, 18, 21, 22, 26, 28	<i>Corynactis viridis</i>	4, 8, 10, 13, 14, 22, 23, 28, 29
<i>Virgularia mirabilis</i>	2, 3, 4, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Caryophyllia smithii</i>	1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Pennatula phosphorea</i>	6, 8, 11, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30	<b>CTENOPHORA</b>	
<i>Cerianthus lloydii</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Pleurobrachia pileus</i>	14, 21, 22
<i>Pachycerianthus multiplicatus</i>	7, 8, 14	<i>Bolinopsis infundibulum</i>	14, 21, 22
<i>Epizoanthus couchii</i>	2, 3, 4, 6, 7, 10, 15, 24, 30	<i>Beroe cucumis</i>	14, 22, 23
<i>Parazoanthus anguicomus</i>	28	<b>PLATYHELMINTHES</b>	
<i>Actinaria</i> indet.	29, 30	<i>Platyhelminthes</i> indet.	3
<i>Protanthea simplex</i>	3, 6, 7, 8, 21, 22, 24, 28, 30	<i>Procerodes littoralis</i>	30
<i>Actinia equina</i>	1, 3, 4, 5, 7, 8, 13, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Procerodes plebeia</i>	30
<i>Actinia fragacea</i>	13	<i>Uteriporus vulgaris</i>	21
<i>Anemonia viridis</i>	2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 15, 21, 22, 23, 24, 25, 29, 30	<i>Notoplana atomata</i>	6
<i>Bolocera tuediae</i>	8	<i>Prostheceraeus vittatus</i>	6, 9
<i>Urticina felina</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 21, 22, 23, 24, 28, 29, 30	<i>Oligocladus sanguinolentus</i>	6, 8
<i>Urticina eques</i>	2, 3, 4, 6, 8, 13, 14, 15, 21, 22, 23, 28, 29, 30	<i>Stylostomum ellipse</i>	6
<i>Aureliania heterocera</i>	6, 7, 8, 21	<b>NEMERTEA</b>	
<i>Stomphia coccinea</i>	4, 15	<i>Nemertea</i> indet.	8, 13, 15, 23, 24, 25, 29
<i>Diadumene cincta</i>	29, 30	<i>Cephalothrix</i> sp.	8
<i>Metridium senile</i>	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 18, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Tubulanus</i> sp.	26, 29
<i>Sagartiidae</i> indet.	22	<i>Tubulanus annulatus</i>	3, 5, 6, 8, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Sagartia</i> sp.	24	<i>Tubulanus banyulensis</i>	21
<i>Sagartia elegans</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 21, 22, 23, 24, 28, 29, 30	<i>Tubulanus polymorphus</i>	4, 13
<i>Sagartia troglodytes</i>	2, 3, 4, 8, 22, 29, 30	<i>Tubulanus superbus</i>	25, 26, 28, 29
<i>Cereus pedunculatus</i>	8, 12	<i>Cerebratulus fuscus</i>	21, 22
<i>Actinothoë sphyrodeta</i>	7, 9, 10, 12, 23	<i>Lineus</i> sp.	29
<i>Sagartiogeton</i> sp.	8	<i>Lineus longissimus</i>	2, 3, 5, 8, 11, 13, 15, 16, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Sagartiogeton laceratus</i>	2, 3, 4, 6, 7, 8, 12, 13, 15, 22, 24, 26, 28, 29, 30	<i>Lineus ruber</i>	21, 22, 30
<i>Sagartiogeton undatus</i>	8, 14, 19, 24, 30	<i>Lineus viridis</i>	22
<i>Phellia gausapata</i>	8	<i>Micrura</i> sp.	6
<i>Hormathia coronata</i>	29	<i>Micrura fasciolata</i>	24
<i>Calliactis parasitica</i>	15	<i>Amphiporus dissimulans</i>	21
<i>Adamsia carciniopados</i>	2, 3, 4, 6, 7, 8, 10, 11, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Amphiporus lactifloreus</i>	21, 23, 25
<i>Halcampoides</i> sp.	13	<i>Nipponnemertes pulcher</i>	6, 7
<i>Peachia cylindrica</i>	3, 4, 6, 7, 9, 13, 14, 15, 22, 23, 24, 28, 29	<i>Emplectonema neesii</i>	21, 22
		<i>Oerstedtia dorsalis</i>	21, 22
		<b>NEMATODA</b>	
		<i>Nematoda</i> indet.	2, 3, 15, 29
		<b>ENTOPROCTA</b>	
		<i>Diplopeltis cirrhatus</i>	4
		<i>Pedicellina cernua</i>	8, 23, 24, 30
		<b>SIPHUNCULA</b>	
		<i>Sipunculus nudus</i>	4
		<i>Golfingia</i> sp.	5, 30
		<i>Golfingia elongata</i>	2, 23
		<i>Golfingia margaritacea</i>	15, 16
		<i>Golfingia margaritacea</i>	
		<i>Golfingia vulgaris vulgaris</i>	3, 6, 8
		<i>Nephasoma minutum</i>	8, 24
		<i>Thysanocardia procera</i>	22, 23, 24
		<i>Phascolion strombus</i>	4, 5, 8, 9, 15, 21, 22, 23, 24, 25, 28

<b>ECHIURA</b>			
<i>Amalosoma eddystonense</i>	3, 4, 6, 7, 8, 19, 23, 24, 25, 28	<i>Glycera rouxii</i>	8, 23
<i>Maxmuelleria lankesteri</i>	3	<i>Glycera tessellata</i>	8
<b>ANNELIDA</b>		<i>Glycera tridactyla</i>	3, 13, 22
<i>Pisio neremota</i>	13, 23	<i>Glycinde nordmanni</i>	24
Aphroditidae indet.	21, 22	<i>Goniada maculata</i>	8, 16, 22, 23, 24
<i>Aphrodita aculeata</i>	2, 3, 6, 9, 11, 15, 18, 21, 23, 24, 26, 28	<i>Goniadella bobretzkii</i>	13
Polynoidae indet.	13, 25, 29	<i>Ephesiella abyssorum</i>	23
<i>Adyte pellucida</i>	2, 6, 7	<i>Sphaerodoridium claparedii</i>	8, 24
<i>Alentia gelatinosa</i>	2, 5, 6, 7, 8, 13, 16, 21, 22, 25, 26, 29, 30	<i>Commensodorum commensalis</i>	24
<i>Antinoella</i> sp.	23	<i>Sphaerodoropsis minuta</i>	8, 23
<i>Enipo kinbergi</i>	23	<i>Sphaerodorum gracilis</i>	2, 8, 24
<i>Eunoe nodosa</i>	6	Hesionidae indet.	23, 24
<i>Gattyana cirrosa</i>	22, 23	<i>Gyptis</i> sp.	13
<i>Harmothoë</i> sp.	3, 6, 8, 15, 21, 23, 24, 29	<i>Podarkeopsis capensis</i>	23, 24
<i>Harmothoë extenuata</i>	2, 5, 6, 7, 13, 21, 22, 26, 30	<i>Kefersteinia cirrata</i>	13, 22, 23
<i>Harmothoë fraserthomsoni</i>	3	<i>Nereimyra punctata</i>	15, 22, 24, 29, 30
<i>Harmothoë imbricata</i>	7, 8, 21, 22, 29	<i>Ophiodromus flexuosus</i>	3, 4, 6, 7, 8, 11, 12, 15, 23, 24, 25, 26, 29, 30
<i>Harmothoë impar</i>	5, 21, 23, 24, 29	<i>Podarke pallida</i>	8, 24
<i>Harmothoë mcintoshi</i>	23	<i>Syllidia armata</i>	24
<i>Harmothoë spinifera</i>	7, 22	<i>Ancistrosyllis groenlandica</i>	8, 23
<i>Harmothoë furcosetosa</i>	23	<i>Glyphohesionia klatti</i>	23
<i>Harmothoë glabra</i>	21	Syllidae indet.	23, 24, 29
<i>Harmothoë lunulata</i>	13	<i>Eurysyllis tuberculata</i>	23
<i>Harmothoë marphysae</i>	21	<i>Ehlersia cornuta</i>	13
<i>Lepidonotus clava</i>	13, 21, 22, 29	<i>Syllis</i> sp.	22, 24
<i>Lepidonotus squamatus</i>	7, 8, 21, 22, 29, 30	<i>Trypanosyllis coeliaca</i>	13, 23
<i>Polynoë scolopendrina</i>	9	<i>Trypanosyllis zebra</i>	21, 22, 29
<i>Pholoë inornata</i>	8, 13, 15, 21, 22, 29	<i>Typosyllis</i> sp.	8
<i>Pholoë synophthalmica</i>	23, 24	<i>Typosyllis prolifera</i>	22
<i>Sigalion</i> sp.	23	<i>Typosyllis vittata</i>	13
<i>Sigalion mathildae</i>	23, 24	<i>Eusyllis assimilis</i>	1
<i>Sthenelais</i> sp.	8	<i>Eusyllis blomstrandii</i>	24
<i>Sthenelais boa</i>	3, 22	<i>Odontosyllis</i> sp.	23
<i>Sthenelais limicola</i>	23, 24	<i>Odontosyllis gibba</i>	23, 24
Phyllodocidae indet.	24	<i>Streptosyllis bidentata</i>	8
<i>Eteone</i> sp.	4, 6, 24	<i>Streptosyllis websteri</i>	24
<i>Eteone flava</i>	24	<i>Syllides benedicti</i>	23
<i>Eteone longa</i>	2, 8, 23, 24	<i>Exogone hebes</i>	2, 8, 13, 23, 24
<i>Hypereteone foliosa</i>	23	<i>Exogone naidina</i>	13, 23, 24
<i>Hesionura elongata</i>	13	<i>Exogone verugera</i>	23, 24
<i>Pseudomystides limbata</i>	13, 8, 23	<i>Sphaerosyllis</i> sp.	23, 24
<i>Anaitides groenlandica</i>	4, 25	<i>Sphaerosyllis bulbosa</i>	13
<i>Anaitides maculata</i>	8, 16, 22, 23, 24	<i>Sphaerosyllis ovigera</i>	8
<i>Anaitides mucosa</i>	3, 13, 24	Nereididae indet.	8, 21, 22
<i>Eulalia viridis</i>	13, 18, 21, 22, 29	<i>Ceratocephale loveni</i>	15
<i>Eumida</i> sp.	24	<i>Hediste diversicolor</i>	1, 2, 3, 13, 22, 29
<i>Eumida bahusiensis</i>	5, 23, 24	<i>Neanthes virens</i>	8, 22
<i>Eumida sanguinea</i>	8, 23, 24	<i>Nereis</i> sp.	8, 23
<i>Notophyllum foliosum</i>	7, 23	<i>Nereis pelagica</i>	2, 6, 7, 13, 15, 21, 22, 24, 29, 30
<i>Phyllodoce</i> sp.	4, 22, 23, 24	<i>Perinereis cultrifera</i>	3
<i>Phyllodoce lamelligera</i>	21, 22	<i>Platynereis dumerilii</i>	2, 7, 8, 22, 23, 24
<i>Lacydonia miranda</i>	23	<i>Nephtys</i> sp.	4, 21, 22, 24, 29, 30
<i>Glycera</i> sp.	3, 22, 24, 30	<i>Nephtys caeca</i>	15
<i>Glycera alba</i>	4, 8, 21, 23, 24	<i>Nephtys cirrosa</i>	1, 3, 13, 23, 24
<i>Glycera gigantea</i>	15, 16	<i>Nephtys hombergii</i>	1, 2, 3, 5, 8, 13, 21, 23, 24
<i>Glycera lapidum</i>	3, 13, 23, 24	<i>Nephtys kersivalensis</i>	23

<i>Nephtys hystrix</i>	4, 8	<i>Spio martinensis</i>	13
<i>Nephtys incisa</i>	8, 13, 15, 16, 23, 24	<i>Microspio mecznikowianus</i>	8, 23
<i>Spinther oniscoides</i>	7	<i>Spiophanes bombyx</i>	13, 23, 24
<i>Aponuphis bilineata</i>	13	<i>Spiophanes kroyeri</i>	24
<i>Nothria britannica</i>	21	<i>Magelona alleni</i>	13, 23, 24
<i>Eunice harassii</i>	22	<i>Magelona filiformis</i>	13, 24
<i>Eunice pennata</i>	8	<i>Magelona mirabilis</i>	13, 23, 24
<i>Marphysa bellii</i>	3	<i>Chaetopterus variopedatus</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Nematoneis unicornis</i>	13, 23	<i>Phyllochaetopterus socialis</i>	8, 22
<i>Lumbrineris aniara</i>	23	Cirratulidae	2, 23
<i>Lumbrineris fragilis</i>	16	<i>Caulleriella</i> sp.	24
<i>Lumbrineris gracilis</i>	8, 13, 15	<i>Caulleriella alata</i>	23
<i>Lumbrineris latreilli</i>	15, 23, 24	<i>Caulleriella bioculata</i>	13
<i>Arabella iricolor</i>	23	<i>Caulleriella caputesocis</i>	8
<i>Notocirrus scoticus</i>	8	<i>Tharyx killariensis</i>	23
<i>Ophryotrocha bacci</i>	8	<i>Caulleriella zetlandica</i>	8
<i>Protodorvillea kefersteini</i>	13, 23	<i>Chaetozonesetosa</i> sp.	8, 13, 15, 16, 23, 24
<i>Schistomeringos rudolphi</i>	2	<i>Cirratulus cirratus</i>	8, 15, 16, 21, 22, 23, 24
<i>Nainereis laevigata</i>	8	<i>Cirratulus filiformis</i>	23
<i>Orbinia</i> sp.	23, 24	<i>Cirriformia tentaculata</i>	3, 8, 13, 16, 21, 22, 23
<i>Orbinia latreillii</i>	8	<i>Dodecaceria concharum</i>	24
<i>Scoloplos armiger</i>	2, 8, 9, 13, 15, 16, 21, 22, 23, 24	<i>Tharyx</i> sp.	23
Paraonidae indet.	13, 23, 24	<i>Aphelochaeta marioni</i>	13, 16
<i>Aricidea minuta</i>	2, 13, 23, 24	<i>Aphelochaeta multibranchiis</i>	8
<i>Aricidea wassi</i>	23, 24	<i>Psammodrilus</i>	1, 23, 24
<i>Aricidea suecica</i>	2, 23	<i>balanoglossoides</i>	
<i>Aricidea catherinae</i>	23	<i>Cossura longocirrata</i>	13
<i>Aricidea laubieri</i>	23	Flabelligeridae indet.	23
<i>Cirrophorus branchiatus</i>	23	<i>Diplocirrus glaucus</i>	8, 15, 16, 23, 24
<i>Levinsenia gracilis</i>	23, 24	<i>Flabelligera affinis</i>	21, 22, 24
<i>Paradoneis lyra</i>	8, 23, 24	<i>Pherusa eruca</i>	13
<i>Paraonis fulgens</i>	23, 24	<i>Pherusa plumosa</i>	8, 22, 29
<i>Poecilochaetus serpens</i>	24	<i>Macrochaeta caroli</i>	23
Spionidae indet.	24	<i>Macrochaeta clavicornis</i>	8, 23
<i>Aonides oxycephala</i>	13	Capitellidae indet.	23, 24
<i>Aonides paucibranchiata</i>	8, 13, 23	<i>Capitella</i> sp.	23, 24
<i>Laonice bahusiensis</i>	13, 23	<i>Capitella capitata</i>	2, 3, 21, 24
<i>Laonice cirrata</i>	8	<i>Capitella hermaphrodita</i>	24
<i>Malacoceros fuliginosus</i>	24	<i>Heteromastus filiformis</i>	3
<i>Malacoceros tetracerus</i>	13, 23	<i>Mediomastus fragilis</i>	3, 8, 13, 23, 24
<i>Minuspio cirrifera</i>	4, 8, 23, 24	<i>Notomastus latericeus</i>	13, 15, 16, 23, 24
<i>Polydora</i> sp.	2, 3, 8, 13, 23, 24, 30	<i>Notomastus profundus</i>	8
<i>Polydora caeca</i>	2	<i>Arenicola marina</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Polydora ciliata</i>	8, 21, 22	<i>Arenicolides ecaudata</i>	21, 22
<i>Prionospio</i> sp.	24	Maldanidae indet.	21, 22, 23, 29
<i>Prionospio fallax</i>	8, 15, 23	<i>Praxillura longissima</i>	8, 24
<i>Prionospio steenstrupi</i>	24	<i>Asychis biceps</i>	23
<i>Prionospio ehlersi</i>	13	Euclymeninae indet.	8
<i>Prionospio caspersi</i>	13	<i>Clymenella</i> sp.	8
<i>Pseudopolydora</i> sp.	23	<i>Clymenura</i> sp.	8
<i>Pseudopolydora pulchra</i>	13	<i>Euclymene</i> sp.	23, 24
<i>Pygospio elegans</i>	1, 2, 3, 8, 24	<i>Euclymene lumbricoides</i>	23
<i>Scoelepis bonnieri</i>	23	<i>Praxillella gracilis</i>	8, 23
<i>Scoelepis squamata</i>	18, 22, 23, 24, 29	<i>Nicomache</i> sp.	8, 24
<i>Scoelepis tridentata</i>	13	<i>Nicomache lumbricalis</i>	23
<i>Spio</i> sp.	23		
<i>Spio armata</i>	23		
<i>Spio filicornis</i>	1, 2, 8, 13, 23, 24		

<i>Nicomache trispinata</i>	8	Sabellidae indet.	2, 5, 13, 21, 23, 24, 28
<i>Petaloproctus tenuis borealis</i>	24	<i>Bispira volutacornis</i>	2, 20, 21, 22, 29
<i>Rhodine gracilior</i>	13	<i>Branchiomma bombyx</i>	2, 6, 8, 23
<i>Rhodine loveni</i>	8	<i>Chone</i> sp.	6, 14, 24, 25, 26, 29
Opheliidae indet.	24	<i>Chone duneri</i>	3, 4
<i>Ophelia</i> sp.	20	<i>Chone filicaudata</i>	8, 23
<i>Ophelia bicornis</i>	29, 30	<i>Chone infundibuliformis</i>	21, 26, 28, 29
<i>Ophelia limacina</i>	23, 24	<i>Demonax cambrensis</i>	24
<i>Ophelia rathkei</i>	1, 5, 8, 23, 24	<i>Euchone rubrocincta</i>	23
<i>Euzonus flabelligerus</i>	23	<i>Fabricia sabella</i>	2, 3, 13, 22
<i>Travisia forbesii</i>	4, 23, 24	<i>Fabriciola baltica</i>	24
<i>Ophelina acuminata</i>	23, 24	<i>Jasmineira candela</i>	23
<i>Ophelina modesta</i>	23	<i>Jasmineira caudata</i>	13, 23, 24
<i>Polyphysia crassa</i>	4, 6, 15	<i>Megalomma vesiculosum</i>	3, 8
<i>Scalibregma inflatum</i>	3, 8, 13, 15, 23, 24	<i>Myxicola aesthetica</i>	3
<i>Polygordius</i> sp.	3	<i>Myxicola infundibulum</i>	1, 2, 3, 4, 6, 7, 8, 11, 14, 15, 16, 19, 20, 21, 22, 25, 26, 28, 29, 30
<i>Myriochele</i> sp.	23	<i>Pseudopotamilla reniformis</i>	21, 22
<i>Galathowenia oculata</i>	8, 23, 24	<i>Sabella</i> sp.	8, 24
<i>Owenia fusiformis</i>	4, 8, 13, 15, 16, 17, 23, 24, 25, 29, 30	<i>Sabella pavonina</i>	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 15, 17, 21, 22, 23, 24, 26, 28, 29, 30
<i>Amphictene auricoma</i>	8, 13, 23, 24		
<i>Lagis koreni</i>	8, 15, 22, 23, 24	Serpulidae indet.	23, 25
<i>Pectinaria</i> sp.	9, 29	<i>Hydroides norvegica</i>	4, 6, 8, 13, 15, 21, 22, 23, 28
<i>Pectinaria belgica</i>	4, 8	<i>Placostegus tridentatus</i>	25
<i>Sabellaria</i> sp.	18	<i>Pomatoceros</i> sp.	8, 23, 24
<i>Sabellaria spinulosa</i>	8	<i>Pomatoceros triqueter</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
Ampharetidae indet.	21	<i>Serpula vermicularis</i>	2, 6, 7, 8, 9, 11, 13, 15, 16, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Melinna</i> sp.	4		
<i>Melinna cristata</i>	15	Filigraninae indet.	8
<i>Melinna palmata</i>	13, 24	<i>Filigrana implexa</i>	5, 8, 10, 15, 21, 22, 23, 29
<i>Ampharete</i> sp.	8, 23, 24	<i>Protula tubularia</i>	2, 3, 4, 6, 7, 8, 10, 13, 16, 18, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Ampharete finmarchica</i>	13, 24	<i>Salmacina dysteri</i>	6, 8, 15
<i>Ampharete lindstroemi</i>	23, 24	Spirorbidae	1, 3, 8, 13, 18, 23, 24, 26, 29
<i>Amphicteis gunneri</i>	13, 15	<i>Circeis spirillum</i>	21, 22, 30
<i>Samytha sexcirrata</i>	15	<i>Janua pagenstecheri</i>	21, 22
<i>Sosane sulcata</i>	8, 13	<i>Paradexiospira vitrea</i>	21
<i>Terebellides stroemi</i>	8, 13, 15, 16, 23, 24	<i>Spirorbis</i> sp.	1, 2, 4, 5, 6, 7, 8, 9, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Trichobranchus glacialis</i>	8, 29	<i>Spirorbis corallinae</i>	3, 5, 21, 22, 30
Terebellidae indet.	1, 2, 3, 4, 5, 6, 8, 9, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Spirorbis rupestris</i>	1, 5, 21, 29
<i>Amphitrite</i> sp.	6, 7, 11, 21, 22, 29	<i>Spirorbis spirorbis</i>	1, 3, 4, 5, 8, 13, 21, 22, 23, 29, 30
<i>Amphitrite cirrata</i>	8, 23	<i>Spirorbis tridentatus</i>	4, 8
<i>Amphitritides gracilis</i>	22	Oligochaeta indet.	2, 3, 8, 23, 24
<i>Eupolymnia nebulosa</i>	2, 3, 4, 6, 7, 8, 13, 16, 21, 22, 23, 24, 25, 28, 30	<i>Tubificoides</i> sp.	2, 3
<i>Lanice conchilega</i>	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 15, 16, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Tubificoides benedii</i>	3, 13
<i>Neoamphitrite figulus</i>	3, 22, 29	<i>Tubificoides pseudogaster</i>	13
<i>Nicolea zostericola</i>	5	Enchytraeidae indet.	13
<i>Pista cristata</i>	4, 8, 13, 23, 24	<i>Grania</i> sp.	29
<i>Artacama proboscidea</i>	15	<i>Pontobdella muricata</i>	11
<i>Polycirrus</i> sp.	13, 21, 23, 24	<b>CHELICERATA</b>	
<i>Polycirrus medusa</i>	23, 24	Pycnogonida indet.	18
<i>Polycirrus norvegicus</i>	23	<i>Nymphon brevirostre</i>	21, 22, 28, 29
<i>Streblosoma bairdi</i>	30		
<i>Streblosoma intestinalis</i>	23		
<i>Thelepus</i> sp.	8		
<i>Thelepus cincinnatus</i>	2, 8, 30		

<i>Endeis charybdaea</i>	28	<i>Hippomedon denticulatus</i>	23
<i>Endeis spinosa</i>	29	<i>Lysianassa ceratina</i>	3
<i>Callipallene brevirostris</i>	23	<i>Lysianassa plumosa</i>	8, 13, 23, 24
<i>Phoxichilidium femoratum</i>	29	<i>Normanion quadrimanus</i>	23
<i>Pycnogonum littorale</i>	13, 22	<i>Orchome nenanus</i>	23
Halacaridae indet.	8, 13, 24, 26	<i>Socarnes erythrophthalmus</i>	3, 13
<b>CRUSTACEA</b>		<i>Austrosyrrhoe fimbriatus</i>	23
<i>Cirrepedia</i> indet.	1, 2, 3, 8, 13, 21, 22, 23, 24, 26, 29	<i>Atylus swammerdamei</i>	23, 24
<i>Scalpellum scalpellum</i>	7, 21	<i>Atylus vedlomensis</i>	24
<i>Verruca stroemia</i>	4, 8, 13, 15, 21, 22, 23, 28, 29	<i>Dexamine spinosa</i>	8, 23
<i>Chthamalus</i> sp.	21, 22	<i>Guerneia coalita</i>	13, 23
<i>Chthamalus montagui</i>	1, 3, 4, 5, 8, 13, 18, 23, 24, 26	<i>Ampelisca</i> sp.	8
<i>Chthamalus stellatus</i>	4, 13, 28, 30	<i>Ampelisca brevicornis</i>	13, 15, 23, 24
<i>Semibalanus balanoides</i>	1, 2, 3, 4, 5, 8, 11, 13, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Ampelisca diadema</i>	23
<i>Balanus</i> sp.	15, 24, 26, 30	<i>Ampelisca tenuicornis</i>	8, 23, 24
<i>Balanus balanus</i>	1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 15, 16, 17, 20, 21, 22, 23, 24, 25, 26, 29, 30	<i>Ampelisca typica</i>	13, 23
<i>Balanus crenatus</i>	1, 2, 3, 4, 5, 6, 7, 8, 10, 12, 13, 15, 16, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Bathyporeia</i> sp.	23
<i>Chirona hameri</i>	22	<i>Bathyporeia elegans</i>	23, 24
Copepoda indet.	2, 3, 23	<i>Bathyporeia guilliamsoniana</i>	1, 23, 24
Ostracoda indet.	22, 23, 24	<i>Bathyporeia pelagica</i>	23, 24
<i>Euphilomedes interpuncta</i>	8	<i>Bathyporeia pilosa</i>	1, 13, 23, 24
<i>Nebalia bipes</i>	13, 24	Gammaridae indet.	1, 3, 8, 13, 18, 21, 22, 23, 24, 26, 28, 29, 30
Mysidae indet.	8, 16, 21, 22, 23, 24	<i>Echinogammarus</i> sp.	30
<i>Gastrosaccus spinifer</i>	23	<i>Echinogammarus marinus</i>	2, 3
<i>Erythrops elegans</i>	23	<i>Echinogammarus obtusatus</i>	3, 23
<i>Neomysis integer</i>	30	<i>Gammarus locusta</i>	24
Amphipoda indet.	1, 6, 8, 13, 18, 19, 21, 22, 23, 23, 24, 25, 26, 28, 29	<i>Gammarus oceanicus</i>	2
Gammaridea indet.	25	<i>Gammarus salinus</i>	2, 3, 24
<i>Apherusa</i> sp.	15	<i>Gammarus zaddachi</i>	2
<i>Apherusa bispinosa</i>	23	<i>Megaluropus agilis</i>	23
<i>Calliopius laeviusculus</i>	24	<i>Abludomelita obtusata</i>	24
<i>Monoculodes borealis</i>	23	<i>Cheirocratus intermedius</i>	24
<i>Monoculodes subnudus</i>	8	<i>Melita dentata</i>	24
<i>Perioculodes longimanus</i>	13, 23, 24	<i>Melita palmata</i>	3
<i>Pontocrates altamarinus</i>	23, 24	<i>Gammaropsis palmata</i>	23
<i>Pontocrates arenarius</i>	23	<i>Megamphopus</i> sp.	23
<i>Synchelidium haplocheles</i>	23, 24	<i>Gammaropsis cornuta</i>	8
<i>Synchelidium maculatum</i>	23, 24	<i>Microprotopus maculatus</i>	23
<i>Westwoodilla caecula</i>	8, 23, 24	<i>Photis longicaudata</i>	13
<i>Amphilochooides serratipes</i>	23	<i>Erichthonius punctatus</i>	2, 8
<i>Leucothoe incisa</i>	23, 24	<i>Jassa</i> sp.	9
<i>Cressa dubia</i>	24	<i>Jassa falcata</i>	2, 21, 23
<i>Stenothoe</i> sp.	23, 24	<i>Jassa marmorata</i>	3
<i>Stenothoe marina</i>	24	<i>Microjassa cumbrensis</i>	23
<i>Hyale prevostii</i>	3, 4, 8, 13, 26, 28, 29, 30	<i>Aora gracilis</i>	23, 24
<i>Orchestia gammarellus</i>	3, 23, 30	<i>Leptocheirus hirsutimanus</i>	3, 13, 23
<i>Talitrus saltator</i>	23, 24, 30	<i>Leptocheirus pectinatus</i>	8
<i>Pseudorchestioidea brito</i>	15	<i>Corophium</i> sp.	2, 23, 24, 29
<i>Urothoe elegans</i>	23	<i>Corophium acherusicum</i>	3
<i>Urothoe marina</i>	23	<i>Corophium affine</i>	23
<i>Urothoe poseidonis</i>	13	<i>Corophium sextonae</i>	23
<i>Harpinia antennaria</i>	8, 13, 15, 23, 24	<i>Corophium volutator</i>	1, 2, 3, 5, 29, 30
<i>Parametaphoxus fultoni</i>	8, 13, 23	<i>Siphonoecetes kroyeranus</i>	23, 24
		Caprellidae indet.	2, 4, 5, 6, 8, 12, 13, 15, 17, 21, 22, 23, 24, 28, 29, 30
		<i>Caprella acanthifera</i>	3
		<i>Caprella linearis</i>	4, 29, 30
		<i>Pariambus typicus</i>	23

<i>Parvipalpus capillaceus</i>	23	<i>Pandalus</i> sp.	7
<i>Phtisica marina</i>	23, 24	<i>Pandalus montagui</i>	2, 7, 8, 15, 16, 18, 20, 24, 26, 28
<i>Pseudoprotella phasma</i>	2, 23	<i>Crangon</i> sp.	1
<i>Hyperia galba</i>	8	<i>Crangon crangon</i>	2, 3, 4, 5, 8, 15, 21, 22, 24, 28
Isopoda indet.	8, 21, 22, 24, 25	<i>Philoceras bispinosus neglecta</i>	23
<i>Gnathia maxillaris</i>	24	<i>Homarus gammarus</i>	2, 5, 6, 7, 10, 13, 15, 21, 28, 29
<i>Gnathia oxyuraea</i>	23, 24	<i>Nephrops norvegicus</i>	3, 5, 6, 7, 8, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 28, 29, 30
<i>Limnoria lignorum</i>	21	<i>Calocaris macandreae</i>	8, 13, 15, 16, 23
<i>Cirolana cranchii</i>	21	Callianassidae indet.	7, 8
<i>Eurydice pulchra</i>	13, 18, 23, 24	<i>Callianassa subterranea</i>	8, 13, 15, 16, 18
Sphaeromatidae	29	<i>Palinurus elephas</i>	7, 29
<i>Cymodoce truncata</i>	22	<i>Lithodes maia</i> sp.	30
<i>Dynamene bidentata</i>	21	Paguridae indet.	2, 8, 13, 15, 16, 21, 22, 23, 24, 29, 30
<i>Sphaeroma</i> sp.	29	<i>Anapagurus chiroacanthus</i>	6, 7, 25, 26, 29, 30
<i>Jaera</i> sp.	8, 13	<i>Anapagurus hyndmanni</i>	2, 3, 4, 5, 6, 8, 12, 13, 15, 16, 18, 20, 23, 24, 25, 26, 28, 29, 30
<i>Jaera albifrons</i>	13, 21, 22, 29, 30	<i>Anapagurus laevis</i>	7, 18, 20, 23, 24
<i>Jaera forsmanni</i>	2, 3	<i>Pagurus</i> sp.	3, 8, 9, 15, 20, 21, 22, 24
<i>Idotea</i> sp.	8, 13, 18, 23, 24, 26, 29	<i>Pagurus bernhardus</i>	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Idotea baltica</i>	3, 15, 21, 22	<i>Pagurus cuanensis</i>	2, 4, 5, 6, 7, 8, 13, 16, 23, 24, 25, 26, 28, 29, 30
<i>Idotea granulosa</i>	1, 2, 13, 21, 22, 23, 26, 29, 30	<i>Pagurus prideaux</i>	2, 3, 4, 5, 6, 7, 8, 10, 11, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Arcturella damnoniensis</i>	13, 23	<i>Pagurus pubescens</i>	4, 5, 6, 8, 16, 20, 23, 24, 25, 26, 28
<i>Astacilla longicornis</i>	4, 6, 8, 14, 24, 25, 28	Parapaguridae indet.	26
<i>Ligia oceanica</i>	1, 8, 13, 18, 21, 22, 23, 24, 26, 29, 30	<i>Galathea</i> sp.	8, 9, 13, 15, 21, 22, 24, 26, 29
Tanaidacea indet.	13	<i>Galathea dispersa</i>	4, 14, 15
<i>Tanais dulongii</i>	22	<i>Galathea intermedia</i>	2, 3, 5, 6, 10, 13, 15, 16, 23, 24, 25, 26
<i>Pseudoparatanais batei</i>	23	<i>Galathea nexa</i>	2, 3, 4, 6, 7, 10, 19, 25, 26, 28
<i>Tanaopsis graciloides</i>	8, 23, 24	<i>Galathea squamifera</i>	1, 2, 3, 4, 5, 6, 24, 25, 29, 30
<i>Vauntomponia cristata</i>	24	<i>Galathea strigosa</i>	2, 5, 6, 7, 8, 9, 10, 12, 16, 18, 21, 22, 23, 26, 28, 29
<i>Bodotria pulchella</i>	13, 24	<i>Munida</i> sp.	23
<i>Iphinoe serrata</i>	23	<i>Munida rugosa</i>	4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Iphinoe trispinosa</i>	13, 24	<i>Pisidia longicornis</i>	2, 3, 4, 5, 6, 7, 8, 13, 15, 20, 21, 22, 24, 26, 29, 30
<i>Eudorella truncatula</i>	8, 13, 23, 24	<i>Porcellana platycheles</i>	3, 5, 6, 8, 13, 21, 22, 24, 25
<i>Campylaspis costata</i>	24	<i>Ebalia cranchii</i>	6, 15
<i>Nannastacus brevicaudatus</i>	23	<i>Ebalia granulosa</i>	4
<i>Nannastacus unguiculatus</i>	13	<i>Ebalia tuberosa</i>	10, 12, 13, 15, 25, 29
<i>Pseudocuma</i> sp.	24	<i>Ebalia tumefacta</i>	3, 6
<i>Pseudocuma gilsoni</i>	23	<i>Hyas</i> sp.	3, 8, 21, 22, 29
<i>Pseudocuma longicornis</i>	23, 24	<i>Hyas araneus</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 14, 15, 16, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Diastylis laevis</i>	23, 24	<i>Hyas coarctatus</i>	2, 3, 4, 5, 6, 8, 13, 14, 15, 18, 20, 21, 22, 23, 24, 25, 26, 28, 29
<i>Diastylis tumida</i>	15		
Euphausiidae indet.	7, 8		
<i>Meganyctiphanes norvegica</i>	8		
Decapoda indet.	22, 24		
Penaeidae indet.	2		
Caridea indet.	3, 12, 15, 16, 25, 28		
<i>Palaemon elegans</i>	13		
<i>Palaemon serratus</i>	6, 8, 9, 23, 24, 29		
<i>Eualus pusiulus</i>	2, 5		
<i>Hippolyte</i> sp.	23, 24		
<i>Hippolyte inermis</i>	5		
<i>Hippolyte varians</i>	2, 3, 28		
<i>Spirontocaris</i> sp.	6		
<i>Spirontocaris spinus</i>	6, 8		
<i>Thoralus cranchii</i>	7		
<i>Processa nouveli holthuisi</i>	8		
Pandalidae indet.	9, 29		
<i>Dichelopandalus bonnierii</i>	23		
<i>Pandalina brevirostris</i>	5, 24		



<i>Achaeus cranchii</i>	30	<i>Tonicella</i> sp.	30
<i>Inachus</i> sp.	10, 21, 22	<i>Tonicella marmorea</i>	2, 3, 4, 5, 6, 7, 8, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Inachus dorsettensis</i>	2, 3, 4, 6, 7, 8, 11, 13, 15, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Tonicella rubra</i>	2, 3, 4, 5, 6, 8, 13, 16, 18, 20, 21, 22, 23, 25, 26, 28, 29, 30
<i>Inachus leptochirus</i>	10	<i>Callochiton septemvalvis</i>	5, 21, 23
<i>Inachus phalangium</i>	2, 4, 5, 6, 7, 9, 13, 24, 25, 26, 28, 29, 30	<i>Acanthochiton acrinita</i>	29
<i>Macropodia</i> sp.	9, 16, 21, 22, 23, 24, 29, 30	Gastropoda indet.	3, 13, 15
<i>Macropodia rostrata</i>	2, 3, 4, 5, 6, 7, 8, 13, 14, 15, 16, 19, 22, 23, 24, 25, 26, 28, 29, 30	<i>Emarginula fissura</i>	2, 3, 6, 8, 10, 18, 21, 22, 24, 25, 28, 29, 30
<i>Macropodia tenuirostris</i>	4, 10, 21, 22, 28, 29	<i>Diodora graeca</i>	2, 6, 7
<i>Eurynome</i> sp.	29	<i>Tectura</i> sp.	9, 20, 26
<i>Eurynome aspera</i>	6, 10, 15, 23, 25, 29	<i>Tectura testudinalis</i>	3, 4, 5, 6, 7, 8, 13, 15, 16, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Eurynome spinosa</i>	2, 3, 23, 28	<i>Tectura virginea</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 13, 16, 19, 20, 21, 22, 23, 24, 25, 26, 29, 30
<i>Corystes cassivelaumus</i>	11, 12, 13, 15, 23	<i>Patella</i> sp.	21, 24
<i>Atelecyclus rotundatus</i>	4, 6, 8, 10, 15, 16, 20, 22, 23, 25, 29	<i>Patella ulyssiponensis</i>	4, 13, 18, 22, 24
<i>Cancer pagurus</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30,	<i>Patella vulgata</i>	1, 2, 3, 4, 5, 6, 8, 9, 13, 18, 21, 22, 23, 24, 26, 28, 29, 30
<i>Liocarcinus</i> sp.	4, 6, 7, 9, 20, 22, 28	<i>Helcion pellucidum</i>	2, 3, 5, 7, 8, 11, 13, 21, 22, 24, 28, 29, 30
<i>Liocarcinus corrugatus</i>	2, 3, 9, 13	<i>Iothia fulva</i>	4, 8, 21
<i>Liocarcinus depurator</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Margarites helicinus</i>	5, 7, 8, 13, 21, 22, 24, 25, 29, 30
<i>Liocarcinus holsatus</i>	23	<i>Margarites striatus</i>	21
<i>Liocarcinus marmoreus</i>	2, 10, 22, 23, 29	<i>Jujubinus miliaris</i>	6, 8, 15, 16, 18, 20, 21, 22, 25, 29, 30
<i>Necora puber</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 28, 29, 30	<i>Jujubinus montagui</i>	9, 16, 25, 29
<i>Liocarcinus pusillus</i>	12, 13, 15, 16, 23, 24, 25, 29	<i>Gibbula</i> sp.	8, 11, 29
<i>Carcinus maenas</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Gibbula magus</i>	2, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Goneplax rhomboides</i>	28	<i>Gibbula tumida</i>	4, 5, 6, 7, 8, 9, 13, 16, 18, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Pilumnus hirtellus</i>	9	<i>Gibbula (Steromphala) sp.</i>	30
<i>Xantho pilipes</i>	3, 5	<i>Gibbula cineraria</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<b>INSECTA</b>		<i>Gibbula umbilicalis</i>	3, 4, 5, 8, 9, 13, 21, 22, 24, 26, 28, 29, 30
Insecta indet.	3, 8, 24, 29	<i>Calliostoma zizyphinum</i>	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Strigamia maritima</i>	8	<i>Skenea ossiansarsi</i>	22
<i>Petrobius maritimus</i>	24	<i>Lacuna</i> sp.	24
<i>Anurida maritima</i>	1, 3, 8, 13, 18, 21, 22, 24, 26, 29, 30	<i>Lacuna pallidula</i>	4, 5, 7, 8, 21, 22, 24, 25, 29
<b>MOLLUSCA</b>		<i>Lacuna crassior</i>	22
<i>Chaetoderma nitidulum</i>	8, 15, 24, 30	<i>Lacuna vincta</i>	2, 3, 4, 5, 7, 8, 9, 21, 22, 24, 25, 28, 29, 30
<i>Neomenia carinata</i>	6	<i>Littorina</i> sp.	3, 8
<i>Rhopalomenia aglaopheniae</i>	23	<i>Littorina littorea</i>	1, 2, 3, 4, 5, 6, 7, 8, 12, 13, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30
Polyplacophora indet.	3, 4, 5, 6, 8, 13, 15, 16, 20, 21, 22, 28, 29	<i>Melarhaphe neritoides</i>	3, 4, 5, 13, 18, 22, 24, 30
<i>Leptochiton</i> sp.	8	<i>Littorina mariae</i>	1, 3, 4, 5, 7, 8, 13, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Leptochiton asellus</i>	2, 3, 4, 5, 6, 7, 8, 9, 16, 18, 20, 21, 22, 23, 24, 25, 26, 29, 30	<i>Littorina obtusata</i>	1, 3, 4, 6, 8, 13, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Leptochiton cancellatus</i>	9		
<i>Ischnochiton albus</i>	8, 21, 23		
<i>Lepidochiton acinerea</i>	1, 3, 4, 5, 8, 13, 15, 21, 22, 23, 24, 26, 28, 29, 30		

<i>Littorina neglecta</i>	3, 4, 8, 13, 21, 22, 24, 26, 29, 30	<i>Trivia arctica</i>	4, 5, 6, 7, 8, 10, 13, 17, 21, 22, 23, 24, 25, 26, 29, 30
<i>Littorina obtusata/mariae</i>	8, 29	<i>Trivia monacha</i>	2, 4, 5, 13, 23, 26, 29, 30
<i>Littorina nigrolineata</i>	21, 22, 25, 29	<i>Lamellaria</i> sp.	24
<i>Littorina saxatilis</i>	1, 2, 3, 4, 5, 8, 13, 18, 21, 22, 23, 24, 26, 28, 29, 30	<i>Lamellaria latens</i>	3, 23
<i>Littorina saxatilis tenebrosa</i>	21, 29	<i>Lamellaria perspicua</i>	8, 10, 29
<i>Littorina saxatilis</i> var. <i>rudis</i>	13	<i>Velutina plicatilis</i>	22, 23, 24, 29
<i>Hydrobia</i> sp.	8, 13, 29	<i>Velutina velutina</i>	6, 7, 13,
<i>Ventrosia ventrosa</i>	22	<i>Polinices</i> sp.	4, 12, 21, 23, 24
<i>Hydrobia ulvae</i>	1, 3, 4, 5, 8, 13, 21, 22, 24, 25, 29, 30	<i>Euspira catena</i>	13, 8
Rissoidea indet.	8, 23, 24	<i>Polinices pulchellus</i>	3, 5, 13, 15, 21, 22, 23, 24, 25, 29
<i>Rissoa lilacina rufilabrum</i>	5, 21, 22, 24, 25, 29	<i>Nucella lapillus</i>	1, 3, 4, 5, 6, 7, 8, 13, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Rissoa interrupta</i>	4, 21, 22, 29, 30	<i>Ocenebra erinacea</i>	2, 21, 22, 29
<i>Rissoa parva</i>	3, 7, 8, 9, 21, 22, 24, 25, 28, 29, 30	<i>Buccinidae</i> sp.	4
<i>Pusillina inconspicua</i>	21, 22, 24, 25	<i>Buccinum undatum</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Pusillina sarsi</i>	21, 22, 24, 25	<i>Neptunea antiqua</i>	6, 8, 10, 16, 20, 21
<i>Alvania beanii</i>	5, 9, 21	<i>Colus</i> sp.	8
<i>Alvania punctura</i>	9, 21, 22, 29	<i>Colus gracilis</i>	8, 26, 29
<i>Alvania semistriata</i>	3, 5	<i>Colus islandicus</i>	28
<i>Cingula cingillus</i>	5, 7, 22, 25	<i>Hinia incrassata</i>	2, 3, 4, 5, 6, 8, 9, 10, 13, 15, 16, 18, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Onoba aculeus</i>	7, 21, 22, 29	<i>Hinia reticulata</i>	1, 2, 3, 4, 5, 6, 13, 21, 22, 23, 24, 29
<i>Onoba semicostata</i>	13, 21, 22, 24, 29	<i>Mangelia</i> sp.	25, 29
<i>Hyalia vitrea</i>	13	<i>Mangelia attenuata</i>	23
<i>Skeneopsis planorbis</i>	7, 8, 21, 22, 24, 25, 29	<i>Mangelia coarctata</i>	3, 5
<i>Omalogyra atomus</i>	5, 7, 8, 21, 22, 24, 29	<i>Teretia anceps</i>	21
<i>Rissoella diaphana</i>	7, 8, 21, 22, 24, 25, 29	<i>Raphitoma boothii</i>	21, 22
<i>Rissoella globularis</i>	21, 22	<i>Raphitoma linearis</i>	15, 21, 29
<i>Rissoella opalina</i>	7, 21, 22	<i>Raphitoma purpurea</i>	30
<i>Eatonina fulgida</i>	9	<i>Acteon tornatilis</i>	25
<i>Caecum glabrum</i>	9, 13	<i>Cylichna cylindracea</i>	8, 13, 15, 23, 24
<i>Caecum trachea</i>	9	<i>Roxania</i> sp.	24
<i>Turritella communis</i>	3, 4, 5, 6, 7, 8, 9, 13, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Philine</i> sp.	13, 23, 24, 25
<i>Bittium reticulatum</i>	3, 4, 5, 9	<i>Philine angulata</i>	5
<i>Chrysallida indistincta</i>	22	<i>Philine aperta</i>	5, 6, 7, 8, 9, 12, 13, 15, 19, 20, 21, 22, 23, 25, 26, 28, 29, 30
<i>Chrysallida interstincta</i>	21, 22	<i>Philine intricata</i>	15, 23
<i>Partulida pellucida</i>	21, 22	<i>Philine punctata</i>	21, 22
<i>Odostomia acuta</i>	22, 25	<i>Diaphana minuta</i>	21, 22
<i>Odostomia plicata</i>	21, 22	<i>Colpodaspis pusilla</i>	6, 25, 29
<i>Odostomia turrita</i>	7, 8, 21, 22, 25, 29	<i>Retusa obtusa</i>	21
<i>Odostomia unidentata</i>	21, 22, 24, 25, 30	<i>Retusa truncatula</i>	9, 21, 22
<i>Odostomia unidentata</i> var. <i>albella</i>	22	<i>Retusa umbilicata</i>	9, 23
<i>Brachystomia eulimoides</i>	21, 22, 29, 30	<i>Sacoglossa</i> indet.	3
<i>Brachystomia scalaris</i>	7, 8, 9, 21, 29	<i>Elysia viridis</i>	5, 7, 22, 23, 29
<i>Turbonilla crenata</i>	24	<i>Hermaea bifida</i>	21
<i>Turbonilla acuta</i>	23	<i>Stiliger bellulus</i>	6
<i>Pherusina gulsonae</i>	24	<i>Limapontia</i> sp.	3
<i>Melanella alba</i>	12, 29	<i>Limapontia capitata</i>	8, 21, 22, 24
<i>Vitreolina philippi</i>	13	<i>Limapontia senestra</i>	21, 22, 29
<i>Aporrhais pespelecani</i>	3, 4, 6, 7, 11, 13, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Akera bullata</i>	23, 25, 29
<i>Capulus ungaricus</i>	6, 8, 16, 21, 26	<i>Aplysia punctata</i>	2, 3, 4, 5, 6, 7, 13, 15, 23, 24, 25, 29
<i>Trivia</i> sp.	21, 22		

<i>Pleurobranchus membranaceus</i>	13, 23, 24, 25, 26	<i>Eubbranchus exiguus</i>	6
<i>Berthella plumula</i>	21, 22, 29	<i>Eubbranchus farrani</i>	23, 24, 29
<i>Tritonia hombergii</i>	8, 21, 28	<i>Eubbranchus pallidus</i>	8, 21, 23, 30
<i>Tritonia lineata</i>	7, 25	<i>Eubbranchus tricolor</i>	6, 8, 23, 28
<i>Tritonia plebeia</i>	8, 24, 29, 30	<i>Eubbranchus vittatus</i>	6, 22, 23, 28, 29
<i>Lomanotus genei</i>	16, 21	<i>Facelina bostoniensis</i>	3, 7, 9, 11, 13, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Lomanotus marmoratus</i>	21, 23	<i>Facelina auriculata</i>	8, 22, 29
<i>Dendronotus frondosus</i>	6, 8, 21, 22, 24, 29	<i>Favorinus blianus</i>	23
<i>Doto</i> sp.	23, 24, 25	<i>Favorinus branchialis</i>	22, 24, 29
<i>Doto coronata</i>	6, 8, 21, 22, 24, 29, 30	<i>Aeolidia papillosa</i>	13, 15, 23, 24, 29
<i>Doto cuspidata</i>	26	<i>Aeolidiella</i> sp.	30
<i>Doto dunnei</i>	6, 7, 22, 24, 29, 30	<i>Aeolidiella glauca</i>	2, 8, 22, 29, 30
<i>Doto eireana</i>	21	<i>Onchidella celtica</i>	21
<i>Doto fragilis</i>	23	<i>Antalis entalis</i>	3, 15, 22, 23, 24
<i>Doto hystrix</i>	22, 28	<i>Pelecypoda</i> indet.	6, 8, 10, 13, 16, 18, 19
<i>Doto maculata</i>	28	<i>Nucula hanleyi</i>	8
<i>Doto tuberculata</i>	6, 23	<i>Nucula nitidosa</i>	9, 13, 15, 22, 23
<i>Doridoidea</i> indet.	16	<i>Nucula nucleus</i>	9, 15, 21, 22, 30
<i>Goniodoris castanea</i>	7, 29	<i>Nucula sulcata</i>	7, 8, 15
<i>Goniodoris nodosa</i>	18, 29, 30	<i>Nuculoma tenuis</i>	8, 9, 23
<i>Okenia pulchella</i>	24	<i>Mytilidae</i> indet.	13
<i>Ancula gibbosa</i>	22, 29	<i>Mytilus edulis</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 13, 18, 19, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Acanthodoris pilosa</i>	7, 15, 22, 24, 29, 30	<i>Crenella decussata</i>	8, 22, 23
<i>Adalaria proxima</i>	1, 8, 10, 21, 22, 24	<i>Musculus</i> sp.	28
<i>Onchidoris bilamellata</i>	6, 8, 22	<i>Musculus discors</i>	5, 7, 8, 21, 22, 24, 29
<i>Onchidoris depressa</i>	23	<i>Modiolarca tumida</i>	7, 9, 21, 22, 24, 29
<i>Onchidoris muricata</i>	3, 8, 9, 10, 21, 22, 28, 29	<i>Modiolus</i> sp.	8, 23
<i>Diaphorodoris luteocincta</i>	6, 23, 29	<i>Modiolus modiolus</i>	2, 4, 5, 6, 7, 8, 13, 19, 20, 21, 22, 23, 24, 26, 28, 29, 30
<i>Aegires punctilucens</i>	22, 29	<i>Arca tetragona</i>	8, 28
<i>Limacia clavigera</i>	6, 7, 15, 21, 23, 24, 25, 26, 28, 29	<i>Glycymeris glycymeris</i>	3, 6, 8, 9, 15
<i>Polycera faeroensis</i>	4, 7, 16, 23, 24, 29, 30	<i>Limaria hians</i>	6, 8, 9, 20, 21, 24, 25, 26, 28
<i>Polycera quadrilineata</i>	6, 13, 15, 22, 23, 24, 25, 29, 30	<i>Limatula gwyni</i>	21
<i>Cadlina laevis</i>	5, 6, 7, 13, 16, 21, 22, 24, 29	<i>Limatula subauriculata</i>	22
<i>Rostanga rubra</i>	21, 24	<i>Limatula sulcata</i>	8
<i>Archidoris pseudoargus</i>	2, 3, 4, 5, 6, 7, 8, 13, 18, 20, 21, 22, 24, 29, 30	<i>Atrina fragilis</i>	8, 21
<i>Jorunna tomentosa</i>	3, 4, 5, 13, 22	<i>Ostrea edulis</i>	3, 5, 21, 24, 30
<i>Armina loveni</i>	22	<i>Pectinidae</i> indet.	8
<i>Janolus cristatus</i>	5, 6, 8, 15, 18, 22, 23, 29	<i>Palliolum furtivum</i>	21, 30
<i>Janolus hyalinus</i>	22	<i>Palliolum striatum</i>	6, 7, 8, 9, 18, 20, 21, 22, 30
<i>Coryphella</i> sp.	22	<i>Palliolum tigerinum</i>	8, 12, 25, 28, 29
<i>Coryphella browni</i>	7, 12, 21, 22, 24, 29	<i>Similipecten similis</i>	8
<i>Coryphella gracilis</i>	21, 24	<i>Pseudamussium septemradiatum</i>	8, 24
<i>Coryphella lineata</i>	4, 8, 12, 13, 14, 15, 22, 23, 24, 25, 29	<i>Chlamys</i> sp.	8, 9, 21, 22, 24, 29, 30
<i>Coryphella verrucosa</i>	8	<i>Chlamys distorta</i>	2, 6, 7, 8, 13, 21, 22, 29, 30
<i>Flabellina pedata</i>	6, 8, 15, 22, 24, 29	<i>Chlamys varia</i>	6, 7, 8, 11, 15, 16, 17, 19, 21, 22, 23, 28, 29, 30
<i>Flabellina pellucida</i>	22	<i>Chlamys varia</i> var. <i>nivea</i>	7, 8, 9, 20, 21, 22, 24, 28, 29
<i>Cuthona amoena</i>	21, 29	<i>Aequipecten opercularis</i>	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Cuthona caerulea</i>	6	<i>Pecten maximus</i>	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Cuthona concinna</i>	6, 21	<i>Anomiidae</i> indet.	1, 2, 3, 4, 5, 8, 9, 13, 23, 28
<i>Cuthona pustulata</i>	22		
<i>Cuthona rubescens</i>	21, 22		
<i>Cuthona viridis</i>	23		
<i>Tergipes tergipes</i>	29		
<i>Eubbranchus</i> sp.	23		

<i>Anomia ephippium</i>	8, 10, 13, 15, 16, 28, 29	<i>Glossus humanus</i>	24
<i>Pododesmus patelliformis</i>	1, 2, 3, 4, 5, 6, 7, 8, 10, 13, 16, 18, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Circomphalus casina</i>	2, 3, 4, 5, 6, 8, 10, 13, 16, 22, 23, 24, 28, 29
<i>Heteranomia squamula</i>	3, 5, 6, 7, 9, 21, 22, 29, 30	<i>Gouldia minima</i>	3, 9, 13, 23
<i>Myrtea spinifera</i>	8, 21, 22, 23, 24, 30	<i>Dosinia</i> sp.	16, 24, 29
<i>Lucinoma borealis</i>	1, 3, 5, 6, 13, 20, 21, 22, 23, 24, 30	<i>Dosinia lupinus</i>	8, 20, 21, 22, 23, 24, 28
<i>Thyasira flexuosa</i>	4, 6, 8, 13, 15, 16, 21, 22, 23, 24, 29	<i>Dosinia exoleta</i>	1, 3, 5, 6, 7, 9, 13, 15, 16, 20, 21, 22, 23, 24, 25
<i>Thyasira ferruginea</i>	23, 24	<i>Tapes decussatus</i>	1, 5
<i>Lasaea adansoni</i>	21, 22, 25	<i>Tapes aureus</i>	5, 9
<i>Kellia suborbicularis</i>	2, 3, 5, 22, 29, 30	<i>Tapes rhomboides</i>	5, 8, 21, 22, 23, 28, 29
<i>Devonia perrieri</i>	22	<i>Venerupis</i> sp.	5
<i>Mysella bidentata</i>	4, 5, 8, 9, 13, 15, 21, 22, 23, 24	<i>Venerupis senegalensis</i>	1, 3, 4, 5, 7, 21, 22, 29
<i>Tellimya ferruginosa</i>	13, 23, 24	<i>Chamelea gallina</i>	1, 3, 4, 5, 6, 9, 12, 21, 22, 23, 24, 29
<i>Astarte sulcata</i>	6, 8, 29	<i>Clausinella fasciata</i>	1, 3, 5, 6, 9, 13, 15, 21, 23, 24, 25, 29, 30
<i>Goodallia triangularis</i>	9, 23	<i>Mercenaria mercenaria</i>	1
<i>Tridonta elliptica</i>	26	<i>Timoclea ovata</i>	3, 8, 13, 15, 22, 23, 24
<i>Acanthocardia</i> sp.	6, 28	<i>Mysia undata</i>	23, 24
<i>Acanthocardia aculeata</i>	24	<i>Turtonia minuta</i>	7, 21, 22, 24, 25, 29
<i>Acanthocardia echinata</i>	8, 20, 21, 22, 23, 24	<i>Mya</i> sp.	12, 16, 19, 21, 23
<i>Parvicardium exiguum</i>	9, 21, 22	<i>Mya truncata</i>	1, 2, 3, 4, 5, 6, 7, 8, 13, 15, 16, 21, 22, 23, 24, 25, 26, 29, 30
<i>Parvicardium minimum</i>	9	<i>Mya arenaria</i>	3, 6, 8, 12, 13, 21, 22, 23, 25, 29, 30
<i>Parvicardium ovale</i>	3, 7, 8, 9, 21, 23	<i>Sphenia binghami</i>	8, 13
<i>Parvicardium scabrum</i>	3, 9, 21, 22	<i>Corbula gibba</i>	8, 9, 13, 15, 21, 22, 23, 24, 29, 30
<i>Laevicardium crassum</i>	6, 15, 23, 29	<i>Hiatella arctica</i>	3, 5, 6, 7, 8, 9, 13, 18, 21, 22, 23, 24, 29, 30
<i>Cerastoderma edule</i>	1, 2, 3, 4, 5, 6, 7, 8, 12, 13, 21, 22, 24, 25, 26, 29, 30	<i>Zirfaea crispata</i>	30
<i>Spisula elliptica</i>	8	<i>Xylophaga dorsalis</i>	21
<i>Spisula solida</i>	21	<i>Nototeredo norvegica</i>	24
<i>Spisula subtruncata</i>	3, 6, 21, 22, 23, 24	<i>Pandora pinna</i>	8
<i>Lutraria</i> sp.	30	<i>Lyonsia norvegica</i>	8
<i>Lutraria angustior</i>	5, 22	<i>Thracia</i> sp.	1, 3, 8
<i>Lutraria lutraria</i>	1, 2, 5, 6, 28	<i>Thracia convexa</i>	3, 22
<i>Ensis</i> sp.	2, 3, 4, 5, 6, 8, 9, 13, 14, 15, 16, 19, 20, 21, 22, 23, 24, 25, 26, 29, 30	<i>Thracia phaseolina</i>	13, 21, 23, 24
<i>Ensis arcuatus</i>	1, 3, 5, 6, 7, 13, 15, 21, 22, 23, 24, 25, 28	<i>Thracia pubescens</i>	15
<i>Ensis ensis</i>	1, 2, 3, 4, 12, 13, 23, 24	<i>Thracia villosiuscula</i>	2, 3, 9, 22
<i>Ensis siliqua</i>	6, 9, 12, 13, 20, 21, 22, 23	<i>Thracia distorta</i>	21
<i>Phaxas pellucidus</i>	5, 13, 15, 22, 23, 24, 29, 30	<i>Cochlodesma praetenue</i>	1, 3, 13, 21, 22, 23, 24
<i>Angulus squalidus</i>	5, 21	<i>Cuspidaria abbreviata</i>	8
<i>Angulus tenuis</i>	1, 3, 5, 6, 13, 21, 23, 24	<i>Cephalopoda</i> indet.	11, 21, 22, 23
<i>Arcopagia crassa</i>	13	<i>Sepia officinalis</i>	23
<i>Fabulina fabula</i>	6, 13, 21, 23, 24	<i>Sepiolidae</i> indet.	22
<i>Moerella donacina</i>	3, 13, 21	<i>Sepiola atlantica</i>	2, 3, 6, 8, 13, 16, 21, 23, 24, 29
<i>Moerella pygmaea</i>	9, 23	<i>Rossia macrosoma</i>	6, 21, 25
<i>Macoma balthica</i>	1, 3, 4, 5, 8, 13, 21, 29	<i>Loligo forbesii</i>	29
<i>Gari fervensis</i>	21, 22, 23, 24	<i>Eledone cirrhosa</i>	4, 6, 11, 12, 13, 14, 15, 16, 22, 23, 24, 28, 29
<i>Gari tellinella</i>	3, 8, 9, 22		
<i>Gari depressa</i>	3, 4, 9	<b>BRACHIOPODA</b>	
<i>Scrobicularia plana</i>	5	<i>Neocrania anomala</i>	2, 3, 4, 6, 7, 8, 10, 16, 18, 20, 22, 23, 24, 25, 26, 28, 29, 30
<i>Abra</i> sp.	8, 15	<i>Terebratulina retusa</i>	6, 7, 8, 16, 18, 19, 21, 22, 25
<i>Abra alba</i>	3, 8, 13, 15, 16, 22, 23, 24, 29	<b>BRYOZOA</b>	
<i>Abra nitida</i>	8, 9, 15, 22, 24, 29, 30	<i>Bryozoa</i> indet. (crusts)	1, 4, 5, 6, 8, 10, 12, 13, 20, 23, 24, 28, 29, 30
<i>Solecortus scopula</i>	13		
<i>Arctica islandica</i>	3, 6, 8, 13, 15, 16, 21, 22, 23, 24, 25, 26, 28, 29, 30		

Cyclostomatidae indet.	15	<i>Scrupocellaria reptans</i>	3, 4, 5, 8, 9, 13, 15, 21, 22, 23, 28, 29
Crisiidae indet.	3, 6, 8, 13, 24, 29, 30	<i>Scrupocellaria scruposa</i>	3, 4, 5, 6, 7, 8, 10, 13, 16, 23, 28, 29, 30
<i>Crisidia cornuta</i>	8	<i>Bicelliariella ciliata</i>	8
<i>Crisia denticulata</i>	5, 23	<i>Bugula</i> sp.	16, 20, 23
<i>Crisia eburnea</i>	5, 8, 28, 29	<i>Bugula avicularia</i>	6, 8
<i>Crisia ramosa</i>	10	<i>Bugula flabellata</i>	7, 10, 15, 23, 24
<i>Tubulipora liliacea</i>	23	<i>Bugula fulva</i>	21
<i>Tubulipora plumosa</i>	8	<i>Bugula turbinata</i>	22
Diastoporidae indet.	4	<i>Dendrobeatia murrayana</i>	29
<i>Plagioecia patina</i>	2	Bryozoa indet. (crusts)	2, 3, 6, 8, 9, 10, 21, 22, 23, 24, 25, 26, 29, 30
<i>Lichenopora</i> sp.	4	<i>Phoronis</i> sp.	13, 23, 24
<i>Disporella hispida</i>	23	<b>ECHINODERMATA</b>	
<i>Alcyonidium</i> sp.	8, 23, 29, 30	Crinoidea indet.	23, 24
<i>Alcyonidium diaphanum</i>	2, 3, 4, 6, 8, 10, 11, 15, 23, 25, 29, 30	<i>Antedon</i> sp.	11, 13, 14, 15, 16
<i>Alcyonidium gelatinosum</i>	2, 3, 4, 6, 7, 8, 13, 21, 22, 26, 29, 30	<i>Antedon bifida</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25, 28, 29, 30
<i>Alcyonidium hirsutum</i>	1, 2, 8, 13, 21, 22, 23, 24, 29	<i>Antedon petasus</i>	4, 6, 8, 10, 11, 13, 15, 16, 17, 20, 23, 25, 26, 28, 29, 30
<i>Alcyonidium mytili</i>	8	<i>Leptometra celtica</i>	6, 7, 8, 15, 25
<i>Flustrellidra hispida</i>	2, 3, 4, 8, 13, 21, 22, 24, 26, 28, 29, 30	Asteroidea indet.	15, 23, 24
<i>Walkeria uva</i>	29	<i>Astropecten irregularis</i>	3, 6, 7, 8, 9, 10, 13, 15, 20, 21, 22, 23, 24, 25, 26, 29, 30
<i>Bowerbankia</i> sp.	3, 21, 22	<i>Luidia</i> sp.	15
<i>Bowerbankia imbricata</i>	8, 30	<i>Luidia ciliaris</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 20, 22, 23, 24, 25, 26, 28, 29
<i>Bowerbankia pustulosa</i>	2	<i>Luidia sarsi</i>	4, 10, 11, 13, 23, 25, 29
<i>Cribrilina</i> sp.	3	<i>Hippasteria phrygiana</i>	22, 24, 28
<i>Umbonula littoralis</i>	3, 4, 13, 21, 22, 23, 26, 29, 30	<i>Porania pulvillus</i>	6, 7, 8, 10, 13, 15, 16, 18, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Escharoides coccinea</i>	28, 29	<i>Asterina gibbosa</i>	8, 9, 11, 13
<i>Cryptosula pallasiana</i>	8, 23, 30	<i>Anseropoda placenta</i>	6, 7, 8, 10, 21, 23, 24, 29
<i>Pentapora foliacea</i>	15	<i>Solaster endeca</i>	1, 2, 3, 4, 6, 7, 8, 13, 15, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29
<i>Smittoidea reticulata</i>	8	<i>Crossaster papposus</i>	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Parasmittina trispinosa</i>	3, 4, 5, 6, 7, 8, 10, 13, 15, 16, 18, 23, 24, 25, 26, 28, 29, 30	<i>Henricia</i> sp.	3, 4, 6, 8, 9, 13, 15, 16, 21, 22, 24, 28, 29, 30
<i>Porella compressa</i>	6, 7, 11, 13, 15, 16, 18, 23, 25, 28, 29	<i>Henricia oculata</i>	1, 2, 3, 4, 5, 6, 7, 8, 13, 15, 16, 18, 19, 21, 22, 23, 24, 25, 26, 29, 30
<i>Palmiskenea skenei</i>	23	<i>Henricia sanguinolenta</i>	2, 4, 6, 21, 22, 29
<i>Schizoporella unicornis</i>	22, 24	<i>Stichastrella rosea</i>	16, 18, 21, 28, 29, 30
<i>Schizomavella linearis</i>	8, 11, 13, 16, 20, 26, 29, 30	<i>Asterias rubens</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Fenestrulina malusii</i>	8	<i>Leptasterias muelleri</i>	2, 4, 6, 8, 10, 11, 12, 13, 15, 16, 22, 23, 24, 25, 26, 28, 29, 30
<i>Celleporella hyalina</i>	18, 29	<i>Marthasterias glacialis</i>	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Cellepora pumicosa</i>	8, 23, 24, 25, 28	Ophiuroidea indet.	8, 13, 21, 22, 23, 24, 29
<i>Celleporina hassallii</i>	23		
<i>Omalosecosa ramulosa</i>	6, 7, 8, 10, 11, 13, 15, 16, 23, 24, 25		
<i>Aetea sica</i>	13		
<i>Eucratea loricata</i>	8, 15, 29		
<i>Membranipora membranacea</i>	1, 2, 3, 4, 6, 7, 8, 9, 13, 20, 21, 22, 23, 24, 26, 28, 29, 30		
<i>Electra monostachys</i>	30		
<i>Electra pilosa</i>	1, 2, 3, 4, 6, 7, 8, 9, 13, 14, 16, 21, 22, 23, 24, 26, 28, 29, 30		
<i>Flustra foliacea</i>	10, 22, 29		
<i>Securiflustra securifrons</i>	22, 29		
<i>Cauloramphus spiniferum</i>	8		
<i>Membraniporella nitida</i>	8		
<i>Cellaria</i> sp.	8, 10, 13, 20, 25, 29		
<i>Cellaria fistulosa</i>	28		
<i>Cellaria sinuosa</i>	15, 20, 28		
<i>Scrupocellaria</i> sp.	2, 3, 4, 5, 6, 8, 10, 13, 15, 29, 30		

<i>Asteronyx loverii</i>	7	<i>Thyonidium drummondii</i>	3, 21, 22, 24, 26, 30
<i>Ophiothrix fragilis</i>	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Psolus phantapus</i>	24, 25, 26
<i>Ophiocomina nigra</i>	2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 15, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Leptosynapta bergensis</i>	23
<i>Ophiopsila annulosa</i>	6	<i>Leptosynapta inhaerens</i>	1, 2, 3, 4, 5, 6, 12, 15, 21, 22, 23, 24, 30
<i>Ophiactis balli</i>	29, 30	<i>Labidoplax buskii</i>	8, 23, 24
<i>Ophiopholis aculeata</i>	3, 6, 7, 8, 9, 10, 13, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Labidoplax digitata</i>	4, 6, 8, 13, 21, 23, 24, 25, 26, 30
<i>Amphiura</i> sp.	4, 7, 8, 13, 24	<i>Labidoplax media</i>	5
<i>Amphiura brachiata</i>	9, 13, 16, 21, 22, 23, 24, 29, 30	<b>TUNICATA</b>	
<i>Amphiura chiajei</i>	2, 3, 4, 6, 7, 8, 12, 13, 15, 16, 18, 20, 23, 24, 25, 26, 28, 29, 30	Tunicata indet.	15, 23, 24
<i>Amphiura filiformis</i>	12, 13, 14, 16, 2, 21, 22, 23, 24, 25, 26, 28, 29, 3, 30, 4, 6, 7, 8	Ascideacea indet.	3, 8, 11, 21, 24, 25, 30
<i>Amphiura chiajei/filiformis</i>	8, 13, 23, 28	<i>Clavelina lepadiformis</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 28, 29, 30
<i>Amphiura securigera</i>	24, 25, 28	Polyclinidae indet.	22, 29
<i>Amphipholis squamata</i>	3, 4, 5, 21, 22, 23, 24, 25, 26, 29	<i>Polyclinum aurantium</i>	2, 3, 5, 6, 7, 8, 13, 21, 24, 29
<i>Ophiura</i> sp.	4, 8, 21, 22, 29, 30	<i>Synoicum pulmonaria</i>	4, 8, 16, 29, 30
<i>Ophiura affinis</i>	4, 6, 7, 8, 11, 15, 16, 23, 24, 25, 28, 29, 30	<i>Morchellium argus</i>	29
<i>Ophiura albida</i>	2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Sidnyum turbinatum</i>	1, 3, 8, 10, 13, 19, 22, 29, 30
<i>Ophiura ophiura</i>	2, 3, 4, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 22, 23, 24, 25, 26, 28, 29, 30	<i>Sidnyum</i> sp.	29
<i>Psammochinus miliaris</i>	1, 3, 4, 5, 6, 7, 8, 9, 13, 18, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Aplidium</i> sp.	29
<i>Echinus esculentus</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Aplidium nordmanni</i>	7, 8, 13, 23, 29
<i>Echinocyamus pusillus</i>	3, 13, 22, 23, 24	<i>Aplidium punctum</i>	2, 3, 4, 5, 6, 7, 13, 23, 24, 29
<i>Spatangus purpureus</i>	3, 29	Didemnidae indet.	2, 7, 8, 9, 10, 13, 15, 18, 21, 23, 24, 25, 28, 29, 30
<i>Echinocardium cordatum</i>	2, 3, 4, 7, 12, 13, 16, 21, 22, 23, 23, 24, 25, 30	<i>Diplosoma</i> sp.	9
<i>Echinocardium flavescens</i>	2, 29, 30	<i>Diplosoma listerianum</i>	3, 4, 8, 23, 24, 29, 30
<i>Brissopsis lyrifera</i>	3, 4, 15	<i>Diplosoma spongiforme</i>	24
Holothuroidea indet.	8, 9, 10, 21, 22, 29	<i>Lissoclinum perforatum</i>	4, 5, 21
<i>Holothuria forskali</i>	20	<i>Ciona intestinalis</i>	2, 3, 4, 6, 7, 8, 9, 10, 11, 13, 15, 16, 18, 20, 21, 22, 23, 23, 24, 25, 26, 28, 29, 30
<i>Leptopentacta elongata</i>	2, 4, 7, 16, 23, 24, 25, 26, 28, 29, 30	<i>Diazona violacea</i>	6, 7, 8, 18, 21, 28, 30
<i>Paracucumaria hyndmani</i>	21	<i>Corella parallelogramma</i>	2, 3, 4, 6, 7, 8, 9, 10, 13, 15, 16, 18, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Pawsonia saxicola</i>	2, 3, 4, 5, 6, 7, 9, 10, 13, 14, 15, 16, 21, 22, 23, 24, 25, 29, 30	Asciidiella sp.	8
<i>Aslia lefevrei</i>	2, 3, 4, 6, 13, 21, 29	<i>Asciidiella aspersa</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, 23, 24, 25, 26, 28, 29, 30
<i>Ocnus lacteus</i>	21, 22, 29	<i>Asciidiella scabra</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Ocnus planci</i>	7, 8, 23, 24, 25, 28, 30	<i>Ascidia conchilega</i>	2, 4, 5, 6, 8, 13, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Thyone</i> sp.	8, 25	<i>Ascidia mentula</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Thyone fusus</i>	3, 4, 8, 23, 24, 25, 26, 29, 30	<i>Ascidia virginea</i>	2, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Thyone roscovita</i>	3, 4, 6, 13, 25	<i>Polycarpa</i> sp.	2
<i>Neopentadactyla mixta</i>	1, 2, 3, 4, 5, 8, 9, 11, 13, 15, 18, 21, 22, 23, 24, 28, 29	<i>Polycarpa gracilis</i>	7
		<i>Polycarpa pomaria</i>	3, 6, 7, 8, 10, 11, 15, 16, 21, 23, 25, 28, 29, 30
		<i>Polycarpa scuba</i>	6, 7, 8, 16, 23, 26, 30
		<i>Dendrodoa grossularia</i>	2, 3, 4, 6, 7, 8, 13, 16, 18, 21, 22, 23, 24, 26, 28, 29, 30
		<i>Botryllus</i> sp.	21, 22, 24, 25

<i>Botryllus schlosseri</i>	2, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Taurulus bubalis</i>	4, 7, 8, 13, 14, 15, 23, 24, 29
<i>Botrylloides leachi</i>	1, 3, 4, 5, 6, 7, 8, 13, 15, 16, 21, 22, 23, 24, 25, 26, 29, 30	<i>Agonus cataphractus</i>	2, 11, 14, 15, 21, 26, 29, 30
<i>Boltenia echinata</i>	2, 7, 8, 16, 25, 29	<i>Cyclopterus lumpus</i>	4, 5, 22
<i>Pyura microcosmus</i>	2, 3, 4, 7, 9, 10, 16	<i>Liparis liparis</i>	8
<i>Pyura squamulosa</i>	2, 4, 6, 7, 8, 13, 15, 16, 18, 25, 29	Labridae indet.	22, 29
<i>Pyura tessellata</i>	2, 7, 8, 16, 30	<i>Centrolabrus exoletus</i>	2
<i>Molgula</i> sp.	23, 24, 30	<i>Crenilabrus melops</i>	2, 7, 8, 29
<i>Molgula citrina</i>	6	<i>Ctenolabrus rupestris</i>	2, 4, 6, 7, 8, 10, 13, 14, 15, 16, 18, 23, 24, 28, 29, 30
<i>Molgula manhattensis</i>	3, 6, 7, 8, 10, 16, 18, 23, 24, 25	<i>Labrus</i> sp.	29
<i>Molgula occulta</i>	13, 15, 25	<i>Labrus bergylta</i>	7, 8, 9, 13, 21, 23, 24, 28, 29, 30
Salpidae indet.	14	<i>Labrus mixtus</i>	6, 7, 8, 10, 13, 15, 18, 22, 23, 24, 28
<i>Salpa</i> sp.	9, 10	<i>Echiichthys vipera</i>	3
<b>PISCES</b>		Blenniidae indet.	8, 22, 29
<i>Scyliorhinus canicula</i>	4, 6, 7, 8, 9, 10, 12, 13, 15, 16, 21, 22, 23, 24, 25, 28	<i>Blennius</i> sp.	21
<i>Scyliorhinus stellaris</i>	7	<i>Lipophrys pholis</i>	8, 9, 13, 20, 28
<i>Mustelus mustelus</i>	8, 10	<i>Parablennius gattorugine</i>	2
<i>Raja batis</i>	21, 22, 30	<i>Chirolophis ascanii</i>	2, 3, 6, 7, 8, 21, 26, 28
<i>Raja clavata</i>	13	<i>Lampanyctus lumpretaeformis</i>	16, 26, 29
<i>Raja naevus</i>	3	<i>Zoarcetes viviparus</i>	7, 8, 21, 23, 29, 30
<i>Anguilla anguilla</i>	8, 13, 22, 30	<i>Pholis gunnellus</i>	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13, 15, 16, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Conger conger</i>	11, 15, 21, 23	<i>Ammodytes</i> sp.	11, 29
<i>Clupea harengus</i>	30	<i>Ammodytes tobianus</i>	6, 8
<i>Salmo trutta</i>	22	<i>Callionymus</i> sp.	8
Gobiesocidae indet.	2, 6	<i>Callionymus lyra</i>	2, 3, 5, 6, 7, 8, 9, 10, 11, 15, 18, 23, 24, 25, 26, 28, 29, 30
<i>Diplecogaster bimaculata</i>	3, 6, 7, 20, 22, 23, 24, 25, 29	<i>Callionymus reticulatus</i>	2, 4, 24
<i>Lepadogaster</i> sp.	5	Gobiidae indet.	3, 6, 8, 12, 16, 17, 21, 22, 23, 24, 29, 30
<i>Lepadogaster lepadogaster</i>	23, 24	<i>Gobius</i> sp.	15, 21, 25
<i>Lophius piscatorius</i>	7, 9, 10, 11, 15, 23, 28, 29	<i>Gobius niger</i>	29
Gadidae indet.	3, 6, 8, 22, 23, 24, 28, 29, 30	<i>Gobiusculus flavescens</i>	3, 4, 6, 7, 8, 9, 15, 22, 23, 24, 28
<i>Ciliata mustela</i>	1, 8	<i>Lesueurigobius friesii</i>	8, 13, 22, 23, 28
<i>Gadus morhua</i>	6, 7, 8, 21, 22, 24	<i>Pomatoschistus</i> sp.	2, 3, 4, 5, 8, 13, 16, 19, 20, 22, 23, 24, 25, 26, 28, 29, 30
<i>Merlangius merlangus</i>	7, 8, 9, 21	<i>Pomatoschistus microps</i>	22
<i>Molva molva</i>	11, 13, 28, 29	<i>Pomatoschistus minutus</i>	2, 3, 4, 5, 6, 7, 8, 11, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Pollachius</i> sp.	8	<i>Pomatoschistus pictus</i>	2, 3, 4, 6, 7, 8, 13, 21, 22, 23, 24, 25, 29, 30
<i>Pollachius pollachius</i>	6, 7, 8, 9, 11, 13, 15, 22, 28, 29, 30	<i>Thorogobius ephippiatus</i>	2, 3, 4, 7, 8, 15, 16, 23, 24, 28, 30
<i>Pollachius virens</i>	6, 7, 8, 10, 15, 18, 24, 28, 29	<i>Scomber scombrus</i>	29
<i>Trisopterus luscus</i>	7, 8, 15, 18, 22, 23, 24, 28, 30	Scophthalmidae indet.	6
<i>Trisopterus minutus</i>	2, 7, 8, 22, 23, 24, 28, 29, 30	<i>Phrynorhombus norvegicus</i>	4, 15, 18, 24
Zeidae indet.	29	<i>Scophthalmus rhombus</i>	9
<i>Zeus faber</i>	6, 23	<i>Zeugopterus punctatus</i>	2, 8, 10, 23, 28, 29
<i>Gasterosteus aculeatus</i>	13, 21	Pleuronectidae indet.	2, 3, 4, 5, 6, 8, 9, 11, 12, 13, 14, 15, 16, 19, 22, 23, 24, 25, 26, 29
<i>Spinachia spinachia</i>	8, 22	<i>Limanda limanda</i>	6, 21
Syngnathidae indet.	3	<i>Platichthys flesus</i>	5, 8, 26
<i>Nerophis lumbriciformis</i>	24	<i>Pleuronectes platessa</i>	5, 7, 8, 11, 12, 13, 15, 16, 17, 21, 22, 23, 24, 26, 29
<i>Syngnathus</i> sp.	22, 23	Soleidae indet.	15
<i>Syngnathus acus</i>	2, 3, 4, 6, 8, 12, 13, 15, 21, 23, 25, 26, 28, 29		
<i>Syngnathus rostellatus</i>	3, 21		
Triglidae indet.	22		
<i>Aspitrigla cuculus</i>	3, 28		
<i>Eutrigla gurnardus</i>	23, 24, 28		
Cottidae indet.	8, 9		
<i>Myoxocephalus scorpius</i>	2, 3, 4, 5, 6, 8, 13, 20, 21, 22, 23, 24, 26, 28, 29		

<i>Solea solea</i>	8, 13, 15	<i>Corallina officinalis</i>	1, 2, 3, 4, 5, 6, 7, 8, 13, 21, 22, 23, 24, 26, 28, 29, 30
<b>CYANOPHYCOTA</b>		<i>Hydrolithon</i> sp.	21, 22
Cyanophycota indet.	6, 8, 13, 15	<i>Jania rubens</i>	5
<i>Beggiatoa</i> sp.	3, 5, 6, 8, 16, 23, 24, 28, 30	<i>Lithophyllum</i> sp.	29, 30
Blue-green algae indet.	8, 26	<i>Lithophyllum incrustans</i>	13, 21, 23, 24, 28
<b>RHODOPHYCOTA</b>		<i>Lithophyllum orbiculatum</i>	13
<i>Erythrotrichia carnea</i>	2	<i>Lithothamnion</i> sp.	5, 8, 9, 10, 14, 15, 21, 22, 23, 24, 29, 30
<i>Porphyropsis coccinea</i>	1, 3, 4, 5, 6, 8, 13, 21, 22, 23, 24, 25, 29	<i>Lithothamnion corallioides</i>	2, 3, 20, 24
<i>Porphyra</i> sp.	2, 3, 4, 8, 13, 14, 16, 19, 21, 22, 24, 26	<i>Lithothamnion glaciale</i>	1, 2, 3, 6, 8, 12, 13, 15, 19, 20, 21, 23, 24, 25, 26, 28, 29, 30
<i>Porphyra linearis</i>	13, 22	<i>Mesophyllum lichenoides</i>	5, 13, 21, 23, 24
<i>Porphyra miniata</i>	2, 3, 6, 13, 15, 29	<i>Phymatolithon calcareum</i>	1, 2, 3, 5, 6, 8, 9, 10, 12, 13, 15, 21, 24, 26, 28, 29
<i>Porphyra umbilicalis</i>	3, 8, 10, 13, 21, 22, 23, 24, 26, 29	<i>Phymatolithon lenormandii</i>	2, 13, 29, 30
<i>Audouinella</i> sp.	1, 5, 8, 13, 22, 24, 28, 29, 30	<i>Pneophyllum limitatum</i>	22
<i>Audouinella battersiana</i>	29	<i>Titanoderma pustulatum</i>	13, 30
<i>Rhodothamniella floridula</i>	3, 4, 8, 20, 24, 28	Maerl indet.	1, 3, 5, 9, 10, 13, 20, 21, 22, 23, 23, 24, 28, 29
<i>Audouinella purpurea</i>	30	<i>Gracilaria gracilis</i>	1, 2, 3, 4, 5, 6, 13, 15, 16, 21, 23, 24, 25, 30
<i>Audouinella virgatula</i>	2	<i>Schmitzia hiscockiana</i>	11, 24
<i>Nemalion helminthoides</i>	3	<i>Ahnfeltia plicata</i>	1, 3, 4, 5, 8, 13, 21, 22, 23, 24, 29
<i>Scinaia</i> sp.	8	<i>Phyllophora</i> sp.	3, 8, 21, 22
<i>Scinaia trigona</i>	6, 8, 14, 15, 21, 22, 23, 24	<i>Phyllophora crispa</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 21, 22, 23, 24, 25, 28, 29
<i>Naccaria wiggii</i>	31	<i>Phyllophora pseudoceranooides</i>	1, 2, 3, 5, 8, 13, 21, 22, 23, 24, 29, 30
<i>Asparagopsis armata</i> ( <i>Falkenbergia</i> )	3, 23, 24	<i>Erythrodermis traillii</i>	3, 5, 8, 13, 18, 23, 24, 28, 29, 30
<i>Bonnemaisonia asparagoides</i>	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, 26, 29, 30	<i>Coccotylus truncata</i>	2, 3, 4, 5, 21, 22, 24, 28, 29
<i>Bonnemaisonia hamifera</i> ( <i>Trailliella</i> )	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 23, 24, 25, 26, 28, 29	<i>Schottera nicaensis</i>	5, 11, 18, 21, 22, 23, 29, 30
<i>Gelidium</i> sp.	5, 9, 13, 30	<i>Mastocarpus stellatus</i>	2, 3, 4, 5, 8, 13, 18, 21, 22, 23, 24, 26, 28, 29, 30
<i>Gelidium latifolium</i>	2, 8, 13, 22, 29, 30	<i>Chondrus crispus</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 13, 19, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Gelidium pusillum</i>	2, 3, 4, 5, 8, 13, 21, 24, 26, 28, 29	<i>Polyides rotundus</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 13, 16, 21, 22, 23, 24, 25, 26, 28, 29
<i>Pterocladia capillacea</i>	13, 29	<i>Plocamium cartilagineum</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Gelidiella pannosa</i>	3	<i>Furcellaria lumbricalis</i>	2, 3, 4, 5, 6, 8, 9, 13, 15, 19, 21, 22, 23, 24, 28, 29, 30
<i>Palmaria palmata</i>	1, 2, 3, 4, 5, 6, 8, 10, 12, 13, 21, 22, 23, 24, 26, 28, 29, 30	<i>Halarachnion ligulatum</i>	3, 4, 5, 6, 7, 8, 11, 12, 13, 14, 15, 16, 18, 19, 21, 22, 23, 24, 25, 29, 30
<i>Rhodophysema elegans</i>	28	<i>Catenella caespitosa</i>	2, 8, 13, 22, 24, 29, 30
<i>Dilsea carnosa</i>	1, 2, 3, 4, 5, 6, 8, 13, 21, 22, 24, 26, 28, 29	<i>Calliblepharis ciliata</i>	2, 3, 4, 5, 7, 8, 11, 12, 13, 15, 19, 22, 24, 25, 29
<i>Dudresnaya verticillata</i>	3, 7	<i>Cystoclonium purpureum</i>	1, 2, 3, 4, 5, 6, 8, 13, 21, 22, 23, 24, 25, 28, 29, 30
<i>Dumontia contorta</i>	1, 2, 3, 13, 21, 22, 23, 24, 26, 29, 30	<i>Rhodophyllis</i> sp.	6, 8, 11, 12, 13, 15, 16, 17, 18, 21, 22, 23, 24, 29
<i>Grateloupia filicina</i>	8	<i>Rhodophyllis divaricata</i>	2, 3, 4, 5, 6, 8, 11, 12, 13, 15, 16, 18, 19, 21, 22, 23, 24, 25, 26, 28, 29
<i>Callophyllis cristata</i>	2, 24		
<i>Callophyllis laciniata</i>	2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 28, 29, 30		
<i>Kallymenia reniformis</i>	6, 7, 8, 11, 12, 13, 15, 18, 22, 23, 24, 25, 29		
<i>Gloiosiphonia capillaris</i>	3		
<i>Peyssonnelia</i> sp.	8		
<i>Peyssonnelia dubyi</i>	2, 3, 8, 28		
<i>Hildenbrandia</i> sp.	1, 3, 4, 8, 13, 18, 21, 22, 23, 24, 26, 28, 29, 30		
<i>Hildenbrandia rubra</i>	2, 29		
Corallinaceae indet. (crusts)	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24, 25, 26, 28, 29, 30		



<i>Rhodophyllis divaricata</i> var. <i>wernerii</i>	15	<i>Spermothamnion</i> sp.	2
<i>Cruoria</i> sp.	21, 22, 29, 30	<i>Spermothamnion repens</i>	2, 10, 13, 23, 28
<i>Cruoria pellita</i>	28	<i>Sphondylothamnion multifidum</i>	22
<i>Cruoria cruoriaeformis</i>	4, 8	<i>Acrosorium reptans</i>	2, 3, 8, 13
<i>Haemescharia</i> sp.	1, 8, 13, 28	<i>Acrosorium venulosum</i>	2, 6, 23, 30
<i>Cordylecladia erecta</i>	1, 2, 3, 4, 6, 13, 21, 24, 29	<i>Apoglossum ruscifolium</i>	3, 6, 23, 24, 29
<i>Rhodymenia delicatula</i>	3, 5, 22	<i>Cryptopleura ramosa</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 16, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Rhodymenia pseudopalmata</i>	2, 3, 13, 28	<i>Delesseria sanguinea</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 16, 17, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Chylocladia verticillata</i>	1, 2, 3, 4, 5, 6, 8, 9, 13, 16, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29	<i>Hypoglossum hypoglossoides</i>	2, 3, 4, 5, 6, 7, 8, 9, 13, 14, 15, 18, 19, 21, 22, 23, 24, 28, 29
<i>Gastroclonium ovatum</i>	5	<i>Membranoptera alata</i>	1, 2, 3, 4, 5, 7, 8, 9, 10, 13, 16, 18, 21, 22, 23, 24, 26, 28, 29, 30
<i>Lomentaria articulata</i>	3, 4, 5, 8, 13, 18, 21, 22, 23, 24, 26, 28, 29	<i>Haraldiophyllum bonnemaisonii</i>	2, 5, 8, 9, 18, 23, 24, 25, 29, 30
<i>Lomentaria clavellosa</i>	1, 2, 3, 4, 5, 6, 11, 12, 13, 15, 16, 17, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Nitophyllum punctatum</i>	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 18, 21, 22, 23, 24, 25, 29, 30
<i>Lomentaria orcadensis</i>	2, 3, 14, 16, 22, 23, 24, 28, 29	<i>Phycodrys rubens</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Antithamnion</i> sp.	2, 3, 6, 24, 26, 29, 30	<i>Erythroglossum laciniatum</i>	3, 8, 21, 22
<i>Antithamnion cruciatum</i>	7	<i>Polyneura litterata</i>	8, 21, 22, 24, 25
<i>Antithamnionella spirographidis</i>	22, 9	<i>Heterosiphonia plumosa</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 21, 23, 24, 29, 30
<i>Callithamnion</i> sp.	9, 13, 22, 23, 26, 28	<i>Brongniartella byssoides</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 18, 19, 21, 22, 23, 24, 25, 26, 29, 30
<i>Aglaothamnion bipinnatum</i>	2, 28	<i>Laurencia obtusa</i>	21
<i>Aglaothamnion byssoides</i>	3, 13	<i>Osmundea hybrida</i>	1, 3, 5, 8, 13, 21, 22, 24, 26, 28, 29
<i>Aglaothamnion hookeri</i>	23, 24, 29, 30	<i>Osmundea pinnatifida</i>	3, 5, 8, 13, 18, 21, 22, 23, 24, 28, 29, 30
<i>Aglaothamnion roseum</i>	2	<i>Odonthalia dentata</i>	1, 2, 3, 4, 5, 6, 8, 10, 11, 12, 13, 15, 17, 21, 22, 24, 28, 29, 30
<i>Callithamnion corymbosum</i>	2, 3, 8, 23, 28	<i>Polysiphonia</i> sp.	1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 15, 16, 21, 22, 23, 24, 25, 26, 29, 30
<i>Callithamnion tetragonum</i>	24, 29	<i>Polysiphonia atlantica</i>	3, 4, 28
<i>Callithamnion tetricum</i>	29, 30	<i>Polysiphonia elongata</i>	2, 3, 4, 5, 6, 8, 11, 13, 16, 19, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Callithamnion</i> spp. (spongy)	4, 24	<i>Polysiphonia fibrata</i>	13
<i>Ceramium</i> sp.	2, 3, 4, 5, 8, 11, 12, 13, 23, 24, 25, 26, 28, 29, 30	<i>Polysiphonia furcellata</i>	24
<i>Ceramium ciliatum</i>	23	<i>Polysiphonia lanosa</i>	1, 2, 3, 4, 5, 8, 13, 18, 21, 22, 23, 24, 26, 28, 29, 30
<i>Ceramium deslongchampsii</i>	21	<i>Polysiphonia lanosa</i>	1, 2, 3, 4, 5, 8, 13, 18, 21, 22, 23, 24, 26, 28, 29, 30
<i>Ceramium diaphanum</i>	6, 30	<i>Polysiphonia nigra</i>	1, 2, 3, 4, 6, 8, 15, 21, 22, 23, 24, 26, 29
<i>Ceramium nodulosum</i>	1, 2, 3, 4, 5, 6, 8, 9, 13, 16, 21, 22, 23, 24, 26, 28, 29, 30	<i>Polysiphonia fucoides</i>	2, 3, 4, 6, 8, 10, 13, 16, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Ceramium shuttleworthianum</i>	13, 18, 22, 23, 24	<i>Polysiphonia simulans</i>	9
<i>Ceramium strictum</i>	25, 30	<i>Polysiphonia stricta</i>	2, 3, 5, 6, 8, 13, 16, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Compsothamnion gracillimum</i>	22	<i>Polysiphonia violacea</i>	8, 21, 24
<i>Compsothamnion thuyoides</i>	4, 6, 8, 9, 13, 15, 23, 24, 26, 29, 30	<i>Pterosiphonia</i> sp.	29
<i>Griffithsia</i> sp.	13		
<i>Griffithsia corallinoides</i>	2, 4, 5, 6, 13, 14, 21, 22, 23, 24, 28		
<i>Halurus flosculosus</i>	2, 3, 4, 5, 6, 8, 11, 12, 14, 22, 24, 28, 29, 30		
<i>Halurus</i> sp.	2		
<i>Monosporus pedicellatus</i>	21		
<i>Plumaria plumosa</i>	3, 8, 13, 18, 21, 22, 24, 28, 29, 30		
<i>Pterothamnion plumula</i>	2, 3, 4, 6, 8, 9, 11, 12, 14, 16, 18, 21, 22, 23, 24, 26, 28, 29, 30		
<i>Ptilota gunneri</i>	1, 4, 5, 6, 7, 8, 9, 10, 13, 21, 22, 23, 24, 28, 29, 30		
<i>Ptilothamnion pluma</i>	28		
<i>Seirospora seirosperma</i>	13, 21, 22, 23, 24, 25, 26		

<i>Pterosiphonia parasitica</i>	2, 4, 5, 6, 7, 8, 11, 12, 13, 16, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Desmarestia dresnayi</i>	6, 15
<i>Rhodomela confervoides</i>	1, 2, 3, 4, 5, 6, 8, 9, 13, 16, 21, 22, 23, 24, 28, 29, 30	<i>Desmarestia ligulata</i>	5, 6, 8, 19, 24, 29, 30
<i>Rhodomela lycopodioides</i>	3, 28	<i>Desmarestia viridis</i>	1, 2, 3, 4, 5, 6, 7, 8, 13, 15, 16, 17, 19, 21, 22, 23, 24, 25, 26, 29, 30
Rhodophycota indet. (non-calc. crusts)	1, 2, 3, 4, 5, 6, 8, 10, 11, 12, 13, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Arthrocladia</i> sp.	13
<b>CHRYSOPHYCOTA</b>		<i>Arthrocladia villosa</i>	6, 8, 12, 15, 16
Diatoms – colonial indet.	1, 3, 6, 8, 13, 16, 18, 22, 23, 24, 26, 29	<i>Isthmoplea sphaerophora</i>	2
Diatoms – film indet.	2, 3, 4, 6, 7, 8, 12, 15, 16, 21, 22, 23, 24, 26, 28, 29, 30	<i>Stictyosiphon</i> sp.	16
<b>CHROMOPHYCOTA</b>		<i>Stictyosiphon griffithsianus</i>	21, 22
Chromophycota indet.	12, 22	<i>Stictyosiphon soriferus</i>	13
Ectocarpaceae indet.	2, 3, 4, 5, 6, 8, 10, 11, 13, 14, 15, 16, 17, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Stictyosiphon tortilis</i>	2, 13, 21, 22
<i>Acinetospora crinita</i>	2	<i>Striaria attenuata</i>	16, 21, 22
<i>Ectocarpus fasciculatus</i>	2, 3	<i>Asperococcus</i> sp.	13, 15, 21, 22, 23, 24, 29
<i>Ectocarpus siliculosus</i>	2, 13, 16	<i>Asperococcus fistulosus</i>	2, 3, 6, 8, 13, 15, 16, 19, 21, 22, 23, 24, 29
<i>Pilayella littoralis</i>	2, 22	<i>Asperococcus bullosus</i>	8, 23, 24
<i>Spongonema tomentosum</i>	13, 23, 24	<i>Litosiphon laminariae</i>	16, 22
<i>Pseudolithoderma extensum</i>	2, 3, 4, 5, 6, 8, 11, 13, 14, 16, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Punctaria</i> sp.	15
<i>Ralfsia</i> sp.	4, 8, 13, 21, 22, 30	<i>Punctaria latifolia</i>	23
<i>Myrionema strangulans</i>	16	<i>Punctaria tenuissima</i>	23
<i>Elachista</i> sp.	1, 3, 8, 13, 24, 28	<i>Dictyosiphon</i> sp.	3, 8, 14
<i>Elachista fucicola</i>	2, 3, 13, 21, 22	<i>Colpomenia peregrina</i>	2, 4, 6, 8, 21, 22
<i>Leathesia difformis</i>	5, 8, 13, 21, 22, 23, 24, 29	<i>Petalonia</i> sp.	30
<i>Spermatocnus paradoxus</i>	7	<i>Petalonia fascia</i>	1, 3, 13
<i>Stilophora tenella</i>	25	<i>Scytosiphon lomentaria</i>	3, 4, 5, 8, 13, 22, 23, 24, 26, 28, 30
<i>Acrothrix gracilis</i>	6	<i>Chorda filum</i>	2, 3, 5, 6, 7, 8, 9, 13, 14, 15, 16, 19, 20, 21, 22, 23, 23, 24, 25, 26, 29, 30
<i>Chordaria flagelliformis</i>	3, 4, 8, 16, 19, 23, 24, 25, 26, 29, 30	<i>Chorda tomentosa</i>	6, 16, 19, 22
<i>Eudesme virescens</i>	2, 3, 4, 6, 13, 16, 21, 22, 23, 24, 25, 26, 30	<i>Laminaria</i> sp.	2, 3, 4, 6, 8, 12, 13, 15, 16, 18, 21, 22, 23, 24, 29, 30
<i>Mesogloia vermiculata</i>	2, 3, 8, 16, 21, 22, 23, 24, 29	<i>Laminaria digitata</i>	1, 2, 3, 4, 5, 7, 8, 11, 13, 14, 15, 16, 19, 21, 22, 23, 24, 26, 28, 29, 30
<i>Cutleria multifida</i>	3, 4, 6, 8, 13, 14, 15, 16, 21, 22, 24, 25, 28, 29, 30	<i>Laminaria hyperborea</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 21, 22, 23, 23, 24, 25, 26, 28, 29, 30
<i>Cutleria multifida</i> ( <i>Aglaozonia</i> )	3, 4, 5, 6, 8, 11, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 28, 29, 30	<i>Laminaria saccharina</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 23, 24, 25, 26, 28, 29, 30
<i>Tilopteris mertensii</i>	6	<i>Saccorhiza polyschides</i>	3, 4, 5, 6, 8, 9, 10, 13, 15, 16, 19, 21, 23, 24, 25, 26, 29, 30
<i>Sphacelaria</i> sp.	2, 3, 5, 8, 21, 22, 23, 24, 25, 29, 30	<i>Alaria esculenta</i>	3, 4, 5, 8, 12, 13, 15, 16, 22, 23, 24, 26, 29, 30
<i>Sphacelaria fusca</i>	21	Fucaceae indet.	6
<i>Sphacelaria plumosa</i>	2, 23, 24, 28	<i>Ascophyllum nodosum</i>	1, 2, 3, 4, 5, 7, 8, 13, 15, 16, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Sphacelaria plumula</i>	21	<i>Ascophyllum nodosum</i> ecad.	2, 3, 5, 8, 13, 18, 21, 22, 29, 30
<i>Halopteris filicina</i>	25	<i>mackaii</i>	30
<i>Stypocaulon scoparia</i>	21	<i>Fucus</i> sp.	2, 3, 4, 5, 8, 15, 16, 19, 21, 22, 23, 24, 29
<i>Cladostephus spongiosus</i>	1, 2, 3, 4, 5, 13, 21, 22, 30	<i>Fucus ceranoides</i>	2, 8, 13, 21, 22, 25, 29, 30
<i>Dictyota dichotoma</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, 29, 30	<i>Fucus cottonii</i>	2, 8, 13, 29
<i>Sporocchnus pedunculatus</i>	6, 7, 8, 13, 15, 29	<i>Fucus serratus</i>	1, 2, 3, 4, 5, 7, 8, 11, 13, 15, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30
<i>Desmarestia</i> sp.	13, 16, 18	<i>Fucus spiralis</i>	2, 3, 4, 5, 7, 8, 13, 18, 21, 23, 24, 25, 26, 28, 29, 30
<i>Desmarestia aculeata</i>	1, 2, 3, 4, 5, 6, 7, 8, 9, 13, 14, 15, 16, 21, 22, 23, 24, 25, 26, 28, 29, 30		

<i>Fucus vesiculosus</i>	1, 2, 3, 4, 5, 7, 8, 12, 13, 16, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Cladophora</i> sp.	3, 5, 13, 16, 21, 22, 23, 24, 28, 29, 30
<i>Pelvetia canaliculata</i>	1, 2, 3, 4, 5, 8, 13, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30	<i>Cladophora albida</i>	2
<i>Himantalia elongata</i>	3, 5, 8, 13, 21, 22, 23, 24, 28	<i>Cladophora pellucida</i>	26, 30
<i>Cystoseira</i> sp.	11	<i>Cladophora pygmaea</i>	8
<i>Halidrys siliquosa</i>	2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 20, 21, 22, 23, 24, 25, 26, 28, 29	<i>Cladophora rupestris</i>	1, 2, 3, 4, 5, 7, 8, 13, 18, 23, 24, 25, 26, 28, 29, 30
Chromophycota indet. (crusts)	2, 4, 6, 8, 11, 12, 13, 15, 16, 23, 24, 29	<i>Cladophora sericea</i>	8, 13, 29, 30
<b>CHLOROPHYCOTA</b>		<i>Cladophora vagabunda</i>	13
<i>Ulothrix</i> sp.	21	<i>Rhizoclonium</i> sp.	3
<i>Ulothrix flacca</i>	2, 13, 29	<i>Rhizoclonium riparium</i>	2, 30
<i>Ulothrix palusalsa</i>	2	<i>Bryopsis plumosa</i>	2, 8, 10, 13, 21, 23, 24, 29
<i>Ulothrix subflaccida</i>	2	<i>Derbesia</i> sp.	5
<i>Acrochaete viridis</i>	2	<i>Derbesia marina</i> ( <i>Halicystis</i> )	4, 8, 12, 13, 24
<i>Entocladia flustrae</i>	2	<i>Codium</i> sp.	8, 13, 22, 24, 28
<i>Pringsheimiella scutata</i>	2	<i>Codium adhaerens</i>	4, 22
<i>Capsosiphon fulvescens</i>	2	<i>Codium fragile</i>	13
<i>Enteromorpha</i> sp.	1, 2, 3, 4, 5, 6, 7, 8, 13, 14, 16, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30	Encrusting green algae indet.	18, 30
<i>Enteromorpha compressa</i>	3, 4	<i>Vaucheria</i> sp.	2
<i>Enteromorpha intestinalis</i>	2, 3, 13, 30	<b>ANGIOSPERMAE</b>	
<i>Enteromorpha lingulata</i>	13	Angiospermae indet.	29
<i>Enteromorpha linza</i>	8, 13	<i>Zostera marina</i>	2, 3, 4, 5, 9, 11, 20, 21, 22, 23, 23
<i>Enteromorpha prolifera</i>	2	<i>Armeria maritima</i>	13, 18, 29
<i>Ulva</i> sp.	1, 2, 3, 4, 5, 6, 8, 9, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 23, 24, 25, 26, 28, 29, 30	<b>LICHENS</b>	
<i>Ulva lactuca</i>	2, 4, 5, 6, 7, 12, 13, 16, 29, 30	<i>Caloplaca</i> sp.	8, 29, 30
<i>Ulva rigida</i>	3	<i>Caloplaca marina</i>	1, 3, 4, 5, 8, 13, 18, 22, 24, 26, 28, 29
<i>Blidingia</i> sp.	29	<i>Caloplaca thallicola</i>	8, 18, 23, 24
<i>Blidingia minima</i>	2	<i>Lecanora atra</i>	1, 3, 8, 13, 18, 22, 23, 24, 28, 30
<i>Monostroma</i> sp.	13, 29	<i>Lichina</i> sp.	13
<i>Prasiola</i> sp.	22	<i>Lichina confinis</i>	1, 4, 8, 18, 28, 29, 30
<i>Prasiola stipitata</i>	2, 8, 23, 24, 29, 30	<i>Lichina pygmaea</i>	3, 5, 8, 13, 18, 21, 22, 23, 24, 26, 28, 29, 30
<i>Spongomorpha</i> sp.	3	<i>Ochrolechia parella</i>	8, 18, 26
<i>Spongomorpha aeruginosa</i>	30	<i>Ramalina</i> sp.	1, 3, 4, 5, 8, 23, 24, 26, 28, 30
<i>Spongomorpha arcta</i>	13, 21, 22, 23	<i>Ramalina siliquosa</i>	22
<i>Chaetomorpha</i> sp.	8, 13, 29	<i>Verrucaria maura</i>	1, 3, 4, 5, 8, 13, 18, 22, 23, 24, 26, 28, 29, 30
<i>Chaetomorpha capillaris</i>	2, 13	<i>Verrucaria mucosa</i>	1, 3, 4, 5, 8, 13, 18, 22, 23, 24, 26, 29, 30
<i>Chaetomorpha linum</i>	2, 24	<i>Xanthoria parietina</i>	1, 3, 8, 13, 18, 21, 22, 23, 24, 26, 28, 30
<i>Chaetomorpha melagonium</i>	1, 2, 3, 4, 8	Grey lichens indet.	1, 3, 4, 8, 13, 18, 23, 24, 26, 28, 29

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## Biotope key to be used in conjunction with biotope distribution maps

Code	Description
ELR1	Exposed littoral rock with <i>Mytilus edulis</i> and barnacles (Ver.B; MytB; Bpat.Cht; Bpat.Lic; Bpat.Fvesl; Bpat.Sem; Him)
ELR3	Exposed littoral rock (ELR)
ELR/MLR	Exposed & moderately exposed littoral rock with <i>Mytilus edulis</i> , barnacles, fucoids & red algal turfs (Ver.B; MytB; BPat.Cht; BPat.Lic; BPat.Fvesl; BPat.Sem; Him; PelB; Fspi; FvesB; Fser.R; Fser.Fser; XR; Mas; Osm)
MLR1	Moderately exposed littoral rock with barnacles, fucoids and red algal turfs (PelB; Fspi; FvesB; Bpat.Cht; Bpat.Sem; Fser.R; Fser.Fser; XR; Mas; Osm)
MLR2	Moderately exposed littoral boulders with fucoids (Pel; Fspi; Fves; Fser.Fser.Bo; Ldig.Ldig.Bo)
MLR10	Moderately exposed littoral rock (un-surveyed)
MLR1+MIR1	Moderately exposed littoral rock with barnacles, fucoids, red algal turfs and infralittoral rock with kelp forests (PelB; Fspi; FvesB; BPat.Cht; BPat.Sem; Fser.R; Fser.Fser; XR; Mas; Osm; Ldig.Ldig; Lhyp.Pk)
SLR1	Sheltered littoral rock with dense fucoids (Pel; Fspi; Fves; Bpat; Asc.Asc; Fserr) – barnacles on verticals
SLR2	Littoral mixed substrata with fucoids (Pel; Fspi; BLLit; FvesX; AscX; FserX; FserX.T)
SLR5	Tide-swept littoral rock with fucoids (Pel; Fspi; Asc.T; Fserr.T)
SLR6	Littoral mixed substrata with <i>Mytilus edulis</i> beds (MytX)
SLR12	Reduced salinity, sheltered, littoral stone, gravel and sediment flats with <i>Mytilus</i> beds, fucoids and infauna of bivalves and polychaetes (FcerX; FvesX; FserX; MytX; MacAre)
SLR14	<i>Ascophyllum nodosum</i> ead <i>mackaii</i> on mixed substrate
SLR15	Sheltered littoral rock
SLR2/12	Sheltered littoral rock & mixed substrata with fucoids & infauna of bivalves (Pel; Fspi; BLLit; FvesX; AscX; FserX; FserX.T; MytX; MacAre)
SLR5/MIR4	Tide-swept littoral & infralittoral rock with fucoids and <i>Halidrys siliquosa</i> (Pel; Fspi; Asc.T; Fserr.T; HalXX)
LGS1	Littoral gravel and sand (LGS)
LGS2	Mobile littoral gravel and sand shores with sparse infauna (BarSh; AEur)
LGS3	Littoral clean sand with amphipods and polychaetes (AP; AP.P; AP.Pon; Lan)
LGS/LMS	Littoral gravel and sand with muddy sand (LGS/LMS)
LMS1	Littoral muddy sand with bivalves and polychaetes (BatCor; PCer; MacAre; MacAre.Mare)
LMS1/LMU2	Littoral muddy sand & sandy mud with bivalves & polychaetes (BatCor; Pcer; MacAre; MacAre.Mare; HedMac; HedMac.Are; HedMac.Pyg)
LMU1	Saltmarsh (Sm; NVC SM8)
LMX2	Littoral mixed sediment with pebbles and cobbles (LMX)
EIR1	Exposed infralittoral rock with <i>Alaria</i> and <i>Laminaria hyperborea</i> (Ala; LhypR.Ft; LhypR.Pk)
MIR1	Moderately exposed infralittoral rock with <i>Laminaria digitata</i> and <i>L. hyperborea</i> (Ldig.Ldig; Lhyp.Ft; Lhyp.Pk)
MIR2	Tide-swept infralittoral rock with <i>Laminaria digitata</i> and <i>Laminaria hyperborea</i> (Ldig.T; Lhyp.TFt; Lhyp.TPk)
MIR3	Sand-scoured infralittoral rock and mobile substrata and kelp and scour-tolerant algae (Sac; XKScrR; EphR)
MIR4	Infralittoral rock with <i>Halidrys siliquosa</i> (HalXX)
MIR5	Infralittoral cobbles with ephemeral red algae (EphR)
MIR7	Infralittoral rock with mussel beds (MytT; MytHAs)
MIR8	Moderately exposed infralittoral rock with grazed kelp <i>Laminaria hyperborea</i> (LhypGz.Ft; LhypGz.Pk)
MIR10	Moderately exposed infralittoral rock (MIR)
MIR/MCR	Moderately exposed sublittoral rock (MIR/MCR)
MIR/SIR	Moderately exposed and sheltered infralittoral rock (MIR/SIR)
MIR1+3	Moderately exposed infralittoral rock with <i>Laminaria digitata</i> and <i>L. hyperborea</i> & mobile substrata with scour-tolerant algae (Ldig.Ldig; Lhyp.Ft; Lhyp.PkSac; XKScrR; EphR)
MIR1+8	Moderately exposed infralittoral rock with grazed and ungrazed kelp (Ldig.Ldig; Lhyp.Ft; Lhyp.Pk; LhypGz.Ft; LhypGz.Pk)
MIR2/MCR7	Tide-swept sublittoral rock with kelp, hydroids and brittlestars (Ldig.Ldig; Lhyp.TPk; Oph; Oph.Oacu)
MIR3+8	Moderately exposed infralittoral rock with grazed & sand-scoured kelp <i>Laminaria hyperborea</i> with scour-tolerant algae (LhypGz.Ft; LhypGz.Pk; Sac; XKScrR; EphR)
MIR8/MCR10	Moderately exposed infralittoral rock with grazed and ungrazed kelp (Lhyp.Ft; Lhyp.Pk; Ldig.Ldig; LhypGz.Ft; LhypGz.Pk)
SIR1	Sheltered infralittoral rock with <i>Laminaria saccharina</i> (LhypLsac.Ft; LhypLsac.Pk; Lsac.Ldig; Lsac.Ft; Lsac.Pk; Lsac.Cod)
SIR2	Tide-swept sheltered infralittoral rock with <i>Laminaria saccharina</i> (Lsac.T)
SIR3	Tide-swept estuarine infralittoral rock with <i>Laminaria saccharina</i> and red algae (LsacRS.FiR)
SIR4	Tide-swept estuarine infralittoral rock with dense <i>Mytilus edulis</i> (MytT)
SIR12	Sheltered infralittoral rock (SIR)
SIR/IMX	Sheltered infralittoral rock and mixed substrata (SIR/IMX)
SIR1/IMX1	Sheltered infralittoral mixed substrata with <i>Laminaria saccharina</i> (LhypLsac.Ft; LhypLsac.Pk; Lsac.Ldig; LsacX; Lsac.Ft; Lsac.Pk; Lsac.Cod)
SIR7/SCR2	Sheltered sublittoral rock with anemones & <i>Neocrania anomala</i> (AmenCio; NeoPro)
ECR2	Tide-swept circalittoral rock with dense <i>Alcyonium digitatum</i> (AlcC)
ECR3	Tide-swept circalittoral rock with <i>Alcyonium digitatum</i> and hydroid turf (AlcTub; AlcSec)
ECR7	Circalittoral rock with sparse fauna (CCParCar)
ECR/IGS	Exposed sublittoral rock with gravels and sands (ECR/IGS)
MCR1	Tide-swept circalittoral rock with erect sponges and mixed faunal turfs (Xfa; ErSPbolSH)
MCR2	Sand-influenced circalittoral rock with bryozoan and hydroid turfs (ByH; SNemAdia; Flu.HBys; Flu.SerHyd; Flu.Hocu; Urt; Urt.Cio)
MCR7	Circalittoral rock and mixed substrata with brittlestars and hydroids (Oph; Oph.Oacu)
MCR9	Sheltered circalittoral, mixed sediment and rock with dense brittlestars (Oph; AntAsH)

Code	Description
MCR10	Circalittoral rock with sparse fauna (FaAIC; Abi)
MCR11	Tide-swept <i>Modiolus</i> bed (ModT)
MCR12	Moderately exposed circalittoral rock (MCR)
MCR/MCR9/ MCR10	Circalittoral rock & mixed sediment and rock with dense brittlestars and patches of sparse fauna (Oph; AntAsH; FaALC; FaALC.Abi)
MCR/SCR	Sheltered/moderately exposed circalittoral rock (MCR/SCR)
MCR9+MCR10	Circalittoral rock & mixed sediment and rock with dense brittlestars and patches of sparse fauna (Oph; AntAsH; FaALC; FaALC.Abi)
MCR2+CGS1+ IMX1	Sublittoral mixed sediments with kelp, filamentous algae and bivalves and sand-influenced circalittoral rock with bryozoan and hydroid turfs (Ven; Ven.Bra; LsacX; ByH; SNemAdia; Flu.HBys; Flu.SerHyd; Flu.Hocu; Urt; Urt.Cio)
SCR1	Silty circalittoral rock with sponges and/or ascidians (SubSoAs; Aasp)
SCR2	Very sheltered, steep circalittoral rock with ascidians, <i>Neocrania anomala</i> and <i>Protanthea simplex</i> (AmenCio; NeoPro)
SCR3	Tide-swept sublittoral, coarse sediment, cobble and boulder without brittlestars (AntAsH)
SCR4	Very sheltered silty, circalittoral bedrock and boulder outcrops with <i>Urticina felina</i> and <i>Bolocera tuediae</i> (AntAsH)
SCR5	Circalittoral mixed substrata with <i>Modiolus modiolus</i> beds or ascidians (AmenCio) (ModHAs)
SCR7	Sheltered circalittoral rock, unclassified (SCR)
SCR5/SIR1	Sheltered sublittoral rock & mixed substrata with <i>Laminaria saccharina</i> and <i>Modiolus modiolus</i> beds (LhypLsac.Ft; LhypLsac.Pk; Lsac.Ldig; Lsac.Ft; Lsac.Pk; Lsac.Cod; ModHAs)
IGS1	Infralittoral gravel/sand with maerl beds (Mrl; Phy.R; Phy.HEc)
IGS4	Infralittoral sand with crustaceans and polychaetes (FaS; Mob; NcirBat; ScupHyd; Lcon; FabMag)
IGS8	Coarse gravel and sand (IGS)
IGS/ CGS	Coarse gravel and sand (IGS & CGS)
IGS/CGS1	Sublittoral gravel and sand (IGS/CGS; Ven; Ven.Bra)
IGS1+CGS1	Sublittoral gravel/sand with maerl beds & bivalves (Mrl; Phy.R; Phy.HEc) & (Ven; Ven.Bra)
IGS1+MCR7	Infralittoral gravel/sand with maerl beds & circalittoral mixed substrata with brittlestars and hydroids (Mrl; Phy.R; Phy.HEc; Oph; Oph.Oacu)
IGS3+IMX1	Estuarine infralittoral mixed sediment with <i>Laminaria saccharina</i> and filamentous algae and mobile clean sand with amphipods (LsacX; EstGS; MobRS; Ncir; NeoGam)
IGS4	Infralittoral sand with crustaceans and polychaetes (FaS; Mob; NcirBat; ScupHyd; Lcon; FabMag)
IGS/IMX7	Infralittoral gravel & sand with mixed sediment and <i>Limaria hians</i> beds (Lim)
CGS1	Circalittoral gravel and sand (Ven; Ven.Bra)
CGS2	Sublittoral fine sand (CGS)
IMS1	Lower shore or infralittoral sediment with <i>Zostera marina</i> beds (Zmar)
IMS2	Sublittoral muddy sands (FaMS; EcorEns; AbrNucCor; AfilEcor)
IMS3	Infralittoral muddy sand with <i>Echinocardium cordatum</i> and <i>Ensis</i> spp. (FaMS; EcorEns)
IMS4	Infralittoral muddy sand with <i>Abra alba</i> and <i>Nucula nitida</i> and infralittoral mixed sediment with <i>Laminaria saccharina</i> (Mob; NcirBat; FaMS; EcorEns; LsacX)
IMS/CMS	Infralittoral/circalittoral muddy sand
IMS3/IMX1	Infralittoral muddy sand with <i>Echinocardium cordatum</i> and <i>Ensis</i> spp.(FaMS;EcorEns)and/or Infralittoral mixed sediment with <i>Laminaria saccharina</i> and filamentous algae (LsacX)
CMS1	Circalittoral muddy sand with bivalves (AbrNucCor)
CMS2	Circalittoral muddy sand with echinoderms (AfilEcor)
CMS3	Circalittoral shelly and sandy mud with ascidians and sometimes <i>Pachycerianthus multiplicatus</i> (VirOph; VirOph.HAs)
CMS4	Circalittoral muddy sands, unclassified (CMS)
CMS/CMU	Sublittoral muddy sand and muds (CMS/CMU)
IMU/IMU1	Marine infralittoral mud (MarMu; TubeAP; AreSyn; PhiVir; Ocn)
IMU6	Shallow sublittoral mud – undefined (IMU)
IMU	Marine infralittoral mud (MarMu; TubeAP; AreSyn; PhiVir; Ocn)
CMU1	Circalittoral soft mud with sea-pens and burrowing megafauna (SpMeg)
CMU3	Circalittoral undisturbed soft mud with <i>Calloccaris</i> (SpMeg)
CMU5	Circalittoral sandy or shelly mud with <i>Nephrops</i> , <i>Virgularis</i> and <i>Calloccaris</i> (SpMeg)
CMU6	Heavily trawled circalittoral mud with <i>Nephrops</i> and <i>Calloccaris</i> (few <i>Virgularia</i> ) (SpMeg)
CMU7	Circalittoral sandy mud with <i>Callianassa subterranea</i> (SpMeg)
CMU8	Anoxic sublittoral mud with <i>Beggiatoa</i> (Beg)
CMU9	Circalittoral soft muds – undefined
CMU10	Seapens including <i>Funiculina quadrangulis</i> and burrowing megafauna in undisturbed circalittoral fine mud
IMX1	Infralittoral mixed sediment with <i>Laminaria saccharina</i> and filamentous algae (LsacX)
IMX2	Infralittoral muddy mixed sediment with maerl beds (MrlMx; Lcor)
IMX4	Infralittoral mixed sediment with faunal communities (FaMx; VsenMtru)
IMX7	Tide-swept sublittoral coarse sediment, cobble and boulder <i>Limaria hians</i> beds (Lim)
IMX9	Infralittoral very fine sand, stones and shells (IMX)
IMX10	Infralittoral mixed sediment with algal mats (Tra)
IMX11	Sublittoral mixed sediment with mats of <i>Phyllophora crispa</i> (Pcri)
IMX/CMX	Infralittoral & circalittoral very fine sand, stones and shells (IMX/CMX)
IMX1/9	Infralittoral very fine sand, stones and shells with <i>Laminaria saccharina</i> and filamentous algae (LsacX)
IMX9/1	Infralittoral mixed sediment with <i>Laminaria saccharina</i> and filamentous algae (LsacX)
IMX1/10	Infralittoral mixed sediment with algal mats and kelp (LsacX; Tra)
CMX1	Circalittoral mixed sediment (CMX)
CMX3	Sheltered sublittoral mixed sediments with <i>Modiolus modiolus</i> and <i>Cerianthus lloydii</i> (ModHo)

