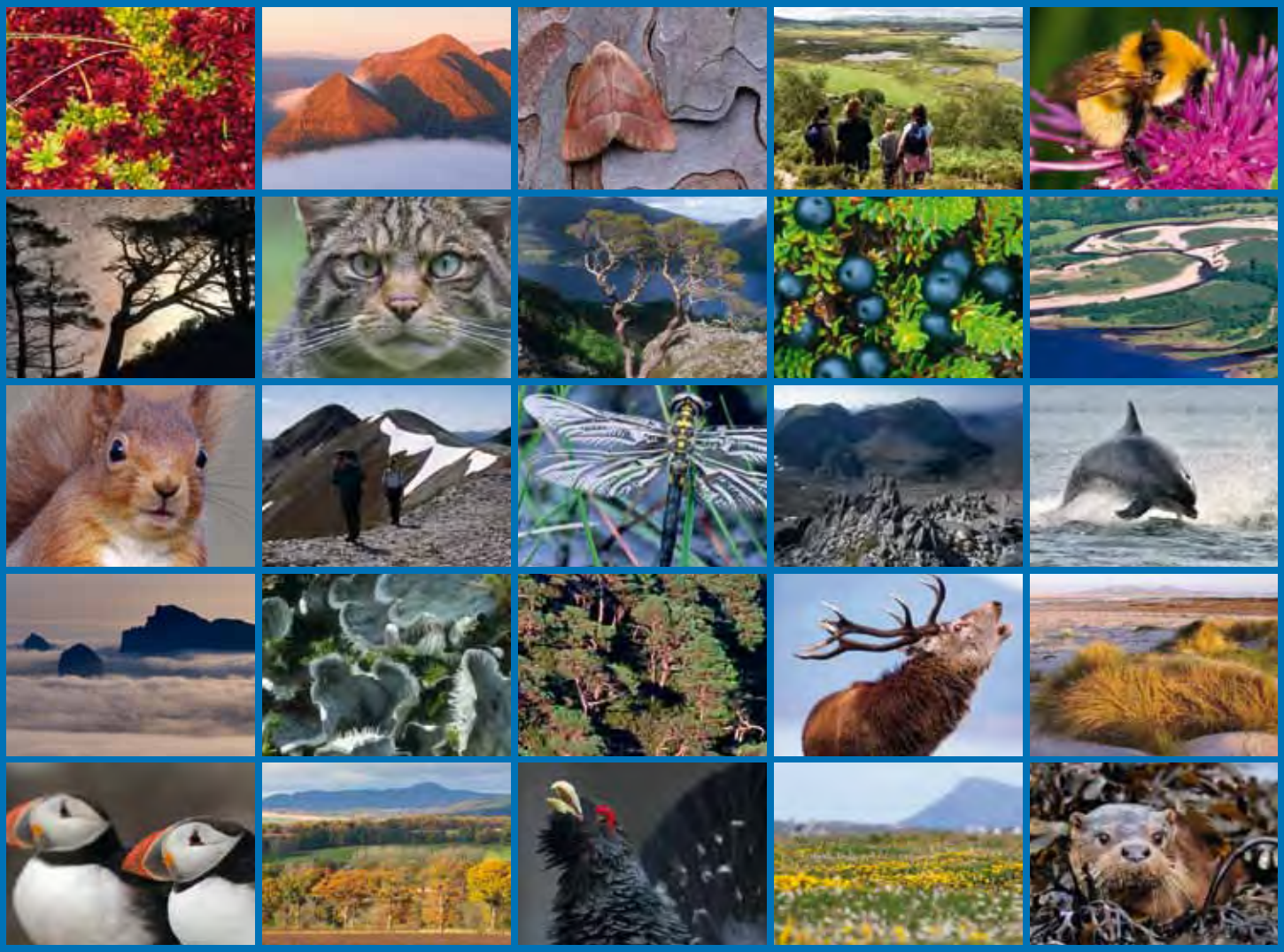
Scottish Natural Heritage
Commissioned Report No. 422

The distribution of Priority Marine Features and MPA search features within the Ullapool Approaches: a broadscale validation survey



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COMMISSIONED REPORT

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The distribution of Priority Marine Features and MPA search features within the Ullapool Approaches: a broadscale validation survey

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COMMISSIONED REPORT

Summary

The distribution of Priority Marine Features and MPA search features within the Ullapool Approaches: a broadscale validation survey

Commissioned Report No. 422 (Project no. 32056, iBids no. 10767)

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Background

The survey area is located in north-west Scotland and extends from the southern entrance of Loch Gairloch to Loch an Alltain Duibh in the north, enclosing a coastal area referred to in this report as the Ullapool Approaches. For the purposes of the current study the area is regarded as consisting of a number of regions, which include the four major loch systems (Loch Gairloch, Loch Ewe, Little Loch Broom and Loch Broom), Gruinard Bay, the Summer Isles, and the Outer Region, which comprises the large embayment between Rubhá Réidh and Loch an Alltain Duibh, and the coastal strip extending southwards from Rubhá Réidh to Loch Gairloch.

To help target nature conservation action SNH and JNCC have generated a focused list of habitats and species of importance in Scottish waters - the Priority Marine Features (PMFs). Provisions to designate new Marine Protected Areas (MPAs) within Scottish waters have recently been introduced through the Marine (Scotland) Act 2010 and the UK Marine and Coastal Access Act 2009. A subset of the PMFs (MPA search features) will drive the identification of Nature Conservation MPAs. The purpose of this study was to carry out a validation survey of the multiple PMFs/MPA search features recorded within the Ullapool Approaches, to record new instances of these and to detect previously unrecorded PMFs/MPA search features within the area. For a subset of MPA search features a further objective involved more detailed analysis to determine their distribution, extent and condition. This included maerl, flame shell, seagrass, oyster, blue mussel, horse mussel and sea loch egg wrack beds. A number of sites with geodiversity features were also investigated and their corresponding biological characteristics recorded.

Main findings

- A total of 11 MPA search features were recorded in the survey area in 2010, of which the burrowed mud component biotope **SS.SMu.CFiMu.SpnMeg** was the most extensive, flooring much of the sea bed in all regions. The associated sea pen, *Funiculina quadrangularis*, was also widespread, with high population densities present in the inner basins of Loch Broom and Little Loch Broom. However, the burrowed mud habitat in the inner parts of the sealoch systems was found to be highly impoverished with respect to infaunal diversity and abundance.
- The *Neopentadactyla mixta* coarse sediment biotope (**SS.SCS.CCS.Nmix**) was only tentatively identified due to the lack of evidence of the presence of the characterising holothurians. However, it is probably present in all regions of the survey area, apart from Loch Broom.

- The presence of maerl beds was confirmed in all regions apart from Loch Broom. Maerl in the Loch Gairloch area was more extensive than previous records suggest, with a coastal band continuing southwards beyond the mouth of the loch and also present to the north of the loch. On the other hand, the bed off Poolewe in Loch Ewe was found to be extensive but of poor quality, with live maerl content much lower than previous records suggest. The 2010 survey confirmed the widespread occurrence of maerl around the Summer Isles (chiefly as **SS.SMp.Mrl.Pcal.R**) and in Gruinard Bay (as **SS.SMp.Mrl.Pcal.Nmix**). A previously recorded maerl bed at Badluarach near the mouth of Little Loch Broom was found in 2010 to be one of the richest maerl beds observed in the search area in terms of maerl density and infaunal diversity.
- The only recorded presence of a flame shell bed (**SS.SMx.IMx.Lim**) was at Sruth Lagaidh Narrows in Loch Broom. This was mapped and the extent estimated as 7 ha, making it one of the smaller UK beds. Although the flame shell bed biotope was previously reported to be present at Badluarach, in association with the maerl bed, in 2010 only juvenile *Limaria hians* were present and no *Limaria*-structured habitat was recognisable. Flame shell beds reported from the Carn Skerries were not refound.
- Seagrass beds of *Zostera marina* (**SS.SMp.SSgr.Zmar**) were located in north-west Loch Gairloch and south-east Gruinard Bay, where distributional studies revealed the habitat to be more widespread than previous studies have shown. Although patchy, seagrass density was locally abundant at both locations and these beds are possibly the richest examples on the mainland coastline of northern Scotland from at least Loch Alsh to the Moray Firth.
- Locations of historical records of *Ostrea edulis* were investigated in Loch Thùrnaig (Loch Ewe) and in Old Dornie Harbour in the north of the study area. Only old, eroded, empty shells were found in Old Dornie Harbour but a small patch of live oysters was present on the lower shore in the very sheltered embayment, Ob na Bà Ruaidhe, in north-west Loch Thùrnaig. Oyster density was too low for the area to be considered an oyster bed.
- Large beds of sea loch egg wrack *Ascophyllum nodosum* ecad *mackaii* (also known as wig wrack) were identified and mapped in Badachro Bay (Loch Gairloch) and Loch Thùrnaig, and a new instance of this habitat, **LR.LLR.FVS.Ascmac**, recorded in Old Dornie Harbour. The 2010 survey provides the first indication of the distribution and composition of these beds.
- Fields of *Leptometra celtica* were observed in the locations of earlier records at the mouth of Loch Broom and on the inner and outer sills of Little Loch Broom, attaining a very high density on the outer sill. The known distribution of the species was extended by several new records of its occurrence on deep mud in the outer embayment of the study area and off the mouth of Loch Gairloch.
- Despite the examination of sites of historical records, no evidence of the presence of several MPA search features was obtained in 2010. These habitats included horse mussel beds (**SS.SBR.SMus.ModHAs**), inshore deep mud with burrowing heart urchins (**SS.SMu.CFiMu.BlyrAchi**) and *Laminaria hyperborea* on tide-swept, infralittoral mixed substrata (**IR.MIR.KR.LhypTX**). Also, historical records of the MPA search feature species, *Palinurus elephas*, *Glossus humanus* and *Atrina fragilis* were not validated.

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ACKNOWLEDGEMENTS

We would like to thank the following personnel for contributions to the field work: from Heriot-Watt University - Lewis Cowie and Alessandro Icardi (drop-down video and grabbing) and Dr Graham Saunders (photography); from SNH - Ben James, Suzanne Henderson and Emily Greenall (diving and shore work). Nathalie Pieters (Heriot-Watt University) carried out the particle size analysis and Sue Hamilton (22 Bryce Crescent, Currie, Midlothian) the infaunal sorting and identification. We are most grateful to Richard Ross, Camusnagaul, for assistance with boating and logistical matters.

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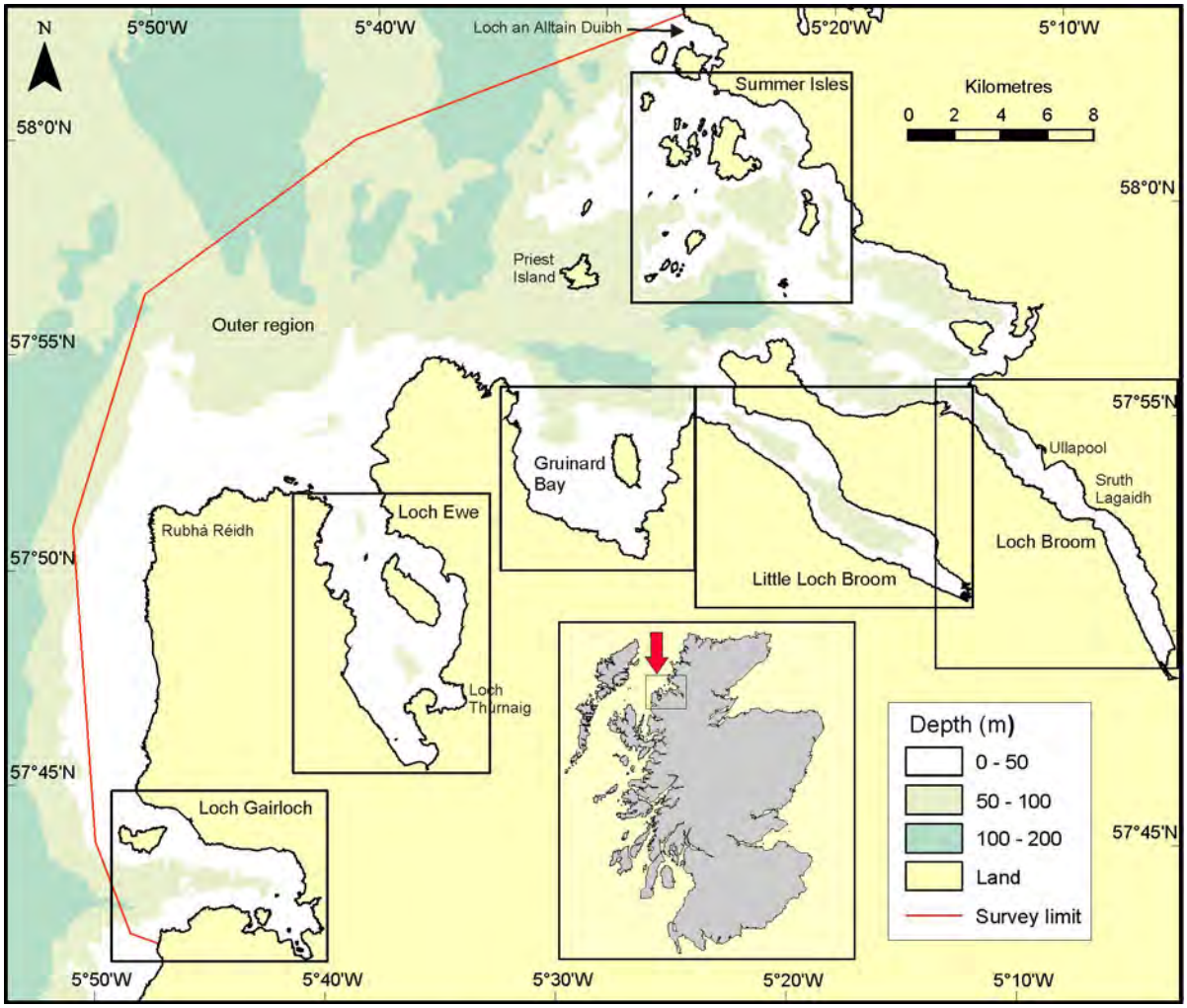
1 INTRODUCTION

1.1 The Ullapool Approaches

The survey area is located in north-west Scotland and extends from the southern entrance of Loch Gairloch to Loch an Alltain Duibh in the north, enclosing a coastal area referred to in this report as the Ullapool Approaches (Figure 1). For the purposes of the survey the area has been divided into a number of regions, which include the four major loch systems (Loch Gairloch, Loch Ewe, Little Loch Broom and Loch Broom), Gruinard Bay, the Summer Isles, and the Outer Region, which comprises the embayment between Rubhá Réidh and Loch an Alltain Duibh, and the coastal strip south of Rubhá Réidh. The sea bed over most of this embayment lies beyond 50 m, with several pockets exceeding 100 m and attaining a maximum depth of 160 m north of Gruinard Bay.

Figure 1 The Ullapool Approaches survey area showing bathymetry and the regional subdivisions used in this report



Loch Gairloch is a short, open sea loch and consequently the most exposed of the loch systems in the area. It has a deep central channel reaching 60 m in depth and no true sill, although a shallow 36 m tongue extends midway across the loch from its southern side just inside the mouth. The other major lochs are deep, fjordic systems. Loch Ewe comprises two basins separated by sills at the mouth and to the north-west of the Isle of Ewe, with the deeper inner basin attaining 71 m. Little Loch Broom and Loch Broom are typical elongate,

steep-sided fjordic lochs. Little Loch Broom contains two basins, with a 38 m sill at the mouth of the loch and a second 34 m sill midway along the loch, separating the outer 78 m and the inner 115 m basins. Loch Broom consists of three basins: an outer 76 m basin, a shallow central basin reaching 32 m and a 51 m inner basin, with sills south-west of Ullapool and at Sruth Lagaidh narrows, where tidal currents reach 1 kt. Gruinard Bay is a broad inlet, open to the north but with relatively sheltered conditions in the channel to the east of Gruinard Island. Much of the bay is floored by shallow (<30 m) sediments, but with a north-western intrusion of deep (>50 m) water. The Summer Isles comprise a group of islands and skerries in the northern part of the survey area separated by narrow, shallow channels and broad expanses of deep water reaching a depth of 78 m.

1.2 Previous surveys

The major marine biological surveys carried out within the Ullapool Approaches area are summarised in Table 1, with a comprehensive list, together with additional sources of historical habitat and species records, supplied in Appendix 16. Most of the data date back at least 20 years, being derived principally from the Marine Nature Conservation Review programme and from Seasearch surveys in the lochs and around the Summer Isles. The outer region has received very little attention. Much of the historical data have been collated and employed to produce descriptions of the habitats and indicative biotope mapping of the loch systems by Dipper and Johnston (2005). This does not include Gruinard Bay, the outer region or the Summer Isles. However, AGDS broadscale mapping of the Summer Isles was carried out in 1996 by Sotheran (1997), employing groundtruth data from the 1996 SNH ROV survey and the Seasearch survey of Howson and Bradshaw (1997). Also, based on existing data, Foster-Smith (2010) derived a predictive biotope map for Scottish territorial waters, which includes the Ullapool Approaches survey area. In recent years a number of geological surveys have taken place over this region, specifically covering Loch Broom, Little Loch Broom and extending into the outer region and Summer Isles (e.g. Stoker and Bradwell, 2005, 2009; Stoker *et al*., 2006, 2009).

1.3 Priority Marine Features (PMFs) and MPA search features

Provisions to designate new marine protected areas (MPAs) within Scottish waters have recently been introduced through the Marine (Scotland) Act 2010 and the UK Marine and Coastal Access Act 2009. The MPA network in Scottish waters will comprise existing protected areas, primarily European Marine Sites (Special Areas of Conservation under the Habitats Directive and Special Protection Areas under the Birds Directive), as well as those subject to other types of area-based management and MPAs designated under the new legislation.

To help target nature conservation action as outlined in the marine nature conservation strategy (Marine Scotland, 2011a), SNH and JNCC have generated a focused list of habitats and species of importance in Scottish waters - the Priority Marine Features (PMFs). It is a subset of these biological features (referred to as MPA search features) that will drive the identification of Nature Conservation MPAs (see Moore and James, 2011 for draft list).

Recent projects undertaken by DEFRA and MarLIN have involved the collation and mapping of historical records of a range of features, including PMFs, around the UK. Draft outputs from these programmes (referred to herein as the DEFRA and MarLIN data layers) were available to inform the current study.

The Ullapool Approaches area has been identified as a region supporting a high diversity of MPA search features (Moore and James, 2011). Historical records suggest the presence of the MPA search features and their components listed in Tables 2 and 3.

Maerl beds are believed to be widely distributed around the Summer Isles, with records also for the *Neopentadactyla* sand biotope, as well as for flame shell (Carn Skerries) and horse mussel (Tanera More) beds (see Howson and Bradshaw, 1997; Sotheran, 1997). *Ostrea edulis* has also been recorded in this area (Old Dornie Harbour). Around the Summer Isles and throughout much of the outer embayment records suggest the widespread occurrence of burrowed mud, often with *Funiculina quadrangularis*. There are also old, isolated records of *Palinurus elephas* and *Atrina fragilis* off Rubhá Réidh.

Table 1 Principal marine biological surveys carried out in the Ullapool Approaches

Year of survey	**Organisation**	**Survey type**	**Reference**
1981	Underwater Conservation Society	Sublittoral surveys of epibiota at 40 sites around the Summer Isles, Priest Island and Eilean Dubh	Dipper, 1981
1988	Marine Biological Consultants	Seasearch surveys of epibiota at 25 sublittoral sites in Little Loch Broom, 1 littoral and 21 sublittoral sites in Loch Broom and 15 sublittoral sites in the approaches to Loch Broom	Gubbay & Nunn, 1988
1989	Marine Biological Consultants	Seasearch surveys of epibiota at 35 sites in Loch Gairloch, 38 sites in Loch Ewe and 23 sites in Gruinard Bay	Gubbay, 1990
1990	University Marine Biological Station, Millport	MNCR phase 2 surveys of epibiota at 5 littoral and 32 sublittoral sites and eight dredge sites in Loch Gairloch; MNCR phase 2 surveys of epibiota at 6 littoral and 35 sublittoral sites and 11 infaunal sites in Loch Ewe	Howson, 1991
1991	University Marine Biological Station, Millport	MNCR phase 2 surveys of epibiota at 12 sublittoral sites in Little Loch Broom and 5 littoral and 15 sublittoral sites in Loch Broom	Holt, 1991
1995	Scottish Natural Heritage	ROV survey of 22 sites in Loch Broom	unpublished, but data in Marine Recorder
1996	SNH	Sublittoral ROV survey at 30 sites around the Summer Isles, Eilean Dubh and Priest Island	unpublished, but data in Marine Recorder
1996	SNH/MCS	Seasearch survey at 66 sites around the Summer Isles, Eilean Dubh, Carn Skerries and Horse Island	Howson & Bradshaw, 1997
2004	ERT	Grab, video and diver survey of Loch Broom	Briggs, 2004
2004	Maris Ecologists	Dropdown video survey of shallow habitats at 25 sites in Gruinard Bay, snorkel observations at one maerl site in the Summer Isles and glass bucket survey in possible seagrass habitat in both areas, as well as east of Isle Martin	James, 2004

Table 2 Habitat and associated species MPA search features previously reported from the Ullapool Approaches, with the PMF code used in this report

MPA search feature	**Component habitats/species**	**Biotope code**	**Code**
Blue mussel beds	*Mytilus edulis* beds on littoral sediments	LS.LBR.LMus.Myt	ME
Burrowed mud	Sea pens and burrowing megafauna in circalittoral fine mud	SS.SMu.CFiMu.SpnMeg	BM
	Funiculina quadrangularis		FQ
Flame shell beds	*Limaria hians* beds in tide-swept sublittoral muddy mixed sediment	SS.SMx.IMx.Lim	FS
Horse mussel beds	*Modiolus modiolus* beds with fine hydroids and large solitary ascidians on very sheltered circalittoral mixed substrata	SS.SBR.SMus.ModHAs	HM
Inshore deep mud with burrowing heart urchin	*Brissopsis lyrifera* and *Amphiura chiajei* in circalittoral mud	SS.SMu.CFiMu.BlyrAchi	DM
Kelp and seaweed communities on sublittoral sediment	Kelp and seaweed communities on sublittoral sediment	SS.SMp.KSwSS	KS
Maerl beds	Maerl beds	SS.SMp.Mrl	MB
Maerl or coarse shell gravel with burrowing sea cucumbers	*Neopentadactyla mixta* in circalittoral shell gravel or coarse sand	SS.SCS.CCS.Nmix	MC
Native oyster beds	*Ostrea edulis* beds on shallow sublittoral muddy mixed sediment	SS.SMx.IMx.Ost	OB
	Ostrea edulis		OE
Seagrass beds	*Zostera marina/angustifolia* beds on lower shore or infralittoral clean or muddy sand	SS.SMp.SSgr.Zmar	SG
Tide-swept algal communities	*Laminaria hyperborea* on tide-swept, infralittoral mixed substrata	IR.MIR.KR.LhypTX	TS
Sea loch egg wrack beds	*Ascophyllum nodosum* ecad *mackaii* beds on extremely sheltered mid eulittoral mixed substrata	LR.LLR.FVS.Ascmac	WW

Burrowed mud has been widely recorded in Loch Gairloch, with areas of *Neopentadactyla* sand and *Zostera marina* beds in the north-west, and maerl fringing the south-west coastline. A sea loch egg wrack (also known as wig wrack) bed has been reported at Badachro.

Table 3 Species MPA search features previously reported from the Ullapool Approaches, with the search feature code used in this report

Common name	Scientific name	Taxon group	Code
Northern feather star	*Leptometra celtica*	Echinoderm	LC
Ocean quahog	*Arctica islandica*	Mollusc	AI
Fan mussel	*Atrina fragilis*	Mollusc	AP
Heart cockle	*Glossus humanus*	Mollusc	GH
European spiny lobster, crayfish, crawfish	*Palinurus elephas*	Crustacean	PE

Records suggest extensive coverage of burrowed mud in Loch Ewe, largely in the inner part of the loch and in The Sound, to the east of the Isle of Ewe, where a *Modiolus* bed has also been recorded. Maerl beds are reported from several areas in the loch, with a particularly extensive bed (live thalli up to 12 cm deep) off Poolewe at the head of Loch Ewe. The very sheltered Loch Thùrnaig is reported to support *Glossus humanus*, *Ostrea edulis* and a sea loch egg wrack bed, whilst there are single records of *Palinurus elephas* and a tide-swept *Laminaria hyperborea* habitat in the main part of Loch Ewe.

Gruinard Bay is reported to contain at least two distinct seagrass beds in the south-east, maerl to the north and west of Gruinard Island and burrowed mud in the shelter of the channel east of the island.

There is a single record of burrowed mud for Little Loch Broom, although the deeper regions of the loch are largely unstudied. The sills support populations of *Leptometra celtica*, with the inner sill also reported to exhibit the inshore deep mud habitat. Maerl beds have been reported near the mouth of the loch, one in association with a flame shell bed.

Burrowed mud has been widely recorded for Loch Broom, in association with *Funiculina quadrangularis* in the outer and inner basins. There are reports of *Leptometra celtica* at two sites at the mouth of the loch, a blue mussel bed off the Ullapool River and inshore deep mud in the middle and inner basins. Sruth Lagaidh Narrows is a particularly interesting region of the loch, where both flame shell and horse mussel beds have been recorded.

Arctica islandica has been widely recorded from the lochs in the area, especially Loch Broom and Loch Ewe, as have kelp and seaweed communities on sublittoral sediment. The only protected area within the survey boundary is Priest Island, which is a Special Protection Area (SPA) classified for its population of breeding storm petrels.

1.4 Geodiversity features

In addition to offering protection to biodiversity features, the MPA network should also safeguard features of geodiversity interest (Marine Scotland, 2011b). Geological surveys have indicated that the Ullapool Approaches region is internationally and scientifically important, containing a classic glacial landscape formed by repeated glaciation over at least the last 500,000 years (Stoker and Bradwell, 2005, 2009; Stoker *et al*., 2006, 2009; Brooks *et al*., 2011). Preference for the selection of MPAs is to be given to areas containing multiple features; this could be for biodiversity and/or geodiversity interests. However, priority for selection of MPAs will be given to key biodiversity locations, with geodiversity interests providing a supporting role.

The Ullapool Approaches is part of a 'process-landscape' formed by fast-flowing ice active during the Quaternary glacial periods. The heavily scoured glacial valleys which now drain into the Ullapool Approaches linked a vast glacial landscape which connected land-based fast-flowing ice-streams with their depositional areas at the edge of the continental shelf. The assemblage of glacial features extends from the land-based glacial erosion surrounding Ullapool to the Sula Sgeir Fan 170 km to the west. The outstanding range of glacial interests coupled with the exceptional detail of the record means this region should be regarded as internationally important. It is also a scientifically important area for developing understanding of Pleistocene ice sheet dynamics, deglaciation of the last British Ice Sheet, Late glacial climate change, and the style and rates of fjord sedimentation (Brooks *et al*., 2011). Contained within this region are numerous geological features such as glaciated channels, bedrock grooves, moraines, pockmarks and slide scars (Figure 2) (see Stoker *et al*., 2006; 2009).

Figure 2 *Sea bed swath bathymetric image showing part of the Ullapool Approaches survey area and the recorded geological features* (Stoker *et al.,* 2009).

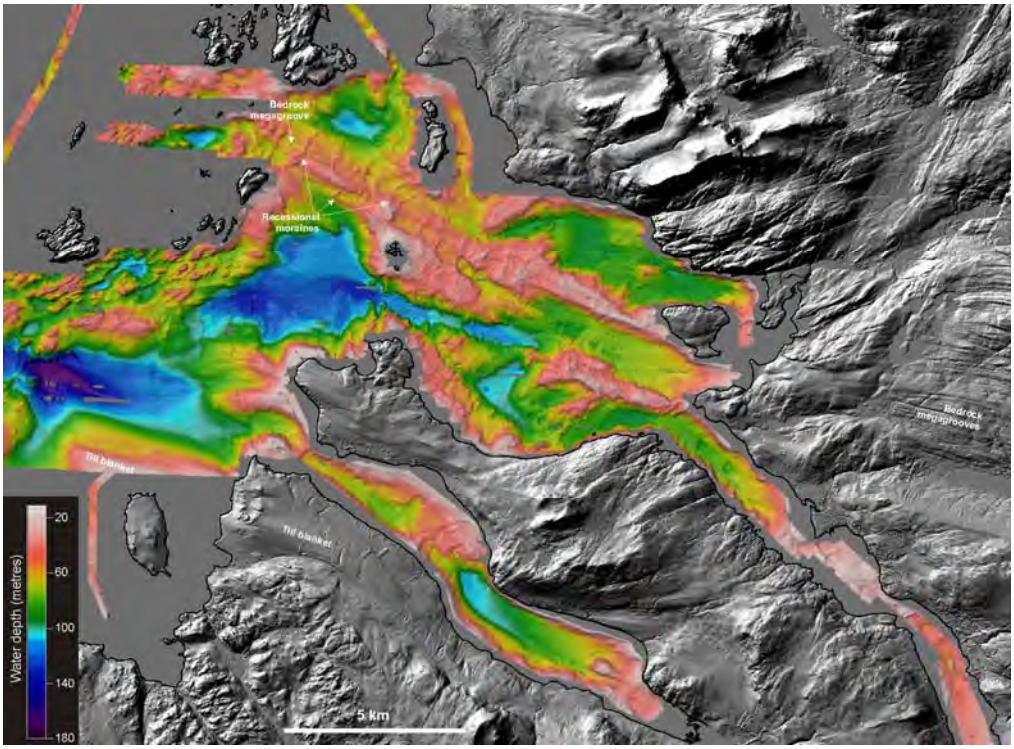


Image provided by Martyn Stoker, British Geological Survey © NERC

1.5 Related human activities

Human activities in most of the survey area have been summarised by the Highland Council (2006). They fall largely into the following categories:

- salmon farming
- shellfish farming
- trawling
- dredging
- creeling
- scallop diving
- submarine exercise
- boat traffic and anchoring
- recreational activities including sailing, kayaking, tour boats, diving and sea angling

Salmon farms currently operate in the Summer Isles, Loch Broom, Little Loch Broom, Loch Ewe and Loch Kanaird. Mussel, scallop and oyster farming have taken place in the area, particularly around Horse Island, but no shellfish farming is believed to be currently practised.

Demersal fishing activity over most of the area consists largely of *Nephrops* trawling in the deeper, muddier regions, scallop dredging around the Summer Isles and creeling for *Nephrops*, crabs and lobsters concentrated in Loch Broom, Little Loch Broom and east of the Summer Isles. In Loch Ewe the main fishing activity is creeling for *Nephrops* from the muddier parts of the loch, as well as for crabs and lobsters. Loch Gairloch is protected from mobile fishing gear under a year-round closure order, but creeling for lobsters and crabs is carried out. As far as interactions with PMF interests, there is likely to be an impact from trawling on burrowed mud communities and also from demersal fishing on maerl beds, especially around the Summer Isles. Jones (1980) reported that a Summer Isles maerl bed was severely damaged by demersal fishing in 1978 and that no live maerl was found there in 1979. Dipper (1981) revisited the site in 1981, noting that most of the maerl was dead.

In January 2010 the Scottish Government (2010) granted permission for the development of a windfarm on the Isle of Lewis. Several options for transferring electricity to the mainland were considered with associated environmental impact assessments (i.e. ERT 2004a, 2004b; Briggs, 2004); the selected option is a subsea cable passing through the Approaches, along Little Loch Broom and landing at Dundonnel at the head of the loch.

ERT (2004b) concluded that the Little Loch Broom cable route would be most likely to interact with the relatively extensive deep water mud habitats in the basins of the loch, and with maerl beds on the south side of the entrance to the loch, with the consequences of such interaction dependent upon the number of cables, the precise route followed and the method of installation. There is also potential for an impact on the *Leptometra celtica* aggregations associated with the sills.

1.6 Survey objectives

The purpose of this study was to design and carry out a broadscale validation survey of the multiple MPA search features recorded within the Ullapool Approaches area and to record new instances of these and previously unrecorded PMFs. The study aimed to determine whether PMFs/MPA search features were still present at previously documented locations.

For a subset of search features a further objective involved more detailed analysis to determine the distribution, extent and condition of some of the bed-forming MPA search features. These were maerl, flame shell, seagrass, oyster, blue mussel, horse mussel and sea loch egg wrack beds.

In addition to the main objectives (as outlined above), a number of sites of geological interest were investigated to provide an initial insight into any potential associations between these and biodiversity features (i.e. PMFs and MPA search features).

2 METHODS

2.1 Video survey

A drop-down video survey was designed to validate previous records of PMFs/MPA search features and to contribute to an assessment of the distribution and extent of certain search features, in combination with more detailed, localised surveys described below.

Video sites were selected based on the previously recorded distribution of MPA search features and the likelihood of their presence, determined from Admiralty charts and predictive broadscale habitat and landscape mapping (Section 1.2). Consideration was also given to providing good coverage of the area of search, without selecting sites unlikely to support PMFs. Greater densities of survey sites were assigned to certain locations to assess the distribution of previously recorded maerl, flame shell, horse mussel and seagrass beds. However, in many cases survey sites did not coincide with previously recorded coordinates but were instead moved to accommodate positional errors, to occupy similar depths to historical records, or to represent areas for which there are multiple closely-positioned historical records. The presence of obstacles (principally *Nephrops* creel lines) also caused some modification of positions. No video sampling specifically targeted the kelp and seaweed community search feature, as its widespread occurrence in this region would have unbalanced the emphasis of the survey.

Sites were categorised (and correspondingly coded) according to the target search feature, although for some sites, several targets were applicable. Site names consist of numbers preceded by the search feature code given in Tables 2 and 3. Two hundred and twenty-five sites were identified at the planning stage, with an additional 20 sites worked during the survey, particularly to determine the extent of MPA search features, based on the observations from the planned sites. The total of 245 sites includes 14 sites which were targeted for analysis of geological features of interest by SNH. Ten of these sites had no previous corresponding records of biological PMFs/MPA search features and are labelled GFx. Site locations are shown in Figures 4-10 and locational details provided in Table 2.1 (Appendix 2).

The video survey was carried out from 22nd July - 5th August 2010 largely from the vessel *RV Serpula*, working from bases in Loch Gairloch, Loch Ewe, Little Loch Broom and Loch Broom. During this period a faster vessel, MV Rebecca Ann, working out of Little Loch Broom, was also employed for the more distant offshore and Summer Isles sites.

The video system used consisted of a Panasonic NV-GS150 3 chip digital video camera within a Seapro housing held within a frame and illuminated by twin 100 watt lamps. A 150 m umbilical cable carried the video signal to a Sony Video Walkman for real-time observation and for recording. At each station the camera was deployed briefly from a drifting vessel, noting the times, depths and precise positions at the start and end of the drift using differential GPS (dGPS). These data, as well as brief notes on substrates and biota, were entered onto a pro forma (Appendix 1). The runs were mostly of 2 - 4 minutes duration, with longer runs where necessary to characterise the habitat.

The video material from each station was processed in the laboratory, with notes being taken on the substrate and the biota present, where possible employing the SACFOR scale of abundance. Biotopes were allocated based on the classification scheme of Connor *et al.* (2004). Stations were also categorized according to the PMFs/MPA search features present. Depths were related to chart datum by determination of the tidal rise at the appropriate secondary port using TotalTide software (Hydrographic Office, Taunton), with ports of Gairloch, Loch Ewe, Ullapool and Tanera More being employed. All depths given in

this report, for both 2010 and previous records, are depths below chart datum. All positions for 2010 and previous records utilise the WGS84 datum.

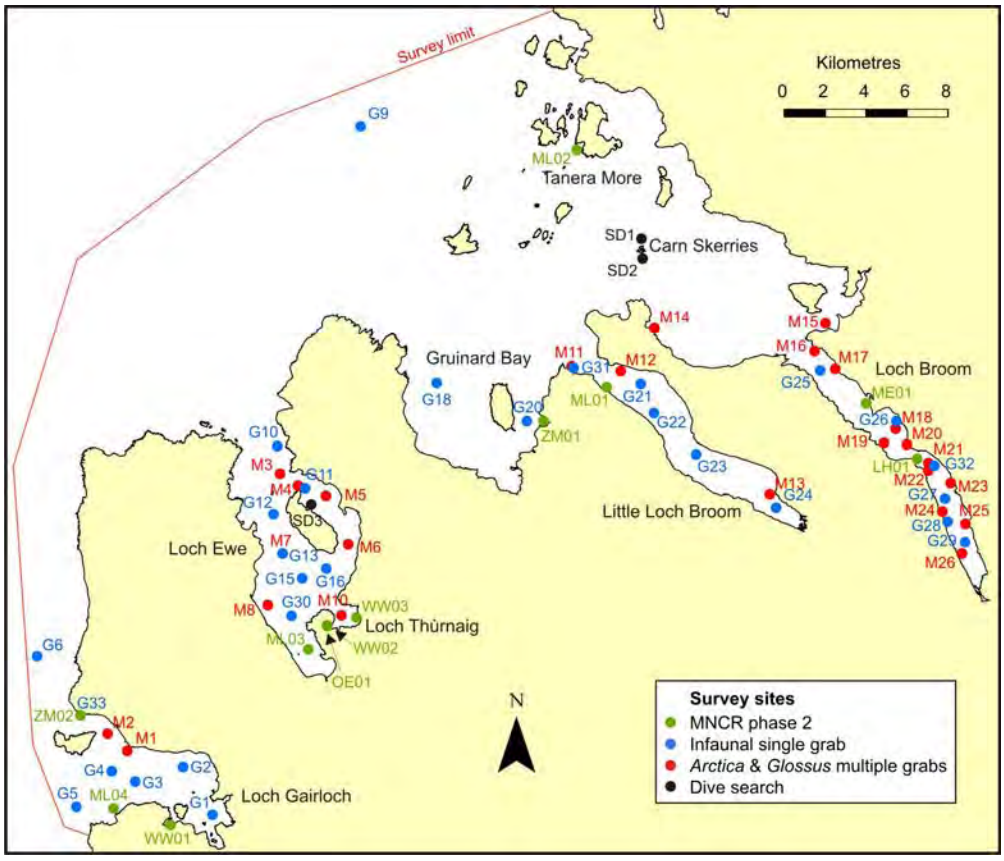
2.2 Still photo survey

To supplement the coverage in Loch Gairloch photographs were analysed from a Marine Scotland Science (MSS) survey carried out from 3rd - 8th March 2010. This consisted of 667 still images taken along 12 runs using either a drop-down or towed video system, with attached digital still camera. Video was also collected along some of these runs but has not been analysed. The location of all analysed images is shown in Appendix 3. Based on analysis of all images, the runs were split into segments of similar substrate and benthic community type. The physical and biological characteristics of each segment was recorded (where possible employing the SACFOR scale), biotopes allocated, and the presence of PMFs/MPA search features recorded.

2.3 Infaunal survey

To assist in the identification and condition assessment of sublittoral sediment biotopes and hence PMFs, single van Veen grab samples were taken at 28 sites. The locations of these (G1-G33) are shown on the biotope distribution maps (Figures 4-10), and also for clarity in Figure 3, with locational details provided in Appendix 4 (Table 4.1).

Figure 3 *Distribution of sites for MNCR phase 2 surveys, single grab survey for infaunal community analysis, multiple grab survey for* Arctica islandica *and* Glossus humanus *distribution and dive searches for MPA search features*



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Following the collection of a c.150 ml subsample of sediment for particle size analysis, the remaining grab contents were sieved on a 1 mm mesh and the retained macrobenthos sorted, identified and enumerated.

Sediment samples for grain size analysis were dried to constant weight then disaggregated by placing in an ultrasonic bath while soaking in a solution of sodium hexametaphosphate. The sample was then wet sieved by puddling the sample on progressively finer sieve sizes from 4 to -4 phi at 0.5 phi intervals and the contents of each sieve dried to constant weight. The sediment grain size parameters, median grain size and phi quartile deviation, were obtained by interpolation of the cumulative weight percentage curves.

2.4 Multi grab survey

For validation of records of the presence of *Arctica islandica*, multiple grab samples (generally five) were taken from 24 sites, representing most of the historical records of the species (see Table 9.2, Appendix 9). Depth and sediment type were also recorded. The location of these sites (M1-M26) is shown on the PMF/MPA search feature distribution maps (Figures 11-18), and also for clarity in Figure 4, with locational details provided in Appendix 4 (Table 4.8). The positions of several of these sites differ from those of corresponding previous records due to clear errors in the original records and attempts in 2010 to resample similar depths. The grab contents were transferred to a large sorting tray and the number of live specimens of *A. islandica* counted on deck.

The same method was used for assessment of the presence of *Glossus humanus* in Loch Thùrnaig (site M10).

2.5 Localised surveys

Detailed surveys were carried out at a number of sites to assess the distribution, extent and condition of certain MPA search features, viz. maerl, flame shell, horse mussel, seagrass, oyster and sea loch egg wrack beds. The methods used at each site are summarised in Table 4. In addition, evidence from the video survey of the lack of previously recorded flame shell beds at two sites off the Carn Skerries and a *Modiolus* bed in The Sound, Loch Ewe, was further investigated by dive searches at these locations. This confirmed the absences at these sites and no detailed work was carried out.

2.5.1 Badluarach, Little Loch Broom (maerl, flame shell beds)

2.5.1.1 Spot dive survey

Based on the results of the video survey, a diver survey was designed to assess the distribution and condition of the maerl bed, and to determine the existence and condition of a *Limaria* bed here.

Divers worked a total of 16 stations (Figure 19, Appendix 7: Table 7.1) along three transects crossing the maerl bed identified by the video survey. Divers followed a compass bearing perpendicular to the shoreline. Station positions were selected at intervals to represent locations just outside the limits of the bed, as well as several areas within the bed. Where discernible, the depths of the bed margins were noted. At each station, the position was fixed by the surface team obtaining a dGPS fix on the diver surface marker buoy, following a signal from the diver. The diver used a pro forma (Appendix 1.2) to record the following data at each station within an area of approximately 5 x 5 m:

- depth
- percentage coverage by live maerl

- percentage coverage by dead maerl
- mean live maerl thickness
- percentage coverage by *Limaria* nest material
- mean *Limaria* nest thickness
- visible presence of *Limaria* individuals
- presence of isolated *Limaria* nests
- sediment type
- percentage coverage by kelp
- main kelp species present
- percentage coverage by algal turf
- comments

Table 4 Summary of methods employed for localised surveys of MPA search features. A two letter location code is given which is used as a trunk for spot dive (Dx), video (Vx) and shore (Sx) sites at those locations

Location	**PMF target**	**MNCR phase2 site**	**Infaunal sample**	**Dive sites (spot)**	**Mini video**	**Glass bucket**	**Boundary delin-eation**	**Littoral density survey**	**Shore/dive search**
Badluarach, Little Loch Broom (BL)	maerl, flame shell	ML01	4 cores	16					
Poolewe, Loch Ewe (PE)	maerl, flame shell	ML03	4 cores	10					
Mol Mòr, Tanera More	maerl	ML02	4 cores						
Sruth Lagaidh Narrows, Loch Broom (SL)	flame shell, horse mussel	LH01	10 grab sites	15					
South-west Loch Gairloch	maerl	ML04							
Gruinard Bay (GB)	seagrass	ZM01		5		√			
Caolas Beag, Loch Gairloch (LG)	seagrass	ZM02	1 grab		√				
Badachro, Loch Gairloch (BB)	sea loch egg wrack	WW01					√	√	√
Loch Thùrnaig, Loch Ewe	sea loch egg wrack	WW02, WW03	8 pooled cores				√	√	√
Ob na Bà Ruaidhe, Loch Thùrnaig (LT)	oyster	OE01			√				√
Old Dornie Harbour (OD)	oyster								√
Ullapool River, Loch Broom (UR)	blue mussel	ME01					√	√	√
Firemore Bay, Loch Ewe	seagrass				√				
The Sound, Loch Ewe	horse mussel								√
Carn Skerries	flame shell								√

2.5.1.2 MNCR phase 2 survey

To characterise and assess the condition of the beds a diver phase 2 survey was carried out in a representative area close to the centre of the maerl bed (site ML01, Figures 3, 19). Location data are provided in Appendix 5. The site was marked with a shot line for the duration of the survey and the dGPS position of the line recorded. A 25 m tape transect line was marked out on the sea bed by running out a measuring tape from the base of the shot line. The bearing of the tape from the shot was noted and the depth at both ends of the tape recorded. A band 2 m either side of the tape was surveyed by two divers, who noted the presence, and where possible, estimates of the abundance of conspicuous biota, collecting material which needed to be identified in the laboratory. To supplement the real-time visual records and collections, the transect band was videoed using a hand-held digital video camera (Panasonic DX100B in a Seapro housing) and still photographs taken of the maerl and associated community using a digital still camera, (Fujifilm S2 Pro digital SLR with Subal FS2 housing and 19 mm wide-angle and 60 mm macro lenses).

Four replicate core samples were taken in areas of living maerl using a 10.3 cm diameter corer to a depth of 20 cm. The sediment was then sieved on a 1 mm mesh screen and the sievings retained in borax-buffered 5% formalin. The infauna of these cores was extracted and studied using the same methodology as described in Section 2.3 above. An additional 20 cm sediment core of 5 cm diameter was taken for particle size analysis using the same methodology as described in Section 2.3.

The diver species records and those derived from the study of the collected epibiota, video footage and still photographs were collated to produce a species list for the transect band with, where possible, SACFOR abundance estimates. Based on the physical and biological data collected, a biotope was subsequently allocated using Connor *et al.* (2004).

2.5.2 Poolewe, Loch Ewe (maerl, flame shell beds)

2.5.2.1 Spot dive survey

The video survey revealed the presence of maerl over a wide area but with extensive coverage by algal turfs and mats, reducing the observational ability of remote cameras. Dives were carried out at ten stations, based on a subset of the video stations, to assess the presence and condition of maerl, as well as to determine the existence and condition of a *Limaria* bed here (Figure 20, Appendix 7: Table 7.2).

Each station was marked with a shot line, which was fixed by dGPS, and a diver surveyed an area within approximately a 5 m radius of the shot. The same parameters were recorded as described above in Section 2.5.1.1, with the addition of noting whether the algal coverage was predominantly a loose filamentous mat.

2.5.2.2 MNCR phase 2 survey

To characterise and assess the condition of the bed a diver phase 2 survey was carried out at a site within the richest region of the maerl bed (site ML03, Figures 3, 20). See Appendix 5 for location data. The methodology was exactly as described above in Section 2.5.1.2.

2.5.3 Mol Mòr, Tanera More, Summer Isles (maerl bed)

The video survey provided a coarse resolution indication of the distribution of maerl around the Summer Isles, although its diffuse nature precluded the detailed assessment of distribution or extent of maerl beds within a realistic timescale. However, one of the seemingly more extensive areas of maerl (based on previous and current records) was

selected for MNCR phase 2 diver survey in order to characterise it and assess its condition. The survey was carried out in the mouth of Mol Mòr Bay, south-west Tanera More (site ML02, Figure 3), using the methodology described in Section 2.5.1.2. See Appendix 5 for location data.

2.5.4 South-west Loch Gairloch (maerl bed)

The length of this fringing maerl bed was established by the video survey. Further work on distribution and extent was cancelled by the onset of inclement sea conditions on the final day of the survey. However, for characterisation and condition assessment an MNCR phase 2 survey was carried out at site ML04 off Sròn a' Mhuilt (Figure 3) in a representative area of the habitat. The methodology was as described in Section 2.5.1.2, except that work had to cease before the collection of core samples. See Appendix 5 for location data.

2.5.5 Sruth Lagaidh Narrows, Loch Broom (flame shell, horse mussel beds)

2.5.5.1 Spot dive survey

The video survey included a high density of sites in the narrows area, revealing areas of likely *Limaria* nest material and areas where the sea bed was blanketed by dense brittlestars. To confirm the presence of *Limaria* and to assess the distribution and condition of the bed, as well as assessment of the presence of a horse mussel bed, a dive survey was carried out at 15 sites (Figure 21, Appendix 8: Table 8.1)). Some of the sites were distributed along transects enabling the diver to record the depth of the flame shell bed boundary. At each site a pro forma was employed to record the following data:

- depth
- percentage coverage by *Limaria* nest material
- mean *Limaria* nest thickness
- visible presence of *Limaria* individuals
- presence of isolated *Limaria* nests
- sediment type
- percentage coverage by algal turf
- percentage coverage by brittlestars
- presence of live *Modiolus*
- presence of dead *Modiolus* shells
- percentage coverage by live *Modiolus*
- *Modiolus* abundance estimate per unit area
- comments

The location of sites was fixed by dGPS following signalling with the surface marker buoy.

2.5.5.2 Grab survey

During the period of stronger current speeds and at depths where diving could not be carried out, single van Veen grab samples were taken at ten sites (Figure 21, Appendix 8: Table 8.2) and the contents analysed onboard for the presence of *Limaria hians* individuals and nest material.

2.5.5.3 MNCR phase 2 survey

This survey was carried out at site LH01 (Figures 3, 21) within an area representative of the shallower (<20 m), flatter region of the bed. See Appendix 5 for location data. The methodology followed that described in Section 2.5.1.2, except that no cores were taken.

Limaria nest material was removed from within three 0.1 m^2 quadrats and returned to the vessel. This was teased apart for enumeration of *L. hians* individuals.

2.5.6 Gruinard Bay (seagrass)

Two major seagrass beds were revealed by the video survey and these received more detailed examination. Unfortunately the planned glass bucket survey was largely frustrated by poor visibility and so this was replaced by a limited programme of glass bucket observations around the time of low water, supplemented by diving observations.

2.5.6.1 Diving survey

One transect was worked in Mungasdale Bay through a seagrass bed identified during the video survey. The diver swam on a compass bearing across the bed, recording data at five sites, which were position fixed on the surface using dGPS following signalling with the surface marker buoy. The positions are given in Table 9.1 (Appendix 9). Some of the sites were positioned close to the bed margins, to facilitate their mapping. Information recorded included depth, substrate type, start or end of bed, and estimations of percentage coverage by seagrass and shoot density.

2.5.6.2 Glass bucket survey

Mungasdale Bay and Loch Camus Gaineach were also examined by glass bucket from the RHIB *Aphrodite*, with records being taken at a number of spot locations along runs crossing the expected depth range of seagrass (Appendix 9: Table 9.1). The positions of diver and glass bucket observations are shown in Figures 22-24. The data collected included depth, time, substrate type and an estimation of percentage cover by seagrass.

2.5.6.3 MNCR phase 2 survey

The survey was carried out at site ZM01 near the centre of Mungasdale Bay in one of the densest areas of seagrass (Figures 3, 22). See Appendix 5 for location data. The methodology followed that described in Section 2.5.1.2, except that no core samples were collected. Counts of *Zostera marina* shoots were made within ten replicate quadrats of 0.25 m^2, distributed haphazardly within the transect belt.

2.5.7 Caolas Beag, Loch Gairloch (seagrass)

2.5.7.1 Mini video survey

Following identification of the main area of distribution of seagrass within the channel, Caolas Beag, from the initial video survey from the vessel *RV Serpula*, a more detailed distributional survey was carried out from the RHIB *Aphrodite*. To avoid the visibility problems encountered in Gruinard Bay a small drop-down video system was employed based on a Sony HiRes ExviewHAD camera, linked to a dGPS video overlay system, with the time and position-stamped images observed and recorded on a Sony Video Walkman. Twelve video runs were carried out with the RHIB gently motoring across the seagrass depth range within the areas known or likely to support seagrass beds (Figures 25, 26). During the runs descriptive notes on the habitat were taken, particularly with respect to the margins of seagrass beds and patches, with depth and time also recorded. Knowledge of the time permitted the depths to be related to the time-stamped video images.

In the laboratory the video footage was used to assess seagrass density at intervals of generally 10-20 seconds, the interval dependent upon the presence of bed or patch margins; sample intensity was reduced in homogeneous areas. This provided an overall average

resolution of around 5 m. Shoot density of seagrass was estimated within an area of the order of 5 m^2 immediately in front of the camera using a simplified SACFOR scale:

- Abundant - ≥1-9/0.1 m^2
- Common - 1-9/m^2
- Rare - <1-9/m^2

To permit integration of density data from the different methods, the glass bucket and *RV Serpula* video survey data were converted to this scale. Although only the start and end positions for the *RV Serpula* video runs were known, the resolution of *Zostera* density records was improved by estimating overall density for quarter segments of the run, based on time.

2.5.7.2 MNCR phase 2 survey

This was carried out in an area of dense *Zostera marina* in the largest seagrass bed north of Longa Island (site ZM02, Figures 3, 25). See Appendix 5 for location data. The protocol followed that described in Section 2.5.1.2, except that a single van Veen grab sample replaced the coring. Also, counts of *Z. marina* shoots were made within ten replicate quadrats of 0.25 m^2, distributed haphazardly within the transect belt.

2.5.8 Loch Thùrnaig (oysters)

2.5.8.1 Shore, diver and video searches

On 10th August 2010 the shore of Loch Thùrnaig was walked by two surveyors from the jetty on the eastern side (commencing at the time of MLWN) to Ob na Bà Ruaidhe on the western side, which was examined at the time of low water (MLWS -0.3 m). The shore was searched for the presence of *Ascophyllum nodosum* ecad *mackaii* (see Section 2.5.12.1) and native oysters, *Ostrea edulis*. A localised area of oysters was encountered in Ob na Bà Ruaidhe and dGPS waypoints taken and density estimated at two sites within the patch and two sites at its lateral margins (Figure 27). The lower area of the patch was flooded at the time and the seaward extent of the patch could not be determined with certainty. Ob na Bà Ruaidhe was revisited on 17th August 2010 when a survey was carried out from the RHIB *Aphrodite* using the mini drop-down video system described in Section 2.5.7.1. This extended the area of search seaward of the shore observations and also covered areas of the shore and shallow sublittoral along the western and southern sides of the bay. Two dives were carried out on 18th August 2010. One examined the shallow sublittoral below the shore records and passed up the shore, estimating oyster density at a number of sites, including at the upper margin of the patch. The positions of stations were obtained by the surface vessel, following signalling of the surface marker buoy. A second dive conducted a search of the lower shore and shallow sublittoral (to a depth of 3.2 m) by zigzagging around the western side of the bay (Figure 27).

2.5.8.2 MNCR phase 2 survey

This was carried out by diving near the centre of the oyster patch at site OE01 at 0.4 m above chart datum (Figures 3, 27). See Appendix 5 for location data. The protocol followed that outlined in Section 2.5.1.2, except that the survey was confined to an area within a radius of around 7 m of the shot. No infaunal samples were taken.

2.5.9 Old Dornie Harbour (oysters)

To validate a historical record of native oysters, the shores of Old Dornie Harbour were searched on 10th August 2010. Full details of the methodology and area surveyed are given in Table 10.2 (Appendix 10).

2.5.10 Ullapool River, Loch Broom (blue mussel bed)

2.5.10.1 Bed mapping and density assessment

On the 10th August 2010 a preliminary search of the west bank of the Ullapool River, extending approximately 300 m north-west of the mouth, established that mussels were confined to a band within 100 m of the river channel. Due to the high degree of patchiness and the lack of a distinct mussel bed margin, the distribution of mussels was mapped by taking waypoints at the limits of their distribution. Mussel density was determined within this area at 15 haphazardly located stations (Figure 28, Appendix 11: Table 11.2), where the percentage cover and number of mussels were estimated within an area of 1 m^2. The nature of the substratum was noted, and the percentage coverage by total fucoid algae, as well as the dominant species, *Fucus vesiculosus* and *F. serratus*.

2.5.10.2 MNCR phase 2 survey

An MNCR phase 2 survey was carried out within an area of approximately 10 x 10 m on the lower shore midway along the mussel band (Figure 28). See Appendix 5 for location data. The substrate type and presence of conspicuous biota was noted, together with SACFOR estimates of abundance where possible, collecting material which needed to be identified in the laboratory. Photographs were taken to characterise the habitat. The substrate was unsuitable for coring and so no infaunal samples were taken.

2.5.11 Badachro, Loch Gairloch (sea loch egg wrack bed)

2.5.11.1 Bed mapping and cover assessment

Following preliminary work to locate the areas of *Ascophyllum nodosum* ecad *mackaii* in Badachro Bay, the beds were mapped on 21st July 2010 by taking dGPS positions at frequent intervals around the margin. The bed edges were distinct, with the resultant polygons enclosing areas with at least 50% coverage by sea loch egg wrack. Following plotting of the polygons within ArcGIS 9.1, the positions of sites at c.50 m intervals around the bay in the centre of the egg wrack band were determined (Figure 28, Appendix 12: Table 12.2). These sites were visited on 6th August 2010 for condition assessment. Within an area of 4 x 4 m the following parameters were determined: visual assessment of percentage coverage by sea loch egg wrack, mean thickness of the bed and substrate type, with photographs taken to characterise the site. Final site positions were fixed but the coordinates were lost from the GPS receiver memory; however, these should agree with the known target positions within c.5 m.

2.5.11.2 MNCR phase 2 survey

A 13 x 4 m band perpendicular to the shoreline was surveyed by one surveyor within an area of dense sea loch egg wrack (95% cover) at site WW01 in bed B1 (Figures 3, 29). The upper and lower ends of the transect were dGPS fixed. The substrate type and presence of conspicuous biota was noted, together with SACFOR estimates of abundance where possible, collecting material which needed to be identified in the laboratory. Four replicate measurements of bed thickness were taken with a ruler, and photographs taken to

characterise the habitat. The substrate was unsuitable for coring and so no infaunal samples were taken.

2.5.12 Loch Thùrnaig (sea loch egg wrack bed)

2.5.12.1 Bed mapping and cover assessment

On 10th August 2010 the shore of Loch Thùrnaig was searched for the presence of *Ascophyllum nodosum* ecad *mackaii* by two surveyors from the jetty on the eastern side to Ob na Bà Ruaidhe on the western side over the low tide period. Sea loch egg wrack patches were photographed and their midpoints dGPS fixed and visual estimations of patch size and coverage made, together with mean bed thickness measurements and descriptions of substrate type. The periphery of one of the two largest patches (T1, Figure 30) was determined by taking dGPS fixes at frequent intervals. The periphery of the largest patch (T2) was fixed on 20th August 2010 and the following parameters determined within 4 x 4 m stations spread over the bed: visual assessment of percentage coverage by egg wrack, mean thickness of the bed and substrate type, with photographs taken to characterise the site.

2.5.12.2 MNCR phase 2 survey

Surveys were carried out on 10th (site WW02, bed T1) and 20th August 2010 (site WW03, bed T2) using the protocol described in Section 2.5.11.2, except that the position of the upper transect end at site WW03 was not taken, but has subsequently been estimated. The transect positions are shown in Figures 3 and 30 and the positional data provided in Appendix 5. Eight pooled cores of diameter 10.3 cm and length of c.20 cm were taken for infaunal analysis within the transect band at site WW03.

3 RESULTS

3.1 Biotope distribution

Details of the biotopes recorded during the drop-down video survey, together with descriptions of the substrates and biota are provided in Table 2.2 (Appendix 2), whilst the biotopes recorded at the infaunal survey sites are given in Table 4.7 (Appendix 4). Appendix 13 provides inventories of MPA search feature and non-search feature biotopes, listing their sites of occurrence.

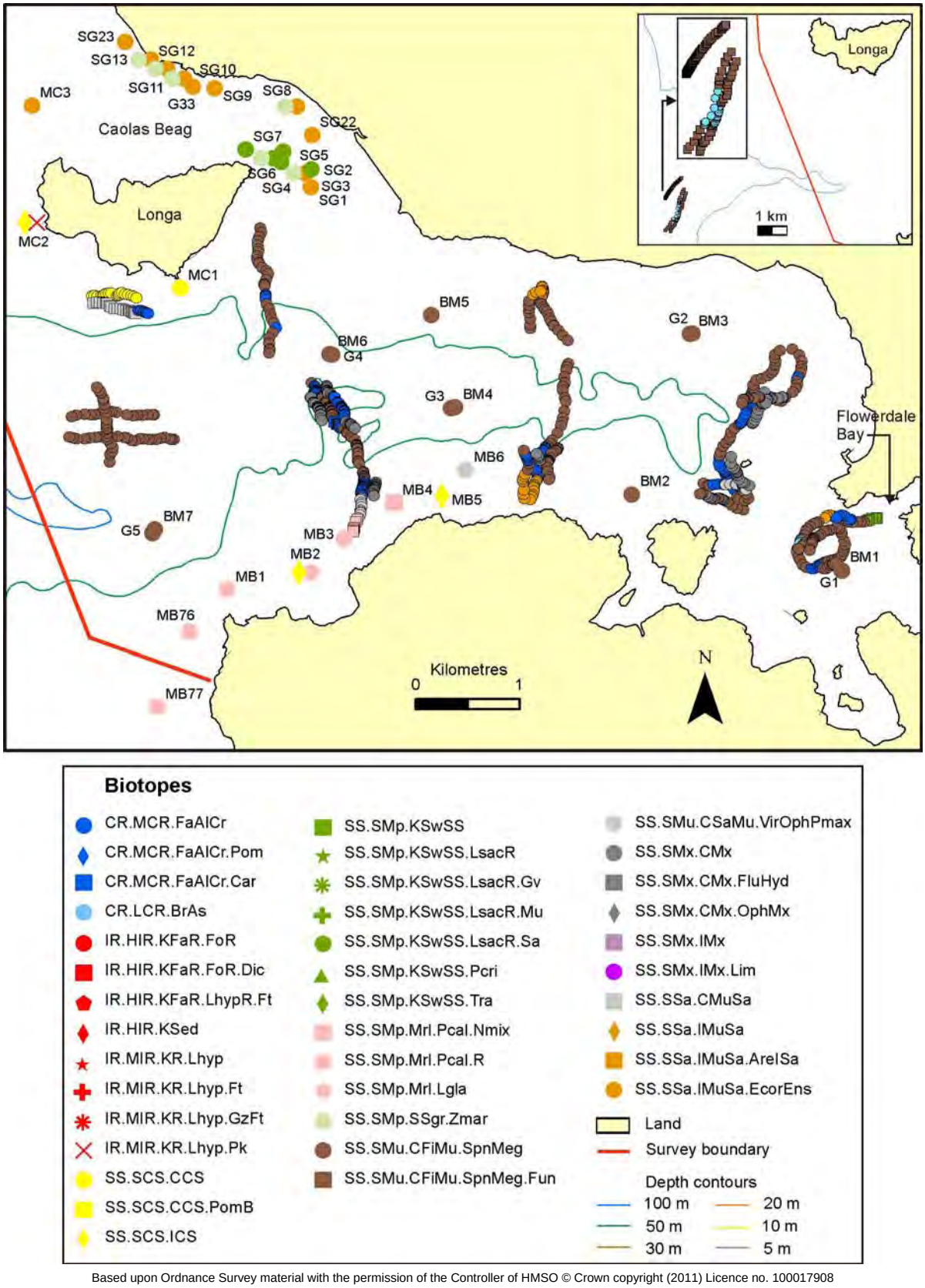
3.1.1 Loch Gairloch (Figure 4)

Loch Gairloch is mostly floored by muddy sediments. In the central deep channel at depths of over 50 m the heavily worked mud was extensively burrowed by *Nephrops*. Smaller burrows were also dense in places, some of which were possibly juvenile *Nephrops*, and megafaunal mounds were prominent features in the deeper (>70 m) entrance to the loch. *Pennatula phosphorea* was widely distributed and dense in places, but *Virgularia mirabilis* was surprisingly absent (**SS.SMu.CFiMu.SpnMeg**). Off the mouth of the loch beyond the 100 m contour, the heavily burrowed mud displayed frequent adult and juvenile *Nephrops* burrows, as well as clusters of smaller vertical burrows, possibly of *Calocaris macandreae*. *Funiculina quadrangularis* was common in this area and supported the ophiuroid, *Asteronyx loveni* (**SS.SMu.CFiMu.SpnMeg.Fun**). In places the sediment displayed linear scars, characteristic of trawling activity. In one area a field of boulders and cobbles supported a faunal turf apparently composed of small ascidians and hydroids (**CR.LCR.BrAs**). Within this region one small area of scattered cobbles on mud supported abundant *Leptometra celtica*.

In the more sheltered eastern part of the loch there is a progression from mud in the centre of the loch through sandy mud and muddy sand to a shallow fringe of slightly silty sand with *Ensis* shells (**SS.SSa.IMuSa.EcorEns**) adjacent to the northern and southern shorelines. Moving from the central mud plain to the shallower margins of the loch, with increasing sand content the larger burrows were lost but muddy sand, which extended to a depth of around 30 m, still supported smaller burrows, some of which were utilised by *Munida rugosa* and possibly juvenile *Nephrops*, and often dense *Pennatula phosphorea* and small (c. 5 cm diameter) mounds. This habitat has been tentatively ascribed to **SS.SMu.CFiMu.SpnMeg**. An area of soft mud at 30 - 40 m with megafaunal mounds and burrows, including *Nephrops*, was recorded in the sheltered south-eastern arm of the loch (**SS.SMu.CFiMu.SpnMeg**), giving way to a patchy algal mat or turf on muddy sediment in the shallow, sheltered waters of Flowerdale Bay at the head of the loch (**SS.SMp.KSwSS**). Localised shallowing of the sea bed, such as on the partial sill south-east of Longa Island, around Glas Eilean, and at the head of the loch results in the presence of a more heterogeneous muddy sediment, with a high gravel and pebble content (**SS.SMx.CMx**), and generally cobbles and boulders, with a fairly sparse encrusting fauna of barnacles and serpulid worms, accompanied by pink coralline algae in shallower waters (**CR.MCR.FaAlCr**) and *Caryophyllia smithii* on the partial sill (**CR.MCR.FaAlCr.Car**).

Increased wave exposure at the mouth of the loch results in coarser coastal sediments. Off Longa Island at a depth of 13 - 14 m boulders supporting a park of *Laminaria hyperborea* (**IR.MIR.KR.Lhyp.Pk**), were interspersed with coarse sand patches, formed into waves in places (**SS.SCS.ICS**), whilst at 20 m the coarse sand was accompanied by scattered pebbles, cobbles and shells (**SS.SCS.CCS**), becoming a thin veneer of coarse sediment over silty sand at around 30 m (**SS.SCS.CCS**). Little fauna was observed in this sand apart from sparse *Lanice conchilega* and an encrusting community on the stones. Beyond a depth of around 30 m the sediment soon changed to one of predominantly silty sand supporting numerous small burrows (**SS.SSa.CMuSa**).

Figure 4 *Distribution of biotope records in Loch Gairloch from the Heriot-Watt video survey (with site codes) and Marine Scotland Science (MSS) still photo survey (smaller, unlabelled symbols) in 2010. Inset shows MSS survey runs located west of the mouth of Loch Gairloch*



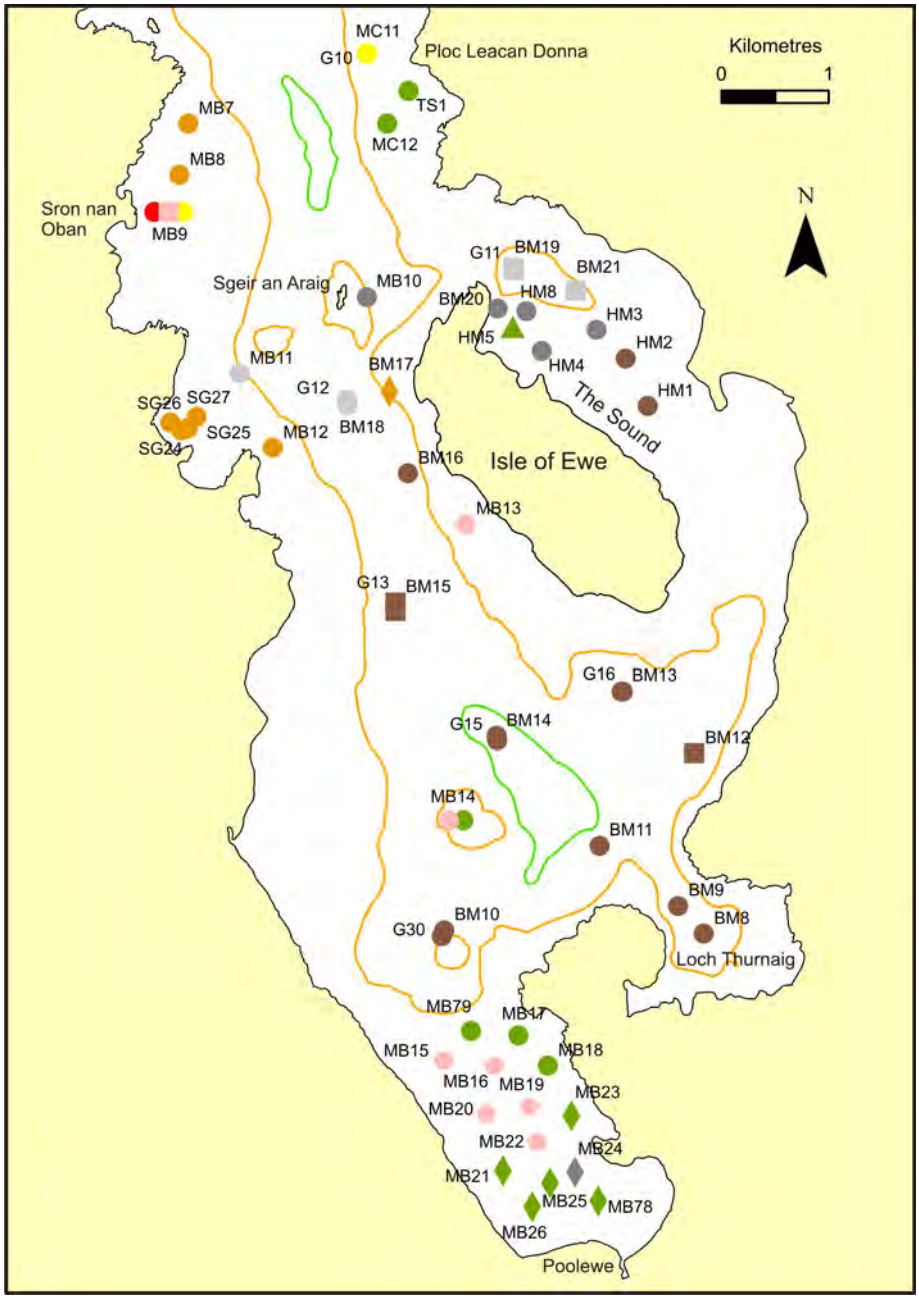
At the southern entrance to the loch a coastal band of medium-coarse sand with scattered gravel and shells was recorded between 12.6 and 17 m depth. Over most of this area the sediment supported a maerl bed with generally around 25% coverage of live *Phymatolithon calcareum*. From 12.6 - 14.8 m depth the maerl was accompanied by a patchy algal turf and fairly dense *Saccharina latissima* (**SS.SMp.Mrl.Pcal.R**), both of which became sparse at 15 - 17 m (**SS.SMp.Mrl.Pcal.Nmix**). Some areas with sparse erect algae and no live maerl have been ascribed to **SS.SCS.ICS**.

The shallow channel separating Longa Island from the mainland (Caolas Beag) was floored by fine-medium sand, which supported *Arenicola marina* (dense in places), *Lanice conchilega* and *Echinocardium cordatum* (**SS.SSa.IMuSa.EcorEns**). This biotope was recorded from 16 m in the most exposed western channel entrance to 1.6 m in the shelter of Longa Island. Patchy beds of *Zostera marina* were found along the northern side of the channel from around 3.0 - 4.4 m, with some extensive areas of abundant seagrass (**SS.SMp.SSgr.Zmar**). Off the north-eastern tip of Longa Island a shallow tongue of sand also supported patches of *Z. marina* at depths of 3.5 - 4.0 m, but mostly the sediment in this area was scattered with shells and was covered with a patchy algal turf, dense in places, comprising large filamentous red tufts, *Desmarestia aculeata* and *Saccharina latissima*, with *Chorda filum* locally abundant (**SS.SMp.KSwSS.LsacR.Sa**).

3.1.2 Loch Ewe (Figure 5)

Much of the inner basin of the loch south of the sill at Sgeir an Araig, including Loch Thùrnaig, was floored by mud below the 20 m contour, which was of soft consistency south of the Isle of Ewe. Sample sites between depths of 25 and 66 m in this area were generally found to be densely burrowed, particularly by *Nephrops* (**SS.SMu.CFiMu.SpnMeg**). Sea pens were generally sparse, although *Funiculina* was recorded at two of the sites (**SS.SMu.CFiMu.SpnMeg.Fun**), and to the west of the Isle of Ewe in firmer mud *Pennatula* was common. **SS.SMu.CFiMu.SpnMeg** was also present at much shallower depths (15 - 18 m) in the shelter of The Sound to the east of the Isle of Ewe, where the mud was burrowed by *Nephrops* and supported a sparse population of *Virgularia*. The northern part of the inner basin, close to the sill exhibited coarser sediments of muddy sand and sandy mud with scattered surface shells, where the sediment supported both *Pennatula* and *Virgularia*, but not megafaunal burrowers (**SS.SMu.CSaMu.VirOphPmax**). In the northern region of The Sound muddy sand was recorded in the deeper water (over 19 m), where it supported sparse individuals of *Amalosoma eddystonense* (**SS.SSa.CMuSa**). Shallower than this a muddy sediment with much sand, shell and surface shells and stones supporting *Nemertesia* spp., displayed a patchy algal cover, possibly largely drift material (**SS.SMx.CMx**), although with increasing shelter this developed into an alga mat apparently consisting predominantly of *Phyllophora crispa* (**SS.SMp.KSwSS.Pcri**). In the outer part of the loch north of Firemore Bay a band of rippled fine-medium sand extended from the shore to a depth of 14 m. This was scattered with surface shells, especially *Ensis* spp. and was populated with dense *Arenicola* in the shallower waters of Firemore Bay (**SS.SSa.IMuSa.EcorEns**). Areas of sand waves (**SS.SCS.CCS**) were also found in this region of the loch composed of coarse sand and maerl gravel on the western side off Sron nan Oban at a depth of 14 m and medium-coarse sand off Ploc Leacan Donna at a depth of 17 m on the eastern side. At both locations the sediment supported fairly sparse *Lanice*, accompanied off Sron nan Oban by concentrations of *Phymatolithon calcareum* in the wave troughs (**SS.SMp.Mrl.Pcal.Nmix**). Maerl, supporting a red algal turf, was also recorded in the south of the loch, off the south-west coast of the Isle of Ewe and off Resolution Rock (**SS.SMp.Mrl.Pcal.R**) and over an extensive area in the Poolewe embayment (**SS.SMp.Mrl.Lgla**), where it was the subject of detailed survey (see Section 3.3.1.3). At the head of the loch at depths of less than 4.5 m the muddy sediment was covered by a thick red algal mat dominated by *Rhodothamniella floridula* (**SS.SMp.KSwSS.LsacR.Tra**). In one area the mat was coated by a dense bed of *Ophiothrix fragilis* (**SS.SMx.CMx.OphMx**).

Figure 5 Distribution of 2010 biotope records in Loch Ewe. See Figure 4 for legend

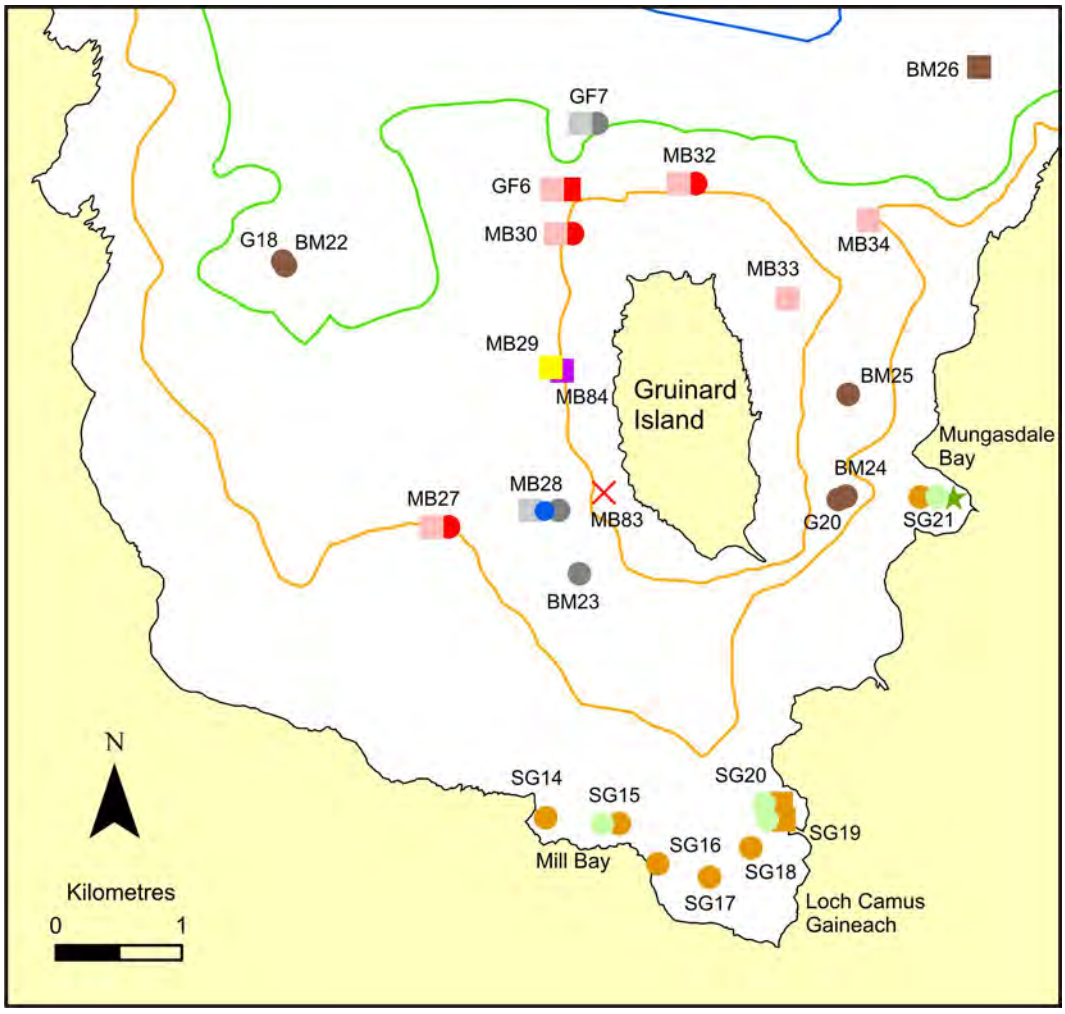


3.1.3 Gruinard Bay (Figure 6)

Limited penetration of mud habitats into Gruinard Bay was observed, with megafaunally-burrowed mud recorded at two sites near the mouth of the bay at depths of 66 - 96 m. Frequent *Nephrops* burrows were present at the shallow site (**SS.SMu.CFiMu.SpnMeg**) and occasional *Funiculina* at the deeper, softer mud site (**SS.SMu.CFiMu.SpnMeg.Fun**). As the depth shallowed to 54 m north of Gruinard Island the sediment coarsened to muddy sand supporting dense *Lanice* (**SS.SSa.CMuSa**), accompanied in places by pebbles, cobbles and boulders encrusted with serpulid worms (**SS.SMx.CMx**). A pocket of **SS.SMu.CFiMu.SpnMeg** was also recorded in shallower waters (31-40 m) in the sheltered sound east of Gruinard Island, where the mud and muddy sand sediments were burrowed by *Nephrops,* and *Virgularia* was locally common. Maerl was widespread around the north of Gruinard Island, being recorded from 12 - 28 m (**SS.SMp.Mrl.Pcal.Nmix**). To the north-east

of the island the maerl was in the form of long waves with live *Phymatolithon calcareum* denser in the troughs and locally abundant. To the north and north-west live *P. calcareum* occurred in patches between boulders and cobbles, which supported a patchy algal turf of predominantly filamentous reds (**IR.HIR.KFaR.FoR**), but was dominated by *Dictyota dichotoma* at one site (**IR.HIR.KFaR.FoR.Dic**). **SS.SMp.Mrl.Pcal.Nmix** was also present to the south-west of the island at 20m in the form of waves with boulder and cobble patches supporting a dense filamentous red algal turf (**IR.HIR.KFaR.FoR**). Off the western coastline of Gruinard Island substrates were mostly stones (pebbles, cobbles and boulders) encrusted with serpulid worms and pink coralline algae and lying on sediment, which varied from coarse sand in the north (**SS.SCS.CCS.PomB**) to muddy sand, in places highly heterogeneous, in the south (**SS.SSa.CMuSa, SS.SMx.CMx**). An inshore fringe of rippled fine-medium sand with scattered *Ensis* and other shells extended from the shore to at least 6 m along the southern coastline of the bay and in Mungasdale Bay (**SS.SSa.IMuSa.EcorEns**). *Arenicola* was generally present in the sand, but on the sheltered eastern side of Loch Camus Gaineach, *Arenicola* mounds became abundant and the fine sand surface was covered by a brown diatomaceous film (**SS.SSa.IMuSa.ArelSa**). Beds of *Zostera marina* were recorded in Mungasdale Bay, Mill Bay and Loch Camus Gaineach (**SS.SMp.SSgr.Zmar**), but these formed the subject of a detailed examination described in Section 3.3.3.1.

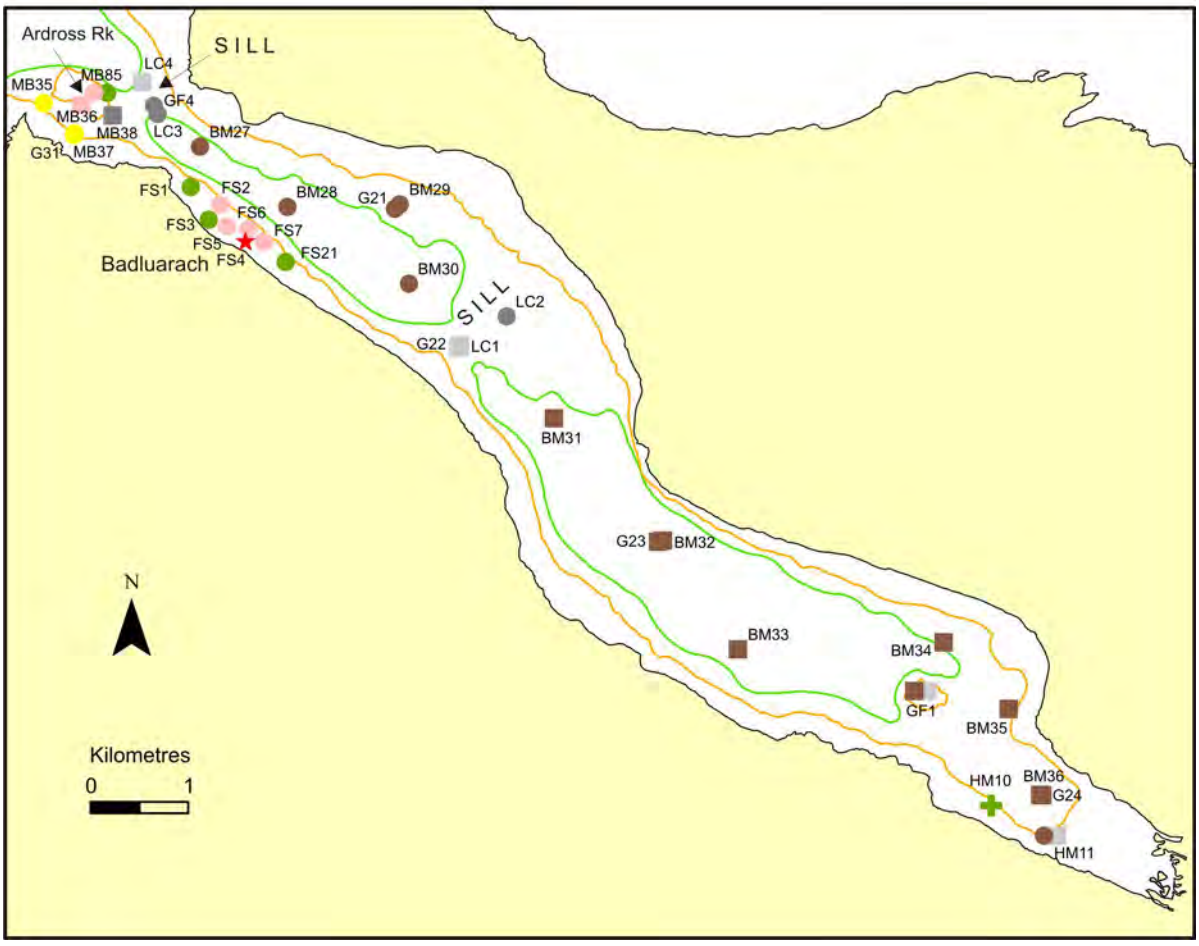
Figure 6 Distribution of 2010 biotope records in Gruinard Bay. See Figure 4 for legend



3.1.4 Little Loch Broom (Figure 7)

Most of the sea bed in the loch is floored with soft mud and this was found to support extensive coverage by burrowed mud habitats, although there was a sharp distinction between the outer and inner basins regarding the dominant biotope. In the outer basin at depths of 41-72 m the mud was heavily burrowed by *Nephrops*, many animals being observed on the video footage. Megafaunal mounds were also present along with the burrowing goby, *Lesueurigobius friesi*, but sea pens were very sparse, with *Pennatula* only present in low numbers at a single site (**SS.SMu.CFiMu.SpnMeg**). In the more extensive inner basin at depths of 24-97 m *Nephrops* and their burrows were also common and *Funiculina* was widespread and very dense in places. Large holothurians, *Mesothuria intestinalis*, were frequent at one site and *Lesueurigobius friesi* was also present (**SS.SMu.CFiMu.SpnMeg.Fun**).

Figure 7 Distribution of 2010 biotope records in Little Loch Broom. See Figure 4 for legend



The sills at the loch mouth and separating the basins were floored by muddy sands with scattered boulders (**SS.SSa.CMuSa**), and more heterogeneous muddy sediments with a surface cover of pebbles, cobbles and boulders (**SS.SMx.CMx**). The stones were encrusted with serpulid worms and supported hydroid tufts and *Bolocera tuediae* and a dense field of *Leptometra celtica* from around 40-45 m on the outer sill and 36-39 m on the inner sill. Coarse sand and shell gravel with an infauna of *Lanice* and *Cerianthus lloydii* was present at the mouth of the loch in the channel south-west of Ardross Rock, becoming a slightly silty shelly medium sand with fairly dense *Cerianthus* south of the rock (**SS.SCS.CCS**). Live

Phymatolithon calcareum was found on both the northern and southern sides of Ardross Rock. To the north maerl was patchy but common overall on a substrate of coarse sand at a depth of 13-14 m, accompanied by long-fronded *Saccharina latissima* and a patchy red algal turf (**SS.SMp.Mrl.Pcal.R**). The maerl bed to the south of the rock contained sparser live maerl on a thin layer of dead maerl on sand. This deeper maerl (21 m) supported sparse *Lanice*, *Cerianthus*, *Virgularia* and algal tufts (**SS.SMp.Mrl.Pcal.Nmix**). A more extensive and richer maerl bed off Badluarach jetty was composed of locally abundant living *P. calcareum* netted together into clumps several centimetres high by filamentous red algae, which also formed a dense turf (**SS.SMp.Mrl.Pcal.R**). This bed formed the subject of a detailed diving survey described in Section 3.3.1.1. To either side of this bed the algal turf continued, together with *Saccharina latissima* on a substrate of medium sand (**SS.SMp.KSwSS.LsacR.Sa**), whilst inshore of the bed was a dense *Laminaria hyperborea* forest on boulders (**IR.MIR.KR.Lhyp**). A kelp and seaweed community on sediment was also recorded in sheltered conditions at the head of the loch, where silted *Saccharina latissima* and a patchy red algal turf lay on a bed of muddy sand with scattered boulders and pebbles (**SS.SMp.KSwSS.LsacR.Mu**).

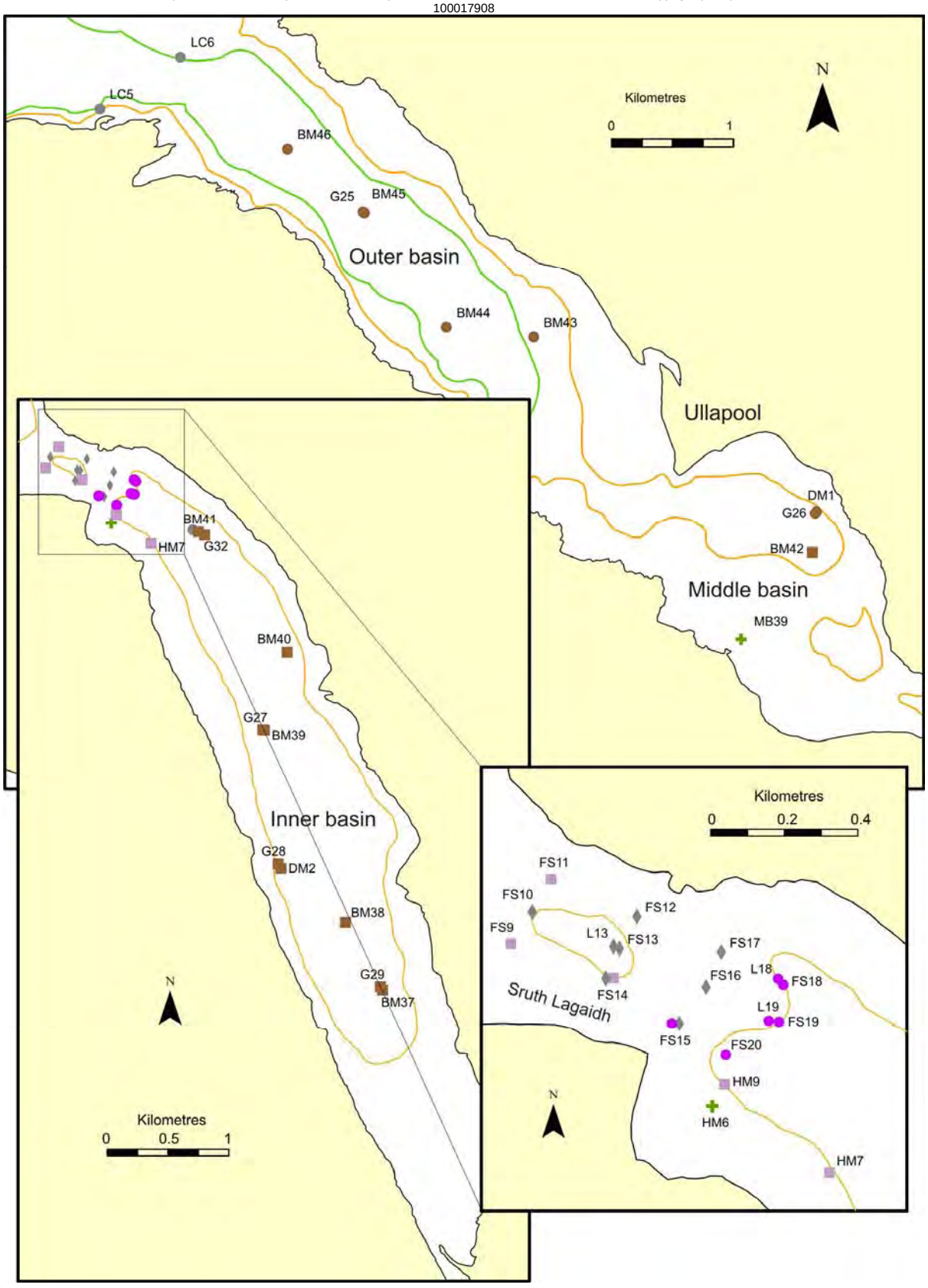
3.1.5 Loch Broom (Figure 8)

In the outer basin the sea bed consisted largely of soft mud, at least at depths of over 40 m. Visibility was poor here at the time of the 2010 survey but from 42 - 79 m the mud was clearly burrowed by megafauna, including *Nephrops* and *Goneplax rhomboides*, and supported sparse *Pennatula* and *Virgularia* (**SS.SMu.CFiMu.SpnMeg**). Either side of the mouth of the loch more mixed muddy sediments with a surface scatter of stones and shells were encountered (**SS.SMx.CMx**) at depths of 27 - 60 m, with the stones supporting abundant *Leptometra celtica* at around 52-60 m at site LC6. In the more sheltered middle basin soft mud burrowed by *Nephrops* and *Lesueurigobius friesi* was recorded at 18-21 m, with numerous *Pennatula* and the appearance of *Funiculina* at one site. Frequent *Virgularia* was also recorded on shallow muddy sand at 9 m off the southern shoreline of the middle basin, accompanied by a patchy red algal turf and *Saccharina latissima* (**SS.SMp.KSwSS.LsacR.Mu**). On the sill at the Sruth Lagaidh narrows the substrate was largely a silty shelly sand with a cover of varying proportions of pebbles, cobbles and scattered boulders, the stones encrusted with serpulid worms and pink coralline algae and in places supporting hydroid tufts (**SS.SMx.IMx**). However, over much of the area the substrate was covered in a dense blanket of *Ophiothrix fragilis* (**SS.SMx.CMx.OphMx**). On the eastern side of the narrows the surface stones were bound together by the byssal threads of *Limaria hians*, the nest material covering most of the sea bed. The stabilised stones supported a rich hydroid fauna and a dense red algal turf in shallower water (**SS.SMx.IMx.Lim**). This area was subject to a detailed survey and is described in more detail in Section 3.3.2.1.

In the inner basin soft, megafaunally burrowed mud was recorded extensively, from 23 m (at the head of the loch) to 42 m. In contrast to the outer basin, all mud sites displayed *Funiculina*, generally in fairly high abundance, and *Pennatula*, which was common locally (**SS.SMu.CFiMu.SpnMeg.Fun**). The sediment became more mixed close to the Sruth Lagaidh narrows where a cover of stones on muddy sand, supporting serpulid worms, hydroids and possibly *Neocrania anomala*, was recorded at 37 m (**SS.SMx.CMx**).

SS.SMp.KSwSS.LsacR.Mu was found at one site in the upper basin, in the sheltered embayment just south of the narrows. The substrate of muddy sand with scattered boulders supported a patchy filamentous red algal turf and occasional *Saccharina latissima*, which provided a surface for the attachment of squid eggs.

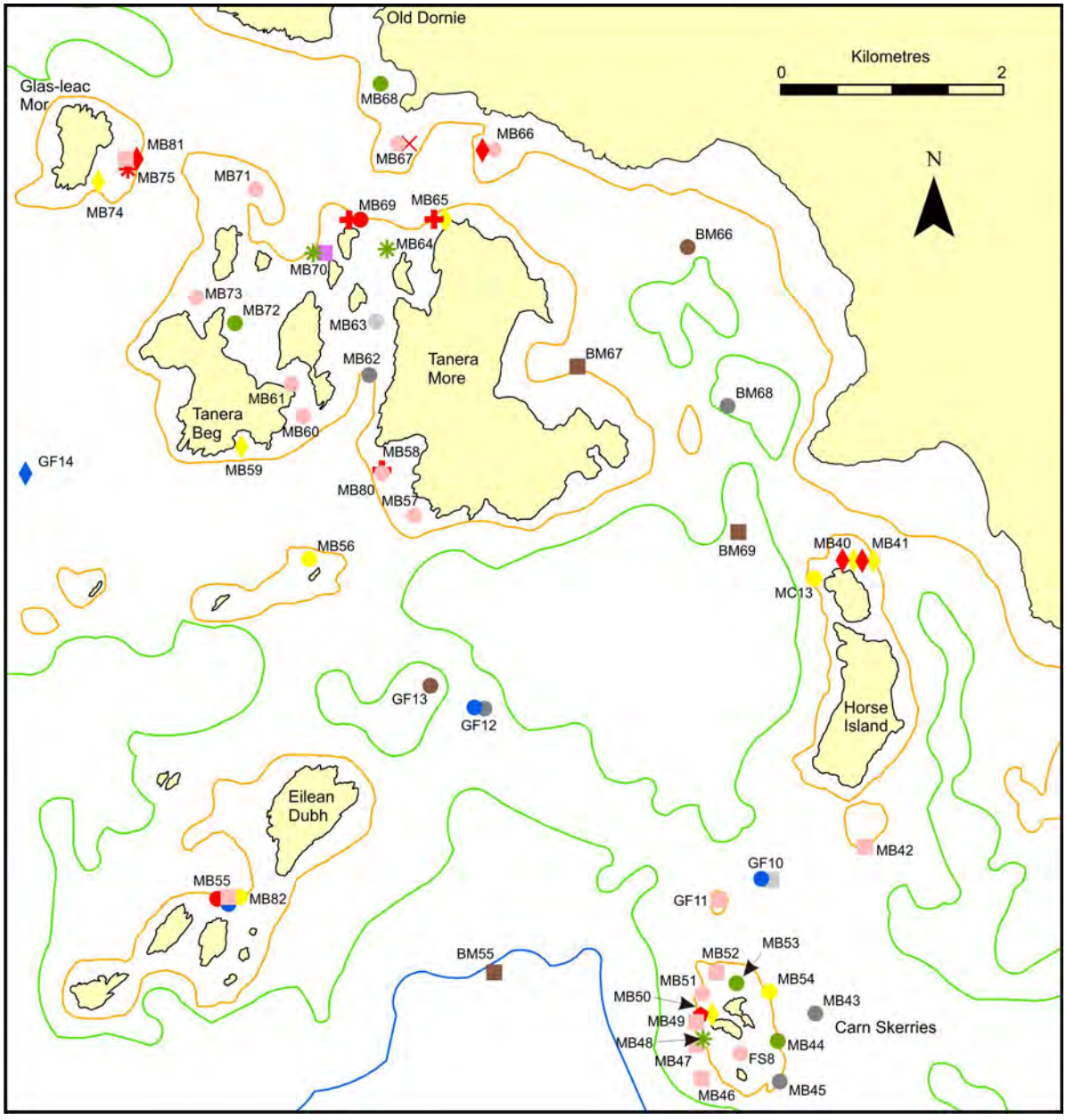
Figure 8 Distribution of 2010 biotope records in Loch Broom. See Figure 4 for legend



3.1.6 Summer Isles (Figure 9)

Soft mud occupied the deeper areas below 50 m, exhibiting megafaunal burrows, including *Nephrops*, and generally sparse sea pens, including *Pennatula* (**SS.SMu.CFiMu.SpnMeg**) and, at three sites, *Funiculina* (**SS.SMu.CFiMu.SpnMeg.Fun**). This burrowed mud extended into shallower waters (39 m) in the lee of Tanera More, but generally from 50 to 30 m the sediments became more heterogeneous muddy sands supporting *Lanice*, with varying densities of surface pebbles, cobbles, shells and occasional boulders encrusted with serpulid worms and *Parasmittina trispinosa* (**SS.SMx.CMx**).

Figure 9 Distribution of 2010 biotope records around the Summer Isles. See Figure 4 for legend



At some locations the stone cover was sufficient to recognise a faunal crust biotope (**CR.MCR.FaAlCr**), particularly to the south-west of Tanera Beg (site GF14) where the sea bed consisted largely of bedrock or boulders encrusted with dense *Pomatoceros* and pink

coralline algae at 31-36 m (**CR.MCR.FaAlCr.Pom**). Shallow reef biotopes were also recorded along the coastal fringes, particularly sand-scoured bedrock and boulders supporting a rich red algal turf, apparently dominated by *Bonnemaisonia asparagoides*, and varying quantities of kelp, particularly *Saccharina latissima* (**IR.HIR.KSed**). Where the potential for scour was less clear and *S. latissima* was very sparse these areas of dense algal turfs have been ascribed to **IR.HIR.KFaR.FoR**. *Laminaria hyperborea* forests (**IR.MIR.KR.Lhyp.Ft**, **IR.MIR.KR.Lhyp.GzFt**) on bedrock and boulders were recorded at several sites around the islands, with the forest off the west of the Carn Skerries exhibiting a profuse red algal understorey (**IR.HIR.KFaR.LhypR.Ft**).

Phymatolithon calcareum maerl beds were widespread in this area. Around Tanera More and Tanera Beg they were recorded at eight sites from 1.7 - 15.4 m, where they supported, often dense, turfs of red and brown algae, including *Saccharina latissima* (**SS.SMp.Mrl.Pcal.R**). Most beds exhibited patchy living maerl, becoming common or abundant locally. The algal cover was particularly extensive in the channel east of Tanera Beg, where in places the maerl formed an understorey to complete coverage by *Saccharina latissima*. The maerl bed south-west of Tanera More appeared to be particularly extensive and was the subject of more detailed study (Section 3.3.1.2). At several locations between the islands the coarse sediment containing varying proportions of sand, shell gravel, shells and cobbles supported no live maerl but a predominantly red algal turf (**SS.SMp.KSwSS.LsacR.Gv** and **LsacR.Sa**).

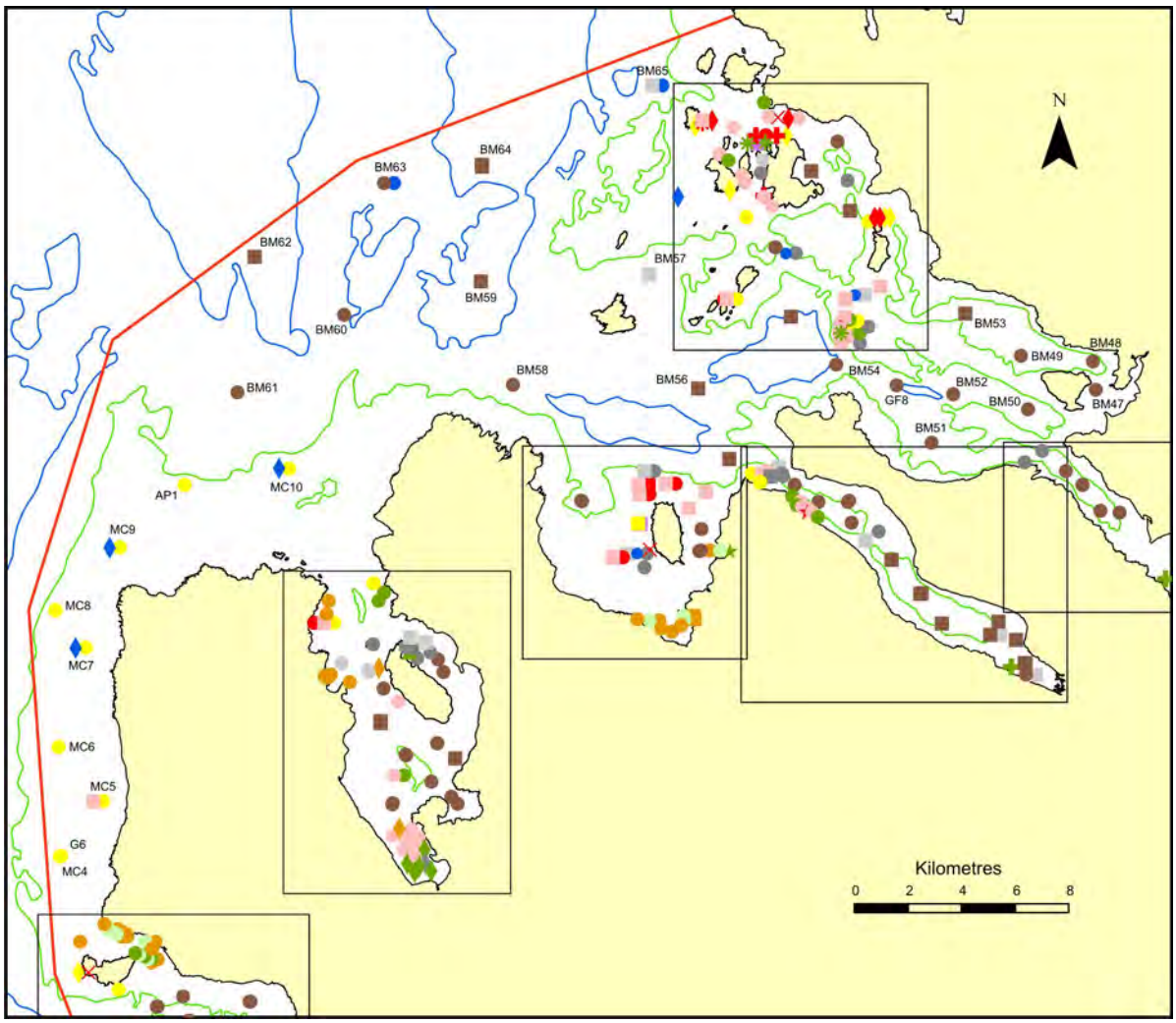
Live maerl was also found to be extensively distributed, though somewhat less abundant, off the west of the Carn Skerries and between the islands, where it supported a predominantly red algal turf and *Saccharina latissima* at 12.3-15.6 m (**SS.SMp.Mrl.Pcal.R**). With increasing depth the algal turf diminished but patchy maerl continued down to at least 26.5 m on silty sand, where it supported dense *Cerianthus lloydii* (**SS.SMp.Mrl.Pcal.Nmix**). The biotope was also recorded on sand shoals north of the Carn Skerries, where *C. lloydii* became extremely dense, as well as off Eilean Dudh and Glas-leac Mor.

Coarse sand sediments with scattered shells and sometimes with maerl gravel, pebbles and cobbles, though with very little or no live maerl, were recorded at five sites throughout the Summer Isles area at depths of 11-24 m, but the habitat is probably more widespread. The faunal component generally included *Cerianthus lloydii* and *Lanice conchilega*. These records have been ascribed to **SS.SCS.CCS**.

3.1.7 Outer region (Figure 10)

Apart from a broad coastal band from Loch Gairloch to Loch Ewe and the area around the Summer Isles, most of the sea bed in this region consists of mud in deep water (>50 m), with several pockets exceeding 100 m. Observations in 2010 extended to a depth of 134 m. The mud was burrowed by megafauna including *Nephrops*, frequent in places, and possibly *Munida* in areas of stiffer mud, and was often worked into dense but fairly small mounds of around 5-10 cm in diameter (**SS.SMu.CFiMu.SpnMeg**). Sea pens were generally sparse, although *Funiculina* was widely distributed (**SS.SMu.CFiMu.SpnMeg.Fun**). *Leptometra celtica* was recorded at three sites between Priest Island and Isle Martin. Soft mud extended into shallow water (27 m) to the east of Isle Martin, where it supported populations of *Virgularia* and *Pennatula* and the burrowing crab, *Goneplax rhomboides*. The only exceptions recorded to this pattern of mud below the 50 m contour were at two sites close to the shallow tongue projecting westwards from the Summer Isles. Here, at depths of 64-78 m, heavily mounded muddy sand supporting *Lanice* and *Munida* was recorded (**SS.SSa.CMuSa**). In some areas boulders and cobbles were scattered over the muddy substrate, encrusted with *Parasmittina trispinosa* and *Pomatoceros*, and supported hydroid clumps and the erect bryozoan, *Omalosecosa ramulosa* (**CR.MCR.FaAlCr**).

Figure 10 Distribution of 2010 biotope records in the outer region of the area of search (delimited by red line). Boxes enclose areas not included in this zone and described separately in the text. See Figure 4 for legend



Markedly coarser substrates of coarse or medium-coarse sand, often formed into waves, were recorded within a coastal band, extending to a depth of at least 46 m in one area, from Loch Gairloch to Loch Ewe. The sediment supported an apparently sparse biota including *Lanice*, *Chaetopterus* and *Cerianthus* (**SS.SCS.CCS**). Scattered rhodoliths of *Phymatolithon calcareum* were present at several sites, but at the shallowest site (17 m) live maerl became common in the wave troughs (**SS.SMp.Mrl.Pcal.Nmix**). A surface scatter of stones and shells was observed at most sites, but dense surface cobbles and boulders were present on the sand at several of the more northerly sites, where they were encrusted with dense *Pomatoceros*, *Parasmittina trispinosa* and pink coralline algae (**CR.MCR.FaAlCr.Pom**).

3.2 PMF/MPA search feature distribution

Details of the PMF/MPA search feature habitats recorded during the drop-down video survey are provided in Table 2.2 (Appendix 2) and those recorded at the infaunal survey sites are given in Table 4.7 (Appendix 4). Table 4.8 (Appendix 4) shows the results of the *Arctica islandica* survey. Appendix 13 provides an inventory of the PMFs observed and lists their sites of occurrence.

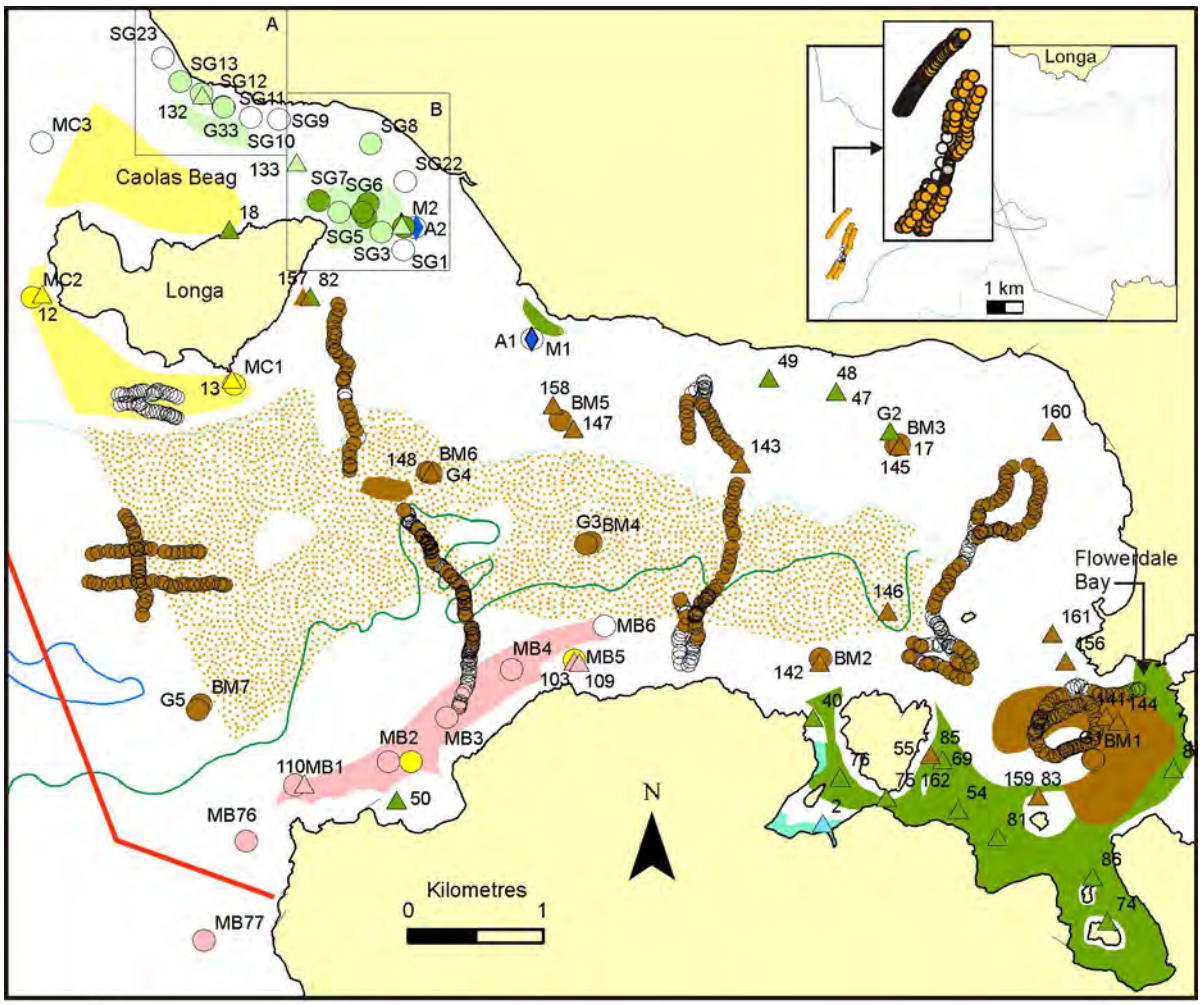
3.2.1 Loch Gairloch (Figure 11)

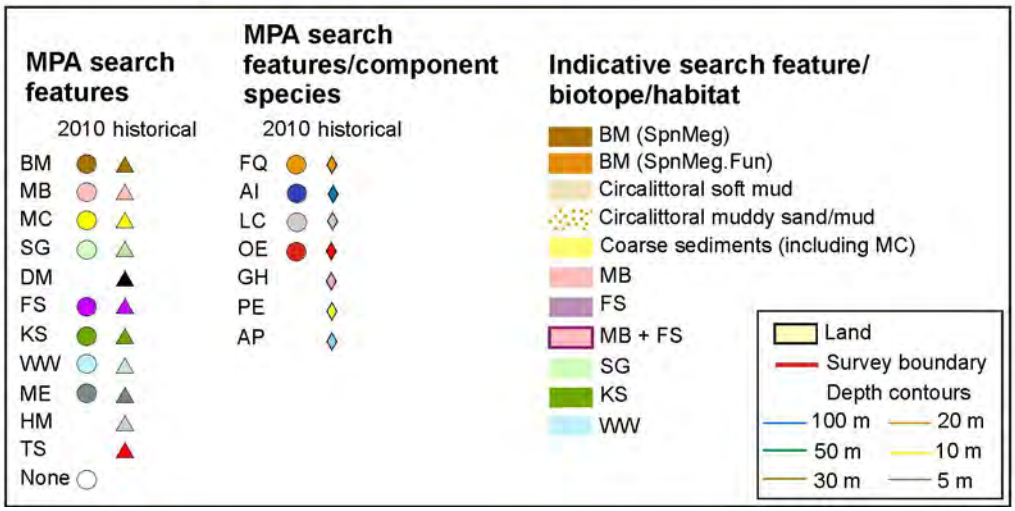
It would appear that much of the sea bed in Loch Gairloch supports MPA search features. The most extensive of these is burrowed mud, which probably floors most of the loch below 30 m. Although indicative biotope mapping only identified two small patches of burrowed mud habitat, the sea bed below the 50 m contour was broadly classed as circalittoral muds and muddy sands. Most of the historical records between 30 and 50 m have subsequently been transferred to **SS.SMu.CFiMu.SpnMeg** within Marine Recorder, which matches the 2010 interpretation of biotope distribution. However, a reduction in evidence of larger megafaunal burrowers and the relatively high sand content towards the shallower end of this depth range results in a progressively weaker biotope fit. In 2010 the MSS survey revealed *Funiculina quadrangularis* to be common in heavily burrowed mud 4 km to the west of the loch at depths of over 100 m. Previously, the nearest record of the presence of *Funiculina* to Loch Gairloch was a 1999 FRS observation 1.5 km farther west. *Leptometra celtica* was also recorded in 2010 at this site. Although abundant it was only observed for a distance of around 6 m along one of the video runs. This is the first record of *L. celtica* off the Scottish mainland between the Kyle of Lochalsh and Little Loch Broom.

SS.SCS.CCS.Nmix can be difficult to identify with certainty. It is found in areas of shell gravel and coarse sand and its main characterising species, *Neopentadactyla mixta*, exhibits periodical withdrawal into the sediment. The species was not observed throughout the whole survey area in 2010 and so no firm instances of this biotope were recorded. Indicative biotope mapping suggests areas of this PMF are present along the north and south coastlines of Longa Island. The sole record by Howson (1991) on which the northern area was founded has now been ascribed in Marine Recorder to the mixed sediment biotope, **SS.SMx.CMx.CIloMx**, and so no observations were made in 2010 at precisely the same position; however, in 2010 site MC3 was located just to the west in slightly more exposed conditions but similar depth in an area of rippled medium sand (**SS.SSa.IMuSa.EcorEns**). This suggests that the waves of stone gravel reported by Howson (1991) may no longer be present. In 2010 the sites of the two historical records for the MPA search feature **SS.SCS.CCS.Nmix** to the South of Longa were observed by video, both of which exhibited coarse sand sediments, formed into waves at one site. Within this report both sites have been referred to as coarse sand biotopes (**SS.SCS.CCS** and **SS.SCS. ICS**) but the faunal evidence is insufficient to confirm the continued presence of **SS.SCS.CCS.Nmix**. In 2010 two MSS video runs passed through the indicative southern patch, both of which recorded finer sediments than is characteristic of **SS.SCS.CCS.Nmix**, suggesting that, if present, the coastal band of this MPA search feature is far narrower than portrayed on the indicative map.

Previous records of maerl off the outer southern coastline of the loch were validated in 2010, with the finding of a maerl bed extending over a depth range of at least 12.6 - 17.0 m for a distance of at least 3.2 km, the bed continuing south beyond the mouth of the loch, well past the predictive mapping boundary. The 2010 observations suggest that much of this bed consists of fairly dense living maerl with a patchy, thin algal turf (**SS.SMp.Mrl.Pcal.R**), although the algal cover becomes very sparse in deeper water (**SS.SMp.Mrl.Pcal.Nmix**). Possible instances of **SS.SCS.CCS.Nmix** were recorded at two locations in areas of medium-coarse sand with shell gravel.

Figure 11 *Distribution of 2010 and previous PMF/MPA search feature records in Loch Gairloch. Also shown is the indicative habitat mapping from Dipper and Johnston (2005). The MSS 2010 photo survey sites are unlabelled. The numbered labels associated with previous records refer to site codes used in Table 16.2 (Appendix 16) (MPA search feature codes as given in Tables 2 and 3). Boxes A and B delimit areas mapped in detail following the localised survey of seagrass beds*





Unfortunately efforts to determine the width of the maerl band were frustrated by a sudden onset of strong wind conditions on the final day of the survey. Based on indications of the offshore margin of the bed (around a depth of 20 m) from a 2010 MSS video run through the area and the dropdown video observations, the maerl band appears to reach a width in the order of 200 m, at least in places. To better characterise and assess the condition of this maerl bed, MNCR phase 2 surveying was carried out at one site (MB3). The results are described in Section 3.3.1.4.

Previous records indicate extensive coverage by **SS.SMp.KSwSS** (especially **SS.SMp.KSwSS.Tra**) in the sheltered innermost region of the loch, as well as **SS.SMp.KSwSS.LsacR.Sa** at scattered locations around the coastline. This search feature and its components did not form a focus of the 2010 survey, although **SS.SMp.KSwSS** was recorded during the MSS survey in Flowerdale Bay, as suggested by the predictive mapping, and **SS.SMp.KSwSS.LsacR.Sa** was found off the north-eastern tip of Longa Island.

Seagrass and sea loch egg wrack beds were recorded in 2010 in Loch Gairloch but were the subject of detailed surveys, described in Sections 3.3.3.2 and 3.3.6.1.

Arctica islandica has been previously recorded at two sites in the loch, to the east of Longa Island. Multiple grab samples were taken at both of these sites (M1, M2) in 2010 but only dead valves were recorded at both sites.

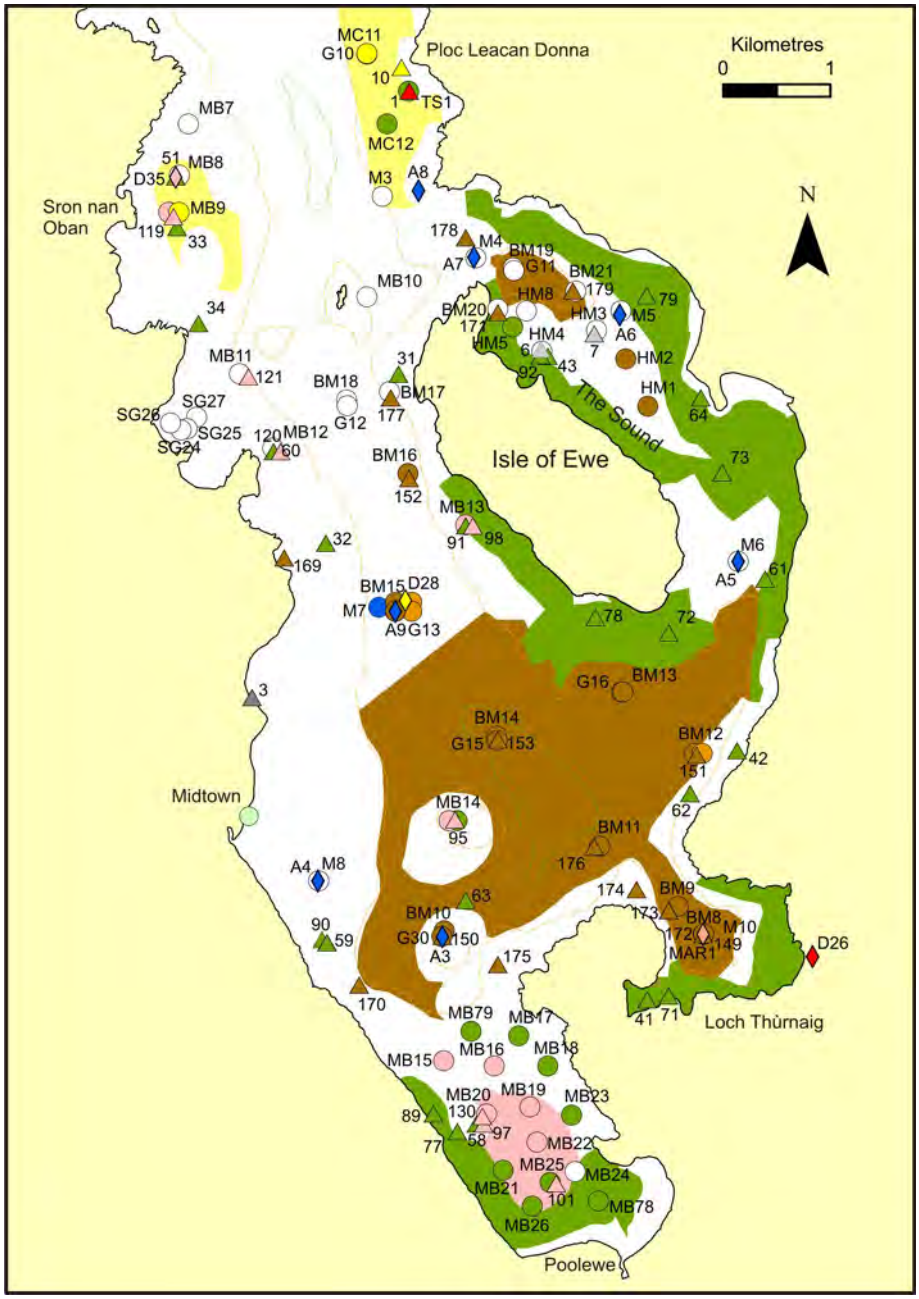
3.2.2 Loch Ewe (Figure 12)

As indicated by previous surveys and indicative mapping, the 2010 survey suggests that the burrowed mud habitat covers an extensive area of the loch below the 20 m contour south of the Isle of Ewe and extending into Loch Thùrnaig (**SS.SMu.CFiMu.SpnMeg**). *Nephrops* burrows were generally common throughout this area, although sea pens were sparse. Low numbers of *Funiculina* were recorded at two sites (**SS.SMu.CFiMu.SpnMeg.Fun**), which are believed to be the first records for this species in the loch. Burrowed mud appears to be more widely distributed than previous records suggest, with the habitat extending northwards along the channel west of the Isle of Ewe and present in shallower waters in the south-eastern region of the Sound. However, previous records of burrowed mud in the north-western area of The Sound (Gubbay, 1990) were not validated in 2010, when the habitat was found to comprise slightly muddy sand with scattered stones and shells (**SS.SSa.CMuSa**). The presence of a *Modiolus* bed in this area, as suggested by two Marine Recorder records of **SS.SBR.SMus.ModHAs**, was not indicated by the current survey. In 2010 the sandy shelly mud at these sites (HM3, HM4) had a surface scatter of stones and shells, including *Modiolus* valves, but the video evidence suggested live specimens were absent or at least sparse. A spot dive midway between these sites in 2010 recorded 10-40% cover by dead *Modiolus* valves and scattered live *Modiolus* were occasional-frequent. In fact, the predictive mapping for this area indicates the presence of **SS.SMx.CMx.CIloModHo**, which does not qualify as a PMF, and this broadly concurs with the 2010 findings.

Waves of coarse sediment were recorded on both sides of the loch entrance in 2010, in areas of predicted coarse sediments. Two video sites were located on the western side to validate a record (51) of gravel waves with *Neopentadactyla mixta*, originally ascribed to **SS.SCS.CCS.Nmix**, but subsequently reassigned to **SS.SMp.KSwSS.LsacR.Sa** in Marine Recorder. In 2010 the habitat at this site had changed to rippled medium sand (**SS.SSa.IMuSa.EcorEns**), although waves of coarse sand and maerl gravel (possibly **SS.SCS.CCS.Nmix**) were found 350 m farther south (MB9). On the eastern side of the entrance the band of coarse sediment has been interpreted as **SS.SCS.CCS.Nmix** by Dipper and Johnston, 2005), although there do not appear to be any historical records of this biotope here. Four stations were located in the predicted coarse sediment area here in

2010. The northernmost site off Ploc Leacan Donna displayed waves of medium-coarse sand with little life visible apart from *Lanice* and *Astropecten irregularis* (possibly **SS.SCS.CCS.Nmix**). Gubbay (1990) recorded waves of coarse shelly sand here in 1989 but no *Neopentadactyla mixta* (**SS.SCS.CCS**). Farther south in 2010 the scattered stones on the sediment supported an algal cover dominated by *Saccharina latissima*, with patches of foliose red and brown algae (**SS.SMp.KSwSS.LsacR.Sa**). This was the case at site TS1 275 m south of Ploc Leacan Donna, which coincided with the location of the only historical record of a tide-swept algal community MPA search feature component in the Ullapool area - **IR.MIR.KR.LhypTX** (Howson, 1991).

Figure 12 Distribution of 2010 and previous PMF/MPA search feature records in Loch Ewe. Also shown is the indicative habitat mapping from Dipper and Johnston (2005). See Figure 11 for legend and further explanation



No attempt was made in 2010 to confirm the widespread occurrence of **SS.SMp.KSwSS** biotopes in the loch, suggested by previous surveys, but in addition to the locations noted above, the biotope complex was present in the form of algal mats on muddy sediment in The Sound (**SS.SMp.KSwSS.Pcri**) and at the head of the loch, off Poolewe (**SS.SMp.KSwSS.Tra**).

Validation of maerl records was attempted at all known sites of occurrence. Sparse *Phymatolithon calcareum* was recorded in 1990 by Howson (1991) north-east of Sron nan Oban and the rippled medium sand here also appeared to be scattered with live rhodoliths in 2010, though not in sufficient quantity to form a maerl bed. Immediately east of Sron nan Oban, however, dense living maerl was present in the troughs of the coarse sand and gravel waves (**SS.SMp.Mrl.Pcal.Nmix**), as was reported here in 1989 (Gubbay, 1990). Gubbay also recorded this habitat at two sites off Firemore Bay. One of the two sites worked here in 2010 coincided precisely with the location and depth cited by Gubbay (1990). This was also close to a charted area of 'coral' and yet a totally different habitat was recorded - sandy mud with scattered shells, *Pennatula* and *Virgularia* (**SS.SMu.CSaMu.VirOphPmax**). More sheltered instances of maerl beds in the inner part of the loch were confirmed for the south-west coast of the Isle of Ewe and Resolution Rock (**SS.SMp.Mrl.Pcal.R**) and in the Poolewe embayment, where a generally muddy sediment supported *Lithothamnion glaciale* and *Phymatolithon calcareum* overlain by an algal mat (**SS.SMp.Mrl.Lgla**). The extensive Poolewe bed was the subject of a detailed survey (Section 3.3.1.3).

Following a report by the MSS Marine Laboratory at Aultbea of the presence of *Zostera marina* in the northern region of Firemore Bay the area was thoroughly examined by dropdown video from RV *Serpula* and the RHIB *Aphrodite* but no seagrass was observed. However, following the survey, photographic evidence from 2010 of a lower shore *Z. marina* bed off Midtown was supplied by Mr Duncan Donald, West Ross recorder for the Botanical Society of the British Isles. From the photographs, density is estimated at 1-9 shoots/m^2 but the extent is unknown. The location is shown in Figure 12.

All seven locations in the loch where *Arctica* has been recorded were grab sampled in 2010 but live material was only recorded at one site (M7) south-west of the Isle of Ewe in sandy mud at 51 m. *Palinurus elephas* was recorded at a location very close to this site in 1927 (Wilson, 1952) but the video footage here (BM15) provided no evidence of its occurrence in 2010. Multiple grab sampling in Loch Thùrnaig failed to reveal the presence of *Glossus humanus*, noted as being rare here in 1990 (Howson, 1991). However, the presence of *Ostrea edulis* in this loch in 1978 (Smith, 1978) was still the case in 2010 and was the subject of detailed survey (Section 3.3.4.1).

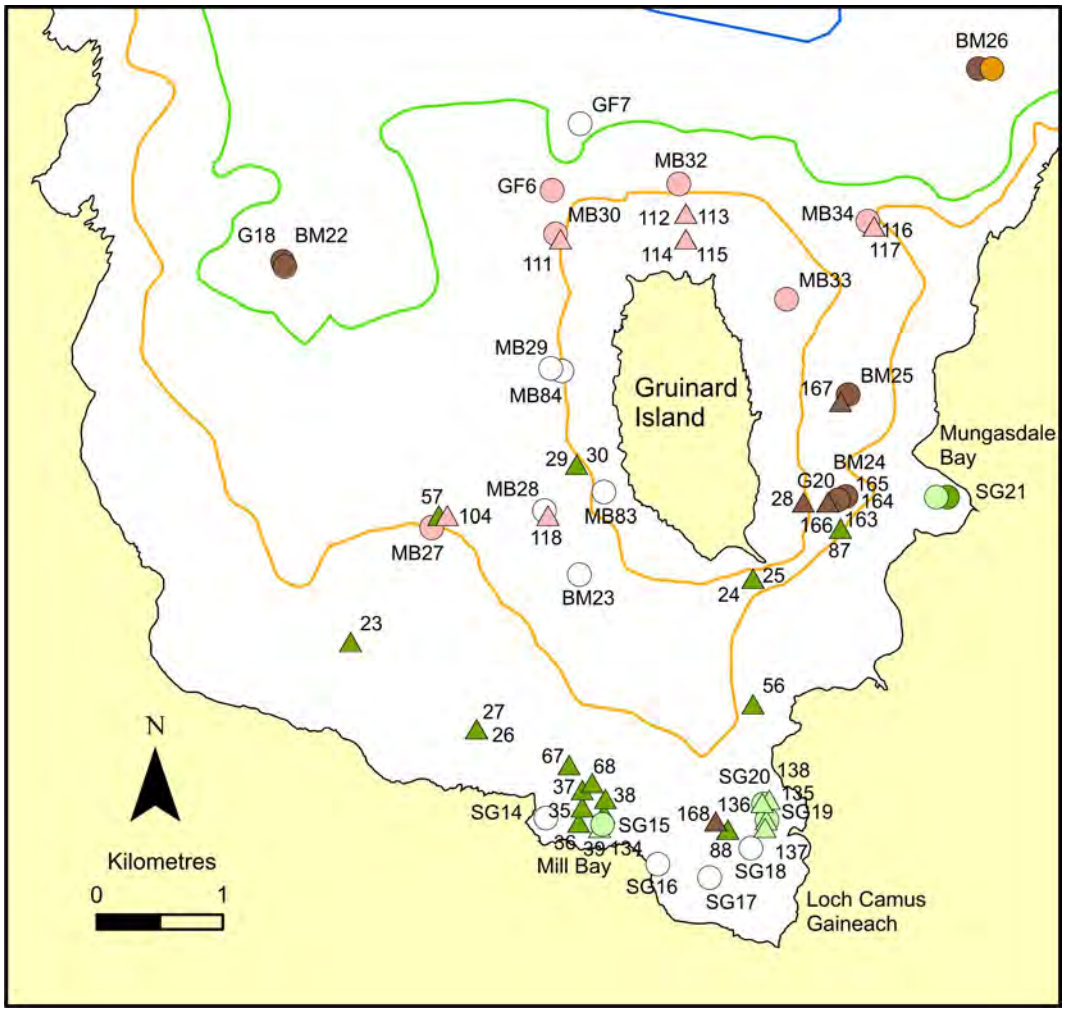
3.2.3 Gruinard Bay (Figure 13)

Burrowed mud habitats were recorded in 2010 including both **SS.SMu.CFiMu.SpnMeg** and **SS.SMu.CFiMu.SpnMeg.Fun**, in the deeper outer part of Gruinard Bay, beyond 60 m, where no previous records exist. The 1989 records of Gubbay (1990) of the presence of **SS.SMu.CFiMu.SpnMeg** in an area of muddy sand in the sheltered sound east of Gruinard Island were confirmed by the 2010 survey, with *Nephrops*, *Virgularia* and *Pennatula* being found at muddy sand and mud sites. Marine Recorder also includes a record of **SS.SMu.CFiMu.SpnMeg** in Loch Camus Gaineach, based on Gubbay's data, but the habitat is closer to **SS.SMu.CSaMu.VirOphPmax**, to which it was originally ascribed.

Gubbay (1990) reported extensive maerl off the northern coastline of Gruinard Island in the form of waves and smaller patches between boulders (**SS.SMp.Mrl.Pcal.Nmix**) and this was also found to still be the case in 2010. The north-east sites (MB33, MB34) are particularly good examples of the biotope, with *Phymatolithon calcareum* becoming locally abundant in the wave troughs. Gubbay's two maerl sites to the south-west of Gruinard Island were

revisited in 2010. Waves of maerl with live maerl common (**SS.SMp.Mrl.Pcal.Nmix**) were recorded at the site 1.5 km from the island (MB27) but closer to the island the sediment at the Gubbay site in 2010 (MB28) was muddy sand, rather than the gravel and coarse sand recorded in 1989. In fact, although Gubbay's record has been assigned to **SS.SMp.Mrl.Pcal.Nmix** in Marine Recorder, the only reference to maerl density here is encompassed in the phrase 'occasional boulders and maerl'. There are many records of **SS.SMp.KSwSS** biotopes in the south-east of Gruinard Bay, generally around 5-16 m in depth and mostly assigned to **SS.SMp.KSwSS.LsacR.Sa**, **LsacR.Gv** and **LSacR.CbPb** depending on the relative proportions of sand, gravel and stones (Gubbay, 1990; James, 2004). Distinguishing between these biotopes can be very difficult or impossible to achieve in an objective manner. In sheltered waters to the south-east of Gruinard Island, Gubbay (1990) recorded an algal mat, including *Trailliella*, covering the muddy sand substrate at 15-16 m (**SS.SMp.KSwSS.LsacR.Tra**). These sites were not revisited in 2010, although the PMF was recorded in Mungasdale Bay in the form of rippled medium sand with pebble and cobble patches supporting dense *Chorda* and ectocarpoid algae and occasional *Saccharina latissima* (**SS.SMp.KSwSS.LsacR**). In 2010 a new seagrass bed (**SS.SMp.SSgr.Zmar**) was encountered in Mungasdale Bay, together with beds previously identified by James (2004) in Mill Bay and Loch Camus Gaineach. These areas formed the subject of detailed examination described in Section 3.3.3.1.

Figure 13 Distribution of 2010 and previous PMF/MPA search feature records in Gruinard Bay. See Figure 11 for legend and further explanation

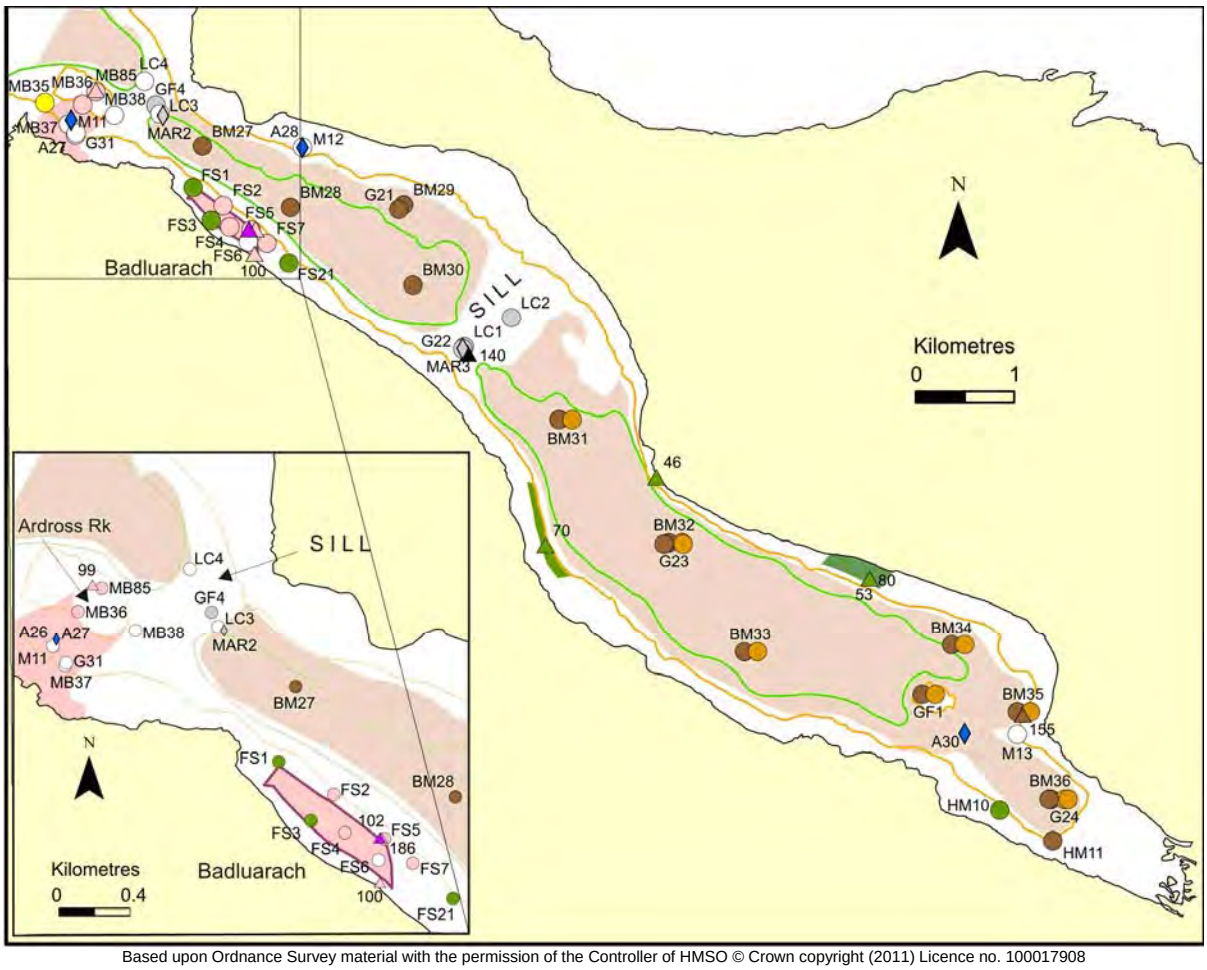


3.2.4 Little Loch Broom (Figure 14)

There are no previous records covering the deep muds of Little Loch Broom, with just a single record of a burrowed mud habitat (with the burrows tentatively assigned to gobies) at 14-17 m near the head of the loch (**SS.SMu.CFiMu.SpnMeg**). In fact burrowed mud is the dominant habitat covering most of the loch bed, the distribution apparently corresponding closely to the predictive mapping of circalittoral soft mud. The mud is densely burrowed by megafauna, particularly *Nephrops*, but also by the goby, *Lesueurigobius friesi*. The inner sill marks a distinct transition in the biotope, with sparse sea pens in the outer basin (**SS.SMu.CFiMu.SpnMeg**) and dense *Funiculina* throughout most of the inner basin (**SS.SMu.CFiMu.SpnMeg.Fun**). There are no previous records of *Funiculina* in the loch.

There are also no previous records of **SS.SCS.CCS.Nmix**. In 2010 an area of coarse sand and shell gravel supporting sparse *Lanice* was identified at the southern entrance to the loch (MB35), which could be referable to **SS.SCS.CCS.Nmix**.

Figure 14 Distribution of 2010 and previous PMF/MPA search feature records in Little Loch Broom. Also shown is the indicative habitat mapping from Dipper and Johnston (2005). Inset shows detail at mouth of loch. See Figure 11 for legend and further explanation



There is a Marine Recorder record of **SS.SMu.CFiMu.BlyrAchi** on the inner sill (140), one of only three records of this MPA search feature in the Ullapool area. This is a reinterpretation of the data from a Holt site (Holt, 1991) originally ascribed to **SS.SMx.CMx.CIloModHo**. The data are a very poor fit to the MPA search feature. In 2010 muddy sand with scattered stones was noted here (**SS.SSa.CMuSa**).

There is some confusion regarding the distribution of maerl beds near the mouth of the loch. The predictive mapping of this area identifies an outer bed south of Ardross Rock and an inner bed off Badluarach, both mapped as mixed *Limaria*/maerl beds. However, the accompanying text (Dipper and Johnston, 2005) clearly distinguishes between an outer maerl bed and an inner *Limaria*/maerl bed and the mapping in Figure 14 reflects this latter interpretation. The outer maerl bed is unlikely to be as extensive as the mapping suggests. There is a record of sparse maerl south of Ardross Rock (Holt, 1991), but no records of a maerl bed or maerl biotope. In 2010 a fairly sparse maerl bed was recorded just south of Ardross Rock (**SS.SMp.Mrl.Pcal.Nmix**), but other sampling in the area suggests that the extent of the bed is far more limited than indicated by the predictive mapping. A richer bed containing denser maerl and supporting *Saccharina latissima* and a patchy red algal turf (**SS.SMp.Mrl.Pcal.R**) was found north of Ardross Rock at 13-14 m, validating a Seasearch record in the area (99). There was a transition from maerl to **SS.SMp.KSwSS.LsacR.Sa** at around 13 m. In 2010 an extensive maerl bed was recorded off Badluarach (**SS.SMp.Mrl.Pcal.R**) supporting juvenile *Limaria*. This was the subject of detailed examination, described in Section 3.3.1.1.

There are a few scattered records of seaweed communities on sediment biotopes around the margin of the inner basin of Little Loch Broom (**SS.SMp.KSwSS**). In 2010 this was recorded not only at Ardross Rock (see above) but also at the margins of the Badluarach maerl bed in the form of *Saccharina latissima* and a red algal turf on medium sand (**SS.SMp.KSwSS.LsacR.Sa**). At the head of the loch silted *S. latissima* and a patchy red algal turf was recorded on a substrate of muddy sand (**SS.SMp.KSwSS.LsacR.Mu**).

Holt (1991) noted the presence of *Leptometra celtica* at two sites in the loch. On the outer sill the species was common at a depth of 39-42 m and on the inner sill it was frequent at a depth of 34 m. In 2010 several sites were examined on both sills. *Leptometra* was found to be abundant at around 40-45 m on the inner part of the outer sill, close to the Holt site. On the inner sill *L. celtica* was frequent at 37 m at the Holt site (LC1) but became common at 36-39 m farther to the north-east (LC2).

There are three historical records of *Arctica islandica* for the loch dating from 1988 (Gubbay and Nunn, 1988) and 1991 (Holt, 1991). All sites were grab sampled in 2010, with only dead valves being recorded at one of the sites at the head of the loch. The position of this site (M13) had to be considerably modified to achieve the depth given in the Seasearch record (A30).

3.2.5 Loch Broom (Figures 15, 16)

In the outer basin the 2010 survey and the recent study by Briggs (2004) suggests that soft mud, burrowed by *Nephrops* and supporting fairly sparse sea pens, covers most of the sea bed, at least below 40 m (**SS.SMu.CFiMu.SpnMeg**). The indicative mapping of soft mud probably represents fairly well the coverage of the biotope, although not at the mouth of the loch where the substrates are more heterogeneous and surface stones support dense *Leptometra celtica*. *Leptometra* has also been recorded from off the southern shores of the loch mouth, but only as rare at 28-38 m on bedrock (Holt, 1991). In 2010 a video run at this site extended from 27-40 m but no bedrock was encountered. *Funiculina* was recorded at two sites in the outer basin in 1995 but no evidence of its continued presence is provided by subsequent surveys.

The presence of **SS.SMu.CFiMu.SpnMeg** and **SpnMeg.Fun** in the deeper part of the middle basin (Holt, 1991; Briggs, 2004) has been found to still be the case in 2010. The indicative mapping portrays an area of maerl off the southern shore of the middle basin. Originally ascribed to the maerl biotope **SS.SMP.Mrl.Lcor**, the 1991 record here (Holt, 1991) has been subsequently transferred in Marine Recorder to **SS.SMp.KSwSS.LsacR.Sa**, as

Holt (1991) only recorded the presence of occasional fragments of unhealthy maerl. Holt also recorded **SS.SMp.KSwSS.LsacR.Mu** here, which agrees with the results of the 2010 survey in this area.

The indicative mapping shows a large tongue of **SS.SMp.KSwSS** occupying the shallow platform off the Ullapool River. The only record for this area, on which this interpretation is presumably based, is derived from the 1988 Seasearch survey by Gubbay and Nunn (1988), which describes *Modiolus* and cobbles embedded in sand, with occasional boulders supporting *Saccharina latissima* at a depth of 1.5 m. It seems that either this has been interpreted as **SS.SMp.KSwSS** by Dipper and Johnston (2005), or more likely that the area of **SS.SMx.CMx.CIloModHo** depicted on their indicative map in the deep channel just south of this area, has been misplaced.

The continued presence of a *Limaria* bed (**SS.SMx.IMx.Lim**) in the Sruth Lagaidh narrows, reported by Holt (1991) and Briggs (2004) was confirmed by the 2010 survey, although it was found to be far less extensive than suggested by the indicative biotope mapping. This bed was the subject of detailed survey in 2010, described in Section 3.3.2.1. Holt (1991) described the presence of frequent *Modiolus* on the south-eastern side of the narrows (possibly within the *Limaria* bed) and this has been translated in Marine Recorder as the presence of **SS.SBR.SMus.ModHAs**. This area was examined by video and diver in 2010 and, although scattered *Modiolus* were found over the *Limaria* bed, no *Modiolus* was recorded close to the Holt site and there was no evidence of a *Modiolus* bed within the narrows area as a whole. Another site off Balnoster, near the head of the loch, was originally ascribed to **SS.SBR.SMus.ModHAs** in Marine Recorder, but this record of occasional *Modiolus* and a generally fairly impoverished fauna on a muddy substrate, has been transferred to **SS.SMx.CMx.CIloModHo**.

In the inner basin in 2010 megafaunally burrowed mud was recorded extensively, from 23 m to 42 m, with all sites displaying *Funiculina*, generally in fairly high abundance (**SS.SMu.CFiMu.SpnMeg.Fun**). Briggs' (2004) video survey of the loch included 12 sites in the inner basin, all of which were burrowed mud, although *Funiculina* was only observed at one of them at 24 m (V14). **SS.SMu.CFiMu.SpnMeg.Fun** was also recorded by their diving survey at one location between 14-24 m, whilst Holt (1991) noted its presence at 17-24 m. These and other records suggest that burrowed mud, particularly supporting *Funiculina*, probably covers most of the sea bed below 20 m in the inner basin, appearing to be far more widespread than suggested by the indicative mapping.

There are two records of inshore deep mud with burrowing heart urchins (**SS.SMu.CFiMu.BlyrAchi**) in Loch Broom, both derived from grab data collected during the 2004 survey by Briggs (2004) at sites in the middle and inner basin. The data are not a good fit to the biotope. Both these sites were revisited in 2010 employing video and grab sampling (video sites DM1, DM2; grab sites G26, G28) and it was concluded that they are both best considered as burrowed mud sites.

Arctica islandica has been recorded previously at two sites in the outer basin, four in the middle, and seven sites in the inner basin. Multiple grab sampling was carried out at most of these sites in 2010, with live material being found at one of the outer sites and two of the inner sites. Differences between the mapped location of historical records and corresponding 2010 sites are a result of either obvious errors in the provision of accurate coordinates for previous records, or attempts to occupy similar depths in 2010.

Figure 15 Distribution of 2010 and previous PMF/MPA search feature records in the outer and middle basins of Loch Broom. Also shown is the indicative habitat mapping from Dipper and Johnston (2005). See Figure 11 for legend and further explanation

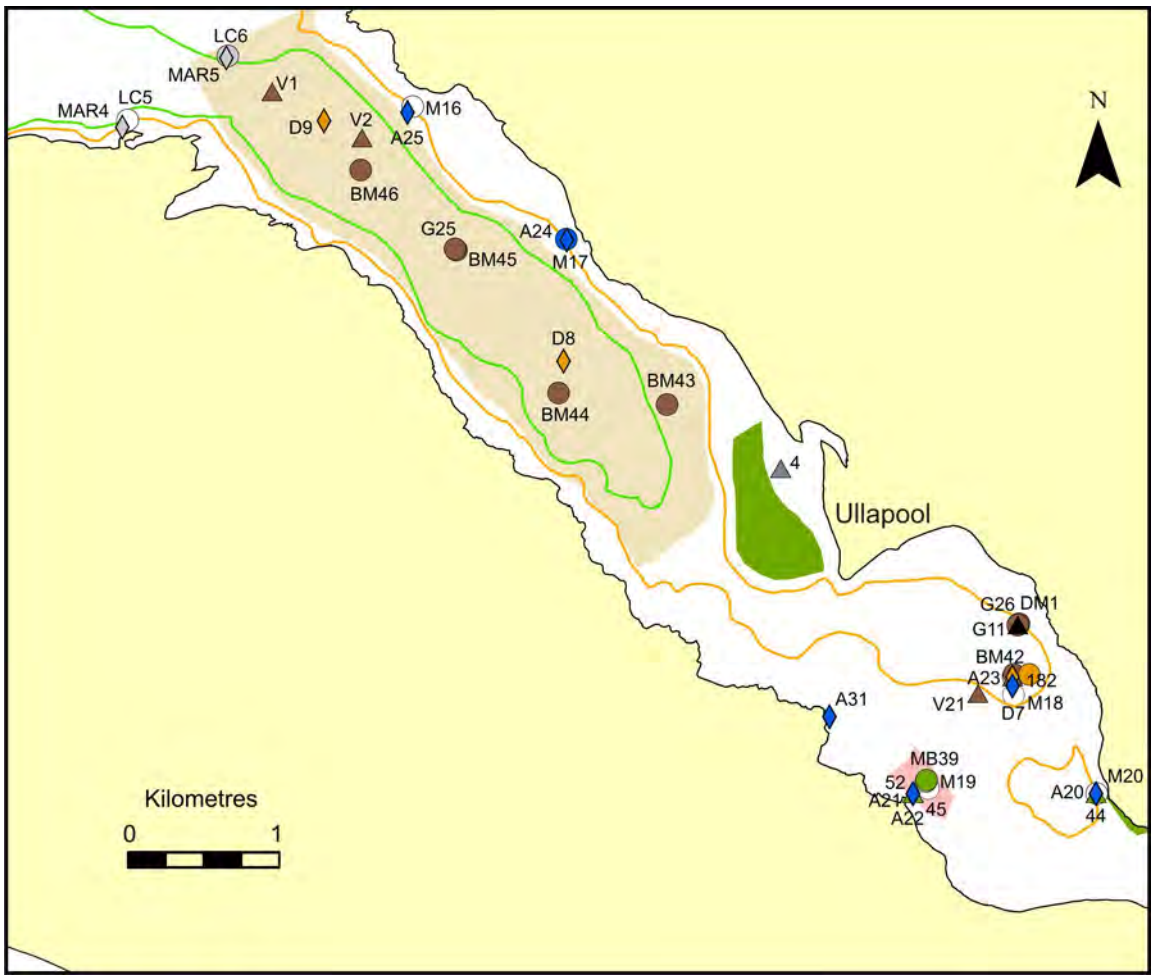
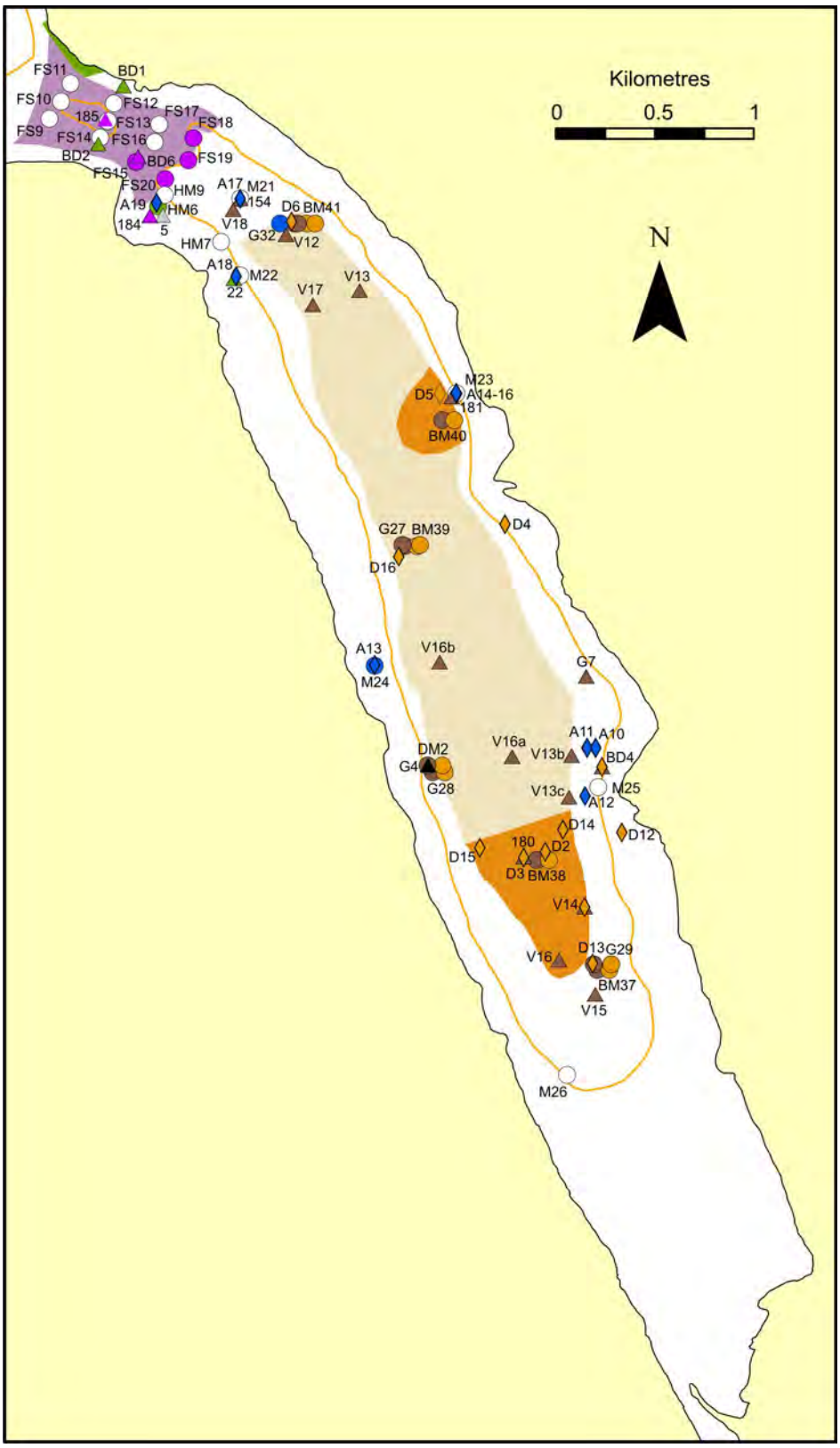


Figure 16 Distribution of 2010 and previous PMF/MPA search feature records in the narrows and inner basin of Loch Broom. Also shown is the indicative habitat mapping from Dipper and Johnston (2005). See Figure 11 for legend and further explanation



3.2.6 Summer Isles (Figure 17)

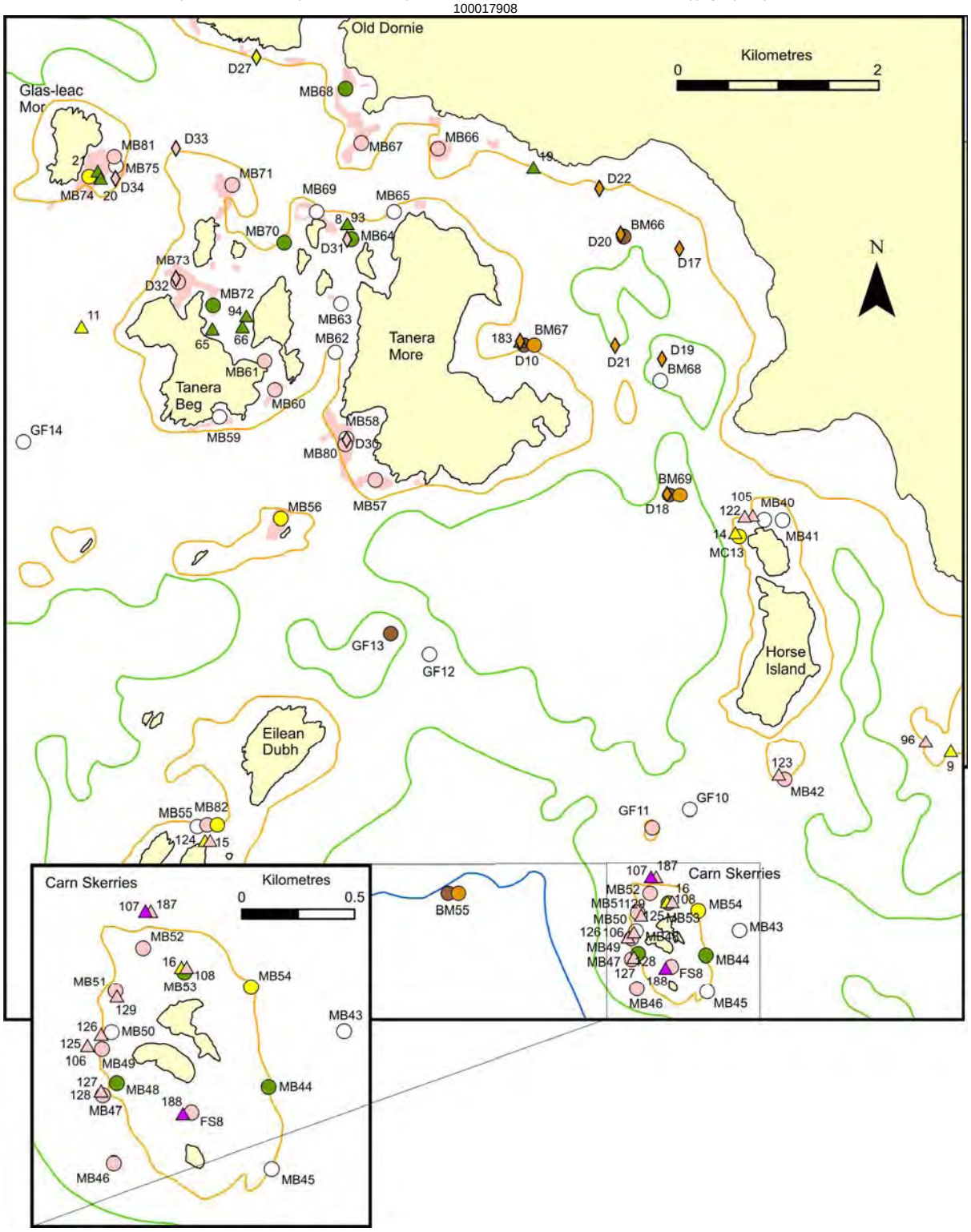
A Fisheries Research Services video survey in 1995 recorded the presence of *Funiculina* at several locations to the east of Tanera More. This was found to still be true in 2010. Soft muds with megafaunal burrows and sparse sea pens were recorded at all sites examined over 50 m, with the habitat extending into shallower water (to 39 m) in the shelter of Tanera More. The presence of both **SS.SMu.CFiMu.SpnMeg** and **SpnMeg.Fun** was noted in 2010 but this probably is a reflection of the low abundance of *Funiculina*, which probably inhabits all deep burrowed mud in the area.

Unlike the indicative biotope mapping available for other regions of the Ullapool area, the predictive mapping of maerl around the islands of Tanera More, Tanera Beg and Glas-leac Mor is based on an AGDS survey of the area in 1996 (Sotheran, 1997), groundtruthed by ROV and observations from the 1996 Seasearch survey by Howson (Howson and Bradshaw, 1997). Hence, some of the maerl patches shown in Figure 17 are based only on their acoustic signature and not on the confirmed presence of maerl. The aim in 2010 was to validate the presence of maerl in the main areas of predicted occurrence, as well as in most of the locations where there is evidence of the existence of maerl beds. In fact in 2010 live maerl was found in all the larger patches of predicted occurrence (except at MB69) and mostly in sufficient density (i.e. common) to be considered maerl biotopes. The 2010 data, however, suggests that the predictive mapping does not give an accurate portrayal of the extent of maerl biotopes. There are surprisingly no Marine Recorder records of maerl biotopes for this central region of the Summer Isles covered by the AGDS survey, although Dipper (1981) reported the presence of live maerl at five sites between Tanera More and Glas-leac Mor. The abundance of the maerl is not given and only at one site south-west of Tanera More (MB80) is the area described as a maerl bed, where thick live maerl overlay dead maerl sand waves. Video observations in this area in 2010 indicated that there is a fairly rich maerl bed here (**SS.SMp.Mrl.Pcal.R**) which extends around the south-western coastline of Tanera More, is interrupted by the deep channel west of the island, but continues on the western side of the channel, passing around the eastern coastline of Tanera Beg in very shallow water (1.7 m or less) and around the north of the island, where it is in the form of low waves of maerl with dense live maerl in the troughs supporting a dense turf of red and brown algae. The site off the south-west of Tanera More (MB80) represents possibly the richest maerl biotope observed in the Summer Isles and was the subject of more detailed survey, described in Section 3.3.1.2.. Maerl is widely distributed around the Tanera islands, mostly supporting algal turfs (**SS.SMp.Mrl.Pcal.R**), although waves of coarse sand and maerl gravel with dense live maerl in the troughs and sparse algae was recorded east of Glas-leac Mor (**SS.SMp.Mrl.Pcal.Nmix**).

Records of maerl biotopes from the 1996 Seasearch survey (Howson and Bradshaw, 1997) were validated in 2010 for south-west of Eilean Dubh and south of Horse Island (**SS.SMp.Mrl.Pcal.Nmix**), but the maerl bed off the north of Horse Island was not identified.

Howson and Bradshaw (1997) reported maerl at a number of sites off the north and west of the Carn Skerries and between the islands. This was still the case in 2010 with an extensive band of maerl supporting a red algal turf (**SS.SMp.Mrl.Pcal.R**) giving way to **Pcal.Nmix** which continued to a depth of at least 26 m.

Figure 17 Distribution of 2010 and previous PMF/MPA search feature records around the Summer Isles, with inset showing detail around the Carn Skerries. Also shown is the predictive mapping of maerl from Sotheran (1997). See Figure 11 for legend and further explanation



There are three previous records of **SS.SCS.CCS.Nmix** for the area from the Seasearch survey (south-west Eilean Dubh, north Carn Skerries and north-west Horse Island). All three were examined in 2010. These coarse sand sites have been ascribed to **SS.SCS.CCS** in the absence of evidence of the presence of characterising species of **CCS.Nmix**. However, coarse shell sand is common around the Summer Isles (Dipper, 1981) and it is possible that **CCS.Nmix** is widespread.

There are seven records of **SS.SMp.KSwSS** biotopes in this area, all between Tanera More and Glas-leac Mor, from the 1996 Seasearch and ROV surveys (Howson and Bradshaw, 1997). Although not a focus for the 2010 survey, this search feature was recorded at six widely dispersed sites, around the Tanera islands, off the entrance to Old Dornie Harbour and around the Carn Skerries (**SS.SMp.KSwSS.LsacR.Gv** and **LsacR.Sa**).

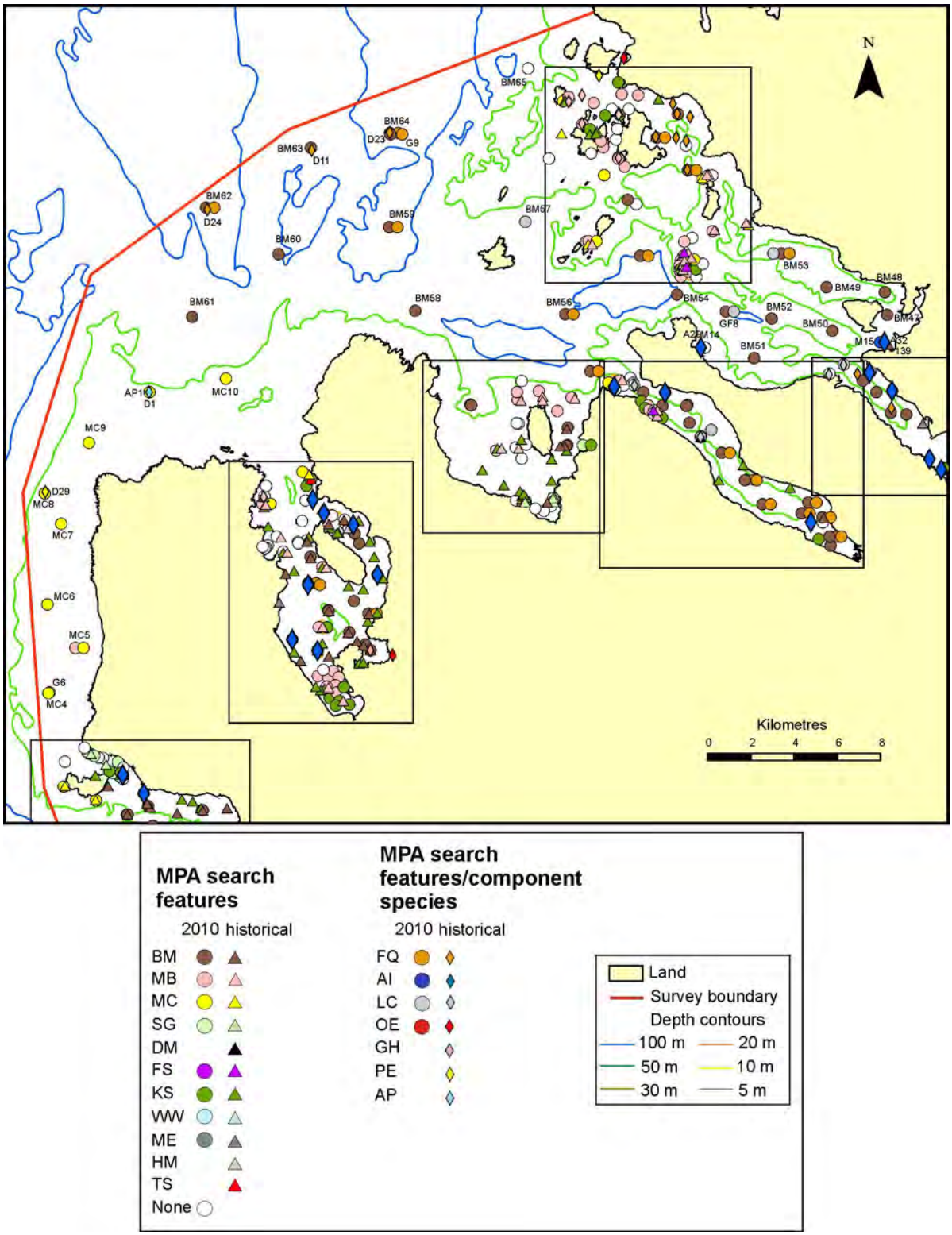
There is one 1956 record of *Palinurus elephas* off the western entrance to Old Dornie Harbour. This site was not visited in 2010.

3.2.7 Outer Region (Figure 18)

There are very few previous records of PMF habitats or species in this area. The sea bed is mostly over 50 m deep and floored by burrowed mud with sparse sea pens (**SS.SMu.CFiMu.SpnMeg**). Observations by Fisheries Research Services and the Centre for Environment, Fisheries and Aquaculture Science in 1999 and 1994 respectively, recorded *Funiculina* present at three of the outermost stations. In 2010 it was found to occur widely across the whole area, but generally at low density. This sparsity, combined with the often poor visibility encountered in this area in 2010, suggests that *Funiculina* and the associated biotope, **SS.SMu.CFiMu.SpnMeg.Fun**, may be present throughout the deeper (>50 m) parts of this region. *Leptometra celtica* was also found at three sites on this deep mud between Priest Island and Loch Broom attaining maximum abundance (i.e. frequent) at site GF8 at 97 m. The only previous records of the species are for the mouth of Loch Broom and the sills within Little Loch Broom.

Coarse and medium-coarse sand, often formed into waves, with scattered rhodoliths of maerl, were found in 2010 to occur in a broad coastal band from Loch Gairloch to Loch Ewe, extending to a depth of at least 46 m at one site (**SS.SCS.CCS**). Given the lack of evidence for the presence of diagnostic species, this area cannot be firmly ascribed to **SS.SCS.CCS.Nmix**, although this biotope may be extensively distributed here. At the shallowest site (17 m) live maerl became common in the wave troughs (**SS.SMp.Mrl.Pcal.Nmix**). Two historical records for PMF species are contained within this region. *Palinurus elephas* was found to the west of Rubhá Réidh in 1924 (Wilson, 1952) and *Atrina fragilis* to the north-east of this point prior to 1970 (Woodward, 1985). Video sampling in 2010 at these sites failed to reveal the presence of these species.

Figure 18 Distribution of 2010 and previous PMF/MPA search feature records in the outer region of the area of search (delimited with red line). Boxes enclose areas not included in this zone and described separately in the text



3.3 Localised MPA search feature (component habitat) surveys

3.3.1 Maerl beds

3.3.1.1 Badluarach, Little Loch Broom

MNCR phase 2 survey (ML01)

This was carried out within a 25 x 4 m band in the centre of the maerl bed at a depth of 7.0-7.1 m (Figures 3, 19). SACFOR abundances of the epibiota are listed in Table 6.1 (Appendix 6). The substrate consisted of maerl lying on slightly muddy sand, with live *Phymatolithon calcareum* covering about 75% of the sea bed. The surface of the maerl layer was uneven, the thalli being bound together into clumps reaching a height of around 15 cm in places. The maerl supported a short, dense, red, filamentous algal turf, dominated by *Trailliella intricata* (superabundant) and *Heterosiphonia japonica* (common), with the latter also forming tufts up to 20 cm in length. *Trailliella intricata* was probably largely responsible for the formation of maerl clumps, although the presence of a population of O-group *Limaria hians* (c. 5 mm in length) may also have contributed. Larger brown algae were represented by *Chorda filum* (common), *Desmarestia viridis* (frequent) and occasional *Dictyota dichotoma* and *Asperococcus turneri* (but much loose material), and sparse *Saccharina latissima* and *Desmarestia aculeata*. The epifauna appeared to be of moderate diversity and was dominated by *Asterias rubens*, *Marthasterias glacialis*, *Pagurus bernhardus*, *Eupolymnia nebulosa* and *Gobiusculus flavescens*, with the sediment supporting numerous large bivalve molluscs, including *Mya truncata*.

Video and spot dive surveys

Eight video runs were initially carried out to confirm the presence of the bed and to assess its distribution. Subsequently, this was supplemented by diver observations at 16 sites to better assess the distribution, extent and condition of the bed, as well as for assessment of the presence of *Limaria hians*. These dives were carried out along transects perpendicular to the shoreline, permitting some observations to be recorded between sample sites. Full details of the methodology are given in Section 2.5.5.1.

The detailed results of the surveys are given in the appendices: Table 2.2 (video) and Table 7.1 (diver). They are collated and summarised here.

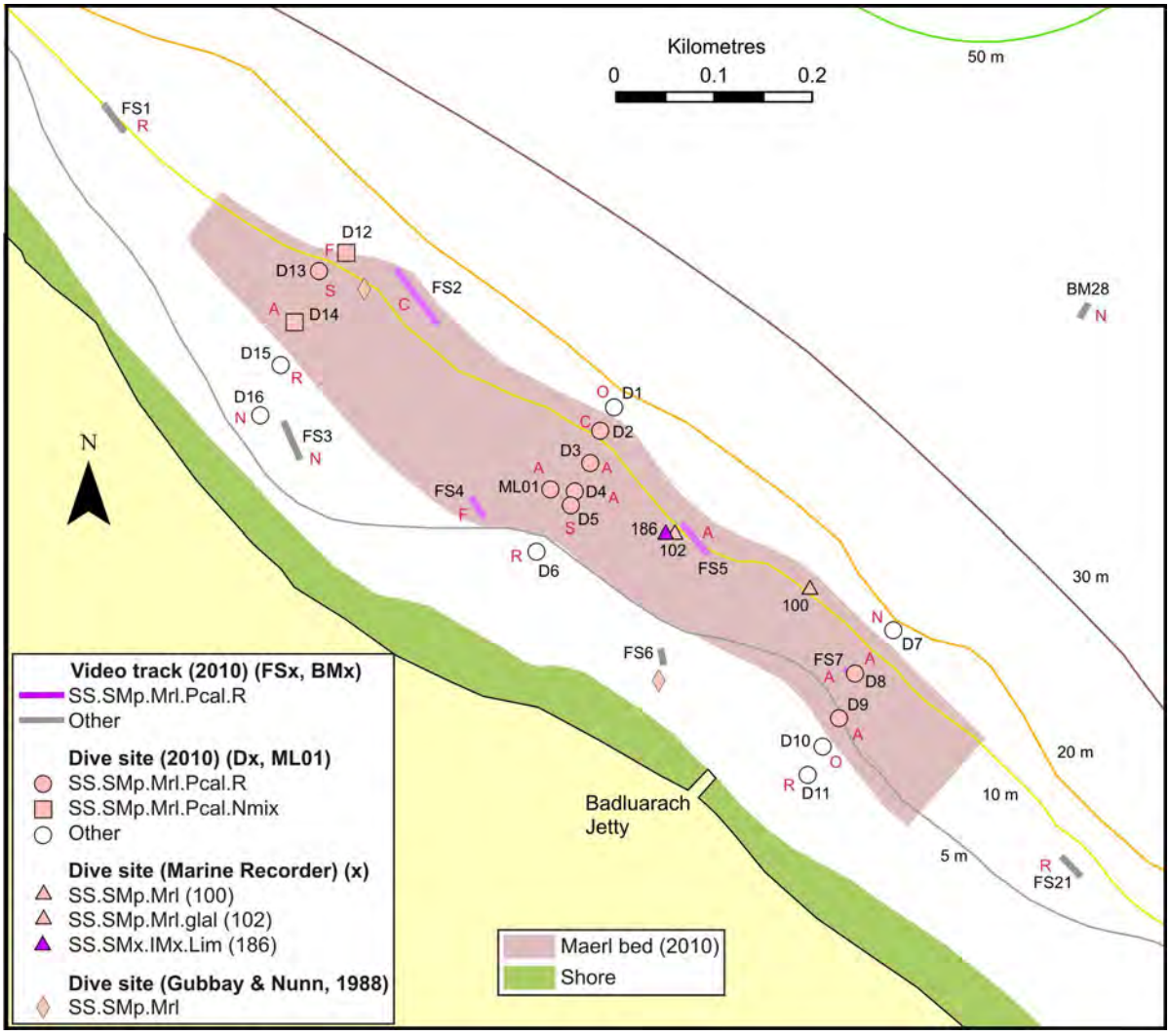
The sediment throughout the bed consisted of maerl on slightly muddy sand and the clumped nature of the maerl was a universal feature. Most of the bed supported a dense red algal turf (**SS.SMp.Mrl.Pcal.R**), with sparse *Saccharina latissima*, although there were areas of frequent kelp. Near the north-western boundary of the bed the algal component became very sparse in places (**SS.SMp.Mrl.Pcal.Nmix**). The presence of juvenile *Limaria hians* was recorded at four of the dive sites, although nowhere did *Limaria* appear to be the dominant habitat-former.

The distribution of the maerl bed based on all evidence from the 2010 surveying is shown in Figure 19, which maps the area exhibiting live maerl densities greater than 10% (i.e. frequent-superabundant). Over most of this area coverage is greater than 50%. The extent of the bed, derived from the polygon area, is estimated as 11.8 ha., with depth limits of approximately 4 and 11.6 m.

Maerl was originally recorded at this site during the Seasearch survey in 1988 (Gubbay and Nunn, 1988), although no biotope records are included in Marine Recorder or the DEFRA data layers. Site positions are only known approximately, but are plotted in Figure 19. One of these sites lies outside the 2010 bed limits, where the maerl bed was reportedly in less

than 2.5 m. One of the 2010 video runs was located at this position, where a dense kelp forest was found from 1.3-2.3 m depth. Gubbay and Nunn (1988) also reported sparse *Zostera marina* at this site but none was found in the area during the 2010 survey. There is also a 2005 Seasearch report of maerl present off Badluarach Jetty. The position given is on land, but in Figure 19 this has been moved offshore to a position corresponding to the maximum depth of the dive, as indicated by the chart bathymetry. Holt (1991) recorded the presence of a maerl bed here in 1991 within the 2010 limits but described the maerl as being netted together by galleries of abundant *Limaria hians*. This resulted in the recognition of both maerl and *Limaria* biotopes here. Although juvenile *L. hians* were recorded at several sites in 2010, there was no clear visual evidence of either *Limaria* nest material or galleries. The indicative mapping of this bed (Dipper and Johnston, 2005 - see Figure 14) incorporates the shallow record of Gubbay and Nunn (1988) and so is more extensive than the 2010 interpretation.

Figure 19 *Distribution of PMF/MPA search feature biotope records from video and dive surveys in 2010 off Badluarach, Little Loch Broom, with resultant indicative mapping of maerl bed. Maerl SACFOR abundances in red. Also shown are previous PMF/MPA search feature biotope records, with numbered labels referring to site codes used in Table 16.2 (Appendix 16)*



3.3.1.2 Mol Mòr, Tanera More (Summer Isles)

MNCR phase 2 survey (ML02)

This was performed within a 25 x 4 m band at a depth of 13.8-14.1 m in the mouth of Mol Mòr Bay, south-west of Tanera More. SACFOR abundances of the epibiota are listed in Table 6.1 (Appendix 6). The sea bed was formed into low waves of maerl gravel, without pronounced crests or troughs, and there was a fairly dense scatter of shells, dominated by *Venerupis* sp. and *Glycimeris glycimeris*. Around 40% of the maerl was living *Phymatolithon calcareum*, which supported an abundant algal turf dominated by *Bonnemaisonia asparagoides* and *Heterosiphonia japonica*, with occasional *Dictyota dichotoma* and *Scinaia turgida*, and sparse *Saccharina latissima* and *Laminaria hyperborea*, (**SS.SMp.Mrl.Pcal.R**). The motile epifauna was dominated by *Marthasterias glacialis* and *Luidia ciliaris*, whilst dead shells supported an encrusting fauna of *Pomatoceros* sp., *Hydroides* sp., *Protula tubularia* and *Balanus crenatus*.

This site was one of the richest maerl sites surveyed during the 1981 Marine Conservation Society expedition to the Summer Isles (Dipper, 1981). Dipper (1981) recorded a total of 30 epibiotic species, but noted that few animal species were present. This is consistent with the situation in 2010, when more species were recorded (63), but the impression was one of moderate diversity.

3.3.1.3 Poolewe, Loch Ewe

MNCR phase 2 survey (ML03)

This was restricted to a 25 x 4 m band within an area identified as exhibiting the richest live maerl density within the Poolewe bed. SACFOR abundances of the epibiota are listed in Table 6.1 (Appendix 6). An underlying substrate of muddy sand was covered by dead maerl (60%) and around 25% coverage by a 1-2 cm layer of live maerl, composed of both *Lithothamnion glaciale* (frequent) and *Phymatolithon calcareum* (occasional). The maerl appeared to be supporting an extensive short brown algal turf, although this was actually very largely a loose filamentous mat, strongly dominated by *Rhodothamniella floridula*, with minor components including *Brongniartella byssoides* and *Trailliella intricata*. Above the mat were scattered large tufts of *B. byssoides* and *Polysiphonia furcellata*, as well as occasional, mostly unattached, *Asperococcus turneri* and sparse *Desmarestia aculeata* and *Saccharina latissima* (**SS.SMp.Mrl.Lgla**). The fauna was dominated by echinoderms, including juvenile *Asterias rubens*, *Astropecten irregularis*, *Marthasterias glacialis* and *Echinus esculentus*. There were many dead bivalve shells scattered over the substrate, including *Dosinia* sp., *Mya* sp., *Venerupis* sp. and *Modiolus modiolus*.

Video and spot dive surveys

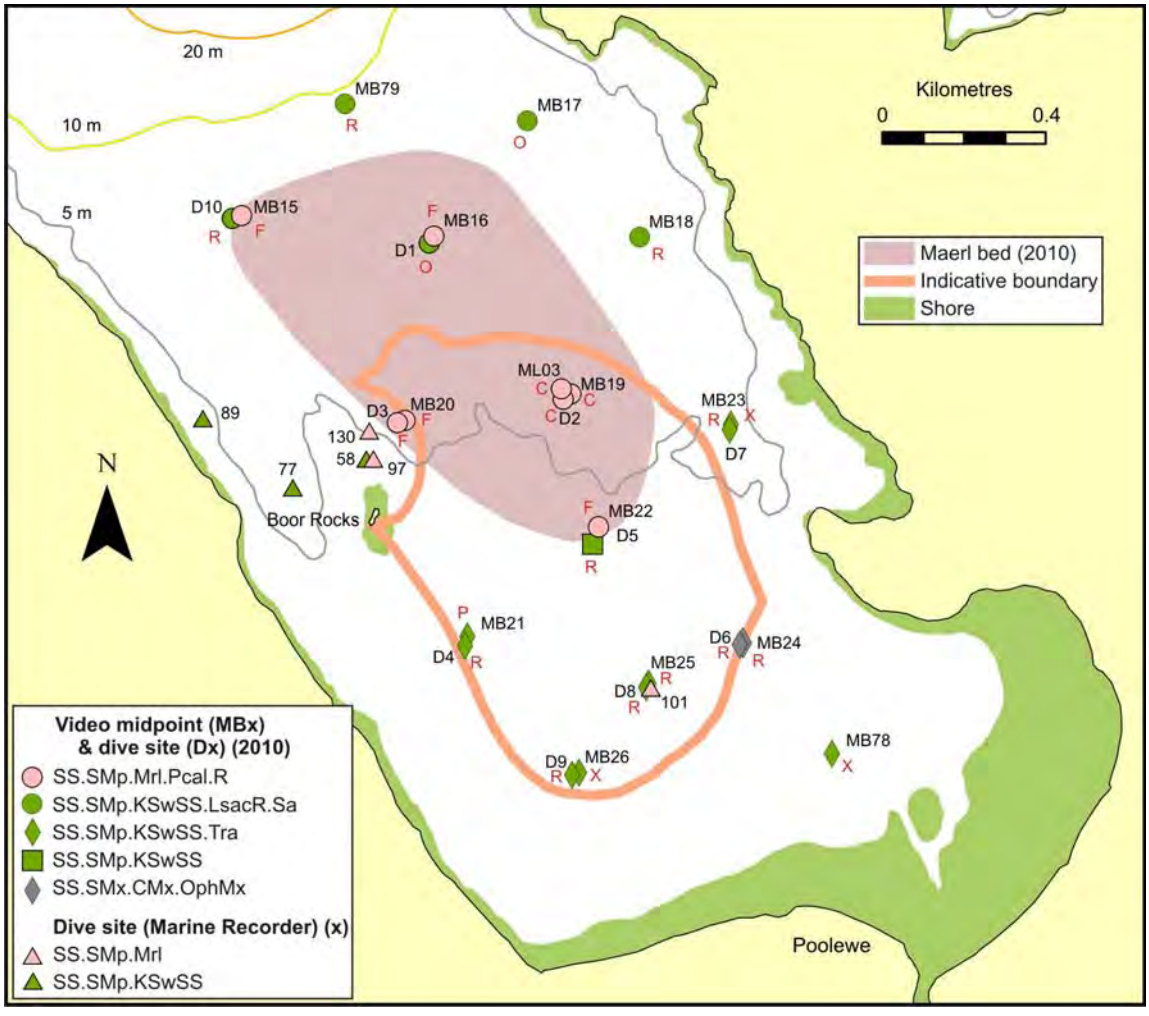
The distribution of the bed was initially assessed by means of fourteen video runs. As these were mostly very short, for clarity only the midpoints are shown in Figure 20. Over much of the area the sea bed was covered by algal turfs and mats and so diver observations were also carried out at 10 of the video sites, which also permitted the recording of maerl thickness and the presence of *Limaria hians*. Full details of the methodology are given in Section 2.5.2.1.

The detailed results of the surveys are given in the appendices: Table 2.2 (video) and Table 7.2 (diver). They are collated and summarised here.

The Poolewe embayment above the 10 m contour was found to be floored predominantly by muddy sand. Live maerl was distributed extensively over this area but the density of live

material did not attain the level recorded at the MNCR phase 2 site anywhere else. Figure 20 shows an indication of the area supporting at least frequent live maerl, although the maerl was very unevenly distributed, with small patches where it was common and small areas of bare muddy sand. In the outer region of the bay, beyond the 5 m contour, the maerl bed gave way to a patchy algal turf on muddy sand, with scattered live rhodoliths (**SS.SMp.KSwSS.LsacR.Sa**), whereas at the head of the bay a muddier sediment with sparse live maerl became progressively covered by a thick filamentous algal mat (**SS.SMp.KSwSS.Tra**).

Figure 20 *Distribution of PMF/MPA search feature biotope records from video and dive surveys in 2010 off Poolewe, with resultant indicative mapping of maerl bed. Maerl SACFOR abundances in red. Also shown are previous PMF/MPA search feature biotope records, with numbered labels referring to site codes used in Table 16.2 (Appendix 16), and the maerl bed boundary from the indicative mapping of Dipper and Johnston (2005)*



Limaria hians was recorded at six of the dive sites, although none were found within the mapped maerl bed. At most of these sites only sparse, juvenile (<1 cm) individuals were observed, although these were common beneath a blanket of *Ophiothrix fragilis* at site D6. Sparse discrete nests containing c.3 cm *L. hians* were recorded at site D4.

The gradual variation in depth throughout the Poolewe embayment and the patchiness of the living maerl complicates the recognition of a bed margin. Figure 20 depicts an area

within which live maerl is likely to exhibit a density of at least 10% overall (i.e. frequent) and 20% (common) locally and play a key habitat-forming role. The estimated area is 60.5 ha. The low survey resolution suggests an accuracy of no greater than +/-50%. The depth limits of the bed are 4.9-7.3 m.

Gubbay (1990) recorded the presence of maerl off the north of Boor Rocks (site 97) in 1989, where in the following year Howson (1991) also recorded abundant maerl bound together by *Trailliella intricata* (**SS.SMp.Mrl.Pcal.R**) (site 130). Howson also surveyed a site (101) to the south of the 2010 maerl bed, where she recorded a 12 cm thick layer of live maerl covering 90% of the sea bed. In 2010 this site displayed a dense algal mat overlying a 90% coverage of dead maerl, with <1% live thalli. Recorded epibiotic diversity, however, was not markedly different, with 40 taxa listed in 1990, compared to 45 in 2010.

The indicative mapping of the Poolewe maerl bed (Dipper and Johnston, 2005) is based on the three records of Gubbay (1990) and Howson (1991). In 2010 the more widespread observations reveal that the bed extends well to the north of the predicted coverage, but the more northerly shallow limit in 2010 strongly suggests a temporal decline in the condition of the bed here, leading to a contraction in the extent of the habitat.

3.3.1.4 South-west Loch Gairloch

As part of the dropdown video survey of Loch Gairloch six sites were located within the maerl bed at the southern entrance to the loch. The observations are described above in Section 3.2.1. MNCR phase 2 surveying was also carried out at one of these sites and is described below.

MNCR phase 2 survey (ML04)

The survey was carried out within a 25 x 4 m band at a depth of 14.3-14.9 m off Sròn a' Mhuilt, just inside the mouth of Loch Gairloch on the southern side (within 25 m of site MB3, Figures 3, 11). SACFOR abundances of the epibiota are listed in Table 6.1 (Appendix 6). The sediment of medium-coarse sand was overlain by maerl gravel and patchy live *Phymatolithon calcareum* up to 5 cm thick with a cover of around 25%. A fairly dense scattering of bivalve shells included *Venerupis*, *Dosinia* and *Lutraria* species. The shells supported frequent *Saccharina latissima* and an encrusting fauna of *Pomatoceros* sp., *Hydroides* sp. and *Balanus balanus*, as well as *Collisella tessulata*. The maerl and shells supported a thin, patchy algal turf, with a coverage of around 15-20%, dominated by filamentous reds, principally *Heterosiphonia plumosa* and *H. japonica*, with occasional *Trailliella intricata*, *Bonnemaisonia asparagoides*, *Plocamium cartilagineum* and *Desmarestia aculeata*. The most abundant members of the motile fauna included *Marthasterias glacialis*, *Cancer pagurus* and *Galathea intermedia*. The community was one of moderate diversity for a maerl bed. In total 62 epibiotic species were recorded. The survey site has been ascribed to **SS.SMp.Mrl.Pcal.R**, but is intermediate between a typical representative of this biotope and **SS.SMp.Mrl.Pcal.Nmix**. In 1990 Howson (1991) examined two sites in this area, 1.2km to the south-west and 1 km to the north-east (sites 110 and 109 in Figure 11), subsequently ascribed to **SS.SMp.Mrl.Pcal.Nmix** in Marine Recorder. In 1989 Gubbay (1990) also recorded a maerl bed adjacent to Howson's north-east site (103 in Figure 11) which has been ascribed to **SS.SMp.Mrl.Pcal** in Marine Recorder.

3.3.2 Flame shell beds

3.3.2.1 Sruth Lagaidh narrows, Loch Broom

MNCR phase 2 survey (LH01)

This was carried out within a 25 x 4 m band in the south-east part of the narrows at a depth of 13.0-14.0 m (Figures 3, 21). The substrate consisted of heterogeneous silty shelly sand, with a dense cover of pebbles. The stones were bound together by *Limaria* byssus threads forming a layer around 5 cm in thickness overlying the sediment, although small sand patches largely devoid of pebbles and *Limaria* covered around 20% of the sea bed. Details of the biota associated with the bed are given in Table 6.2 (Appendix 6).

The stabilised pebbles supported a patchy algal turf (around 25% cover) dominated by *Plocamium cartilagineum* and *Rhodophyllis divaricata*, with occasional *Heterosiphonia japonica* and *Phycodrys rubens*, and sparse *Saccharina latissima*. The stones were encrusted with serpulid worms and pink coralline algae, including *Lithothamnion glaciale*, and supported frequent hydroids, dominated by *Nemertesia ramosa*. *Ophiocomina nigra* was scattered over the bed but *Ophiothrix fragilis* formed a localised dense patch. Frequent members of the larger motile fauna included *Cancer pagurus*, *Inachus* sp., *Marthasterias glacialis* and *Asterias rubens*. Nest material was collected from within three 0.1m^2 quadrats in the surveyed area, which were found to contain 7, 19 and 3 live *Limaria hians*, which included 13 juveniles, probably recruited earlier in the year. This equates to a mean density of 97 ind./m^2.

Video, grab and spot dive surveys

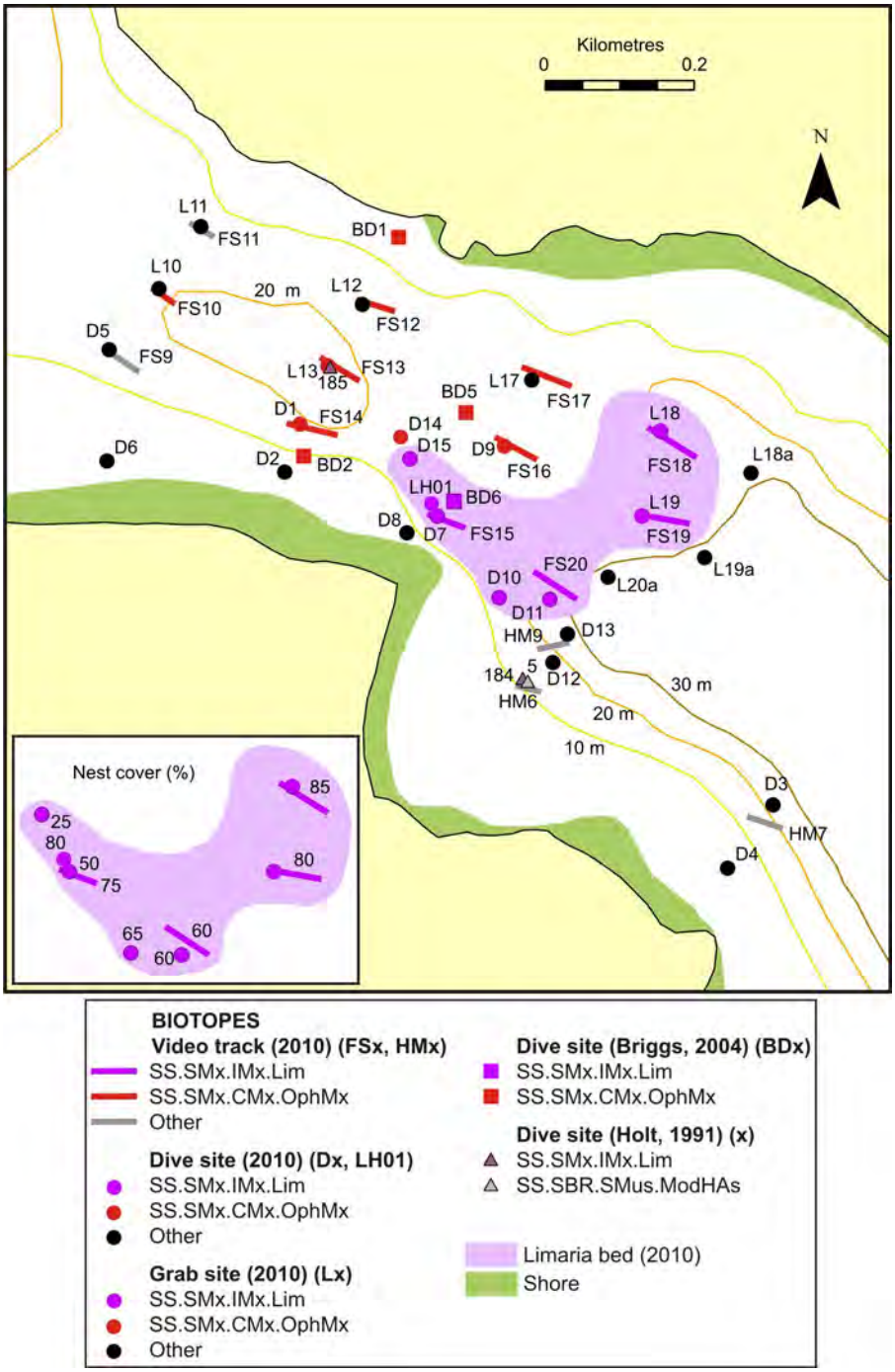
The narrows area was covered by 15 video runs, designed to assess the distribution of both the flame shell bed and the presence of a *Modiolus* bed (Figure 21). Spot dives were carried out at 15 locations to provide more detailed information on *Limaria* and *Modiolus* presence, especially in areas where the substrate was obscured by brittlestars. Single grab samples to assess the presence of *Limaria* were collected at 10 sites, including the deepest locations and when the water current was unsuitable for diving. Full details of the methodology are given in Section 2.5.5.

The detailed results of the surveys are given in the appendices: Table 2.2 (video), Table 8.1 (diver) and Table 8.2 (grab). They are collated and summarised here.

The substrates observed were generally similar to the heterogeneous silty sandy sediment with shell gravel, recorded at site LH01, although the pebble cover varied in density and in places was accompanied by scattered cobbles and small boulders. On the slope at the south-eastern side of the narrows, *Limaria* had formed the sea bed into a series of narrow, stepped platforms, with the byssal bound pebbles concentrated around the vertical faces. The algal cover observed at site LH01 was less well developed or absent at the other sites, which were all deeper. Otherwise, the community appeared similar.

The distribution of the flame shell bed, based on data from the video, diving and grabbing surveys is shown in Figure 21. The recorded coverage of the sea bed by nest material within this area varied from 25-85%, with a thickness of around 4-5 cm. Nest thickness was largely determined by the pebble size as the proportion of byssal material making up the nest matrix was low.

Figure 21 *Distribution of flame shell and brittlestar biotope records from video, dive and grab surveys in 2010 in Sruth Lagaidh Narrows, with resultant indicative mapping of the* Limaria *bed. Inset shows the percentage coverage of the sea bed by* Limaria *nest material at video and dive sites. Also shown are previous flame shell and brittlestar biotope records, with numbered labels referring to site codes used in Table 16.2 (Appendix 16)*



The estimated extent of the bed exhibiting nest coverage of 25% or greater is 6.9 ha. This is likely to be accurate to within +/-50%. The upper edge of the bed was found to extend to 9.6 m between sites D7 and D8. The lower limit was found to lie between 32 - 35 m at the south-eastern entrance to the narrows (between sites FS20 and L20a).

Dense blankets of *Ophiothrix fragilis* replaced the flame shell bed over an extensive area of the narrows to the north-west (Figure 21).

During the 1988 Seasearch survey of the loch Gubbay and Nunn (1988) reported the presence of *Limaria* beds at five sites along both the northern and southern sides of the narrows at depths of 13.0-15.5 m. Subsequently, Holt (1991) recorded the habitat in the centre of the narrows (Figure 21, site 185) and in the embayment south-east of the narrows (Figure 21, 184). On this basis, the predictive mapping of the bed (Dipper and Johnston, 2005) shows almost complete coverage of the narrows by the *Limaria* biotope. The 2004 diving survey of the area by Briggs (2004) failed to find the habitat on the northern side but did locate it in the south-eastern region of the narrows (Figure 21, site BD6), where they recorded it from 10.6 m to at least 29.3 m down the slope into the inner basin. This was found to be still the case in 2010, although it is now known that the bed extends across the narrows on the eastern side. However, there does appear to have been some contraction of the bed in the last 20 years.

Holt (1991) recorded the presence of frequent *Modiolus* on the southern side of the entrance to the narrows (Figure 21, site 5) in the form of clumps or buried in the sediment. No evidence of a *Modiolus* bed at Sruth Lagaidh was apparent in 2010. Scattered individuals were observed in 2010 during the diving and video surveys, becoming frequent locally at sites D3 and D4 close to Holt's site, but not in sufficient abundance to constitute a *Modiolus* MPA search feature biotope.

3.3.2.2 Badluarach, Little Loch Broom

Eight video runs were carried out to validate the presence of a flame shell bed here and a diving survey was carried out at 16 sites, which permitted close examination of the maerl substrate for the presence of *Limaria hians* nest material and individuals. The detailed methodology is given in Section 2.5.1.1 and the results in Table 7.1 (Appendix 7). *Limaria hians* was only found as O-group juveniles (c. 5 mm in length) and, although it may be contributing to the formation of maerl clumps, it was not considered to be a habitat-former and the area is best considered as a maerl bed. Consequently, the results are described above in Section 3.3.1.1.

3.3.2.3 Carn Skerries

In 1996 Howson and Bradshaw (1997) observed the presence of *Limaria* beds to the north, and between the southern islands, of the Carn Skerries, with *L. hians* recorded as abundant at the latter site. The positions given for these sites in Marine Recorder are clearly inaccurate and so validation in 2010 concentrated on the locations indicated on the mapping in Howson and Bradshaw (1997), combined with the depths cited. Following the indication of absence of a *Limaria* bed from dropdown video runs at these sites, dives were carried out at both sites (Appendix 5), which also revealed no evidence of the continued presence of *Limaria*.

3.3.3 Seagrass beds

3.3.3.1 Gruinard Bay

MNCR phase 2 survey (ZM01)

This was carried out within a 25 x 4 m band at a depth of 2.0-2.7 m in Mungasdale Bay (Figures 3, 22). The substrate of medium sand supported a dense bed of *Zostera marina*. Ten replicate 0.25m^2 quadrat counts provided a mean shoot density of 43/m^2. *Zostera* leaves provided a substrate for frequent *Lacuna vincta* and small rissoid gastropods, as well

as abundant *Ectocarpus siliculosus*, although much of the algal material was unattached (Appendix 6: Table 6.3). Minor components of the epiphytic flora included *Callithamnion corymbosum*, *Trailliella intricata*, *Audouinella* sp. and small (up to 3 cm) plants of *Heterosiphonia japonica*. Scattered shells and pebbles supported frequent *Chorda filum* and a sparse red algal flora including *Gracilariopsis longissima*, *Polysiphonia fucoides* and *Spermothamnion repens*. Conspicuous elements of the infauna included numerous *Amphiura* sp. arms emerging from the sediment, frequent *Arenicola marina*, bivalve siphons (probably *Ensis* spp.), *Echinocardium cordatum* and *Lanice conchilega*. The motile epifauna was dominated by *Pagurus bernhardus*, *Astropecten irregularis* and *Asterias rubens*.

Video, dive and glass bucket surveys

The area of investigation included Mungasdale Bay and the south-eastern region of Gruinard Bay, comprising Loch Camus Gaineach and Mill Bay. Eight video runs were initially carried out, identifying seagrass beds in all three areas. More detailed work to assess the extent of beds was frustrated by insufficient visibility for clear observation of the sea bed from the surface on the day of the survey, but limited surveying was carried out. A diver transect in Mungasdale Bay recorded seagrass density at a number of spot locations, as well as identifying a suitable site for the MNCR phase 2 survey. Glass bucket observations of seagrass density were made at a number of spot locations during the low water period in Mungasdale Bay and Loch Camus Gaineach. Further details of methodology are given in Section 2.5.6.

Figure 22 shows the recorded seagrass densities in Mungasdale Bay (detailed in Appendix 9: Table 9.1). Dense seagrass (at least 1-9/m^2) was found within a polygon of area 0.54 ha in the centre of the bay within a depth range of 1.9-3.6 m. Seagrass extended from here to the southern side of the bay but only as sparse plants. Unfortunately, time did not permit coverage of the northernmost part of the bay, but aerial imagery from 2004 (Figure 22) is suggestive of the presence of dense *Zostera* at that time.

Extensive patches of dense seagrass (at least 1-9/m^2), entangled with ectocarpoid algae, were recorded with an area of 0.43 ha to the south of Fraoch Eilean Mór in Loch Camus Gaineach (Figures 23, 24 and Table 9.1, Appendix 9). In the shelter of the island, the sediment here was of fine sand with abundant *Arenicola marina* and a brown diatomaceous film. A band of seagrass straddled the low water line (between 0.4 m above and 0.3 m below chart datum). Dense patches were observed as far as the northernmost end of the SG19 video run. Sparse plants were observed for a farther 250 m south of here at depths of 0.7-1.9 m. This interpretation of seagrass distribution corresponds fairly closely to the patterning visible on the 2004 aerial imagery (Figure 24).

Figure 22 Zostera marina *shoot density estimates from spot dive and glass bucket observations and a drop-down video run in Mungasdale Bay in 2010, with resultant indicative minimum seagrass bed boundary. The data are overlain on 2004 aerial imagery. See text for explanation of density categories*

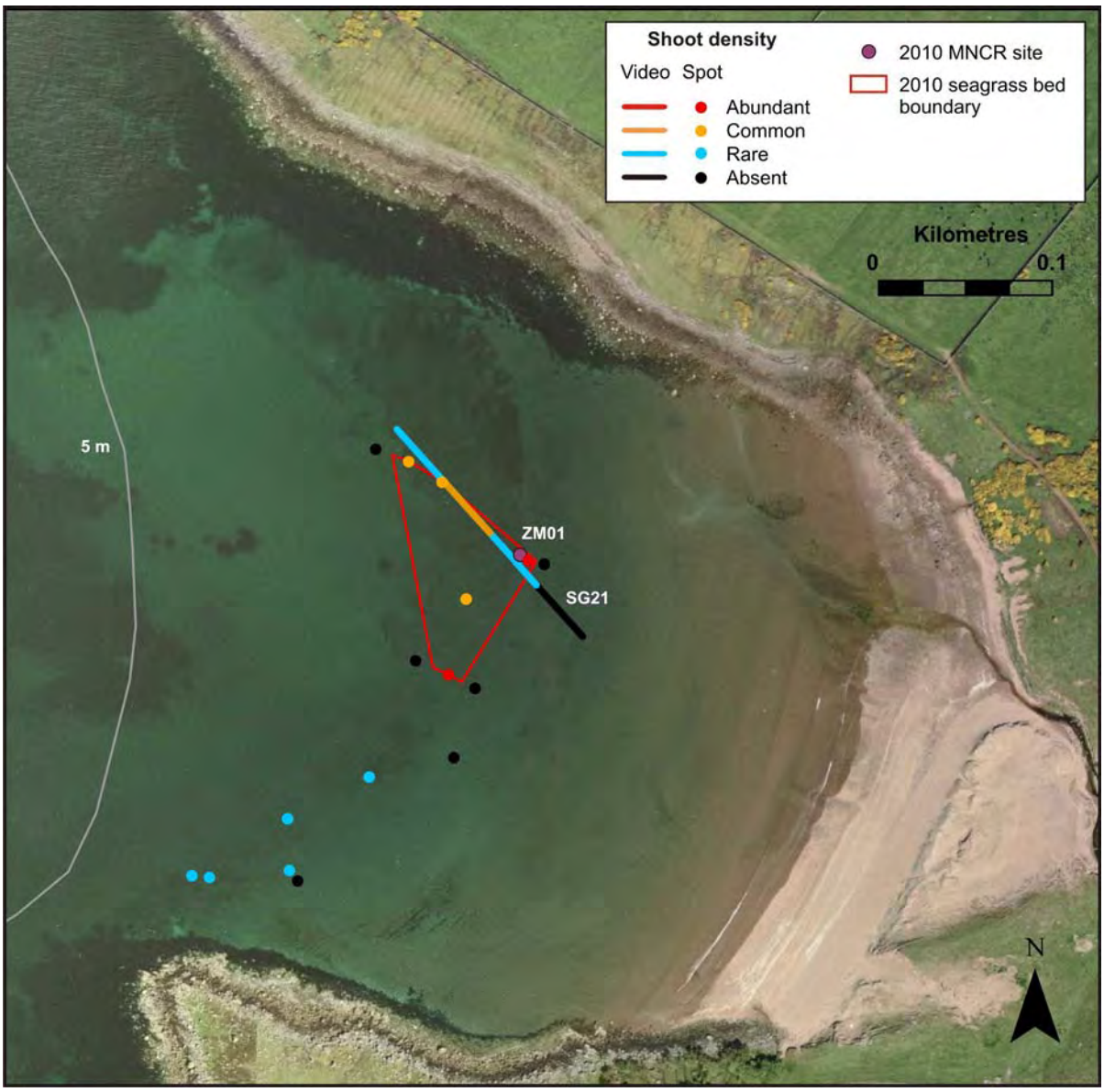
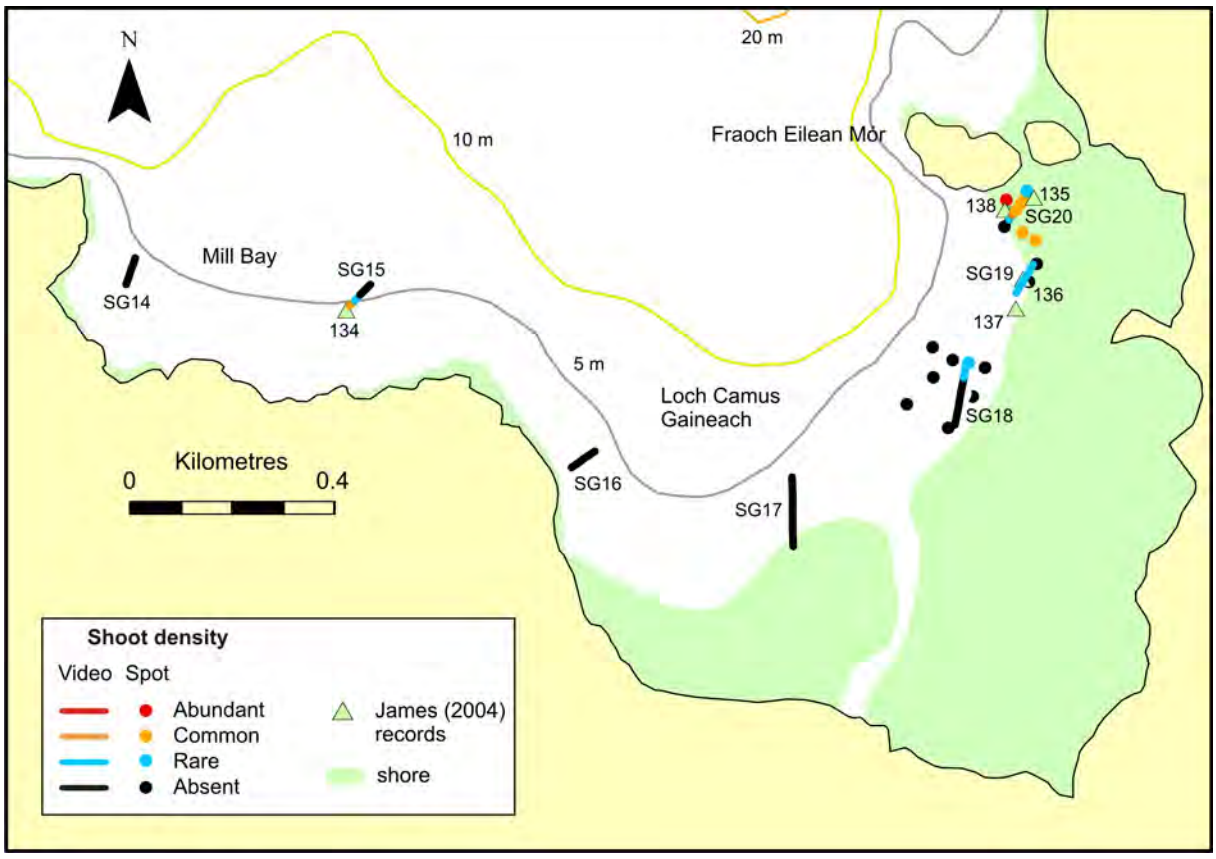


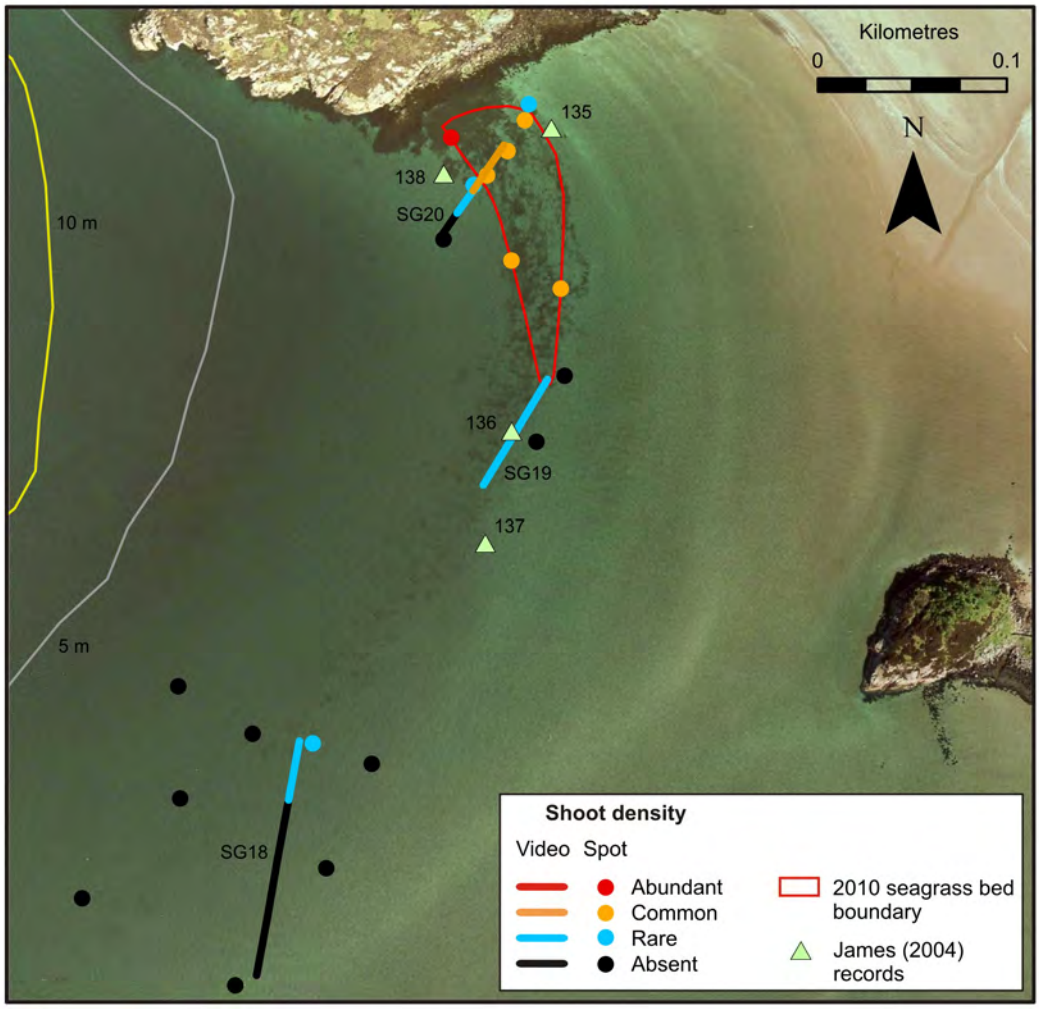
Figure 23 Zostera marina *shoot density estimates from glass bucket observations and drop-down video runs in south-east Gruinard Bay in 2010. Also shown are seagrass biotope records from James (2004). See text for explanation of density categories*



A thin seagrass bed on rippled fine-medium sand at 5 m depth was observed in Mill Bay, where *Zostera* was common for a distance of around 20 m along the SG15 video run.

The Mungasdale Bay bed has not been previously recorded. However, James (2004) identified the location of the two south-eastern beds in 2004. The Mill Bay bed was estimated to have a diameter of 25 m in 2004, which corresponds to the 2010 findings. Due to the lack of quantitative data and differences in methodology, it is difficult to compare densities between years. James' (2004) estimate of 5-35% seagrass coverage embraces the 2010 estimate (overall c.10%), but the upper range value (which is reflected in the photograph of the site given by James (2004, p.51)) was greater than observed in 2010. James (2004) delimited the bed in Loch Camus Gaineach by means of four marginal survey sites, from which he derived an extent of 0.6 ha. This is somewhat greater than the 2010 estimate (0.43 ha). The cause of the difference is likely to be due in part to methodologies, but the bed was interpreted as extending farther south in 2004. Over this area James (2004) recorded patchy *Zostera* with densities of 5-25% cover. *Zostera* was also recorded in this area in 2010 but more thinly spread. However, given the absence of detailed quantitative data in both years, no firm conclusions can be drawn regarding temporal differences in seagrass density or extent.

Figure 24 Zostera marina *shoot density estimates from glass bucket observations and drop-down video runs in eastern Loch Camus Gaineach, Gruinard Bay in 2010. Also shown are seagrass biotope records from James (2004). The data are overlain on 2004 aerial imagery. See text for explanation of density categories*

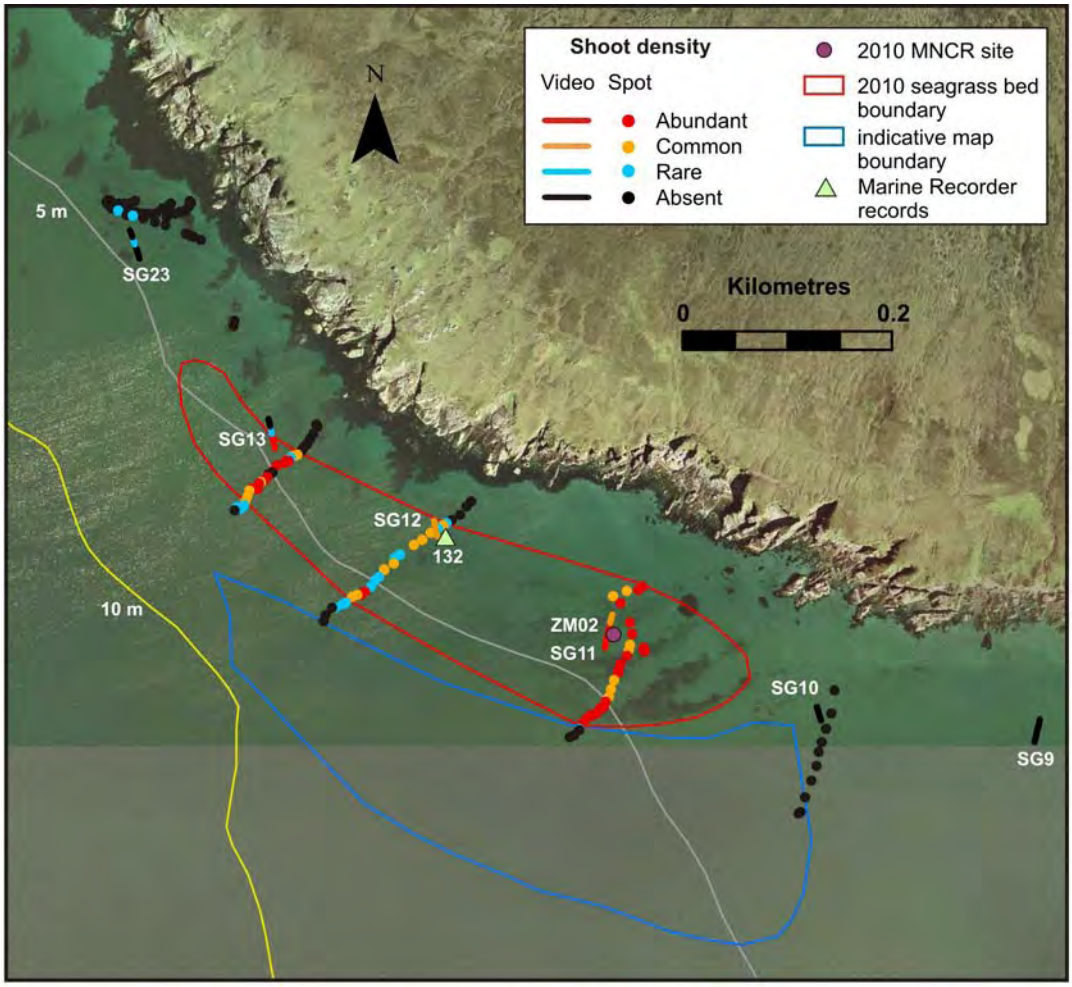


3.3.3.2 Loch Gairloch

MNCR phase 2 survey (ZM02)

The survey was located on the northern side of the channel between Longa Island and the mainland (Caolas Beag) at a depth of 3.0-3.5m (Figures 3, 25). A band of 25 x 4 m was surveyed by diving, supplemented by a van Veen grab sample for analysis of the infauna. The substrate of rippled fine sand supported a dense sward of *Zostera marina*, ten replicate 0.25m^2 quadrat counts providing a mean shoot density of 113/m^2. Although 20 algal epiphytes were recorded on *Zostera* leaves (Table 6.3, Appendix 6), these were largely microscopic; the flora of conspicuous species was poor and was dominated by *Ceramium nodulosum* and *Heterosiphonia japonica* (both rare). The leaf fauna also appeared poor in abundance and diversity, with only *Idotea* species (*I. baltica* and *I. linearis*) attaining a SACFOR abundance of frequent. *Chorda filum* was common, but there were very few hard surface substrates to support an epibiota. Thinly scattered bivalve shells supported a sparse flora including *Mesogloia vermiculata*, *Gracilariopsis longissima* and *Scytosiphon lomentaria*. The sand fauna also appeared poor, and was dominated by occasional *Liocarcinus depurator*, *Carcinus maenas*, *Pagurus bernhardus* and small flatfish.

Figure 25 Zostera marina *shoot density estimates from 2010 video surveys from RV* Serpula *(lines, coded SGx) and from the RHIB* Aphrodite *(spot observations using a mini video system) in north-west Caolas Beag, Loch Gairloch (Box A in Figure 11). Also shown are previous seagrass biotope records. The data are overlain on 2004 aerial imagery. See text for explanation of density categories*

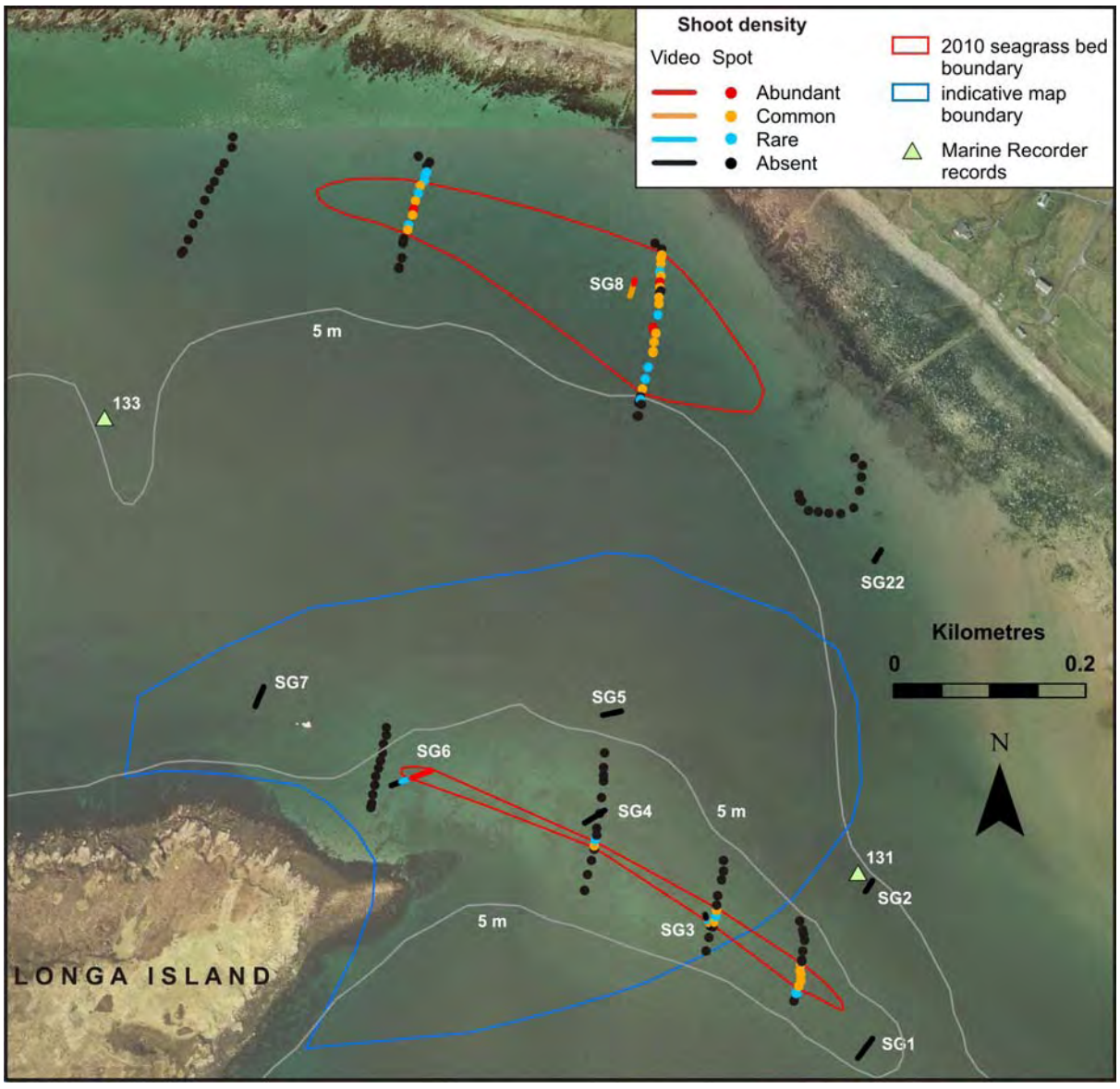


Video surveys

An initial set of fifteen video runs on both sides of the channel, Caolas Beag, identified the principal areas of seagrass. This was followed by a more detailed survey of distribution using a small dropdown video system with a GPS video overlay along runs across known and likely seagrass habitats. Full details of the methodology are given in Section 2.5.7.1 and the results in Table 9.2 (Appendix 9).

Three areas of seagrass were identified. The most extensive and densest area lies in the north-western entrance to the channel (Figure 25). The polygon embracing sites displaying shoot densities generally of 1-9/m^2 (common) or 1-9/0.1m^2 (abundant) covers an area of 6.22 ha and extends from depths of 2.8 - c.6.2m. Density appears greater at the eastern end, where superabundant seagrass was recorded during the MNCR phase 2 survey. One of the two previous records of Gairloch seagrass lies in this area (Gubbay, 1990), although little detail is provided. The patterning discernible on the 2004 aerial imagery on the eastern side of this area is suggestive of a similar, though very patchy seagrass distribution in 2004.

Figure 26 Zostera marina *shoot density estimates from 2010 video surveys from RV* Serpula *(lines, coded SGx) and from the RHIB* Aphrodite *(spot observations using a mini video system) in east Caolas Beag, Loch Gairloch (Box B in Figure 11). Also shown are previous seagrass biotope records. The data are overlain on 2004 aerial imagery. The map is an eastern continuation of Figure 25, using the same scale. See text for explanation of density categories*



At the north-eastern channel entrance an area of generally sparser seagrass, though with patches of abundant plants, is estimated to extend over 4.21 ha, with overall density of 1-9/m^2 (Figure 26). The seagrass supported a greater algal biomass here than in the previous site, especially of red filamentous forms, which also colonised the greater density of shells, especially *Ensis* spp., that were observed here.

The third area of seagrass occupied a narrow band (estimated at 0.68 ha) at recorded depths of 3.3-4.5 m along the middle of a shallow tongue of medium sand with scattered shells to the north-east of Longa Island (Figure 26). *Zostera* density was generally around 1-9/m^2, apart from a patch of abundant plants at the western end. The surface scatter of shells and pebbles was markedly greater at this site than the north-west site and the chart

indicates stronger current speeds. The algal flora appeared significantly richer in terms of biomass and diversity, with a patchy algal turf reaching c. 10% cover on the western side and including much *Chorda filum*, frequent filamentous reds and occasional *Saccharina latissima*.

Howson (1991) recorded the presence of a *Zostera marina* bed close to this band (site 131) in 1990. Although no *Zostera* was recorded at the stated location in 2010 (site SG2), the current level of precision in position fixing technology was not available at that time. Howson's (1991) description of the site clearly portrays a more diverse community than was encountered at the MNCR phase 2 site (ZM02) in 2010, but this is likely to result, at least in part, from the more heterogeneous substrate and tide-swept nature of the site.

The indicative mapping of *Zostera* beds (Dipper and Johnston, 2005) is loosely based on the very limited data available at the time and does not reflect the distribution of the habitat (Figures 25, 26).

3.3.4 Oyster beds

3.3.4.1 Loch Thùrnaig

Shore, dive and video surveys

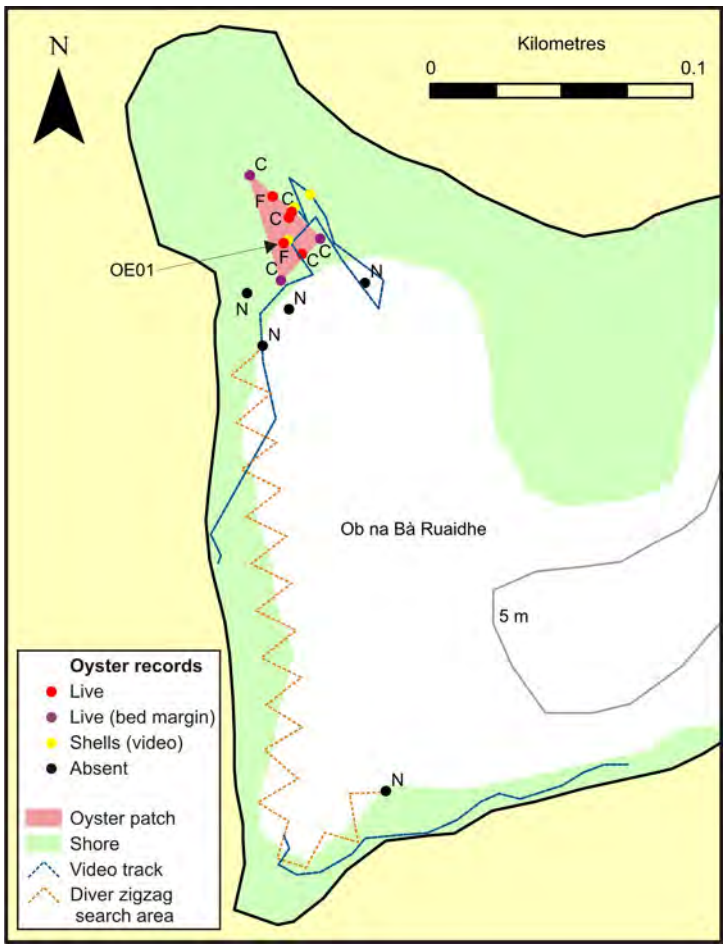
Records of the location and abundance of oysters from these surveys have been collated in Table 10.1, Appendix 10) and illustrated in Figure 27. Living oysters were only observed on the lower shore in the north-western embayment of Ob na Bà Ruaidhe. The records delimit a triangular patch of area 398 m^2. Within the patch SACFOR density records varied from frequent - common, locally reaching 4-5 ind./m^2 for small areas less than 5 x 5 m. Oyster size ranged from 25 - 120 mm, with an average of around 70 mm. The video survey recorded the presence of oyster shells just beyond the patch boundary; however, it was not possible to distinguish between living material and empty shells.

MNCR phase 2 survey (OE01)

This was located near the centre of the oyster patch, with the shot marker at a height of 0.4 m above chart datum (Figure 27). The substrate consisted of slightly silty sand with a dense (c.80%) cover of pebbles, encrusted with frequent *Hildenbrandia* spp. and *Pomatoceros* spp. The pebbles were colonised by occasional *Fucus vesiculosus*, *Polysiphonia fucoides* and *Chorda filum*, which became dense in the lower part of the surveyed area, the algae supporting ascidians, including *Ascidiella aspersa* and *Ciona intestinalis*, and *Anemonia viridis*. Scattered clumps of *Polyides rotundus* supported an epiphyte community including small (up to 1 cm) thalli of *Heterosiphonia japonica*. Amongst the commoner members of the motile fauna were frequent *Carcinus maenas*, *Littorina littorea* and *Pagurus bernhardus*, with occasional *Buccinum undatum* and *Asterias rubens* (Appendix 6: Table 6.2).

The overall abundance of *Ostrea edulis* within the surveyed area was assessed as frequent, although small patches of denser oysters were present. The abundance of live and dead *O. edulis* material appeared too thin for the area to be classified as an oyster bed, the oyster material contributing little to the process of habitat formation. The area is probably best considered as a transitional region between an upper biotope, **LR.LLR.F.Fves.X**, and a lower biotope, **SS.SMpKSwSS.LsacCho**.

Figure 27 *Records of* Ostrea edulis *from 2010 shore, dive and video surveys in Ob na Bà Ruaidhe, Loch Thùrnaig, showing SACFOR abundance. Also illustrated are the areas searched by diving (with negative results) and video, and the location of the MNCR phase 2 survey site (OE01)*



Smith (1978, 1984) recorded abundant *Ostrea edulis* in Loch Thùrnaig in 1978. A variety of positional coordinates are given in these publications for the record, but none of these could be correct. However, using a permutation of some of these coordinates, and the description of the location given in Smith (1978) it is clear that her record relates to the area around the jetty on the eastern side of the loch. During the 2010 survey, this area was examined around the time of MLWN, so it is possible that oysters were missed. The 2010 record for western Loch Thùrnaig thus appears to be new. *Ostrea edulis* growth experiments were carried out at this site in 1973 and 1974 and it was considered possible that there had been some loss of the caged seed oysters (Drinkwater and Howell, 1985).

3.3.4.2 Old Dornie Harbour

Details of the search for oysters at this location are provided in Table 10.2 (Appendix 10). Despite an extensive examination of the shores at around the time of MLWS, only old, eroded, empty shells were found. Smith recorded occasional *Ostrea edulis* here in 1979 (Smith, 1981, 1984).

3.3.5 Blue mussel beds

3.3.5.1 Ullapool River

Bed mapping and density assessment

At the mouth of the Ullapool River a channel-like depression was separated from the main river channel on its western side by a pebble bank (Figure 28). This depression was partly flooded at the time of the survey (MLWS) but probably largely drains on very low tides.

Figure 28 *Peripheral limits of* Mytilus edulis *distribution and SACFOR abundance of mussels at 15 haphazardly located stations at the mouth of the Ullapool River in 2010*

The 2004 aerial imagery shows this depression as a minor channel, linked at its northern end to the main river channel but this linkage was not evident at the time of the survey. Indeed temporal topographical change might be expected and it is possible that the depression has moved eastwards over the last six years. The substrate within this depressed area was largely composed of dense pebbles and gravel which supported dense fucoids, with *Fucus serratus* predominating in lower areas and *F. vesiculosus* in more elevated areas. *Mytilus edulis* was recorded both in the depressed area and on the pebble

bank, where live specimens were largely buried. Mussel density was highly variable (Table 11.2, Appendix 11), frustrating the delineation of a mussel bed boundary. Over the area examined by the density survey, overall mussel density was frequent-common, with only one small patch supporting abundant mussels beneath a blanket of *Fucus serratus* near the seaward limit of the mussel band.

MNCR phase 2 survey (ME01)

The survey was carried out within an area of approximately 10 x 10 m midway along the mussel band (Figure 28) on the lower shore. The area was mostly flooded, with the depth varying from 0 - 20 cm. Assuming the area freely drains at low tide, this is equivalent to a height range of 0.5 - 0.7 m above chart datum.

The substrate consisted of a 95% pebble cover, with scattered cobbles and boulders. *Mytilus edulis* density was frequent overall but common in small (c.1 m^2) patches. The stones supported a dense fucoid blanket, with both *Fucus serratus* and *F. vesiculosus* abundant, but varying in dominance locally. A sparse algal understorey included *Corallina officinalis*, *Chondrus crispus*, *Furcellaria lumbricoides* and *Cladophora rupestris*. Small thalli of *Heterosiphonia japonica* were found growing epiphytically on *F. lumbricoides* and large bushy plants (up to 15 cm) on pebbles. The motile fauna was dominated by gastropods, including frequent *Littorina littorea*, *L. mariae*, *Gibbula umbilicalis* and *Patella vulgata*. One specimen of *Modiolus modiolus* was observed. See Table 6.2 (Appendix 6) for a full list of SACFOR abundances.

Mussel density over much of the area within the recorded distributional limits of *Mytilus edulis* was too low for the recognition of an extensive mussel bed. The only unambiguous record of a mussel biotope (**LS.LBR.LMus.Myt.Mx**) relates to the small patch of abundant mussels recorded within an area of around 12 m^2 near the southern limit of the surveyed area (station 6, Figure 28). Elsewhere, other mussel-supporting biotopes are more appropriate. Most of the surveyed area is probably best considered as a mosaic of mixed substrata fucoid biotopes, with **LR.LLR.F.Fserr.X** on lower ground and **LR.LLR.F.Fves.X** on higher ground.

Holt (1991) recorded three biotopes at the Ullapool River mouth in 1991, **LR.LLR.F.Asc.X** and **Fserr.X** on the eastern side of the river and **LS.LBR.LMus.Myt.Mx** on the western side. All three records are represented by one set of positional coordinates (see Figure 8, site 4) and so it is unlikely that this location corresponds to the mussel bed site. Holt (1991) recorded abundant *Mytilus edulis* to the west of the river channel but the extent of the bed in 1991 is unknown.

3.3.6 Sea loch egg wrack beds

3.3.6.1 Badachro

Bed mapping and cover assessment

A band of sea loch egg wrack fringed most of the shoreline of Badachro Bay, interrupted by areas of outcropping bedrock and boulders (Figure 29). Parts of beds B1, B2 and B3 extended onto the lower shore and, although the survey was carried out during a low tide period of MLWN -0.2 m, it is possible that some egg wrack coverage was missed. Table 5 summarises the bed sizes, revealing a total extent for Badachro of 1.31 ha. The sea loch egg wrack coverage was fairly luxuriant, with site measures varying between 50 - 95% (Figure 29) and thickness from 11 - 16 cm (Appendix 12: Table 12.2). The egg wrack overlay a substrate of mainly muddy sand with gravel and pebbles.

MNCR phase 2 survey (WW01)

This was located on the mid shore in bed B1 (Figure 29), where the substrate was a mix of gravel, pebbles, cobbles and scattered boulders, with a muddy sand infill, supporting 95% coverage by *Ascophyllum nodosum* ecad *mackaii* with a mean thickness of 12 cm. The sea loch egg wrack was accompanied by very sparse plants of attached *A. nodosum* and *Fucus vesiculosus*. The associated fauna (Table 6.6, Appendix 6) was dominated by gastropods, especially *Littorina littorea* and *L. obtusata*, whilst beneath the stones were dense gammarids and juvenile eels, *Anguilla anguilla*, up to c.9 cm in length. The stones supported light encrustations of *Hildenbrandia* spp. and *Semibalanus balanoides*, whilst the sediment infauna included sparse *Arenicola marina* and *Cerastoderma edule*.

Figure 29 *Distribution of* Ascophyllum nodosum *ecad* mackaii *beds (B1-B4) in Badachro Bay, 2010. Also shown is the percentage coverage of* mackaii *at 15 stations within the beds and the location of the MNCR phase 2 survey site (WW01)*

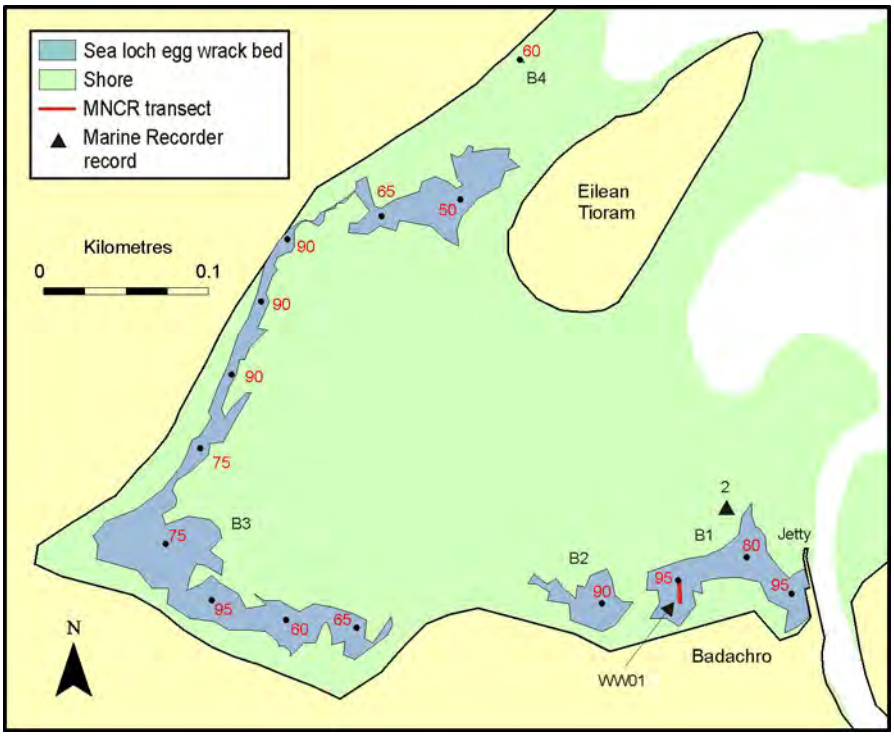


Table 5 *Measurements of extent of* Ascophyllum nodosum *ecad* mackaii *beds based on mapped bed margins, and mean coverage by sea loch egg wrack, for beds in Badachro Bay and Loch Thùrnaig. *Extent based on visual estimate of bed area*

Badachro			Loch Thùrnaig		
Bed	**Extent (m^2)**	**Mean cover (%)**	**Bed**	**Extent (m^2)**	**Mean cover (%)**
B1	2682	90	T1	1244	100
B2	1036	90	T2	5313	83
B3	9351	76	T3	>40*	20
B4	5	60	T4	150*	40
			T5	500*	25
			T6	125*	15
			T7	25*	10
Total	13074			6747	

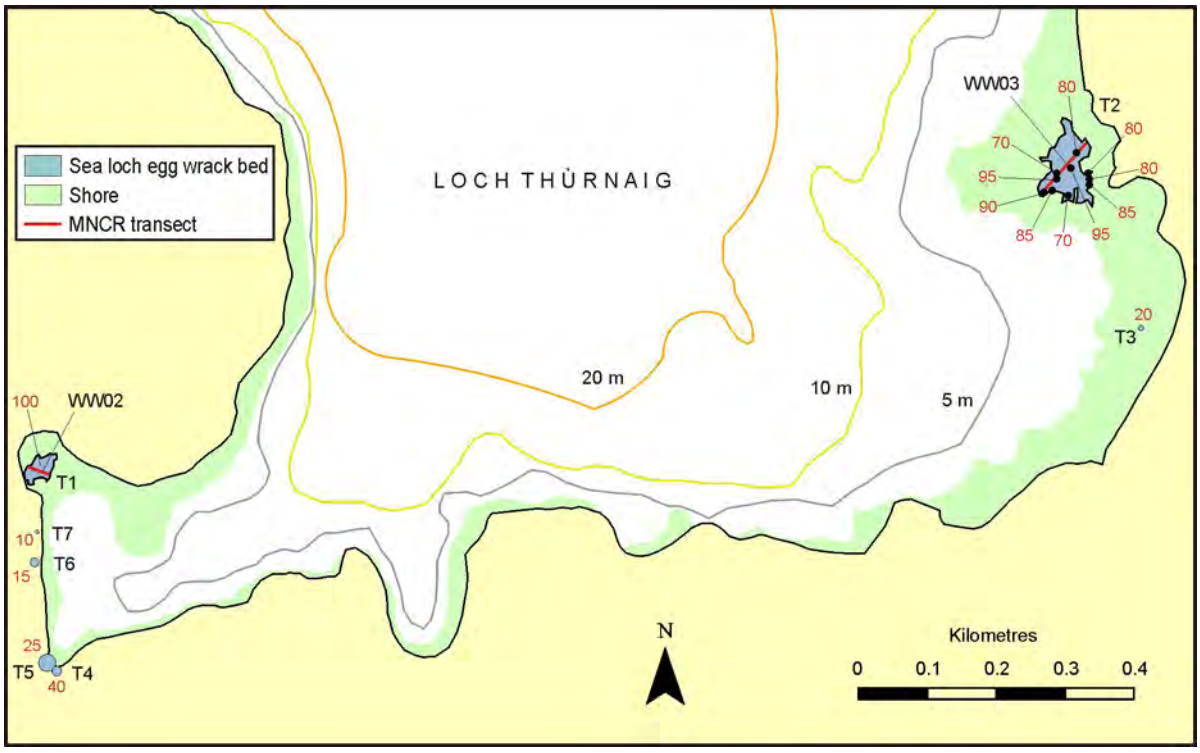
Howson (1991) recorded abundant sea loch egg wrack in front of the Badachro Inn in 1990, which corresponds to bed B1 in 2010. The plotted position in Figure 29 (site 2) is based on the cited 100 m grid reference, which probably explains the lack of coincidence between the records. The indicative mapping of Badachro Bay (Dipper and Johnston, 2005) suggests the presence of sea loch egg wrack along the whole of the southern shoreline of the bay, although this appears to be based solely on Howson's single record. The mapping also indicates the presence of a fringe of sea loch egg wrack along the mainland shore to the north of Eilean Tioram. This appears to be an error, as the Howson (1991) site which underpins this interpretation, supported abundant *Ascophyllum nodosum*, but not ecad *mackaii*.

3.3.6.2 Loch Thùrnaig

Bed mapping and cover assessment

Areas of sea loch egg wrack were concentrated on the more sheltered western and eastern sides of the loch on the mid shore (Figure 30). Two major beds were found (T1, T2) which exhibited extensive coverage by luxuriant egg wrack (80 - 100% cover, 7 - 15 cm mean thickness) (Figure 30; Table 12.2, Appendix 12). Between these beds five smaller patches were located displaying significantly sparser egg wrack coverage (Figure 30, Appendix 12: Table 12.3). The total extent of the habitat within the loch was estimated to be at least 0.67ha (Table 5). The sea loch egg wrack generally overlay mixed substrates of muddy sediment with gravel, pebbles and cobbles.

Figure 30 *Distribution of* Ascophyllum nodosum *ecad* mackaii *beds (T1-T7) in Loch Thùrnaig, 2010. Also shown is the overall percentage coverage of* mackaii in the bed or *at stations within the bed, and the location of the MNCR phase 2 survey sites (WW02, WW03)*



MNCR phase 2 surveys (WW02, WW03)

These surveys were carried out along 4 m wide transects spanning the two major beds T1 and T2 (Figure 30). At WW02 the substrate of dense pebbles and scattered cobbles on gravelly muddy sand supported a complete cover of *Ascophyllum nodosum* ecad *mackaii*, with much epiphytic *Polysiphonia lanosa*, to a mean depth of 15 cm, overlain by sparse plants of attached *A. nodosum* and *Fucus vesiculosus* (Table 6.4, Appendix 6). The associated fauna was dominated by *Littorina littorea*, *L. obtusata* and *Carcinus maenas*, with the stones encrusted by *Hildenbrandia* spp. and *Semibalanus balanoides* and overlying dense gammarids and juvenile *Anguilla anguilla*, as at Badachro.

At WW03 the muddy sediment with a surface scattering of stones was overlain by dense *Ascophyllum nodosum* ecad *mackaii* (99% cover) with much *Polysiphonia lanosa*, and sparse attached *A. nodosum* and *Fucus vesiculosus* (Table 6.4, Appendix 6). The fauna was very similar to that of WW02 except that no eels were recorded here (though they were present elsewhere on the bed). Dominant members of the fauna were gammarid amphipods, *Carcinus maenas*, *Littorina littorea* and *L. obtusata*. Eight infaunal cores were taken at this site and were strongly dominated by the polychaetes, *Malacoceros fuliginosa* and *Capitella capitata*, and gammarid amphipods (Appendix 4: Table 4.6).

The presence of *Ascophyllum nodosum* ecad mackaii in Loch Thùrnaig was noted by Lewis (1957). Howson (1991) recorded its continued presence in 1990, but did not provide any further details.

3.3.6.3 Old Dornie Harbour

During the shore search for native oysters around Old Dornie Harbour (Section 3.3.4.2) on the 10th August 2010, several small patches of sea loch egg wrack were observed amongst attached fucoids. A dense, well-delineated, thick bed (site O1) with coverage of c.95% was recorded at 58.04335°N 5.41840°W. This extended over an area of c. 25 x 5 m within a shallow gully running down the shore (Table 10.2, Appendix 10).

3.4 Infaunal survey

Granulometric data for the grab sample sites are provided in Appendix 4, with Table 4.2 showing summarised descriptors, Table 4.3 raw data and Figure 4.1 cumulative weight curves. Species abundance data are given in Table 4.4, with total abundance, diversity and biotope allocations in Table 4.7.

The multidimensional scaling plot (Figure 31) shows species composition strongly reflecting the pattern in substrate type, with sand sites on the right of the plot, muddy sand sites in the centre, and mud sites largely on the left of the plot. The sandier biotopes (**SS.SCS.CCS** and **SS.SMp.SSgr.Zmar**) are relatively distinct, whereas there is no distinction in composition between the burrowed mud habitats, **SS.SMu.CFiMu.SpnMeg** and **SpnMeg.Fun**, apart from the presence of *Funiculina quadrangularis*. Moreover, sites allocated to these biotopes span a broad range of sediment types from muddy sands to soft muds. Some of the sandier sites are poor fits to the biotope, even though they display megafaunal burrows and, in some cases, *F. quadrangularis*. Such sites tend to be located in transitional zones between extensive burrowed mud habitats and shallower, sandier habitats and display characteristics of both.

Figure 31 Multidimensional scaling analysis plot of species abundance data from all grab samples. Symbols scaled by silt/clay content and coloured by assigned biotope. Stress = 0.13

Figure 32 Spatial pattern of taxon richness and biotopes shown by the infaunal grab samples

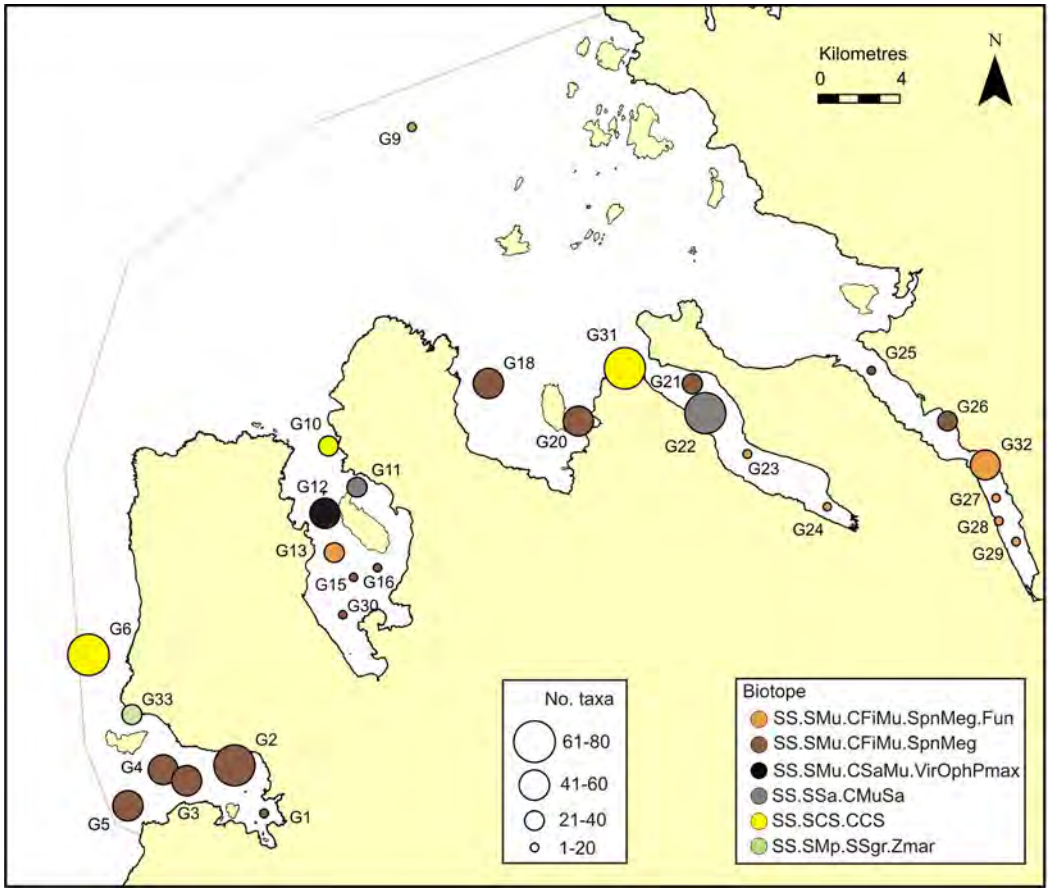


Figure 32 shows the spatial pattern of diversity and biotopes recorded for the infaunal samples. There is a striking impoverishment of the burrowed mud habitats in the inner regions of all the lochs examined, with very low numbers of taxa recorded in Loch Gairloch (17 at G1), Loch Ewe (3-14 at G15, G16 and G30), Little Loch Broom (7-20 at G23-24) and Loch Broom (4-7 at G27-29). This low diversity will also have contributed to the separation of these sites on the left of the MDS plot (Figure 31). Except in Loch Gairloch, this impoverishment is also echoed in the infaunal abundance figures, with these stations supporting densities of 3-35 ind./0.1m^2 in Loch Ewe, 8-46 ind./0.1m^2 in Little Loch Broom and 5-10 ind./0.1m^2 in Loch Broom (Table 4.7). The offshore burrowed mud site G9 also exhibited low abundance and diversity, but this is likely to have been influenced by the use of a shallower-sampling, small Van Veen grab at this site.

3.5 Geological features

Descriptions of the targeted geological features are given in Table 6. Further details on the PMFs/MPA search features, biota, substrate and biotope found at each of the geological interest sites (GFx) during the drop-down video survey are provided in Table 2.2 (Appendix 2). A total of 10 MPA search features (and their components) were found at eight of the GF sites.

Table 6 All geological feature (GFx) sites (including those that correspond with drop-down locations for search features), the nature of the geological feature and the PMF/MPA search feature identified at the site

Feature Code	Region	Description of targeted feature	PMF/MPA search feature
GF1	Little Loch Broom	Ice scoured stack	Burrowed mud, tall sea pen
GF2 (=LC2)	Little Loch Broom	Recessional moraine	Northern feather star
GF3 (=LC3)	Little Loch Broom	Position east of bedrock lip (sill)	
GF4	Little Loch Broom	Bedrock lip (sill)	Northern feather star
GF5 (=LC4)	Little Loch Broom	Position west of bedrock lip (sill)	
GF6	Gruinard Bay	Till blanket	Maerl bed
GF7	Gruinard Bay	Till blanket and recessional moraine	
GF8	Outer	Glaciated channel	Burrowed mud, northern feather star
GF9 (=BM54)	Outer	Glaciated channel	Burrowed mud
GF10	Summer Isles	Recessional moraine	
GF11	Summer Isles	Recessional moraine	Maerl bed
GF12	Summer Isles	Recessional moraine overlying bedrock groove	
GF13	Summer Isles	Bedrock groove	Burrowed mud
GF14	Summer Isles	Scoured rock surface	

4 DISCUSSION

4.1 Current distribution of PMF/MPA search features and their components

A total of 12 PMF/MPA search feature component biotopes and/or species were recorded during the 2010 survey (Table 7). The locations of these, as well as non-PMF biotopes are given in Appendix 13. The detailed distribution of PMFs is described above in Sections 3.2 and 3.3, whilst Table 7 summarises the regional distribution of PMFs.

*Table 7 Records of PMF/MPA search feature biotopes and species within regions of the Ullapool Approaches from the current survey (●) and previous surveys (○). *Uncertain 2010 records*

Biotope/species	PMF Code	Loch Gairloch	Loch Ewe	Gruinard Bay	Little Loch Broom	Loch Broom	Summer Isles	Outer region
LS.LBR.LMus.Myt	ME		○			●○		
SS.SMu.CFiMu.SpnMeg	BM	●○	●○	●○	●○	●○	●	●
Funiculina quadrangularis	FQ		●		●	●○	●○	●○
SS.SMx.IMx.Lim	FS				○	●○	○	
SS.SMp.KSwSS	KS	●○	●○	●○	●○	●○	●○	
SS.SMp.Mrl	MB	●○	●○	●○	●○		●○	●
SS.SCS.CCS.Nmix*	MC	●○	●○		●		●○	●
Ostrea edulis	OE		●○				○	
SS.SMp.SSgr.Zmar	SG	●○	●	●○				
LR.LLR.FVS.Ascmac	WW	●○	●○				●	
Leptometra celtica	LC				●○	●○		●
Arctica islandica	AI	○	●○		○	●○		●○
SS.SBR.SMus.ModHAs	HM		○			○	○	
SS.SMu.CFiMu.BlyrAchi	DM				○	○		
IR.MIR.KR.LhypTX	TS		○					
Palinurus elephas	PE		○				○	○
Glossus humanus	GH		○					
Atrina fragilis	AP							○

Blue mussel beds (**LS.LBR.LMus.Myt**) were only represented in 2010 by the presence of a small patch of dense mussels at the mouth of the Ullapool River, although mussels were present over a much wider area in lower abundance. This site probably corresponds to the 1991 record of the biotope by Holt (1991). Although there is another record of this biotope, in Marine Recorder for Loch Ewe, the original data from Eleftheriou and McIntyre (1976) on which this is based, provides no indication of a mussel bed, and the original ascription of this site to **LGS.AP.Pon** appears more fitting.

Burrowed mud was very widely distributed within all regions, generally supporting *Nephrops norvegicus*, and in parts of Loch Gairloch and Loch Broom, dense *Pennatula phosphorea*. *Virgularia mirabilis* was surprisingly infrequently encountered. *Funiculina quadrangularis* also has a widespread distribution within the Ullapool Approaches. Although not recorded within Loch Gairloch or Gruinard Bay, it was present just off the mouths of both and was found in all other regions, with high population densities recorded in the inner basins of Little Loch Broom and Loch Broom. Surprisingly, these are the first records of *F. quadrangularis* for Little Loch Broom and Loch Ewe.

The only recorded presence of a flame shell bed in 2010 was at Sruth Lagaidh Narrows in Loch Broom, where it has been previously recorded by Gubbay and Nunn (1988), Holt

(1991) and Briggs (2004). Although the biotope **SS.SMx.IMx.Lim** has also been recorded at Badluarach in Little Loch Broom (Holt, 1991) in association with the maerl bed here, in 2010 only juvenile *Limaria hians* were observed amongst the maerl, and the level of byssal production was not at a stage where a flame shell biotope could be recognised. Validation dives in 2010 at the two sites around the Carn Skerries, Summer Isles, where flame shell beds had been reported in 1996 by Howson and Bradshaw (1997) failed to reveal their continued presence.

Although unrecorded in the Outer region, **KSwSS** biotopes were widespread in 2010, in line with evidence from previous surveys. There was particularly extensive development of this PMF at the head of Loch Ewe, where the maerl bed off Poolewe was replaced by a patchy algal turf on muddy sand in deeper water (**SS.SMp.KSwSS.LsacR.Sa**) and a dense algal mat on very muddy sediment in shallower water (**SS.SMp.KSwSS.Tra**). Comparisons with the data from the 1990 survey by Howson (1991) suggests that previous maerl habitat has now been converted to algal mats at this location.

Maerl beds were recorded in all regions in 2010, apart from Loch Broom. In Loch Gairloch the maerl band fringing the south-west coastline was more extensive than previous records (Gubbay, 1990; Howson, 1991) and indicative mapping (Dipper and Johnston, 2005) suggest, with the band continuing southwards beyond the mouth of the loch. On the other hand, in 2010 the maerl bed off Poolewe had a more northerly distribution than these previous sources indicate, partly resulting from temporal change already referred to above, and partly possibly resulting from the additional survey coverage in 2010.

As first reported by Gubbay (1990), extensive maerl was recorded in 2010 off the northern coastline of Gruinard Island. Whereas most of the 2010 maerl records for the Ullapool Approaches relate to the algal turf biotope, **SS.SMp.Mrl.Pcal.R**, Gruinard Bay supports well-developed examples of the deeper biotope, **SS.SMp.Mrl.Pcal.Nmix**, with abundant *Phymatolithon calcareum* accumulating in the troughs of coarse sediment waves. This biotope was also recorded for the first time in the outer region, north of Loch Gairloch.

The presence of extensive maerl around the Summer Isles, as found by the 1996 Seasearch survey (Howson and Bradshaw, 1997) and indicated by the 1996 broadscale mapping of the area (Sotheran, 1997), was supported by the 2010 survey, with many records of **SS.SMp.Mrl.Pcal.R**, particularly around the Tanera islands and the Carn Skerries, although previous records of maerl off the north of Horse Island were not validated in 2010. The presence of maerl at two locations near the mouth of Little Loch Broom, Ardross Rock and Badluarach (Gubbay and Nunn, 1988; Holt, 1991; Seasearch, unpublished) was validated in 2010, with the Badluarach site representing one of the richest maerl beds in the Ullapool Approaches.

There were no firm records of **SS.SCS.CCS.Nmix** during the current survey due to the absence of the characterising holothurians, although possible occurrences were noted in all areas apart from Loch Broom (where it is probably absent due to the sheltered conditions) and Gruinard Bay (where it is likely to be present). Coarse sediments observed in 2010 along the exposed coastline north of Loch Gairloch and noted by Dipper (1981) around the Summer Isles possibly harbour extensive areas of this biotope.

There are no previous records of oyster beds within the Ullapool Approaches. In 2010 *Ostrea edulis* was only recorded as present within a small area of 398 m^2 in Loch Thùrnaig, where it was frequent-common. Smith (1978, 1984) recorded 'abundant' native oysters in Loch Thùrnaig in 1978, although this abundance category was not defined. No evidence of the persistence of an *O. edulis* population in Old Dornie Harbour (Smith, 1981, 1984) was found in 2010.

In 2010 seagrass beds were observed in parts of north-west Loch Gairloch and Gruinard Bay. Although there are previous records of this habitat in both locations (Gubbay, 1990; Howson, 1991; James, 2004), the current survey expands the known distributional range in both areas. The indicative mapping of Dipper and Johnston (2005) was found to be a poor fit to the distribution in Loch Gairloch.

In 2010 large beds of *Ascophyllum nodosum* ecad *mackaii* were recorded in Badachro Bay (Loch Gairloch), Loch Thùrnaig and a smaller bed in Old Dornie Harbour. The last record represents a new instance of this PMF. There are historical records of beds in Loch Thùrnaig (Lewis, 1957) and Loch Gairloch (Howson, 1991), but the 2010 survey provides the first indication of their distribution and extent.

Leptometra celtica has been previously recorded as rare-common at sites at the mouth of Loch Broom (Holt, 1991; unpublished 1995 SNH ROV survey), as well as on the inner and outer sills of Little Loch Broom (frequent-common) by Holt (1991). In 2010 it was found to be common at the mouth of Loch Broom and on the inner sill of Little Loch Broom, but became abundant on the outer sill. New instances were also recorded in the Outer region, where it occurred on deep mud between Priest Island and Loch Broom and was common in one small area off the mouth of Loch Gairloch.

There are sparse records of *Artica islandica* in 2010, restricted to Loch Ewe, Loch Broom and south of Isle Martin in the Outer region. Although there are also historical records for Loch Gairloch and Little Loch Broom, all records to date are likely to provide a poor indication of the distribution of the species. Its infaunal habit and the relatively low population density associated with such a large species renders it not readily amenable to survey. Although not possible within the timescale of the current survey, methodologies involving the sampling of greater volumes of sediment should lead to improvements in presence and density determination. Such approaches might include the use of anchor and scallop dredges (albeit with risk of habitat disturbance), as well as diver probing of the sediment. The same issues apply to *Glossus humanus*, which has only previously been recorded at a single site in the survey area (Loch Thùrnaig) by Howson (1991) and was not refound in 2010.

No examples of a *Modiolus* PMF were identified during the 2010 survey. At sites in Loch Ewe (Gubbay, 1990) and Loch Broom (Holt, 1991), where the presence of **SS.SBR.SMus.ModHAs** has previously been recorded, horse mussel density in 2010 was considered too low for the sites to constitute horse mussel beds. A Marine Recorder record of the presence of **SS.SBR.SMus.ModHAs** in the Summer Isles is considered to be erroneous.

There are historical records of the inshore deep mud biotope, **SS.SMu.CFiMu.BlyrAchi**, in Little Loch Broom (Holt, 1991) and Loch Broom (Briggs, 2004). The data are a poor fit to the biotope and resampling of all these sites in 2010 suggested alternative biotope ascriptions were more appropriate.

The only record of a tide-swept algal community in the Ullapool Approaches, near the mouth of Loch Ewe, could not be confirmed in 2010. The biotope allocation within Marine Recorder of this Howson (1991) site is uncertain and has been reassigned from the original **MIR.EphR**. In 2010 this site was considered to be **SS.SMp.KSwSS.LsacR.Sa**.

No evidence of the presence of *Palinurus elephas* or *Atrina fragilis* was recorded during the current survey. More focused methods are appropriate for assessment of these PMFs.

4.2 Comparative analysis of MPA search feature beds

4.2.1 Maerl beds

Table 8 summarises biological descriptors of the four maerl beds studied in detail in 2010. In particular it should be noted that extent estimates are only indicative of the scale of bed size. Due to the diffuse nature of maerl distribution around the Summer Isles (which includes site ML02) no estimate of individual maerl bed pockets or total maerl bed coverage is currently possible.

Table 8 Summary of condition measures for four maerl beds (ML01-04) examined in 2010. Infaunal data derived from analysis of four replicate 10.3 cm diameter core samples

	ML01	**ML02**	**ML03**	**ML04**
Bed extent (ha)	12		61	>64
Overall live maerl density (SACFOR)	A	C	F	C
No. epibiotic taxa	69	63	45	62
No. infaunal taxa (mean)	48	35.3	27.8	
No. infaunal taxa (range)	37-65	33-38	20-37	
No. infaunal taxa (total)	109	74	54	
Infaunal mean abundance (ind./0.01m^2)	142	87	136	
Infaunal abundance range (ind./0.01m^2)	76-187	58-104	95-179	

Although the smallest of the maerl beds examined, the Badluarach site (ML01) exhibited probably the densest overall concentration of living maerl. However, localised patches of abundant maerl were also present elsewhere, especially around the Summer Isles. Epibiotic diversity appears lower at Poolewe (ML03) than the other sites, which reflects the visual appearance of the site. This site also supported the sparsest maerl concentration. Infaunal diversity appears highest at ML01, although an ANOVA analysis with post-hoc Tukey testing reveals only that mean species richness was significantly higher at ML01 than ML03 ($p<0.05$). There are no significant differences in infaunal abundance.

Comparisons with other Scottish maerl beds are complicated by methodological differences and a general lack of extent data. However, some context is provided by studies of twelve maerl beds using similar techniques and personnel: five in the Sound of Arisaig (Moore *et al.*, 2004), four in Loch Maddy (Moore *et al.*, 2006) and three in Loch Laxford (Moore *et al.*, 2010). Epibenthic taxon richness at these sites ranged from 33 to 109, with the Ullapool beds lying in mid range, apart from ML03, which is the third lowest of all sites. Infaunal taxon richness ranged from 56 to 122, with ML01 displaying the second highest diversity and ML03 the lowest diversity. Mean infaunal abundance ranged from 72 to 453 ind./0.01m^2, with ML02 showing the second lowest abundance. Live maerl was recorded as abundant at five of the twelve sites, and common at most of the other sites. Thus, the Badluarach site can be characterised as representative of a Scottish maerl bed with a rich maerl density, high infaunal diversity and moderate epibenthic diversity. The Poolewe site is extensive but of low quality, whilst the Summer Isles and Gairloch sites are probably representative of medium quality beds.

4.2.2 Flame shell beds

Although *Limaria hians* was observed associated with the maerl beds at Badluarach (Little Loch Broom) and Poolewe (Loch Ewe), the only instance of a flame shell biotope recorded was in the Sruth Lagaidh narrows (Loch Broom).

Table 9 compares various condition measures of the Loch Broom bed with those derived from other studies of Scottish beds. Despite accurate measures of extent not being produced for any of the beds, it is clear that Loch Broom is at the smaller end of the range. It appears that *Limaria* density is also much lower than other beds, particularly in view of the fact that 45% of the specimens sampled were juveniles; however, the proportion of juveniles found at this site seems to indicate that recruitment potential is high on this bed. Although the very limited sampling intensity may not have enabled accurate characterisation of the population, the *Limaria* nest matrix in Sruth Lagaidh narrows has a relatively high stone/byssus ratio and low thickness and so the recording of relatively low densities is unsurprising. Table 9 indicates that the diversity of the associated community at Sruth Lagaidh in 2010 was similar to those recorded elsewhere and by Holt's (1991) study at the same location. However, such MNCR phase 2 diversity figures can be strongly influenced by methodological differences, particularly regarding the extent and depth range of the area surveyed, so no ranking of sites should be inferred.

Table 9 Limaria hians *density, bed extent and epibenthic taxon richness recorded by MNCR phase 2 survey in studies of Scottish flame shell beds. *Crude estimate based on authors' knowledge of bed*

Location	**Year**	**Density (no./m^2)**	**Extent (ha)**	**No. taxa**	**Reference**
Laudale	2000	400	87 (c.17 >50% cover)		Bates *et al*., 2004
Laudale	2006	200		17-44	Mercer *et al*., 2007
Port Appin	1989			55	Connor, 1990
Port Appin	2006	348	c.40*		Trigg & Moore, 2009
Otter Spit	1988			70	Holt & Davies, 1991
Otter Spit	2000	>700			Hall-Spencer & Moore, 2000
Loch Creran	2006	600	c.8*		Trigg, 2009
Loch Broom	1991			61	Holt, 1991
Loch Broom	2010	97	7	57	This report

4.2.3 Seagrass beds

Table 10 compares condition measures for seagrass beds recorded during the current survey. SACFOR densities given are those most commonly recorded within the bed; however, it should be noted that aerial imagery suggests that the potentially high degree of patchiness may mean that these densities are overestimates for the bed as a whole. Clearly, the more extensive beds were located in Loch Gairloch, with the largest bed (NW Caolas Beag) also providing the higher of the two shoot density estimates. Epibenthic taxon richness was similar at the two MNCR phase 2 sites.

In a national context these Ullapool beds are small in size, especially when compared with the extensive seagrass coverage found in such areas as the Sound of Barra (Harries *et al.*, 2007) and Sound of Harris (Malthus *et al.*, 2006). However, existing evidence suggests that they may be the richest beds along the mainland coastline of northern Scotland from at least Loch Alsh to Moray Firth. Records of beds in Loch Carron (Smith, 1978; Smith, 1985a), Loch Torridon (Smith, 1985a), Enard Bay (White, 1987; James, 2004) and Eddrachillis Bay (James, 2004) indicate only the presence of very small, sparse or currently extinct beds.

Table 10 Summary of condition measures for seagrass beds examined in 2010. Mean shoot density and epibenthic taxon richness relate to MNCR phase 2 surveys

Location	Bed	Extent (ha)	Density (SACFOR)	Mean shoot density (/m^2)	No. epibenthic taxa
Gruinard Bay	Mungasdale Bay	>0.54	C-A	43	49
	Loch Camus Gaineach	0.43	C-A		
	Mill Bay	0.03	C		
Loch Gairloch	NW Caolas Beag	6.22	C-A	113	56
	NE Caolas Beag	4.21	C		
	NE Longa Island	0.68	C		

4.2.4 Sea loch egg wrack beds

The extent and coverage details for sea loch egg wrack beds in Badachro Bay and Loch Thùrnaig are provided above in Table 5 (Section 3.3.6.1). The additional small bed found in Old Dornie Harbour exhibited a coverage of c. 95% over an area of around 125 m^2. Bed thickness was similar at all sites, ranging up to around 15 cm. In terms of extent Badachro Bay beds covered approximately twice the area of Loch Thùrnaig beds, with all major beds (>1000 m^2) at both locations supporting high coverages (>75%) of egg wrack. The associated community was similar in terms of species composition and diversity at all three MNCR phase 2 sites examined (B1, T1, T2), although elvers were common at sites B1 and T1 but not recorded at site T2.

With total extent values of 1.3 ha for Badachro Bay and 0.7 ha for Loch Thùrnaig, these locations can be regarded as supporting medium-sized stands of sea loch egg wrack. For example, Gibb (1957) cited a figure of 4.0 ha for a bed in Loch Feochan and Mercer *et al.* (2007) recorded a total coverage of 6.9 ha for Loch Sunart, with individual beds up to 3.3 ha. Bed thickness for the Ullapool sites appears moderate, with some other beds, such as at the head of Loch Duich, known to reach 20-30 cm (Connor, 1989). This latter bed was also recorded as supporting numerous elvers.

4.3 Related human activities

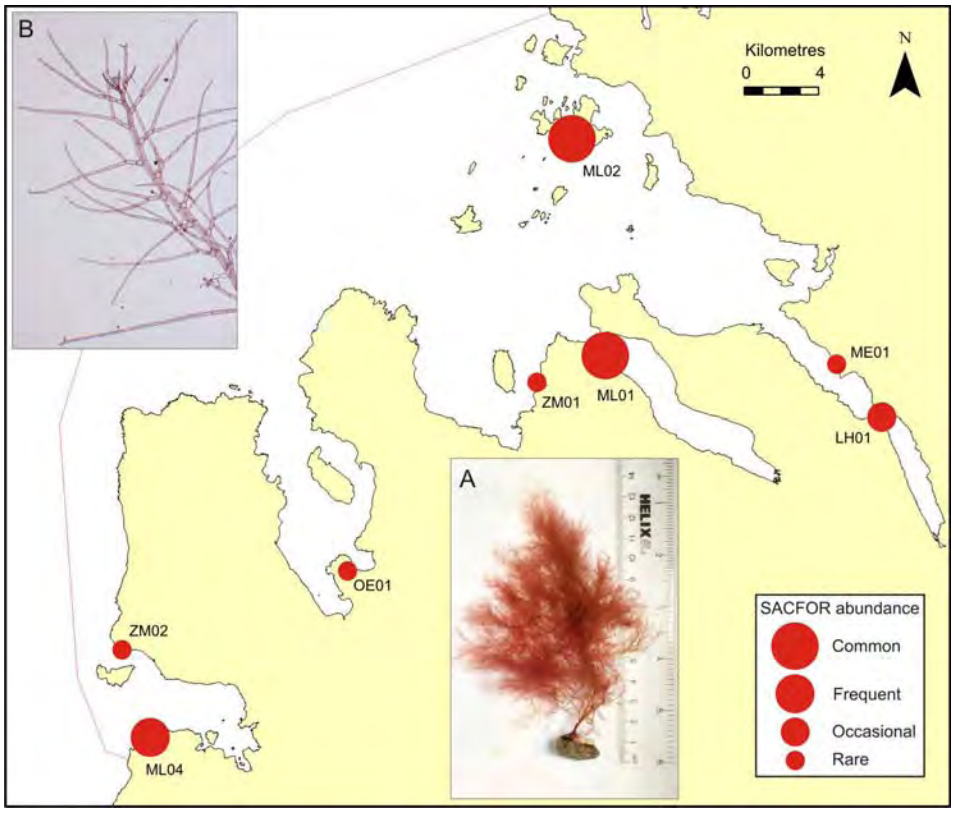
Demersal fishing is likely to represent the main type of activity to interact with PMFs and MPA search features in the study area, particularly trawling and dredging. Trawl scarring of the sea bed was observed off the mouth of Loch Gairloch during the current survey work. Trawling and dredging modify the physical and biological characteristics of the sea bed, removing emergent epifauna and leaving it flattened (Magorrian and Service, 1998). Large bodied, fragile organisms such as sea pens are believed to be particularly vulnerable (Troffe *et al.*, 2005). Unlike *Virgularia mirabilis* and *Pennatula phosphorea*, *Funiculina quadrangularis* is unable to withdraw into the sediment and it is likely that it is the most vulnerable of the British sea pens to demersal fishery disturbance (Hughes, 1998). The most prevalent form of demersal fishing in the Ullapool Approaches is trawling for *Nephrops*, with the main vessel base at Ullapool, from where vessels sail to fishing grounds in the Minch and to areas of mud in the Ullapool Approaches, including the outer basin of Loch Broom and, rarely the inner basin, Gruinard Bay and Little Loch Broom, although trawling is banned from the latter two locations from October to March (Highland Council, 2005). Non-local trawlers are also known to operate within the survey area, including some east coast vessels. There is very limited scallop dredging by local boats but vessels from outwith the area regularly fish grounds off Greenstone Point, around the mouth of Little Loch Broom and to the north and west of the Summer Isles. Although no evidence of damage was observed during the current survey, there is potential for impacts on maerl beds, and Jones (1980)

reported that a Summer Isles maerl bed was severely damaged by a demersal fishing vessel in 1978.

Creel fishing is carried out mainly around the Summer Isles, Loch Kinaird, Loch Broom, Little Loch Broom and inner Gruinard Bay, with *Nephrops* the principal target (Highland Council, 2005). At the time of the 2010 survey extensive *Nephrops* creeling was taking place throughout the inner and outer basins of Loch Broom and in Little Loch Broom. A study of the impact of *Nephrops* creel fishing on the three species of British sea pen carried out around the Summer Isles and in the inner basin of Loch Broom (Kinnear *et al.*, 1996) found all species to be fairly resilient to smothering, dragging and uprooting by creels. All species fully recovered from smothering and uprooting. A small proportion of specimens of one of the species, *Funiculina quadrangularis*, showed evidence of damage from being subjected to abrasion by creel dragging.

The Scottish Hydro-Electric Transmission Ltd proposed cable route from the Isle of Lewis to the Scottish mainland will pass through the Ullapool Approaches, chiefly in deep water (>50 m), but crossing shallower areas on the sills and at the head of Little Loch Broom (Briggs, 2008). The level of impact will depend upon the precise route followed and the method of installation (ERT, 2004b), but it is likely that the principal MPA search features to be affected will be burrowed mud over much of the route and the *Leptometra celtica* aggregations on the loch sills. The other major search feature of importance in Little Loch Broom is the maerl beds near the mouth, especially off Badluarach. It appears unlikely that the maerl beds would receive a significant impact from cable installation beyond the 50 m contour.

Figure 33 *Distribution and SACFOR abundance of 2010 records of* Heterosiphonia japonica*. Insets show a plant from ME01 on the lower shore of the Ullapool River mouth (A) and a micrograph of the apical region (B)*



The introduced Pacific red alga *Heterosiphonia japonica* was first recorded in Europe in Brittany, France, in 1984 (Sjøtun *et al.*, 2008). Recently, Sjøtun *et al.* (2008) have summarized its known distribution around the British Isles, listing records of its presence in Milford Haven, Wales, in 1999, from County Clare on the west coast of Ireland in 2002, near Inverness on the Scottish east coast in 2004 and from two sites on the Isle of Wight in the English Channel in 2005. It is now also known to be established at a number of sites in the Oban area of Argyll (Moore and Harries, 2009) and in Loch Laxford (Moore *et al.*, 2010). Although its introduction to Europe was believed to be through the importation of the Pacific oyster, *Crassostrea gigas*, subsequent spreading throughout the North Sea and Scandinavia has possibly been facilitated by shipping activity (Sjøtun *et al.*, 2008).

Heterosiphonia japonica was found to be of widespread occurrence in the Ullapool Approaches, being recorded at all lower shore and sublittoral MNCR phase 2 sites, apart from Poolewe (Figure 33). It was a principal member of the algal turf community on the maerl beds in Little Loch Broom and the Summer Isles and epiphytised *Zostera marina* blades at both seagrass bed sites studied in detail (Loch Gairloch and Gruinard Bay).

Heterosiphonia japonica may represent a threat to the conservation value of a variety of habitats, including maerl beds, although there is little current evidence of an adverse environmental impact. Husa *et al.* (2008) found that the success of the species in south-western Norway has had no adverse effect on algal species richness. In the Ullapool Approaches the coverage of this species has not currently attained the level where habitat degradation through the displacement of native species or through substrate fouling has clearly become apparent.

4.4 Geological features

The stunning and complex sea-scape around the Summer Isles reflects a wide range of geological and glacial influences. At a large-scale, the orientation of fjords (and subsequent ice streams) in part reflects structural geological controls. At a medium scale, superimposed on this geological surface are a range of glacial deposits and erosion features. These are heterogeneous features which will interact with complex hydrological influences to create intricate habitat mosaics. In the same way that terrestrial habitats reflect nuanced changes in the environment, marine features reflect subtle influences alongside crude controls. For example, sampling at various points on and around a recessional moraine will identify a variety of landforms, habitats and species. Maerl beds were recorded at GF11 whilst at GF2, *Leptometra celtica* aggregations were present.

Although the MPA selection guidelines note that consideration should be given to linkages between geological features and biological assemblages, the influence and combination of the local hydrography and geology can have profound impacts on the formation of a habitat thus highlighting the difficulty in assessing these linkages. The focus of this part of the study was simply to give a snapshot of communities found at several geological features, providing data that may assist in any future work on geological/biological linkages and associations.

4.5 MPA selection

To assist in the selection of possible MPAs a detailed set of guidelines has been produced (Marine Scotland, 2011b). Following recommendation that a specific area meets MPA selection criteria, the area will be formally assessed by SNH against the MPA selection guidelines. The guidelines set out a sequential staged approach to MPA selection:

- Stage 1 guidelines for the identification of search locations containing MPA search features.

- Stage 2 guidelines for the prioritisation of search locations according to the qualities of the MPA Search Features features they contain.
- Stage 3 guidelines to assess the appropriate scale of the search location in relation to search features it contains.
- Stage 4 guidelines to assess the potential effectiveness of managing features within a search location as part of a Nature Conservation MPA.
- Stage 5 guidelines to assess ecological coherence to prioritise between diffeent areas according to their contribution to the MPA network.

4.6 Recommendations

4.6.1 MPA selection

In view of the high quality, extent and current lack of protection for the burrowed mud with *Funiculina quadrangularis* habitat and *Leptometra celtica* aggregations, and the level of compatibility with existing usage of the area, it is recommended that an area comprising Little Loch Broom and part or all of Loch Broom ('the two Brooms') should be formally assessed by SNH against the MPA selection guidelines. The Loch Broom search area should at least take in the inner basin and the Sruth Lagaidh Narrows to afford protection to the northernmost known example of a flame shell bed. This area would include a suite of additional PMFs/MPA search features, including possibly the richest maerl bed in the region. In addition to 'the two Brooms', recognition is also given towards Loch Gairloch and specifically the MPA search features that this loch encompasses, including the extensive burrowed mud and maerl habitats.

It is believed that the Ullapool Approaches area can make a significant contribution to providing much improved geographical coverage of a number of MPA search features including *Zostera marina* seagrass beds, sea loch egg wrack beds and maerl beds. However, with the exception of the maerl bed at Badluarach in Little Loch Broom, none of these beds represent very high quality examples of their type.

4.6.2 Further work

Further work would be useful to better characterise the quality of MPA search features in the two Brooms area. Consideration should be given to assessment of the distribution, extent and abundance of *Leptometra celtica*. This might also assist with mitigating the impacts of proposed cable routing where these cross the sills of Little Loch Broom. More detailed work is also needed to assess the distribution, extent and composition of the Sruth Lagaidh flame shell bed. This should include better characterisation of the abundance and population structure of the *Limaria hians* population and quantitative analysis of the associated community.

Multibeam echosounder data are already available for much of Loch Broom and Little Loch Broom (Stoker *et al.*, 2009). Consideration should be given to the possibility of utilising this information to determine the distribution and extent of search features, especially burrowed mud, and possibly the habitat supporting *Leptometra* aggregations. Recent groundtruth data from the current survey and Briggs (2004) could be utilised.

If search locations beyond the two Brooms area are to be subject to further consideration, then additional studies of certain search features are recommended. Due to the high degree of patchiness of the *Zostera marina* beds and the coarse-grained nature of the 2010 work, more detailed examination of seagrass density, distribution and extent is needed. The beds are, at least in part, discernible on aerial imagery, and may thus be amenable to mapping by means of image classification techniques. More detailed mapping of maerl beds is also

desirable, particularly in Loch Gairloch, Gruinard Bay and the Summer Isles, where only a crude understanding of distribution prevails. It is likely that knowledge of the distribution of the 'maerl or coarse shell gravel with burrowing sea cucumbers' PMF/MPA search feature, currently lacking, will only be reliably acquired using diving or ROV methods. As with the two Brooms area, existing multibeam data may be available to improve understanding of the distribution and extent of MPA search features, particularly burrowed mud.

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Appendix 1 Data recording forms

Appendix 1.1 Drop-down video survey recording form

Ullapool Approaches drop-down video survey, 2010

	Target PMF:		Target depth (m):

Site code		**Date**	
Time in			
GPS waypoint in		Latitude & longitude in	
Depth BSL in			

Time out			
GPS waypoint out		Latitude & longitude out	
Depth BSL out			

Substrate notes	
Biological notes & abundance estimates	
Video footage (tape no)	

Appendix 1.2 Pro forma *for diver surveying of maerl and* Limaria *habitat at Badluarach and Poolewe*

Site			
Depth (BSL m)			
% live maerl			
% dead maerl			
Thickness live maerl (mean cm)			
% Limaria nest cover			
Thickness Limaria nest (mean cm)			
Limaria seen? (Y/N)			
Isolated Limaria nests seen? (Y/N)			
Sediment type			
% kelp cover			
Main kelp species			
% algal turf			
Algal turf predominantly loose, filamentous (Y/N)			
Comments			
Surveyor			

Appendix 1.3 Pro forma *for diver surveying of* Limaria *and* Modiolus *habitat at Sruth Ladaigh Narrows*

Site			
Depth (BSL m)			
% Limaria nest cover			
Thickness Limaria nest (mean cm)			
Limaria seen? (Y/N)			
Isolated Limaria nests seen? (Y/N)			
Sediment type			
% brittlestar cover			
% algal turf			
Live Modiolus seen Y/N			
Dead Modiolus shells present Y/N			
% live Modiolus cover			
Modiolus abundance per unit area			
Comments			
Surveyor			

Appendix 2 Drop-down video survey data

Table 2.1 Details of sites and video data collected for the 2010 drop-down video survey

Site	Latitude in	Long'de in	Latitude out	Long'de out	Depth in (m)	Depth out (m)	Date	Video tape no.	Video in (m:s)	Video out (m:s)
AP1	57.89593	-5.77635	57.89658	-5.77605	45.0	45.5	24/07/2010	D-ULLAPOOL-0710-4	11:01	16:15
BM1	57.70448	-5.69043	57.70415	-5.69115	32.2	33.0	22/07/2010	D-ULLAPOOL-0710-1	07:33	10:11
BM2	57.70983	-5.72593	57.71020	-5.72473	35.9	32.3	23/07/2010	D-ULLAPOOL-0710-3	12:05	13:33
BM3	57.72458	-5.71723	57.72427	-5.71752	31.7	32.8	22/07/2010	D-ULLAPOOL-0710-1	00:44	02:54
BM4	57.71677	-5.75512	57.71692	-5.75413	60.5	59.8	23/07/2010	D-ULLAPOOL-0710-3	08:40	12:05
BM5	57.72510	-5.75885	57.72467	-5.75982	34.9	37.6	22/07/2010	D-ULLAPOOL-0710-1	04:27	07:33
BM6	57.72118	-5.77493	57.72075	-5.77580	54.0	55.0	22/07/2010	D-ULLAPOOL-0710-1	02:54	04:27
BM7	57.70442	-5.80233	57.70482	-5.80152	95.7	96.7	23/07/2010	D-ULLAPOOL-0710-2	43:27	46:42
BM8	57.79438	-5.59372	57.79443	-5.59333	24.8	24.6	25/07/2010	D-ULLAPOOL-0710-5	53:39	55:23
BM9	57.79665	-5.59813	57.79665	-5.59742	34.7	32.2	25/07/2010	D-ULLAPOOL-0710-5	52:24	53:39
BM10	57.79315	-5.63485	57.79390	-5.63370	26.1	25.4	25/07/2010	D-ULLAPOOL-0710-5	40:12	45:28
BM11	57.80123	-5.61125	57.80143	-5.61007	45.9	45.6	25/07/2010	D-ULLAPOOL-0710-5	49:57	52:24
BM12	57.80933	-5.59632	57.80978	-5.59668	39.1	39.0	26/07/2010	D-ULLAPOOL-0710-6	00:00	02:38
BM13	57.81423	-5.60832	57.81463	-5.60855	31.6	30.7	26/07/2010	D-ULLAPOOL-0710-6	02:38	04:52
BM14	57.80987	-5.62757	57.81033	-5.62795	62.9	60.3	26/07/2010	D-ULLAPOOL-0710-6	04:52	07:44
BM15	57.82045	-5.64478	57.82122	-5.64477	49.9	49.5	26/07/2010	D-ULLAPOOL-0710-6	07:44	10:37
BM16	57.83133	-5.64368	57.83212	-5.64405	36.4	35.7	26/07/2010	D-ULLAPOOL-0710-6	13:18	16:06
BM17	57.83812	-5.64743	57.83893	-5.64760	16.9	12.7	26/07/2010	D-ULLAPOOL-0710-6	16:06	18:12
BM18	57.83710	-5.65395	57.83817	-5.65432	55.2	54.2	26/07/2010	D-ULLAPOOL-0710-6	31:48	34:16
BM19	57.84920	-5.62920	57.84973	-5.62885	28.1	27.1	27/07/2010	D-ULLAPOOL-0710-7	22:10	24:41
BM20	57.84560	-5.63143	57.84632	-5.63095	10.2	19.8	27/07/2010	D-ULLAPOOL-0710-7	15:25	19:15
BM21	57.84753	-5.61940	57.84810	-5.61870	26.8	18.9	27/07/2010	D-ULLAPOOL-0710-7	24:41	28:10
BM22	57.89797	-5.52613	57.89850	-5.52528	66.1	66.7	31/07/2010	D-ULLAPOOL-0710-16	13:56	16:58
BM23	57.87670	-5.48418	57.87732	-5.48333	32.0	32.9	31/07/2010	D-ULLAPOOL-0710-16	00:00	03:53
BM24	57.88307	-5.44880	57.88400	-5.44838	32.4	33.6	31/07/2010	D-ULLAPOOL-0710-15	11:58	16:17
BM25	57.89040	-5.44930	57.89123	-5.44873	39.8	39.8	31/07/2010	D-ULLAPOOL-0710-15	08:19	11:58
BM26	57.91468	-5.43457	57.91452	-5.43298	95.5	94.6	05/08/2010	D-ULLAPOOL-0810-21	00:00	03:40
BM27	57.90690	-5.39133	57.90715	-5.39225	61.1	61.7	30/07/2010	D-ULLAPOOL-0710-14	08:53	13:06
BM28	57.90197	-5.37612	57.90183	-5.37628	65.8	66.5	30/07/2010	D-ULLAPOOL-0710-14	13:06	19:19
BM29	57.90240	-5.35735	57.90283	-5.35618	44.2	41.2	31/07/2010	D-ULLAPOOL-0710-16	33:37	37:13
BM30	57.89522	-5.35488	57.89550	-5.35420	71.0	71.0	31/07/2010	D-ULLAPOOL-0710-16	37:13	40:32
BM31	57.88347	-5.32880	57.88375	-5.32780	65.0	65.0	31/07/2010	D-ULLAPOOL-0710-16	47:20	52:33
BM32	57.87283	-5.30895	57.87297	-5.30787	99.0	97.0	31/07/2010	D-ULLAPOOL-0710-16	52:33	57:20
BM33	57.86348	-5.29487	57.86292	-5.29423	76.9	73.3	01/08/2010	D-ULLAPOOL-0810-17	38:41	42:16
BM34	57.86495	-5.25950	57.86458	-5.25872	47.3	47.5	01/08/2010	D-ULLAPOOL-0810-17	42:16	47:22
BM35	57.85898	-5.24775	57.85898	-5.24703	26.6	23.5	01/08/2010	D-ULLAPOOL-0810-17	51:54	55:57
BM36	57.85120	-5.24122	57.85107	-5.24033	33.2	33.1	01/08/2010	D-ULLAPOOL-0810-17	55:57	59:47
BM37	57.84000	-5.08492	57.83943	-5.08420	23.7	23.0	03/08/2010	D-ULLAPOOL-0810-19	09:15	12:14
BM38	57.84477	-5.09025	57.84440	-5.08997	29.3	28.7	03/08/2010	D-ULLAPOOL-0810-19	06:21	09:15
BM39	57.85865	-5.10292	57.85833	-5.10213	39.2	41.5	03/08/2010	D-ULLAPOOL-0810-19	02:28	04:01
BM40	57.86443	-5.10025	57.86412	-5.09950	38.0	36.4	03/08/2010	D-ULLAPOOL-0810-19	00:00	02:28
BM41	57.87303	-5.11365	57.87270	-5.11268	36.8	38.1	04/08/2010	D-ULLAPOOL-0810-20	13:31	18:20

Table 2.1 continued

Site	Latitude in	Long'de in	Latitude out	Long'de out	Depth in (m)	Depth out (m)	Date	Video tape no.	Video in (m:s)	Video out (m:s)
BM42	57.88817	-5.14633	57.88833	-5.14575	20.3	20.3	04/08/2010	D-ULLAPOOL-0810-20	20:59	23:39
BM43	57.90310	-5.18598	57.90325	-5.18590	42.7	41.7	02/08/2010	D-ULLAPOOL-0810-18	28:39	33:45
BM44	57.90353	-5.19805	57.90365	-5.19803	62.1	58.0	02/08/2010	D-ULLAPOOL-0810-18	24:12	28:39
BM45	57.91168	-5.21010	57.91182	-5.21022	74.9	74.0	02/08/2010	D-ULLAPOOL-0810-18	18:31	24:12
BM46	57.91628	-5.22120	57.91615	-5.22117	79.3	79.1	02/08/2010	D-ULLAPOOL-0810-18	15:26	18:31
BM47	57.94378	-5.20168	57.94415	-5.20757	27.0	34.1	28/07/2010	D-ULLAPOOL-0710-8	43:19	51:59
BM48	57.95308	-5.20828	57.95355	-5.20623	70.0	68.0	28/07/2010	D-ULLAPOOL-0710-8	51:59	55:11
BM49	57.95410	-5.25357	57.95437	-5.25212	70.0	70.0	28/07/2010	D-ULLAPOOL-0710-8	55:11	58:11
BM50	57.93607	-5.24778	57.93672	-5.24613	68.0	65.0	28/07/2010	D-ULLAPOOL-0710-8	40:43	43:19
BM51	57.92317	-5.30745	57.92380	-5.30580	92.0	92.0	28/07/2010	D-ULLAPOOL-0710-8	33:38	36:38
BM52	57.94003	-5.29545	57.94040	-5.29378	90.0	90.0	28/07/2010	D-ULLAPOOL-0710-8	36:38	40:43
BM53	57.96737	-5.29007	57.96732	-5.28893	90.0	90.0	28/07/2010	D-ULLAPOOL-0710-9	00:00	03:56
BM54	57.94783	-5.36988	57.94842	-5.36865	103.0	105.0	28/07/2010	D-ULLAPOOL-0710-9	03:56	06:28
BM55	57.96338	-5.39963	57.96340	-5.39912	105.0	105.0	29/07/2010	D-ULLAPOOL-0710-10	00:00	04:00
BM56	57.93767	-5.45532	57.93770	-5.45595	90.0	90.0	30/07/2010	D-ULLAPOOL-0710-13	00:00	04:43
BM57	57.97482	-5.48998	57.97530	-5.49102	63.6	66.0	30/07/2010	D-ULLAPOOL-0710-13	37:31	43:34
BM58	57.93572	-5.57238	57.93588	-5.57272	98.0	98.0	30/07/2010	D-ULLAPOOL-0710-13	04:43	10:43
BM59	57.96953	-5.59647	57.97037	-5.59628	109.0	109.0	30/07/2010	D-ULLAPOOL-0710-13	10:43	14:53
BM60	57.95582	-5.68273	57.95663	-5.68063	91.0	95.0	30/07/2010	D-ULLAPOOL-0710-13	14:53	18:52
BM61	57.92787	-5.74695	57.92865	-5.74505	86.0	84.0	30/07/2010	D-ULLAPOOL-0710-13	18:52	22:53
BM62	57.97345	-5.74092	57.97442	-5.73915	119.0	119.0	30/07/2010	D-ULLAPOOL-0710-13	22:53	27:04
BM63	58.00050	-5.66152	58.00145	-5.66012	90.0	87.0	30/07/2010	D-ULLAPOOL-0710-13	27:04	33:39
BM64	58.00853	-5.59983	58.00923	-5.59937	110.2	111.7	30/07/2010	D-ULLAPOOL-0710-13	33:39	37:31
BM65	58.03827	-5.49487	58.03880	-5.49415	69.0	69.0	29/07/2010	D-ULLAPOOL-0710-10	36:17	40:46
BM66	58.02297	-5.37612	58.02263	-5.37482	44.2	46.2	29/07/2010	D-ULLAPOOL-0710-11	28:27	32:41
BM67	58.01283	-5.39175	58.01248	-5.39092	44.5	39.3	29/07/2010	D-ULLAPOOL-0710-11	32:41	37:01
BM68	58.01015	-5.36843	58.00998	-5.36785	35.5	39.5	29/07/2010	D-ULLAPOOL-0710-11	37:01	39:17
BM69	58.00008	-5.36587	57.99973	-5.36525	65.0	65.0	29/07/2010	D-ULLAPOOL-0710-11	39:17	42:51
DM1	57.89123	-5.14598	57.89132	-5.14545	21.2	17.9	04/08/2010	D-ULLAPOOL-0810-20	23:39	25:15
DM2	57.84862	-5.09962	57.84803	-5.09903	28.4	28.6	03/08/2010	D-ULLAPOOL-0810-19	04:01	06:21
FS1	57.90335	-5.39323	57.90310	-5.39285	7.6	7.4	01/08/2010	D-ULLAPOOL-0810-17	13:08	16:04
FS2	57.90198	-5.38807	57.90148	-5.38728	11.3	9.1	01/08/2010	D-ULLAPOOL-0810-17	16:04	20:33
FS3	57.90053	-5.38987	57.90018	-5.38955	6.8	5.3	01/08/2010	D-ULLAPOOL-0810-17	20:33	25:12
FS4	57.89992	-5.38658	57.89973	-5.38633	4.4	3.3	01/08/2010	D-ULLAPOOL-0810-17	25:12	29:08
FS5	57.89977	-5.38293	57.89950	-5.38245	8.3	7.2	01/08/2010	D-ULLAPOOL-0810-17	29:08	32:50
FS6	57.89862	-5.38318	57.89847	-5.38312	2.3	1.3	01/08/2010	D-ULLAPOOL-0810-17	32:50	34:24
FS7	57.89852	-5.38002	57.89842	-5.37977	7.7	7.0	01/08/2010	D-ULLAPOOL-0810-17	34:24	36:13
FS8	57.95772	-5.36180	57.95795	-5.36085	14.5	12.3	28/07/2010	D-ULLAPOOL-0710-8	01:38	03:54
FS9	57.87723	-5.13482	57.87695	-5.13397	12.4	11.2	03/08/2010	D-ULLAPOOL-0810-19	16:43	19:40
FS10	57.87798	-5.13377	57.87780	-5.13322	14.7	19.4	03/08/2010	D-ULLAPOOL-0810-19	14:30	16:43
FS11	57.87878	-5.13298	57.87863	-5.13240	16.2	16.5	03/08/2010	D-ULLAPOOL-0810-19	12:14	14:30
FS12	57.87795	-5.12912	57.87783	-5.12823	15.9	13.4	03/08/2010	D-ULLAPOOL-0810-19	19:40	22:01
FS13	57.87723	-5.12988	57.87697	-5.12897	30.9	28.9	03/08/2010	D-ULLAPOOL-0810-19	22:01	24:30
FS14	57.87642	-5.13057	57.87630	-5.12940	12.6	15.9	03/08/2010	D-ULLAPOOL-0810-19	24:30	27:29
FS15	57.87540	-5.12730	57.87525	-5.12642	11.1	11.1	03/08/2010	D-ULLAPOOL-0810-19	27:29	29:59

Table 2.1 continued

Site	Latitude in	Long'de in	Latitude out	Long'de out	Depth in (m)	Depth out (m)	Date	Video tape no.	Video in (m:s)	Video out (m:s)
FS16	57.87637	-5.12585	57.87612	-5.12487	14.0	15.7	03/08/2010	D-ULLAPOOL-0810-19	29:59	32:35
FS17	57.87723	-5.12532	57.87702	-5.12417	16.8	14.1	03/08/2010	D-ULLAPOOL-0810-19	32:35	36:00
FS18	57.87657	-5.12240	57.87623	-5.12127	13.8	19.0	03/08/2010	D-ULLAPOOL-0810-19	36:00	39:50
FS19	57.87552	-5.12258	57.87543	-5.12135	16.6	28.9	03/08/2010	D-ULLAPOOL-0810-19	39:50	43:13
FS20	57.87477	-5.12483	57.87445	-5.12383	20.4	31.7	03/08/2010	D-ULLAPOOL-0810-19	43:13	46:35
FS21	57.89690	-5.37612	57.89672	-5.37577	8.0	7.4	01/08/2010	D-ULLAPOOL-0810-17	36:13	38:41
GF1	57.86032	-5.26418	57.85997	-5.26337	29.3	21.0	01/08/2010	D-ULLAPOOL-0810-17	47:22	51:54
GF4	57.91030	-5.39973	57.91088	-5.40047	45.4	39.6	30/07/2010	D-ULLAPOOL-0710-13	52:50	01:56
GF6	57.90417	-5.49062	57.90457	-5.48967	20.1	19.1	31/07/2010	D-ULLAPOOL-0710-16	27:17	30:49
GF7	57.90897	-5.48733	57.90938	-5.48635	52.2	53.7	31/07/2010	D-ULLAPOOL-0710-16	30:49	33:37
GF8	57.94195	-5.33107	57.94243	-5.33013	80.0	83.0	28/07/2010	D-ULLAPOOL-0710-8	29:40	33:38
GF10	57.97205	-5.36003	57.97180	-5.35917	41.6	48.8	29/07/2010	D-ULLAPOOL-0710-11	52:37	56:21
GF11	57.97032	-5.36600	57.96997	-5.36542	19.3	19.0	29/07/2010	D-ULLAPOOL-0710-12	00:00	05:49
GF12	57.98445	-5.40487	57.98485	-5.40425	43.7	42.8	29/07/2010	D-ULLAPOOL-0710-10	04:00	09:30
GF13	57.98612	-5.41150	57.98648	-5.41103	58.1	55.3	29/07/2010	D-ULLAPOOL-0710-10	09:30	12:31
GF14	58.00157	-5.47460	58.00195	-5.47438	35.5	31.0	29/07/2010	D-ULLAPOOL-0710-10	32:30	36:17
HM1	57.83818	-5.60687	57.83868	-5.60663	16.4	15.0	27/07/2010	D-ULLAPOOL-0710-7	00:00	02:05
HM2	57.84200	-5.61075	57.84265	-5.61038	16.9	17.7	27/07/2010	D-ULLAPOOL-0710-7	02:05	04:22
HM3	57.84425	-5.61577	57.84493	-5.61513	12.0	13.0	27/07/2010	D-ULLAPOOL-0710-7	04:22	07:35
HM4	57.84223	-5.62423	57.84300	-5.62350	11.7	12.6	27/07/2010	D-ULLAPOOL-0710-7	07:35	11:55
HM5	57.84423	-5.62897	57.84477	-5.62843	10.8	13.9	27/07/2010	D-ULLAPOOL-0710-7	11:55	15:25
HM6	57.87338	-5.12512	57.87332	-5.12453	8.5	9.8	04/08/2010	D-ULLAPOOL-0810-20	00:00	03:20
HM7	57.87193	-5.11975	57.87180	-5.11893	10.2	19.0	04/08/2010	D-ULLAPOOL-0810-20	07:11	13:31
HM8	57.84565	-5.62692	57.84615	-5.62640	15.4	16.4	27/07/2010	D-ULLAPOOL-0710-7	19:15	22:10
HM9	57.87383	-5.12467	57.87393	-5.12395	15.7	24.6	04/08/2010	D-ULLAPOOL-0810-20	03:20	07:11
HM10	57.85005	-5.24992	57.84982	-5.24908	13.1	9.8	05/08/2010	D-ULLAPOOL-0810-21	03:40	07:21
HM11	57.84768	-5.24070	57.84708	-5.23977	27.4	9.7	05/08/2010	D-ULLAPOOL-0810-21	07:21	15:11
LC1	57.88973	-5.34553	57.89012	-5.34475	37.0	37.6	31/07/2010	D-ULLAPOOL-0710-16	43:33	47:20
LC2	57.89267	-5.33787	57.89295	-5.33687	38.7	36.0	31/07/2010	D-ULLAPOOL-0710-16	40:32	43:33
LC3	57.90947	-5.39862	57.91023	-5.40023	52.1	42.4	30/07/2010	D-ULLAPOOL-0710-14	00:00	08:53
LC4	57.91252	-5.40177	57.91290	-5.40293	49.3	52.6	30/07/2010	D-ULLAPOOL-0710-13	49:33	52:50
LC5	57.91860	-5.24773	57.91842	-5.24703	40.1	26.7	02/08/2010	D-ULLAPOOL-0810-18	04:27	15:26
LC6	57.92270	-5.23675	57.92247	-5.23638	51.8	60.2	02/08/2010	D-ULLAPOOL-0810-18	00:00	04:27
MB1	57.69952	-5.78992	57.69978	-5.78943	14.1	14.8	23/07/2010	D-ULLAPOOL-0710-2	46:42	48:35
MB2	57.70138	-5.77875	57.70173	-5.77768	13.7	13.1	23/07/2010	D-ULLAPOOL-0710-2	52:39	57:30
MB3	57.70460	-5.77168	57.70482	-5.77103	12.6	13.7	23/07/2010	D-ULLAPOOL-0710-3	00:00	01:46
MB4	57.70797	-5.76393	57.70832	-5.76322	17.0	15.1	23/07/2010	D-ULLAPOOL-0710-3	01:46	03:37
MB5	57.70887	-5.75642	57.70918	-5.75530	14.9	14.7	23/07/2010	D-ULLAPOOL-0710-3	03:37	06:59
MB6	57.71123	-5.75277	57.71153	-5.75190	25.8	26.6	23/07/2010	D-ULLAPOOL-0710-3	06:59	08:40
MB7	57.85988	-5.68145	57.86027	-5.68132	13.7	13.9	26/07/2010	D-ULLAPOOL-0710-6	40:59	43:20
MB8	57.85548	-5.68258	57.85597	-5.68212	13.5	13.7	26/07/2010	D-ULLAPOOL-0710-6	38:07	40:59
MB9	57.85232	-5.68397	57.85285	-5.68345	12.8	12.6	26/07/2010	D-ULLAPOOL-0710-6	34:16	38:07
MB10	57.84595	-5.65173	57.84672	-5.65202	21.5	21.8	26/07/2010	D-ULLAPOOL-0710-6	18:12	19:37
MB11	57.83905	-5.67103	57.83967	-5.67142	22.1	19.9	26/07/2010	D-ULLAPOOL-0710-6	19:37	22:13
MB12	57.83290	-5.66513	57.83362	-5.66558	11.2	9.3	26/07/2010	D-ULLAPOOL-0710-6	30:05	31:48
MB13	57.82750	-5.63428	57.82783	-5.63443	9.5	8.9	26/07/2010	D-ULLAPOOL-0710-6	10:37	13:18

Table 2.1 continued

Site	Latitude in	Long'de in	Latitude out	Long'de out	Depth in (m)	Depth out (m)	Date	Video tape no.	Video in (m:s)	Video out (m:s)
MB14	57.80273	-5.63487	57.80290	-5.63408	10.3	7.3	25/07/2010	D-ULLAPOOL-0710-5	45:28	49:57
MB15	57.78260	-5.63335	57.78265	-5.63323	7.3	4.5	25/07/2010	D-ULLAPOOL-0710-5	00:00	03:25
MB16	57.78230	-5.62552	57.78252	-5.62515	6.9	6.4	25/07/2010	D-ULLAPOOL-0710-5	03:25	06:38
MB17	57.78487	-5.62175	57.78520	-5.62173	8.0	8.3	25/07/2010	D-ULLAPOOL-0710-5	06:38	09:38
MB18	57.78235	-5.61663	57.78287	-5.61715	6.9	6.9	25/07/2010	D-ULLAPOOL-0710-5	09:38	12:27
MB19	57.77897	-5.61957	57.77923	-5.61912	5.7	5.6	25/07/2010	D-ULLAPOOL-0710-5	12:27	14:46
MB20	57.77828	-5.62620	57.77837	-5.62600	5.5	5.5	25/07/2010	D-ULLAPOOL-0710-5	14:46	16:39
MB21	57.77347	-5.62332	57.77385	-5.62283	4.4	4.4	25/07/2010	D-ULLAPOOL-0710-5	16:39	19:55
MB22	57.77573	-5.61812	57.77668	-5.61775	4.9	5.2	25/07/2010	D-ULLAPOOL-0710-5	19:55	25:50
MB23	57.77842	-5.61288	57.77878	-5.61257	5.8	6.0	25/07/2010	D-ULLAPOOL-0710-5	25:50	28:09
MB24	57.77373	-5.61198	57.77395	-5.61148	4.5	4.4	25/07/2010	D-ULLAPOOL-0710-5	28:09	30:58
MB25	57.77273	-5.61568	57.77293	-5.61538	4.4	4.4	25/07/2010	D-ULLAPOOL-0710-5	30:58	32:57
MB26	57.77070	-5.61850	57.77088	-5.61785	4.2	4.0	25/07/2010	D-ULLAPOOL-0710-5	32:57	36:16
MB27	57.87960	-5.50427	57.88002	-5.50352	19.4	19.7	31/07/2010	D-ULLAPOOL-0710-16	11:09	13:56
MB28	57.88113	-5.48947	57.88177	-5.48835	32.1	30.8	31/07/2010	D-ULLAPOOL-0710-16	03:53	08:38
MB29	57.89132	-5.48788	57.89160	-5.48712	21.2	19.4	31/07/2010	D-ULLAPOOL-0710-16	16:58	18:53
MB30	57.90092	-5.48995	57.90152	-5.48877	22.3	20.5	31/07/2010	D-ULLAPOOL-0710-16	20:21	24:24
MB32	57.90503	-5.47378	57.90547	-5.47248	21.2	27.6	31/07/2010	D-ULLAPOOL-0710-16	24:24	27:17
MB33	57.89678	-5.45840	57.89803	-5.45740	12.1	13.1	31/07/2010	D-ULLAPOOL-0710-15	03:51	08:19
MB34	57.90285	-5.44792	57.90382	-5.44717	19.9	23.2	31/07/2010	D-ULLAPOOL-0710-15	00:03	03:51
MB35	57.91038	-5.41925	57.91023	-5.41907	21.8	20.8	01/08/2010	D-ULLAPOOL-0810-17	00:00	02:59
MB36	57.91045	-5.41285	57.91012	-5.41255	20.5	21.1	01/08/2010	D-ULLAPOOL-0810-17	02:59	05:12
MB37	57.90762	-5.41368	57.90737	-5.41363	20.4	16.7	01/08/2010	D-ULLAPOOL-0810-17	07:32	10:24
MB38	57.90970	-5.40733	57.90923	-5.40710	21.9	24.8	01/08/2010	D-ULLAPOOL-0810-17	10:24	13:08
MB39	57.88170	-5.15547	57.88180	-5.15488	8.8	9.6	04/08/2010	D-ULLAPOOL-0810-20	18:20	20:59
MB40	57.99807	-5.34982	57.99807	-5.34915	12.0	12.0	29/07/2010	D-ULLAPOOL-0710-11	45:29	47:27
MB41	57.99820	-5.34685	57.99807	-5.34605	10.5	16.0	29/07/2010	D-ULLAPOOL-0710-11	47:27	49:47
MB42	57.97512	-5.34425	57.97500	-5.34357	16.8	16.8	29/07/2010	D-ULLAPOOL-0710-11	49:47	52:37
MB43	57.96125	-5.35045	57.96147	-5.34995	24.6	24.3	28/07/2010	D-ULLAPOOL-0710-8	09:26	11:20
MB44	57.95880	-5.35608	57.95920	-5.35520	14.4	21.8	28/07/2010	D-ULLAPOOL-0710-8	05:34	09:26
MB45	57.95565	-5.35548	57.95585	-5.35477	19.8	22.5	28/07/2010	D-ULLAPOOL-0710-8	03:54	05:34
MB46	57.95552	-5.36723	57.95582	-5.36668	23.3	22.5	28/07/2010	D-ULLAPOOL-0710-8	00:02	01:38
MB47	57.95822	-5.36820	57.95845	-5.36787	26.5	24.0	28/07/2010	D-ULLAPOOL-0710-8	26:00	27:52
MB48	57.95875	-5.36720	57.95895	-5.36688	18.1	14.5	28/07/2010	D-ULLAPOOL-0710-8	27:52	29:40
MB49	57.96003	-5.36845	57.96032	-5.36808	23.0	16.9	28/07/2010	D-ULLAPOOL-0710-8	23:48	26:00
MB50	57.96073	-5.36780	57.96100	-5.36737	11.9	6.7	28/07/2010	D-ULLAPOOL-0710-8	21:35	23:48
MB51	57.96237	-5.36787	57.96267	-5.36707	15.6	12.7	28/07/2010	D-ULLAPOOL-0710-8	18:51	21:35
MB52	57.96452	-5.36582	57.96407	-5.36528	18.8	18.5	28/07/2010	D-ULLAPOOL-0710-8	16:53	18:51
MB53	57.96340	-5.36277	57.96358	-5.36202	12.1	12.8	28/07/2010	D-ULLAPOOL-0710-8	13:53	16:53
MB54	57.96277	-5.35755	57.96310	-5.35713	21.4	23.8	28/07/2010	D-ULLAPOOL-0710-8	11:20	13:53
MB55	57.96815	-5.44165	57.96828	-5.44243	15.9	27.9	30/07/2010	D-ULLAPOOL-0710-13	43:34	46:08
MB56	57.99595	-5.43045	57.99607	-5.43085	16.9	17.2	29/07/2010	D-ULLAPOOL-0710-10	12:31	15:31
MB57	57.99985	-5.41502	58.00003	-5.41513	12.7	12.4	29/07/2010	D-ULLAPOOL-0710-10	15:31	18:34
MB58	58.00337	-5.42037	58.00372	-5.42022	13.1	7.5	29/07/2010	D-ULLAPOOL-0710-10	18:34	23:23
MB59	58.00478	-5.44182	58.00490	-5.44182	9.6	9.0	29/07/2010	D-ULLAPOOL-0710-10	30:28	32:30
MB60	58.00742	-5.43292	58.00768	-5.43253	4.9	4.3	29/07/2010	D-ULLAPOOL-0710-10	26:31	30:28

Table 2.1 continued

Site	Latitude in	Long'de in	Latitude out	Long'de out	Depth in (m)	Depth out (m)	Date	Video tape no.	Video in (m:s)	Video out (m:s)
MB61	58.01013	-5.43483	58.00997	-5.43460	1.7	1.7	29/07/2010	D-ULLAPOOL-0710-10	55:45	59:49
MB62	58.01120	-5.42320	58.01107	-5.42262	30.4	32.5	29/07/2010	D-ULLAPOOL-0710-11	00:00	02:26
MB63	58.01548	-5.42265	58.01550	-5.42210	16.8	14.4	29/07/2010	D-ULLAPOOL-0710-11	02:26	04:51
MB64	58.02127	-5.42148	58.02147	-5.42087	10.7	9.4	29/07/2010	D-ULLAPOOL-0710-11	04:51	07:35
MB65	58.02405	-5.41408	58.02390	-5.41447	6.3	9.7	29/07/2010	D-ULLAPOOL-0710-11	26:07	28:27
MB66	58.02988	-5.40750	58.02970	-5.40732	15.4	10.5	29/07/2010	D-ULLAPOOL-0710-11	23:47	26:07
MB67	58.03003	-5.42028	58.02985	-5.42043	14.0	14.6	29/07/2010	D-ULLAPOOL-0710-11	20:52	23:47
MB68	58.03483	-5.42368	58.03455	-5.42322	12.7	10.9	29/07/2010	D-ULLAPOOL-0710-11	18:01	20:52
MB69	58.02355	-5.42757	58.02368	-5.42695	8.0	12.8	29/07/2010	D-ULLAPOOL-0710-11	07:35	12:54
MB70	58.02088	-5.43262	58.02063	-5.43222	14.6	11.9	29/07/2010	D-ULLAPOOL-0710-11	12:54	15:46
MB71	58.02573	-5.44167	58.02553	-5.44170	11.3	11.9	29/07/2010	D-ULLAPOOL-0710-11	15:46	18:01
MB72	58.01477	-5.44393	58.01478	-5.44370	13.7	14.0	29/07/2010	D-ULLAPOOL-0710-10	52:21	55:45
MB73	58.01680	-5.45003	58.01662	-5.44973	14.2	13.9	29/07/2010	D-ULLAPOOL-0710-10	49:05	52:21
MB74	58.02558	-5.46598	58.02580	-5.46550	11.4	11.7	29/07/2010	D-ULLAPOOL-0710-10	40:46	43:19
MB75	58.02680	-5.46152	58.02670	-5.46117	9.4	9.1	29/07/2010	D-ULLAPOOL-0710-10	43:19	45:11
MB76	57.69558	-5.79558	57.69598	-5.79520	13.4	13.1	23/07/2010	D-ULLAPOOL-0710-2	48:35	50:52
MB77	57.68883	-5.79995	57.68918	-5.79978	12.8	12.6	23/07/2010	D-ULLAPOOL-0710-2	50:52	52:39
MB78	57.77143	-5.60795	57.77158	-5.60773	4.3	4.3	25/07/2010	D-ULLAPOOL-0710-5	36:16	37:37
MB79	57.78510	-5.62937	57.78532	-5.62915	9.6	10.1	25/07/2010	D-ULLAPOOL-0710-5	37:37	40:12
MB80	58.00315	-5.42042	58.00333	-5.42007	13.5	12.9	29/07/2010	D-ULLAPOOL-0710-10	23:23	26:31
MB81	58.02752	-5.46222	58.02770	-5.46128	17.0	20.6	29/07/2010	D-ULLAPOOL-0710-10	45:11	49:05
MB82	57.96832	-5.43983	57.96848	-5.44088	19.2	22.0	30/07/2010	D-ULLAPOOL-0710-13	46:08	49:33
MB83	57.88287	-5.48135	57.88307	-5.48078	17.8	15.2	31/07/2010	D-ULLAPOOL-0710-16	08:38	11:09
MB84	57.89135	-5.48942	57.89188	-5.48862	24.0	22.5	31/07/2010	D-ULLAPOOL-0710-16	18:53	20:21
MB85	57.91167	-5.41077	57.91132	-5.41038	14.1	11.5	01/08/2010	D-ULLAPOOL-0810-17	05:12	07:32
MC1	57.72593	-5.80035	57.72623	-5.79973	19.7	18.5	23/07/2010	D-ULLAPOOL-0710-2	40:17	43:27
MC2	57.73095	-5.82588	57.73123	-5.82542	14.1	12.9	23/07/2010	D-ULLAPOOL-0710-2	36:54	40:17
MC3	57.74132	-5.82570	57.74148	-5.82558	15.9	15.8	23/07/2010	D-ULLAPOOL-0710-2	34:27	36:54
MC4	57.76940	-5.84112	57.76990	-5.84062	23.7	23.1	24/07/2010	D-ULLAPOOL-0710-4	00:00	01:05
MC5	57.78843	-5.82290	57.78903	-5.82252	16.9	17.0	24/07/2010	D-ULLAPOOL-0710-4	01:05	03:21
MC6	57.80585	-5.84622	57.80618	-5.84598	22.1	21.9	24/07/2010	D-ULLAPOOL-0710-4	03:21	05:25
MC7	57.83955	-5.83918	57.84000	-5.83898	21.5	21.4	24/07/2010	D-ULLAPOOL-0710-4	05:25	07:37
MC8	57.85180	-5.85317	57.85205	-5.85303	38.1	38.1	24/07/2010	D-ULLAPOOL-0710-4	07:37	09:31
MC9	57.87380	-5.82123	57.87405	-5.82128	36.3	36.4	24/07/2010	D-ULLAPOOL-0710-4	09:31	11:01
MC10	57.90328	-5.71772	57.90382	-5.71703	40.1	40.7	24/07/2010	D-ULLAPOOL-0710-4	16:15	20:43
MC11	57.86648	-5.65403	57.86710	-5.65385	16.6	16.8	26/07/2010	D-ULLAPOOL-0710-6	49:09	51:42
MC12	57.86080	-5.65028	57.86118	-5.64995	13.6	13.0	26/07/2010	D-ULLAPOOL-0710-6	43:20	46:29
MC13	57.99647	-5.35375	57.99652	-5.35340	18.5	16.1	29/07/2010	D-ULLAPOOL-0710-11	42:51	45:29
SG1	57.73553	-5.78008	57.73572	-5.77985	4.7	4.6	23/07/2010	D-ULLAPOOL-0710-2	00:00	01:46
SG2	57.73708	-5.78012	57.73722	-5.77997	4.7	4.7	23/07/2010	D-ULLAPOOL-0710-2	01:46	03:21
SG3	57.73667	-5.78280	57.73678	-5.78287	3.8	4.0	23/07/2010	D-ULLAPOOL-0710-2	03:21	05:50
SG4	57.73757	-5.78505	57.73770	-5.78472	3.5	3.7	23/07/2010	D-ULLAPOOL-0710-2	05:50	10:26
SG5	57.73858	-5.78485	57.73863	-5.78453	5.0	5.1	23/07/2010	D-ULLAPOOL-0710-2	10:26	13:01
SG6	57.73782	-5.78845	57.73797	-5.78777	3.9	3.5	23/07/2010	D-ULLAPOOL-0710-2	13:01	16:47
SG7	57.73848	-5.79088	57.73867	-5.79075	6.0	6.0	23/07/2010	D-ULLAPOOL-0710-2	16:47	18:44
SG8	57.74248	-5.78478	57.74263	-5.78472	3.2	2.8	23/07/2010	D-ULLAPOOL-0710-2	18:44	20:44

Table 2.1 continued

Site	Latitude in	Long'de in	Latitude out	Long'de out	Depth in (m)	Depth out (m)	Date	Video tape no.	Video in (m:s)	Video out (m:s)
SG9	57.74373	-5.79638	57.74393	-5.79632	2.3	1.6	23/07/2010	D-ULLAPOOL-0710-2	22:19	24:48
SG10	57.74382	-5.79982	57.74393	-5.79990	3.1	2.9	23/07/2010	D-ULLAPOOL-0710-2	24:48	26:17
SG11	57.74433	-5.80333	57.74462	-5.80325	3.4	2.9	23/07/2010	D-ULLAPOOL-0710-2	26:17	29:42
SG12	57.74520	-5.80612	57.74533	-5.80618	3.6	3.2	23/07/2010	D-ULLAPOOL-0710-2	29:42	31:05
SG13	57.74587	-5.80880	57.74612	-5.80892	4.4	4.0	23/07/2010	D-ULLAPOOL-0710-2	31:05	33:06
SG14	57.85928	-5.48670	57.85975	-5.48643	4.0	4.7	31/07/2010	D-ULLAPOOL-0710-15	54:18	57:42
SG15	57.85910	-5.47927	57.85950	-5.47862	5.0	5.6	31/07/2010	D-ULLAPOOL-0710-15	52:10	54:18
SG16	57.85647	-5.47167	57.85677	-5.47093	3.0	4.4	31/07/2010	D-ULLAPOOL-0710-15	47:41	52:10
SG17	57.85527	-5.46422	57.85650	-5.46437	1.9	4.0	31/07/2010	D-ULLAPOOL-0710-15	40:34	47:41
SG18	57.85755	-5.45908	57.85867	-5.45880	0.4	1.9	31/07/2010	D-ULLAPOOL-0710-15	32:44	40:34
SG19	57.85993	-5.45727	57.86045	-5.45675	1.3	0.7	31/07/2010	D-ULLAPOOL-0710-15	29:32	32:44
SG20	57.86110	-5.45777	57.86155	-5.45725	1.9	0.4	31/07/2010	D-ULLAPOOL-0710-15	26:11	29:32
SG21	57.88332	-5.43552	57.88433	-5.43743	0.7	3.7	31/07/2010	D-ULLAPOOL-0710-15	16:17	26:11
SG22	57.74015	-5.78028	57.74025	-5.78017	3.0	2.5	23/07/2010	D-ULLAPOOL-0710-2	20:44	22:19
SG23	57.74743	-5.81113	57.74767	-5.81130	4.6	4.5	23/07/2010	D-ULLAPOOL-0710-2	33:06	34:27
SG24	57.83532	-5.67772	57.83567	-5.67755	6.9	7.1	26/07/2010	D-ULLAPOOL-0710-6	22:13	23:48
SG25	57.83440	-5.67907	57.83463	-5.67883	5.0	5.4	26/07/2010	D-ULLAPOOL-0710-6	23:48	25:31
SG26	57.83413	-5.68005	57.83447	-5.67982	3.1	4.8	26/07/2010	D-ULLAPOOL-0710-6	25:31	27:55
SG27	57.83477	-5.68162	57.83497	-5.68170	1.3	1.9	26/07/2010	D-ULLAPOOL-0710-6	27:55	30:05
TS1	57.86357	-5.64710	57.86402	-5.64692	12.5	11.0	26/07/2010	D-ULLAPOOL-0710-6	46:29	49:09

Table 2.2 Substrates, biota, biotopes and PMFs/MPA search features recorded during the 2010 video survey

Site	Substrate	Biota	Biotopes	PMFs
AP1	Largely medium-coarse sand but surface scattered with pebbles, cobbles and occasional boulders	*Chaetopterus variopedatus* (O-F), *Lanice conchilega* (P), *Munida rugosa* (F). Stones with occasional *Nemertesia ramosa*, *Flustra foliacea* (R), *Echinus esculentus* (R) and *Asterias rubens* (P) and densely encrusted with *Pomatoceros* (A) and orange bryozoans (R)	SS.SCS.CCS	MC?
BM1	Mud	Megafaunal mounds and burrows, including *Nephrops norvegicus* (F). *Asterias rubens* (O), *Liocarcinus depurator*? (R)	SS.SMu.CFiMu.SpnMeg	BM
BM2	Mud or muddy sand	Megafaunal mounds and burrows, including *Nephrops norvegicus* (F). Sediment surface possibly with dense coating of faunal tubes (<1 cm diameter). *Virgularia mirabilis* F (locally C), *Turritella communis* (F), *Asterias rubens* (F), *Munida rugosa* (R)	SS.SMu.CFiMu.SpnMeg	BM
BM3	Muddy sand	Very densely mounded sediment, with worm casts present at some mound summits. *Pennatula phosphorea* (F, but C in patches), *Asterias rubens* (F), *Toxisarcon albida*? (giant foraminiferan) (R), *Munida rugosa* (P)	SS.SMu.CFiMu.SpnMeg	BM
BM4	Soft mud	Mud with occasional megafaunal mounds but frequent *Nephrops norvegicus* burrows. *Pennatula phosphorea* (R)	SS.SMu.CFiMu.SpnMeg	BM
BM5	Muddy sand	Densely mounded sediment with numerous *Pennatula phosphorea* (C) and frequent *Turritella communis*. *Asterias rubens* (F), *Liocarcinus depurator*? (R)	SS.SMu.CFiMu.SpnMeg	BM
BM6	Very muddy sand	Mounded sediment with sparse megafaunal burrows but numerous *Pennatula phosphorea* (C). *Callionymus lyra* (R), *Munida rugosa* (R), *Turritella communis* (P)	SS.SMu.CFiMu.SpnMeg	BM
BM7	Soft mud	Mud with megafaunal mounds and burrows, including *Nephrops norvegicus* (F). *Munida rugosa* (R), *Callionymus lyra* (R).	SS.SMu.CFiMu.SpnMeg	BM
BM8	Soft mud	Frequent megafaunal burrows, including those of *Nephrops norvegicus*. *Asterias rubens* (F)	SS.SMu.CFiMu.SpnMeg	BM

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
BM9	Soft mud	Frequent *Nephrops norvegicus* burrows. Occasional large megafaunal mounds with central burrow	SS.SMu.CFiMu.SpnMeg	BM
BM10	Soft mud	Frequent *Nephrops norvegicus* burrows. *Asterias rubens* (C)	SS.SMu.CFiMu.SpnMeg	BM
BM11	Soft mud	*Nephrops norvegicus* burrows. *N. norvegicus* (P)	SS.SMu.CFiMu.SpnMeg	BM
BM12	Soft mud	Occasional *Funiculina quadrangularis* and *Nephrops norvegicus* burrows. *N. norvegicus* (P)	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
BM13	Soft mud	Dense *Nephrops norvegicus* burrows (C). *N. norvegicus* (P)	SS.SMu.CFiMu.SpnMeg	BM
BM14	Soft mud	Dense *Nephrops norvegicus* burrows (C). *N. norvegicus* (P), *Turritella communis* (P)	SS.SMu.CFiMu.SpnMeg	BM
BM15	Sandy mud	Occasional *Nephrops norvegicus* burrows with *N. norvegicus* (P), *Pennatula phosphorea* (F) and *Funiculina quadrangularis* (P). *Asterias rubens* (C, locally A), *Liocarcinus depurator* (O), *Metridium senile* (R), *Cerianthus lloydii* (O), Pleuronectidae sp. (P), *Callionymus lyra*? (P)	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
BM16	Mud. Nephrops creels	Dense *Pennatula phosphorea* (C) and *Nephrops norvegicus* burrows (C). *N. norvegicus* (P)	SS.SMu.CFiMu.SpnMeg	BM
BM17	Slightly muddy sand with shell material and scattered shells, especially Ensis	Sediment with a scattering of fine algal debris (c.15% cover), with *Cerianthus lloydii* common. *Liocarcinus depurator* (O), *Asterias rubens* (P), *Astropecten irregularis*? (P), *Suberites* sp. (R)	SS.SSa.IMuSa	
BM18	Muddy sand with scattered shells and cobbles	Frequent *Pennatula phosphorea* and occasional *Munida rugosa*, *Liocarcinus depurator* and c.10 cm diameter mounds. *Metridium senile* (R), *Crossaster papposus* (P), *Asterias rubens* (R)	SS.SMu.CSaMu.VirOphPmax	
BM19	Muddy sand with sparsely scattered shells and cobbles	*Asterias rubens* (C), *Turritella communis* (F), Brachyura sp. (R), *Chaetopterus variopedatus*? (R), *Pennatula phosphorea* (R), *Amalosoma eddystonense* (P). Cobbles with foliose red algae (R); *Saccharina latissima* (R - possibly drift)	SS.SSa.CMuSa	

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
BM20	Muddy shelly sand with scattered shells and pebbles, and with occasional boulders and cobbles at start of run	Patchy algal turf or scrub (c.30% cover) at start of run with stones supporting occasional *Nemertesia antennina* and *N. ramosa*; *Saccharina latissima* (R). With increasing depth the algal turf becomes occasional and may be drift material. *Asterias rubens* (P), *Cerianthus lloydii* (P), *Cancer pagurus* (R)	SS.SMx.CMx	
BM21	Muddy sand with scattered cobbles, pebbles and occasional boulders	*Asterias rubens* (C), *Aequipecten opercularis* (F), *Marthasterias* glacialis (P). Scattered drift algae but larger stones appear to support clumps of red algae (R) and hydroids, including *Nemertesia antennina* (R), as well as encrusting pink algae (F) and serpulid worms (F), and act as cover for *Munida rugosa* (R).	SS.SSa.CMuSa	
BM22	Mud	Frequent *Nephrops norvegicus* burrows; *N. norvegicus* (P). *Porania pulvillus* (R)	SS.SMu.CFiMu.SpnMeg	BM
BM23	Heterogeneous substrate of muddy gravelly sand with much pebbles and cobbles on the surface, with occasional boulders	Stones encrusted with serpulid worms (C) and pink coralline algae (P), and supporting hydroids (O, locally C), including *Nemertesia ramosa* (O), and *Metridium senile* (R). *Asterias rubens* (O), *Porania pulvillus* (R), *Munida rugosa* (R). Megafaunal burrows (R)	SS.SMx.CMx	
BM24	Muddy sand	*Nephrops norvegicus* burrows (R), *Pennatula phosphorea* (R), *Liocarcinus depurator* (R)	SS.SMu.CFiMu.SpnMeg	BM
BM25	Mud	*Virgularia mirabilis* (C), *Nephrops norvegicus* burrows (O), *Asterias rubens* (F)	SS.SMu.CFiMu.SpnMeg	BM
BM26	Soft mud	Poor visibility but megafaunal burrows present and occasional *Funiculina quadrangularis*. Euphausids/mysids just above sea bed	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
BM27	Soft mud	Heavily mounded mud, mostly c. 5-10 cm diameter. *Pennatula phosphorea* (R), *Munida rugosa* (O), *Liocarcinus* sp. (R), *Nemertesia ramosa* (R), *N. antennina*? (R), *Asterias rubens* (O), *Turritella communis* (P)	SS.SMu.CFiMu.SpnMeg	BM
BM28	Soft mud	Megafaunal mounds and frequent *Nephrops norvegicus* burrows; *N. norvegicus* (F). *Munida rugosa* (O)	SS.SMu.CFiMu.SpnMeg	BM

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
BM29	Soft mud	Many *Nephrops norvegicus* burrows (C) and megafaunal mounds, with a large number of *N. norvegicus* visible (at least F). *Lesueurigobius friesi*i (O)	SS.SMu.CFiMu.SpnMeg	BM
BM30	Soft mud	Frequent *Nephrops norvegicus* burrows and megafaunal mounds; *N. norvegicus* (P). *Munida rugosa* (O), *Liocarcinus depurator* (R), Cephalopoda sp. (R)	SS.SMu.CFiMu.SpnMeg	BM
BM31	Soft mud with occasional boulders	Frequent *Nephrops norvegicus* burrows, with several *N. norvegicus* seen (at least F) and several large holothurians, *Mesothuria intestinalis* (F). *Funiculina quadrangularis* (P), *Munida rugosa* (O), *Liocarcinus depurator* (R). Boulders support encrusting serpulid worms (F) and a patchy hydroid turf, with *Nemertesia ramosa* (F). *Porania pulvillus* (R)	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
BM32	Soft mud	Apparently densely burrowed, including some *Nephrops norvegicus* burrows. *Funiculina quadrangularis* (O). Dense euphausids/mysids just above sea bed	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
BM33	Soft mud	Frequent *Nephrops norvegicus* burrows; *N. norvegicus* (P). *Funiculina quadrangularis* common but abundant in patches	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
BM34	Soft mud	Frequent *Nephrops norvegicus* burrows; *N. norvegicus* (P). *Funiculina quadrangularis* frequent but common in patches. Pleuronectidae sp. (P), *Lesueurigobius friesii* (P)	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
BM35	Soft mud	Megafaunal mounds and frequent *Nephrops norvegicus* burrows; *N. norvegicus* (P). *Funiculina quadrangularis* (R), *Lesueurigobius friesii* (O), *Turritella* shells (P), *Amphiura* sp.? (P)	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
BM36	Soft mud	Visibility poor but apparently frequent *Nephrops norvegicus* burrows; *N. norvegicus* (P). Occasional *Funiculina quadrangularis* and *Pennatula phosphorea*. *Pagurus bernhardus* (R), Teleostei sp. (P)	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
BM37	Soft mud	Megafaunal mounds and burrows, including *Nephrops norvegicus*, *Funiculina quadrangularis* (P), *Pennatula phosphorea* (F)	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
BM38	Soft mud	*Nephrops norvegicus* burrows (F), *Funiculina quadrangularis* (F), *Pennatula phosphorea* (O)	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
BM39	Soft mud	Megafaunal burrows present. *Pennatula phosphorea* (O), *Funiculina quadrangularis* (F)	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
BM40	Soft mud	Megafaunal burrows present including *Nephrops norvegicus* (P). *Pennatula phosphorea* (F), *Funiculina quadrangularis* (O)	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
BM41	Initially cobbles and occasional boulders on muddy sand, becoming very muddy sand plain towards end of run	Stones supporting a fairly sparse fauna of encrusted serpulid worms (F), *Neocrania anomala*? (R) and hydroid tufts (O). *Munida rugosa* (F), *Echinus esculentus* (O), *Carcinus*? (R), *Liocarcinus* sp. (R). Towards the end of the run, the muddier sand plain is populated by a fairly dense sea pen population of *Pennatula phosphorea* (F, locally C) and *Funiculina quadrangularis* (F) and there are numerous 5-10 cm diameter mounds	SS.SMx.CMx SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
BM42	Soft mud	Extensively burrowed mud, with frequent *Nephrops norvegicus* burrows, and some megafaunal mounds; *N. norvegicus* (P). *Pennatula phosphorea* (F), *Funiculina quadrangularis* (P), *Amphiura filiformis*? (A), *Lesueurigobius friesii* (O), *Munida rugosa* (O)	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
BM43	Soft mud	Megafaunal burrows present including *Nephrops norvegicus* (F). *Pennatula phosphorea* (O), *Virgularia mirabilis* (R)	SS.SMu.CFiMu.SpnMeg	BM
BM44	Soft mud	Poor visibility but megafaunal burrows present including *Nephrops norvegicus*. *Goneplax rhomboides* (P)	SS.SMu.CFiMu.SpnMeg	BM
BM45	Soft mud	Poor visibility but megafaunal burrows present. *Pennatula phosphorea* (P)	SS.SMu.CFiMu.SpnMeg	BM

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
BM46	Soft mud	Poor visibility but *Nephrops norvegicus* burrows present and *N. norvegicus*, with occasional *Virgularia mirabilis* and *Pennatula phosphorea* (P). *Asterias rubens* (P). Euphausids/mysids just above sea bed	SS.SMu.CFiMu.SpnMeg	BM
BM47	Soft mud	Mud with unevenen topography though few megafaunal burrows observed. *Pennatula phosphorea* (O), *Virgularia mirabilis* (O), *Goneplax rhomboides* (P), *Munida rugosa* (R), *Asterias rubens* (P), Paguridae sp. (R), *Turritella communis* (R)	SS.SMu.CFiMu.SpnMeg	BM
BM48	Soft mud	Mud with uneven topography with few megafaunal burrows observed. *Pennatula phosphorea* (O), *Nephrops norvegicus* (P), *Asterias rubens* (P), *Pagurus bernhardus* (O - three on carrion), *Amphiura* sp.? (R)	SS.SMu.CFiMu.SpnMeg	BM
BM49	Soft mud	Mud with dense megafaunal burrows	SS.SMu.CFiMu.SpnMeg	BM
BM50	Soft mud	Visibility poor but apparently densely mounded sediment	SS.SMu.CFiMu.SpnMeg	BM
BM51	Soft mud	Dense mounds and megafaunal burrows. Dense euphausids/mysids just above sea bed	SS.SMu.CFiMu.SpnMeg	BM
BM52	Soft mud	Dense megafaunal burrows and some mounds. Visibility very poor, probably resulting from recent trawling	SS.SMu.CFiMu.SpnMeg	BM
BM53	Soft mud with sparse boulders	Mud with megafaunal burrows, *Funiculina quadrangularis* (O), *Munida rugosa* (O) and *Leptometra celtica* (R). Boulders with sparse hydroids and serpulid worms (F)	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ LC
BM54	Soft mud	Mud with dense megafaunal burrows. Dense euphausids/mysids just above sea bed	SS.SMu.CFiMu.SpnMeg	BM
BM55	Soft mud	Mud with heavily-worked uneven topography though few megafaunal burrows clearly observed. *Funiculina quadrangularis* (R), *Cerianthus lloydii* (R). Dense euphausids/mysids just above sea bed	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
BM56	Mud with sparse shell fragments	Frequent *Nephrops norvegicus* burrows, with small *Funiculina quadrangularis*? (P) and 5-10 cm diameter mounds. *Turritella communis* (P), *Pecten*? (R), Pleuronectidae sp. (R)	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
BM57	Muddy sand with scattered shells, pebbles and cobbles	Many c. 5 cm diameter mounds. *Turritella* shells (F) but some at least occupied by pagurids (R). *Munida rugosa* (O), *Porania pulvillus* (R), *Lanice conchilega* (P). Stones and shells support serpulid worms (C), *Leptometra celtica* (R), *Omalosecosa ramulosa* (R) and *Nemertesia ramosa* (O)	SS.SSa.CMuSa	LC
BM58	Mud with sparse shell fragments	Many 5-10 cm diameter mounds and few *Nephrops norvegicus* burrows. *Turritella* shells (P) but some at least occupied by pagurids (R). *Munida rugosa* (O). Euphausids/mysids just above sea bed	SS.SMu.CFiMu.SpnMeg	BM
BM59	Mud with sparse shell fragments	Many 5-10 cm diameter mounds and some *Nephrops norvegicus* burrows; several *N. norvegicus* on surface, so probably at least frequent. *Funiculina quadrangularis* (F), *Turritella* shells (P) Dense euphausids/mysids just above sea bed	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
BM60	Mud with much scattered shell material at the end of the run	Heavily mounded mud, mostly c. 5-10 cm diameter. *Nephrops norvegicus* (P), *Munida rugosa* (O), Paguridae sp. (R)	SS.SMu.CFiMu.SpnMeg	BM
BM61	Mud with occasional shells and cobbles	Heavily mounded mud, mostly c. 5-10 cm diameter. Megafaunal burrows present, probably *Munida rugosa*; *M. rugosa* (O), *Pagurus bernhardus* (R), *Cerianthus lloydii*? (R), Ascidiacea sp. (R)	SS.SMu.CFiMu.SpnMeg	BM
BM62	Soft mud	Heavily mounded mud with frequent *Nephrops norvegicus* burrows; *N. norvegicus* (P). *Funiculina quadrangularis* (O). Euphausids/mysids just above sea bed	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
BM63	Soft mud, with scattered boulders and cobbles towards the end	Heavily mounded mud with occasional burrows, including *Nephrops norvegicus*; *Munida rugosa* (O). Boulders with yellow encrusting bryozoans (R), *Omalosecosa ramulosa*? (F), hydroids (O), yellow branching sponge (R), Ascidiacea sp. (R), *Porania pulvillus* (R), *Asterias rubens* (P)	SS.SMu.CFiMu.SpnMeg CR.MCR.FaAlCr	BM
BM64	Soft mud	Megafaunal mounds and frequent *Nephrops norvegicus* burrows; *Funiculina quadrangularis* (O). Euphausids/mysids just above sea bed	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
BM65	Muddy sand with scattered cobbles and boulder patches	Many small sediment mounds (mostly c. 5-10 cm diameter - c.1-9/m^2); small (c.5 mm diameter) tubes (*Lanice conchilega*?) (C). Boulders encrusted with *Parasmittina trispinosa* (O), *Pomatoceros* (C, though probably mostly dead) and supporting hydroid clumps (O) and thin turf patches and *Omalosecosa ramulosa*? (P). *Munida rugosa* (O), *Echinus esculentus* (P), *Marthasterias glacialis* (P)	SS.SSa.CMuSa CR.MCR.FaAlCr	
BM66	Soft mud	Megafaunal burrows and mounds. *Pennatula phosphorea* (O)	SS.SMu.CFiMu.SpnMeg	BM
BM67	Mud with scattered shell fragments	Megafaunal burrows, including *Nephrops norvegicus*; *Nephrops norvegicus* (O), *Pennatula phosphorea* (O), *Funiculina quadrangularis* (O), *Munida rugosa* (F), *Turritella communis* (R). Sparse drift kelp supported *Henricia* sp. (R), *Liocarcinus* sp. (R) and *Antedon* sp.? (R), with old fishing gear with *Metridium senile* (R) and *Echinus esculentus* (R)	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
BM68	Muddy sand with surface scatter of pebbles, cobbles, shells and occasional boulders	Stones encrusted by serpulid worms (C) and orange bryozoans (R) and supporting sparse hydroid clumps (R) and *Alcyonidium diaphanum*? (R). *Asterias rubens* (F), *Munida rugosa* (O), *Lanice conchilega* (P), Aequipecten opercularis (R), *Porania pulvillus* (R)	SS.SMx.CMx	BM FQ
BM69	Soft mud	Frequent *Nephrops norvegicus* burrows, with *Funiculina quadrangularis* (O) and *Pennatula phosphorea* (R)	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
DM1	Soft mud	*Nephrops norvegicus* and smaller burrows present, with *Pennatula phosphorea* (C). *Munida rugosa* (O), *Cerianthus lloydii* (O), *Liocarcinus depurator* (R), *Lesueurigobius friesii* (P)	SS.SMu.CFiMu.SpnMeg	BM
DM2	Soft mud	Megafaunal burrows present including *Nephrops norvegicus*; *Nephrops norvegicus* (P). *Pennatula phosphorea* (C), *Funiculina quadrangularis* (F), *Munida rugosa* (R), *Asterias rubens* (O)	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
FS1	Scatteres shell gravel and shells on medium? sand	Sand with occasional *Cerianthus lloydii* and very sparse live *Phymatolithon calcareum* (R). A patchy algal turf is dominated by filamentous red algae (F), with browns also present including *Asperococcus turneri* (R), *Sporochnus pedunculatus* (R), *Chorda filum* (F) and *Saccharina latissima* (R).	SS.SMp.KSwSS.LsacR.Sa	KS
FS2	Maerl on sand with surface scatter of shells	Maerl bed with live *Phymatolithon calcareum* (C, but A in patches). The maerl supports a filamentous red algal turf (A), which binds the rhodoliths, and there is frequent *Cerianthus lloydii* and *Saccharina latissima*. *Asperococcus* sp. (R), *Cancer pagurus* (P), *Liocarcinus* sp. (R), *Necora puber* (R), *Marthasterias* glacialis (O)	SS.SMp.Mrl.Pcal.R	MB
FS3	Medium sand with scattered shells	Much of the sediment surface is covered by a luxuriant filamentous red algal turf (S) and frequent *Saccharina latissima*. *Chorda filum* (O), *Asperococcus turneri* (P). A significant proportion of the algal material could be unattached	SS.SMp.KSwSS.LsacR.Sa	KS
FS4	Maerl with scattered shells	Maerl bed with live *Phymatolithon calcareum* (F, but A in patches). The maerl supports a filamentous red algal turf (A), which binds the rhodoliths, and a brown algal flora includes *Chorda filum* (C), *Saccharina latissima* (O), Dictota *dichotoma* (O) and *Asperococcus turneri* (P). *Carcinus maenas* (R)	SS.SMp.Mrl.Pcal.R	MB

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
FS5	Slightly silty medium sand with scattered shells	Maerl bed with live *Phymatolithon calcareum* (A) bound together into clumps several cm high. A short filamentous red *Trailliella*-like turf (S) covers, and probably binds, much of the maerl. *Saccharina latissima* is common and *Asperococcus* sp. (P). *Asterias rubens* (P), *Macropodia* sp. (P)	SS.SMp.Mrl.Pcal.R	MB
FS6	Boulders	Dense *Laminaria hyperborea* forest (A). Fronds with sparse *Obelia geniculata* (R) *Scrupocellaria reptans* (R), Ectocarpaceae sp. (R) and *Membranipora membranacea* (R); restricted view of boulders but encrusted with pink coralline (A) and brown algae (P) and supporting a light algal turf of filamentous red (F) and *Desmarestia* sp.? (P but possibly drift)	IR.MIR.KR.Lhyp	
FS7	Maerl on slightly silty sand	Maerl bed with live *Phymatolithon calcareum* (A) bound together into clumps several cm high. A short filamentous red *Trailliella*-like turf (A) covers, and probably binds, much of the maerl. *Saccharina latissima* is frequent and *Asperococcus turneri* (P). *Liocarcinus* sp. (P), *Macropodia* sp. (P)	SS.SMp.Mrl.Pcal.R	MB
FS8	Medium-coarse sand with shell and maerl gravel and scattered shells	Maerl bed with live *Phymatolithon calcareum* (O overall, but C in patches). A patchy algal turf covers around 30% of the substrate, strongly dominated by *Bonnemaisonia asparagoides*? (A); *Saccharina latissima* (F), *Dictyota dichotoma* (O). *Liocarcinus* sp. (P), *Marthasterias glacialis* (P)	SS.SMp.Mrl.Pcal.R	MB
FS9	Dense pebbles with some cobbles and occasional boulders on silty shelly sand	Stones encrusted with serpulid worms (C) and pink coralline algae (F) and supporting patchy hydroid turf and clumps (F). Foliose red algae (O), *Echinus esculentus* (F), *Munida rugosa* (O), Antedon bifida (R), *Asterias rubens* (O), *Marthasterias glacialis* (P), *Crossaster papposus* (P), *Luidia ciliaris* (P), Paguridae sp. (R), *Aequipecten opercularis* (R)	SS.SMx.IMx	

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
FS10	Mostly obscured but where visible cobbles and occasional boulders on silty sand. Boulders increase in density at the end of the run	Dense bed of *Ophiothrix fragilis* (S), with virtually 100% cover over most of run. *Ophiocomina nigra* also present (R). Stones encrusted with pink coralline algae (C). *Echinus esculentus* is frequent in boulder area	SS.SMx.CMx.OphMx	
FS11	Cobbles and pebbles, with occasional boulders, on slightly silty shelly sand	Stones encrusted with serpulid worms (C), pink coralline algae (F) and *Parasmittina trispinosa* (R) and supporting moderate hydroid fauna, including *Kirchenpaueria pinnata*? (C), *Nemertesia ramosa* (F) and *Halecium halecinum* (P). *Ophiothrix fragilis* (P, locally A at base of stones), *Ophiura albida*? (C), *Ophiocomina nigra* (R), *Munida rugosa* (F), *Necora puber* (R), *Echinus esculentus* (O), *Porania pulvillus* (R), *Asterias rubens* (P), *Aequipecten opercularis* (R)	SS.SMx.IMx	
FS12	Mostly obscured but fairly flat silty substrate with occasional boulders visible	Dense bed of *Ophiothrix fragilis* (S), with virtually 100% cover. *Echinus esculentus* (O), *Necora puber* (R), *Porania pulvillus* (R)	SS.SMx.CMx.OphMx	
FS13	Silty shelly sand with pebbles and ocasional boulders	Dense bed of *Ophiothrix fragilis* (S), with virtually 100% cover. *Munida rugosa* (F), *Liocarcinus* sp. (O), *Echinus esculentus* (C), Luidia ciliaris (F), *Crossaster papposus* (F)	SS.SMx.CMx.OphMx	
FS14	Silty shelly sand with pebbles and cobbles, dense in places, with ocasional boulders	Dense bed of *Ophiothrix fragilis* (S), with virtually 100% cover, followed by sparser bed of *Ophiocomina nigra* (A). *Munida rugosa* (O), *Liocarcinus depurator* (R), *Echinus esculentus* (F), *Asterias rubens*? (P). Brittlestars disappear at the end of the run, where the dense pebbles and cobbles support an encrusting biota of pink coralline algae (F) and serpulid worms (C), as well as scattered hydroid clumps (O)	SS.SMx.CMx.OphMx SS.SMx.IMx	

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
FS15	Dense pebbles on silty shelly sand	The pebbles appear bound together, with bare patches of sand, giving the appearance of a *Limaria* bed (c.75% cover). The stabilised pebbles provide a substrate for an algal turf dominated by filamentous reds (S), with foliose reds (O), *Dictyota dichotoma* (R) and *Saccharina latissima* (C). A conspicuous hydroid fauna includes *Nemertesia antennina* (F), *N. ramosa* (F) and *Halecium halecinum* (P). *Liocarcinus depurator* (O), *Echinus esculentus* (F), *Asterias* rubens (P), *Marthasterias glacialis* (F), *Henricia*? (O). At the end of the run is a dense carpet of *Ophiothrix fragilis* (S), with *Marthasterias glacialis* (F) and *Echinus esculentus* (P)	SS.SMx.IMx.Lim SS.SMx.CMx.OphMx	FS
FS16	Dense pebbles and sparser cobbles and occasional boulders on silty shelly sand	Dense bed of *Ophiothrix fragilis* (S), with virtually 100% cover for most of run. *Ophiocomina nigra* (P), *Echinus esculentus* (O), *Luidia ciliaris* (P)	SS.SMx.CMx.OphMx	
FS17	Dense cover of pebbles, with cobbles, on silty shelly sand	Initially dense *Ophiothrix fragilis* arms (A) emerging from stone interstices changing to dense *Ophiocomina nigra* (A, locally S) over substratum. The stones are encrusted in pink coralline algae (F) and serpulid worms (C) and support frequent hydroid clumps, Polyplacophora sp. (P), *Chlamys* sp. (R) and many *Protanthia simplex* (C), which are also attached to drift *Fucus serratus*. *Echinus esculentus* (O), *Aequipecten opercularis* (R), *Porania pulvillus* (R), *Munida rugosa* (O), *Necora puber* (R)	SS.SMx.CMx.OphMx	
FS18	Dense pebbles on silty shelly sand with occasional boulders	The pebbles appear bound together, with bare patches of sand, giving the appearance of a *Limaria* bed (c.85% cover). The stabilised pebbles provide a substrate for a rich hydroid turf (A), including *Nemertesia ramosa* (F) and foliose red algae (O). *Echinus esculentus* (O), *Asterias* rubens (O), *Marthasterias glacialis* (O), *Necora puber* (R), *Munida rugosa* (F), *Alcyonium digitatum* (R)	SS.SMx.IMx.Lim	FS

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
FS19	Dense pebbles and cobbles on silty shelly sand with scattered boulders	The stones appear bound together, with bare patches of sand, giving the appearance of a *Limaria* bed (c.80% cover). The stabilised stones provide a substrate for a rich hydroid turf (A), including *Kirchenpaueria pinnata*? (C), *Nemertesia ramosa* (F) and *N. antennina* (P). *Echinus esculentus* (F), *Munida rugosa* (F), *Cancer pagurus* (P), Ascidiacea sp. (P). Boulders are encrusted with pink coralline algae (F), *Parasmittina trispinosa* (O) and *Pomatoceros* (C) and also support hydroid patches	SS.SMx.IMx.Lim	FS
FS20	Dense cover of pebbles on silty shelly sand	The stones are bound together, forming *Limaria* terraces down the slope, with intervening strips of bare sediment (c.60% *Limaria* nest cover). The stabilised stones provide a substrate for a rich hydroid turf (A), including *Kirchenpaueria pinnata*? (C), *Nemertesia ramosa* (F) and *N. antennina* (P). *Echinus esculentus* (F), *Munida rugosa* (F), *Liocarcinus* sp. (R), *Ascidia virginea* (R)	SS.SMx.IMx.Lim	FS
FS21	Slightly silty shelly medium sand	Sediment covered with patchy *Trailliella*-like fine filamentous attached red algal turf (A, but S over extensive areas). At least some clumps of live *Phymatolithon calcareum* are bound by the turf, although overall maerl abundance appears low (R). *Saccharina latissima* is scattered over the area (O) and other brown algae present include *Asperococcus turneri* (P), *Halidrys siliquosa* (R) and filamentous forms (P). *Cerianthus lloydii* (F), *Carcinus maenas* (R), Asteroidea sp. (R)	SS.SMp.KSwSS.LsacR.Sa	KS

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
GF1	Initially mud with sparsely scattered cobbles and pebbles giving way to shelly muddy sand with many scattered pebbles	Initially *Funiculina quadrangularis* present with small 5-10 cm diameter mounds, with serpulid worms on stones; *Munida rugosa* (P), *Asterias rubens* (P). With movement up the slope the high density of small mounds (1-9/m^2) creates an uneven topography. *Cerianthus lloydii* becomes common, *Asterias rubens* (F), *Pennatula phosphorea* (R), *Porania pulvillus* (O), *Aequipecten opercularis* (R) and *Liocarcinus* sp. (R)	SS.SMu.CFiMu.SpnMeg.Fun SS.SSa.CMuSa	BM FQ
GF4	Very heterogeneous substrate of muddy gravelly sand with much pebbles and cobbles on the surface, with occasional boulders	Stones encrusted with serpulid worms (C) and supporting hydroids (O), including *Nemertesia ramosa* (O), *Omalosecosa ramulosa* (R) and *Bolocera tuediae* (R). *Munida rugosa* (F), *Porania pulvillus* (P), *Asterias rubens* (R), *Echinus esculentus* (R), *Carcinus*? (R). For much of the run there is a field of dense *Leptometra celtica* (A)	SS.SMx.CMx	LC
GF6	Heterogeneous substrate of boulders, cobbles and pebbles with interstitial maerl and larger patches of maerl	Boulders and cobbles encrusted with pink coralline algae (A), brown algae (O, locally C), *Pomatoceros* (C) and *Parasmittina trispinosa* (R) and with patchy algal turf on upper faces, dominated overall by *Dictyota dichotoma* (F, locally A), but with some areas of predominantly filamentous reds (O, locally A); foliose reds (O). Hydroid patches (F), especially *Kirchenpaueria pinnata*? (O). *Alcyonidium diaphanum* (R), *Asterias* rubens (C), *Marthasterias glacialis* (P), *Luidia ciliaris* (P), *Echinus esculentus* (F). Sediment patches between stones, the larger ones covering several square metres, appear to be principally maerl, with live *Phymatolithon calcareum* (C)	SS.SMp.Mrl.Pcal.Nmix IR.HIR.KFaR.FoR.Dic	MB
GF7	Muddy sand, then silted cobbles, pebbles and occasional boulders on muddy sand	Muddy sand with dense *Lanice conchilega* (A) and small c.5 cm diameter mounds (1-9/m2); *Asterias rubens* (C), *Munida rugosa* (P). Stones encrusted with serpulid worms (C) and barnacles? (F); *Asterias rubens* (C), *Porania pulvillus* (R) and *Echinus esculentus* (F)	SS.SSa.CMuSa SS.SMx.CMx	

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
GF8	Soft mud; possibly sparse trawl furrows	Many small mounds (c. 5-10 cm diameter) and scattered burrows, some possibly *Nephrops norvegicus*. *Leptometra celtica* (F), *Pennatula phosphorea* (R), dead *Funiculina quadrangularis*? (O), *Turritella communis* (O), Paguridae sp. (R). Dense euphausids/mysids just above sea bed	SS.SMu.CFiMu.SpnMeg	BM LC
GF10	Initially small boulders and cobbles on muddy sand becoming scattered pebbles on muddy sand	Stones encrusted with serpulid worms (C) and *Parasmittina trispinosa* (O), with *Asterias rubens* (P), *Porania pulvillus* (P), *Echinus esculentus* (P), *Omalosecosa ramulosa*? (O) and hydroid tufts (R), including *Nemertesia ramosa*. Sediment with conical mounds c.5-10 cm in diameter, *Munida rugosa* (F), *Lanice conchilega* (O, locally F) and *Chaetopterus variopedatus* (R)	CR.MCR.FaAlCr SS.SSa.CMuSa	
GF11	Maerl gravel, scattered shells, cobbles and boulders on slightly silty sand	Maerl bed with live *Phymatolithon calcareum* common and *Cerianthus lloydii* abundant (possibly S in places). Sparse foliose algae, especially *Phyllophora crispa*? (R); *Asterias rubens* (C), *Liocarcinus* sp. (R), *Echinus esculentus* (P), *Inachus* sp. (R), *Marthasterias glacialis* (R). Boulders and cobbles are encrusted with pink coralline algae (F), *Parasmittina trispinosa* (R) and serpulid worms (F) and support patches of red filamentous algae (locally C) and hydroids including *Abietinaria abietina* (R), *Nemertesia antennina* (R) and *N. ramosa* (R). *Porania pulvillus* (R)	SS.SMp.Mrl.Pcal.Nmix	MB
GF12	Boulders on mixed sandy mud sediment with gravel, pebbles and cobbles	Rock supporting encrusting biota of serpulid worms (C), pink coralline algae (O) and *Parasmittina trispinosa* (R) and erect fauna of a patchy hydroid turf, *Nemertesia ramosa* (R), *Porella compressa* (R) and *Urticina* sp.? (R). *Munida rugosa* (F), *Echinus esculentus* (F), *Porania pulvillus* (O), *Aequipecten opercularis* (R), Labrus bimaculata (P), *Pagurus bernhardus* (R), *Asterias rubens* (P). Sediment with *Lanice conchilega* (R)	CR.MCR.FaAlCr SS.SMx.CMx	

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
GF13	Soft mud with scattered shell fragments	Many small mounds (mostly c. 5-10 cm diameter - c.1-9/10m^2) and burrows, including *Nephrops norvegicus*; *Nephrops norvegicus* (P). *Turritella communis* (P), *Munida rugosa* (O), *Asterias rubens* (P)	SS.SMu.CFiMu.SpnMeg	BM
GF14	Initially boulders on mixed silty sediment, then camera rises up a slope of mostly smooth bedrock, with areas of boulders	Rock encrusted with dense *Pomatoceros* (C, locally A), pink coralline algae (A), *Parasmittina trispinosa* (R, but O on boulders) and barnacles (P), with sparse hydroids (R). *Echinus esculentus* (F, but C on boulders), *Munida rugosa* (F in boulder areas), *Porania pulvillus* (R), *Asterias rubens* (O), *Ciona*? (R), *Necora puber* (R), *Aequipecten opercularis* (O), *Luidia sarsi*? (P)	CR.MCR.FaAlCr.Pom	
HM1	Mud with scattered shell fragments and occasional cobbles	Sparse *Nephrops norvegicus* burrows and small mounds; *N. norvegicus* (P). *Virgularia mirabilis* (R), *Asterias rubens* (C), *Turritella communis* (P), *Aequipecten opercularis* (O), *Metridium senile* (P)	SS.SMu.CFiMu.SpnMeg	BM
HM2	Mud with scattered shell fragments	Frequent *Nephrops norvegicus* burrows; *N. norvegicus* (P). *Asterias rubens* (C), *Turritella communis* (F).	SS.SMu.CFiMu.SpnMeg	BM
HM3	Sandy shelly mud with scattered pebbles, cobbles, boulders and shells. Including Modiolus	Sediment with c.50% cover by algal turf, including *Saccharina latissima*, but possibly largely loose material. Boulders and cobbles with foliose red algae (locally A) and *Nemertesia antennina* (F). *Asterias rubens* (P), *Marthasterias glacialis* (P), *Astropecten irregularis*? (P), *Turritella communis* (P), *Pholis gunnellus* (R), *Aequipecten opercularis* (R), *Philine aperta* egg case? (R)	SS.SMx.CMx	
HM4	Sandy shelly mud with scattered pebbles, cobbles, boulders and shells. Including Modiolus	Sediment with c.50% cover by algal turf, including kelp, but possibly largely loose material. Boulders and cobbles with foliose red algae (locally A) and *Nemertesia antennina* (O). *Asterias rubens* (C), *Astropecten irregularis* (P), *Turritella communis* (P), *Aequipecten opercularis* (R), *Cerianthus lloydii*? (R), *Liocarcinus* sp. (R)	SS.SMx.CMx	

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
HM5	Shelly sandy mud or muddy sand	Sediment largely covered by a loose mat of *Phyllophora crispa*? (S). *Turritella communis* (P), *Nemertesia antennina* (R), *Cancer pagurus* (P), *Asterias rubens* (P)	SS.SMp.KSwSS.Pcri	KS
HM6	Muddy shelly sand with scattered boulders	Sediment covered with patchy algal turf (c. 35% cover) dominated by filamentous reds (A), with occasional *Saccharina latissima*. Some of this material may be unattached *Trailliella*-like forms. Boulders are encrusted with pink coralline algae (F), serpulid worms (F), *Parasmittina trispinosa* (R) and support hydroid tufts (O). *Asterias rubens* (O), *Munida rugosa* (O), *Echinus esculentus* (F), Squid eggs present on one kelp stipe	SS.SMp.KSwSS.LsacR.Mu	KS
HM7	Silty shelly sand with scatter of pebbles and cobbles and occasional boulders	Stones are encrusted with pink coralline algae (F), serpulid worms (C) and *Parasmittina trispinosa* (R) and support hydroid tufts (F) including *Kirchenpaueria pinnata*? (O) and *Halecium halecinum* (O), and intially a patchy red algal turf dominated by filamentous forms (locally C), with sparse foliose forms (R). A few dead *Modiolus* shells are present and possibly sparse live *Modiolus* (R, locally O). *Munida rugosa* (F), *Echinus esculentus* (F), *Liocarcinus* sp. (R), *Crossaster papposus* (O), *Asterias rubens* (O), Paguridae sp. (R), *Nephrops norvegicus* (P), *Ascidia virginea* (R)	SS.SMx.IMx	
HM8	Muddy shelly sand with scattered shells, pebbles and cobbles	Stones with hydroid clumps (R), patchy algal turf initially, and *Ascidiella aspersa*? (R). *Asterias rubens* (P), *Turritella communis* (P), *Aequipecten opercularis* (R), *Liocarcinus* sp. (P), *Pennatula phosphorea* (R)	SS.SMx.CMx	

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
HM9	Silty shelly sand with scatter of pebbles and cobbles and occasional boulders	Stones are encrusted with pink coralline algae (F), serpulid worms (C) including *Pomatoceros* (C), and support hydroid tufts and patches (O) including *Kirchenpaueria pinnata*? (O) and *Nemertesia ramosa* (O). *Munida rugosa* (F), *Echinus esculentus* (F), *Henricia* sp. (R), *Liocarcinus* sp. (R), *Crossaster papposus* (O), *Asterias rubens* (O), Paguridae sp. (R), filamentous red algae (R)	SS.SMx.IMx	
HM10	Predominantly shelly muddy sand with scattered pebbles; scattered boulders also present	Sediment and boulders with patchy filamentous red algal turf with c.50% cover (S) and frequent *Saccharina latissima* with silted fronds. Steep faces of boulders are generally sparsely encrusted with pink coralline algae (O) and serpulid worms (F). *Buccinum undatum* (R), *Asterias rubens* (O), *Echinus esculentus* (O), *Munida rugosa* R)	SS.SMp.KSwSS.LsacR.Mu	KS
HM11	Initially mud but with passage up the slope becoming an increasingly shelly muddy sand with scattered cobbles and boulders	Mud at base of slope with occasional megafaunal burrows, possibly including *Nephrops norvegicus*, and small mounds. Lesueurigobius friesii? (P), *Munida rugosa* (O), *Cerianthus lloydii* (R). With transition to a muddy sand *Turritella* shells become abundantly scattered over the surface, although they appear unoccupied. *Cerianthus lloydii* becomes frequent and scattered stones support sparse *Nemertesia ramosa* (R). *Asterias rubens* (O), Pleuronectidae sp. (R), *Munida rugosa* (R)	SS.SMu.CFiMu.SpnMeg SS.SSa.CMuSa	BM
LC1	Muddy sand with sparsely scattered boulders	Sediment with 5-10 cm diameter mounds (1-9/m2), frequent *Leptometra celtica*, *Munida rugosa* (F) and *Turritella* shells (P, though possibly empty). Boulders are encrusted with pink coralline algae (C) and serpulid worms (C) and support hydroid patches (O), including *Halecium halecinum* (O) and *Nemertesia ramosa* (O), as well as L. *celtica*	SS.SSa.CMuSa	LC

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
LC2	Scattered cobbles and pebbles, with occasional boulders on sandy mud or muddy sand	Stones encrusted with pink coralline algae (F) and serpulid worms (C) and support dense *Leptometra celtica* (C), *Antedon* sp. (R) and hydroid tufts (O), including *Kirchenpaueria pinnata*? *Pecten* (R), *Porania pulvillus* (R), *Munida rugosa* (O), Brachyura sp. (R)	SS.SMx.CMx	LC
LC3	Muddy sand with surface scattering of pebbles, cobbles and shells and occasional boulders, which becomes increasingly dense with progression up the slope	Stones encrusted with serpulid worms (C) and supporting hydroids (O), including *Nemertesia ramosa* (R) and *N. antennina*? (R). *Munida rugosa* (F), *Porania pulvillus* (O), *Asterias rubens* (O), *Liocarcinus depurator* (O), *Marthasterias glacialis* (O)	SS.SMx.CMx	
LC4	Muddy sand with scattered pebbles, shells and cobbles, initially fairly dense with occasional boulders	*Lanice conchilega* (O), *Munida rugosa* (F), *Asterias rubens* (P). Stones support serpulid worms (C) and hydroid tufts (O). *Porania pulvillus* (O)	SS.SSa.CMuSa	
LC5	Shelly muddy sand with scattered shells and pebbles, increasing in density with progression up the slope	Prolific *Cerianthus lloydii* (C), with frequent *Munida rugosa*; *Asterias rubens* (O)	SS.SMx.CMx	
LC6	Scattered pebbles, cobbles and occasional small boulders on muddy sediment. Trawl net present at start of run	Abundant *Leptometra celtica* on stones, which are sparsely encrusted with serpulid worms. *Cerianthus lloydii* (P), *Munida rugosa* (F)	SS.SMx.CMx	LC
MB1	Maerl gravel with scattered shells	Maerl bed with c.25% cover of live *Phymatolithon calcareum* (C) and c. 50% cover by algal turf, including red algae, *Desmarestia aculeata*, *Dictyota dichotoma* and *Saccharina latissima* (F)	SS.SMp.Mrl.Pcal.R	MB

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
MB2	Medium-coarse sand with shell gravel and scatter of dead shells	Initially scattered algal tufts (O-F) in deeper water, with occasional *Lanice conchilega*. Coverage of erect algae increases to around 50% in shallower water, dominated by *Saccharina latissima* (C), and accompanied by increasing coverage by live *Phymatolithon calcareum* (C). Other algae on the maerl bed include *Desmarestia aculeata*, *Bonnemaisonia asparagoides*? and *Ulva lactuca*. *Cancer pagurus* (P), Paguridae sp. (R)	SS.SCS.ICS SS.SMp.Mrl.Pcal.R	MB MC?
MB3	Maerl on sand with surface scatter of shells	Maerl bed with c.25% cover of live *Phymatolithon calcareum* (C) and c. 40% cover by algal turf (including red algae, *Desmarestia aculeata*, *Dictyota dichotoma*) and *Saccharina latissima* (F). Asteroidea sp. (P)	SS.SMp.Mrl.Pcal.R	MB
MB4	Medium-coarse sand with scattered shells	Maerl bed with c.20% cover by *Phymatolithon calcareum* (C) and thin, patchy algal turf. Sparse *Saccharina latissima* (R) and *Desmarestia aculeata* (R), possibly drift. *Chaetopterus variopedatus* (P), *Asterias rubens* (P)	SS.SMp.Mrl.Pcal.Nmix	MB
MB5	Medium-coarse sand with scattered gravel, pebbles and shells. Creel and creel line present	Pebbles support sparse tufts of algae (O), pink coralline algae (R) and serpulid worms (F). *Cerianthus lloydii* (R)	SS.SCS.ICS	MC?
MB6	Slightly silty sand with much broken shell and scattered pebbles	Occasional megafaunal mounds (10-20 cm diameter) and sparse epifauna with *Virgularia mirabilis* (R), *Turritella communis* (R), *Asterias rubens* (O)	SS.SMu.CSaMu.VirOphPmax	
MB7	Slightly rippled medium sand with surface scatter of shell fragments and dead shells	Shells support sparse algal tufts (O). *Asterias rubens* (P)	SS.SSa.IMuSa.EcorEns	
MB8	Slightly rippled medium sand with surface scatter of shell fragments and dead shells, especially Ensis; very sparse dead maerl	Small *Asterias rubens* (C), Pleuronectidae sp. (P). Possibly very sparse rhodoliths of *Phymatolithon calcareum* (R)	SS.SSa.IMuSa.EcorEns	

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
MB9	Waves of coarse sand and maerl gravel with dense shells in troughs. Outcrop of bedrock towards end of run	Live *Phymatolithon calcareum* frequent-common in the narrow troughs but only scattered rhodoliths (R) on the broader crests. Frequent *Saccharina latissima* over the area as a whole, with shells in the troughs also supporting a patchy, mostly red, algal turf (C). *Lanice conchilega* (P), *Asterias rubens* (P). Bedrock densely coated in red algae (possibly *Plocamium cartilagineum*, S), with sparse *Laminaria hyperborea* (R) and frequent *Nemertesia antennina*. Vertical faces with pink coralline crust (C) and serpulid worms (C). Small *Asterias rubens* common on algae	SS.SMp.Mrl.Pcal.Nmix SS.SCS.CCS IR.HIR.KFaR.FoR	MB MC?
MB10	Heterogeneous sediment of slightly muddy sand with much gravel, pebbles, shells and scattered cobbles	Pebbles and cobbles with serpulid worms (C), pink coralline crusts and sparse hydroid tufts, including *Nemertesia ramosa* (O). *Asterias rubens* (P), *Porania pulvillus* (R)	SS.SMx.CMx	
MB11	Sandy mud with sparsely scattered shells	*Pennatula phosphorea* (O but locally F), *Virgularia mirabilis* (R), *Cerianthus lloydii* (F), *Asterias rubens* (C), *Turritella communis* (P). Drift kelp and *Desmarestia aculeata*	SS.SMu.CSaMu.VirOphPmax	
MB12	Fine-medium sand with surface scatter of shell gravel and shells	Scattered small red (O) and brown (O) algal tufts on shells with occasional Sacharina latissima. *Cerianthus lloydii* (P), *Asterias rubens* (C), *Astropecten irregularis* (P). Glimpse of kelp forest on rock at end of run	SS.SSa.IMuSa.EcorEns	
MB13	Slightl;y muddy sand with dead maerl and scattered shells	Live maerl overall occasional, but common in patches. Maerl is largely covered by a short red filamentous red algal turf (S), with occasional *Saccharina latissima*. *Cerianthus lloydii* (F), *Asterias rubens* (P)	SS.SMp.Mrl.Pcal.R	MB

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
MB14	Medium-coarse sand with maerl gravel and occasional boulders	Initially live maerl (C) beneath a dense red algal cover (S), with the live maerl disappearing with progression up the slope. Some dense areas of *Saccharina latissima* (overall C, but locally A), supporting *Antedon bifida* (P). *Asterias rubens* (P)	SS.SMp.Mrl.Pcal.R SS.SMp.KSwSS.LsacR.Sa	MB KS
MB15	Muddy sand	Patchy live maerl (F, locally C) and dead maerl with c.60% cover by algal turf, mostly red. *Desmarestia aculeata* (P), *Saccharina latissima* (F). *Asterias rubens* (C), *Crossaster papposus* (P)	SS.SMp.Mrl.Lgla	MB
MB16	Muddy sand	Patchy live maerl (overall F, locally C) and dead maerl with c.50% cover by algal turf, mostly red, but including *Asperococcus turneri* (O), *Desmarestia aculeata* (P) and *Dictyota dichotoma* (R). *Saccharina latissima* (C), *Asterias rubens* (C),	SS.SMp.Mrl.Lgla	MB
MB17	Muddy sand	Sparse maerl with only occasional live thalli. Algal turf coverage around 40%, mostly by reds, but also *Dictyota dichotoma* (R) and *Ulva* sp. (R). *Saccharina latissima* (F). *Cerianthus lloydii* (P), *Taurulus bubalis* (P), Pleuronectidae sp. (P), *Turritella communis* (F), *Asterias rubens* (P), *Astropecten irregularis*? (P)	SS.SMp.KSwSS.LsacR.Sa	KS
MB18	Muddy sand with maerl gravel	Sparse maerl with dense short fine algal turf or mat covering c.60% of sea bed, dominated by *Audouinella* (S). Live maerl possibly only rare, although largely obscured by turf. Clumps of *Saccharina latissima* (F), some possibly drift. *Turritella communis* (F), *Asterias rubens* (P)	SS.SMp.KSwSS.LsacR.Sa	KS
MB19	Muddy sand with maerl gravel	Live maerl (C) and dead maerl with c.80% cover by dense, luxuriant algal turf, mostly red. *Desmarestia aculeata* (P), *Asperococcus turneri* (P), *Asterias rubens* (P), *Crossaster papposus* (P)	SS.SMp.Mrl.Lgla	MB

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
MB20	Muddy sand with maerl gravel	Fairly sparse maerl bed with algal turf or mat covering c.90% of sea bed, dominated by *Audouinella* (S), but larger reds (possibly *Polysiphonia* sp.) also common. Live maerl probably frequent, although largely obscured by turf. Turf also includes *Asperococcus turneri* (O) and *Desmarestia aculeata* (P). *Asterias rubens* (P),	SS.SMp.Mrl.Lgla	MB
MB21	Muddy sediment with maerl gravel	Algal mat covering c.97% of sea bed, dominated by *Audouinella* (S) Live maerl present but largely obscured by mat. *Asterias rubens* (P), *Astropecten irregularis* (P), *Marthasterias glacialis* (P), *Echinus esculentus* (P), *Necora*? (P)	SS.SMp.KSwSS.Tra	KS
MB22	Maerl gravel overlying muddy sediment	Algal mat covering c.95% of sea bed, dominated by *Audouinella* (S) but larger reds (possibly *Polysiphonia* sp.) also frequent. Sediment covered by dense dead maerl material with live maerl present (O-F) but largely obscured by mat. *Asperococcus* sp. (P), *Saccharina latissima* (O), *Echinus esculentus* (C), *Asterias rubens* (F), *Astropecten irregularis* (P), *Marthasterias glacialis* (P)	SS.SMp.Mrl.Lgla	MB
MB23	Muddy sediment? (largely obscured)	100% cover by algal mat dominated by *Audouinella* sp. (S) with occasional *Saccharina latissima*. *Asterias rubens* (P), *Aequipecten opercularis* (R)	SS.SMp.KSwSS.Tra	KS
MB24	Muddy sand with dead maerl	Dense bed of *Ophiothrix fragilis* (S) with sparse *Saccharina latissima* (O) over a red algal mat (S) with sparse live maerl (R)	SS.SMx.CMx.OphMx	
MB25	Muddy sediment with much dead maerl	99% cover by algal mat dominated by *Audouinella* sp. (S) with occasional *Saccharina latissima* and sparse live maerl (R). *Asterias rubens* (P)	SS.SMp.KSwSS.Tra	KS
MB26	Substrate not visible	100% cover by thick filamentous red algal mat (S)	SS.SMp.KSwSS.Tra	KS

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
MB27	Waves of maerl with scattered boulders and cobbles and areas of dense boulders, with cobbles	Sediment areas constitute a maerl bed with live *Phymatolithon calcareum* (C) and sparse erect algae (O). *Luidia ciliaris* (P), *Echinus esculentus* (P), *Echinus esculentus* (P). Boulders are encrusted with pink coralline algae (F), *Parasmittina trispinosa* (R), barnacles (P) and serpulid worms (P) but upper faces support a dense algal turf of predominantly filamentous reds (S), with some foliose reds (R) and *Dictyota dichotoma* (R). Fauna includes *Echinus esculentus* (F), hydroid clumps (O), cushion sponges (R) and *Asterias rubens* (P)	SS.SMp.Mrl.Pcal.Nmix IR.HIR.KFaR.FoR	MB
MB28	Initially small boulder field on muddy sand giving way to dense cobbles and pebbles on muddy sand and then muddy sand with scattered shells	Boulders encrusted with pink coralline algae (F), serpulid worms (including *Pomatoceros* - C), *Parasmittina trispinosa* (R) and supporting hydroid patches (O) and *Porella*? (R). *Echinus esculentus* (C), *Asterias rubens* (C), *Munida rugosa* (F). Pebbles and cobbles also encrusted with pink coralline algae (O) and serpulid worms (C) and with occasional hydroid clumps; *Asterias rubens* (F), *Luidia ciliaris* (P). Muddy sand with small c. 5-10 cm diameter mounds (1-9/m2), *Asterias rubens* (F), *Lanice conchilega* (R)	CR.MCR.FaAlCr SS.SMx.CMx SS.SSa.CMuSa	
MB29	Pebbles, cobbles and small boulders on coarse sand	Stones encrusted with pink coralline algae (A), serpulid worms (C) and barnacles (F-C) and also supporting scattered foliose red algae (O) (including *Phycodrys rubens*, R), filamentous red algae (R), hydroids (O) and Polyplacophora sp. (P). *Marthasterias glacialis* (O), *Asterias rubens* (P), *Lanice conchilega* (P) and *Liocarcinus* sp. (R)	SS.SMx.IMx	

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
MB30	Boulders, cobbles and pebbles on coarse sand, with maerl pockets	Boulders and cobbles encrusted with pink coralline algae (C), *Pomatoceros* (C), *Parasmittina trispinosa* (O) and barnacles (P, locally C), with upper surfaces of larger boulders supporting a red algal turf of filamentous (C, locally S) and foliose (R) forms and hydroid tufts (O), including *Nemertesia ramosa*. *Asterias rubens* (C), *Munida rugosa* (P), *Echinus esculentus* (F), *Marthasterias glacialis* (P). At least some of the maerl patches between areas of stones contain dense live *Phymatolithon calcareum* (A)	SS.SMp.Mrl.Pcal.Nmix IR.HIR.KFaR.FoR	MB
MB32	Boulders and cobbles, with interstitial and larger patches of maerl and sand	Boulders and cobbles encrusted with pink coralline algae (F), *Pomatoceros* (C), *Parasmittina trispinosa* (F) and barnacles (P, locally C), with upper surfaces of stones supporting a red algal turf of filamentous (C, locally S) and foliose (R) forms and hydroid tufts (O), including *Nemertesia ramosa*. The algal turf decreases in density with increasing depth towards the end of the run. *Asterias rubens* (C), *Munida rugosa* (P), *Echinus esculentus* (F), *Marthasterias glacialis* (O), *Cancer pagurus*? (R). Sediment patches between stones, the larger ones covering several square metres, contain dense live *Phymatolithon calcareum* (A); *Porania pulvillus* (P)	SS.SMp.Mrl.Pcal.Nmix IR.HIR.KFaR.FoR	MB
MB33	Long waves of maerl, with scattered shells in troughs	Maerl bed with live *Phymatolithon* frequent overall, though concentrated in the broad troughs (C, but A in patches). Extremely long fronds of *Saccharina latissima* are frequent and other algae are present, though rare, such as *Desmarestia aculaeata* and tufts of red algae. *Marthasterias glacialis* (P), *Asterias rubens* (P)	SS.SMp.Mrl.Pcal.Nmix	MB
MB34	Long waves of maerl, with scattered shells in troughs	Maerl bed with live *Phymatolithon* frequent overall, though concentrated in the broad troughs (C, but A in patches). *Cerianthus lloydii* (C), *Asterias rubens* (O), *Aequipecten opercularis* (R)	SS.SMp.Mrl.Pcal.Nmix	MB

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
MB35	Coarse sand and shell gravel with scattered shells, pebbles and occasional cobbles	Sediment containing sparse *Lanice conchilega* (P), *Cerianthus lloydii* (P) and *Virgularia mirabilis* (R), with stones and shells encrusted with pink coralline algae and serpulid worms and with sparse tufts of foliose red (R), filamentous red (R) algae and *Ascidia virginea*? (R). *Liocarcinus depurator* (R), Paguridae sp. (R)	SS.SCS.CCS	MC?
MB36	Thin layer of maerl with scattered pebbles and shells on sand	Sparse maerl bed with live *Phymatolithon calcareum* (O, locally F). Sparse *Lanice conchilega* (P), *Cerianthus lloydii* (P) and *Virgularia mirabilis* (R), with stones and shells encrusted with pink coralline algae and serpulid worms and with sparse tufts of foliose red (R) and filamentous red (R) algae. *Luidia cilaris* (P)	SS.SMp.Mrl.Pcal.Nmix	MB
MB37	Slightly silty shelly medium sand with scattered pebbles and shells	Sediment with frequent *Cerianthus lloydii* (locally C) and occasional c.10 cm diameter mounds. Some stones and shells encrusted with serpulid worms and pink coralline algae and supporting sparse tufts of filamentous red algae (O). *Saccharina latissima* (O), *Liocarcinus depurator* (R)	SS.SCS.CCS	
MB38	Cobbles and pebbles on shelly medium sand	Stones encrusted with pink coralline algae (F), serpulid worms (A) and orange bryozoans (R) and support frequent hydroid tufts, including *Kirchenpaueria pinnata*? (P) and *Nemertesia ramosa* (R), as well as sparse foliose red (R) and filamentous red (O) algae. The sediment supports *Cerianthus lloydii* (F) and *Lanice conchilega* (O). *Liocarcinus depurator* (R), *Modiolus modiolus*? (O), *Munida rugosa* (O)	SS.SMx.CMx.FluHyd	
MB39	Muddy sand with scattered pebbles, cobbles and shells	Patchy filamentous red algal turf (C) with *Desmarestia aculeata* R) and *Saccharina latissima* (O); some of this material may be drift. *Virgularia mirabilis* (F), *Asterias rubens* (F)	SS.SMp.KSwSS.LsacR.Mu	KS

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
MB40	Sand-scoured bedrock with coarse sand patches	Dense *Saccharina latissima* (A) and alga turf dominated by *Bonnemaisonia asparagoides*? (C), with *Dictyota dichotoma* (P) and *Delesseria sanguinea* (R). *Echinus esculentus* (P), *Marthasterias glacialis* (P)	IR.HIR.KSed SS.SCS.ICS	
MB41	Coarse sand with scattered shells, cobbles and small boulders, the latter dense in places	Sand with *Cerianthus lloydii* (F) and *Lanice conchilega* (P). Boulders with dense algal turf of filamentous reds (A) and browns and sparse *Saccharina latissima* (R). *Nemertesia antennina* (F), *Cancer pagurus* (O), *Asterias rubens* (P), *Porania pulvillus* (P), *Echinus esculentus* (O)	IR.HIR.KSed SS.SCS.ICS	
MB42	Maerl gravel on sand with scattered shells	Maerl bed with live *Phymatolithon calcareum* (C) and dense *Cerianthus lloydii* (C, locally A). Sparse tufts of filamentous red algae (R), *Asterias rubens* (F), *Porania pulvillus* (R), *Liocarcinus* sp. (R), *Lanice conchilega* (P)	SS.SMp.Mrl.Pcal.Nmix	MB
MB43	Heterogeneous sediment of slightly muddy sand with surface cover of much shell gravel, pebbles and shells	*Cerianthus lloydii* (C), *Lanice conchilega* (R), *Aequipecten opercularis* (R), *Porania pulvillus* (R), *Echinus esculentus* (P), *Luidia sarsi*? (P), *Asterias rubens* (P). Pebbles and shells support a sparse fauna of hydroids (R) and serpulid worms (C), as well as pink coralline algae (R)	SS.SMx.CMx	
MB44	Medium sand with scattered shells	Sand with c.30% cover by algal turf dominated by *Bonnemaisonia asparagoides* (A) and *Saccharina latissima* (F); live *Phymatolithon calcareum* (R). *Cerianthus lloydii* (C), 10-15 cm diameter mounds (P)	SS.SMp.KSwSS.LsacR.Sa	KS
MB45	Slightly silty sand with surface scatter of maerl gravel, shells and pebbles	Sparse tufts of foliose red algae (R) and small patches of *Phymatolithon calcareum* (R). *Saccharina latissima* (R), *Cerianthus lloydii* (C), *Virgularia mirabilis* (R), *Echinus esculentus* (P), *Hyas* sp. (R)	SS.SMx.CMx	
MB46	Maerl on silty sand with scattered shells	Maerl bed with live *Phymatolithon calcareum* (C) and *Cerianthus lloydii* (C) and patches of *Phyllophora crispa*? (O). *Porania pulvillus* (O), *Munida rugosa* (R)	SS.SMp.Mrl.Pcal.Nmix	MB

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
MB47	Maerl gravel on silty sand with scattered shells	Sparse maerl bed with live *Phymatolithon calcareum* frequent at most. *Cerianthus lloydii* (C), *Asterias rubens* (P), *Aequipecten opercularis* (R), *Inachus* sp. (R)	SS.SMp.Mrl.Pcal.Nmix	MB
MB48	Coarse sand with shell gravel and scattered shells	Patchy algal turf dominated by *Bonnemaisonia asparagoides* (A). *Saccharina latissima* (O), *Dictyota dichotoma* (R)	SS.SMp.KSwSS.LsacR.Gv	KS
MB49	Maerl gravel with scattered shells	Fairly sparse maerl bed with live *Phymatolithon calcareum* frequent overall but common in patches. Sparse tufts of *Bonnemaisonia asparagoides* (R). *Cerianthus lloydii* (C), *Porania pulvillus* (R), *Asterias rubens* (P), Paguridae sp. (R)	SS.SMp.Mrl.Pcal.Nmix	MB
MB50	Bedrock with narrow gullies of coarse sand	Abundant *Laminaria hyperborea* with profuse red algal understorey of *Bonnemaisonia asparagoides* (S) and *Delesseria sanguinea* (P). Kelp fronds support *Calliostoma zizyphinum* (P), *Gibbula cineraria* (P) and *Scrupocellaria reptans* (O)	IR.HIR.KFaR.LhypR.Ft SS.SCS.ICS	
MB51	Maerl gravel with scattered shells	Maerl bed with *Phymatolithon calcareum* common and with patchy algal turf with around 30% coverage. Turf is largely red (chiefly *Bonnemaisonia asparagoides* - C), with *Saccharina latissima* (O), *Dictyota dichotoma* (R). Luidia ciliaris (F), *Asterias rubens* (O), *Marthasterias glacialis* (P), *Cerianthus lloydii* (P), *Liocarcinus* sp. (R)	SS.SMp.Mrl.Pcal.R	MB
MB52	Maerl gravel on silty sand	Maerl bed with live *Phymatolithon* patchy, but frequent overall. Patchy small clumps of algae, mostly red (O), with *Dictyota dichotoma* (R). *Porania pulvillus* (O), *Cerianthus lloydii* (P)	SS.SMp.Mrl.Pcal.Nmix	MB
MB53	Coarse sand with scattered shells, pebbles and cobbles	Sediment with 50% algal cover dominated by *Bonnemaisonia asparagoides* (S), *Saccharina latissima* (F) and *Desmarestia aculeata* (O). Probably scattered rhodoliths of *Phymatolithon calcareum* present (R)	SS.SMp.KSwSS.LsacR.Sa	KS

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
MB54	Coarse sand with scattered shells and sparse pebbles, cobbles and boulders	Frequent *Saccharina latissima* and occasional patches of other algae (especially red), but it appears to be largely drift material. Sediment with frequent *Cerianthus lloydii* and *Lanice conchilega*	SS.SCS.CCS	MC?
MB55	Boulders with small coarse sand patches, together with bedrock in shallower water	Bedrock and shallower boulders with profuse coverage by filamentous red algae, strongly dominated by *Bonnemaisonia asparagoides*? (S); Delesseria *sanguinea* (R), *Saccharina latissima* (R). Steep rock is encrusted with pink coralline algae (C) and *Parasmittina trispinosa* (O) and *Pomatoceros* (P); *Echinus esculentus* (F). In deeper water the algal turf disappears, but the other biota remains	IR.HIR.KFaR.FoR CR.MCR.FaAlCr	
MB56	Waves of coarse sand and maerl gravel with collections of pebbles in troughs	Live *Phymatolithon calcareum* present in troughs but at low overall density (R, locally O). Pebbles support a patchy turf of red and brown algae, including *Dictyota dichotoma* (R) and *Saccharina latissima* (O). *Porania pulvillus* (R), *Pomatoschistus pictus*? (R), Caridea sp. (R), *Inachus* sp. (R), *Chaetopterus variopedatus* (P)	SS.SCS.CCS	MC?
MB57	Coarse sand with scattered shells, dense in places	Patchy maerl bed with *Phymatolithon calcareum* occasional overall, but common in many small patches of around $1m^2$, particularly in areas of dense shells. Patchy algal turf dominated by *Bonnemaisonia asparagoides* (F-C) and *Saccharina latissima* (F). *Echinus esculentus* (F), *Marthasterias glacialis* (P), *Pecten* (R), *Asterias rubens* (P), *Pomatoschistus pictus*? (R)	SS.SMp.Mrl.Pcal.R	MB

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
MB58	Bedrock	Dense forest of *Laminaria hyperborea* (A) with patchy algal understorey, abundant in places, sparse in others. Dominant species include *Bonnemaisonia asparagoides* (locally A), *Dictyota dichotoma* (P) and Delesseria *sanguinea* (P). Stipe flora not particularly well-developed, including *Callophyllis laciniata* and *Phycodrys rubens*. Fauna includes *Echinus esculentus* (C), *Calliostoma zizyphinum* (P), *Hyas araneus* (P)	IR.MIR.KR.Lhyp.Ft	
MB59	Medium sand with gravel, scattered shells (especially Ensis) and pebbles	Shells and stones support sparse tufts of algae. *Cerianthus lloydii* (F), *Lanice conchilega* (P), *Liocarcinus* sp. (P),	SS.SCS.ICS	
MB60	Maerl with scattered shells	Maerl bed with live *Phymatolithon calcareum* frequent, but abundant within extensive patches. A canopy of *Saccharina latissima* covers c.45% of the sea bed (A), with *Chorda filum* also commo*N.* Foliose and filamentous red algae (F), *Desmarestia aculeata* (O), *Dictyota dichotoma* (P), *Laminaria hyperborea* (R). The fauna includes *Marthasterias glacialis* (P), *Asterias rubens* (P), *Necora puber* (O), *Cerianthus lloydii* (P)	SS.SMp.Mrl.Pcal.R	MB
MB61	Maerl	Maerl bed with live *Phymatolithon calcareum* frequent overall but common in patches. Areas of maerl with little epibiota but with abundant *Cerianthus lloydii* and areas of complete algal cover dominated by *Saccharina latissima* (S) and *Chorda filum* (S) and with *Ulva lactuca* (R), *Desmarestia aculeata* (R) and filamentous red algae (P); a significant part of this material may be drift. Asteroidea sp. (R)	SS.SMp.Mrl.Pcal.R	MB
MB62	Muddy sand with surface cover of much gravel, pebbles and scattered cobbles	*Lanice conchilega* (O), *Munida rugosa* (O), *Cerianthus lloydii* (O), *Cancer pagurus* (F), *Echinus esculentus* (R), *Asterias rubens* (O). Stones supporting serpulid worms (F), filamentous red algae (R)	SS.SMx.CMx	

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
MB63	Silty sand with much surface cover by shell and maerl gravel, with scattered shells and cobbles	Scattered algal tufts, dominated by red algae (F) and with frequent *Virgularia mirabilis* and *Cerianthus lloydii*. *Turritella communis* (P, but possibly dead). Algal density increases in shallower water towards end of run, becoming a patchy turf	SS.SMu.CSaMu.VirOphPmax	
MB64	Coarse sand with scattered shells	Sediment with c.35% cover by algae, especially reds, with *Bonnemaisonia asparagoides* (F), *Nitophyllum punctatum* (R), *Scinaia* sp. (R); *Saccharina latissima* (F), *Ulva lactuca* (R). *Cerianthus lloydii* (F, locally C), *Henricia* sp.? (P), *Astropecten irregularis* (R), *Cancer pagurus* (P)	SS.SMp.KSwSS.LsacR.Gv	KS
MB65	Bedrock with gully of coarse? sand with shells and sand patches	Dense forest of *Laminaria hyperborea* (A), with *Saccharina latissima* also present at low density. Stipes are lightly epiphytised and fronds with *Membranipora membranacea* (locally F) and sparse *Obelia geniculata*. The rock was encrusted with pink coralline algae (O-F), brown algae (R), orange encrusting bryozoans (R) and *Pomatoceros* (P) and supported a moderate turf dominated by filamentous red algae (C). *Echinus esculentus* (F), *Asterias rubens* (C), *Marthasterias glacialis* (P); hydroid clumps (O), including *Nemertesia antennina*, at the lower margin of the forest	IR.MIR.KR.Lhyp.Ft SS.SCS.ICS	
MB66	Boulders on coarse sand with sand patches	Park of *Saccharina latissima* (C), with occasional *Laminaria hyperborea*. Upper boulder faces support a fairly luxuriant turf of red and brown algae, dominated by *Bonnemaisonia asparagoides*? (A), *Dictyota dichotoma* (P) and *Desmarestia aculeata* (P). Steeper boulder faces encrusted with pink, brown and red algae and orange bryozoans. Fauna includes *Asterias rubens* (C), *Echinus esculentus* (F). Live *Phymatolithon calcareum* is frequent in the sand patches, together with scattered algal clumps	IR.HIR.KSed SS.SMp.Mrl.Pcal.R	MB

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
MB67	Maerl gravel, then boulders on coarse sand	Initially poor view but clearly live *Phymatolithon calcareum* present (probably C) with algal flora of *Saccharina latissima*, *Dictyota dichotoma* and filamentous reds, with *Chaetopterus variopedatus*, *Asterias rubens* and *Nemertesia ramosa*. Boulder area with kelp park mainly *Laminaria hyperborea* (F) but also *Saccharina latissima* (P). The understorey flora is of dense red (A) and brown (A) algae, including *Bonnemaisonia asparagoides*? (A) and *Dictyota dichotoma* (C). Vertical rock faces are encrusted with pink coralline algae and orange bryozoans with upper faces supporting frequent *Nemertesia antennina*. *Echinus esculentus* density appears low, apart from being common in the vicinity of large boulders; *Asterias rubens* (P)	SS.SMp.Mrl.Pcal.R IR.MIR.KR.Lhyp.Pk	MB
MB68	Coarse sand with shall gravel, scattered shells and pebbles	Sediment with c.25% coverage by algal turf of largely filamentous red (C) and brown (F) algae including *Bonnemaisonia asparagoides*? (F), *Saccharina latissima* (O) and *Scinaia* sp. (R). Fauna includes *Lanice conchilega* (O), *Carcinus maenas* (O) and *Echinus esculentus* (P)	SS.SMp.KSwSS.LsacR.Sa	KS
MB69	Bedrock giving way to boulders with interstitial coarse sand patches	Dense *Laminaria hyperborea* forest (A, locally S) on bedrock with understorey of predominantly filamentous red (C) algae; foliose reds (O), *Dictyota dichotoma* (O). Fronds with fairly sparse Obelia geniculata (P) and *Membranipora membranacea* (P); stipes lightly epiphytised with red algae with *Asterias rubens* (P). *Echinus esculentus* (C). Below the kelp forest boulders support a dense turf of red algae on upper faces (S); brown algae include sparse *Saccharina latissima* (O) and *L. hyperborea* (R). Fauna includes *Echinus esculentus* (C) and encrusting orange bryozoans (R)	IR.MIR.KR.Lhyp.Ft IR.HIR.KFaR.FoR	

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
MB70	Initially cobbles and scattered shell gravel on sand becoming a dense scatter of shell gravel and shells on slightly silty sand	Cobbles covered with a luxuriant turf of red algae (dominated by *Bonnemaisonia asparagoides*? - S) and brown algae, including *Dictyota dichotoma* (F); serpulid worms (C). Algal cover decreases to scattered tufts as cobble density reduces; *Asterias rubens* (P)	SS.SMp.KSwSS.LsacR.Gv SS.SMx.IMx	KS
MB71	Coarse sand and maerl gravel, with scattered shells	Maerl bed with live *Phymatolithon calcareum* (C) and supporting a turf of around 35% cover of red and brown algae. *Bonnemaisonia asparagoides*? (F); foliose reds include *Callophyllis laciniata* (R), *Scinaia* sp. (R), *Porphyropsis coccinea* (R), *Nitophyllum punctatum*? (R); browns include *Dictyota dichotoma* (P), Desmarestia *dichotoma* (P) and *Saccharina latissima* (O); *Ulva lactuca* (R). The fauna includes *Pomatoschistus pictus*? (R) and *Liocarcinus* spp. (O)	SS.SMp.Mrl.Pcal.R	MB
MB72	Slightly silty sand with shell gravel	Sediment extensively covered by short *Audouinella* or *Trailliella*-type turf (A) and *Saccharina latissima* (F), some of which may be drift material, together with other species present, such as *Ulva lactuca* (R) and *Asperococcus turneri* (R). *Echinus esculentus* (R), *Asterias rubens* (R)	SS.SMp.KSwSS.LsacR.Sa	KS
MB73	Low waves of maerl	Maerl bed with live *Phymatolithon calcareum* common overall but markedly denser in the troughs, where it supports a dense turf of red and brown algae, which appears at a distance as distinct parallel lines. The dominant turf constituent appears to be *Bonnemaisonia asparagoides* (A, but S in troughs alone); *Dictyota dichotoma* (P), *Scinaia* sp. (P), *Saccharina latissima* (P). *Asterias rubens* (P), *Echinus esculentus* (O), *Henricia* sp.? (R)	SS.SMp.Mrl.Pcal.R	MB
MB74	Medium-coarse sand with scattered shells (especially Ensis) and crab pits	Very sparse algal tufts (O). *Cancer pagurus* (F) some in pits, *Cerianthus lloydii* (F), *Lanice conchilega* (P), *Nemertesia ramosa* (R)	SS.SCS.ICS	MC?

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
MB75	Bedrock	Dense forest of *Laminaria hyperborea* (A) on grazed rock encrusted with pink coralline algae (A) and *Pomatoceros*? (C), with sparse foliose and filamentous red algae (R) and *Dictyota dichotoma* (R). Kelp fronds with dense coating of *Obelia geniculata* (P) and with *Membranipora membranacea* (P); stipes with moderate epiphytisation by *Cryptopleura ramosa* (dominant) and *Callophyllis laciniata*. *Asterias rubens* (F), *Echinus esculentus* (P)	IR.MIR.KR.Lhyp.GzFt	
MB76	Maerl gravel with scattered shells	Maerl bed with c.20% cover of live *Phymatolithon calcareum* (C), dense *Saccharina latissima* (A) and c. 30% cover by algal turf, including red algae, *Desmarestia aculeata and Dictyota dichotoma*	SS.SMp.Mrl.Pcal.R	MB
MB77	Maerl gravel with scattered shells	Maerl bed with c.25% cover of live *Phymatolithon calcareum* (C), dense *Saccharina latissima* (A) and c. 25% cover by algal turf, including red algae, *Desmarestia aculeata and Dictyota dichotoma*	SS.SMp.Mrl.Pcal.R	MB
MB78	Muddy sand	100% cover by thick filamentous red algal mat (S)	SS.SMp.KSwSS.Tra	KS
MB79	Muddy sand with scattered shells and maerl gravel	Sediment with patchy brown diatomaceous film (O) and patchy, largely red, algal turf (c. 15% cover). Live maerl <1% cover (R). *Asterias rubens* (C), *Cerianthus lloydii* (F), *Turritella communis* (P), *Carcinus maenas* (R), *Liocarcinus depurator* (R), *Astropecten irregularis* (P), *Pagurus bernhardus* (R), *Marthasterias glacialis* (P)	SS.SMp.KSwSS.LsacR.Sa	KS
MB80	Maerl with scattered shells	Maerl bed with live *Phymatolithon calcareum* frequent, but common within extensive patches. An algal turf covers c.50% of the sea bed dominated by *Bonnemaisonia asparagoides* (A), *Desmarestia aculeata* (O), *Dictyota dichotoma* (O) and *Saccharina latissima* (O). The fauna includes *Marthasterias glacialis* (O), *Asterias rubens* (O), *Echinus esculentus* (R), *Liocarcinus* sp. (R),	SS.SMp.Mrl.Pcal.R	MB

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
MB81	Initially sand-scoured bedrock step, with boulders at base, then low waves of coarse sand and maerl gravel, with shells collecting in troughs	Rock with sparse *Laminaria hyperborea* (O) and dense red algal turf (A, but sparse on steep faces); *Nemertesia antennina* (F), *Echinus esculentus* (C), *Marthasterias glacialis* (P).. Sediment with live *Phymatolithon calcareum* occasional on crests but common in troughs. *Lanice conchilega* (O), *Neopentadactyla mixta*? (P), drift kelp and other algae	SS.SMp.Mrl.Pcal.Nmix IR.HIR.KSed	MB
MB82	Coarse sand with scattered shells and pebbles	Patchy maerl bed, initially with areas of frequent live *Phymatolithon calcareum* and intervening areas of sparsely scattered rhodoliths (R). Live maerl becomes extremely sparse or absent towards the end of the ru*N.* Patches of drift kelp and other algae	SS.SMp.Mrl.Pcal.Nmix SS.SCS.CCS	MB MC?
MB83	Cobbles and boulders on coarse sand with pebbles	Stones encrusted with pink coralline (C) and red algae (P) and serpulid worms (C) and supporting luxuriant turf of filamentous red algae (S), probably principally *Bonnemaisonia asparagoides* (S); *Dictyota dichotoma* (R), *Desmarestia aculeata* (R), *Laminaria hyperborea* (F). *Echinus esculentus* (P), *Marthasterias glacialis* (P), *Asterias rubens* (P)	IR.MIR.KR.Lhyp.Pk	
MB84	Dense pebbles and cobbles on coarse sand	Stones encrusted with pink coralline algae (C) possibly forming erect branches in places and serpulid worms (A), including *Pomatoceros*. Very sparse foliose red algae (R) and hydroid tufts (R). *Marthasterias glacialis* (P), *Liocarcinus* sp. (R)	SS.SCS.CCS.PomB	
MB85	Coarse sand with maerl cover and scattered shells, with maerl disappearing towards the end of the run in shallower water	Initially a maerl bed with live *Phymatolithon calcareum* patchy but common overall. Particularly long fronds of *Saccharina latissima* are common, accompanied by a patchy turf of filamentous red (C) and foliose red (O) algae, including *Phyllophora* sp. (R). *Necora puber* (O). Live maerl is absent at the end of the run and the algal turf becomes more sparse	SS.SMp.Mrl.Pcal.R SS.SMp.KSwSS.LsacR.Sa	MB

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
MC1	Coarse sand with gravel and scattered pebbles, cobbles and shells on surface	Pebbles supporting serpulid worms (F), including *Serpula vermicularis*, pink coralline algal crusts (R) and sparse hydroids (R) and erect algae (R). Sparse infauna includes *Lanice conchilega* (O). *Inachus* sp. (R)	SS.SCS.CCS	MC?
MC2	Large boulders interspersed with patches of coarse sand, the larger patches in the form of waves	Boulders support a fairly dense park of *Laminaria hyperborea* (C) with an understorey of filamentous red (C), foliose red (*Callophyllis laciniata*? P) and brown algae, including *Dictyota dichotoma* (F), pink coralline crusts (F) and occasional hydroid tufts. *Echinus esculentus* (C). No fauna observed in the coarse sand areas	SS.SCS.ICS IR.MIR.KR.Lhyp.Pk	MC?
MC3	Rippled medium sand with scattered broken shell	Occasional *Asterias rubens* with sparse *Lanice conchilega* (R), *Cerianthus lloydii* (R), *Arenicola marina* (R), *Pagurus bernhardus* (R) and Pleuronectidae sp. (R)	SS.SSa.IMuSa.EcorEns	
MC4	Medium - coarse sand with scattered maerl and shells	Live *Phymatolithon calcareum* around 2-5% cover (R) with frequent *Cerianthus lloydii* and *Lanice conchilega* present	SS.SCS.CCS	MC?
MC5	Low waves of coarse sand with scattered cobbles and small boulders and collections of shell material in the troughs	Live *Phymatolithon calcareum* concentrated in troughs (C), with scattered rhodoliths in crest areas. Maerl supporting sparse algal tufts (R) and the starfish, *Asterias rubens* (C) and *Marthasterias glacialis* (O). Cobbles and boulders are encrusted with pink coralline algae (C) and support dense algal patches, especially filamentous reds (A) and *Dictyota* (P), as well as occasional *Saccharina latissima* and *Nemertesia antennina* (P)	SS.SMp.Mrl.Pcal.Nmix SS.SCS.CCS	MB MC?
MC6	Waves of coarse sand with dense shells in troughs	Sparse live *Phymatolithon calcareum* (rare overall but occasional in troughs). Serpulid worms present on shells, though possibly largely dead	SS.SCS.CCS	MC?

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
MC7	Boulders and cobbles on coarse sand with some sand patches of several square metres, formed into waves	Rock densely encrusted with *Pomatoceros* (A), pink coralline algae (C) and *Parasmittina trispinosa* (F) and with scattered hydroid patches (O), including *Nemertesia ramosa*. *Echinus esculentus* (C), *Asterias rubens* (C), *Munida rugosa* (P), *Ophiothrix fragilis*? (R). Sand patches with scattered rhodoliths of *Phymatolithon calcareum* (R)	CR.MCR.FaAlCr.Pom SS.SCS.CCS	MC?
MC8	Coarse sand with scattered shells	Very sparse epibiota. *Lanice conchilega* (R)	SS.SCS.CCS	MC?
MC9	Mostly dense cobble bed on coarse sand with boulders and patches of coarse sand	Rock densely encrusted with *Pomatoceros* (A) and other serpulids, pink coralline algae (O) and *Parasmittina trispinosa* (O) with *Caryophyllia smithii* present on larger boulders (P). *Nemertesia ramosa* (R), *Porania pulvillus* (P), *Munida rugosa* (P)	CR.MCR.FaAlCr.Pom SS.SCS.CCS	MC?
MC10	Mostly dense cobble bed on coarse sand with boulders and patches of coarse sand	Rock densely encrusted with *Pomatoceros* (A) and supporting sparse patches of hydroids, including *Nemertesia ramosa* (R). *Echinus esculentus* (P), *Asterias rubens* (P), *Munida rugosa* (P)	CR.MCR.FaAlCr.Pom SS.SCS.CCS	MC?
MC11	Waves of medium-coarse sand	Little life visible apart from *Astropecten irregularis* (F), *Asterias rubens*? (P) and *Lanice conchilega* (O)	SS.SCS.CCS	MC?
MC12	Medium-coarse sand with scattered pebbles and cobbles, becoming dense at end of run	*Saccharina latissima* common, with stones supporting a sparse flora of smaller algae, including *Callophyllis laciniata* (R) and *Desmarestia aculeata* (R)	SS.SMp.KSwSS.LsacR.Sa	KS
MC13	Coarse sand with scattered shells, pebbles and occasional cobbles	Frequent *Cerianthus lloydii*, with *Lanice conchilega* (O), *Liocarcinus* sp. (R) and sparse tufts of algae (R)	SS.SCS.CCS	MC?
SG1	Medium sand	Sand surface dotted with numerous small *Arenicola* mounds (A) and supporting fairly dense *Chorda filum* (C, locally A). Tufts of smaller algae frequent, with scattered clumps of *Saccharina latissima* (R)	SS.SSa.IMuSa.EcorEns	

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
SG2	Medium sand with scattered shells	Sand surface supporting dense *Chorda filum* (A) and 40% coverage by algal turf including c.20 cm filamentous red balls (F, locally C), *Ulva lactuca* (O) and *Desmarestia aculeata* (P). *Saccharina latissima* (O), *Aequipecten opercularis* (R), *Liocarcinus depurator*? (R)	SS.SMp.KSwSS.LsacR.Sa	KS
SG3	Medium sand with scattered shells, especially *Ensis*	*Chorda filum* (C) with scattered algal tufts (O), including filamentous red and brown algae. *Cancer pagurus* (R). One patch of *Zostera marina* about 5 m in diameter and c.15% cover.	SS.SMp.SSgr.Zmar SS.SSa.IMuSa.EcorEns	ZM
SG4	Medium sand with scattered shells	Dense *Chorda filum* (A) and 30% coverage by algal turf including c.20 cm filamentous red balls (O) and *Ulva lactuca* (O). *Saccharina latissima* (O), *Asterias rubens* (R)	SS.SMp.KSwSS.LsacR.Sa	KS
SG5	Medium-coarse sand with dense shell cover	Dense *Chorda filum* (A) and 40% coverage by algal turf including c.20 cm filamentous red balls (F), *Ulva lactuca* (O) and *Desmarestia aculeata* (P). *Saccharina latissima* (F)	SS.SMp.KSwSS.LsacR.Sa	KS
SG6	Medium sand with scattered shells	*Chorda filum* (C) and *Saccharina latissima* (O), with very patchy algal turf (c.10%), including filamentous reds (F), *Ulva lactuca* (F) and *Desmarestia aculeata* (R). Patches of *Zostera marina*, including one many square metres in extent, where the plant is abundant	SS.SMp.SSgr.Zmar SS.SMp.KSwSS.LsacR.Sa	ZM KS
SG7	Medium sand with scattered shells	Overall algal coverage c.60% but patchy, with some areas with complete cover. An algal turf includes c.20 cm filamentous red balls (F, locally C), *Desmarestia aculeata* (O) and *Ulva lactuca* (O). *Saccharina latissima* (F), *Chorda filum* (F)	SS.SMp.KSwSS.LsacR.Sa	KS
SG8	Slightly rippled medium sand with scattered shells	Small *Arenicola* mounds (F, locally C) and scattered algal tufts (overall c.5%) with frequent *Chorda filum*. Patches of *Zostera marina* (A), each several square metres in area, the blades supporting filamentous red algae (O)	SS.SMp.SSgr.Zmar SS.SSa.IMuSa.EcorEns	ZM
SG9	Rippled medium sand with sparsely scattered shells	Occasional *Arenicola marina* and *Lanice conchilega*?, with fairly sparse *Chorda filum* (F) and algal tufts (<1%)	SS.SSa.IMuSa.EcorEns	

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
SG10	Rippled medium sand	Sparse *Chorda filum* (F) and algal tufts (<<1%) with little epifaunal life discernible. Pleuronectidae (R), Brachiura sp. (R), *Saccharina latissima* (O - possibly drift)	SS.SSa.IMuSa.EcorEns	
SG11	Rippled medium sand	Extensive bed of dense *Zostera marina* (A) for most of run, with patch of fairly bare sand with very sparse *Zostera* at end of run. *Arenicola* marina (P), filamentous red algal tufts (probably *Cermium nodulosum*) (R)	SS.SMp.SSgr.Zmar SS.SSa.IMuSa.EcorEns	ZM
SG12	Slightly rippled medium sand	Scattered patches of *Zostera marina*, ranging in area from <1m^2 to around 25m^2, with abundant shoots in some patches. Occasional *Saccharina latissima* but probably drift material	SS.SMp.SSgr.Zmar SS.SSa.IMuSa.EcorEns	ZM
SG13	Slightly rippled medium sand	Dense *Zostera marina* (A) for first half of run with filamentous red algae common and locally abundant, although some of the material may be drift. Bare sand apart from occasional *Arenicola marina* and much drift algae over second half of run, with kelp forest in the distance at end of run	SS.SMp.SSgr.Zmar SS.SSa.IMuSa.EcorEns	ZM
SG14	Slightly rippled fine-medium sand with scattered shells, including *Ensis*	Brown diatomaceous film (O) with sparse algal tufts (R), including Ectocarpaceae sp. *Saccharina latissima* (O) but drift kelp and other algae also present. *Liocarcinus* sp. (R), Paguridae sp. (R), *Astropecten irregularis* (R)	SS.SSa.IMuSa.EcorEns	
SG15	Slightly rippled fine-medium sand with scattered shells, including Ensis	Extensive but thin bed of *Zostera marina* (C) at start of run, with Ectocarpaceae sp. (F) and *Ulva lactuca* (R). Beyond the *Zostera* bed the sediment continues to support algal patches of Ectocarpacese sp. (F), with occasional *Chorda filum* and *Saccharina latissima*	SS.SMp.SSgr.Zmar SS.SSa.IMuSa.EcorEns	ZM
SG16	Rippled medium sand with sparsely scattered shells, including Ensis	Sand with *Arenicola marina* occasional, a patchy brown diatomaceous film (F) and sparse clumps of algae (R), including Ectocarpaceae sp.	SS.SSa.IMuSa.EcorEns	
SG17	Rippled medium sand with sparsely scattered shells, including Ensis	Sand with *Arenicola marina* frequent, a sparse brown diatomaceous film (R) and sparse clumps of algae (R), including Ectocarpaceae sp. *Asterias rubens* (R)	SS.SSa.IMuSa.EcorEns	

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
SG18	Rippled fine-medium sand with sparsely scattered shells, including Ensis	Sand with *Arenicola marina* common, a slight brown diatomaceous film (O) and sparse clumps of Ectocarpaceae sp. (R). *Cerianthus lloydii* (R), *Carcinus maenas* (R), Paguridae sp. (R), *Asterias rubens* (R). A few very small clumps of *Zostera marina* (up to 0.25 m^2 in area) at end of run	SS.SSa.IMuSa.EcorEns	
SG19	Arenicola-mounded fine sand with sparsely scattered Ensis shells	Sand with brown diatomaceous film (F) and abundant *Arenicola marina*. Sparse scattered small clumps of *Zostera marina* (up to 0.25 m^2 in area), with some larger patches (several m^2) in the distance at the end of the ru*N.* Sparse clumps of Ectocarpaceae sp. (R), particularly on *Zostera*.	SS.SMp.SSgr.Zmar SS.SSa.IMuSa.AreISa	ZM
SG20	Arenicola-mounded fine sand	Sand initially with brown diatomaceous film (F) and abundant *Arenicola marina*. Patches of *Zostera marina*, some extensive (many square metres), with density generally abundant, entangled with Ectocarpaceae sp. (C); *Chorda filum* (F)	SS.SMp.SSgr.Zmar SS.SSa.IMuSa.AreISa	ZM
SG21	Rippled medium sand with patches of cobbles and pebbles	Sand with occasional *Arenicola marina* and scattered *Ensis* shells in places. Areas of scattered stones are dominated by *Chorda filum* (S), ectocarpoid algae (C, locally S) and *Ulva lactuca* (C), with *Saccharina latissima* (O). The run traverses an extensive *Zostera* bed, with *Z. marina* (A), ectocarpoid algae (C), *Chorda filum* (F), *Arenicola marina* (F), *Asterias rubens* (P), *Ulva lactuca* (R)	SS.SMp.SSgr.Zmar SS.SMp.KSwSS.LsacR SS.SSa.IMuSa.EcorEns	ZM KS
SG22	Slightly rippled medium sand with scattered shells	Small *Arenicola* mounds and *Chorda filum* common, with scattered algal tufts (overall c.5-9% but some undoubtedly unattached). Filamentous red algal balls (probably *Ceramium nodulosum*) R, *Ulva lactuca* (R)	SS.SSa.IMuSa.EcorEns	
SG23	Slightly rippled medium sand	Sand with scattered drift algae and *Zostera* leaves. *Arenicola marina* apparently present (P). Brachiura sp. (R)	SS.SSa.IMuSa.EcorEns	

Table 2.2 continued

Site	Substrate	Biota	Biotopes	PMFs
SG24	Hard-packed fine-medium rippled sand with scattered shells, including Ensis	Dense *Arenicola marina* (A) with drift algae. *Asterias rubens* (F)	SS.SSa.IMuSa.EcorEns	
SG25	Hard-packed fine-medium slightly rippled sand with scattered shell fragments	Sand completely covered by dense drift algae of fine reds (75%), *Ulva lactuca* (20%) and kelp (5%)	SS.SSa.IMuSa.EcorEns	
SG26	Hard-packed fine-medium rippled sand with scattered shells, including Ensis	Dense *Arenicola marina* (A) with drift algae, completely covering sediment towards the end of the run. *Asterias rubens* (P)	SS.SSa.IMuSa.EcorEns	
SG27	Hard-packed fine-medium rippled sand with scattered shells, including Ensis	Dense *Arenicola marina* (A) and frequent *Cerianthus lloydii*, with sparse drift algae and very sparse attached algal tufts, including Ectocarpaceae sp. (R) and *Chorda filum* (O)	SS.SSa.IMuSa.EcorEns	
TS1	.Medium-coarse sand with scattered cobbles and pebbles and occasional boulders	*Saccharina latissima* frequent. The cobbles appear mobile and support little life apart from sparse serpulid worms, and tufts of foliose red (O) and brown algae such as *Dictyota dichotoma* (R) and pink coralline algae, although there are extensive patches of dense red foliose algae, which appear to be principally drift material. The occasional boulders support scattered plants of *Laminaria hyperborea* (O), dense foliose red algae (S), *Nemertesia antennina* (P), *Asterias rubens* (P), *Marthasterias glacialis* (P), *Pomatoceros* (P) and encrusting pink coralline (C) and encrusting brown algae (P)	SS.SMp.KSwSS.LsacR.Sa	KS

Appendix 3 Loch Gairloch MSS photo survey data

Figure 3.1 Location of still photographs taken within seven boxes during the MSS survey of Loch Gairloch, 3rd-8th March 2010. Numbers refer to photo ID numbers.

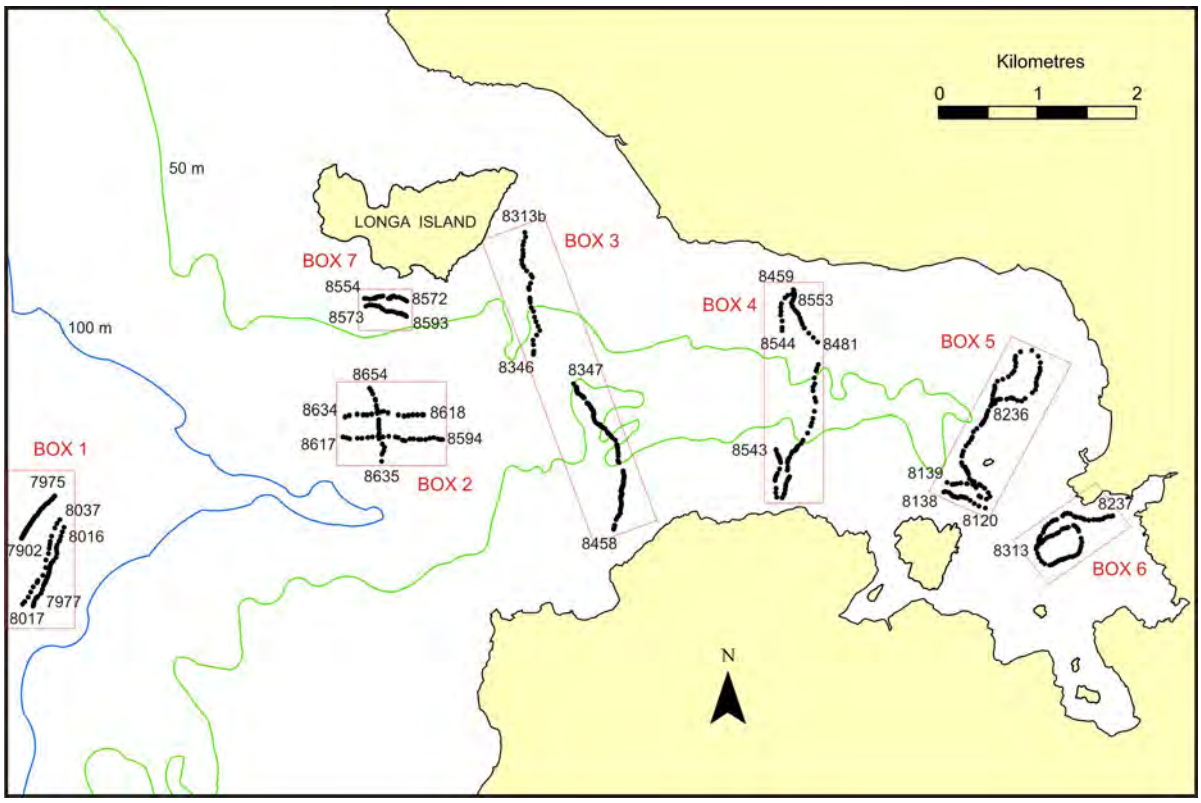


Table 3.1 Location, physical and biological details of still photographs taken within seven areas (boxes) during the MSS survey of Loch Gairloch, 3rd-8th March 2010

ID	Box	Latitude	Longitude	Biotopes	PMFs	Substrate	Biota
7902	1	57.70156	-5.87004	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ	Mud, in places with linear trawl scars; scattered boulders in places	Densely burrowed mud with small vertical burrows (<1 cm diameter), often in clusters, 1-9/0.1m^2 and *Nephrops* burrows 1-9/m^2, though mostly created by juveniles with a diameter of around 3 cm. *Funiculina quadrangularis* common (locally abundant), though mostly small and frequent *Pennatula phosphorea*. *Asteronyx loveni* present on *Funiculina*. *Turritella communis* (O), *Munida rugosa* (O), *Buccinum undatum* (R), *Cerianthus*? (R), Paguridae sp. (R), *Nephrops norvegicus* (P)
7903	1	57.70158	-5.87002				
7904	1	57.70162	-5.86998				
7905	1	57.70165	-5.86996				
7906	1	57.70169	-5.86993				
7907	1	57.70172	-5.86990				
7908	1	57.70175	-5.86987				
7909	1	57.70178	-5.86983				
7910	1	57.70182	-5.86979				
7911	1	57.70186	-5.86977				
7912	1	57.70190	-5.86973				
7913	1	57.70192	-5.86971				
7914	1	57.70194	-5.86969				
7915	1	57.70197	-5.86967				
7916	1	57.70199	-5.86966				
7917	1	57.70202	-5.86964				
7918	1	57.70204	-5.86962				
7919	1	57.70206	-5.86959				
7920	1	57.70208	-5.86958				
7921	1	57.70210	-5.86956				
7922	1	57.70212	-5.86954				
7923	1	57.70214	-5.86952				
7924	1	57.70215	-5.86950				
7925	1	57.70217	-5.86948				
7926	1	57.70220	-5.86946				
7927	1	57.70222	-5.86945				
7928	1	57.70224	-5.86942				
7929	1	57.70227	-5.86940				
7930	1	57.70231	-5.86937				
7931	1	57.70233	-5.86935				
7932	1	57.70235	-5.86932				
7933	1	57.70237	-5.86930				
7934	1	57.70240	-5.86928				
7935	1	57.70242	-5.86926				
7936	1	57.70244	-5.86924				
7937	1	57.70245	-5.86922				
7938	1	57.70247	-5.86920				
7939	1	57.70248	-5.86919				
7942	1	57.70256	-5.86909				
7943	1	57.70267	-5.86899				
7944	1	57.70273	-5.86892				
7945	1	57.70281	-5.86884				
7946	1	57.70289	-5.86876				
7947	1	57.70296	-5.86868				
7948	1	57.70305	-5.86858				
7949	1	57.70315	-5.86845				
7950	1	57.70319	-5.86840				
7951	1	57.70325	-5.86832				

Table 3.1 continued

ID	Box	Latitude	Longitude	Biotopes	PMFs	Substrate	Biota
7952	1	57.70335	-5.86823				
7953	1	57.70342	-5.86813				
7954	1	57.70352	-5.86801				
7955	1	57.70359	-5.86795				
7956	1	57.70362	-5.86787				
7958	1	57.70381	-5.86760				
7959	1	57.70398	-5.86743				
7960	1	57.70404	-5.86732				
7961	1	57.70421	-5.86713				
7962	1	57.70433	-5.86697				
7963	1	57.70443	-5.86679				
7964	1	57.70456	-5.86663				
7965	1	57.70467	-5.86644				
7966	1	57.70476	-5.86624				
7967	1	57.70484	-5.86611				
7968	1	57.70494	-5.86591				
7969	1	57.70502	-5.86573				
7971	1	57.70520	-5.86537				
7972	1	57.70531	-5.86526				
7973	1	57.70541	-5.86512				
7974	1	57.70550	-5.86495				
7975	1	57.70558	-5.86479				
7977	1	57.69549	-5.86742	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ	Mud, in places with linear trawl scars	Densely burrowed mud with small vertical burrows (<2 cm diameter), often in clusters, 1-9/0.1m^2 and juvenile *Nephrops* burrows 1-9/10 m2,. *Funiculina quadrangularis* common though small and *Pennatula phosphorea* frequent. *Turritella communis* (O), Gadidae? sp. (R), *Cerianthus lloydii*? (O)
7978	1	57.69562	-5.86738				
7979	1	57.69590	-5.86729				
7980	1	57.69617	-5.86706				
7981	1	57.69624	-5.86694				
7982	1	57.69638	-5.86671				
7983	1	57.69670	-5.86623				
7984	1	57.69705	-5.86604				
7985	1	57.69740	-5.86588				
7986	1	57.69756	-5.86576				
7987	1	57.69766	-5.86567	CR.LCR.BrAs	LC	Cobbles and boulders on mud	Much of rock with faunal turf apparently largely composed of small ascidians. *Munida rugosa* (F), *Callionymus* sp? (R), Paguridae sp. (R), *Funiculina quadrangularis* (P), Gadidae? sp. (P). One area of fairly sparse cobbles on mud (photos 7998-8000) supports abundant *Leptometra celtica* on the upper cobble surfaces
7988	1	57.69772	-5.86560				
7989	1	57.69773	-5.86559				
7990	1	57.69777	-5.86555				
7991	1	57.69784	-5.86548				
7992	1	57.69799	-5.86537				
7993	1	57.69813	-5.86528				
7994	1	57.69821	-5.86524				
7995	1	57.69828	-5.86521				
7996	1	57.69835	-5.86518				
7997	1	57.69850	-5.86511				
7998	1	57.69863	-5.86505				
7999	1	57.69867	-5.86504				
8000	1	57.69868	-5.86503				
8001	1	57.69891	-5.86498				
8002	1	57.69905	-5.86497				
8003	1	57.69918	-5.86495				
8004	1	57.69942	-5.86484	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ	Mud, with trawl scars in places	Densely burrowed mud with small vertical burrows
8005	1	57.69955	-5.86473				

Table 3.1 continued

ID	Box	Latitude	Longitude	Biotopes	PMFs	Substrate	Biota
8006	1	57.69973	-5.86445				(<2 cm diameter), often in clusters, 1-9/0.1m^2 and juvenile *Nephrops* burrows 1-9/10 m2,. *Funiculina quadrangularis* common and frequent *Turritella communis*. Gadidae? sp. (P), *Nephrops* (P).
8007	1	57.70003	-5.86402				
8008	1	57.70038	-5.86391				
8009	1	57.70067	-5.86400				
8010	1	57.70089	-5.86408				
8011	1	57.70111	-5.86394				
8012	1	57.70148	-5.86366				
8013	1	57.70163	-5.86355				
8014	1	57.70193	-5.86341				
8015	1	57.70236	-5.86320				
8016	1	57.70275	-5.86296				
8017	1	57.69558	-5.86923				
8018	1	57.69585	-5.86890				
8019	1	57.69624	-5.86834				
8020	1	57.69673	-5.86795				
8021	1	57.69719	-5.86757				
8022	1	57.69762	-5.86699				
8023	1	57.69765	-5.86697	CR.LCR.BrAs		Cobbles and boulders on mud	Much of rock with faunal turf possibly composed of small ascidians and hydroids. *Munida rugosa* (C), Paguridae sp. (P), *Funiculina quadrangularis* (P), *Omalosecosa ramulosa* (F), Porifera? sp. (white foliose) P
8024	1	57.69777	-5.86691				
8025	1	57.69784	-5.86688				
8026	1	57.69834	-5.86610				
8027	1	57.69899	-5.86569				
8028	1	57.69974	-5.86567				
8029	1	57.70031	-5.86533				
8030	1	57.70080	-5.86528	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ	Mud	Densely burrowed mud with small vertical burrows (<2 cm diameter), often in clusters, 1-9/0.1m^2 and *Nephrops* burrows 1-9/10 m^2,. *Funiculina quadrangularis* (C), *Cerianthus lloydii* (P)
8031	1	57.70114	-5.86520				
8032	1	57.70144	-5.86518				
8033	1	57.70192	-5.86496				
8035	1	57.70265	-5.86451				
8036	1	57.70308	-5.86418				
8037	1	57.70349	-5.86372				
8594	2	57.71270	-5.79972	SS.SMu.CFiMu.SpnMeg	BM	Mud	Heavily worked mud with many mounds of diameter c. 5-15 cm (1-9/m^2), some with worm casts and some with central burrow. Also, many small burrows of up to 2 cm diameter (1-9/m^2) and larger *Nephrops* burrows. *Pennatula phosphorea* (F), *Turritella communis* (FGadidae sp. (P), *Cerianthus lloydii* (O), Pleuronectidae sp. (P), *Porania pulvillus* (R)
8595	2	57.71269	-5.80012				
8596	2	57.71270	-5.80048				
8597	2	57.71282	-5.80124				
8598	2	57.71274	-5.80189				
8599	2	57.71263	-5.80263				
8600	2	57.71258	-5.80337				
8601	2	57.71258	-5.80383				
8602	2	57.71260	-5.80466				
8603	2	57.71256	-5.80524				
8604	2	57.71238	-5.80599				
8605	2	57.71240	-5.80651				
8606	2	57.71259	-5.80726				
8607	2	57.71265	-5.80772				
8608	2	57.71270	-5.80885				
8609	2	57.71258	-5.80983				
8610	2	57.71262	-5.81068				
8611	2	57.71257	-5.81166				

Table 3.1 continued

ID	Box	Latitude	Longitude	Biotopes	PMFs	Substrate	Biota
8612	2	57.71249	-5.81240				
8613	2	57.71240	-5.81337				
8614	2	57.71232	-5.81414				
8615	2	57.71226	-5.81543				
8616	2	57.71236	-5.81599				
8617	2	57.71239	-5.81662				
8618	2	57.71480	-5.80319	SS.SMu.CFiMu.SpnMeg	BM	Mud	Heavily worked mud with many mounds of diameter c. 5-15 cm (1-9/m^2), some with central burrow. Also, many small burrows of up to 2 cm diameter (1-9/m^2) and larger *Nephrops* burrows. *Pennatula phosphorea* (F), *Turritella communis* (O), Gadidae sp. (P), *Cerianthus lloydii* (P)
8619	2	57.71479	-5.80337				
8620	2	57.71475	-5.80421				
8621	2	57.71471	-5.80502				
8622	2	57.71465	-5.80578				
8623	2	57.71459	-5.80651				
8624	2	57.71465	-5.80746				
8625	2	57.71477	-5.80921				
8626	2	57.71483	-5.80998				
8627	2	57.71480	-5.81048				
8628	2	57.71474	-5.81110				
8629	2	57.71460	-5.81200				
8630	2	57.71449	-5.81275				
8631	2	57.71447	-5.81342				
8632	2	57.71451	-5.81441				
8633	2	57.71435	-5.81575				
8634	2	57.71420	-5.81647				
8635	2	57.71036	-5.80985	SS.SMu.CFiMu.SpnMeg	BM	Mud	Heavily worked mud with many mounds of diameter c. 5-15 cm (1-9/m^2), some with worm casts and some with central burrow. Also, many small burrows of up to 2 cm diameter (1-9/m^2) and lmany larger *Nephrops* burrows (c. 1-9/10m^2). *Pennatula phosphorea* (P), *Turritella communis* (O), *Aporrhais pespelicani* (O), *Nephrops* (P)
8636	2	57.71106	-5.80984				
8637	2	57.71133	-5.80955				
8638	2	57.71168	-5.80952				
8639	2	57.71199	-5.80990				
8640	2	57.71240	-5.81050				
8641	2	57.71264	-5.81057				
8642	2	57.71295	-5.81053				
8643	2	57.71328	-5.81060				
8644	2	57.71330	-5.81060				
8645	2	57.71362	-5.81068				
8646	2	57.71385	-5.81067				
8647	2	57.71415	-5.81072				
8648	2	57.71473	-5.81098				
8649	2	57.71505	-5.81113				
8650	2	57.71540	-5.81126				
8651	2	57.71584	-5.81144				
8652	2	57.71597	-5.81148				
8653	2	57.71640	-5.81196				
8654	2	57.71664	-5.81222				
8655	2	57.71690	-5.81260				
8313b	3	57.73176	-5.78773	SS.SMu.CFiMu.SpnMeg	BM	Sandy mud, possibly initially muddy sand	Dense *Turritella communis* (C) and frequent *Pennatula phosphorea*, with moderate numbers of small burrows up to 2 cm in diameter (1-9/m^2) and a few slightly larger burrows, possibly juvenile *Nephrops*. Pisces sp. (P),
8314	3	57.73140	-5.78757				
8315	3	57.73099	-5.78782				
8316	3	57.73061	-5.78800				
8317	3	57.73022	-5.78794				
8318	3	57.72987	-5.78784				
8319	3	57.72964	-5.78781				
8320	3	57.72928	-5.78800				

Table 3.1 continued

ID	Box	Latitude	Longitude	Biotopes	PMFs	Substrate	Biota
8321	3	57.72892	-5.78795				*Munida rugosa* (P), *Asterias rubens* (F)
8322	3	57.72869	-5.78763				
8323	3	57.72865	-5.78759				
8324	3	57.72831	-5.78709				
8325	3	57.72800	-5.78634				
8326	3	57.72776	-5.78606				
8327	3	57.72726	-5.78633				
8328	3	57.72684	-5.78659				
8329	3	57.72682	-5.78658				
8330	3	57.72668	-5.78646				
8331	3	57.72590	-5.78628	CR.MCR.EcCr.FaAlCr		Cobbles and boulders on muddy sediment	Rock with sparse crust biota of barnacles (O), serpulid worms (F) and orange Bryozoa (R), with thin faunal turf on some vertical faces. *Munida rugosa* (P)
8332	3	57.72582	-5.78625				
8333	3	57.72575	-5.78624				
8334	3	57.72550	-5.78619				
8335	3	57.72505	-5.78596	SS.SMu.CFiMu.SpnMeg	BM	Mud	Dense *Turritella communis* (C) with moderate numbers of small burrows up to 2 cm in diameter (1-9/m^2) and a few slightly larger burrows, possibly juvenile *Nephrops*
8336	3	57.72467	-5.78553				
8337	3	57.72418	-5.78529				
8338	3	57.72379	-5.78503				
8339	3	57.72342	-5.78464				
8340	3	57.72301	-5.78430	CR.MCR.EcCr.FaAlCr		Silt-dusted cobbles and boulders on muddy sediment	Rock with sparse barnacles and serpulid worms, possibly all dead
8341	3	57.72258	-5.78477	SS.SMu.CFiMu.SpnMeg	BM	Mud	Dense *Turritella communis* (C) with burrows (1-9/m^2) ranging in size from <1 cm to around 7 cm in diameter and small mounds (1-9/m^2) around 5 cm in diameter
8342	3	57.72206	-5.78531				
8343	3	57.72167	-5.78525				
8344	3	57.72112	-5.78510				
8345	3	57.72104	-5.78511				
8346	3	57.72080	-5.78514				
8347	3	57.71834	-5.77805				
8348	3	57.71809	-5.77759	CR.MCR.EcCr.FaAlCr SS.SMx.CMx		Heterogeneous muddy sediment containing much shell, gravel and pebbles and scattered cobbles, with some silted boulder patches	Rock with sparse crust biota of barnacles (O), serpulid worms (F) and orange Bryozoa (R), with thin faunal turf, possibly hydroid on some faces. *Asterias rubens* (O), *Cerianthus lloydii* (R), *Porania pulvillus* (O), *Callionymus* sp. (O), erect cream Porifera sp. (R)
8349	3	57.71799	-5.77748				
8350	3	57.71789	-5.77747				
8351	3	57.71773	-5.77747				
8352	3	57.71769	-5.77745				
8353	3	57.71763	-5.77741				
8354	3	57.71754	-5.77733				
8355	3	57.71749	-5.77727				
8356	3	57.71746	-5.77715				
8357	3	57.71737	-5.77677				
8358	3	57.71728	-5.77656				
8359	3	57.71720	-5.77636				
8360	3	57.71716	-5.77627				
8361	3	57.71713	-5.77622				
8362	3	57.71711	-5.77619	SS.SMu.CFiMu.SpnMeg CR.MCR.EcCr.FaAlCr SS.SMx.CMx	BM	Mud, with patches containing high content of gravel, pebbles, cobbles	Mud with small burrows up to 2 cm diameter (1-9/0.1 m^2), occasional juvenile *Nephrops* burrows and
8363	3	57.71709	-5.77613				
8364	3	57.71668	-5.77561				
8365	3	57.71665	-5.77557				

Table 3.1 continued

ID	Box	Latitude	Longitude	Biotopes	PMFs	Substrate	Biota
8366	3	57.71663	-5.77553			and shell, in places overlain by boulders	small <5 cm diameter mounds, *Turritella communis* (C) and *Pennatula phosphorea* (C). Rock sparsely encrusted with *Parasmittina* spinosa (R), serpulid worms (C, though appear largely dead) and barnacles (largely dead). Sparse epibiota of *Psolus phantapus*? (P), *Clavelina lepadiformis*? (R), cream branching sponge (R) and *Munida rugosa* (P)
8367	3	57.71657	-5.77533				
8368	3	57.71655	-5.77529				
8369	3	57.71631	-5.77497				
8370	3	57.71627	-5.77492				
8371	3	57.71622	-5.77486				
8372	3	57.71619	-5.77482				
8373	3	57.71616	-5.77476				
8374	3	57.71613	-5.77469				
8375	3	57.71598	-5.77448				
8376	3	57.71595	-5.77445				
8377	3	57.71591	-5.77442				
8378	3	57.71585	-5.77440				
8379	3	57.71575	-5.77437				
8380	3	57.71565	-5.77439				
8381	3	57.71560	-5.77440				
8382	3	57.71534	-5.77432				
8383	3	57.71515	-5.77415				
8384	3	57.71502	-5.77400	CR.MCR.EcCr.FaAlCr.CarSS.SMx.CMx		Heterogeneous muddy sediment containing much shell, gravel and pebbles and scattered cobbles, with some silted boulder patches	Rock with sparse crust biota of *Caryophyllia smithii* (F), barnacles (O), orange Bryozoa (R) and serpulid worms. *Echinus esculentus* (C), *Porania pulvillus* (F), erect cream Porifera sp. (R), *Pecten* (P)
8385	3	57.71485	-5.77358				
8386	3	57.71484	-5.77347				
8387	3	57.71482	-5.77329				
8388	3	57.71482	-5.77327				
8389	3	57.71481	-5.77322				
8390	3	57.71481	-5.77318				
8391	3	57.71477	-5.77312				
8392	3	57.71467	-5.77298				
8393	3	57.71457	-5.77269				
8394	3	57.71453	-5.77253				
8395	3	57.71444	-5.77234	SS.SMu.CFiMu.SpnMeg	BM	Largely mud with scattered boulders	Around 1-9 burrows/m^2, mostly <2 cm diameter but some larger *Nephrops* burrows also present. *Pennatula phosphorea* (F) and *Turritella communis* (C, locally A). Boulders support *Munida rugosa* and *Porania pulvillus* and fairly sparse serpulid worms (possibly mostly dead). 1 possible *Swiftia* observed
8396	3	57.71418	-5.77191				
8397	3	57.71413	-5.77181				
8398	3	57.71407	-5.77166				
8399	3	57.71387	-5.77129				
8400	3	57.71373	-5.77103				
8401	3	57.71352	-5.77047				
8402	3	57.71311	-5.77020				
8403	3	57.71307	-5.77018				
8404	3	57.71305	-5.77016				
8405	3	57.71301	-5.77013				
8406	3	57.71285	-5.77006				
8407	3	57.71278	-5.77003				
8408	3	57.71272	-5.77000				
8409	3	57.71245	-5.76991				
8410	3	57.71235	-5.76988				
8411	3	57.71207	-5.76982				
8412	3	57.71166	-5.76984				
8413	3	57.71160	-5.76976				
8414	3	57.71147	-5.76965				
8415	3	57.71076	-5.76886				
8416	3	57.71069	-5.76888				
8417	3	57.71059	-5.76881				

Table 3.1 continued

ID	Box	Latitude	Longitude	Biotopes	PMFs	Substrate	Biota
8418	3	57.71042	-5.76869				
8419	3	57.71031	-5.76864				
8420	3	57.71028	-5.76864				
8421	3	57.71014	-5.76863				
8422	3	57.71004	-5.76866				
8423	3	57.70988	-5.76871				
8424	3	57.70979	-5.76870	CR.MCR.EcCr.FaAlCr SS.SMx.CMx		Boulders and cobbles on a heterogeneous silty gravelly sand with pebbles and shells	Boulders and cobbles supporting encrusting community of pink coralline (A) and brown algae (R), *Parasmittina trispinosa* (R), barnacles (mostly dead) and serpulid worms (C, but possibly largely dead). *Cancer* (P), *Asterias rubens* (C, locally A), *Porania pulvillus* (F)
8425	3	57.70970	-5.76869				
8426	3	57.70957	-5.76870				
8427	3	57.70948	-5.76872				
8428	3	57.70943	-5.76874				
8429	3	57.70938	-5.76877				
8430	3	57.70932	-5.76882				
8431	3	57.70926	-5.76886				
8432	3	57.70917	-5.76893				
8433	3	57.70914	-5.76895				
8434	3	57.70908	-5.76899				
8435	3	57.70905	-5.76899				
8436	3	57.70891	-5.76903				
8437	3	57.70888	-5.76902				
8438	3	57.70880	-5.76895				
8439	3	57.70868	-5.76886				
8440	3	57.70863	-5.76884				
8441	3	57.70847	-5.76894	SS.SMu.CSaMu.VirOphPmax		Muddy sand with much broken and whole shell material	Small mounds around 5 cm in diameter, some topped by worm casts. Small vertical burrows (up to 1 cm in diameter), 1-9/m^2, locally denser. *Turritella communis* shells common but may be mostly dead. *Pecten maximus* (P)
8442	3	57.70839	-5.76903				
8443	3	57.70829	-5.76906				
8444	3	57.70804	-5.76892				
8445	3	57.70784	-5.76884				
8446	3	57.70764	-5.76881				
8447	3	57.70735	-5.76893				
8448	3	57.70722	-5.76898				
8449	3	57.70713	-5.76898				
8450	3	57.70693	-5.76896				
8451	3	57.70666	-5.76921				
8452	3	57.70651	-5.76939	SS.SMp.Mrl.Pcal.Nmix	MB	Maerl and scattered shells on silty sand	Thin cover of live *Phymatolithon calcareum* (C) with small burrows up to 1 cm in diameter in underlying silty sand (1-9/0.1 m^2)
8453	3	57.70630	-5.76957				
8454	3	57.70578	-5.76979				
8455	3	57.70577	-5.76980				
8456	3	57.70563	-5.76985				
8457	3	57.70550	-5.76989				
8458	3	57.70543	-5.76990				
8459	4	57.72799	-5.74173	SS.SSa.IMuSa.EcorEns		Slightly silty sand with dense shell cover, especially *Ensis*	Sand surface with thin brown diatomaceous film and scattered filamentous red algal tufts (F), some of which may be drift material. *Aphrodita aculeata* and *Cerianthus lloydii* present in deeper water
8460	4	57.72791	-5.74163				
8461	4	57.72762	-5.74149				
8462	4	57.72755	-5.74150				
8463	4	57.72744	-5.74151				
8464	4	57.72738	-5.74152				
8465	4	57.72721	-5.74161				
8466	4	57.72708	-5.74166				
8467	4	57.72696	-5.74177				
8468	4	57.72678	-5.74196				
8469	4	57.72646	-5.74175	SS.SMu.CFiMu.SpnMeg	BM	Mud	Around 1-9 burrows/0.1

Table 3.1 continued

ID	Box	Latitude	Longitude	Biotopes	PMFs	Substrate	Biota
8470	4	57.72638	-5.74166				m^2, mostly <1 cm diameter but some larger juvenile *Nephrops* burrows also present. *Pennatula phosphorea* (F) and *Turritella communis* (F, locally C). *Liocarcinus depurator* (P), *Asterias rubens* (P), *Cerianthus lloydii* (P)
8471	4	57.72612	-5.74126				
8472	4	57.72592	-5.74099				
8473	4	57.72577	-5.74067				
8474	4	57.72548	-5.74037				
8475	4	57.72516	-5.74009				
8476	4	57.72487	-5.73987				
8477	4	57.72455	-5.73953				
8478	4	57.72454	-5.73952				
8479	4	57.72414	-5.73874				
8480	4	57.72370	-5.73793				
8481	4	57.72334	-5.73715				
8482	4	57.72129	-5.73681				
8483	4	57.72096	-5.73702				
8484	4	57.72068	-5.73711				
8485	4	57.72008	-5.73734				
8486	4	57.71957	-5.73726				
8487	4	57.71926	-5.73748				
8488	4	57.71890	-5.73748				
8489	4	57.71824	-5.73708				
8490	4	57.71792	-5.73685				
8491	4	57.71706	-5.73705				
8492	4	57.71648	-5.73724				
8493	4	57.71607	-5.73736				
8494	4	57.71577	-5.73748				
8495	4	57.71510	-5.73799				
8496	4	57.71443	-5.73868				
8497	4	57.71414	-5.73897				
8498	4	57.71393	-5.73947				
8499	4	57.71380	-5.73966				
8500	4	57.71372	-5.73970	CR.MCR.EcCr.FaAlCr SS.SMu.CFiMu.SpnMeg	BM	Mud with boulder patches	Dense *Turritella communis* (C-A) with small burrows <2 cm in diameter (1-9/m^2) and *Pennatula phosphorea* (P). *Antalia entalis* shells present . Rock encrusted with pink coralline algae (C), orange Bryozoa (R), *Pomatoceros* (F) and barnacles (mostly apparently dead). *Porania pulvillus* (F), *Echinus esculentus* (P), *Munida rugosa* (P), *Bolocera tuediae* (P), *Omalosecosa ramulosa* (R)
8501	4	57.71367	-5.73973				
8502	4	57.71354	-5.73985				
8503	4	57.71348	-5.73994				
8504	4	57.71343	-5.74006				
8505	4	57.71330	-5.74040				
8506	4	57.71316	-5.74057				
8507	4	57.71277	-5.74079				
8508	4	57.71261	-5.74102				
8509	4	57.71257	-5.74104				
8510	4	57.71253	-5.74106				
8511	4	57.71248	-5.74109				
8512	4	57.71243	-5.74110				
8513	4	57.71233	-5.74112				
8514	4	57.71194	-5.74105				
8515	4	57.71160	-5.74105				
8516	4	57.71109	-5.74066				
8517	4	57.71091	-5.74072				
8518	4	57.71081	-5.74083	SS.SSa.IMuSa.EcorEns		Slightly silty sand with scattered shells, especially Ensis	Sand surface with thin brown diatomaceous film and sparse algal drift material. *Cerianthus*
8519	4	57.71069	-5.74097				
8520	4	57.71041	-5.74116				
8521	4	57.71027	-5.74120				

Table 3.1 continued

ID	Box	Latitude	Longitude	Biotopes	PMFs	Substrate	Biota
8522	4	57.71015	-5.74120				*lloydii* (F)
8523	4	57.70987	-5.74120				
8524	4	57.70954	-5.74130				
8525	4	57.70937	-5.74143				
8526	4	57.70909	-5.74167				
8527	4	57.70916	-5.74261				
8528	4	57.70955	-5.74282				
8529	4	57.70994	-5.74282				
8530	4	57.71066	-5.74308				
8531	4	57.71086	-5.74305				
8532	4	57.71110	-5.74285				
8533	4	57.71129	-5.74270				
8534	4	57.71171	-5.74236	SS.SMu.CFiMu.SpnMeg	BM	Mud	Dense *Turritella communis* (C-A) and sparse small burrows, with *Pennatula phosphorea* (P)
8535	4	57.71228	-5.74226				
8536	4	57.71253	-5.74238	CR.MCR.EcCr.FaAlCr SS.SMx.CMx		Boulders and cobbles on a heterogeneous muddy sediment with much gravel and pebbles	Boulders and cobbles encrusted with pink coralline algae (C) and mostly dead barnacles and serpulid worms. *Asterias rubens* (F)
8537	4	57.71258	-5.74243				
8538	4	57.71272	-5.74258				
8539	4	57.71284	-5.74266				
8540	4	57.71293	-5.74274				
8541	4	57.71310	-5.74293				
8542	4	57.71341	-5.74319	SS.SMu.CFiMu.SpnMeg	BM	Mud	*Turritella communis* (F, locally C), small burrows (1-9/m^2) and mounds (to around 5 cm diameter), with frequent *Pennatula phosphorea*. *Asterias rubens* (P)
8543	4	57.71342	-5.74319				
8544	4	57.72419	-5.74325				
8545	4	57.72450	-5.74329				
8546	4	57.72505	-5.74334				
8547	4	57.72561	-5.74364				
8548	4	57.72592	-5.74360				
8549	4	57.72626	-5.74370				
8550	4	57.72664	-5.74362				
8551	4	57.72719	-5.74311	SS.SSa.ImuSa.EcorEns		Slightly silty sand with dense shell cover, especially *Ensis*	Sand surface with thin brown diatomaceous film and scattered filamentous red algal tufts (O), which may be drift material
8552	4	57.72745	-5.74262				
8553	4	57.72755	-5.74192				
8120	5	57.70921	-5.70721	SS.SMu.CFiMu.SpnMeg	BM	Mud	1-9/m^2 burrows up to c. 5 cm in diameter
8121	5	57.70933	-5.70831				
8122	5	57.70954	-5.70909				
8123	5	57.70981	-5.70986				
8124	5	57.71000	-5.71051	SS.SMx.CMx		Heterogeneous muddy sediment with much gravel and pebbles and scattered cobbles and boulders	Larger stones with sparse cover of serpulid worms and boulders with pink coralline algae common. *Turritella communis* present towards margin of area
8125	5	57.71004	-5.71066				
8126	5	57.71007	-5.71085				
8127	5	57.71009	-5.71099				
8128	5	57.71012	-5.71137				
8129	5	57.71010	-5.71150	SS.SMu.CFiMu.SpnMeg	BM	Mud	Frequent *Virgularia mirabilis*, *Pennatula phosphorea* and *Turritella communis*
8130	5	57.71001	-5.71191				
8131	5	57.71002	-5.71217				
8132	5	57.71007	-5.71249	SS.SMx.CMx		Heterogeneous	Sediment with small

Table 3.1 continued

ID	Box	Latitude	Longitude	Biotopes	PMFs	Substrate	Biota
8133	5	57.71007	-5.71262			muddy sediment with much gravel and pebbles and scattered cobbles and small boulders	burrows (<1 cm diameter, 1-9/m^2); *Asterias rubens* (C) Stones encrusted with serpulid worms (C) and barnacles (O), both of which appear largely dead, and pink coralline algae (R). One cluster of *Antedon bifida* on stones (P, locally C)
8134	5	57.71015	-5.71287				
8135	5	57.71026	-5.71308				
8136	5	57.71040	-5.71347				
8137	5	57.71046	-5.71405	SS.SMu.CFiMu.SpnMeg	BM	Mud	Sediment with many small burrows (1-9/0.1m^2), mostly <1 cm diameter, but a few up to 3 cm diameter, possibly juvenile *Nephrops*. *Turritella communis* common and *Pennatula phosphorea* frequent. *Porania pulvillus* (P)
8138	5	57.71044	-5.71437				
8139	5	57.71136	-5.71391				
8140	5	57.71119	-5.71307				
8141	5	57.71118	-5.71283				
8142	5	57.71118	-5.71278				
8143	5	57.71124	-5.71225	CR.MCR.EcCr.FaAlCr SS.SMu.CSaMu.VirOphPmax		Mud with surface scatter, of varying density, of shell, gravel, pebbles, cobbles and boulders	Small burrows (<1 cm diameter, 1-9/m^2), *Turritella communis* (F) and *Virgularia mirabilis* (P) present on sediment, with boulders encrusted with pink coralline algae (C) and largely dead serpulid worms and barnacles. The boulders also support *Asterias rubens* (C), Antedon bifida (F), *Caryophyllia smithii* (locally C) and *Porania pulvillus* (P)
8144	5	57.71131	-5.71157				
8145	5	57.71133	-5.71063				
8146	5	57.71133	-5.71050				
8147	5	57.71130	-5.70957				
8148	5	57.71129	-5.70947				
8149	5	57.71127	-5.70940				
8150	5	57.71121	-5.70922				
8151	5	57.71115	-5.70905				
8152	5	57.71099	-5.70891				
8153	5	57.71029	-5.70840	SS.SMu.CFiMu.SpnMeg	BM	Mud	Small burrows (<2 cm diam, 1-9/m^2), with possibly *Nephrops* burrow also present. *Asterias rubens* (P)
8154	5	57.71014	-5.70810				
8155	5	57.71004	-5.70709				
8156	5	57.71026	-5.70653				
8157	5	57.71063	-5.70687				
8158	5	57.71095	-5.70750				
8159	5	57.71120	-5.70810				
8160	5	57.71131	-5.70840	CR.MCR.EcCr.FaAlCr SS.SMx.CMx		Heterogeneous muddy sediment with much gravel and pebbles, largely covered by boulders	Boulders encrusted with pink coralline algae (A) and sparse serpulid worms and barnacles (apparently largely dead). Porifera sp. (cream cushion) (R), *Asterias rubens* (C), *Echinus esculentus* (C)
8161	5	57.71153	-5.70931				
8162	5	57.71157	-5.70966				
8163	5	57.71180	-5.71018				
8164	5	57.71220	-5.71040				
8165	5	57.71239	-5.71055				
8166	5	57.71244	-5.71060				
8167	5	57.71248	-5.71064				
8168	5	57.71261	-5.71078				
8169	5	57.71273	-5.71096				
8170	5	57.71277	-5.71102				
8171	5	57.71293	-5.71143				

Table 3.1 continued

ID	Box	Latitude	Longitude	Biotopes	PMFs	Substrate	Biota
8172	5	57.71322	-5.71166				
8173	5	57.71378	-5.71166				
8174	5	57.71392	-5.71160	SS.SMu.CFiMu.SpnMeg	BM	Mud	Small burrows up to 2 cm diameter 1-9/0/1m^2, with a few possibly *Munida rugosa* or juvenile *Nephrops*. *Turritella communis* (F), *Asterias rubens* (F)
8175	5	57.71421	-5.71141				
8176	5	57.71472	-5.71108				
8177	5	57.71506	-5.71063				
8178	5	57.71534	-5.71023				
8179	5	57.71560	-5.71006				
8180	5	57.71600	-5.70995				
8181	5	57.71635	-5.70938				
8182	5	57.71673	-5.70870				
8183	5	57.71684	-5.70852	CR.MCR.EcCr.FaAlCr SS.SMx.CMx		Heterogeneous muddy sediment with much gravel and pebbles, with some more homogeneous sandy mud patches. Some areas of boulders and possibly outcropping bedrock	Boulders encrusted with pink coralline algae (A) and sparse serpulid worms and barnacles (apparently largely dead). *Porella compressa*? (P), *Echinus esculentus* (P), *Porania pulvillus* (P), *Asterias rubens* (P). Muddier sediment with *Turritella communis* common
8184	5	57.71689	-5.70843				
8185	5	57.71698	-5.70829				
8186	5	57.71712	-5.70816				
8187	5	57.71745	-5.70790				
8188	5	57.71767	-5.70779				
8189	5	57.71800	-5.70760				
8190	5	57.71838	-5.70725				
8191	5	57.71853	-5.70712				
8192	5	57.71864	-5.70706				
8193	5	57.71870	-5.70702				
8194	5	57.71904	-5.70702				
8195	5	57.71939	-5.70699				
8196	5	57.71962	-5.70688				
8197	5	57.71994	-5.70671	SS.SMu.CFiMu.SpnMeg	BM	Mud	Small burrows up to 3 cm diameter 1-9/0/1m^2, with a few possibly *Munida rugosa* or juvenile *Nephrops*. Small mounds up to 5 cm diameter, with central burrow, also present. Frequent adult *Pennatula phosphorea* but juveniles (<2 cm) locally common. (*Turritella communis* (F), *Munida rugosa* (P), *Antalis entalis* shells (P)
8198	5	57.72006	-5.70666				
8199	5	57.72028	-5.70673				
8200	5	57.72070	-5.70635				
8201	5	57.72090	-5.70542				
8202	5	57.72116	-5.70447				
8203	5	57.72144	-5.70390				
8204	5	57.72169	-5.70357				
8205	5	57.72214	-5.70337				
8206	5	57.72251	-5.70339				
8207	5	57.72278	-5.70356				
8208	5	57.72308	-5.70348				
8209	5	57.72346	-5.70270				
8210	5	57.72362	-5.70078				
8211	5	57.72315	-5.69966				
8212	5	57.72259	-5.69923				
8213	5	57.72214	-5.69923				
8214	5	57.72186	-5.69921				
8215	5	57.72153	-5.69934				
8216	5	57.72123	-5.69960				
8217	5	57.72110	-5.69969	CR.MCR.EcCr.FaAlCr		Boulders and cobbles	Rock encrusted with pink coralline algae O), *Caryophyllia smithii* (F) and sparse and probably dead barnacles and serpulid worms. *Munida rugosa* (P)
8218	5	57.72078	-5.69974	SS.SMu.CFiMu.SpnMeg	BM	Mud	Many very small burrows

Table 3.1 continued

ID	Box	Latitude	Longitude	Biotopes	PMFs	Substrate	Biota
8219	5	57.72052	-5.69966				(<0.5 cm diameter, 1-9/0.1m^2), with occasional larger burrows up to 5 cm diameter; small mounds (up to 5 cm diameter) with central burrow 1-9/m^2. *Pennatula phosphorea* common, though many small. *Antalis entalis* shells (P), *Asterias rubens* (P)
8220	5	57.72016	-5.69981				
8221	5	57.71982	-5.70030				
8222	5	57.71927	-5.70149				
8223	5	57.71897	-5.70206				
8224	5	57.71903	-5.70279				
8225	5	57.71920	-5.70346				
8226	5	57.71926	-5.70375	CR.MCR.EcCr.FaAlCr SS.SMx.CMx SS.SMu.CFiMu.SpnMeg	BM	Heterogeneous muddy sediment with gravel and pebbles, with some more homogeneous mud patches. Some areas of boulders	Boulders encrusted with pink coralline algae (C), *Caryophyllia smithii* (C) and serpulid worms and barnacles (apparently largely dead). Epibiota includes *Porella compressa*? (P), *Porania pulvillus* (P), *Ciona intestinalis* (F), *Ascidia virginea* (F), *Echinus esculentus* (C), *Asterias rubens* (P) and *Antedon bifida* (F) Muddier sediment with *Pennatula phosphorea* (C), *Turritella communis* (F) and *Aporrhais pespelicani* (O)
8227	5	57.71926	-5.70379				
8228	5	57.71926	-5.70385				
8229	5	57.71926	-5.70393				
8230	5	57.71915	-5.70458				
8231	5	57.71907	-5.70558				
8232	5	57.71907	-5.70578				
8233	5	57.71902	-5.70616				
8234	5	57.71898	-5.70628				
8235	5	57.71895	-5.70634				
8236	5	57.71867	-5.70655				
8237	6	57.70911	-5.68553	SS.SMp.KSwSS	KS	Muddy sediment	Sediment 40% covered by algal turf, possibly loose
8238	6	57.70906	-5.68576				
8239	6	57.70905	-5.68633				
8240	6	57.70892	-5.68691				
8241	6	57.70881	-5.68720				
8242	6	57.70871	-5.68766	SS.SMu.CFiMu.SpnMeg	BM	Soft mud	Small burrows 1-9/m^2, including possibly juvenile *Nephrops*
8243	6	57.70869	-5.68819				
8244	6	57.70868	-5.68879				
8245	6	57.70863	-5.68956				
8246	6	57.70866	-5.69029				
8247	6	57.70869	-5.69048				
8248	6	57.70877	-5.69103				
8249	6	57.70882	-5.69169	SS.SSa.ImuSa.EcorEns CR.MCR.EcCr.FaAlCr		Very scattered boulders on silty fine sand with scattered shells, especially *Ensis*	Much drift kelp material. Boulders encrusted with pink coralline algae (C)
8250	6	57.70882	-5.69182				
8251	6	57.70886	-5.69208				
8252	6	57.70906	-5.69275				
8253	6	57.70915	-5.69325				
8254	6	57.70907	-5.69373				
8255	6	57.70888	-5.69401				
8256	6	57.70852	-5.69503	SS.SMu.CFiMu.SpnMeg	BM	Soft mud	Burrows of varying sizes from <1 - 2 cm diameter 1-9/m2. Mud otherwise epifaunally barren looking apart from Gobiidae sp.? (P)
8257	6	57.70841	-5.69546				
8258	6	57.70830	-5.69585				
8259	6	57.70808	-5.69634				
8260	6	57.70780	-5.69678				
8261	6	57.70758	-5.69701				
8262	6	57.70727	-5.69719				

Table 3.1 continued

ID	Box	Latitude	Longitude	Biotopes	PMFs	Substrate	Biota
8263	6	57.70691	-5.69761	CR.LCR.BrAs SS.SMu.CFiMu.SpnMeg	BM	Boulders and cobbles on mud	Boulders encrusted with pink coralline algae (C), serpulid worms and barnacles (both largely dead) and with a thin faunal turf, possibly of hydroids, on vertical faces. *Ciona intestinalis* common, though patchy. *Munida rugosa* (P), *Asterias rubens* (P). Mud with small burrows <1 cm diameter, 1-9/m^2
8264	6	57.70685	-5.69767				
8265	6	57.70678	-5.69773				
8266	6	57.70673	-5.69775				
8267	6	57.70660	-5.69781				
8268	6	57.70655	-5.69784				
8269	6	57.70644	-5.69788				
8270	6	57.70600	-5.69812				
8271	6	57.70589	-5.69818				
8272	6	57.70575	-5.69822	SS.SMu.CFiMu.SpnMeg	BM	Soft mud	Small burrows <1 cm diameter 1-9/m^2. Mud otherwise epifaunally barren looking
8273	6	57.70529	-5.69793				
8274	6	57.70501	-5.69768				
8275	6	57.70464	-5.69720				
8276	6	57.70445	-5.69665				
8277	6	57.70435	-5.69577	CR.MCR.EcCr.FaAlCr SS.SMu.CFiMu.SpnMeg	BM	Boulders and cobbles on mud	Boulders encrusted with pink coralline algae (C), serpulid worms and barnacles (both largely dead). *Porella compressa* (F), *Asterias rubens* (F), *Porania pulvillus* (P). Mud with sparse small burrows <1 cm diameter, 1-9/m^2; *Inachus* sp. (F)
8278	6	57.70437	-5.69531				
8279	6	57.70451	-5.69496				
8280	6	57.70468	-5.69463				
8281	6	57.70478	-5.69433				
8282	6	57.70480	-5.69427				
8283	6	57.70484	-5.69412				
8284	6	57.70491	-5.69378				
8285	6	57.70494	-5.69354	SS.SMu.CFiMu.SpnMeg	BM	Soft mud	Burrows of varying sizes from <1 - 7 cm diameter 1-9/m2, some of which possibly *Nephrops*. Mud otherwise epifaunally barren looking apart from *Liocarcinus depurator*? (P)
8286	6	57.70501	-5.69327				
8287	6	57.70507	-5.69301				
8288	6	57.70517	-5.69248				
8289	6	57.70524	-5.69201				
8290	6	57.70533	-5.69158				
8291	6	57.70549	-5.69114				
8292	6	57.70570	-5.69084				
8293	6	57.70600	-5.69072				
8294	6	57.70627	-5.69065				
8295	6	57.70662	-5.69052				
8296	6	57.70693	-5.69068				
8297	6	57.70754	-5.69116				
8298	6	57.70776	-5.69129				
8299	6	57.70798	-5.69171				
8300	6	57.70806	-5.69209				
8301	6	57.70784	-5.69298				
8302	6	57.70780	-5.69327				
8303	6	57.70773	-5.69376				
8304	6	57.70765	-5.69405				
8305	6	57.70736	-5.69456				
8306	6	57.70719	-5.69494				
8307	6	57.70704	-5.69552				
8308	6	57.70695	-5.69600				
8309	6	57.70681	-5.69651				
8310	6	57.70659	-5.69697				

Table 3.1 continued

ID	Box	Latitude	Longitude	Biotopes	PMFs	Substrate	Biota
8311	6	57.70640	-5.69729				
8312	6	57.70627	-5.69748				
8313	6	57.70602	-5.69794				
8554	7	57.72496	-5.81429	SS.SCS.CCS		Thin veneer of coarse sand, gravel, pebbles and shells over silty sand	Pebbles and shells extensively encrusted with pink coralline algae (A) and sparse serpulid worms. Sediment with small burrows (<1 cm diameter, 1-9/m^2) and sparse *Lanice conchilega* (P)
8555	7	57.72500	-5.81391				
8556	7	57.72495	-5.81339				
8557	7	57.72500	-5.81277				
8558	7	57.72506	-5.81245				
8559	7	57.72516	-5.81233				
8560	7	57.72524	-5.81195				
8561	7	57.72528	-5.81159				
8562	7	57.72531	-5.81117				
8563	7	57.72508	-5.81022				
8564	7	57.72512	-5.80997				
8565	7	57.72520	-5.80985				
8566	7	57.72534	-5.80976				
8567	7	57.72537	-5.80939				
8568	7	57.72530	-5.80892				
8569	7	57.72527	-5.80841				
8570	7	57.72518	-5.80788				
8571	7	57.72512	-5.80748				
8572	7	57.72501	-5.80708				
8573	7	57.72432	-5.81396	SS.SSa.CMuSa		Silty sand with surface scatter of shell gravel and pebbles	Small burrows (up to c.0.5 cm diameter) 1-9/0.1 m^2, *Turritella communis* (R), *Myxicola infundibulum* (R)
8574	7	57.72443	-5.81344				
8575	7	57.72444	-5.81294				
8576	7	57.72440	-5.81238				
8577	7	57.72439	-5.81191				
8578	7	57.72439	-5.81172				
8579	7	57.72419	-5.81128				
8580	7	57.72410	-5.81102				
8581	7	57.72394	-5.81049				
8582	7	57.72395	-5.80999				
8583	7	57.72396	-5.80950				
8584	7	57.72392	-5.80903				
8585	7	57.72385	-5.80852	SS.SSa.CMuSa CR.MCR.EcCr.FaAlCr		Silty sand with surface scatter of shell gravel and pebbles, as well as cobbles and boulders	Rock surface encrusted with pink coralline algae (O), orange Bryozoa (R) and sparse barnacles and *Pomatoceros* (mostly dead). *Luidia ciliaris* (P), *Pecten maximus* (P)
8586	7	57.72384	-5.80814				
8587	7	57.72384	-5.80810				
8588	7	57.72385	-5.80803				
8589	7	57.72378	-5.80769				
8590	7	57.72373	-5.80755				
8591	7	57.72367	-5.80731				
8592	7	57.72365	-5.80720				
8593	7	57.72362	-5.80700				

Appendix 4 Infaunal survey data

Table 4.1 Sample details and in situ *characterisation of the sediment for the infaunal grab survey*

Site	Location	Latitude	Longitude	Time	Date	Depth (m)	Substrate	Sample area (m^2)	Video site
G1	Gairloch	57.70427	-5.69072	18:25	22/07/2010	32.9	soft mud	0.1m^2	BM1
G2	Gairloch	57.72448	-5.71697	15:50	22/07/2010	32.7	slightly muddy sand	0.1m^2	BM3
G3	Gairloch	57.71676	-5.75521	17:21	23/07/2010	60.6	soft mud	0.1m^2	BM4
G4	Gairloch	57.72091	-5.77496	16:56	22/07/2010	54.2	very muddy sand	0.1m^2	BM6
G5	Gairloch	57.70430	-5.80234	14:51	23/07/2010	94.3	soft mud	0.1m^2	BM7
G6	Gairloch	57.76940	-5.84154	11:48	24/07/2010	23.3	medium-coarse sand	0.1m^2	MC4
G9	Outer	58.00837	-5.59936	13:45	30/07/2010	110.0	mud	0.09m^2	BM64
G10	Ewe	57.86680	-5.65390	15:49	26/07/2010	16.6	medium-coarse sand	0.1m^2	MC11
G11	Ewe	57.84926	-5.62897	16:54	26/07/2010	27.7	fine sand	0.1m^2	BM19
G12	Ewe	57.83713	-5.65396	14:15	26/07/2010	55.2	muddy sand	0.1m^2	BM18
G13	Ewe	57.82007	-5.64472	16:44	25/07/2010	50.1	sandy mud	0.1m^2	BM15
G15	Ewe	57.80977	-5.62756	15:54	25/07/2010	63.5	soft mud	0.1m^2	BM14
G16	Ewe	57.81443	-5.60824	17:01	25/07/2010	31.1	soft mud	0.1m^2	BM13
G18	Gruinard	57.89792	-5.52536	10:40	05/08/2010	65.2	slightly sandy mud	0.1m^2	BM22
G20	Gruinard	57.88328	-5.44960	09:54	05/08/2010	31.2	muddy sand	0.1m^2	BM24
G21	Little Broom	57.90219	-5.35757	14:35	01/08/2010	44.9	very muddy sand	0.1m^2	BM29
G22	Little Broom	57.88971	-5.34543	15:02	01/08/2010	36.3	very muddy sand with pebbles	0.1m^2	LC1
G23	Little Broom	57.87278	-5.30929	15:28	01/08/2010	95.4	soft mud	0.1m^2	BM32
G24	Little Broom	57.85116	-5.24123	17:40	01/08/2010	33.3	soft mud	0.1m^2	BM36
G25	Broom	57.91183	-5.21033	15:30	02/08/2010	75.3	soft mud	0.1m^2	BM45
G26	Broom	57.89116	-5.14587	12:36	04/08/2010	20.9	sandy mud	0.1m^2	DM1
G27	Broom	57.85853	-5.10273	15:23	03/08/2010	40.0	soft mud	0.1m^2	BM39
G28	Broom	57.84864	-5.09974	14:36	03/08/2010	28.9	soft mud	0.1m^2	DM2
G29	Broom	57.83995	-5.08489	10:59	03/08/2010	23.5	soft mud	0.1m^2	BM37
G30	Ewe	57.79304	-5.63462	11:51	25/07/2010	25.8	soft mud	0.1m^2	BM10
G31	Little Broom	57.90763	-5.41357	12:07	01/08/2010	21.1	very slightly muddy shelly medium sand	0.1m^2	MB37
G32	Broom	57.87287	-5.11290	10:47	04/08/2010	37.7	muddy sand	0.1m^2	BM41
G33	Gairloch	57.74445	-5.80323	19:00	19/08/2010	3.6	medium sand	0.1m^2	SG11

Table 4.2 Particle size characteristics of sediments sampled for infaunal analysis. $MD_{\emptyset}$ = median grain diameter in phi units, Md_{μ} = median grain diameter in microns, $QD_{\emptyset}$ = phi quartile deviation, ND = not determined

Site	$MD_{\emptyset}$	Md_{μ}	$QD_{\emptyset}$	% silt/clay	% sand	% gravel	% fine sand	% medium sand	% coarse sand
G1	>4	<63	ND	91.22	8.78	0.00	7.17	1.49	0.12
G2	2.8	144	0.25	8.21	91.19	0.60	85.61	5.53	0.05
G3	3.9	67	ND	46.66	53.33	0.01	50.13	3.08	0.12
G4	3.6	82	ND	32.76	67.18	0.05	58.96	7.97	0.26
G5	3.7	77	ND	36.14	63.83	0.03	61.32	2.13	0.39
G6	1.1	467	0.85	8.68	89.42	1.89	15.47	56.41	17.54
G9	3.7	77	ND	36.31	63.69	0.00	59.01	4.53	0.15
G10	0.8	574	0.55	1.84	97.93	0.23	4.21	81.07	12.65
G11	2.5	177	0.65	10.48	89.52	0.00	51.91	37.16	0.44
G12	2.1	233	0.65	13.15	86.71	0.14	39.55	46.48	0.69
G13	2.9	134	0.55	16.18	83.80	0.02	64.22	19.16	0.41
G15	>4	<63	ND	73.11	26.76	0.13	24.09	1.37	1.30
G16	>4	<63	ND	90.34	9.66	0.00	7.99	1.40	0.27
G18	3.7	77	ND	35.35	64.60	0.05	62.00	2.39	0.21
G20	2.9	134	0.70	23.92	76.01	0.07	65.03	9.85	1.13
G21	3.9	67	ND	45.08	54.92	0.00	47.36	7.14	0.42
G22	3.3	102	ND	38.93	57.09	3.98	27.72	25.79	3.58
G23	>4	<63	ND	97.72	2.28	0.00	1.62	0.62	0.04
G24	>4	<63	ND	92.69	7.31	0.00	6.32	0.81	0.17
G25	>4	<63	ND	96.15	3.85	0.00	3.60	0.20	0.05
G26	3.5	88	ND	35.57	63.65	0.78	54.23	8.06	1.35
G27	>4	<63	ND	95.28	4.72	0.00	4.11	0.49	0.12
G28	>4	<63	ND	53.68	46.11	0.22	38.64	7.02	0.44
G29	>4	<63	ND	95.56	4.44	0.00	3.67	0.51	0.26
G30	>4	<63	ND	88.19	10.96	0.85	9.28	1.20	0.48
G31	0.4	758	1.15	8.89	87.38	3.74	15.55	39.14	32.69
G32	2.8	144	0.95	25.28	74.16	0.56	51.04	20.28	2.84
G33	2.6	165	0.20	3.05	96.95	0.00	91.14	5.56	0.26
ML01	0	1000	2.10	18.68	73.54	7.78	15.78	15.69	42.07
ML02	-1.2	2297	0.70	10.87	68.71	20.42	0.88	8.61	59.22
ML03	2.2	218	ND	44.32	44.89	10.79	6.77	14.79	23.33

Table 4.3 Percentage of total sediment sample collected by sieves at 0.5 phi interval mesh sizes for all sites sampled for infaunal analysis

Sieve (phi)	Site															
	G1	G2	G3	G4	G5	G6	G9	G10	G11	G12	G13	G15	G16	G18	G20	G21
-3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-3.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
-2.5	0.0	0.6	0.0	0.0	0.0	0.7	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-2.0	0.0	0.0	0.0	0.1	0.0	0.7	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0
-1.5	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.2	0.0	0.1	0.1	0.4	0.1	0.1	0.3	0.2
-1.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.5	0.0	0.1	0.1	0.2	0.0	0.1	0.2	0.1
-0.5	0.0	0.0	0.0	0.1	0.0	4.7	0.1	2.0	0.1	0.1	0.1	0.4	0.0	0.0	0.3	0.1
0.0	0.0	0.0	0.0	0.1	0.3	7.3	0.1	10.0	0.2	0.4	0.2	0.4	0.0	0.0	0.4	0.1
0.5	0.0	0.0	0.1	0.3	0.2	10.8	0.1	20.0	1.0	1.7	0.6	0.3	0.1	0.1	0.8	0.2
1.0	0.0	0.2	0.1	1.2	0.3	18.3	0.3	30.7	6.1	7.0	3.2	0.3	0.1	0.4	1.3	0.9
1.5	0.1	0.4	0.2	1.9	0.4	10.8	0.7	15.4	10.0	12.0	5.5	0.3	0.1	0.5	2.1	1.9
2.0	1.2	4.9	2.7	4.6	1.3	16.5	3.5	15.0	20.0	25.8	9.8	0.5	1.1	1.4	5.6	4.2
2.5	2.4	15.4	6.4	5.4	2.4	7.0	6.5	2.6	13.1	17.4	10.0	0.6	2.6	1.9	12.9	4.7
3.0	1.5	51.0	8.7	10.9	6.2	6.2	11.5	1.4	26.5	12.7	27.8	1.5	2.1	6.5	29.9	8.2
3.5	0.7	15.5	14.4	21.9	28.1	1.5	20.9	0.2	8.8	6.5	21.2	8.7	1.0	28.1	16.7	11.6
4.0	2.5	3.7	20.6	20.8	24.7	0.8	20.1	0.0	3.5	3.0	5.2	13.3	2.3	25.5	5.5	22.9
>4	91.2	8.2	46.7	32.8	36.1	8.7	36.3	1.8	10.5	13.1	16.2	73.1	90.3	35.3	23.9	45.1

Sieve (phi)	Site														
	G22	G23	G24	G25	G26	G27	G28	G29	G30	G31	G32	G33	ML01	ML02	ML03
-3.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.3
-3.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	1.1	2.1	1.5
-2.5	1.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.6	0.8	0.0	0.0	1.8	7.4	5.8
-2.0	0.3	0.0	0.0	0.0	0.5	0.0	0.2	0.0	0.3	1.6	0.5	0.0	4.0	11.0	3.1
-1.5	0.3	0.0	0.0	0.0	0.2	0.0	0.1	0.3	0.1	1.9	0.5	0.0	5.8	16.1	4.3
-1.0	0.4	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.2	3.1	0.4	0.0	11.6	19.3	7.1
-0.5	0.8	0.0	0.0	0.0	0.4	0.0	0.1	0.0	0.1	11.9	0.8	0.1	14.5	17.2	6.1
0.0	2.1	0.0	0.1	0.0	0.5	0.1	0.1	0.0	0.1	15.8	1.2	0.1	10.1	6.6	5.8
0.5	4.1	0.0	0.1	0.0	1.0	0.1	0.3	0.0	0.1	17.9	2.8	0.2	5.0	2.9	4.4
1.0	6.6	0.1	0.2	0.1	1.8	0.1	0.9	0.1	0.1	12.2	4.2	0.6	4.5	3.0	4.7
1.5	6.1	0.2	0.2	0.1	1.9	0.1	1.4	0.1	0.1	4.7	4.6	0.3	3.4	1.6	2.4
2.0	9.0	0.3	0.3	0.1	3.3	0.1	4.4	0.3	0.9	4.4	8.7	4.5	2.8	1.2	3.3
2.5	5.8	0.3	0.3	0.1	4.1	0.2	7.2	0.3	2.0	3.4	13.5	28.8	2.1	0.3	2.2
3.0	5.4	0.4	0.6	0.2	11.6	0.3	10.5	0.5	1.3	4.7	22.8	55.7	4.4	0.3	1.8
3.5	8.7	0.3	1.7	0.8	23.3	1.2	9.9	0.9	1.2	4.5	9.7	6.2	6.1	0.2	1.4
4.0	7.8	0.6	3.8	2.5	15.2	2.5	11.0	2.0	4.8	2.9	4.9	0.4	3.2	0.1	1.3
>4	38.9	97.7	92.7	96.1	35.6	95.3	53.7	95.6	88.2	8.9	25.3	3.0	18.7	10.9	44.3

Figure 4.1 Cumulative weight of sediment retained on sieves at 0.5 phi intervals for all infaunal samples collected

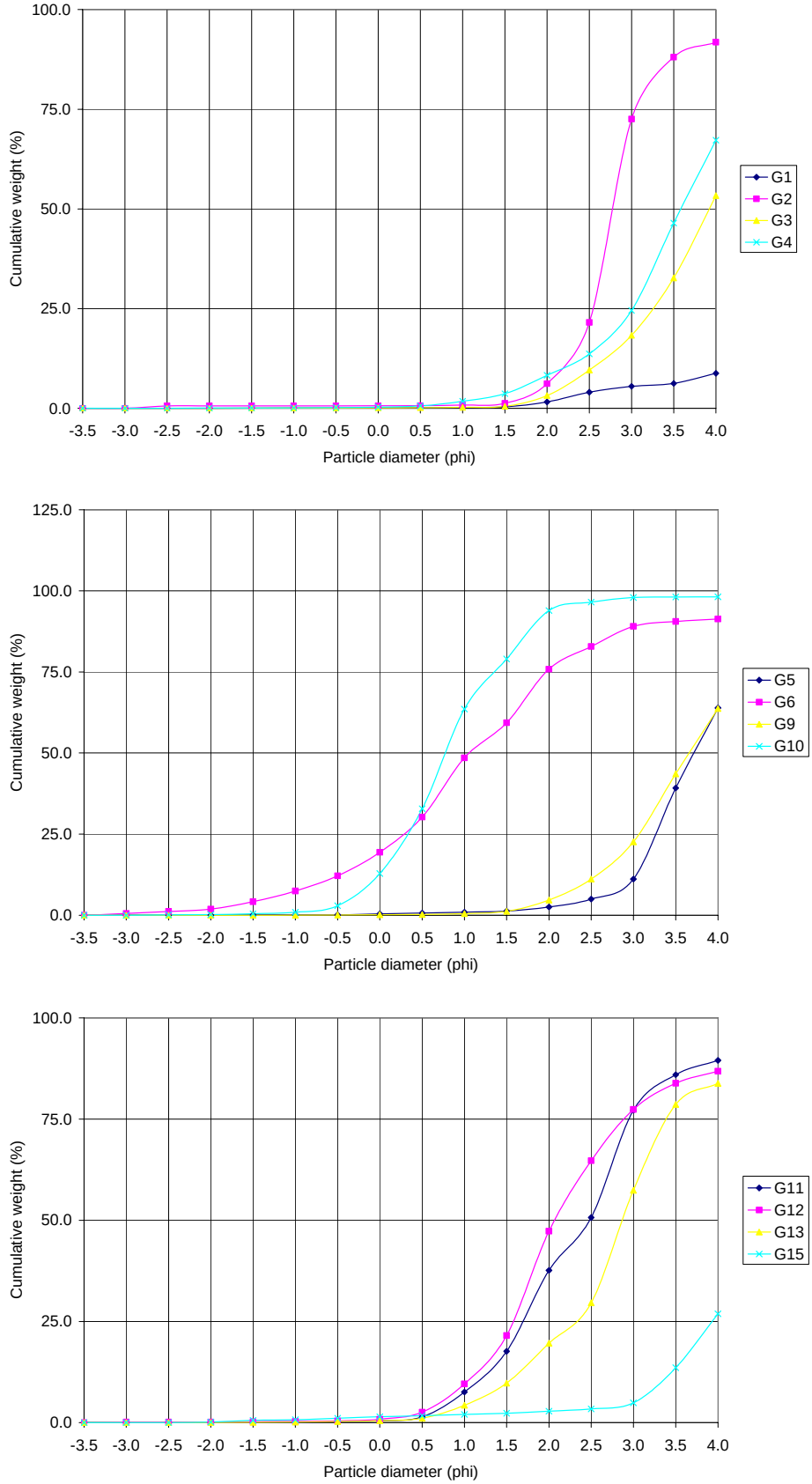
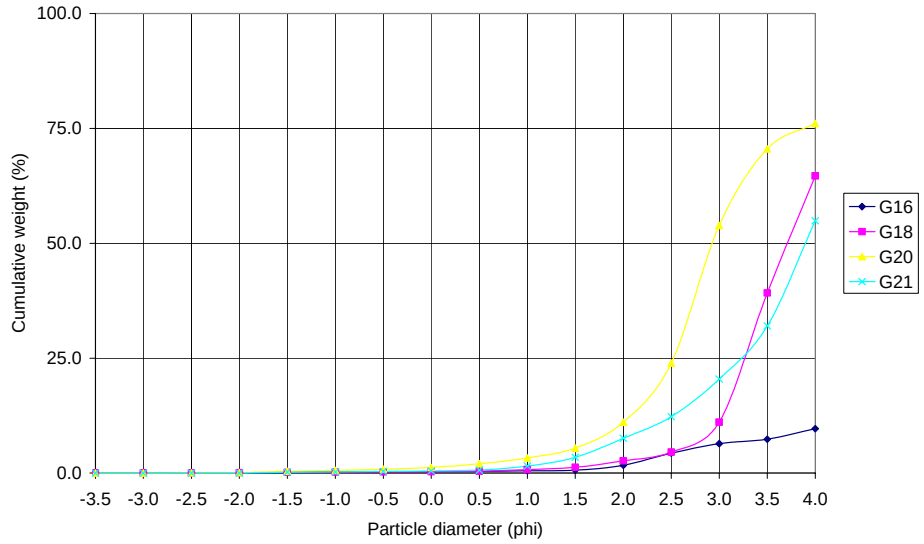
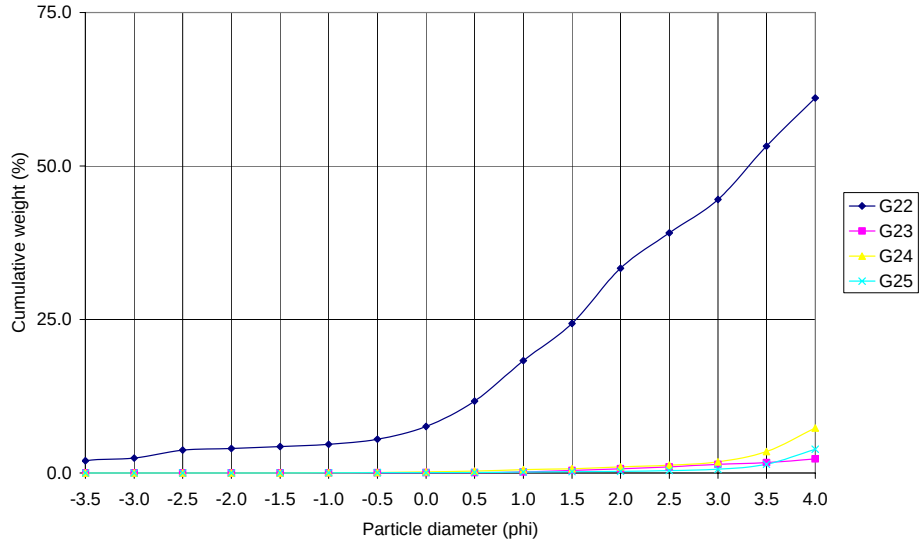


Figure 4.1 continued





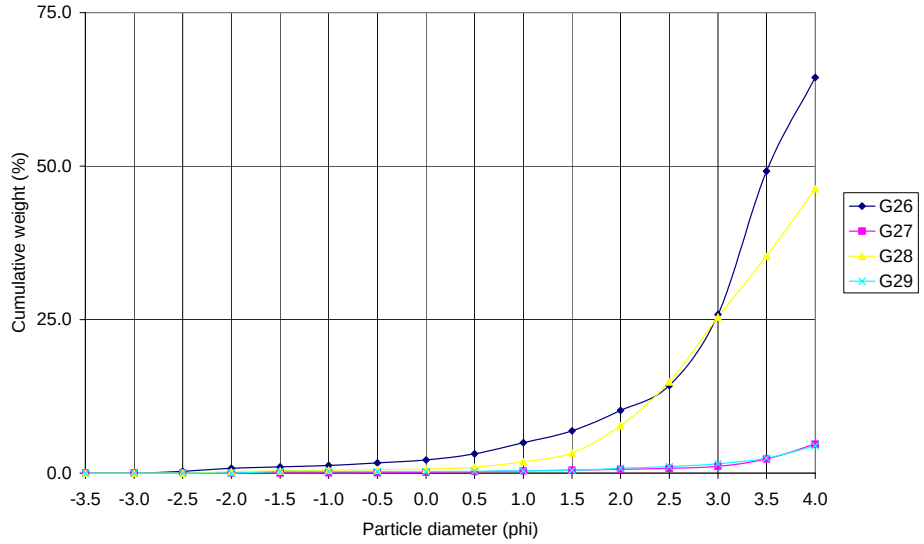
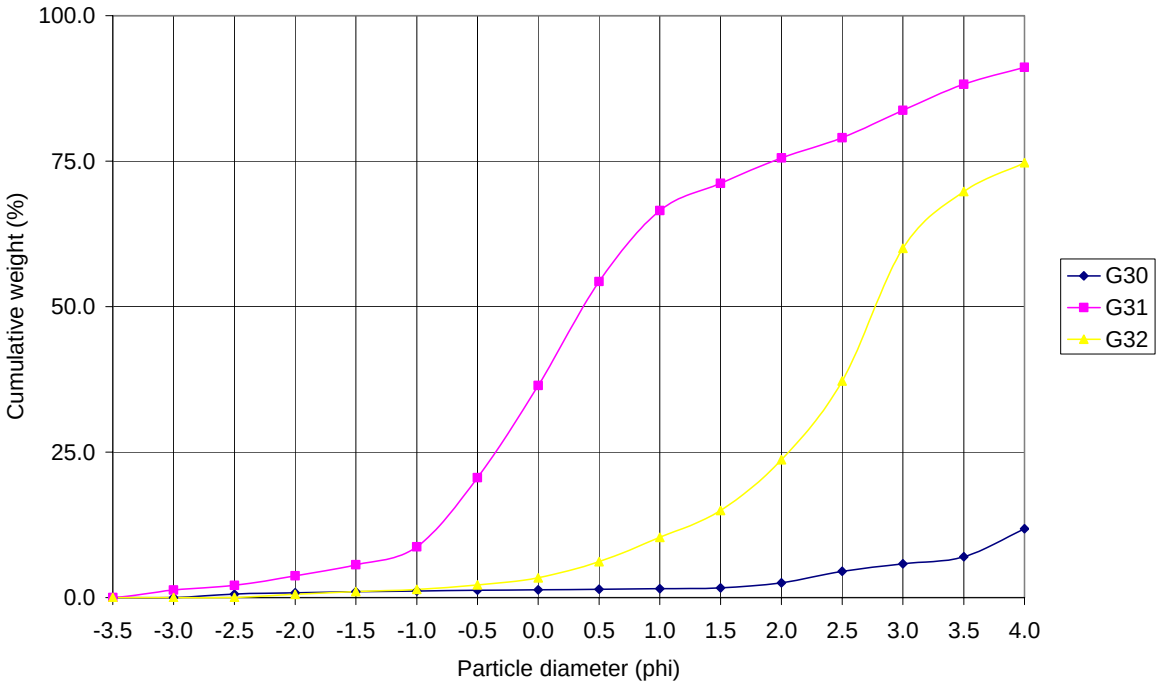


Figure 4.1 continued



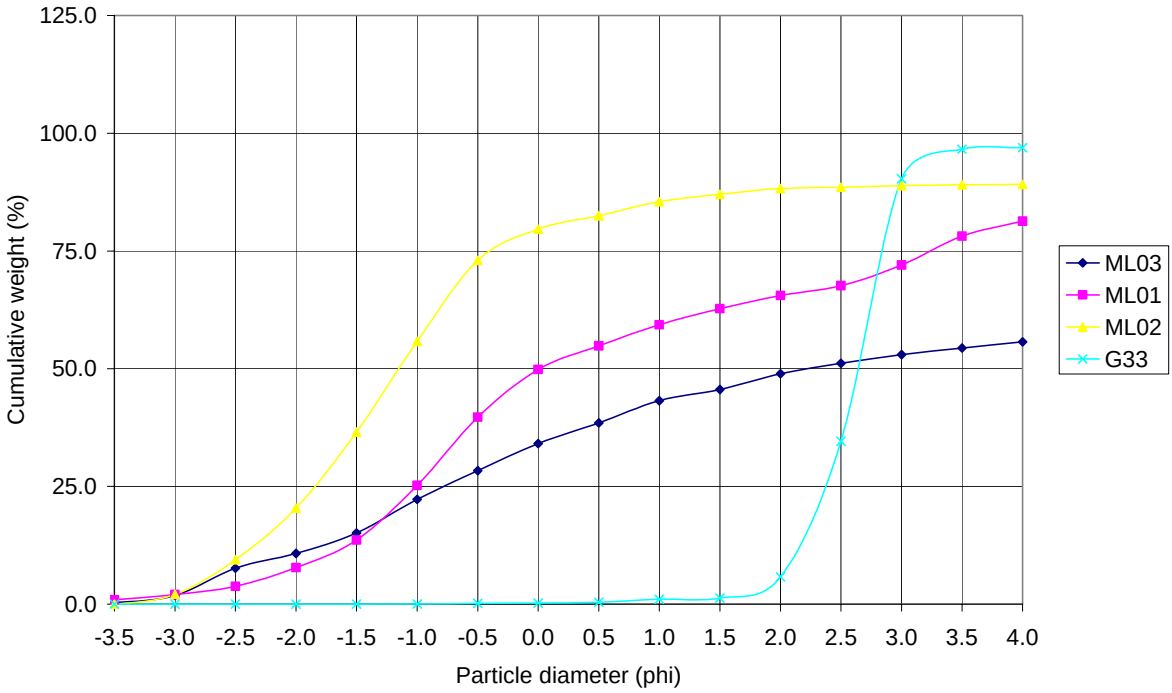


Table 4.4 Abundance of infauna (no./0.1m^2) in van Veen grab samples collected at 28 sites

	Site													
Taxa	**G1**	**G2**	**G3**	**G4**	**G5**	**G6**	**G9**	**G10**	**G11**	**G12**	**G13**	**G15**	**G16**	**G18**
Astrorhyza limicola		1												
Pennatula phosphorea		1								1				
Cerianthus lloydii						2				7	1			1
Edwardsia claparedii		4	2	1			1		12	1	8			
PLATYHELMINTHES		1												
NEMERTEA spp			1					1		1				1
Tubulanus polymorphus		4	1	1		1		1			1			
Lineidae spp		3	1	1		3	1	2	1		4			
NEMATODA						2		7						
Priapulus caudatus		2	2											
Golfingiidae spp juv									4					1
Golfingia elongata														
Nephasoma minutum						8								
Thysanocardia procera					2						1			
Phascolion strombus				8		1		1	3					
Pisione remota								7						
Polynoidae spp juv/indet			1			4			1	1				
Gattyana cirrhosa		1												
Harmothoe extenuata						1								
Harmothoe fragilis														
Malmgreniella mcintoshi														
Malmgreniella castanea		1												
Pettibonesia furcosetosa														
Malmgreniella arenicolae					1									
Pholoe inornata						2								
Pholoe baltica		13	6		2				1	1	4			
Sigalion squamosus														
Sthenelais boa					1									
Sthenelais limicola									2					1
Phyllodocidae spp indet														
Eteone longa		2	1				1							
Hesionura elongata								2						
Phyllodoce lineata									1					
Anaitides longipes								1						
Eulalia viridis														
Eulalia mustela						1								
Eumida spp juv/indet														
Nereiphylla paretti						1								
Sige fusigera														
Glycera spp juv														
Glycera alba		1	4	1						1				
Glycera gigantea														
Glycera lapidum						3		1						
Glycera rouxi		2		1	1									1
Glycinde nordmanni		2				1								

Table 4.4 continued

	Site													
Taxa	**G1**	**G2**	**G3**	**G4**	**G5**	**G6**	**G9**	**G10**	**G11**	**G12**	**G13**	**G15**	**G16**	**G18**
Goniada maculata		1	2			1								3
Goniadella gracilis								1						
Sphaerodorum gracilis						1								
Podarkeopsis capensis			1									1		
Hesiospina similis														
Kefersteinia cirrata						2								
Nereimyra punctata						2								
Ophiodromus flexuosus	3	5	3							1	1	1		1
Ophiodromus pallidus														
Ancistrosyllis groenlandica			1		1		1					1	1	
?Dioplosyllis sp						1								
Syllis cornuta				5										
Syllis sp H						1								
Syllis sp D						1								
Syllides benedicti														
Exogone hebes						1								
Exogone verugera														
Sphaerosyllis bulbosa						2								
Sphaerosyllis taylori								1						
Myrianida sp		1												
Eunereis longissima														
Aglaophamus rubella						1								
Nephtys spp juv		3												
Nephtys cirrosa								3						
Nephtys hombergii		4		2	1				7	4	8			2
Nephtys kersivalensis														
Nephtys incisa	8	1	1	5	3		1					9	1	2
Aponuphis bilineata						6		1						
Nothria britannica								1						
Nematonereis hebes										1				
Lumbrineris sp indet														
Lumbrineris gracilis		1				1			1	1				
Lumbrineris hibernica		1					1							
Protodorvillea kefersteini								2						
Orbinia sp indet		1												
Orbinia armandi								1						
Paraonidae sp indet														
Aricidea wassi		1												
Aricidea catherinae		1												
Aricidea cerrutii								1						
Cirrophorus branchiatus														
Paradoneis lyra		1				1				1				
Apistobranchus tullbergi														
Aonides paucibranchiata						8		8						
Laonice bahusiensis						1								
Minuspio cirrifera		1												2
Minuspio multibranchiata											1	3		
Dipolydora flava														

Table 4.4 continued

	Site													
Taxa	**G1**	**G2**	**G3**	**G4**	**G5**	**G6**	**G9**	**G10**	**G11**	**G12**	**G13**	**G15**	**G16**	**G18**
Prionospio fallax	1	2	6											
Prionospio banyulensis						3		1						
Pseudopolydora pulchra				1										
Microspio mecznikowianus						1								
Spiophanes bombyx						1								
Spiophanes kroyeri		1	1	3	4					6	3			3
Magelona alleni		1								1	1			
Magelona filiformis														
Magelona minuta		3	2											1
Cirratulidae spp indet		1			1				1					
Caulleriella alata														
Chaetozone sp 'D'														
Chaetozone setosa		3	3	19	11		16		3		1			6
Cheatozone christei														
Cirratulus cirratus														
Cirratulus caudatus				2			1							
Aphelochaeta sp A							1							
Diplocirrus glaucus		9	5	11	6		6			8	2	1		5
Capitella capitata														
Dasybranchus caducus														
Mediomastus fragilis		2	7	5		7				1				1
Notomastus latericeus		2	22	8	7	2	3	1		4	2	1		4
Notomastus sp A						7								
Peresiella clymenoides		2												1
Maldanidae spp juv/indet				1	1									1
Praxillura longissima		1												
Clymenura sp indet						1								
Euclymene lumbricoides		3												
Heteroclymene robusta														
Praxillella affinis		2					2							
Nicomache sp														
Rhodine sp indet											1			
Rhodine loveni														
Ophelina acuminata														1
Scalibregma celticum						2								
Scalibregma inflatum	288	33	83	52	1		1	1	1					5
Polygordius spp indet								9						
Polygordius appendiculatus								5						
Galathowenia oculata		1												2
Owenia fusiformis		1		1	6	3			3	7	2			1
Amphictene auricoma			1	1										1
Lagis koreni												1		
Ampharetidae sp indet														
Melinna palmata									2	2	2			
Amage sp														
Ampharete sp indet						1			1	1				
Ampharete falcata										1				1
Ampharete finmarchica														

Table 4.4 continued

	Site													
Taxa	**G1**	**G2**	**G3**	**G4**	**G5**	**G6**	**G9**	**G10**	**G11**	**G12**	**G13**	**G15**	**G16**	**G18**
Amphicteis gunneri														
Sosane sulcata									1					
Terebellides stroemi		1								1				1
Trichobranchus roseus														
Amphitritinae spp juv/indet										1				
Lanice conchilega													1	
Pista cristata						1		5						
Pista lornensis														
Amaeana trilobata														
Lysilla loveni			1											
Polycirrus sp 'A'						1								
Polycirrus medusa									1					
Polycirrus norvegicus						5		1		1				
Polycirrus plumosus	3	15	45	2							1	1		
Streblosoma intestinale		5												
Thelepus cincinnatus														
Sabellidae sp indet														
Chone duneri						46			1					
Parasabella sp A									2					
Parasabella sp B										1				
Euchone rubrocincta														
Euchone southerni		1				2								
Jasmineira caudata		1				19								
Serpulidae spp indet														
Hydroides norvegicus						32			2					
Pomatoceros triqueter						4								
Serpula/Hydroides spp indet														
Serpula vermicularis														
Apomatus similis														
Grania spp								3						
Anoplodactylus petiolatus										1				
COPEPODA spp														1
OSTRACODA spp								1						
Gastrosaccus spinifer								21						
GAMMARIDEA spp indet		1												
Oedicerotidae sp indet														
Monoculodes carinatus								1						
Perioculodes longimanus														
Synchelidium haplocheles								2	1					
Westwoodilla caecula														
Urothoe elegans		3												
Urothoe marina						10								
Harpinia antennaria		1												3
Harpinia crenulata									1					1
Hippomedon denticulatus														
Tryphosella horingi														
Tryphosella sarsi										1				
Atylus vedlomensis						3		2						

Table 4.4 continued

	Site													
Taxa	**G1**	**G2**	**G3**	**G4**	**G5**	**G6**	**G9**	**G10**	**G11**	**G12**	**G13**	**G15**	**G16**	**G18**
Ampelisca sp indet						1								
Ampelisca spinipes						2								
Ampelisca tenuicornis				2					1	2	2			
Ampelisca typica		1				2			2					
Bathyporeia elegans														
Bathyporeia guilliamsoniana														
Abludomelita obtusata				1					3					
Cheirocratus sp ♀									2					
Microprotopus maculatus														
Photis longicaudata														
Ericthonius difformis														
Jassa falcata						4								
Aoridae spp ♀/indet								2			1			
Aora gracilis														
Leptocheirus pectinatus														
Siphonoecetes kroyeranus														
Unciola planipes								13						
Caprella acanthifera														
Caprella linearis						3								
Parvipalpus capillaceus										1				
Gnathia sp (praniza)		1												
Gnathia oxyuraea		1												
Idotea ?linearis														
Astacilla dilatata										3				
Tanaopsis graciloides		16	2								1			
Bodotria scorpioides						1								
Iphinoe serrata		4								2				
Iphinoe trispinosa														
Diastylis sp indet	1								3					
Diastylis laevis		10		2						2	1			
Diastylis lucifera														
DECAPODA spp juv/larvae					4									1
CARIDEA spp juv				1										
Nephrops norvegicus														
Calocaris macandreae							2							
Paguridae spp juv/indet				1		3								
Galathea sp juv/indet														
Galathea intermedia						11								
Galathea nexa														
Liocarcinus pusillus					1	1								
Carcinus maenas						1								
Collembola sp		1												
Chaetoderma nitidulum		7	1	3	3					1	2			
Falcidens crossotus		1		1	5		1				1			1
Leptochiton asellus						2								
Leptochiton cancellatus						3								
Emarginula fissura														
Lacuna vincta														

Table 4.4 continued

	Site													
Taxa	**G1**	**G2**	**G3**	**G4**	**G5**	**G6**	**G9**	**G10**	**G11**	**G12**	**G13**	**G15**	**G16**	**G18**
Hyala vitrea														
Turritella communis		4		28					12	5				
Turbonilla crenata		2												
Turbonilla acuta/lactea				1										
Aporrhais pespelecani														
Euspira pulchellus		2												
Nassarius reticulatus				1										
Bela nebula														1
OPISTHOBRANCHIA sp indet									3		2			
Cylichna cylindracea		12	12	3	2			1	1		3			7
Philine spp					1									1
Diaphana minuta														
Haminoea sp				2										
Cylichnina umbilicata		1			1									
Volvulella acuminatus				1										
Onchidoriddae spp														
BIVALVIA spp indet				1						1	18			
BIVALVIA sp A					1									
Nucula nitidosa	3	7	2	1	1						4	1		1
Nucula nucleus														
Nucula sulcata				1	3									
Yoldiella sp juv					1									
Mytilus edulis						1								
Limatula subauricularis					1									
Pododesmus patelliformis														
Myrtea spinifera		3		1	3				1	2	6	1		
Lucinoma borealis										3				
Thyasira flexuosa	17	4	4	1					11	2		4		3
Kurtiella bidentata	23	20	3		5		1			2	19	9		
Tellimya ferruginosa	3													
Acanthocardia echinata					1									
Parvicardium pinnulatum					1									
Parvicardium scabrum			1		1									
Spisula elliptica								8						
Ensis ensis						1								
Phaxas pellucidus							2		4	15	1			
Tellina fabula														
Tellina donacina														
Tellina pygmaea						9		16						
Gari fervensis		1												
Gari costulata						1								
Gari tellinella						1								
Abra spp juv >3mm	6		88	29	37									24
Abra alba	1		14		2		2							1
Abra nitida	8	1	30	17	17		3							13
Gouldia minima			1											1
Dosinia spp juv		1	1							1				2
Dosinia exoleta						1		1		1				

Table 4.4 continued

	Site													
Taxa	**G1**	**G2**	**G3**	**G4**	**G5**	**G6**	**G9**	**G10**	**G11**	**G12**	**G13**	**G15**	**G16**	**G18**
Tapes rhomboides						1								
Chamelea striatula		2	1											
Clausinella fasciata						1								
Timoclea ovata						2								
Mysia undata			2											1
Corbula gibba	1		2		4					1				
Hiatella arctica				1					2		1			
Thracia convexa														1
Thracia phaseolina				2										
Cochlodesma praetenue														
Phoronis spp		2		5	1					1	1			2
Astropecten irregularis								1						
Asterias rubens									2					
Amphiuridae spp juv			3			2			1					
Amphiura chiajei		1	1	4	5					1		1		
Amphiura filiformis		38	10	6	31					15	42			2
Amphipholis squamata		4			2	1								
Ophiocten affinis	1													
Echinocyamus pusillus		2				5		1						
Echinocardium cordatum	2													
Brissopsis lyrifera														
HOLOTHUROIDEA sp juv										1				
Leptosynapta spp juv/indet	1													
Leptosynapta bergensis					1					1				
Leptosynapta decaria			1		1									
Labidoplax sp juv											1			
Labidoplax buskii		4												
Saccoglossus sp														
Ammodytes tobianus														

Table 4.4 continued

	Site													
Taxa	**G20**	**G21**	**G22**	**G23**	**G24**	**G25**	**G26**	**G27**	**G28**	**G29**	**G30**	**G31**	**G32**	**G33**
Astrorhyza limicola														
Pennatula phosphorea														
Cerianthus lloydii	11		7				1					29		
Edwardsia claparedii	12		1	1								7		
PLATYHELMINTHES				1										
NEMERTEA spp				1								8	2	3
Tubulanus polymorphus	5		3										1	
Lineidae spp	1	2	1		1							1		
NEMATODA														
Priapulus caudatus														
Golfingiidae spp juv														
Golfingia elongata			1				3					1		
Nephasoma minutum														
Thysanocardia procera	7												1	
Phascolion strombus	2		1				1							
Pisione remota														
Polynoidae spp juv/indet	1		4			2	2				2			
Gattyana cirrhosa							1							
Harmothoe extenuata														
Harmothoe fragilis				1										
Malmgreniella mcintoshi												1		
Malmgreniella castanea												1		
Pettibonesia furcosetosa						1								
Malmgreniella arenicolae			1											
Pholoe inornata												1		
Pholoe baltica	2		6				1					4	2	
Sigalion squamosus														1
Sthenelais boa														
Sthenelais limicola			1											
Phyllodocidae spp indet												1		
Eteone longa												1		
Hesionura elongata														
Phyllodoce lineata														
Anaitides longipes														
Eulalia viridis			2											
Eulalia mustela												3		
Eumida spp juv/indet			2											
Nereiphylla paretti														
Sige fusigera													1	
Glycera spp juv													1	
Glycera alba	6		2									3	1	
Glycera gigantea												4		
Glycera lapidum														
Glycera rouxi			1	2		1							4	
Glycinde nordmanni	1													
Goniada maculata	3											1	2	

Table 4.4 continued

	Site													
Taxa	**G20**	**G21**	**G22**	**G23**	**G24**	**G25**	**G26**	**G27**	**G28**	**G29**	**G30**	**G31**	**G32**	**G33**
Goniadella gracilis														
Sphaerodorum gracilis														
Podarkeopsis capensis												1		
Hesiospina similis												1		
Kefersteinia cirrata												2		
Nereimyra punctata			4									1		
Ophiodromus flexuosus													3	
Ophiodromus pallidus												1		
Ancistrosyllis groenlandica					1			1	2				3	
?Dioplosyllis sp														
Syllis cornuta	1													
Syllis sp H			1											
Syllis sp D			1											
Syllides benedicti												1		
Exogone hebes														
Exogone verugera	1											5		
Sphaerosyllis bulbosa														
Sphaerosyllis taylori														
Myrianida sp														
Eunereis longissima	1													
Aglaophamus rubella														
Nephtys spp juv			1										2	
Nephtys cirrosa														4
Nephtys hombergii	4	3	1											1
Nephtys kersivalensis			1									1		
Nephtys incisa		3		2	2	5	8	3	2	1	1		4	
Aponuphis bilineata												4		
Nothria britannica														
Nematonereis hebes												4		
Lumbrineris sp indet											1			
Lumbrineris gracilis	21		4									78		
Lumbrineris hibernica				2			2		1				1	
Protodorvillea kefersteini												4		
Orbinia sp indet														
Orbinia armandi														
Paraonidae sp indet													1	
Aricidea wassi														
Aricidea catherinae														
Aricidea cerrutii												3		
Cirrophorus branchiatus												3		
Paradoneis lyra														
Apistobranchus tullbergi												18		
Aonides paucibranchiata												2		
Laonice bahusiensis	2		1											
Minuspio cirrifera	1											8	4	
Minuspio multibranchiata													7	
Dipolydora flava												2		
Prionospio fallax														

Table 4.4 continued

	Site													
Taxa	**G20**	**G21**	**G22**	**G23**	**G24**	**G25**	**G26**	**G27**	**G28**	**G29**	**G30**	**G31**	**G32**	**G33**
Prionospio banyulensis												1		
Pseudopolydora pulchra														
Microspio mecznikowianus														
Spiophanes bombyx														2
Spiophanes kroyeri		4	1			1	2						3	
Magelona alleni												1		
Magelona filiformis														4
Magelona minuta														
Cirratulidae spp indet							1							
Caulleriella alata												1		
Chaetozone sp 'D'	1		1									1		
Chaetozone setosa	9		2				1						5	
Cheatozone christei														1
Cirratulus cirratus			1											
Cirratulus caudatus		3												
Aphelochaeta sp A		1					1				1	1		
Diplocirrus glaucus	1	1	5	1									8	
Capitella capitata														1
Dasybranchus caducus		3												
Mediomastus fragilis	7											93	1	
Notomastus latericeus	8	3	2			1	7	1			1	7	2	
Notomastus sp A														
Peresiella clymenoides			1									1		
Maldanidae spp juv/indet		2												
Praxillura longissima	1													
Clymenura sp indet														
Euclymene lumbricoides												1		
Heteroclymene robusta			6											
Praxillella affinis			1										3	
Nicomache sp			3											
Rhodine sp indet														
Rhodine loveni				1										
Ophelina acuminata														
Scalibregma celticum												1		
Scalibregma inflatum	73	6	1								1			
Polygordius spp indet														
Polygordius appendiculatus														
Galathowenia oculata			4	1										
Owenia fusiformis	3		12									3	1	
Amphictene auricoma			4										1	
Lagis koreni														
Ampharetidae sp indet			1											
Melinna palmata							1						1	
Amage sp				1										
Ampharete sp indet														
Ampharete falcata	1													
Ampharete finmarchica			6											
Amphicteis gunneri			4											

Table 4.4 continued

	Site													
Taxa	**G20**	**G21**	**G22**	**G23**	**G24**	**G25**	**G26**	**G27**	**G28**	**G29**	**G30**	**G31**	**G32**	**G33**
Sosane sulcata	4											6		
Terebellides stroemi		2										1	1	
Trichobranchus roseus			1											
Amphitritinae spp juv/indet														
Lanice conchilega			1											
Pista cristata	1		1											
Pista lornensis													1	
Amaeana trilobata												1		
Lysilla loveni														
Polycirrus sp 'A'														
Polycirrus medusa														
Polycirrus norvegicus			1				1							
Polycirrus plumosus	3	2	1			4	3		1					
Streblosoma intestinale	1													
Thelepus cincinnatus							1							
Sabellidae sp indet			2											
Chone duneri														
*Parasabella s*p A														
Parasabella sp B														
Euchone rubrocincta												1		
Euchone southerni														
Jasmineira caudata												3		
Serpulidae spp indet			3											
Hydroides norvegicus			11									1		
Pomatoceros triqueter			4											
Serpula/Hydroides spp indet			9											
Serpula vermicularis			1											
Apomatus similis			2											
Grania spp														
Anoplodactylus petiolatus												1		
COPEPODA spp			1											
OSTRACODA spp														
Gastrosaccus spinifer														
GAMMARIDEA spp indet														
Oedicerotidae sp indet													1	
Monoculodes carinatus														
Perioculodes longimanus														6
Synchelidium haplocheles														1
Westwoodilla caecula	1													
Urothoe elegans														
Urothoe marina														
Harpinia antennaria														
Harpinia crenulata														
Hippomedon denticulatus														2
Tryphosella horingi												1		
Tryphosella sarsi														
Atylus vedlomensis												1		
Ampelisca sp indet														

Table 4.4 continued

	Site													
Taxa	**G20**	**G21**	**G22**	**G23**	**G24**	**G25**	**G26**	**G27**	**G28**	**G29**	**G30**	**G31**	**G32**	**G33**
Ampelisca spinipes														
Ampelisca tenuicornis	3		6									4		
Ampelisca typica														
Bathyporeia elegans														2
Bathyporeia guilliamsoniana														3
Abludomelita obtusata													4	
Cheirocratus sp ♀												1		
Microprotopus maculatus														1
Photis longicaudata														1
Ericthonius difformis														81
Jassa falcata														14
Aoridae spp ♀/indet														
Aora gracilis														17
Leptocheirus pectinatus			1											
Siphonoecetes kroyeranus														2
Unciola planipes														
Caprella acanthifera											1			
Caprella linearis														
Parvipalpus capillaceus														
Gnathia sp (praniza)														
Gnathia oxyuraea														
Idotea ?linearis														1
Astacilla dilatata														
Tanaopsis graciloides	2													
Bodotria scorpioides														
Iphinoe serrata	2													
Iphinoe trispinosa														6
Diastylis sp indet														
Diastylis laevis	1													
Diastylis lucifera												1		
DECAPODA spp juv/larvae	5	1	1	1				2		1				
CARIDEA spp juv														
Nephrops norvegicus							1				1			
Calocaris macandreae						1							1	
Paguridae spp juv/indet														
Galathea sp juv/indet			1											
Galathea intermedia														
Galathea nexa			1											
Liocarcinus pusillus			1											
Carcinus maenas												2		
Collembola sp												1		
Chaetoderma nitidulum		1	1	1		2								
Falcidens crossotus		1												
Leptochiton asellus			1									2		
Leptochiton cancellatus												2		
Emarginula fissura			3											
Lacuna vincta														5
Hyala vitrea										1				

Table 4.4 continued

	Site													
Taxa	**G20**	**G21**	**G22**	**G23**	**G24**	**G25**	**G26**	**G27**	**G28**	**G29**	**G30**	**G31**	**G32**	**G33**
Turritella communis			14				5						15	
Turbonilla crenata														
Turbonilla acuta/lactea							1			1				
Aporrhais pespelecani			1											
Euspira pulchellus					1									
Nassarius reticulatus														
Bela nebula														
OPISTHOBRANCHIA sp indet														
Cylichna cylindracea	6	2									1		1	
Philine spp	2													
Diaphana minuta														1
Haminoea sp														
Cylichnina umbilicata														
Volvulella acuminatus														
Onchidorididae spp			4											
BIVALVIA spp indet	1													1
BIVALVIA sp A														
Nucula nitidosa	2						1		1	1			1	
Nucula nucleus			9	1										
Nucula sulcata			1	12	1	1								
Yoldiella sp juv														
Mytilus edulis														
Limatula subauricularis														
Pododesmus patelliformis			1											
Myrtea spinifera			5		1		1						2	
Lucinoma borealis	2													
Thyasira flexuosa	2	2	2		1		1		1		1	4		
Kurtiella bidentata	1		8									2	1	2
Tellimya ferruginosa														6
Acanthocardia echinata														
Parvicardium pinnulatum			1											
Parvicardium scabrum														
Spisula elliptica														
Ensis ensis														
Phaxas pellucidus														
Tellina fabula														77
Tellina donacina												1		
Tellina pygmaea												1		
Gari fervensis														
Gari costulata														
Gari tellinella														
Abra spp juv >3mm						1								
Abra alba						1								
Abra nitida		14	3			1	1				1			
Gouldia minima														
Dosinia spp juv		1												8
Dosinia exoleta												2	1	
Tapes rhomboides														

Table 4.4 continued

	Site													
Taxa	**G20**	**G21**	**G22**	**G23**	**G24**	**G25**	**G26**	**G27**	**G28**	**G29**	**G30**	**G31**	**G32**	**G33**
Chamelea striatula							3							147
Clausinella fasciata														
Timoclea ovata		1	1				1							
Mysia undata		1	1											
Corbula gibba				1			2				1		1	
Hiatella arctica			2											
Thracia convexa														
Thracia phaseolina														
Cochlodesma praetenue														3
Phoronis spp	6	3	1										3	
Astropecten irregularis												1		
Asterias rubens	1													
Amphiuridae spp juv			3											
Amphiura chiajei			7	9		8	2				1		19	
Amphiura filiformis	3	1	5	2			1						1	
Amphipholis squamata				4										
Ophiocten affinis												1		
Echinocyamus pusillus												6		1
Echinocardium cordatum														1
Brissopsis lyrifera									2					
HOLOTHUROIDEA sp juv														
Leptosynapta spp juv/indet														
Leptosynapta bergensis	3													
Leptosynapta decaria														
Labidoplax sp juv														
Labidoplax buskii			3	1										
Saccoglossus sp												1		
Ammodytes tobianus														1

Table 4.5 Abundance of infauna in each of four replicate 10.3 cm diameter cores taken from three maerl beds

Taxa	**Site**	**ML01**				**ML02**				**ML03**			
	Replicate	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
Cerianthus lloydii										1			
Edwardsia claparedii			1						1				
NEMERTEA spp		1			2		1	1	1			2	
Tubulanus sp			1										
Tubulanus polymorphus										1	2	3	2
Lineidae spp		1		1								1	
NEMATODA			1	2		17	30	5	9	1	1		1
Golfingiidae spp juv						1							
Golfingia elongata						1		1					
Pisione remota									1				
Polynoidae spp juv/indet			4	3	3	1	2	1	4			1	
Subadyte pellucida									1				
Alentia gelatinosa					1		1						
Harmothoe imbricata			1										
Malmgreniella ljungmani				1									
Malmgreniella mcintoshi			2	1		1	1						1
Malmgreniella castanea					1								
Pholoe inornata		1	10	9		1				3	4	3	4
Pholoe baltica					1					1			1
Eteone longa									1				
Pseudomystides limbata													1
Eulalia expusilla		1											
Eulalia viridis						1							
Eumida sanguinea								1	1				
Paranaitis kosteriensis			1										
Glycera lapidum		2	1		2	1	1	3			3		2
Glycera rouxi												1	
Sphaerodoropsis minuta						1							
Sphaerodorum gracilis			1	1							2		
Hesionidae sp juv/indet			1										
Podarkeopsis capensis		1											
Hesiospina similis		4	3	13	3		1	1	1	5		6	2
Kefersteinia cirrata				3		2			2				
Nereimyra punctata			4	2				2					
Ophiodromus pallidus			1									2	1
Syllis sp E							2						
Trypanosyllis coeliaca			1										
Odontosyllis gibba								1					
Exogone naidina							1						
Sphaerosyllis bulbosa						3			1				
Sphaerosyllis taylori			1					1					
Platynereis dumerilii			1	1	2								
Nephtys spp juv													1
Pareurythoe borealis								1					
Aponuphis bilineata									1				
Nematonereis hebes		1	2	3	3	1	1		2				

Table 4.5 continued

Taxa	**Site**	**ML01**				**ML02**				**ML03**			
	Replicate	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
Lumbrineris gracilis			1		2						1		
Paradoneis lyra		2		1									
Aonides oxycephala				1									
Aonides paucibranchiata						3			4				
Laonice bahusiensis						1							
Minuspio cirrifera			1	4	4								
Dipolydora caulleryi					1								
Dipolydora saintjosephi				1									
Diplocirrus glaucus													1
Macrochaeta clavicornis		1	3						2	1			2
Mediomastus fragilis		8	2		2	2	1	2	2	2	1	4	4
Notomastus latericeus					1	2			2				
Maldanidae spp juv/indet			1										
Euclymeninae sp A		2											
Clymenura tricirrata		1		1									
Clymenura sp indet			1										
Clymenura johnstoni		1											
Euclymene sp. A		1		1	2								
Praxillella affinis		2											
Scalibregma celticum		1	2		3								
Scalibregma inflatum		1		1									
Polygordius spp indet								2					
Terebellides stroemi			1							2	4	1	1
Trichobranchus glacialis		2	6	11	4					1	4	1	
Eupolymnia nebulosa			1										
Pista cristata		4		1	2								
Polycirrus norvegicus			2	2	2		1		3				
Chone duneri						1	1		1				1
Chone filicaudata		1	2			3		1	2		4	1	3
Hydroides norvegicus			1			2	1	1					
Pomatoceros lamarcki		1				2	1	1					2
Pomatoceros triqueter		1				2	1						
Serpula vermicularis							1	1					
Grania spp						2			1				
COPEPODA spp			1										
OSTRACODA spp			1								1		1
MYSIDA sp indet					1								
GAMMARIDEA spp indet					1								
Apherusa bispinosa						1	1	3	15	4	10	7	10
Monoculodes subnudus			1										
Urothoe elegans		3	2	8	6								
Harpinia crenulata				1									
Metaphoxus fultoni			2	1							1		
Lysianassa plumosa		4	8	1		1	2			2	10	1	9
Socarnes erythrophthalmus			1							2	25	1	16
Liljeborgia kinahani			1					1					
Atylus vedlomensis						1		1					
Dexamine spinosa		1	1	1	1								

Table 4.5 continued

Taxa	**Site**	**ML01**				**ML02**				**ML03**			
	Replicate	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
Dexamine thea			3										
Animoceradocus semiserratus					1	1		1			5	1	4
Cheirocratus sundevallii												1	
Gammaropsis lobata						1							
Gammaropsis cornuta												2	
Ericthonius punctatus						1							
Aoridae spp ♀/indet										4			2
Aora gracilis													1
Leptocheirus hirsutimanus						3	2						
Leptocheirus pectinatus					1					3	4	3	3
Microdeutopus anomalus										1	2		
Crassicorophium bonnellii			7	5	3								1
Caprella acanthifera							1						
Phtisica marina			1	2	1		2			9	4	2	20
Pseudoparatanais batei			3	1									
Tanaopsis graciloides		1			1					4	1	4	1
Vauntompsonia cristata		2	2	3	2					27	50	31	25
Eudorella truncatula												1	
DECAPODA spp juv/larvae		1											
CARIDEA spp juv			3	2	2						1	2	
Athanus nitescens				1									
Eualus occultus			1	1									
Eualus pusiolus		2											
Anapagurus chiroacanthus									1				
Galathea sp juv/indet				1									
Galathea intermedia		2	2	3		2							
Galathea nexa			1	4	2								
Pisidia longicornis			2	3	1								
Maja squinado		1		1									
Macropodia rostrata			1										
Leptochiton sp juv			1										
Leptochiton asellus			3		1	1	3	3	1				
Leptochiton cancellatus			2		2	1	6	2	3		2		4
Lepidochitona cinerea		1		1	1								
Callochiton septemvalvis									1				
GASTROPODA sp indet				1			1						
Tectura sp juv		1		1		1	2	1	12			1	
Tectura virginea						2							
Hyala vitrea													1
Skeneopsis planorbis			1										
Euspira pulchellus					1			1					
Philine sp			1										
Nucula nucleus				1									
Modiolus modiolus								1	1				
Limaria hians			19	43	34						3	2	
Limaria loscombi		1											
Myrtea spinifera													1
Kurtiella bidentata							1						
Goodallia triangularis								1					

Table 4.5 continued

Taxa	**Site**	**ML01**				**ML02**				**ML03**			
	Replicate	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
Parvicardium scabrum			1										
Gouldia minima			2	1		1	3	1	1				
Dosinia exoleta						1			2				
Tapes rhomboides			1				1						
Clausinella fasciata			1			1	1	1	1				
Timoclea ovata								1					
Mya truncata (juv)												1	
Hiatella arctica			1										
Thracia villosiuscula									1				
ASTEROIDEA sp juv													1
Asterias rubens		1	1								2		1
Ophiothrix fragilis							4	1	2				
Amphiuridae spp juv			2	2	1		3	1	1				1
Amphipholis squamata			2			1	3	2	1	5	2	3	2
Psammechinus miliaris				1	4				1				
Ocnus sp juv				1									
Leptosynapta bergensis					1								
Leptosynapta minuta							1						
Saccoglossus spp		1		1	1								2

Table 4.6 Abundance of infauna in eight pooled 10.3 cm diameter cores taken from the MNCR phase 2 survey site WW03 in the Ascophyllum nodosum *ecad* mackaii *bed T2 in Loch Thùrnaig*

Taxa	**Abundance (no./0.067m^2)**
Eteone longa	1
Phyllodoce mucosa	2
Malacoceros fuliginosus	299
Prionospio banyulensis	1
Capitella capitata	219
Tubificidae spp indet	26
Tubificoides benedii	12
GAMMARIDEA spp indet	6
Apherusa jurinei	22
Apohyale prevostii	55
Echinogammarus marinus/obtusatus juvs	78
Echinogammarus marinus	10
Gammarus spp juv/indet	145
Gammarus sp A	1
Gammarus finmarchicus	17
Gammarus locusta	13
Jaera ischiostosa	73
DECAPODA spp juv/larvae	1
Carcinus maenas	1

Table 4.7 Community descriptors for all infaunal samples collected during the 2010 survey. Diversity indices include the Shannon-Wiener function using log_e (H'_e) and log_2 (H'_2) and Peliou's evenness index (J')

Sample	Sample area (m^2)	Abundance (no./0.1m^2)	No. taxa	H'_e	H'_2	J'	PMF	Biotope
G1	0.100	370	17	1.02	1.48	0.36	BM	SS.SMu.CFiMu.SpnMeg
G2	0.100	308	79	3.67	5.29	0.84	BM	SS.SMu.CFiMu.SpnMeg
G3	0.100	382	44	2.62	3.78	0.69	BM	SS.SMu.CFiMu.SpnMeg
G4	0.100	247	46	2.97	4.28	0.77	BM	SS.SMu.CFiMu.SpnMeg
G5	0.100	185	43	3.00	4.33	0.80	BM	SS.SMu.CFiMu.SpnMeg
G6	0.100	271	72	3.53	5.09	0.83	MC?	SS.SCS.CCS
G9	0.090	49	19	2.49	3.59	0.84	BM, FQ	SS.SMu.CFiMu.SpnMeg.Fun
G10	0.100	138	39	3.09	4.46	0.84	MC?	SS.SCS.CCS
G11	0.100	101	37	3.21	4.64	0.89		SS.SSa.CMuSa
G12	0.100	121	48	3.38	4.88	0.87		SS.Smu.CSaMu.VirOphPmax
G13	0.100	150	35	2.73	3.94	0.77	BM, FQ	SS.SMu.CFiMu.SpnMeg.Fun
G15	0.100	35	14	2.17	3.14	0.82	BM	SS.SMu.CFiMu.SpnMeg
G16	0.100	3	3	1.10	1.59	1.00	BM	SS.SMu.CFiMu.SpnMeg
G18	0.100	116	44	3.22	4.64	0.85	BM	SS.SMu.CFiMu.SpnMeg
G20	0.100	238	48	3.00	4.33	0.77	BM	SS.SMu.CFiMu.SpnMeg
G21	0.100	63	24	2.85	4.12	0.90	BM	SS.SMu.CFiMu.SpnMeg
G22	0.100	228	80	4.01	5.79	0.92		SS.SSa.CMuSa
G23	0.100	46	20	2.51	3.62	0.84	BM, FQ	SS.SMu.CFiMu.SpnMeg.Fun
G24	0.100	8	7	1.91	2.75	0.98	BM, FQ	SS.SMu.CFiMu.SpnMeg.Fun
G25	0.100	30	14	2.30	3.32	0.87	BM	SS.SMu.CFiMu.SpnMeg
G26	0.100	57	29	3.08	4.44	0.91	BM	SS.SMu.CFiMu.SpnMeg
G27	0.100	7	4	1.28	1.84	0.92	BM, FQ	SS.SMu.CFiMu.SpnMeg.Fun
G28	0.100	10	7	1.89	2.72	0.97	BM, FQ	SS.SMu.CFiMu.SpnMeg.Fun
G29	0.100	5	5	1.61	2.32	1.00	BM, FQ	SS.SMu.CFiMu.SpnMeg.Fun
G30	0.100	14	13	2.54	3.66	0.99	BM	SS.SMu.CFiMu.SpnMeg
G31	0.100	364	69	2.96	4.26	0.70		SS.SCS.CCS
G32	0.100	118	41	3.23	4.66	0.87	BM, FQ	SS.SMu.CFiMu.SpnMeg.Fun
G33	0.100	407	33	2.09	3.02	0.60	SG	SS.SMp.SSgr.Zmar
ML01	0.008	63	37	3.39	4.89	0.94	MB	SS.SMp.Mrl.Pcal.R
ML01	0.008	143	65	3.76	5.43	0.90	MB	SS.SMp.Mrl.Pcal.R
ML01	0.008	156	49	3.09	4.46	0.80	MB	SS.SMp.Mrl.Pcal.R
ML01	0.008	110	41	3.06	4.42	0.82	MB	SS.SMp.Mrl.Pcal.R
ML02	0.008	71	38	3.22	4.65	0.89	MB	SS.SMp.Mrl.Pcal.R
ML02	0.008	85	34	2.80	4.04	0.79	MB	SS.SMp.Mrl.Pcal.R
ML02	0.008	48	33	3.35	4.84	0.96	MB	SS.SMp.Mrl.Pcal.R
ML02	0.008	87	36	3.10	4.47	0.86	MB	SS.SMp.Mrl.Pcal.R
ML03	0.008	79	20	2.43	3.50	0.81	MB	SS.SMp.Mrl.Lgla
ML03	0.008	149	26	2.47	3.56	0.76	MB	SS.SMp.Mrl.Lgla
ML03	0.008	89	28	2.65	3.83	0.80	MB	SS.SMp.Mrl.Lgla
ML03	0.008	136	37	2.95	4.25	0.82	MB	SS.SMp.Mrl.Lgla
WW03	0.067	982	19	2.02	2.92	0.69	WW	LR.LLR.FVS.Ascmac

Table 4.8 Location of multiple grab sites for Arctica islandica*, with sediment type and number of live specimens and dead shell valves of* Arctica *recorded*

Site	Location	Latitude	Longitude	Date	Depth (m)	Substrate	No. live *Arctica*	No. dead shells	No. grabs
M1	Gairloch	57.73017	-5.76332	22/07/2010	4.9	shelly medium sand		1	5
M2	Gairloch	57.73723	-5.78020	23/07/2010	4.8	medium? sand		2	5
M3	Ewe	57.85492	-5.65030	26/07/2010	10.8	medium sand, many Ensis shells			5
M4	Ewe	57.85012	-5.63505	26/07/2010	22.1	fine-medium sand			5
M5	Ewe	57.84637	-5.61175	26/07/2010	11.6	muddy sand			5
M6	Ewe	57.82583	-5.59121	25/07/2010	20.9	muddy sand			5
M7	Ewe	57.82008	-5.64472	25/07/2010	50.5	sandy mud	1	4	2
M8	Ewe	57.79717	-5.65450	25/07/2010	15.6	very muddy sand		1	3
M10	Ewe	57.79439	-5.59364	25/07/2010	24.5	soft sulphurous mud			5
M11	Little Broom	57.90845	-5.41493	01/08/2010	24.1	very slightly muddy shelly medium sand		several	3
M12	Little Broom	57.90738	-5.37459	01/08/2010	13.7	muddy sand		several	1
M13	Little Broom	57.85687	-5.24715	01/08/2010	22.3-15.4	very muddy sand with pebbles and cobbles		4	5
M14	Outer	57.92675	-5.34858	04/08/2010	14.9-33.5	muddy sand with many pebbles and cobbles			4
M15	Broom	57.93260	-5.20788	02/08/2010	20.4	sandy mud	1	6	2
M16	Broom	57.92010	-5.21577	02/08/2010	11.3-20.3	muddy sand		2	5
M17	Broom	57.91270	-5.19800	02/08/2010	10.5-19.2	muddy sand	1		5

Table 4.8 continued

Site	Location	Latitude	Longitude	Date	Depth (m)	Substrate	No. live *Arctica*	No. dead shells	No. grabs
M18	Broom	57.88808	-5.14610	04/08/2010	20.4-20.5	mud with broken shells		7	5
M19	Broom	57.88166	-5.15523	04/08/2010	8.2-8.8	muddy sand			5
M20	Broom	57.88142	-5.13624	04/08/2010	10.5-12	muddy sand		1	5
M21	Broom	57.87386	-5.11789	03/08/2010	35.5-40.3	muddy sand with pebbles			5
M22	Broom	57.87040	-5.11755	03/08/2010	8.0-23.0	muddy sand with pebbles			5
M23	Broom	57.86550	-5.09876	03/08/2010	9.7-17.9	muddy sand			5
M24	Broom	57.85300	-5.10463	03/08/2010	8.5-15.5	sandy mud	1		4
M25	Broom	57.84799	-5.08520	03/08/2010	11.2-17.6	mud			5
M26	Broom	57.83490	-5.08673	03/08/2010	23.6-6.5	mud			5

Appendix 5 Site details for all MNCR phase 2 surveys and spot dives

Table 5.1 Site details for MNCR phase 2 transect and site reconnoitre (spot) dives. Int = intertidal

Site	Location	Tar-get PMF	Latitude	Long'de	Feature	Depth at start (m)	Depth at end (m)	Bearing (°M)	Date	Surv-eyors
LH01	Sruth Lagaidh Narrows, Loch Broom	FS, HM	57.87553	-5.12717	transect start	13.0	14.0	10	12/08/2010	DH, CM
ML01	Badluarach, Little Loch Broom	MB, FS	57.90002	-5.38523	transect start	7.1	7.0	320	09/08/2010	DH, CM
ML02	Mol Mòr, Tanera More	MB	58.00295	-5.41993	transect start	13.8	14.1	180	13/08/2010	DH, CM
ML03	Poolewe, Loch Ewe	MB, FS	57.77897	-5.61965	transect start	5.9	5.9	180	17/08/2010	DH, CM
ML04	South-west Loch Gairloch	MB	57.70460	-5.77168	transect start	14.3	14.9	35	20/08/2010	DH, CM
ZM01	Gruinard Bay	SG	57.88372	-5.43617	transect start	2.0	2.7	280	15/08/2010	DH, CM
ZM02	Caolas Beag, Loch Gairloch	SG	57.74445	-5.80323	transect start	3.0	3.5	250	19/08/2010	DH, CM
OE01	Ob na Bà Ruaidhe, Loch Ewe	OE	57.78942	-5.60467	survey centre	-0.4			18/08/2010	DH, CM
ME01	Ullapool River, Loch Broom	ME	57.89830	-5.17135	survey centre	int	int		10/08/2010	CM
WW01	Badachro, Loch Gairloch	WW	57.69863	-5.72435	mid transect	int	int		21/07/2010	CM
			57.69868	-5.72437	transect bottom	int	int			
			57.69857	-5.72435	transect top	int	int			
WW02	Loch Thùrnaig, Loch Ewe	WW	57.78963	-5.60520	mid transect	int	int		10/08/2010	CT, SH
			57.78967	-5.60548	transect bottom	int	int			
			57.78959	-5.60491	transect top	int	int			
WW03	Loch Thùrnaig, Loch Ewe	WW	57.79390	-5.58117	transect bottom	int	int		20/08/2010	CT, EG

Table 5.1 continued

Site	Location	Target PMF	Latitude	Long'de	Feature	Depth at start (m)	Depth at end (m)	Bearing (°M)	Date	Surveyors
SD1	Carn Skerries N	FS	57.96466	-5.36543	start of reconnoitre	20.1		170	13/08/2010	CT
SD2	Carn Skerries S	FS	57.95759	-5.36150	start of reconnoitre	15.7		90	13/08/2010	CM
SD3	The Sound, Loch Ewe	HM	57.84358	-5.61482	start of reconnoitre	12.8			18/08/2010	CT
			57.84380	-5.61643	end of reconnoitre					

Appendix 6 SACFOR abundance data for all MNCR phase 2 surveys

Table 6.1 SACFOR abundance records for species recorded during MNCR phase 2 surveys at four maerl bed sites (ML01-4). Localised abundance in brackets

Taxa	ML01	ML02	ML03	ML04
Scypha ciliata	P	P		
Clione celata		P		P
Myxilla? sp.			P	
Hydrozoa spp.				R
Obelia geniculata	P			P
Cerianthus lloydii	O(F)		O	
Actiniaria sp.		P		
Chaetopterus variopedatus	P	P		P
Eupolymnia nebulosa	F			P
Lanice conchilega				R(O)
Sabellidae sp.	(F)			
Hydroides sp.	F	F	P	F(O)
Pomatoceros spp.	F	F	O	F(O)
Protula/Serpula	P			
Protula tubularia		P		
Spirorbidae spp.				P
Balanus balanus				P
Balanus crenatus		R		
Palaemon serratus		O		
Pandalus sp.?				O
Pagurus bernhardus	F	O	P	P
Galathea intermedia		R(O)		F
Munida rugosa	P			
Ebalia sp.	P		P	
Inachus sp.	P		P	O
Macropodia sp.	P	O	P	
Cancer pagurus	P	P		F
Liocarcinus corrugatus	O	O		
Liocarcinus depurator	O	P	O	O
Necora puber	P	P		P
Carcinus maenas			O	
Polyplacophora spp.	O	P	P	
Tectura sp.	F			
Tectura testudinalis				F
Tectura virginea		O		
Gibbula magus				P
Gibbula tumida		P		R
Lacuna vincta		A		
Turritella communis			P	
Hinia incrassata		P		
Limaria hians	C			
Aequipecten opercularis		O	P	
Pecten maximus				P
Lutraria lutraria?	P			
Dosinia exoleta			P	
Mya sp.	P			

Table 6.1 continued

Taxa	ML01	ML02	ML03	ML04
Crisiidae spp.	P			
Escharoides coccinea		P		
Fenestrulina malusii		P		
Membranipora membranacea	P	P		
Scrupocellaria reptans		P		
Scrupocellaria scruposa		P		
Scrupocellaria sp.	P			
Astropecten irregularis	P		F	
Luidia ciliaris		F		P
Porania pulvillus	P			P
Henricia sanguinolenta	P	P		P
Asterias rubens	C	P	C	
Marthasterias glacialis	F	F	F	F
Echinus esculentus			F	
Diplosoma listerianum	P	P		
Ascidiella sp.	P			
Gadidae sp.			P	
Trisopterus minutus				P
Taurulus bubalis	O	O	P	P
Pholis gunnellus	O	P		P
Ammodytes sp.				P
Callionymus lyra	O	P		P
Gobiusculus flavescens	F		P	
Pleuronectiformes sp.	P			
Stylonema alsidii			R	
Erythrotrichia carnea	R		R	
Porphyropsis coccinea		R		
Audouinella daviesii				R
Audouinella floridula			S	
Audouinella saviana	R			
Audouinella saviana?			R	
Scinaia turgida		O		R
Bonnemaisonia asparagoides		C		O
Trailliella intricata	S	R	R	O
Callophyllis laciniata		R		
Kallymenia reniformis				R
Corallinaceae (indet. pink crust)				R
Corallina officinalis	R			
Lithothamnion glaciale			F	
Phymatolithon calcareum	A	A	O	C
Phyllophora crispa	R			R
Plocamium cartilagineum				O
Halarachnion ligulatum		R		
Calliblepharis ciliata?		R		
Rhodophyllis divaricata	R	R	R	R
Cordylecladia erecta				R
Chylocladia verticillata				R
Aglaothamnion sp.?			R	

Table 6.1 continued

Taxa	**ML01**	**ML02**	**ML03**	**ML04**
Aglaothamnion bipinnatum		R		R
Aglaothamnion byssoides	R			
Ceramium sp.		R		
Ceramium nodulosum	R			
Pleonosporium borreri				R
Pterothamnion plumula	R			
Ptilota gunneri		R		
Delesseriaceae sp.		R		
Acrosorium venulosum	R			R
Apoglossum ruscifolium				R
Cryptopleura ramosa				R
Nitophyllum punctatum			R	
Phycodrys rubens		R		R
Erythroglossum laciniatum		R		
Heterosiphonia plumosa				F
Heterosiphonia japonica	C	C		F
Brongniartella byssoides	R	R	C	R
Polysiphonia sp.	R	R		R
Polysiphonia furcellata			O	
Pterosiphonia parasitica		R		R
Phaeophyceae (indet. brown crust)	R	R		R
Ectocarpus sp.	P			
Ectocarpus fasciculatus	R			
Ectocarpus siliculosus	R			
Elachista sp.	R			
Myriactula sp.?			R	
Acrothrix gracilis?	R		R	
Mesogloia vermiculata	R			
Cutleria multifida	R			
Sphacelaria sp.			R	
Sphacelaria cirrosa	R	R	R	R
Sphacelaria fusca			R	
Halopteris filicina				R
Dictyota dichotoma	O	O	R	R
Sporochnus pedunculatus		R		
Desmarestia aculeata	R	R	R	O
Desmarestia viridis	F			R
Asperococcus bullosus	O		O	
Petalonia sp.?	R			
Chorda filum	C			
Laminaria hyperborea		R		R
Saccharina latissima	R	O	R	F
Ulva sp.		R		R
Cladophora sp.	R			
Rhizoclonium riparium			R	
Schizonema sp.		R	R	
Lyngbya sp.			R	
No. taxa	69	63	45	62

Table 6.2 SACFOR abundance records for species recorded during MNCR phase 2 surveys at flame shell (LH01), oyster (OE01) and blue mussel (ME01) sites. Localised abundance in brackets

Taxa	LH01	OE01	ME01
Clione celata	P		
Esperiopsis fucorum	P		
Hydractinia echinata		P	
Lafoea dumosa	P		
Halecium halecinum	P		
Halopteris catharina	P		
Kirchenpaueria pinnata	P		
Nemertesia antennina	P		
Nemertesia ramosa	F		
Plumularia setacea	P		
Polyplumaria frutescens	P		
Sertularia argentea	P		
Anemonia viridis		P	
Lineus sp.	P		
Arenicola marina		P	
Lanice conchilega		P	
Hydroides sp.	F		
Pomatoceros spp.	F	F	
Spirorbidae spp.			C
Verruca stroemia	P		
Semibalanus balanoides			R
Balanus balanus	P		
Balanus crenatus			R
Elminius modestus		P	
Pagurus bernhardus	O	F(C)	P
Munida rugosa	O		
Inachus sp.	F		
Cancer pagurus	F		
Necora puber	O		
Carcinus maenas	P	F	P
Polyplacophora spp.			P
Leptochiton asellus	P		
Tectura testudinalis	P		
Patella vulgata			F
Gibbula umbilicalis			F
Littorina littorea		F(O)	F
Littorina mariae			F
Littorina obtusata			P
Buccinum undatum		O	
Archidoris pseudoargus		P	
Mytilus edulis		P	F(C)
Modiolus modiolus		P	P
Ostrea edulis		F	
Chlamys sp.		P	
Aequipecten opercularis	P		

Table 6.2 continued

Taxa	LH01	OE01	ME01
Pecten maximus	P		
Anomiidae spp.	P		
Cryptosula pallasiana		P	
Parasmittina trispinosa	P		
Microporella ciliata	P		
Fenestrulina malusii	P		
Buskea dichotoma	P		
Electra pilosa	P		
Solaster endeca	P		
Asterias rubens	F	O	
Marthasterias glacialis	F		
Ophiothrix fragilis	(S)		
Ophiocomina nigra	F		
Amphiura spp.	P		
Ophiura albida	F		
Psammechinus miliaris		P	
Echinus esculentus	F		
Ascidiacea sp.		P	
Ciona intestinalis		P	
Ascidiella aspersa		P	
Myoxocephalus scorpius		P	
Pholis gunnellus	P		
Pomatoschistus minutus		P	
Rhodophyceae (red crusts)			R
Erythrotrichia carnea		R	R
Audouinella daviesii			R
Bonnemaisonia asparagoides	R		
Trailliella intricata			R
Peyssonnelia sp.			R
Peyssonnelia dubyi	R		
Hildenbrandia spp.		F	R
Hildenbrandia rubra		P	
Corallinaceae (indet. pink crust)		R	O
Corallinaceae (indet. light pink crust)			R
Corallina officinalis			O
Lithothamnion glaciale	O		
Phyllophora crispa	R		
Chondrus crispus		R	R
Polyides rotundus		R	
Plocamium cartilagineum	C		R
Furcellaria lumbricalis			R
Rhodophyllis divaricata	F		
Chylocladia verticillata		R	
Ceramium sp.		R	
Ceramium nodulosum		R	R
Compsothamnion gracillimum?	R		
Pleonosporium borreri	R		
Spermothamnion repens		R	

Table 6.2 continued

Taxa	LH01	OE01	ME01
Delesseria sanguinea	R		
Phycodrys rubens	O		R
Erythroglossum laciniatum	R		
Heterosiphonia plumosa	R		
Heterosiphonia japonica	O	R	R
Brongniartella byssoides	R		
Polysiphonia fucoides		O	
Polysiphonia stricta		R	
Pterosiphonia parasitica	O		
Ectocarpaceae sp.			R
Ectocarpus siliculosus		P	R
Chilionema reptans?			R
Elachista fucicola			R
Sphacelaria sp.		R	
Sphacelaria cirrosa			R
Asperococcus fistulosus		R	R
Chorda filum		(A)	
Laminaria hyperborea			R
Saccharina latissima	R		
Ascophyllum nodosum		R	
Fucus serratus			A
Fucus vesiculosus		O	A
Ulva intestinalis			R
Ulva prolifera		R	
Ulva lactuca			R
Chaetomorpha ligustica			R
Cladophora rupestris			R
Schizonema sp.		R	
Calothrix confervicola?		R	
No. taxa	57	45	41

Table 6.3 SACFOR abundance records for species recorded during MNCR phase 2 surveys at two seagrass bed sites (ZM01-2). Localised abundance in brackets

Taxa	ZM01	ZM02
Haliclystus auricula		R
Lucernariopsis campanulata	P	
Hydrozoa sp.		R
Hydrozoa spp.	P	
Arenicola marina	F	
Lanice conchilega	P	
Serpulidae sp.	P	O(F)
Mysidacea sp.	P	
Idotea spp.		F
Idotea baltica	P	P
Idotea linearis		P
Crangon crangon	P	
Pagurus bernhardus	C	O(F)
Macropodia sp.	O(F)	O
Cancer pagurus	P	P
Liocarcinus sp.		O
Liocarcinus depurator	O	O
Carcinus maenas	P	O
Lacuna vincta	F	R(O)
Littorina mariae		P
Rissoidae sp.	F	R(O)
Ensis sp.?	P	
Chamelea gallina	P	
Bryozoan crust		P
Astropecten irregularis	F	
Asterias rubens	F	P
Amphiura spp.	A	
Ophiura ophiura	P	
Echinocardium cordatum	P	
Aspitrigla cuculus	P	
Taurulus bubalis	P	
Cyclopterus lumpus		P
Pomatoschistus minutus	P	
Pleuronectiformes sp.	O	O
Erythrotrichia carnea	R	R
Sahlingia subintegra	R	
Audouinella sp.		R
Audouinella daviesii?	R	
Audouinella floridula	R	
Trailliella intricata	R	R
Rhodophysema georgii		R
Peyssonnelia dubyi	R	

Taxa	ZM01	ZM02
Corallinaceae (indet. pink crust)	R	
Pneophyllum caulerpae		R
Gracilariopsis longissima	R	R
Rhodophyllis divaricata		R
Chylocladia verticillata		R
Lomentaria clavellosa		R
Aglaothamnion gallicum?		R
Callithamnion corymbosum	R	
Ceramium cimbricum?	R	
Ceramium nodulosum	R	R
Pterothamnion plumula		R
Seirospora interrupta		R
Spermothamnion repens	R	R
Nitophyllum punctatum		R
Heterosiphonia japonica	R	R
Polysiphonia sp.		R
Polysiphonia fucoides	R	
Ectocarpus sp.		R
Ectocarpus siliculosus	A	R
Hincksia ovata?		R
Ralfsia verrucosa?		R
Myrionema magnusii		R
Protectocarpus speciosus?		R
Leptonematella fasciculata?		R
Acrothrix gracilis?	R	R
Mesogloia vermiculata		R
Sphacelaria sp.	R	
Sphacelaria cirrosa		R
Desmarestia aculeata	R	
Asperococcus fistulosus		R
Asperococcus bullosus	R	R
Punctaria latifolia		R
Scytosiphon lomentaria		R
Chorda filum	F	C
Saccharina latissima	R	
Ulva sp.		R
Ulva lactuca?		R
Chaetomorpha ligustica		R
Cladophora sericea		R
Calothrix confervicola?	R	
Zostera marina	A	S
No. taxa	49	56

Table 6.4 SACFOR abundance records for species recorded during MNCR phase 2 surveys at three sea loch egg wrack bed sites (WW01-3).

Taxa	**WW01**	**WW02**	**WW03**
Actinia equina		R	O
Arenicola marina	R		
Spirorbidae spp.	R		
Semibalanus balanoides	O	O	R
Balanus balanus		R	
Gammaridae spp.	C	S	C
Carcinus maenas	P	C	C
Patella vulgata		R	O
Littorina sp.	F		
Littorina littorea	C	C	C
Littorina obtusata	C	C	F
Littorina saxatilis	F		
Mytilus edulis	R	R	R
Cerastoderma edule	P	R	O
Anguilla anguilla	C	C	
Hildenbrandia spp.	O	P	
Polysiphonia lanosa	O	A	C
Ectocarpaceae sp.	R		
Ascophyllum nodosum	R	R	R
Ascophyllum nodosum ecad *mackaii*	S	S	S
Fucus vesiculosus	R	R	R
Pelvetia canaliculata		R	
No. taxa	18	17	13

Appendix 7 Localised maerl bed survey data

Table 7.1 Locational and observational data from the dive survey of the maerl bed at Badluarach, Little Loch Broom

Site	D1	D2	D3	D4	D5	D6
Date	08/08/2010	08/08/2010	08/08/2010	08/08/2010	08/08/2010	08/08/2010
Time	12:40	12:53	13:06	13:20	13:55	14:20
Latitude	57.90080	57.90058	57.90028	57.90002	57.89988	57.89945
Longitude	-5.38420	-5.38442	-5.38455	-5.38480	-5.38485	-5.38540
Depth (m)	15.1	11.6	9.4	7.6	6.8	5.3
Live maerl (%)	5	20	60	75	80	<1
Dead maerl (%)	35	15	15	10	20	20
Mean thickness live maerl (cm)	<2	4	6	9	7 (max 14)	0
Limaria nest cover (%)	0	0	0	0	0	0
Mean thickness Limaria nest (cm)	0	0	0	0	0	0
Limaria seen? (Y/N)	N	N	N	Y	Y	N
Isolated Limaria nests seen? (Y/N)	N	N	N	N	N	N
Sediment type	Soft sand with occasional boulders	Broken maerl on soft sand	Sandy maerl	Sandy maerl	Sandy mud with maerl fragments	Muddy shell sand
Kelp cover (%)	8	<1	3	<1	10	<5
Main kelp species	*Sacc-harina*	*Sacc-harina*	*Sacc-harina*	*Sacc-harina*	*Sacc-harina*	*Sacc-harina*
Algal turf cover (%)	10	50	70	75	50	30
Surveyor	CT	CT	CT	CT	AL	AL
Comments	At 20.5m CD (bottom of shot) broken maerl cover of 40%	At 13.6 m CD noticeable increase of maerl	At 8.8 m CD some very thick maerl clumps with small *Limaria*	Some very thick patches of maerl 12 - 15 cm thick	Edge maerl 6.0 m CD (100% dead)	5.3 m CD edge of bed of dense *L.hyper-borea* extending inshore
Biotope		Mrl.Pcal.R	Mrl.Pcal.R	Mrl.Pcal.R	Mrl.Pcal.R	
PMF		MB	MB	MB	MB	

Table 7.1 continued

Site	D7	D8	D9	D10	D11	D12
Date	08/08/2010	08/08/2010	08/08/2010	08/08/2010	09/08/2010	08/08/2010
Time	15:30	15:43	15:56	16:10	16:35	16:00
Latitude	57.89890	57.89848	57.89807	57.89780	57.89753	57.90210
Longitude	-5.37922	-5.37983	-5.38007	-5.38032	-5.38055	-5.38893
Depth (m)	14.0	8.4	5.6	3.3	2.2	10.9
Live maerl (%)	0	70	50	5	<<1	10
Dead maerl (%)	15	20	40	80	90	5
Mean thickness live maerl (cm)	0	5 (max 10)	4 (max 7)	1.5 (max 3)	0	5
Limaria nest cover (%)	0	0	0	0	0	0
Mean thickness Limaria nest (cm)	0	0	0	0	0	0
Limaria seen? (Y/N)	N	Y	Y	N	N	N
Isolated Limaria nests seen? (Y/N)	N	N	N	N	N	N
Sediment type	Muddy sand with shell and maerl	Maerl gravel on sand	Maerl gravel on sand	Maerl gravel on sand	Maerl sand	Muddy sand
Kelp cover (%)	5	15	1	0	5	<1
Main kelp species	*Sacc-harina*	*Sacc-harina*	*Sacc-harina*		*Sacc-harina*	*Saccharina*
Algal turf cover (%)	5	25	70	25	20	0
Surveyor	CM	CM	CM	CM	AL	GS
Comments	Live maerl starts ~11 m CD (moving deep to shallow)		*Limaria* small (~4 mm).		Dead maerl is 'maerl sand'	At 19.4 m CD - 20% dead maerl on muddy sand; at 14.4 m CD - 80% dead maerl on muddy sand; at 10.8 m CD - 5% dead maerl & 5% live maerl
Biotope		Mrl.Pcal.R	Mrl.Pcal.R			Mrl.Pcal.Nmix
PMF		MB	MB			MB

Table 7.1 continued

Site	D13	D14	D15	D16
Date	08/08/2010	08/08/2010	08/08/2010	09/08/2010
Time	16:17	16:34	16:50	16:10
Latitude	57.90192	57.90143	57.90103	57.90057
Longitude	-5.38938	-5.38977	-5.38997	-5.39027
Depth (m)	9.1	8.3	8.1	6.9
Live maerl (%)	80	70	1	0
Dead maerl (%)	10	10	70	0
Mean thickness live maerl (cm)	5 (max 15)	5 (max 10)	2	0
Limaria nest cover (%)	0	0	0	0
Mean thickness Limaria nest (cm)	0	0	0	0
Limaria seen? (Y/N)	N	N	N	N
Isolated Limaria nests seen? (Y/N)	N	N	N	N
Sediment type	Muddy sand	Muddy sand	Muddy sand	Poorly sorted medium sand with shells
Kelp cover (%)	2-5	2	2	5
Main kelp species	*Saccharina*	*Saccharina*	*Saccharina*	*Saccharina*
Algal turf cover (%)	40	2	20	30
Surveyor	GS	GS	GS	DH
Comments	*Dictyota dichotoma* 30%, filamentous red algae 10% cover		*Trailliella*	
Biotope	Mrl.Pcal.R	Mrl.Pcal.Nmix		
PMF	MB	MB		

Table 7.2 Locational and observational data from the dive survey of the maerl bed off Poolewe, Loch Ewe

Site	**D1**	**D2**	**D3**	**D4**	**D5**
Time	1025	1103	1136	1206	1242
Depth (m)	7.1	6.0	5.8	4.7	5.1
Live maerl cover (%)	5	25	10	<2	2-5
Mean thickness live maerl (cm)	2	4	2-4	3	4-5
Dead maerl cover (%)	50	50	60	60	90
Sediment type	Slightly silty sand with superficial maerl gravel	Muddy sand with dead maerl fragments	Mud	Mixed very fine silt with maerl gravel and scattered shells	Maerl gravel, broken shells, mud with Modiolus shells
Limaria nest cover (%)	0	0	0	0	0
Limaria seen? (Y/N)	Y	N	N	Y	Y
Isolated Limaria nests seen? (Y/N)	N	N	N	Y	N
Algal turf/mat cover (%)	10	50	80	95	60
Algal turf mainly loose / filamentous (Y/N)	Y	N	Y	Y	N
Kelp cover (%)	90	0	<1	0	0
Main kelp species	*Saccharina*	N/A	*Saccharina*	N/A	N/A
Comments	Areas of maerl were bound together by *Desmarestia* and filamentous algae rather than by *Limaria* byssus threads. About 2 *Limaria* seen, both small (~4 mm). Some areas beyond 3 m of base of shot were clear of kelp but similarly had very low cover of live maerl	Maerl with dense cover of short fine filamentous algae	*Asperococcus* (C), small *Asterias* (S)	Sparse discrete nests with single ~3cm *Limaria* within (x3 nests opened). Some very small (~4mm); also present in clumped maerl material. *Marthasterias*, *Astropecten*, *Asterias*, *Asperococcus* on filamentous algal mat	Clumps of 2 *Limaria* per m^2. Urchins, *Astropecten*, *Asterias* and *Marthasterias*
Surveyor	DH	CM	GS	BJ	JP
Latitude	57.78224	57.77896	57.77826	57.77344	57.77583
Longitude	-5.62552	-5.61965	-5.62643	-5.62316	-5.61813
Biotope	SS.SMp.KSwSS.LsacR.Sa	SS.SMp.Mrl.Lgla	SS.SMp.Mrl.Lgla	SS.SMp.KSwSS.Tra	SS.SMp.KSwSS
PMF	KS	MB	MB	KS	KS

Table 7.2 continued

Site	D6	D7	D8	D9	D10
Time	1325	1403	1434	1506	1538
Depth (m)	4.7	6.1	4.6	4.2	7.5
Live maerl cover (%)	2	2	<1	<1	1-2
Mean thickness live maerl (cm)	2	1	N/A	N/A	N/A
Dead maerl cover (%)	25	50	90	75	60
Sediment type	Muddy sand with superficial maerl gravel	Sandy mud with dense maerl fragments	Mud	Filamentous red algal mat on mostly dead maerl on top of very fine silt.	Maerl gravel with mud patches and broken shells
Limaria nest cover (%)	0	0	0	0	0
Limaria seen? (Y/N)	Y	N	Y	N	Y
Isolated Limaria nests seen? (Y/N)	N	N	N	N	N
Algal turf/mat cover (%)	60	90	100	100	60
Algal turf predominantly loose / filamentous (Y/N)	Y	Y	Y	Y	N
Kelp cover (%)	0	5	0	0	0
Main kelp species	N/A	*Saccharina*	N/A	N/A	N/A
Comments	Nest-like material present but mostly composed of maerl bound together by filamentous algae. Small (~4 mm) *Limaria* common. Abundant (~70% cover) of *Ophiothrix*, *Modiolus* present.	*Philine* 1-9 per 0.1 m^2	100% cover of *Trailliella*. *Limaria* very small (c.1 cm)	?*Trailliella* mattress of 35-40cm thickness. Very loose above dead maerl below (a few scattered twiglets of live maerl). A couple of live *Modiolus* in the silty sediment below the algal canopy.	1 juvenile *Limaria* seen. Occasional *Cerianthius* and starfish (*Astropecten*, *Asterias* and *Marthasterias*)
Surveyor	DH	CM	GS	BJ	JP
Latitude	57.77379	57.77849	57.77274	57.77074	57.78255
Longitude	-5.61188	-5.61276	-5.61563	-5.61848	-5.63366
Biotope	SS.SMx.CMx.OphMx	SS.SMp.KSwSS.Tra	SS.SMp.KSwSS.Tra	SS.SMp.KSwSS.Tra	SS.SMp.KSwSS.LsacR.Sa
PMF		KS	KS	KS	KS

Appendix 8 Localised flame shell bed survey data

Table 8.1 Locational and observational data *from the dive survey of the flame shell bed in Sruth Lagaidh narrows*

Site	**D1**	**D2**	**D3**	**D4**	**D5**
Dive no.	1	1	2	2	3
Surveyor	CT	CT	AL	AL	GS
Date	11/08/2010	11/08/2010	11/08/2010	11/08/2010	11/08/2010
Time	1146	1211	1344	1423	1456
Depth (m)	13.2	2.5	19.9	14.4	12.8
Latitude	57.87642	57.87583	57.87208	57.87130	57.87722
Longitude	-5.13027	-5.13055	-5.11917	-5.12013	-5.13467
Nest cover (%)	0	0	0	0	0
Nest thickness (cm)	0	0	0	0	0
Limaria present (Y/N)	N	N	N	N	N
Substrate	Soft sand / mud underlying cobbles	Sandy gravel with large stones	Muddy sand, scattered cobbles & boulders and broken shell.	Muddy sand, scattered cobbles & boulders and broken shell.	Muddy sand with pebbles & cobbles
Brittlestar cover (%)	95	<5	0	0	0
Algal turf cover (%)	0	0	0	0	0
Comments	Following 200° bearing from site, still heavily covered brittlestars but sediment becomes slightly coarser with less stones. At about 3.8 m large stones with large *Sacc. latissima* covered with brittlestars. *Modiolus* shells.	Very large *Sacc. latissima* with brittlestars on holdfasts	*Echinus*, *Munida* (6 per 5 m x 5 m), *Asterias*, *Nemertesia antennina*, hermits, *Necora*, *Liocarcinus depurator*, 1 painted goby	Poor cod (shoaling), *Munida*, 1 *Pecten*, *Nemertesia antennina* & *ramosa*, *Crossaster*, hermits, *Asterias*, *Serpula*, *Echinus*	
Modiolus present (Y/N)	N	N	Y	Y	N
Modiolus shell present (Y/N)	Y	N	N	N	N
Modiolus cover (%)	0	0	1	1	0
Modiolus abundance	0	0	11 per 5m x 5 m	12 per 5m x 5 m	0
PMF					
Biotope	SS.SMx.CMx. OphMx				

Table 8.1 continued

Site	D6	D7	D8	D9	D10
Dive no.	3	4	4	5	6
Surveyor	GS	CM	CM	SH	GS
Date	11/08/2010	11/08/2010	11/08/2010	11/08/2010	12/08/2010
Time	1528	1551	1612	1700	1128
Depth (m)	2.6	11.8	8.9	14.7	15.0
Latitude	57.87587	57.87538	57.87517	57.87627	57.87443
Longitude	-5.13460	-5.12707	-5.12773	-5.12562	-5.12558
Nest cover (%)	0	50	0	0	65
Nest thickness (cm)	0	4	0	0	5
Limaria present (Y/N)	N	Y	N	N	Y
Substrate	Muddy sand	Shelly sand with pebble & cobble cover	Very shelly medium to coarse sand	Shelly mud, cobbles, occasional boulder	Muddy sand & shell gravel
Brittlestar cover (%)	0	<1	0	90	0
Algal turf cover (%)	1	30	<1	0	0
Comments	100% cover *Sacc. latissima* & *Chorda*	*Sacc. latissima* 5%. Cape kelp @ 10 m. *Limaria* bed stopped at 9.6 m	*Sacc. latissima* 20% cover - park.	*Cancer*, *Asterias*, *Echinus*, *Munida*, hermits, *Nemertesia*, *Carcinus*	
Modiolus present (Y/N)	N	N	N	N	N
Modiolus shell present (Y/N)	Y (<1%)	N	N	N	Y <1%
Modiolus cover (%)	0	0	0	0	0
Modiolus abundance	0	0	0	0	0
PMF		FS			FS
Biotope		SS.SMx.Imx. Lim		SS.SMx.CMx. OphMx	SS.SMx.Imx. Lim

Table 8.1 continued

Site	D11	D12	D13	D14	D15
Dive no.	6	7	7	8	8
Surveyor	GS	SH	SH	AL	AL
Date	12/08/2010	12/08/2010	12/08/2010	12/08/2010	12/08/2010
Time	1153	1219	1256	1639	1721
Depth (m)	25.4	16.0	26.7	16.2	13.2
Latitude	57.87445	57.87368	57.87403	57.87632	57.87607
Longitude	-5.12443	-5.12430	-5.12398	-5.12797	-5.12775
Nest cover (%)	60	0	0	0	25
Nest thickness (cm)	5	0	0	0	3.5
Limaria present (Y/N)	Y	N	N	N	Y
Substrate	Muddy sand & shell gravel	Shelly sand and pebbles	Cobbles on shelly sand	Muddy sand, gravel and pebbles	Muddy shell sand, pebbles & small cobbles
Brittlestar cover (%)	0	0	0	90	0
Algal turf cover (%)	0	0	0	0	0
Comments		Butterfish, *Turritella*, *Munida*, sunstar, *Carcinus*, *Nemertesia*	*Lanice*, *Munida*, *Echinus*, *Nemertesia*, cushion star, *Asterias*	Brittlestar bed, *Echinus*, *Calliostoma*, *Liocarcinus depurator*, *Luidia*, *Mathasterias*. 15.4 m edge of brittlestars onto dense pebbles on muddy sand, 14.5 m *Limaria* clear edge	*Inachus*, *Macropodia*, *Cancer*, *Mathasterias*, *Nemertesia ramosa*, *Asterias*, *Echinus*. Isolated nests upper edge 10.4 m some red algae
Modiolus present (Y/N)	N	Y	N	N	N
Modiolus shell present (Y/N)	<1%	7 seen	N	N	N
Modiolus cover (%)	0	0	0	0	0
Modiolus abundance	0	1 seen	0	0	0
PMF	FS				FS
Biotope	SS.SMx.Imx. Lim			SS.SMx.CMx. OphMx	SS.SMx.Imx. Lim

Table 8.2 Survey sites, with physical and biological data obtained from the grab survey of Sruth Lagaidh narrows, 12th August 2010

Site	Latitude	Longitude	Depth (m)	Substrate	Sample area (m^2)	Video site	Biotope	PMF
L10	57.87798	-5.13360	15.7	muddy sand	0.1	FS10		
L11	57.87874	-5.13272	15.7	muddy sand with pebbles	0.1	FS11		
L12	57.87790	-5.12898	16.4	muddy sand	0.1	FS12		
L17	57.87708	-5.12507	16.8	muddy sand	0.1	FS17		
L19	57.87550	-5.12243	16.7	*Limaria* nest material, with *Limaria*	0.1	FS19	SS.SMx. IMx.Lim	FS
L18	57.87653	-5.12210	14.4	*Limaria* nest material, with *Limaria*	0.1	FS18	SS.SMx. IMx.Lim	FS
L13	57.87714	-5.12969	31.0	muddy sand with abundant *Ophiothrix*	0.045	FS13	SS.SMx. CMx.OphMx	
L18a	57.87608	-5.12002	28.4	muddy sand with pebbles	0.1			
L19a	57.87503	-5.12098	35.5	pebbles and cobbles on shelly medium sand	0.1			
L20a	57.87475	-5.12315	35.1	sandy mud with pebbles and cobbles	0.1			

Appendix 9 Localised seagrass survey bed data

Table 9.1 Diver and glass bucket observations at a number of waypoints (WPT) in Gruinard Bay of Zostera marina *cover and shoot density. Density utilises a simplified SACFOR scale (A ≥1-9/0.1 m^2, C = 1-9/m^2, R <1-9/m^2, N = absent)*

WPT	Depth (m)	Cover (%)	Shoot density	Substrate	Comments	Method	Latitude	Longitude
POI041	1.5	0	N	rippled sand with Arenicola		diver (CM)	57.88368	-5.43593
POI042	1.9	25	A	rippled sand with Arenicola	start of *Zostera*; shoot density 1-9/0.1m^2	diver (CM)	57.88370	-5.43608
POI043	3.2	10	C	rippled sand with Arenicola	shoot density 1-9/m^2; coverage reaches 25% between this and following site	diver (CM)	57.88408	-5.43697
POI044	3.6	10	C	rippled sand with Arenicola	shoot density 8/m^2; *Zostera* ends here	diver (CM)	57.88418	-5.43730
POI045	3.7	0	N	rippled sand with Arenicola		diver (CM)	57.88423	-5.43762
POI046	1.3	0	N	Arenicola sand	drift *Zostera*	glass bucket	57.86108	-5.45775
POI047	0.6	<1	R	Arenicola sand	start of *Zostera* - patches	glass bucket	57.86135	-5.45750
POI048	0.3	10	C	Arenicola sand	density reaches 20% between this and next site	glass bucket	57.86140	-5.45738
POI049	0	10	C	Arenicola sand		glass bucket	57.86152	-5.45722
POI050	-0.4	15	C	Arenicola sand		glass bucket	57.86167	-5.45708
POI051	-0.5	<1	R	Arenicola sand	end of *Zostera*	glass bucket	57.86175	-5.45705
POI052	0.3	30	A	Arenicola sand	some bare patches	glass bucket	57.86157	-5.45772
POI054	0.3	10	C	Arenicola sand		glass bucket	57.86100	-5.45712
POI055	0	10	C	Arenicola sand		glass bucket	57.86088	-5.45667
POI056	-0.1	0	N	Arenicola sand		glass bucket	57.86047	-5.45660
POI057	0.2	0	N	Arenicola sand		glass bucket	57.86015	-5.45683

Table 9.1 continued

WPT	Depth (m)	Cover (%)	Shoot density	Substrate	Comments	Method	Latitude	Longitude
POI058	0.2	0	N	Arenicola sand		glass bucket	57.85808	-5.45850
POI059	2.3	0	N	rippled sand		glass bucket	57.85838	-5.45982
POI060	0.1	0	N	rippled sand		glass bucket	57.85750	-5.45925
POI061	2.4	0	N	rippled sand		glass bucket	57.85788	-5.46065
POI062	0.4	0	N	rippled sand		glass bucket	57.85858	-5.45815
POI063	1.2	<1	R	rippled sand	start of *Zostera* - small patches; 1-9/10m^2	glass bucket	57.85867	-5.45868
POI064	2	0	N	rippled sand		glass bucket	57.85870	-5.45922
POI065	3.6	0	N	rippled sand		glass bucket	57.85890	-5.45990
POI066	2.45	10	C	rippled sand		glass bucket	57.88348	-5.43668
POI067	2.75	0	N	rippled sand		glass bucket	57.88315	-5.43713
POI068	2.15	20	A	rippled sand		glass bucket	57.88308	-5.43680
POI069	1.35	0	N	rippled sand		glass bucket	57.88302	-5.43655
POI070	0.85	0	N	rippled sand		glass bucket	57.88265	-5.43672
POI071	1.95	1-5	R	rippled sand		glass bucket	57.88253	-5.43753
POI072	2.55	1-5	R	rippled sand		glass bucket	57.88230	-5.43830
POI073	1.55	1-5	R	rippled sand		glass bucket	57.88203	-5.43825
POI074	1.05	0	N	rippled sand		glass bucket	57.88198	-5.43817
POI075	2.35	5	R	rippled sand		glass bucket	57.88197	-5.43903
POI076	2.75	5	R	rippled sand	deep limit of *Zostera*	glass bucket	57.88198	-5.43920

Table 9.2 Zostera marina *shoot density estimates derived from sample points from drop-down video footage recorded along runs in North-west Loch Gairloch. Depth and comment data are derived from real time observations during the runs. See Table 9.1 for density scale used*

Point	Run	Time (GMT)	Shoot density	Depth (m)	Comments	Latitude	Longitude
1	0	10:48:02	N			57.74795	-5.81037
2	0	10:48:12	N			57.74793	-5.81035
3	0	10:48:22	N			57.74790	-5.81038
4	0	10:48:32	N			57.74787	-5.81043
5	0	10:48:42	N			57.74785	-5.81052
6	0	10:48:52	N			57.74783	-5.81060
7	0	10:49:12	N			57.74780	-5.81073
8	0	10:49:31	N			57.74785	-5.81073
9	0	10:49:41	N			57.74788	-5.81068
10	0	10:49:52	N			57.74792	-5.81068
11	0	10:50:02	N			57.74790	-5.81070
12	0	10:50:12	N			57.74787	-5.81080
13	0	10:50:22	N			57.74783	-5.81090
14	0	10:50:32	N			57.74782	-5.81102
15	0	10:50:42	N			57.74782	-5.81108
16	0	10:50:52	N			57.74782	-5.81115
17	0	10:51:02	N			57.74782	-5.81123
18	0	10:51:12	N			57.74783	-5.81123
19	0	10:51:22	N			57.74785	-5.81132
20	0	10:51:32	N			57.74787	-5.81137
21	0	10:51:42	N			57.74788	-5.81133
22	0	10:51:52	N			57.74792	-5.81125
23	0	10:52:02	N			57.74792	-5.81125
24	0	10:52:12	N			57.74790	-5.81133
25	0	10:52:22	N			57.74790	-5.81140
26	0	10:52:32	N			57.74790	-5.81150
27	0	10:52:42	N			57.74790	-5.81162
28	0	10:52:52	N			57.74792	-5.81165
29	0	10:53:02	N			57.74792	-5.81168
30	0	10:53:12	N			57.74790	-5.81170
31	0	10:53:22	N			57.74788	-5.81168
32	0	10:53:32	N			57.74787	-5.81163
33	0	10:53:42	N			57.74785	-5.81160
34	0	10:53:52	R			57.74783	-5.81150
35	0	10:54:02	N			57.74780	-5.81137
36	0	10:54:10	R			57.74780	-5.81127
37	0	10:54:22	N			57.74778	-5.81110
38	0	10:54:34	N			57.74775	-5.81090
39	0	10:54:44	N			57.74773	-5.81073
40	0	10:55:12	N			57.74767	-5.81042
41	0	10:55:22	N			57.74765	-5.81033
42	0	10:55:32	N			57.74765	-5.81027
43	0	10:55:43	N			57.74762	-5.81015

Table 9.2 continued

Point	Run	Time (GMT)	Shoot density	Depth (m)	Comments	Latitude	Longitude
44	0	10:57:52	N			57.74695	-5.80955
45	0	10:58:02	N			57.74690	-5.80955
46	1	11:03:22	N			57.74610	-5.80815
47	1	11:03:32	N			57.74608	-5.80813
48	1	11:03:43	N			57.74602	-5.80818
49	1	11:03:53	N			57.74597	-5.80823
50	1	11:04:02	N			57.74593	-5.80828
51	1	11:04:13	N			57.74590	-5.80832
52	1	11:04:22	N			57.74587	-5.80835
53	1	11:04:33	C	4.6	*Zostera* starts	57.74583	-5.80842
54	1	11:04:42	C			57.74582	-5.80845
55	1	11:04:52	C			57.74582	-5.80848
56	1	11:05:03	R			57.74580	-5.80852
57	1	11:05:12	A			57.74577	-5.80855
58	1	11:05:27	A	4.8	dense *Zostera*	57.74577	-5.80860
59	1	11:05:32	A			57.74575	-5.80862
60	1	11:05:52	A			57.74573	-5.80875
61	1	11:06:03	A	5.3	dense *Zostera*	57.74568	-5.80880
62	1	11:06:06	N			57.74567	-5.80880
63	1	11:06:22	N			57.74565	-5.80887
64	1	11:06:30	A			57.74563	-5.80888
65	1	11:06:50	A			57.74560	-5.80893
66	1	11:07:00	C			57.74558	-5.80898
67	1	11:07:10	A			57.74557	-5.80902
68	1	11:07:20	A			57.74553	-5.80903
69	1	11:07:30	A			57.74552	-5.80905
70	1	11:07:50	A			57.74552	-5.80912
71	1	11:08:05	C			57.74550	-5.80915
72	1	11:08:20	C			57.74545	-5.80918
73	1	11:08:30	C			57.74540	-5.80922
74	1	11:08:40	R			57.74538	-5.80923
75	1	11:08:54	R	6.5	Edge of bed	57.74535	-5.80928
76	1	11:09:12	R			57.74535	-5.80935
77	1	11:09:22	N			57.74533	-5.80937
78	2	11:12:31	N			57.74552	-5.80560
79	2	11:12:51	N			57.74547	-5.80567
80	2	11:13:11	N			57.74540	-5.80577
81	2	11:13:31	N			57.74535	-5.80590
82	2	11:13:39	R			57.74532	-5.80597
83	2	11:13:49	C	3.5	*Zostera* starts	57.74530	-5.80602
84	2	11:14:00	R			57.74527	-5.80610
85	2	11:14:20	C			57.74523	-5.80622
86	2	11:14:40	C			57.74517	-5.80635
87	2	11:15:00	C			57.74512	-5.80648
88	2	11:15:20	R			57.74503	-5.80668
89	2	11:15:40	R			57.74500	-5.80677
90	2	11:16:00	C			57.74495	-5.80678

Table 9.2 continued

Point	Run	Time (GMT)	Shoot density	Depth (m)	Comments	Latitude	Longitude
91	2	11:16:20	C			57.74490	-5.80692
92	2	11:16:40	R			57.74483	-5.80700
93	2	11:17:00	R			57.74480	-5.80707
94	2	11:17:20	R			57.74475	-5.80713
95	2	11:17:40	A			57.74470	-5.80722
96	2	11:17:55	A	6.2	Moderately dense *Zostera*	57.74467	-5.80728
97	2	11:18:10	C			57.74467	-5.80733
98	2	11:18:30	C			57.74465	-5.80742
99	2	11:18:55	R			57.74460	-5.80752
100	2	11:19:06	R	6.7	*Zostera* ends	57.74458	-5.80757
101	2	11:19:26	R			57.74455	-5.80768
102	2	11:19:36	N			57.74455	-5.80773
103	2	11:20:00	N			57.74448	-5.80782
104	2	11:20:14	N			57.74443	-5.80785
105	3A	11:24:30	A			57.74432	-5.80270
106	3A	11:24:50	A			57.74433	-5.80272
107	3A	11:25:10	A			57.74435	-5.80272
108	3	11:44:16	A			57.74488	-5.80278
109	3	11:44:22	A	2.8	Dense *Zostera*	57.74485	-5.80285
110	3	11:44:42	C			57.74483	-5.80303
111	3	11:45:02	C			57.74478	-5.80325
112	3	11:45:22	A			57.74472	-5.80312
113	3	11:45:48	A	2.9	Very dense *Zostera*	57.74457	-5.80295
114	3	11:46:02	A			57.74447	-5.80292
115	3	11:46:22	C			57.74437	-5.80293
116	3	11:46:32	C			57.74432	-5.80295
117	3	11:46:42	A			57.74428	-5.80297
118	3	11:47:02	A			57.74420	-5.80307
119	3	11:47:22	A			57.74415	-5.80310
120	3	11:47:42	A			57.74413	-5.80310
121	3	11:48:02	C			57.74407	-5.80315
122	3	11:48:22	C			57.74398	-5.80320
123	3	11:48:42	C			57.74392	-5.80323
124	3	11:49:02	A			57.74387	-5.80327
125	3	11:49:11	A	4.7	Dense patch	57.74383	-5.80330
126	3	11:49:22	A			57.74382	-5.80335
127	3	11:49:42	A			57.74378	-5.80340
128	3	11:49:56	A	5.1	Dense *Zostera*	57.74375	-5.80345
129	3	11:50:06	A			57.74375	-5.80350
130	3	11:50:22	A			57.74372	-5.80355
131	3	11:50:42	A			57.74368	-5.80362
132	3	11:51:02	R			57.74363	-5.80367
133	3	11:51:06	N	5.4	*Zostera* ends	57.74362	-5.80367
134	3	11:51:22	N			57.74357	-5.80375
135	3	11:51:32	N			57.74355	-5.80380
136	4	11:54:54	N			57.74408	-5.79963
137	4	11:55:30	N	3.3	Sand	57.74388	-5.79965

Table 9.2 continued

Point	Run	Time (GMT)	Shoot density	Depth (m)	Comments	Latitude	Longitude
138	4	11:56:00	N			57.74375	-5.79972
139	4	11:56:30	N			57.74363	-5.79978
140	4	11:57:00	N			57.74355	-5.79982
141	4	11:57:30	N			57.74343	-5.79985
142	4	11:58:00	N			57.74330	-5.79992
143	4	11:58:30	N			57.74315	-5.80000
144	4	11:58:49	N	4.0	Sand	57.74303	-5.80005
145	4	11:59:04	N			57.74302	-5.80008
146	5	12:02:33	N	1.9	Sand	57.74375	-5.79183
147	5	12:03:00	N			57.74365	-5.79183
148	5	12:03:30	N			57.74350	-5.79195
149	5	12:04:00	N			57.74343	-5.79203
150	5	12:04:30	N			57.74333	-5.79210
151	5	12:05:00	N			57.74325	-5.79217
152	5	12:05:30	N			57.74315	-5.79225
153	5	12:06:00	N			57.74302	-5.79233
154	5	12:06:30	N			57.74292	-5.79242
155	5	12:07:00	N			57.74278	-5.79250
156	5	12:07:28	N	4.3	Shells on sand	57.74267	-5.79257
157	5	12:08:00	N			57.74265	-5.79260
158	6	12:10:56	N	1.7	Sand	57.74367	-5.78858
159	6	12:11:20	N			57.74362	-5.78838
160	6	12:11:40	N			57.74358	-5.78843
161	6	12:11:52	R	2.0	Start of *Zostera* (sparse)	57.74353	-5.78842
162	6	12:12:10	R			57.74350	-5.78845
163	6	12:12:30	R			57.74345	-5.78847
164	6	12:12:50	C			57.74340	-5.78852
165	6	12:13:10	R			57.74333	-5.78855
166	6	12:13:30	C			57.74325	-5.78860
167	6	12:13:50	A		Small dense patches in this area	57.74318	-5.78862
168	6	12:14:10	C			57.74312	-5.78863
169	6	12:14:30	R			57.74303	-5.78868
170	6	12:14:50	C			57.74298	-5.78870
171	6	12:15:13	N	3.4	*Zostera* ends	57.74290	-5.78875
172	6	12:15:30	N			57.74285	-5.78877
173	6	12:16:04	N			57.74272	-5.78878
174	6	12:16:30	N	3.9	Large filamentous reds	57.74263	-5.78882
175	6	12:16:45	N			57.74262	-5.78882
176	7	12:20:10	N	1.8	Sand	57.74298	-5.78440
177	7	12:20:30	N			57.74293	-5.78428
178	7	12:20:49	C	2.0	*Zostera* start (small dense patches)	57.74288	-5.78427
179	7	12:21:00	C		Patches	57.74285	-5.78428
180	7	12:21:30	C		Patches	57.74280	-5.78428
181	7	12:22:00	R			57.74273	-5.78428
182	7	12:22:30	C			57.74268	-5.78427

Table 9.2 continued

Point	Run	Time (GMT)	Shoot density	Depth (m)	Comments	Latitude	Longitude
183	7	12:23:00	A			57.74263	-5.78427
184	7	12:23:20	C			57.74258	-5.78427
185	7	12:23:27	N			57.74255	-5.78425
186	7	12:23:35	N	2.8	*Zostera* ends	57.74253	-5.78427
187	7	12:23:57	C	2.9	*Zostera* restarts	57.74248	-5.78427
188	7	12:24:30	C		Patches	57.74242	-5.78427
189	7	12:25:05	N	3.3	*Zostera* ends	57.74232	-5.78428
190	7	12:25:20	R		Patch	57.74232	-5.78428
191	7	12:25:52	A	3.6	*Zostera* restarts - dense	57.74220	-5.78435
192	7	12:26:20	A			57.74217	-5.78432
193	7	12:26:40	C			57.74215	-5.78430
194	7	12:27:05	C	4.0	*Zostera* ends	57.74207	-5.78432
195	7	12:27:20	C			57.74198	-5.78433
196	7	12:27:26	C	4.3	*Zostera* restarts	57.74197	-5.78433
197	7	12:27:50	R			57.74183	-5.78440
198	7	12:28:20	R			57.74172	-5.78443
199	7	12:28:50	C			57.74162	-5.78447
200	7	12:29:02	N			57.74155	-5.78450
201	7	12:29:13	N	5.3		57.74150	-5.78452
202	7	12:29:32	R			57.74152	-5.78450
203	7	12:29:42	N			57.74148	-5.78448
204	7	12:30:03	N	5.6	Sand	57.74137	-5.78452
205	7	12:30:22	N			57.74137	-5.78453
206	8	12:34:54	N	1.7	Sand	57.74110	-5.78072
207	8	12:35:30	N			57.74103	-5.78058
208	8	12:36:00	N			57.74092	-5.78058
209	8	12:36:30	N			57.74080	-5.78060
210	8	12:37:00	N			57.74063	-5.78068
211	8	12:37:30	N			57.74057	-5.78092
212	8	12:38:00	N			57.74057	-5.78112
213	8	12:38:30	N			57.74058	-5.78130
214	8	12:39:00	N			57.74058	-5.78147
215	8	12:39:30	N			57.74067	-5.78160
216	8	12:39:38	N	3.9	Sand	57.74068	-5.78163
217	8	12:39:53	N			57.74073	-5.78165
218	9	14:13:38	N	3.3	Sand	57.73760	-5.78878
219	9	14:14:00	N			57.73765	-5.78877
220	9	14:14:30	N			57.73773	-5.78875
221	9	14:15:00	N			57.73782	-5.78873
222	9	14:15:30	N			57.73790	-5.78872
223	9	14:16:00	N			57.73797	-5.78868
224	9	14:16:30	N			57.73805	-5.78865
225	9	14:17:00	N			57.73812	-5.78863
226	9	14:17:30	N			57.73820	-5.78862
227	9	14:18:04	N	5.1	Sand	57.73828	-5.78858
228	9	14:18:22	N			57.73835	-5.78858
229	10	14:22:58	N	3.2	Sand	57.73695	-5.78500

Table 9.2 continued

Point	Run	Time (GMT)	Shoot density	Depth (m)	Comments	Latitude	Longitude
230	10	14:23:30	N			57.73710	-5.78495
231	10	14:24:00	N			57.73723	-5.78490
232	10	14:24:20	N			57.73733	-5.78487
233	10	14:24:28	C	3.3	Small *Zostera* patch	57.73737	-5.78487
234	10	14:24:38	R		Small *Zostera* patch	57.73742	-5.78485
235	10	14:24:48	N			57.73747	-5.78483
236	10	14:25:00	N			57.73753	-5.78483
237	10	14:25:30	N			57.73767	-5.78480
238	10	14:26:00	N			57.73782	-5.78478
239	10	14:26:30	N			57.73797	-5.78477
240	10	14:26:44	N	3.3	Large filamentous reds (5%)	57.73803	-5.78477
241	10	14:27:00	N			57.73810	-5.78477
242	10	14:27:30	N			57.73823	-5.78477
243	11	14:31:55	N	3.6	Sand	57.73645	-5.78282
244	11	14:32:30	N			57.73658	-5.78278
245	11	14:33:00	N			57.73668	-5.78272
246	11	14:33:07	C	3.5	*Zostera* start (patches)	57.73672	-5.78272
247	11	14:33:27	R		Patches	57.73678	-5.78268
248	11	14:33:40	C		Patches	57.73683	-5.78268
249	11	14:33:52	N			57.73688	-5.78268
250	11	14:34:14	N	3.8	Sand	57.73697	-5.78267
251	11	14:35:00	N			57.73712	-5.78262
252	11	14:35:30	N			57.73720	-5.78260
253	11	14:36:00	N			57.73730	-5.78260
254	12	14:38:27	N	4.4	Sand with shells	57.73603	-5.78125
255	12	14:38:45	N			57.73608	-5.78122
256	12	14:38:47	R			57.73610	-5.78122
257	12	14:38:50	R	4.2	Thin patchy *Zostera*	57.73610	-5.78120
258	12	14:39:10	C			57.73617	-5.78117
259	12	14:39:30	C			57.73622	-5.78115
260	12	14:39:50	C	4.5	Sparse *Zostera*	57.73628	-5.78115
261	12	14:40:00	C			57.73632	-5.78117
262	12	14:40:16	C			57.73637	-5.78117
263	12	14:40:25	N			57.73640	-5.78115
264	12	14:40:31	N	4.7	Sand	57.73642	-5.78115
265	12	14:41:00	N			57.73650	-5.78115
266	12	14:41:39	N	5.0	Live maerl possibly present	57.73660	-5.78113
267	12	14:42:00	N		Live maerl possibly present	57.73665	-5.78115
268	12	14:42:16	N	5.0	Live maerl possibly present; large filamentous reds (5-10%)	57.73670	-5.78117
269	12	14:42:44	N		Live maerl possibly present; large filamentous reds (5-10%)	57.73678	-5.78122

Appendix 10 Localised oyster survey data

Table 10.1 Observations of Ostrea edulis *during searches by diving, shore walking and drop-down video in Ob na Bà Ruaidhe, Loch Thùrnaig*

WPT	Latitude	Longitude	Comment	SACFOR	Survey	Surveyor	Photo
78	57.78930	-5.60415	diver entry	N	dive	CT	
79	57.78953	-5.60463	first oyster seen; overall density between waypoints 79 and 81: F	C	dive	CT	
81	57.78965	-5.60492	last oyster seen; overall density	C	dive	CT	
82	57.78942	-5.60467	MNCR phase 2 site	F	dive	CT	
83	57.78925	-5.60490		N	dive	CT	
84	57.78920	-5.60462		N	dive	CT	
A	57.78907	-5.60477	diver entry; zigzagged to WPT B; max depth 3.2 m	N	dive	BJ	
B	57.78757	-5.60383	diver out	N	dive	BJ	
85	57.78930	-5.60468	edge of oyster bed; 3-4/m^2	C	shore	CT	2047-2052
86	57.78939	-5.60456	edge of oyster bed; 3-4/m^2	C	shore	CT	2047-2052
87	57.78945	-5.60444	edge of oyster bed; 3-4/m^2	C	shore	CT	2047-2052
88	57.78951	-5.60465	uncovered oyster bed; 4-5/m^2	C	shore	CT	2053
1	57.78955	-5.60463	oyster shells visible		video	CT/BJ	
4	57.78960	-5.60453	oyster shells visible		video	CT/BJ	
12	57.78943	-5.60465	oyster shells visible		video	CT/BJ	

Table 10.2 Details of shore search for Ostrea edulis *at Old Dornie Harbour on 10th August 2010. Surveyor, DH.*

Site	Location	Time	Substrate	Biota	Search notes	Photos	Position
1	West of slipway Old Dornie Harbour	1300	Boulders, cobbles & muddy sand	Dense fucoids. *Ascophyllum nodosum* above *Fucus serratus* above *Laminaria digitata*. *Fucus serratus* occasionally replaced by patches of *Enteromorpha*.	Walk 10 paces, clear ~2 m^2 of fucoids to search substrate. Repeat until next set coordinates. Searches conducted both in *Fucus serratus* and *Laminaria digitata* zones.	IMG_1240-42	58.04393 -5.42057
2	Jetty west of Old Dornie Harbour				End of search	IMG_1243-44	58.0427 -5.42305
3	West of jetty west of Old Dornie Harbour		Small boulders and cobbles	Dense fucoids. *Fucus vesiculosus* above *Fucus serratus* above *Laminaria digitata*.	Walk 20 paces, clear ~2 m^2 of fucoids to search substrate. Repeat until next set coordinates. Searches conducted both in *Fucus serratus* and *Laminaria digitata* zones.	IMG_1245-46	58.04233 -5.42318
4	End of bouldery shore beginning of bedrock shore				End of search	IMG_1247-48	58.04107 -5.42342
5	East of slipway Old Dornie Harbour	1430	Muddy sand and pebbles in shallows and to 20-30 m up the shore. Cobbles on higher areas of shore.	Dense fucoids on cobbles. *Ascophyllum nodosum* & *Fucus vesiculosus* above *Fucus serratus*. *Hymenacidion* cushions occasional on pebbles. Numerous oyster shells - old and eroded.	Walk over sediment areas of shore zig-zagging over shallow (wellie depth) areas and exposed sediments. Continue until next set coordinates.	IMG_1249-50	58.0439 -5.4198
6	Boundary sediment area with boulders & cobbles.		Small boulders and cobbles on muddy sand. Shallow water with muddy sand.	Dense fucoids on cobbles. *Ascophyllum nodosum* & *Fucus vesiculosus* above *Fucus serratus*. *Arenicola* in shallows, many pipefish & one *Modiolus* below fucoids.	Walk 20 paces, clear ~2 m^2 of fucoids to search substrate. Repeat until next set coordinates. Searches conducted just above waterline (*Fucus serratus* & *Ascophyllum*). Sediment in shallows also examined.	IMG_1251-52	58.04417 -5.41667
7	Boundary boulders & cobble area with sediment area at head of harbour.		Muddy sand in shallows and to 40-50 m up the shore. Cobbles on higher areas of shore.	Fucoids & *Mytilus* on occasional boulders.	Walk over sediment areas of shore zig-zagging over shallow (wellie depth) areas and exposed sediments. Continue until next set coordinates.	IMG_1253-54	58.04503 -5.41542

Table 10.2 continued

Site	Location	Time	Substrate	Biota	Search notes	Photos	Position
8	Boundary sediment area with boulders & cobbles.		Small boulders and cobbles on muddy sand. Shallow water with muddy sand.	Dense fucoids on cobbles. *Ascophyllum nodosum* & *Fucus vesiculosus* above *Fucus serratus*.	Walk 20 paces, clear ~2 m^2 of fucoids to search substrate. Repeat until next set coordinates. Searches conducted just above waterline (*Fucus serratus* & *Ascophyllum*). Sediment in shallows also examined.	IMG_1255-56	58.04527 -5.41685
9	Boundary boulders & cobble area with mixed sediment area		Muddy sand with pebbles & boulder / cobble patches	*Fucus vesiculosus*	Walk 20 paces, clear ~2 m^2 of fucoids to search substrate. Repeat until next set coordinates. Searches conducted just above waterline (Fucus serratus / Fucus vesiculosus / Ascophyllum). Sediment in shallows also examined.	IMG_1257-58	58.0448 -5.41835
10	Boundary mixed sediment area with more continuous cobbles & boulders	1530	Cobbles & boulders	Dense fucoids. *Ascophyllum nodosum* & *Fucus vesiculosus* above *Fucus serratus* (becoming submerged).	Walk 20 paces, clear ~2 m^2 of fucoids to search substrate. Repeat until next set coordinates. Searches conducted just above waterline (*Fucus vesiculosus* / *Ascophyllum*).	IMG_1259-60	58.0445 -5.42038
11	Boulder area		Boulders	*Ascophyllum nodosum*	Walk 20 paces, clear ~2 m^2 of fucoids to search substrate. Repeat until next set coordinates. Searches conducted just above waterline (*Fucus vesiculosus* / *Ascophyllum*).	IMG_1261-62	58.04493 -5.42222
12	Boulder area by channel		Cobbles & boulders	*Ascophyllum nodosum*	Walk 20 paces, clear ~2 m^2 of fucoids to search substrate. Repeat until next set coordinates. Searches conducted just above waterline (*Fucus vesiculosus* / *Ascophyllum*).	IMG_1263-64	58.04595-5.42297
13	End of bouldery shore beginning of bedrock shore		Cobbles & boulders	*Ascophyllum nodosum*	End of search	IMG_1265-66	58.04615 -5.4212
14	Mid shore mixed sediment		Extensive area fine sand with pebbles and scattered small boulders	*Fucus vesiculosus*, *Arenicola*. *Mytilus* clumps on rock.	Zig-zagging walk over sediment areas of shore.	IMG_1267-70	58.04543 -5.4198

Table 10.2 continued

Site	Location	Time	Substrate	Biota	Search notes	Photos	Position
15	*Ascophyllum nodosum* ecad *mackaii* patch		Mixed sediment?	Dense *mackaii* patch in shallow artificial gulley running down shore. Patch ~5m wide ~20-30 m long. Other smaller patches seen amongst attached fucoids on shore to the east.		IMG_1270-73	58.04335 -5.4184

Appendix 11 Localised blue mussel bed survey data

Table 11.1 Track mapping data around the boundary of Mytilus edulis *distribution at the mouth of the Ullapool River*

Latitude	Longitude		Latitude	Longitude		Latitude	Longitude
57.89770	-5.17127		57.89868	-5.17063		57.89870	-5.17125
57.89758	-5.17118		57.89878	-5.17063		57.89867	-5.17142
57.89745	-5.17092		57.89883	-5.17062		57.89855	-5.17135
57.89760	-5.17095		57.89895	-5.17042		57.89847	-5.17147
57.89772	-5.17098		57.89910	-5.17033		57.89838	-5.17148
57.89793	-5.17103		57.89917	-5.17045		57.89830	-5.17142
57.89803	-5.17110		57.89920	-5.17058		57.89822	-5.17138
57.89813	-5.17112		57.89935	-5.17065		57.89817	-5.17142
57.89822	-5.17108		57.89932	-5.17083		57.89813	-5.17137
57.89827	-5.17113		57.89923	-5.17093		57.89808	-5.17140
57.89832	-5.17102		57.89912	-5.17088		57.89805	-5.17133
57.89840	-5.17090		57.89893	-5.17083		57.89798	-5.17132
57.89847	-5.17082		57.89883	-5.17112		57.89790	-5.17127
57.89858	-5.17068		57.89882	-5.17123			

Table 11.2 Survey of Mytilus edulis *at the mouth of the Ullapool River, showing density estimates of mussels within haphazardly located 1 m2 stations. Total percentage cover by fucoids is given, together with coverage by the main species,* Fucus vesiculosus *(F. ves) and* F. serratus *(F. ser)*

Site	Position	Substrate	Mytilus cover (%)	Mytilus count (/m^2)	SAC-FOR	Fucoid cover (%)	F. ves (%)	F ser (%)	Photo no.	Notes
1	57.89847 -5.17130	pebble 3-5 cm	5	~25	C	100	40	60		Single mussels
2	57.89842 -5.17130	pebbles/ cobbles	2	~8	F	100	30	70		Single mussels
3	57.89760 -5.17105	gravel/ pebbles	1	~5	F	5	<1	5		~ 20cm water at 13.40 h (+0.5 m CD)
4	57.89745 -5.17092	pebbles 3-6 cm	1	6	F	60		60	015	10 cm water @ 13.50 h (+0.6 m CD); near end of spit at river mouth; Saccharina latissima 30% cover
5	57.89740 -5.17087	gravel/ pebbles	0	0	N	15		15		End of spit at river mouth; 10 cm water @ 13.54 h (+0.6 m CD). River outflow (FW) across spit here
6	57.89758 -5.17118	pebbles	80	150-200	A	70		70	016	Dense bed, very limited extent ~ 2 x 6 m
7	57.89770 -5.17127	pebbles	10	~30	C	100	1	99		Sparse bed mussels in small clumps of 2-3
8	57.89783 -5.17127	pebbles	<1	4	F	85		85	017	
9	57.89790 -5.17128	pebbles	0	0	N	5	5			Slightly raised pebbles
10	57.89797 -5.17127	pebbles	2	27	C	95	95			
11	57.89848 -5.17123	pebbles/ cobbles	5	~20	C	100	5	95	018-022	2 Modiolus; site flooded; 10cm @ 14.39 (+0.7 m CD); clumps of 3-4 Mytilus
12	57.89857 -5.17133	pebbles/ cobbles	5	~30	C	100	60	40		Flooded; 2cm @ 14.41 (+0.8 m CD); 1 Modiolus; clumps of up to 8 Mytilus
13	57.89867 -5.17097	pebbles, occ. cobbles	<1	~5	F	2	2		026-027	Raised pebble bank. Filamentous green algae 5% cover
14	57.89867 -5.17108	gravel/ pebbles	10	~50	C	25	5	20		Rise onto pebble bank
15	57.89828 -5.17127	pebbles/ gravel	0	0	N	10	5	5	028	

Appendix 12 Localised sea loch egg wrack bed survey data

Table 12.1 Track mapping data around boundaries of Ascophyllum nodosum *ecad* mackaii *beds, with photo numbers where applicable*

Latitude	Longitude	Bed	Photo
57.69843	-5.72327	B1	
57.69855	-5.72325	B1	
57.69860	-5.72345	B1	
57.69870	-5.72355	B1	
57.69872	-5.72378	B1	
57.69870	-5.72402	B1	
57.69868	-5.72415	B1	
57.69862	-5.72413	B1	
57.69863	-5.72423	B1	
57.69855	-5.72418	B1	
57.69843	-5.72435	B1	
57.69847	-5.72448	B1	
57.69847	-5.72465	B1	
57.69855	-5.72455	B1	
57.69862	-5.72458	B1	
57.69862	-5.72470	B1	
57.69872	-5.72470	B1	
57.69880	-5.72432	B1	
57.69882	-5.72412	B1	
57.69887	-5.72393	B1	
57.69895	-5.72380	B1	
57.69905	-5.72377	B1	
57.69912	-5.72368	B1	
57.69905	-5.72367	B1	
57.69900	-5.72363	B1	
57.69898	-5.72358	B1	
57.69895	-5.72353	B1	
57.69887	-5.72350	B1	
57.69882	-5.72342	B1	
57.69877	-5.72333	B1	
57.69872	-5.72325	B1	
57.69875	-5.72320	B1	
57.69878	-5.72310	B1	
57.69868	-5.72305	B1	
57.69867	-5.72310	B1	
57.69852	-5.72303	B1	
57.69847	-5.72313	B1	
57.69842	-5.72500	B2	
57.69838	-5.72513	B2	
57.69843	-5.72545	B2	
57.69852	-5.72547	B2	
57.69853	-5.72562	B2	
57.69853	-5.72570	B2	
57.69858	-5.72568	B2	
57.69862	-5.72582	B2	
57.69862	-5.72590	B2	

Latitude	Longitude	Bed	Photo
57.69867	-5.72585	B2	
57.69865	-5.72580	B2	
57.69862	-5.72570	B2	
57.69865	-5.72562	B2	
57.69860	-5.72553	B2	
57.69855	-5.72542	B2	
57.69862	-5.72540	B2	
57.69862	-5.72532	B2	
57.69868	-5.72528	B2	
57.69872	-5.72512	B2	
57.69867	-5.72505	B2	
57.69858	-5.72502	B2	
57.69855	-5.72493	B2	
57.69855	-5.72483	B2	
57.69855	-5.72540	B2	
57.69855	-5.72540	B2	
57.69855	-5.72540	B2	
57.69840	-5.72728	B2	
57.69833	-5.72735	B2	
57.69825	-5.72745	B2	
57.69827	-5.72753	B2	
57.69837	-5.72753	B2	
57.69840	-5.72767	B2	
57.69843	-5.72788	B2	
57.69845	-5.72807	B2	
57.69840	-5.72822	B2	
57.69845	-5.72842	B2	
57.69845	-5.72858	B2	
57.69848	-5.72868	B2	
57.69842	-5.72855	B2	
57.69840	-5.72875	B2	
57.69848	-5.72885	B2	
57.69853	-5.72902	B2	
57.69857	-5.72913	B2	
57.69852	-5.72922	B2	
57.69848	-5.72937	B2	
57.69855	-5.72935	B2	
57.69863	-5.72928	B2	
57.69862	-5.72920	B2	
57.69857	-5.72903	B2	
57.69865	-5.72902	B2	
57.69870	-5.72915	B2	
57.69878	-5.72905	B2	
57.69882	-5.72907	B2	
57.69887	-5.72918	B2	
57.69888	-5.72930	B2	

Table 12.1 continued

Latitude	Longitude	Bed	Photo
57.69888	-5.72940	B2	
57.69885	-5.72952	B2	
57.69945	-5.72925	B2	
57.69943	-5.72922	B2	
57.69933	-5.72932	B2	
57.69930	-5.72940	B2	
57.69922	-5.72945	B2	
57.69915	-5.72950	B2	
57.69902	-5.72968	B2	
57.69890	-5.72993	B2	
57.69883	-5.73023	B2	
57.69875	-5.73035	B2	
57.69870	-5.73030	B2	
57.69862	-5.73030	B2	
57.69860	-5.73012	B2	
57.69857	-5.72988	B2	
57.69848	-5.72973	B2	
57.69848	-5.72955	B2	
57.69840	-5.72957	B2	
57.69833	-5.72932	B2	
57.69832	-5.72907	B2	
57.69828	-5.72893	B2	
57.69828	-5.72873	B2	
57.69828	-5.72855	B2	
57.69823	-5.72842	B2	
57.69820	-5.72840	B2	
57.69820	-5.72835	B2	
57.69818	-5.72828	B2	
57.69815	-5.72828	B2	
57.69823	-5.72815	B2	
57.69823	-5.72803	B2	
57.69832	-5.72798	B2	
57.69835	-5.72792	B2	
57.69828	-5.72787	B2	
57.69823	-5.72787	B2	
57.69825	-5.72773	B2	
57.69818	-5.72775	B2	
57.69817	-5.72770	B2	
57.69815	-5.72762	B2	
57.69830	-5.72730	B2	
57.69835	-5.72725	B2	
57.70148	-5.72630	B2	
57.70147	-5.72627	B2	
57.70145	-5.72623	B2	
57.70146	-5.72629	B2	
57.70147	-5.72625	B2	
57.78950	-5.60500	T1	
57.78955	-5.60493	T1	
57.78962	-5.60492	T1	

Latitude	Longitude	Bed	Photo
57.78970	-5.60486	T1	
57.78977	-5.60486	T1	
57.78980	-5.60478	T1	
57.78983	-5.60479	T1	
57.78987	-5.60481	T1	
57.78985	-5.60489	T1	
57.78987	-5.60496	T1	
57.78984	-5.60500	T1	
57.78982	-5.60509	T1	
57.78980	-5.60517	T1	
57.78984	-5.60522	T1	
57.78982	-5.60529	T1	
57.78975	-5.60535	T1	
57.78970	-5.60539	T1	
57.78969	-5.60548	T1	
57.78964	-5.60552	T1	
57.78959	-5.60557	T1	
57.78953	-5.60553	T1	
57.78949	-5.60553	T1	
57.78950	-5.60546	T1	
57.78945	-5.60544	T1	
57.78944	-5.60539	T1	
57.78945	-5.60530	T1	
57.78949	-5.60532	T1	
57.78951	-5.60531	T1	
57.78953	-5.60523	T1	
57.78955	-5.60516	T1	
57.78955	-5.60509	T1	
57.78952	-5.60501	T1	
57.79445	-5.58005	T2	2217
57.79457	-5.57998	T2	
57.79468	-5.58013	T2	
57.79463	-5.58022	T2	
57.79477	-5.58045	T2	
57.79488	-5.58050	T2	
57.79492	-5.58062	T2	
57.79493	-5.58072	T2	
57.79488	-5.58075	T2	
57.79482	-5.58067	T2	
57.79473	-5.58063	T2	
57.79467	-5.58078	T2	
57.79462	-5.58080	T2	
57.79455	-5.58087	T2	2218-19
57.79452	-5.58097	T2	
57.79443	-5.58102	T2	
57.79440	-5.58102	T2	
57.79440	-5.58113	T2	
57.79440	-5.58122	T2	
57.79435	-5.58117	T2	

Table 12.1 continued

Latitude	Longitude	Bed	Photo
57.79437	-5.58102	T2	
57.79435	-5.58095	T2	
57.79428	-5.58093	T2	
57.79423	-5.58090	T2	2220-22
57.79418	-5.58102	T2	
57.79413	-5.58107	T2	
57.79408	-5.58117	T2	
57.79400	-5.58122	T2	
57.79390	-5.58117	T2	2223
57.79390	-5.58108	T2	
57.79397	-5.58092	T2	
57.79397	-5.58073	T2	
57.79395	-5.58058	T2	
57.79383	-5.58063	T2	
57.79387	-5.58047	T2	2224-25
57.79385	-5.58033	T2	
57.79392	-5.58032	T2	
57.79402	-5.58033	T2	

Latitude	Longitude	Bed	Photo
57.79403	-5.58025	T2	
57.79392	-5.58025	T2	
57.79383	-5.58027	T2	
57.79383	-5.58015	T2	2226
57.79388	-5.58000	T2	
57.79380	-5.57988	T2	
57.79393	-5.57988	T2	
57.79400	-5.58003	T2	
57.79407	-5.57995	T2	
57.79410	-5.58003	T2	
57.79413	-5.57993	T2	
57.79417	-5.57995	T2	
57.79418	-5.58003	T2	
57.79425	-5.57993	T2	
57.79420	-5.58010	T2	
57.79425	-5.58020	T2	
57.79437	-5.58025	T2	
57.79443	-5.58015	T2	

Table 12.2 Percentage cover and mean thickness of Ascophyllum nodosum ecad mackaii at stations within beds at Badachro and Loch Thùrnaig

Bed	Site	Location	Substrate	Cover (%)	Thick-ness (cm)	Latitude	Longitude	Photos
B1	A	Badachro	slightly muddy fine sand with dense gravel and pebbles	95	11	57.69864	-5.72322	1232 - 37
B1	B	Badachro	muddy sand with dense gravel and pebbles	80	16	57.69883	-5.72369	1230 - 31
B1	C	Badachro	muddy sand with dense gravel, pebble and cobble cover	95	14	57.69868	-5.72439	1228 - 29
B2	D	Badachro	muddy fine sand with scattered gravel	90	11	57.69853	-5.72515	1226 - 27
B3	E	Badachro	fine sand with scattered gravel and pebbles	65	11	57.69832	-5.72762	1224 - 25
B3	F	Badachro	slightly muddy fine sand with dense gravel,pebbles and cobbles	60	14	57.69835	-5.72834	1222 - 23
B3	G	Badachro	slightly muddy fine sand	95	16	57.69843	-5.72911	1220 - 21
B3	H	Badachro	very gravelly sand with scattered pebbles and cobbles	75	15	57.69872	-5.72961	1217 - 19
B3	I	Badachro	muddy sand with gravel and pebbles below	75	12	57.69925	-5.72932	1215 - 16
B3	J	Badachro	muddy sand with gravel and pebbles below	90	13	57.69967	-5.72904	1213 - 14
B3	K	Badachro	slightly muddy fine sand with gravel and pebbles	90	13	57.70007	-5.72877	1211 - 12
B3	L	Badachro	slightly muddy fine sand with gravel and pebbles	90	14	57.70042	-5.72854	1209 - 10
B3	M	Badachro	fine gravelly sand with pebbles	65	12	57.70057	-5.72761	1207 - 08
B3	N	Badachro	fine sand with scattered gravel and pebbles	50	12	57.70069	-5.72681	1205 - 06
B4	O	Badachro	pebbles and cobbles on muddy sand	60	13	57.70147	-5.72628	1203 - 04
T2	A	Thùrnaig E	stones on mud	70	10	57.79392	-5.58048	2227 - 28
T2	B	Thùrnaig E	scattered rocks and stones on muddy sand	85	11	57.79398	-5.58088	2229, 2231
T2	C	Thùrnaig E	sandy mud	90	9	57.79395	-5.58107	2240 - 41
T2	D	Thùrnaig E	mud with stones	70	10	57.7942	-5.5808	2241 - 43
T2	E	Thùrnaig E	mud with stones	95	12	57.79413	-5.58078	2244 - 45
T2	F	Thùrnaig E	mud with cobbles and boulders	85	8	57.79408	-5.57998	2246 - 47
T2	G	Thùrnaig E	mud with cobbles and boulders	80	10	57.79415	-5.57998	2248 - 49
T2	H	Thùrnaig E	mud with cobbles and boulders	80	7	57.79423	-5.58002	2250 - 51
T2	I	Thùrnaig E	mud with loose stones	95	9	57.79428	-5.58045	2252 - 53
T2	J	Thùrnaig E	anoxic mud, some loose stones	80	10	57.79448	-5.58033	2254 - 55

Table 12.3 Survey data for minor beds of Ascophyllum nodosum *ecad* mackaii *in Loch Thurnaig. A visual estimate of size is given, together with overall percentage coverage and thickness of the bed, and position of the centre of the bed. *70% cover by free-living* Fucus serratus

Bed	Substrate	Size (m)	Cover (%)	Mean thick-ness (cm)	Latitude	Longitude	Photo no.
T3	Muddy sand	>10x4	20		57.79225	-5.57853	2026
T4	Muddy gravel/stone/sand	10x15	40	8	57.78704	-5.60451	2033-2034
T5	Cobbles/stones	20x25	25*		57.78714	-5.60475	2036-2039
T6	Cobbles/stones, gravelly mud underneath	5x25	15	6	57.78844	-5.60518	2040-2041
T7	Cobbles and pebbles on muddy sediment	5x5	10	6	57.78884	-5.60516	2042-2043

Appendix 13 MPA search feature and non-PMF biotope inventories

Table 13.1 MPA search features and their components recorded during the current survey with illustrative photograph or video frame grab. Italicised sites indicate provenance of image

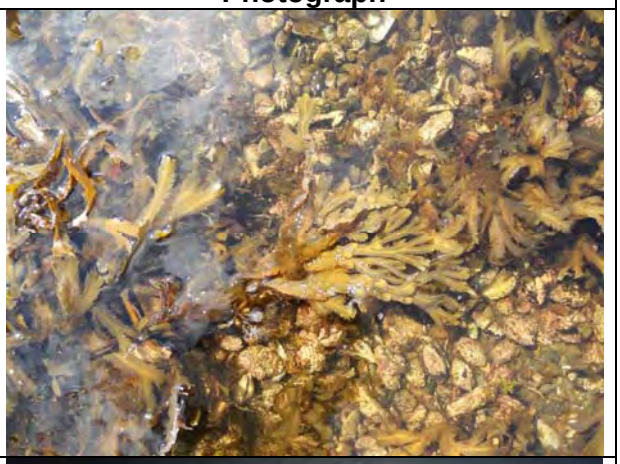
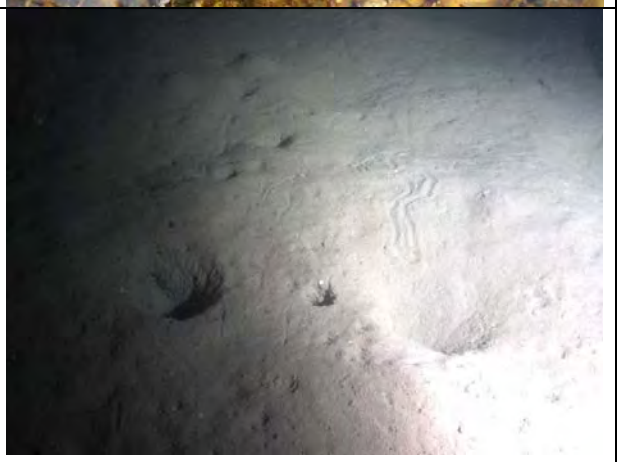
PMF and Sites	Photograph
BLUE MUSSEL BEDS (*Mytilus edulis* beds on littoral sediment) **LS.LBR.LMus.Myt.Mx** *UR.6*	
BURROWED MUD (Seapens and burrowing megafauna in circalittoral fine mud) **SS.SMu.CFiMu.SpnMeg** 8120-23, 8129-31, 8137-42, 8153-59, 8174-82, 8197-16, 8218-25, 8226-36, 8242-48, 8256-62, 8263-71, 8272-76, 8277-84, 8285-13, 8313b-30, 8335-39, 8341-47, 8362-83, 8395-23, 8469-99, 8500-17, 8534-35, 8542-50, 8594-8640*, 8641,* 8642-55, BM1, BM10, BM11, BM13, BM14, BM16, BM2, BM22, BM24, BM25, BM27, BM28, BM29, BM3, BM30, BM4, BM43, BM44, BM45, BM46, BM47, BM48, BM49, BM5, BM50, BM51, BM52, BM54, BM58, BM6, BM60, BM61, BM63, BM66, BM7, BM8, BM9, DM1, G1, G15, G16, G18, G2, G20, G21, G25, G26, G3, G30, G4, G5, GF13, GF8, HM1, HM11, HM2	
BURROWED MUD (with *Funiculina quadrangularis*) **SS.SMu.CFiMu.SpnMeg.Fun** 7902-75, 7977-86, 8004-22, 8030-37, BM12, BM15, BM26, BM31, BM32, *BM33*, BM34, BM35, BM36, BM37, BM38, BM39, BM40, BM41, BM42, BM53, BM55, BM56, BM59, BM62, BM64, BM67, BM69, DM2, G13, G23, G24, G27, G28, G29, G32, G9, GF1	

Table 13.1 continued

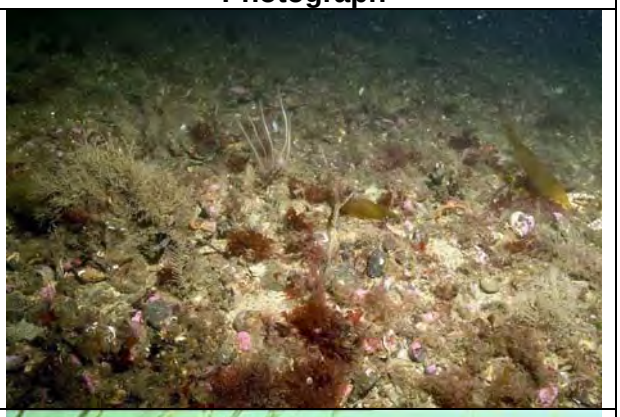
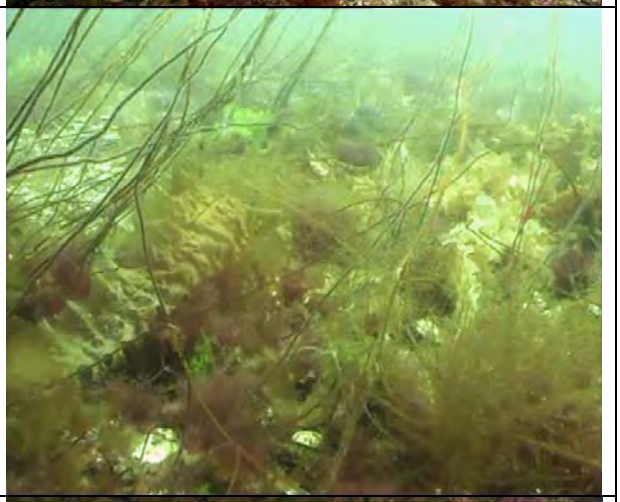
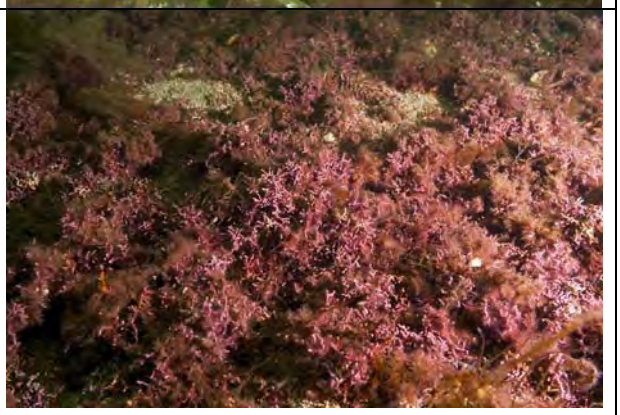
PMF and Sites	Photograph
FLAME SHELL BEDS **SS.SMx.IMx.Lim** FS15, FS18, FS19, FS20, L18, L19, *LH01*, SL.D10, SL.D11, SL.D15, SL.D7	
KELP AND SEAWEED COMMUNITIES ON SUBLITTORAL SEDIMENT **SS.SMp.KSwSS** 8237-41, FS1, FS21, FS3, HM10, HM5, HM6, MB14, MB17, MB18, MB21, MB23, MB25, MB26, MB39, MB44, MB48, MB53, MB64, MB68, MB70, MB72, MB78, MB79, MB85, MC12, PE.D1, PE.D10, PE.D4, PE.D5, PE.D7, PE.D8, PE.D9, SG2, SG21, SG4, *SG5*, SG6, SG7, TS1	
MAERL BEDS **SS.SMp.Mrl** 8452-58, BL.D12, BL.D13, BL.D14, BL.D2, BL.D3, BL.D4, BL.D5, BL.D8, BL.D9, FS2, FS4, FS5, FS7, FS8, GF11, GF6, MB1, MB13, MB14, MB15, MB16, MB19, MB2, MB20, MB22, MB27, MB3, MB30, MB32, MB33, MB34, MB36, MB4, MB42, MB46, MB47, MB49, MB51, MB52, MB57, MB60, MB61, MB66, MB67, MB71, MB73, MB76, MB77, MB80, MB81, MB82, MB85, MB9, MC5, *ML01*, ML02, ML03, ML04, PE.D2, PE.D3	

Table 13.1 continued

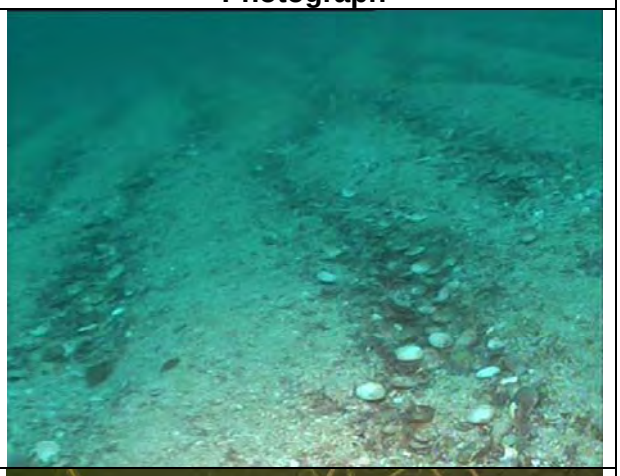
PMF and Sites	Photograph
MAERL OR COARSE SHELL GRAVEL WITH BURROWING SEA CUCUMBERS **SS.SCS.CCS.Nmix** AP1, G10, G6, MB2, MB35, MB5, MB54, MB56, MB74, MB82, MB9, MC1, MC10, MC11, MC13, MC2, MC4, MC5, *MC6*, MC7, MC8, MC9 All records uncertain	
NATIVE OYSTER *Ostrea edulis* LT.D79, LT.D81, LT.D82, LT.S85, LT.S86, LT.S87, LT.S88, *OE01*	
SEAGRASS BEDS (*Zostera marina* beds on lower shore or infralittoral clean or muddy sand) **SS.SMp.SSgr.Zmar** G33, GB.B48-50, GB.B52, GB.B54, GB.B55, GB.B66, GB.B68, GB.D42-44, LG.V105-131, LG.V164, LG.V166-168, LG.V170, LG.V178-180, LG.V182-184, LG.V187, LG.V188, LG.V191-196, LG.V199, LG.V233, LG.V246, LG.V248, LG.V258-262, LG.V53-55, LG.V57-61, LG.V64-73, LG.V83, LG.V85-87, LG.V90, LG.V91, LG.V95-98, SG11-13, SG15, SG19, SG20, SG21, SG3, SG6, SG8, ZM01, *ZM02*	

Table 13.1 continued

PMF and Sites	Photograph
SEA LOCH EGG WRACK BEDS **LR.LLR.FVS.Ascmac** *B1*, B2-4, T1-7, O1, WW01-03	
LEPTOMETRA CELTICA BM53, BM57, G22, GF4, GF8, LC1, LC2, LC6, 7998*, 7999*, 8000	
ARCTICA ISLANDICA G32, M7, M15, M17, *M24*	

Table 13.2 Non-PMF biotopes recorded during the current survey with illustrative photograph or video frame grab. Italicised sites indicate provenance of image

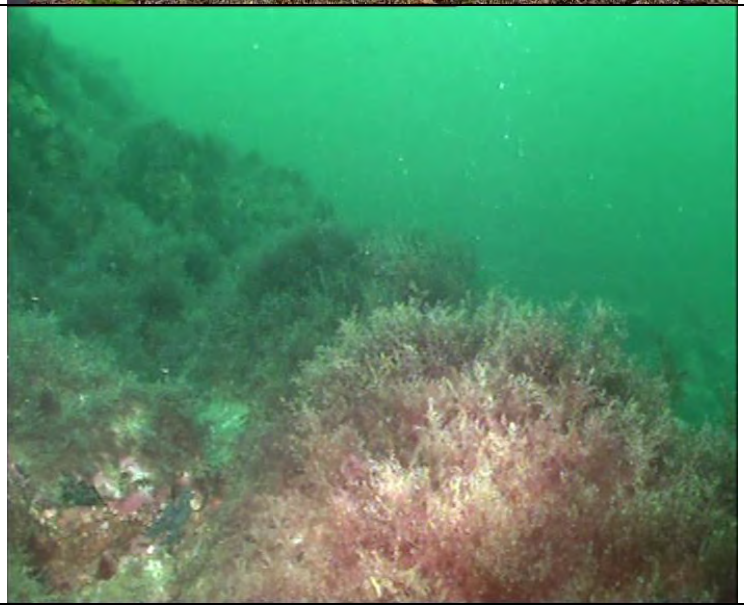
Biotope and Sites	Photograph
LR.LLR.F.Fserr.X *Fucus serratus* on full salinity lower eulittoral mixed substrata *ME01*	
LR.LLR.F.Fves.X *Fucus vesiculosus* on mid eulittoral mixed substrata *ME01*, OE01	
IR.HIR.KFaR.FoR Foliose red seaweeds on exposed lower infralittoral rock MB27, MB30, MB32, *MB55*, MB69, MB9	

Table 13.2 continued

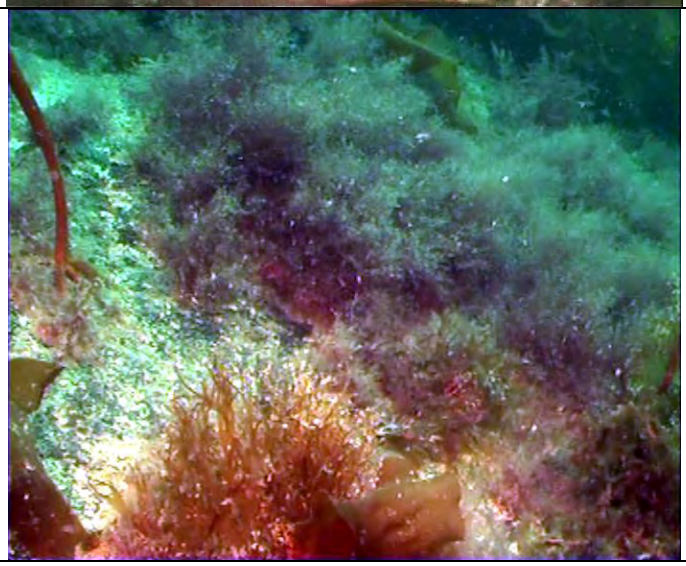
Biotope and Sites	Photograph
IR.HIR.KFaR.FoR.Dic Foliose red seaweeds with dense *Dictyota dichotoma* on exposed lower infralittoral rock *GF6*	
IR.HIR.KFaR.LhypR.Ft *Laminaria hyperborea* forest with dense red seaweeds on exposed upper infralittoral rock *MB50*	
IR.HIR.KSed Sand or gravel-affected or disturbed kelp and seaweed communities *MB40*, MB41, MB66, MB81	

Table 13.2 continued

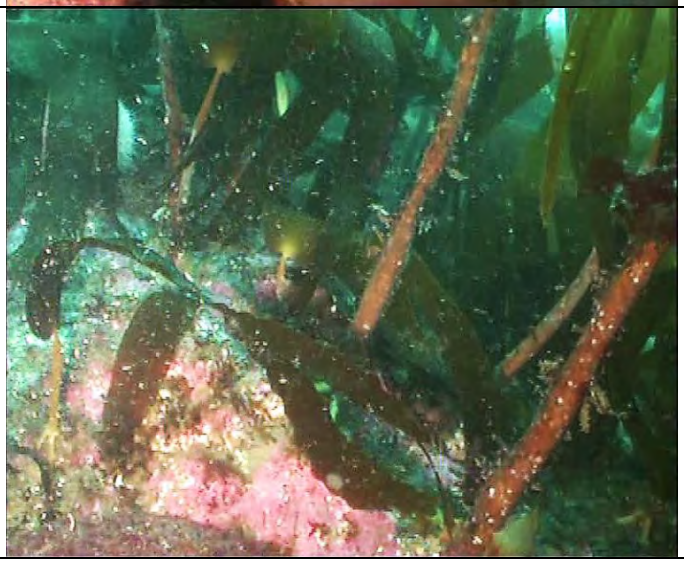
Biotope and Sites	Photograph
IR.MIR.KR.Lhyp *Laminaria hyperborea* and foliose red seaweeds on moderately exposed infralittoral rock *FS6*	
IR.MIR.KR.Lhyp.Ft *Laminaria hyperborea* forest and foliose red seaweeds on moderately exposed upper infralittoral rock *MB58*, MB65, MB69	
IR.MIR.KR.Lhyp.GzFt Grazed *Laminaria hyperborea* forest with coralline crusts on upper infralittoral rock *MB75*	

Table 13.2 continued

Biotope and Sites	Photograph
IR.MIR.KR.Lhyp.Pk *Laminaria hyperborea* park and foliose red seaweeds on moderately exposed lower infralittoral rock MB67, MB83, MC2	
CR.MCR.EcCr.FaAlCr Faunal and algal crusts on exposed to moderately wave-exposed circalittoral rock 8217, 8340, 8143-52, 8160-73, 8183-96, 8226-36, 8249-55, 8277-84, 8331-34, 8348-61, 8362-83, 8424-40, 8500-17, 8536-41, 8585-93, BM63, BM65, GF10, GF12, MB28, MB55	
CR.MCR.EcCr.FaAlCr.Car *Caryophyllia smithii* with faunal and algal crusts on moderately wave-exposed circalittoral rock 8384-88, *8389*, 8390-94	

Table 13.2 continued

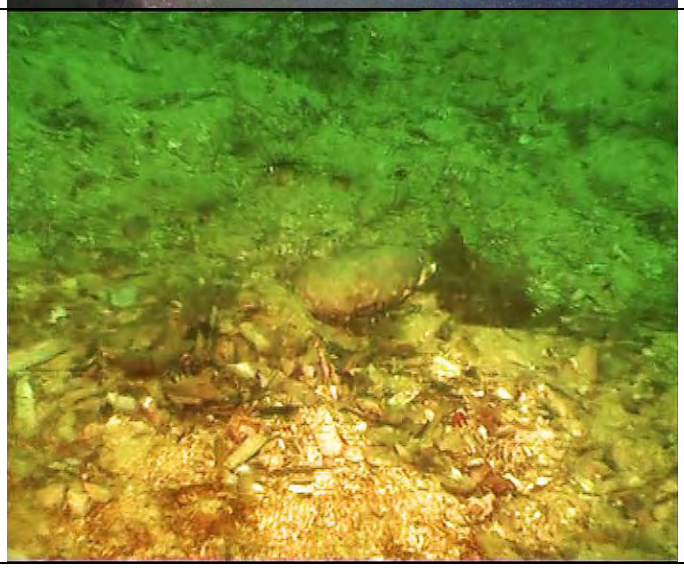
Biotope and Sites	Photograph
CR.MCR.EcCr.FaAlCr.Pom Faunal and algal crusts with *Pomatoceros triqueter* and sparse *Alcyonium digitatum* on exposed to moderately wave-exposed circalittoral rock *GF14*, MC10, MC7, MC9	
CR.LCR.BrAs Brachiopods and ascidians 7987-03, 8023-29, 8263-65, *8266*, 8267-71	
SS.SCS.ICS Infralittoral coarse sediment MB40, *MB41*, MB50, MB59, MB65	

Table 13.2 continued

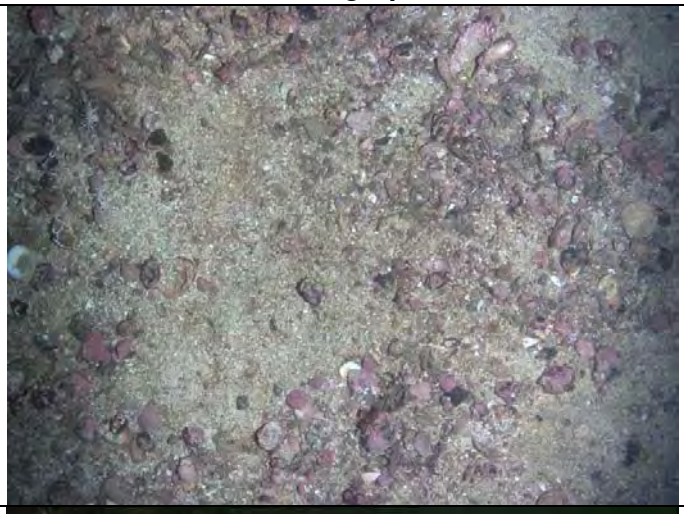
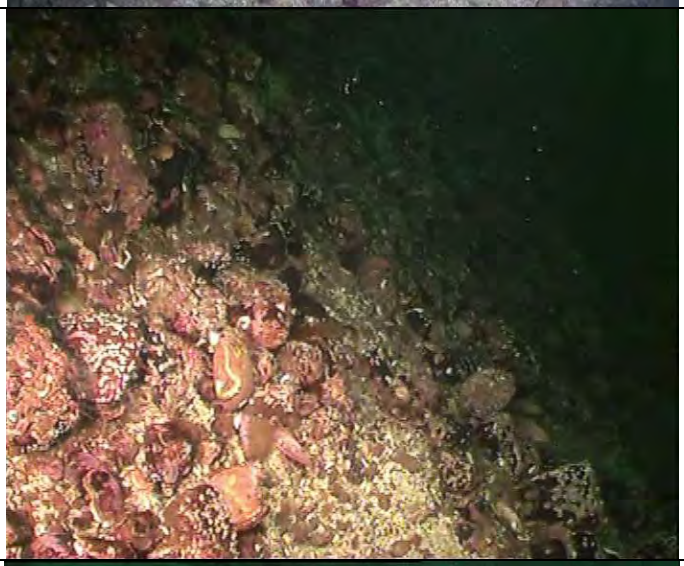
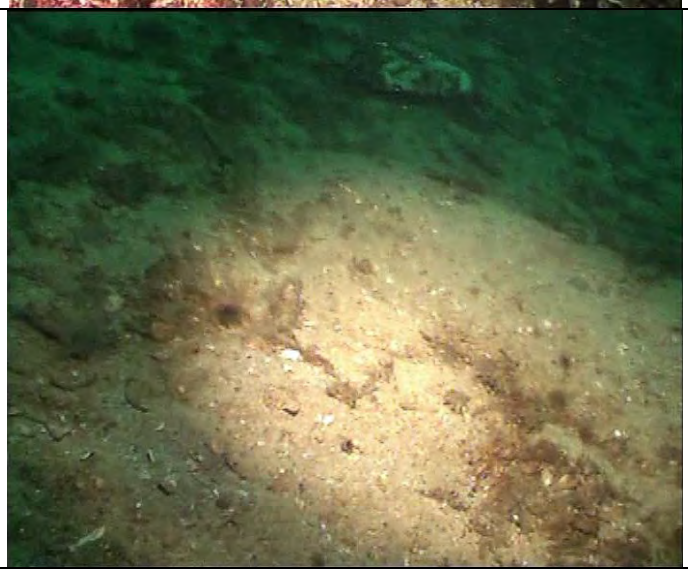
Biotope and Sites	Photograph
SS.SCS.CCS Circalittoral coarse sediment 8554-55, *8556*, 8557-72, G31, MB37	
SS.SCS.CCS.PomB *Pomatoceros triqueter* with barnacles and bryozoan crusts on unstable circalittoral cobbles and pebbles *MB84*	
SS.SSa.IMuSa Infralittoral muddy sand *BM17*	

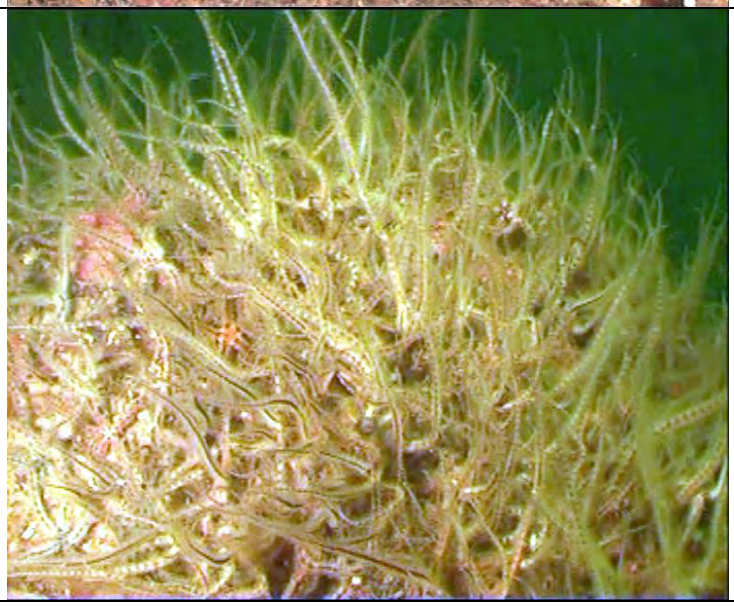
Table 13.2 continued

Biotope and Sites	Photograph
SS.SSa.IMuSa.ArelSa *Arenicola marina* in infralittoral fine sand or muddy sand *SG19*, SG20	
SS.SSa.IMuSa.EcorEns *Echinocardium cordatum* and *Ensis* spp. in lower shore and shallow sublittoral slightly muddy fine sand 8249-55, 8459-68, 8518-33, 8551-53, MB12, MB7, MB8, *MC3*, SG1, SG3, SG8-18, SG21-27	
SS.SSa.CMuSa Circalittoral muddy sand 8573-84, 8585-93, BM19, BM21, BM65, G11, *GF1*, GF10, GF7, HM11, LC4, MB28	

Table 13.2 continued

Biotope and Sites	Photograph
SS.SMu.CSaMu.VirOphPmax *Virgularia mirabilis* and *Ophiura* spp. with *Pecten maximus* on circalittoral sandy or shelly mud 8143-52, 8441-51, BM18, G12, *MB11*, MB6, MB63	
SS.SMx.IMx Infralittoral mixed sediment *FS11*, FS14, FS9, HM7, HM9, MB29, MB70	
SS.SMx.CMx Circalittoral mixed sediment 8124-28, 8132-36, 8160-73, 8183-96, 8226-36, 8348-61, 8362-83, 8384-94, 8424-40, 8536-41, BM20, BM23, BM41, *BM68*, GF12, GF7, HM3, HM4, HM8, LC3, LC5, MB10, MB28, MB43, MB45, MB62	

Table 13.2 continued

Biotope and Sites	Photograph
SS.SMx.CMx.FluHyd *Flustra foliacea* and *Hydrallmania falcata* on tide-swept circalittoral mixed sediment *MB38*	
SS.SMx.CMx.OphMx *Ophiothrix fragilis* and/or *Ophiocomina nigra* brittlestar beds on sublittoral mixed sediment *FS10*, FS12, FS13, FS14, FS15, FS16, FS17, L13, MB24, PE.D6, SL.D1, SL.D14, SL.D9	

Appendix 14 Image logs

Table 14.1 Digital still photographic log showing details of photographs taken during the 2010 survey and lodged with Scottish Natural Heritage. Files are jpegs or tiffs with the extensions 'jpg' or 'tif'. All filenames are preceded by the trunk 'SNH_UA_2010_'Photographers (Phot) are Alastair Lyndon (AL), Ben James (BJ), Colin Moore (CM), Colin Trigg (CT), Dan Harries (DH), Emily Greenall (EG), Graham Saunders (GS), Lewis Cowie (LC), Suzanne Henderson (SH)

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
1_DSCF1689	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Marthasterias glacialis* on dense maerl	GS	Mrl.Pcal.R	MB
1_DSCF1693	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	SNH diver (Suzanne Henderson) operating video over maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1694	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Marthasterias glacialis* on dense maerl with transect tape in shot	GS	Mrl.Pcal.R	MB
1_DSCF1698	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	SNH diver (Suzanne Henderson) operating video over maerl bed. Marthasterias glacialis and transect tape in foreground	GS	Mrl.Pcal.R	MB
1_DSCF1701	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	SNH diver (Suzanne Henderson) operating video over maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1703	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	Maerl bed with algal turf dominated by *Trailliella intricata*. *Dictyota dichotoma* near centre of view	GS	Mrl.Pcal.R	MB
1_DSCF1705	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	Maerl bed with *Asperococcus turneri* and *Dictyota dichotoma*	GS	Mrl.Pcal.R	MB
1_DSCF1706	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Cerianthus lloydii* on maerl bed with tufts of *Heterosiphonia japonica*	GS	Mrl.Pcal.R	MB
1_DSCF1707	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Cerianthus lloydii* on maerl bed with tufts of *Heterosiphonia japonica*	GS	Mrl.Pcal.R	MB
1_DSCF1708	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Cerianthus lloydii* on maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1709	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Cerianthus lloydii* on maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1710	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	Stipe of *Saccharina latissima* on maerl bed with much *Heterosiphonia japonica* also in shot	GS	Mrl.Pcal.R	MB

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
1_DSCF1711	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	Stipe of *Saccharina latissima* on maerl bed with much *Heterosiphonia japonica* also in shot	GS	Mrl.Pcal.R	MB
1_DSCF1712	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Marthasterias glacialis* on maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1713	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Henricia* on maerl bed with turf of *Trailliella intricata* and *Heterosiphonia japonica*	GS	Mrl.Pcal.R	MB
1_DSCF1714	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Marthasterias glacialis* on maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1716	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Marthasterias glacialis* on maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1717	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Henricia* on maerl bed with turf of *Trailliella intricata*	GS	Mrl.Pcal.R	MB
1_DSCF1719	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	SNH diver (Suzanne Henderson) operating video over maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1720	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	SNH diver (Suzanne Henderson) operating video over maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1721	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	SNH diver (Suzanne Henderson) operating video over maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1722	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	SNH diver (Suzanne Henderson) operating video over maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1723	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	SNH diver (Suzanne Henderson) operating video over maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1724	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	SNH diver (Suzanne Henderson) operating video over maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1725	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	SNH diver (Suzanne Henderson) operating video over maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1730	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	SNH diver (Suzanne Henderson) operating video over maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1731	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	SNH diver (Suzanne Henderson) operating video over maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1732	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	SNH diver (Suzanne Henderson) operating video over maerl bed	GS	Mrl.Pcal.R	MB

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
1_DSCF1734	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	SNH diver (Suzanne Henderson) operating video over maerl bed, with Marthasterias glacialis	GS	Mrl.Pcal.R	MB
1_DSCF1736	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	SNH diver (Suzanne Henderson) operating video over maerl bed, with Marthasterias glacialis	GS	Mrl.Pcal.R	MB
1_DSCF1738	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Porania pulvillus*, *Scrupocellaria reptans* and *Electra pilosa* on *Saccharina latissima* on maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1739	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	Maerl bed close-up	GS	Mrl.Pcal.R	MB
1_DSCF1740	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	Maerl bed with *Dictyota dichotoma*, *Asperococcus turneri* and *Chorda filum*	GS	Mrl.Pcal.R	MB
1_DSCF1742	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	Maerl bed with *Dictyota dichotoma*, *Asperococcus turneri* and *Chorda filum*	GS	Mrl.Pcal.R	MB
1_DSCF1746	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	Maerl bed with algal turf dominated by *Trailliella intricata*	GS	Mrl.Pcal.R	MB
1_DSCF1748	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	Maerl bed with algal turf	GS	Mrl.Pcal.R	MB
1_DSCF1750	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Munida rugosa* emerging from maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1755	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Munida rugosa* emerging from maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1756	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Munida rugosa* emerging from maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1758	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	Large maerl clump bound by *Trailliella intricata*	GS	Mrl.Pcal.R	MB
1_DSCF1766	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	SNH diver (Suzanne Henderson) operating video over maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1767	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	SNH diver (Suzanne Henderson) operating video over maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1768	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	SNH diver (Suzanne Henderson) operating video over maerl bed	GS	Mrl.Pcal.R	MB

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
1_DSCF1770	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Cancer pagurus* on maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1772	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Necora puber* on maerl bed with dense filamentous red algal turf	GS	Mrl.Pcal.R	MB
1_DSCF1773	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Necora puber* on maerl bed with dense filamentous red algal turf	GS	Mrl.Pcal.R	MB
1_DSCF1774	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	Wide shot of maerl bed habitat	GS	Mrl.Pcal.R	MB
1_DSCF1775	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	Wide shot of maerl bed habitat	GS	Mrl.Pcal.R	MB
2_DSCF1719	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Munida rugosa* in maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1720	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Munida rugosa* in maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1721	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Munida rugosa* in maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1722	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Munida rugosa* in maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1723	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Munida rugosa* in maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1725	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Munida rugosa* in maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1726	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Porania pulvillus* and *Scrupocellaria reptans* on *Saccharina latissima*	GS	Mrl.Pcal.R	MB
2_DSCF1727	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Necora puber* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1731	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Necora puber* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1732	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	Dense maerl (*Phymatolithon calcareum*) close-up	GS	Mrl.Pcal.R	MB
2_DSCF1733	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	Dense maerl (*Phymatolithon calcareum*) close-up	GS	Mrl.Pcal.R	MB
2_DSCF1734	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Corallina officinalis* on maerl close-up	GS	Mrl.Pcal.R	MB

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
2_DSCF1738	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Cerianthus lloydii* in maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1739	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Cerianthus lloydii* in maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1743	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Cerianthus lloydii* close-up	GS	Mrl.Pcal.R	MB
2_DSCF1744	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Cerianthus lloydii* close-up	GS	Mrl.Pcal.R	MB
2_DSCF1746	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Cerianthus lloydii* close-up	GS	Mrl.Pcal.R	MB
2_DSCF1747	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Marthasterias glacialis* - extreme close-up	GS	Mrl.Pcal.R	MB
2_DSCF1753	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	Small pagurid on maerl	GS	Mrl.Pcal.R	MB
2_DSCF1754	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	Maerl close-up (*Phymatolithon calcareum*)	GS	Mrl.Pcal.R	MB
2_DSCF1755	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	Juvenile *Astropecten irregularis* on maerl	GS	Mrl.Pcal.R	MB
2_DSCF1756	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	Maerl close-up (*Phymatolithon calcareum*)	GS	Mrl.Pcal.R	MB
2_DSCF1757	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	Maerl close-up (*Phymatolithon calcareum*)	GS	Mrl.Pcal.R	MB
2_DSCF1758	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	Maerl close-up (*Phymatolithon calcareum*)	GS	Mrl.Pcal.R	MB
2_DSCF1759	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	Maerl close-up (*Phymatolithon calcareum*)	GS	Mrl.Pcal.R	MB
2_DSCF1760	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Marthasterias glacialis* - extreme close-up	GS	Mrl.Pcal.R	MB
2_DSCF1762	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Marthasterias glacialis* - extreme close-up	GS	Mrl.Pcal.R	MB
2_DSCF1765	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Marthasterias glacialis* - extreme close-up	GS	Mrl.Pcal.R	MB
2_DSCF1774	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Marthasterias glacialis* - extreme close-up	GS	Mrl.Pcal.R	MB
2_DSCF1775	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Marthasterias glacialis* - extreme close-up	GS	Mrl.Pcal.R	MB

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
2_DSCF1776	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Marthasterias glacialis* - extreme close-up	GS	Mrl.Pcal.R	MB
2_DSCF1777	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Marthasterias glacialis* - extreme close-up	GS	Mrl.Pcal.R	MB
2_DSCF1778	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Marthasterias glacialis* - extreme close-up	GS	Mrl.Pcal.R	MB
2_DSCF1785	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Taurulus bubalis* on maerl	GS	Mrl.Pcal.R	MB
2_DSCF1789	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Taurulus bubalis* on maerl	GS	Mrl.Pcal.R	MB
2_DSCF1790	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Taurulus bubalis* on maerl	GS	Mrl.Pcal.R	MB
2_DSCF1792	09/08/10	ML01	57.90002	-5.38523	NG 99489 95093	*Taurulus bubalis* on maerl	GS	Mrl.Pcal.R	MB
1_DSCF1776	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - general view of habitat	GS	IMx.Lim	FS
1_DSCF1779	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - general view of habitat	GS	IMx.Lim	FS
1_DSCF1780	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - showing *Nemertesia ramosa*, *Plocamium cartilagineum*, *Rhodophyllis divaricata*, *Antedon* sp. and transect tape	GS	IMx.Lim	FS
1_DSCF1781	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - showing *Nemertesia ramosa*, *Plocamium cartilagineum*, *Rhodophyllis divaricata*, *Antedon* sp. and transect tape	GS	IMx.Lim	FS
1_DSCF1782	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - showing *Nemertesia ramosa*	GS	IMx.Lim	FS
1_DSCF1783	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - showing *Nemertesia ramosa*	GS	IMx.Lim	FS
1_DSCF1784	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - showing *Nemertesia ramosa*	GS	IMx.Lim	FS
1_DSCF1785	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - general view of habitat	GS	IMx.Lim	FS

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
1_DSCF1786	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - general view of habitat with *Echinus esculentus*	GS	IMx.Lim	FS
1_DSCF1787	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - general view of habitat with *Echinus esculentus*	GS	IMx.Lim	FS
1_DSCF1788	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - showing *Munida rugosa* and hydroids including *Polyplumaria frutescens*	GS	IMx.Lim	FS
1_DSCF1789	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - showing *Munida rugosa* and hydroids including *Polyplumaria frutescens*	GS	IMx.Lim	FS
1_DSCF1790	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - general view of habitat	GS	IMx.Lim	FS
1_DSCF1791	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - general view of habitat with *Echinus esculentus*	GS	IMx.Lim	FS
1_DSCF1793	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - general view of habitat with *Marthasterias glacialis* and *Nemertesia ramosa*	GS	IMx.Lim	FS
1_DSCF1795	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - general view of habitat with *Marthasterias glacialis* and *Nemertesia ramosa*	GS	IMx.Lim	FS
1_DSCF1796	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed with *Porania pulvillus*	GS	IMx.Lim	FS
1_DSCF1797	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - showing *Munida rugosa*	GS	IMx.Lim	FS
1_DSCF1798	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - showing *Munida rugosa*	GS	IMx.Lim	FS
1_DSCF1799	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed with *Nemertesia ramosa*	GS	IMx.Lim	FS
1_DSCF1801	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	SNH Diver (Suzanne Henderson) operating video over *Limaria* bed	GS	IMx.Lim	FS
1_DSCF1802	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	SNH Diver (Suzanne Henderson) operating video over *Limaria* bed	GS	IMx.Lim	FS

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
1_DSCF1804	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Necora puber* with captured live *Limaria* on *Limaria* bed	GS	IMx.Lim	FS
1_DSCF1805	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Necora puber* with captured live *Limaria* on *Limaria* bed	GS	IMx.Lim	FS
1_DSCF1806	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Necora puber* with captured live *Limaria* on *Limaria* bed	GS	IMx.Lim	FS
1_DSCF1807	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	Close-up of *Marthasterias glacialis* on *Limaria* bed	GS	IMx.Lim	FS
1_DSCF1808	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - showing *Nemertesia ramosa* and algal turf including much *Rhodophyllis divaricata*	GS	IMx.Lim	FS
1_DSCF1809	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - showing *Nemertesia ramosa* and algal turf including much *Rhodophyllis divaricata*	GS	IMx.Lim	FS
1_DSCF1811	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - showing *Nemertesia ramosa* and algal turf including much *Rhodophyllis divaricata*	GS	IMx.Lim	FS
1_DSCF1812	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - general view of habitat with *Echinus esculentus*	GS	IMx.Lim	FS
1_DSCF1813	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* bed - general view of habitat with *Nemertesia ramosa*	GS	IMx.Lim	FS
2_DSCF1793	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Necora puber* close-up on *Limaria* bed	GS	IMx.Lim	FS
2_DSCF1794	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Kirchenpaueria pinnata* close-up on *Limaria* bed	GS	IMx.Lim	FS
2_DSCF1795	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Munida rugosa* close-up	GS	IMx.Lim	FS
2_DSCF1796	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	Pebbles and cobbles on *Limaria* bed encrusted with pink coralline algae and serpulid worms	GS	IMx.Lim	FS
2_DSCF1798	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* close-up	GS	IMx.Lim	FS

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
2_DSCF1800	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* close-up	GS	IMx.Lim	FS
2_DSCF1801	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* close-up	GS	IMx.Lim	FS
2_DSCF1802	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* close-up	GS	IMx.Lim	FS
2_DSCF1803	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* close-up	GS	IMx.Lim	FS
2_DSCF1804	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* close-up	GS	IMx.Lim	FS
2_DSCF1806	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* close-up	GS	IMx.Lim	FS
2_DSCF1807	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* close-up	GS	IMx.Lim	FS
2_DSCF1809	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* close-up	GS	IMx.Lim	FS
2_DSCF1810	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* close-up	GS	IMx.Lim	FS
2_DSCF1811	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Polyplumaria frutescens* close-up	GS	IMx.Lim	FS
2_DSCF1812	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Porania pulvillus* close-up	GS	IMx.Lim	FS
2_DSCF1815	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Nemertesia ramosa* close-up	GS	IMx.Lim	FS
2_DSCF1816	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	Hydroid turf close-up	GS	IMx.Lim	FS
2_DSCF1817	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	Hydroid turf close-up	GS	IMx.Lim	FS
2_DSCF1819	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Liocarcinus* sp. Close-up	GS	IMx.Lim	FS
2_DSCF1822	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Ophiocomina nigra* - close-up	GS	IMx.Lim	FS
2_DSCF1823	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Ophiocomina nigra* - close-up	GS	IMx.Lim	FS
2_DSCF1825	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Ophiocomina nigra*	GS	IMx.Lim	FS

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
2_DSCF1828	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Halecium halecinum* close-up	GS	IMx.Lim	FS
2_DSCF1832	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Inachus* sp.	GS	IMx.Lim	FS
2_DSCF1834	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Polyplumaria frutescens* close-up	GS	IMx.Lim	FS
2_DSCF1835	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* close-up	GS	IMx.Lim	FS
2_DSCF1836	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Limaria hians* close-up	GS	IMx.Lim	FS
2_DSCF1837	12/08/10	LH01	57.87553	-5.12717	NH 14648 91631	*Nemertesia ramosa*	GS	IMx.Lim	FS
1_DSCF1814	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	Maerl bed, with patchy algal turf, *Luidia ciliaris* and transect tape	GS	Mrl.Pcal.R	MB
1_DSCF1816	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	Maerl bed with algal turf including *Scinaia turgida* in foreground	GS	Mrl.Pcal.R	MB
1_DSCF1818	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	Maerl bed with algal turf	GS	Mrl.Pcal.R	MB
1_DSCF1819	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	Maerl bed with algal turf including *Desmarestia aculeata* and *Saccharina latissima*	GS	Mrl.Pcal.R	MB
1_DSCF1820	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	Maerl bed, *Aequipecten opercularis* and transect tape	GS	Mrl.Pcal.R	MB
1_DSCF1821	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	Maerl bed, *Aequipecten opercularis* and transect tape	GS	Mrl.Pcal.R	MB
1_DSCF1822	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Aequipecten opercularis* on maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1823	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Aequipecten opercularis* on maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1825	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Aequipecten opercularis* on maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1826	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	General view of maerl bed and algal turf	GS	Mrl.Pcal.R	MB
1_DSCF1827	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	General view of maerl bed and algal turf	GS	Mrl.Pcal.R	MB

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
1_DSCF1828	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	General view of maerl bed and algal turf, with *Heterosiphonia japonica* in midground	GS	Mrl.Pcal.R	MB
1_DSCF1829	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	General view of maerl bed and algal turf	GS	Mrl.Pcal.R	MB
1_DSCF1830	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Pecten maximus* with attached *Saccharina latissima* on maerl	GS	Mrl.Pcal.R	MB
1_DSCF1831	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Pecten maximus* with attached *Saccharina latissima* on maerl	GS	Mrl.Pcal.R	MB
1_DSCF1835	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Pecten maximus* with attached *Saccharina latissima* on maerl	GS	Mrl.Pcal.R	MB
1_DSCF1836	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Pecten maximus* with attached *Saccharina latissima* on maerl	GS	Mrl.Pcal.R	MB
1_DSCF1845	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	Wide view of maerl bed and algal turf	GS	Mrl.Pcal.R	MB
1_DSCF1846	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	Maerl bed and algal turf	GS	Mrl.Pcal.R	MB
1_DSCF1847	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Necora puber* and *Liocarcinus depurator* on maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1849	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Cancer pagurus* on *Saccharina latissima*, with *Desmarestia aculeata* on maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1850	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Luidia ciliaris* on maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1851	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Luidia ciliaris* on maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF1854	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Marthasterias glacialis* and much *Heterosiphonia japonica* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1841	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Palaemon serratus* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1843	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Palaemon serratus* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1846	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Palaemon serratus* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1847	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Palaemon serratus* on maerl bed	GS	Mrl.Pcal.R	MB

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
2_DSCF1848	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Palaemon serratus* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1849	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Palaemon serratus* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1850	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Palaemon serratus* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1851	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Palaemon serratus* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1852	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Palaemon serratus* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1853	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Palaemon serratus* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1855	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Palaemon serratus* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1856	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Palaemon serratus* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1857	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Palaemon serratus* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1858	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Palaemon serratus* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1859	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Palaemon serratus* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1860	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Palaemon serratus* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1861	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Pecten maximus* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1862	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Pecten maximus* close-up	GS	Mrl.Pcal.R	MB
2_DSCF1864	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Pecten maximus* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1867	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Pecten maximus* close-up	GS	Mrl.Pcal.R	MB
2_DSCF1868	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Pecten maximus* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1869	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Pecten maximus* on maerl bed	GS	Mrl.Pcal.R	MB

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
2_DSCF1871	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Pagurus bernhardus* on maerl	GS	Mrl.Pcal.R	MB
2_DSCF1872	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Pagurus bernhardus* on maerl	GS	Mrl.Pcal.R	MB
2_DSCF1874	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Phymatolithon calcareum* close-up	GS	Mrl.Pcal.R	MB
2_DSCF1875	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Dictyota dichotoma* and *Bonnemaisonia asparagoides* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1876	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Dictyota dichotoma* and *Bonnemaisonia asparagoides* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1877	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Dictyota dichotoma, Scinaia turgida* and *Bonnemaisonia asparagoides* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1878	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Luidia ciliaris* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1884	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Luidia ciliaris* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1885	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Luidia ciliaris* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1888	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Macropodia* sp. on *Desmarestia aculeata*	GS	Mrl.Pcal.R	MB
2_DSCF1889	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Macropodia* sp. on *Desmarestia aculeata*	GS	Mrl.Pcal.R	MB
2_DSCF1893	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Palaemon serratus* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF1895	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	Maerl bed (*Phymatolithon calcareum*) close-up	GS	Mrl.Pcal.R	MB
2_DSCF1896	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Echinus esculentus* with *Bonnemaisonia asparagoides* and *Heterosiphonia japonica*	GS	Mrl.Pcal.R	MB
2_DSCF1897	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	*Echinus esculentus* with *Bonnemaisonia asparagoides* and *Heterosiphonia japonica*	GS	Mrl.Pcal.R	MB

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
1_DSCF1855	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	View of transect tape through *Zostera marina* bed	GS	SSgr.Zmar	SG
1_DSCF1856	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Zostera marina* bed with ectocarpoid algae	GS	SSgr.Zmar	SG
1_DSCF1857	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Zostera marina* bed with ectocarpoid algae	GS	SSgr.Zmar	SG
1_DSCF1858	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Zostera marina* bed with ectocarpoid algae	GS	SSgr.Zmar	SG
1_DSCF1859	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Zostera marina* bed with ectocarpoid algae	GS	SSgr.Zmar	SG
1_DSCF1860	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Zostera marina* bed with ectocarpoid algae	GS	SSgr.Zmar	SG
1_DSCF1863	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Astropecten irregularis* in *Zostera marina* bed	GS	SSgr.Zmar	SG
1_DSCF1864	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Astropecten irregularis* in *Zostera marina* bed	GS	SSgr.Zmar	SG
1_DSCF1865	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Astropecten irregularis* in *Zostera marina* bed	GS	SSgr.Zmar	SG
1_DSCF1870	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Astropecten irregularis* in *Zostera marina* bed	GS	SSgr.Zmar	SG
1_DSCF1871	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Zostera marina* bed with ectocarpoid algae	GS	SSgr.Zmar	SG
1_DSCF1874	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Astropecten irregularis* on *Zostera marina* bed	GS	SSgr.Zmar	SG
1_DSCF1884	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	Liocarcinus depurator in Zostera marina bed	GS	SSgr.Zmar	SG
1_DSCF1885	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	Liocarcinus depurator in Zostera marina bed	GS	SSgr.Zmar	SG
1_DSCF1886	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	Liocarcinus depurator in Zostera marina bed	GS	SSgr.Zmar	SG
1_DSCF1890	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	Liocarcinus depurator in Zostera marina bed	GS	SSgr.Zmar	SG
1_DSCF1898	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	Liocarcinus depurator in Zostera marina bed	GS	SSgr.Zmar	SG
1_DSCF1901	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Zostera marina* bed with ectocarpoid algae	GS	SSgr.Zmar	SG

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
1_DSCF1902	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Zostera marina* bed with ectocarpoid algae	GS	SSgr.Zmar	SG
1_DSCF1903	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Zostera marina* bed with ectocarpoid algae	GS	SSgr.Zmar	SG
1_DSCF1904	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Zostera marina* bed with ectocarpoid algae	GS	SSgr.Zmar	SG
2_DSCF1904	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Carcinus maenas* in *Zostera marina* bed	GS	SSgr.Zmar	SG
2_DSCF1906	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Astropecten irregularis* in *Zostera marina* bed	GS	SSgr.Zmar	SG
2_DSCF1908	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Pagurus bernhardus* in *Zostera marina* bed	GS	SSgr.Zmar	SG
2_DSCF1911	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Pagurus bernhardus* in *Zostera marina* bed	GS	SSgr.Zmar	SG
2_DSCF1912	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Pagurus bernhardus* in *Zostera marina* bed	GS	SSgr.Zmar	SG
2_DSCF1913	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Pagurus bernhardus* in *Zostera marina* bed	GS	SSgr.Zmar	SG
2_DSCF1918	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Macropodia* sp. on *Zostera marina*	GS	SSgr.Zmar	SG
2_DSCF1921	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Macropodia* sp. on *Zostera marina*	GS	SSgr.Zmar	SG
2_DSCF1922	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Macropodia* sp. on *Zostera marina*	GS	SSgr.Zmar	SG
2_DSCF1937	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Idotea baltica* on *Zostera marina* blade	GS	SSgr.Zmar	SG
2_DSCF1939	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Lacuna vincta* on *Zostera marina* blade	GS	SSgr.Zmar	SG
2_DSCF1940	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Lacuna vincta* on *Zostera marina* blade	GS	SSgr.Zmar	SG
2_DSCF1944	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	Mysids in *Zostera marina* bed	GS	SSgr.Zmar	SG
2_DSCF1947	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Idotea baltica* on *Zostera marina* blade	GS	SSgr.Zmar	SG
2_DSCF1951	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Idotea baltica* on *Zostera marina* blade	GS	SSgr.Zmar	SG

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
2_DSCF1954	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Idotea baltica* on *Zostera marina* blade	GS	SSgr.Zmar	SG
2_DSCF1960	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Lucernariopsis campanulata* on *Zostera marina*	GS	SSgr.Zmar	SG
2_DSCF1961	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Lucernariopsis campanulata* on *Zostera marina*	GS	SSgr.Zmar	SG
2_DSCF1962	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Lucernariopsis campanulata* on *Zostera marina*	GS	SSgr.Zmar	SG
2_DSCF1968	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Lucernariopsis campanulata* on *Zostera marina*	GS	SSgr.Zmar	SG
2_DSCF1973	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Lucernariopsis campanulata* on *Zostera marina*	GS	SSgr.Zmar	SG
2_DSCF1976	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Lucernariopsis campanulata* on *Zostera marina*	GS	SSgr.Zmar	SG
2_DSCF1977	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Lucernariopsis campanulata* on *Zostera marina*	GS	SSgr.Zmar	SG
2_DSCF1979	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Lucernariopsis campanulata* on *Zostera marina*	GS	SSgr.Zmar	SG
2_DSCF1990	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Amphiura* sp. arms emerging from sediment in *Zostera marina* bed	GS	SSgr.Zmar	SG
2_DSCF1992	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Aspitrigla cuculus* (gurnard) in *Zostera marina* bed	GS	SSgr.Zmar	SG
2_DSCF1996	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Idotea baltica* on *Zostera marina* blade	GS	SSgr.Zmar	SG
2_DSCF2003	15/08/10	ZM01	57.88372	-5.43617	NG 96379 93432	*Idotea baltica* on *Zostera marina* blade	GS	SSgr.Zmar	SG
1_DSCF1905	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	Algal mat on maerl bed with clump of *Polysiphonia furcellata*	GS	Mrl.Lgla	MB
1_DSCF1907	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	Algal mat on maerl bed with clump of *Polysiphonia furcellata*	GS	Mrl.Lgla	MB
1_DSCF1910	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	Transect tape passing through maerl bed with algal mat	GS	Mrl.Lgla	MB
1_DSCF1914	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	Mating *Carcinus maenas* on maerl	GS	Mrl.Lgla	MB

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
1_DSCF1921	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Polysiphonia furcellata* and algal mat on maerl bed	GS	Mrl.Lgla	MB
1_DSCF1922	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Polysiphonia furcellata* and algal mat on maerl bed	GS	Mrl.Lgla	MB
1_DSCF1923	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Cyanea capillata* on maerl bed	GS	Mrl.Lgla	MB
1_DSCF1925	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Cyanea capillata* on maerl bed	GS	Mrl.Lgla	MB
1_DSCF1926	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Liocarcinus depurator* on maerl	GS	Mrl.Lgla	MB
1_DSCF1927	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Liocarcinus depurator* on maerl	GS	Mrl.Lgla	MB
1_DSCF1928	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Liocarcinus depurator* on maerl	GS	Mrl.Lgla	MB
1_DSCF1933	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Marthasterias glacialis* on maerl	GS	Mrl.Lgla	MB
1_DSCF1934	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Marthasterias glacialis* on maerl	GS	Mrl.Lgla	MB
1_DSCF1936	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Marthasterias glacialis* on maerl	GS	Mrl.Lgla	MB
1_DSCF1937	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Brongniartella byssoides* and algal mat on maerl bed	GS	Mrl.Lgla	MB
1_DSCF1938	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Brongniartella byssoides* and algal mat on maerl bed	GS	Mrl.Lgla	MB
1_DSCF1941	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Brongniartella byssoides* and algal mat on maerl bed	GS	Mrl.Lgla	MB
1_DSCF1942	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Polysiphonia furcellata* and algal mat on maerl bed	GS	Mrl.Lgla	MB
1_DSCF1943	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Polysiphonia furcellata* and algal mat on maerl bed	GS	Mrl.Lgla	MB
1_DSCF1946	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Polysiphonia furcellata* and algal mat on maerl bed	GS	Mrl.Lgla	MB
1_DSCF1947	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Polysiphonia furcellata* and algal mat on maerl bed	GS	Mrl.Lgla	MB
1_DSCF1950	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Polysiphonia furcellata* and algal mat on maerl bed	GS	Mrl.Lgla	MB

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
1_DSCF1951	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Polysiphonia furcellata* and algal mat on maerl bed	GS	Mrl.Lgla	MB
1_DSCF1952	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	Diver (Jo Porter) videoing maerl bed transect	GS	Mrl.Lgla	MB
1_DSCF1953	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	Diver (Jo Porter) videoing maerl bed transect	GS	Mrl.Lgla	MB
2_DSCF2006	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Polysiphonia furcellata* on maerl bed	GS	Mrl.Lgla	MB
2_DSCF2007	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Carcinus maenas* on maerl bed	GS	Mrl.Lgla	MB
2_DSCF2011	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Trisopterus minutus*? over maerl bed	GS	Mrl.Lgla	MB
2_DSCF2012	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	Juvenile *Asterias rubens* on maerl bed	GS	Mrl.Lgla	MB
2_DSCF2016	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	Juvenile *Astropecten irregularis* on maerl bed	GS	Mrl.Lgla	MB
2_DSCF2021	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Liocarcinus depurator*	GS	Mrl.Lgla	MB
2_DSCF2026	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Aequipecten opercularis*	GS	Mrl.Lgla	MB
2_DSCF2027	17/08/10	ML03	57.77897	-5.61965	NG 84883 82348	*Aequipecten opercularis*	GS	Mrl.Lgla	MB
1_DSCF1956	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* on pebbles	GS	Fves.X	OE
1_DSCF1959	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* on pebbles	GS	Fves.X	OE
1_DSCF1961	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* on pebbles	GS	Fves.X	OE
1_DSCF1963	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* and *Fucus vesiculosus* on pebbles	GS	Fves.X	OE
1_DSCF1966	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* and *Fucus vesiculosus* on pebbles	GS	Fves.X	OE
1_DSCF1968	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* on pebbles	GS	Fves.X	OE
1_DSCF1973	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* on pebbles with *Chorda filum*	GS	KSwSS.LsacCho	OE

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
1_DSCF1974	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* on pebbles with *Chorda filum*	GS	KSwSS.LsacCho	OE
1_DSCF1977	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* on pebbles with *Chorda filum* and *Polyides rotundus*	GS	KSwSS.LsacCho	OE
1_DSCF1978	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* on pebbles with *Chorda filum*	GS	KSwSS.LsacCho	OE
1_DSCF1988	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* on pebbles with *Chorda filum*	GS	KSwSS.LsacCho	OE
1_DSCF2011	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* on pebbles with *Chorda filum*	GS	KSwSS.LsacCho	OE
1_DSCF2024	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* on pebbles	GS	KSwSS.LsacCho	OE
1_DSCF2029	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* on pebbles	GS	KSwSS.LsacCho	OE
1_DSCF2034	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* on pebbles	GS	KSwSS.LsacCho	OE
1_DSCF2043	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	Diver (Jo Porter) videoing sea bed	GS	KSwSS.LsacCho	
1_DSCF2045	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	Diver (Jo Porter) videoing sea bed. Chorda filum	GS	KSwSS.LsacCho	
2_DSCF2036	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* close-up	GS		OE
2_DSCF2037	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* close-up	GS		OE
2_DSCF2038	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* close-up	GS		OE
2_DSCF2049	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Archidoris pseudoargus* close-up	GS		
2_DSCF2059	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Archidoris pseudoargus* close-up	GS		
2_DSCF2062	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Archidoris pseudoargus* close-up	GS		
2_DSCF2063	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Archidoris pseudoargus* close-up	GS		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
2_DSCF2064	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Archidoris pseudoargus* close-up	GS		
2_DSCF2067	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Archidoris pseudoargus* close-up	GS		
2_DSCF2068	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Archidoris pseudoargus* close-up	GS		
2_DSCF2069	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Archidoris pseudoargus* close-up	GS		
2_DSCF2076	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Chlamys* sp. close-up	GS		
2_DSCF2082	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	Juvenile brachyuran on *Chorda filum*	GS		
2_DSCF2086	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ascidiella aspersa* on *Fucus vesiculosus*	GS		
2_DSCF2089	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ascidiella aspersa* on *Fucus vesiculosus*	GS		
2_DSCF2092	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ciona intestinalis* on *Fucus vesiculosus*	GS		
2_DSCF2094	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	Colonial ascidian on *Fucus* sp.	GS		
2_DSCF2096	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Buccinum undatum*	GS		
2_DSCF2099	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Taurulus bubalis*	GS		
2_DSCF2104	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Taurulus bubalis*	GS		
2_DSCF2110	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Carcinus maenas*	GS		
2_DSCF2111	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* close-up	GS		OE
2_DSCF2114	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* close-up	GS		OE
2_DSCF2115	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* close-up	GS		OE
2_DSCF2118	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* close-up	GS		OE

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
2_DSCF2119	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* close-up	GS		OE
2_DSCF2120	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* close-up	GS		OE
2_DSCF2123	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* close-up	GS		OE
2_DSCF2124	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Ostrea edulis* close-up	GS		OE
2_DSCF2126	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Carcinus maenas*	GS		
2_DSCF2127	18/08/10	OE01	57.78942	-5.60467	NG 85835 83463	*Carcinus maenas*	GS		
1_DSCF2058	19/08/10	ZM02	57.74445	-5.80323	NG 73759 79107	Diver (Dan Harries) surveying *Zostera marina* bed	GS	SSgr.Zmar	SG
1_DSCF2060	19/08/10	ZM02	57.74445	-5.80323	NG 73759 79107	Diver (Dan Harries) surveying *Zostera marina* bed	GS	SSgr.Zmar	SG
1_DSCF2061	19/08/10	ZM02	57.74445	-5.80323	NG 73759 79107	Diver (Colin Moore) surveying *Zostera marina* bed	GS	SSgr.Zmar	SG
1_DSCF2062	19/08/10	ZM02	57.74445	-5.80323	NG 73759 79107	Transect tape passing through *Zostera marina* bed	GS	SSgr.Zmar	SG
1_DSCF2067	19/08/10	ZM02	57.74445	-5.80323	NG 73759 79107	*Zostera marina* bed	GS	SSgr.Zmar	SG
1_DSCF2068	19/08/10	ZM02	57.74445	-5.80323	NG 73759 79107	*Zostera marina* bed	GS	SSgr.Zmar	SG
1_DSCF2076	19/08/10	ZM02	57.74445	-5.80323	NG 73759 79107	Transect tape passing through *Zostera marina* bed	GS	SSgr.Zmar	SG
2_DSCF2129	19/08/10	ZM02	57.74445	-5.80323	NG 73759 79107	*Idotea baltica* on *Zostera marina* blade	GS	SSgr.Zmar	SG
2_DSCF2136	19/08/10	ZM02	57.74445	-5.80323	NG 73759 79107	*Haliclystus auricula* on *Zostera marina* blade	GS	SSgr.Zmar	SG
2_DSCF2146	19/08/10	ZM02	57.74445	-5.80323	NG 73759 79107	*Haliclystus auricula* on *Zostera marina* blade	GS	SSgr.Zmar	SG
2_DSCF2147	19/08/10	ZM02	57.74445	-5.80323	NG 73759 79107	*Idotea linearis*? on *Zostera marina*	GS	SSgr.Zmar	SG
2_DSCF2148	19/08/10	ZM02	57.74445	-5.80323	NG 73759 79107	Juvenile *Liocarcinus* sp. on *Zostera marina*	GS	SSgr.Zmar	SG

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
2_DSCF2151	19/08/10	ZM02	57.74445	-5.80323	NG 73759 79107	Juvenile *Liocarcinus* sp. on *Zostera marina*	GS	SSgr.Zmar	SG
2_DSCF2154	19/08/10	ZM02	57.74445	-5.80323	NG 73759 79107	*Idotea linearis* on *Zostera marina blade*	GS	SSgr.Zmar	SG
1_DSCF2081	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	Maerl bed with *Saccharina latissima* and transect tape	GS	Mrl.Pcal.R	MB
1_DSCF2083	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	Maerl bed with patchy algal turf and *Saccharina latissima*	GS	Mrl.Pcal.R	MB
1_DSCF2088	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Cancer pagurus* on maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF2089	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Cancer pagurus* on maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF2093	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Ammodytes* sp. on maerl	GS	Mrl.Pcal.R	MB
1_DSCF2095	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Ammodytes* sp. on maerl	GS	Mrl.Pcal.R	MB
1_DSCF2099	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Marthasterias glacialis* on maerl	GS	Mrl.Pcal.R	MB
1_DSCF2100	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Marthasterias glacialis* on maerl	GS	Mrl.Pcal.R	MB
1_DSCF2101	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Marthasterias glacialis* on maerl	GS	Mrl.Pcal.R	MB
1_DSCF2103	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	Maerl bed with *Saccharina latissima*	GS	Mrl.Pcal.R	MB
1_DSCF2104	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Cancer pagurus* and patchy algal turf on maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF2106	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	Diver (Jo Porter) videoing maerl bed transect	GS	Mrl.Pcal.R	MB
1_DSCF2111	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	Diver (Jo Porter) videoing maerl bed transect	GS	Mrl.Pcal.R	MB
1_DSCF2112	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	Maerl bed with patchy algal turf and *Saccharina latissima*	GS	Mrl.Pcal.R	MB
1_DSCF2115	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Cancer pagurus* on maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF2116	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Cancer pagurus* on maerl bed	GS	Mrl.Pcal.R	MB

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
1_DSCF2117	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	Maerl bed with patchy algal turf including *Scinaia turgida* and *Saccharina latissima*	GS	Mrl.Pcal.R	MB
1_DSCF2118	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	Long shot of maerl bed	GS	Mrl.Pcal.R	MB
1_DSCF2119	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	Long shot of maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF2157	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Scinaia turgida* on maerl	GS	Mrl.Pcal.R	MB
2_DSCF2158	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Scinaia turgida* on maerl	GS	Mrl.Pcal.R	MB
2_DSCF2160	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Scinaia turgida* on maerl	GS	Mrl.Pcal.R	MB
2_DSCF2161	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Phymatolithon calcareum* with short, filamentous, red, algal turf - close-up	GS	Mrl.Pcal.R	MB
2_DSCF2165	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Galathea intermedia* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF2166	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Lanice conchilega* in maerl	GS	Mrl.Pcal.R	MB
2_DSCF2167	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Lanice conchilega* in maerl	GS	Mrl.Pcal.R	MB
2_DSCF2169	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Galathea intermedia* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF2170	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Galathea intermedia* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF2174	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Trisopterus minutus* over maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF2183	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Trisopterus minutus* over maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF2185	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Porania pulvillus* extreme close-up	GS	Mrl.Pcal.R	MB
2_DSCF2187	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Porania pulvillus* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF2189	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Porania pulvillus* on maerl bed	GS	Mrl.Pcal.R	MB

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
2_DSCF2195	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Obelia geniculata* on *Saccharina latissima*	GS	Mrl.Pcal.R	MB
2_DSCF2205	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Cancer pagurus* close-up	GS	Mrl.Pcal.R	MB
2_DSCF2206	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Cancer pagurus* close-up	GS	Mrl.Pcal.R	MB
2_DSCF2207	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Cancer pagurus* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF2208	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Taurulus bubalis* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF2213	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Taurulus bubalis* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF2218	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Taurulus bubalis* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF2220	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Taurulus bubalis* on maerl bed	GS	Mrl.Pcal.R	MB
2_DSCF2223	20/08/10	ML04	57.70460	-5.77168	NG 75388 74569	*Phymatolithon calcareum* close-up	GS	Mrl.Pcal.R	MB
IMG_2423	10/08/10	UR	57.89830	-5.17135	NH 12148 94287	Shore surveyors (Colin Moore, Alastair Lyndon)	GS	Fves.X	
IMG_2426	10/08/10	UR	57.89830	-5.17135	NH 12148 94287	Shore surveyors (Colin Moore, Alastair Lyndon)	GS	Fserr.X	
IMG_2427	10/08/10	UR	57.89830	-5.17135	NH 12148 94287	Shore surveyors (Colin Moore, Alastair Lyndon)	GS	Fserr.X	
IMG_2429	10/08/10	UR	57.89830	-5.17135	NH 12148 94287	View from lower shore of Ullapool River mouth showing shore surveying	GS	Fserr.X, Fves.X	
IMG_2432	10/08/10	UR	57.89830	-5.17135	NH 12148 94287	View from lower and mid shore of Ullapool River mouth looking west	GS	Fserr.X, Fves.X	
DSCF0608	09/08/10		57.85021	-5.25923	NH 06684 89184	Sieving samples at Camusnagaul, Little Loch Broom	GS		
DSCF0611	09/08/10		57.85021	-5.25923	NH 06684 89184	Sieving samples at Camusnagaul, Little Loch Broom	GS		
DSCF0687	14/08/10		57.85213	-5.32453	NH 02822 89586	Little Loch Broom and the Summer Isles from Sail Chruaidh, looking north	GS		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
DSCF0690	14/08/10		57.85213	-5.32453	NH 02822 89586	Head of Little Loch Broom from Sail Chruaidh, looking east	GS		
DSCF0693	14/08/10		57.85213	-5.32453	NH 02822 89586	Little Loch Broom from Sail Chruaidh, looking north-east	GS		
DSCF0694	14/08/10		57.85213	-5.32453	NH 02822 89586	Head of Little Loch Broom from Sail Chruaidh, looking east	GS		
DSCF0703	14/08/10		57.8444	-5.31606	NH 03282 88702	Entrance of Little Loch Broom and the Summer Isles from Sail Mhor, looking north	GS		
DSCF0709	14/08/10		57.8444	-5.31606	NH 03282 88702	Entrance of Little Loch Broom and the Summer Isles from Sail Mhor, looking north	GS		
DSCF0715	14/08/10		57.8444	-5.31606	NH 03282 88702	Fishfarm on Little Loch Broom from Sail Mhor, looking north-east	GS		
DSCF0720	14/08/10		57.8444	-5.31606	NH 03282 88702	Entrance of Little Loch Broom and the Summer Isles from Sail Mhor, looking north	GS		
DSCF0727	14/08/10		57.8444	-5.31606	NH 03282 88702	Serpula travelling up Little Loch Broom	GS		
DSCF0730	14/08/10		57.8444	-5.31606	NH 03282 88702	Little Loch Broom and the Summer Isles from Sail Mhor, looking north	GS		
DSCF0736	14/08/10		57.8444	-5.31606	NH 03282 88702	Little Loch Broom and the Summer Isles from Sail Mhor, looking north	GS		
DSCF0739	14/08/10		57.8444	-5.31606	NH 03282 88702	Fishfarm on Little Loch Broom from Sail Mhor, looking north-east	GS		
DSCF0766	14/08/10		57.8444	-5.31606	NH 03282 88702	Little Loch Broom and the Summer Isles from Sail Mhor, looking north	GS		
DSCF0792	14/08/10		57.8444	-5.31606	NH 03282 88702	Little Loch Broom and the Summer Isles from Sail Mhor, looking north	GS		
IMG_2352	08/08/10		57.85045	-5.25759	NH 06783 89206	Survey team briefing at Camusnagaul, Little Loch Broom	GS		
IMG_2357	08/08/10		57.85045	-5.25759	NH 06783 89206	Survey team briefing at Camusnagaul, Little Loch Broom	GS		
IMG_2358	08/08/10		57.85045	-5.25759	NH 06783 89206	Survey team briefing at Camusnagaul, Little Loch Broom	GS		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
IMG_2382	09/08/10		57.90447	-5.39126	NH 99156 95606	View towards head of Little Loch Broom from Leac an Ime, looking south-east	GS		
IMG_2383	09/08/10		57.90447	-5.39126	NH 99156 95606	View towards head of Little Loch Broom from Leac an Ime, looking south-east	GS		
IMG_2388	09/08/10		57.89875	-5.38177	NH 99687 94941	Dan Harries and Colin Trigg on Serpula tender, Little Loch Broom	GS		
IMG_2390	09/08/10		57.89875	-5.38177	NH 99687 94941	Survey divers preparing to dive, Little Loch Broom	GS		
IMG_2392	09/08/10		57.89875	-5.38177	NH 99687 94941	Survey divers preparing to dive, Little Loch Broom	GS		
IMG_2393	09/08/10		57.89875	-5.38177	NH 99687 94941	Survey divers preparing to dive, Little Loch Broom	GS		
IMG_2396	09/08/10		57.89875	-5.38177	NH 99687 94941	Colin Trigg on Serpula, Little Loch Broom	GS		
IMG_2397	09/08/10		57.89875	-5.38177	NH 99687 94941	Colin Trigg on Serpula, Little Loch Broom	GS		
IMG_2398	09/08/10		57.89875	-5.38177	NH 99687 94941	Colin Trigg examining underwater video, Little Loch Broom	GS		
IMG_2400	09/08/10		57.89875	-5.38177	NH 99687 94941	Recovering diver, Little Loch Broom	GS		
IMG_2401	09/08/10		57.89875	-5.38177	NH 99687 94941	Recovering diver, Little Loch Broom	GS		
IMG_2403	09/08/10		57.89875	-5.38177	NH 99687 94941	Recovering diver, Little Loch Broom	GS		
IMG_2407	09/08/10		57.89875	-5.38177	NH 99687 94941	Divers on Serpula, Little Loch Broom	GS		
IMG_2438	12/08/10		57.87722	-5.12991	NH 14495 91827	Grab sampling, Loch Broom	GS		
IMG_2442	12/08/10		57.87722	-5.12991	NH 14495 91827	Grab sampling, Loch Broom	GS		
IMG_2444	12/08/10		57.87722	-5.12991	NH 14495 91827	Grab sampling, Loch Broom	GS		
IMG_2447	12/08/10		57.87722	-5.12991	NH 14495 91827	Grab sampling, Loch Broom	GS		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
IMG_2451	12/08/10		57.87722	-5.12991	NH 14495 91827	Grab sampling, Loch Broom	GS		
IMG_2452	12/08/10		57.87722	-5.12991	NH 14495 91827	Grab sampling, Loch Broom	GS		
IMG_2455	12/08/10		57.87722	-5.12991	NH 14495 91827	Grab sampling, Loch Broom	GS		
IMG_2458	12/08/10		57.87722	-5.12991	NH 14495 91827	Grab sampling, Loch Broom	GS		
IMG_2463	12/08/10		57.87722	-5.12991	NH 14495 91827	Grab sampling, Loch Broom	GS		
IMG_2468	12/08/10		57.87722	-5.12991	NH 14495 91827	Break from grab sampling, Loch Broom	GS		
IMG_2471	12/08/10		57.87722	-5.12991	NH 14495 91827	Grab sampling, Loch Broom	GS		
IMG_2472	12/08/10		57.87722	-5.12991	NH 14495 91827	Grab sampling, Loch Broom	GS		
IMG_2476	12/08/10		57.87722	-5.12991	NH 14495 91827	Grab sampling, Loch Broom	GS		
IMG_2477	12/08/10		57.87722	-5.12991	NH 14495 91827	Grab sampling, Loch Broom	GS		
IMG_2479	12/08/10		57.87722	-5.12991	NH 14495 91827	Grab sample with *Limaria hians*, Loch Broom	GS		
IMG_2486	13/08/10	ML02	58.00295	-5.41993	NB 98014 06647	Diver preparing, site ML02, Summer Isles	GS		
IMG_2492	13/08/10	ML03	58.00295	-5.41993	NB 98014 06647	Dive supervisor, Site ML02, Summer Isles	GS		
IMG_2504	13/08/10	ML04	58.00295	-5.41993	NB 98014 06647	Aboard MV Rebecca Anne, Site LM02, Summer Isles	GS		
IMG_2505	13/08/10	ML05	58.00295	-5.41993	NB 98014 06647	Recovering diver, site ML02, Summer Isles	GS		
IMG_2506	13/08/10	ML06	58.00295	-5.41993	NB 98014 06647	Recovering diver, site ML02, Summer Isles	GS		
IMG_2526	13/08/10	SD2	57.95758	-5.3615	NC 01213 01426	Diver preparing, site SD2, Carn Skerries	GS		
IMG_2527	13/08/10	SD2	57.95758	-5.3615	NC 01213 01426	Diver preparing, site SD2, Carn Skerries	GS		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
IMG_2529	14/08/10		57.85213	-5.32453	NH 02822 89586	Fishfarm on Little Loch Broom from Sail Chruaidh, looking east	GS		
IMG_2531	14/08/10		57.85611	-5.34058	NH 01892 90076	Entrance to Little Loch Broom and the Summer Isles from Sail Bheag, looking north-west	GS		
IMG_2532	14/08/10		57.85611	-5.34058	NH 01892 90076	Little Loch Broom and the Summer Isles from Sail Bheag, looking north	GS		
IMG_2533	14/08/10		57.85213	-5.32453	NH 02822 89586	Little Loch Broom from Sail Chruaidh, looking north-east	GS		
IMG_2535	14/08/10		57.85213	-5.32453	NH 02822 89586	View towards the head Little Loch Broom from Sail Chruaidh, looking south-east	GS		
IMG_2537	14/08/10		57.85213	-5.32453	NH 02822 89586	Little Loch Broom and the Summer Isles from Sail Chruaidh, looking north-east	GS		
IMG_2542	14/08/10		57.85213	-5.32453	NH 02822 89586	Little Loch Broom and the Summer Isles from Sail Chruaidh, looking north-west	GS		
IMG_2545	14/08/10		57.85213	-5.32453	NH 02822 89586	Fishfarm on Little Loch Broom from Sail Chruaidh, looking north-east	GS		
IMG_2547	14/08/10		57.85213	-5.32453	NH 02822 89586	Little Loch Broom and the Summer Isles from Sail Chruaidh, looking north	GS		
IMG_2548	14/08/10		57.85213	-5.32453	NH 02822 89586	Little Loch Broom and the Summer Isles from Sail Chruaidh, looking north	GS		
IMG_2549	14/08/10		57.8444	-5.31606	NH 03282 88702	Little Loch Broom (Serpula in distance) from Sail Mhor, looking north	GS		
IMG_2555	14/08/10		57.8444	-5.31606	NH 03282 88702	Little Loch Broom and the Summer Isles from Sail Mhor, looking north-west	GS		
IMG_2560	14/08/10		57.8444	-5.31606	NH 03282 88702	Fishfarm on Little Loch Broom from Sail Mhor, looking north-east	GS		
IMG_2563	14/08/10		57.8444	-5.31606	NH 03282 88702	Fishfarm on Little Loch Broom from Sail Mhor, looking north-east	GS		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
IMG_2565	14/08/10		57.8444	-5.31606	NH 03282 88702	Little Loch Broom and the Summer Isles from Sail Mhor, looking north	GS		
IMG_2569	14/08/10		57.8444	-5.31606	NH 03282 88702	Little Loch Broom and the Summer Isles from Sail Mhor, looking north	GS		
IMG_2580	14/08/10		57.8444	-5.31606	NH 03282 88702	Little Loch Broom and the Summer Isles from Sail Mhor, looking north-west	GS		
IMG_2583	15/08/10		57.88384	-5.43828	NG 96255 93452	Using the glass-bottom-bucket for seagrass distribution, Gruinard Bay	GS		
IMG_2584	15/08/10		57.88384	-5.43828	NG 96255 93452	Using the glass-bottom-bucket for seagrass distribution, Gruinard Bay	GS		
IMG_2590	15/08/10		57.88384	-5.43828	NG 96255 93452	Colin Trigg in Aphrodite, off Mungasdale, Gruinard Bay	GS		
IMG_2602	15/08/10		57.87303	-5.45394	NG 95265 92296	Gruinard Bay. Shore and Gruinard House, looking south-east	GS		
IMG_2603	15/08/10		57.87303	-5.45394	NG 95265 92296	Gruinard Bay. Shore and Gruinard House, looking south-east	GS		
IMG_2624	15/08/10		57.87303	-5.45394	NG 95265 92296	Gruinard Bay, Gruinard Island	GS		
IMG_2634	15/08/10		57.87303	-5.45394	NG 95265 92296	Gruinard Bay, Gruinard Island	GS		
IMG_2641	15/08/10		57.92995	-5.61361	NG 86141 99123	RV Serpula en route to Loch Ewe (Close to Greenstone Point)	GS		
IMG_2642	15/08/10		57.92995	-5.61361	NG 86141 99123	RV Serpula en route to Loch Ewe (Close to Greenstone Point)	GS		
IMG_2645	15/08/10		57.92995	-5.61361	NG 86141 99123	RV Serpula en route to Loch Ewe (Close to Greenstone Point)	GS		
IMG_2648	15/08/10		57.92995	-5.61361	NG 86141 99123	RV Serpula en route to Loch Ewe (Close to Greenstone Point)	GS		
IMG_2657	15/08/10		57.92995	-5.61361	NG 86141 99123	Colin Trigg on Aphrodite en route to Loch Ewe	GS		
IMG_2659	15/08/10		57.92995	-5.61361	NG 86141 99123	Colin Trigg on Aphrodite en route to Loch Ewe	GS		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
IMG_2661	15/08/10		57.84665	-5.64643	NG 83698 89962	Sgeir an Araig, Loch Ewe	GS		
IMG_2694	15/08/10		57.83538	-5.60028	NG 86369 88561	RV Serpula, Loch Ewe, sunset	GS		
IMG_2699	17/08/10		57.77672	-5.61614	NG 85078 82086	Londubh, Loch Ewe, looking south-east	GS		
IMG_2711	17/08/10		57.77672	-5.61614	NG 85078 82086	Poolewe, Loch Ewe, looking south-east	GS		
IMG_2718	17/08/10		57.83853	-5.59134	NG 86918 88883	Sample sieving in Aultbea Harbour, Loch Ewe	GS		
IMG_2722	17/08/10		57.83853	-5.59134	NG 86918 88883	Sample sieving in Aultbea Harbour, Loch Ewe	GS		
IMG_2724	17/08/10		57.83853	-5.59134	NG 86918 88883	Sample sieving in Aultbea Harbour, Loch Ewe	GS		
IMG_2728	17/08/10		57.83853	-5.59134	NG 86918 88883	Sample sieving in Aultbea Harbour, Loch Ewe	GS		
IMG_2729	17/08/10		57.83853	-5.59134	NG 86918 88883	Sample sieving in Aultbea Harbour, Loch Ewe	GS		
IMG_2730	17/08/10		57.83853	-5.59134	NG 86918 88883	Sample sieving in Aultbea Harbour, Loch Ewe	GS		
IMG_2732	17/08/10		57.83853	-5.59134	NG 86918 88883	Close-up of maerl sieve sample	GS		
IMG_2733	17/08/10		57.83853	-5.59134	NG 86918 88883	Close-up of maerl sieve sample	GS		
IMG_2735	17/08/10		57.83853	-5.59134	NG 86918 88883	Sample sieving in Aultbea Harbour, Loch Ewe	GS		
IMG_2740	17/08/10		57.83853	-5.59134	NG 86918 88883	Sample sieving in Aultbea Harbour, Loch Ewe	GS		
IMG_2753	18/08/10		57.8849	-5.60688	NG 86271 94090	RV Serpula in Loch Thùrnaig for oyster survey, looking east	GS		
IMG_2754	18/08/10		57.8849	-5.60688	NG 86271 94090	Deploying a diver off Serpula tender, Loch Thùrnaig	GS		
IMG_2768	18/08/10		57.8849	-5.60688	NG 86271 94090	RV Serpula in Loch Thùrnaig for oyster survey, looking east	GS		
IMG_2769	18/08/10		57.8849	-5.60688	NG 86271 94090	RV Serpula in Loch Thùrnaig for oyster survey, looking east	GS		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
IMG_2783	18/08/10		57.8849	-5.60688	NG 86271 94090	RV Serpula in Loch Thùrnaig for oyster survey, looking east	GS		
IMG_2784	18/08/10		57.8849	-5.60688	NG 86271 94090	RV Serpula in Loch Thùrnaig for oyster survey, looking east	GS		
IMG_2786	18/08/10		57.8849	-5.60688	NG 86271 94090	RV Serpula in Loch Thùrnaig for oyster survey, looking east	GS		
IMG_2806	18/08/10		57.8849	-5.60688	NG 86271 94090	RV Serpula in Loch Thùrnaig for oyster survey, looking east	GS		
IMG_2811	18/08/10		57.8849	-5.60688	NG 86271 94090	RV Serpula in Loch Thùrnaig for oyster survey, looking east	GS		
IMG_2815	18/08/10		57.78834	-5.60494	NG 85813 83343	RV Serpula in Loch Thùrnaig for oyster survey, looking east	GS		
IMG_2816	18/08/10		57.78834	-5.60494	NG 85813 83343	RV Serpula in Loch Thùrnaig for oyster survey, looking east	GS		
IMG_2825	18/08/10		57.78942	-5.60467	NG 85835 83463	Colin Trigg on Serpula tender, Loch Thùrnaig	GS		
IMG_2828	18/08/10		57.84358	-5.61482	NG 85555 89519	Diving off Aphrodite, between Isle of Ewe and Ormiscaig	GS		
IMG_2872	18/08/10		57.69729	-5.68955	NG 80234 73487	View of Loch Shieldaig, looking south-east	GS		
IMG_2877	19/08/10		57.71694	-5.70309	NG 79547 75716	View of Loch Gairloch, position uncertain	GS		
IMG_2896	19/08/10		57.74116	-5.79586	NG 74177 78716	View of Loch Gairloch, position uncertain	GS		
IMG_2907	19/08/10		57.74538	-5.80653	NG 73569 79221	Deploying the drop-down video, Loch Gairloch	GS		
IMG_2917	19/08/10		57.72921	-5.76027	NG 76220 77269	Loch Gairloch south coast, looking south	GS		
IMG_2925	19/08/10		57.73299	-5.78101	NG 75009 77758	Aphrodite in Loch Gairloch, looking south-east	GS		
IMG_2926	19/08/10		57.73299	-5.78101	NG 75009 77758	Aphrodite in Loch Gairloch, looking south-east	GS		
IMG_2928	19/08/10		57.73299	-5.78101	NG 75009 77758	Aphrodite in Loch Gairloch, looking south-east	GS		
IMG_2929	19/08/10		57.73299	-5.78101	NG 75009 77758	Aphrodite in Loch Gairloch, looking south-east	GS		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
IMG_2931	19/08/10		57.73299	-5.78101	NG 75009 77758	Aphrodite in Loch Gairloch, looking south-east	GS		
IMG_2932	19/08/10		57.73299	-5.78101	NG 75009 77758	Aphrodite in Loch Gairloch, looking south-east	GS		
IMG_2933	19/08/10		57.73299	-5.78101	NG 75009 77758	Aphrodite in Loch Gairloch, looking south-east	GS		
IMG_2939	19/08/10		57.73299	-5.78101	NG 75009 77758	Aphrodite in Loch Gairloch, looking south-east	GS		
IMG_2940	19/08/10		57.73299	-5.78101	NG 75009 77758	Aphrodite in Loch Gairloch, looking south-east	GS		
IMG_2950	19/08/10		57.69662	-5.68859	NG 80287 73409	Aphrodite in Loch Shieldaig	GS		
IMG_2964	19/08/10		57.69576	-5.68779	NG 80330 73311	Sunset in Loch Gairloch, position uncertain	GS		
IMGP0015	21/07/10	B1	57.69853	-5.72460	NG 78154 73739	Sea loch egg wrack bed looking NE, Badachro	CM	FVS.Ascmac	WW
IMGP0016	21/07/10	B2	57.69853	-5.72460	NG 78154 73739	Close-up - sea loch egg wrack bed, Badachro	CM	FVS.Ascmac	WW
IMGP0017	21/07/10	B3	57.69853	-5.72460	NG 78154 73739	Close-up - sea loch egg wrack bed, Badachro	CM	FVS.Ascmac	WW
IMGP0018	21/07/10	WW01	57.69857	-5.72435	NG 78169 73743	View of sea loch egg wrack bed from top of MNCR survey site, Badachro	CM	FVS.Ascmac	WW
IMGP0019	21/07/10	WW01	57.69863	-5.72435	NG 78170 73749	View of sea loch egg wrack bed from centre of MNCR survey site, Badachro	CM	FVS.Ascmac	WW
IMGP0020	21/07/10	WW01	57.69863	-5.72435	NG 78170 73749	View of sea loch egg wrack bed from centre of MNCR survey site, Badachro	CM	FVS.Ascmac	WW
IMGP0021	21/07/10	WW01	57.69868	-5.72437	NG 78169 73755	View of sea loch egg wrack bed from bottom of MNCR survey site, Badachro	CM	FVS.Ascmac	WW
IMGP0022	21/07/10	WW01	57.69863	-5.72435	NG 78170 73749	Substrate beneath sea loch egg wrack at centre of MNCR survey site, Badachro	CM	FVS.Ascmac	WW
IMGP0023	21/07/10	WW01	57.69863	-5.72435	NG 78170 73749	Substrate beneath sea loch egg wrack at centre of MNCR survey site, Badachro	CM	FVS.Ascmac	WW

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
IMGP0024	21/07/10	WW01	57.69863	-5.72435	NG 78170 73749	Substrate beneath sea loch egg wrack at centre of MNCR survey site, Badachro	CM	FVS.Ascmac	WW
IMGP0025	21/07/10	WW01	57.69863	-5.72435	NG 78170 73749	Substrate beneath sea loch egg wrack at centre of MNCR survey site, Badachro	CM	FVS.Ascmac	WW
IMGP0026	23/07/10	M2	57.73723	-5.78032	NG 75077 78227	Lewis Cowie on winch, Loch Gairloch	CM		
IMGP0027	23/07/10	M2	57.73723	-5.78032	NG 75077 78227	Grabbing - retrieval, Loch Gairloch	CM		
IMGP0028	23/07/10	M2	57.73723	-5.78032	NG 75077 78227	Grabbing - emptying, Loch Gairloch	CM		
IMGP0029	23/07/10	M2	57.73723	-5.78032	NG 75077 78227	Grabbing - emptying, Loch Gairloch	CM		
IMGP0030	23/07/10	M2	57.73723	-5.78032	NG 75077 78227	RV Serpula deck, Loch Gairloch	CM		
IMGP0031	23/07/10	M2	57.73723	-5.78032	NG 75077 78227	RV Serpula deck, Loch Gairloch	CM		
IMGP0032	23/07/10	M2	57.73723	-5.78032	NG 75077 78227	Grabbing - retrieval, Loch Gairloch	CM		
IMGP0033	23/07/10	M2	57.73723	-5.78032	NG 75077 78227	Grabbing - retrieval, Loch Gairloch	CM		
IMGP0034	23/07/10	M2	57.73723	-5.78032	NG 75077 78227	Grab contents - dense bivalves, Loch Gairloch	CM		
IMGP0035	23/07/10	M2	57.73723	-5.78032	NG 75077 78227	Grab contents - dense bivalves, Loch Gairloch	CM		
IMGP0036	23/07/10	M2	57.73723	-5.78032	NG 75077 78227	Grab contents - dense bivalves, Loch Gairloch	CM		
IMGP0037	23/07/10		57.72092	-5.77497	NG 75294 76396	Colin Moore setting up dropdown system, Loch Gairloch	LC		
IMGP0038	23/07/10		57.72092	-5.77497	NG 75294 76396	Colin Moore setting up dropdown system, Loch Gairloch	LC		
IMGP0039	23/07/10		57.72092	-5.77497	NG 75294 76396	Colin Moore setting up dropdown system, Loch Gairloch	LC		
IMGP0040	23/07/10		57.72092	-5.77497	NG 75294 76396	Colin Moore setting up dropdown system, Loch Gairloch	LC		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
IMGP0041	23/07/10		57.72092	-5.77497	NG 75294 76396	Alessandro Icardi operating dropdown, Loch Gairloch	CM		
IMGP0042	23/07/10		57.72092	-5.77497	NG 75294 76396	Alessandro Icardi operating dropdown, Loch Gairloch	CM		
IMGP0043	23/07/10		57.72092	-5.77497	NG 75294 76396	Alessandro Icardi and Lewis Cowie operating dropdown, Loch Gairloch	CM		
IMGP0044	23/07/10		57.72092	-5.77497	NG 75294 76396	Grab sample sieving, Loch Gairloch	CM		
IMGP0045	23/07/10		57.72092	-5.77497	NG 75294 76396	Grab sample sieving, Loch Gairloch	CM		
IMGP0046	23/07/10		57.72092	-5.77497	NG 75294 76396	Grab sample sieving, Loch Gairloch	CM		
IMGP0047	23/07/10		57.72092	-5.77497	NG 75294 76396	Grab sample sieving, Loch Gairloch	CM		
IMGP0048	23/07/10		57.72092	-5.77497	NG 75294 76396	Grab sample sieving, Loch Gairloch	CM		
IMGP0049	23/07/10		57.72092	-5.77497	NG 75294 76396	Deploying the dropdown video, Loch Gairloch	CM		
IMGP0050	25/07/10	G30	57.79304	-5.63462	NG 84078 83960	Nephrops in grab sample, Loch Ewe	CM		
IMGP0051	25/07/10	G30	57.79304	-5.63462	NG 84078 83960	Nephrops in grab sample, Loch Ewe	CM		
IMGP0052	25/07/10	G30	57.79304	-5.63462	NG 84078 83960	Nephrops in grab sample, Loch Ewe	CM		
IMGP0053	29/07/10		57.99602	-5.43062	NB 97343 05908	Operating the dropdown from Rebecca Ann, Summer Isles	CT		
IMGP0054	29/07/10		57.99602	-5.43062	NB 97343 05908	Operating the dropdown from Rebecca Ann, Summer Isles	CT		
IMGP0055	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0056	29/07/10		57.99602	-5.43062	NB 97343 05908	SNH staff on Rebecca Ann, Summer Isles	CT		
IMGP0057	29/07/10		57.99602	-5.43062	NB 97343 05908	SNH staff on Rebecca Ann, Summer Isles	CT		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
IMGP0058	29/07/10		57.99602	-5.43062	NB 97343 05908	Operating the dropdown from Rebecca Ann, Summer Isles	CT		
IMGP0059	29/07/10		57.99602	-5.43062	NB 97343 05908	Operating the dropdown from Rebecca Ann, Summer Isles	CT		
IMGP0060	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0061	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0062	29/07/10		57.99602	-5.43062	NB 97343 05908	Operating the dropdown from Rebecca Ann, Summer Isles	CT		
IMGP0063	29/07/10		57.99602	-5.43062	NB 97343 05908	SNH staff on Rebecca Ann, Summer Isles	CT		
IMGP0064	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0065	29/07/10		57.99602	-5.43062	NB 97343 05908	SNH staff on Rebecca Ann, Summer Isles	CT		
IMGP0066	29/07/10		57.99602	-5.43062	NB 97343 05908	Operating the dropdown from Rebecca Ann, Summer Isles	CT		
IMGP0067	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0068	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0069	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0070	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0071	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0072	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0073	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0074	29/07/10		57.99602	-5.43062	NB 97343 05908	SNH staff on Rebecca Ann, Summer Isles	CT		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
IMGP0075	29/07/10		57.99602	-5.43062	NB 97343 05908	Dropdown video system, Summer Isles	CT		
IMGP0076	29/07/10		57.99602	-5.43062	NB 97343 05908	Dropdown video system, Summer Isles	CT		
IMGP0077	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0078	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0079	29/07/10		57.99602	-5.43062	NB 97343 05908	Operating the dropdown from Rebecca Ann, Summer Isles	CT		
IMGP0080	29/07/10		57.99602	-5.43062	NB 97343 05908	Operating the dropdown from Rebecca Ann, Summer Isles	CT		
IMGP0081	29/07/10		57.99602	-5.43062	NB 97343 05908	Operating the dropdown from Rebecca Ann, Summer Isles	CT		
IMGP0082	29/07/10		57.99602	-5.43062	NB 97343 05908	Operating the dropdown from Rebecca Ann, Summer Isles	CT		
IMGP0083	29/07/10		57.99602	-5.43062	NB 97343 05908	Operating the dropdown from Rebecca Ann, Summer Isles	CT		
IMGP0084	29/07/10		57.99602	-5.43062	NB 97343 05908	Operating the dropdown from Rebecca Ann, Summer Isles	CT		
IMGP0085	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0086	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0087	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0088	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0089	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0090	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0091	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
IMGP0092	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0093	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0094	29/07/10		57.99602	-5.43062	NB 97343 05908	Operating the dropdown from Rebecca Ann, Summer Isles	CT		
IMGP0095	29/07/10		57.99602	-5.43062	NB 97343 05908	Operating the dropdown from Rebecca Ann, Summer Isles	CT		
IMGP0096	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0097	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0098	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0099	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0100	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0101	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0102	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0103	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0104	29/07/10		57.99602	-5.43062	NB 97343 05908	SNH staff on Rebecca Ann, Summer Isles	CT		
IMGP0105	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0106	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0107	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0108	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
IMGP0109	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0110	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0111	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0112	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0113	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0114	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0115	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0116	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0117	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0118	29/07/10		57.99602	-5.43062	NB 97343 05908	SNH staff on Rebecca Ann, Summer Isles	CT		
IMGP0119	29/07/10		57.99602	-5.43062	NB 97343 05908	SNH staff on Rebecca Ann, Summer Isles	CT		
IMGP0120	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0121	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0122	29/07/10		57.99602	-5.43062	NB 97343 05908	SNH staff on Rebecca Ann, Summer Isles	CT		
IMGP0123	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0124	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0125	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMGP0126	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
IMGP0127	29/07/10		57.99602	-5.43062	NB 97343 05908	General view, Summer Isles	CT		
IMG_1186	30/07/10		57.97345	-5.74092	NB 78878 04359	Operating the dropdown from Rebecca Ann, Outer Ullapool Approaches	CM		
IMG_1187	30/07/10		57.97345	-5.74092	NB 78878 04359	Operating the dropdown from Rebecca Ann, Outer Ullapool Approaches	CM		
IMG_1188	30/07/10		57.97345	-5.74092	NB 78878 04359	Operating the dropdown from Rebecca Ann, Outer Ullapool Approaches	CM		
IMG_1189	30/07/10		57.97345	-5.74092	NB 78878 04359	Operating the dropdown from Rebecca Ann, Outer Ullapool Approaches	CM		
IMG_1190	30/07/10		57.97345	-5.74092	NB 78878 04359	Operating the dropdown from Rebecca Ann, Outer Ullapool Approaches	CM		
IMG_1191	02/08/10		57.95186	-5.38812	NB 99607 00869	General view, Summer Isles, looking north	CM		
IMG_1192	02/08/10		57.95186	-5.38812	NB 99607 00869	General view, Summer Isles, looking north	CM		
IMG_1193	02/08/10		57.95186	-5.38812	NB 99607 00869	General view, Summer Isles, looking north	CM		
IMG_1194	02/08/10		57.95186	-5.38812	NB 99607 00869	General view, Summer Isles, looking north	CM		
IMG_1195	03/08/10		57.84473	-5.09020	NH 16683 88103	View of head of Loch Broom, looking south	CM		
IMG_1196	03/08/10		57.84473	-5.09020	NH 16683 88103	View of eastern shoreline of Loch Broom, looking east	CM		
IMG_1197	03/08/10		57.85352	-5.09668	NH 16343 89099	View of eastern shoreline of Loch Broom, looking north-east	CM		
IMG_1198	03/08/10		57.85352	-5.09668	NH 16343 89099	View NW towards narrows, Loch Broom	CM		
IMG_1199	03/08/10		57.85352	-5.09668	NH 16343 89099	View of head of Loch Broom, looking south-east	CM		
IMG_1200	03/08/10	M24	57.853	-5.10463	NH 15869 89063	Arctica islandica, Loch Broom	CM		AI

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
IMG_1201	03/08/10	M24	57.853	-5.10463	NH 15869 89063	Arctica islandica, Loch Broom	CM		AI
IMG_1202	03/08/10	M24	57.853	-5.10463	NH 15869 89063	Alessandro Icardi with Arctica islandica, Loch Broom	CM		AI
IMG_1203	06/08/10	BB.O	57.70147	-5.72628	NG 78072 74071	Sea loch egg wrack bed at coverage survey site O, Badachro	CM	FVS.Ascmac	WW
IMG_1204	06/08/10	BB.O	57.70147	-5.72628	NG 78072 74071	Sea loch egg wrack bed at coverage survey site O, Badachro	CM	FVS.Ascmac	WW
IMG_1205	06/08/10	BB.N	57.70069	-5.72681	NG 78036 73986	Sea loch egg wrack bed at coverage survey site N, Badachro	CM	FVS.Ascmac	WW
IMG_1206	06/08/10	BB.N	57.70069	-5.72681	NG 78036 73986	Sea loch egg wrack bed at coverage survey site N, Badachro	CM	FVS.Ascmac	WW
IMG_1207	06/08/10	BB.M	57.70057	-5.72761	NG 77988 73976	Sea loch egg wrack bed at coverage survey site M, Badachro	CM	FVS.Ascmac	WW
IMG_1208	06/08/10	BB.M	57.70057	-5.72761	NG 77988 73976	Sea loch egg wrack bed at coverage survey site M, Badachro	CM	FVS.Ascmac	WW
IMG_1209	06/08/10	BB.L	57.70042	-5.72854	NG 77931 73962	Sea loch egg wrack bed at coverage survey site L, Badachro	CM	FVS.Ascmac	WW
IMG_1210	06/08/10	BB.L	57.70042	-5.72854	NG 77931 73962	Sea loch egg wrack bed at coverage survey site L, Badachro	CM	FVS.Ascmac	WW
IMG_1211	06/08/10	BB.K	57.70007	-5.72877	NG 77915 73924	Sea loch egg wrack bed at coverage survey site K, Badachro	CM	FVS.Ascmac	WW
IMG_1212	06/08/10	BB.K	57.70007	-5.72877	NG 77915 73924	Sea loch egg wrack bed at coverage survey site K, Badachro	CM	FVS.Ascmac	WW
IMG_1213	06/08/10	BB.J	57.69967	-5.72904	NG 77897 73880	Sea loch egg wrack bed at coverage survey site J, Badachro	CM	FVS.Ascmac	WW
IMG_1214	06/08/10	BB.J	57.69967	-5.72904	NG 77897 73880	Sea loch egg wrack bed at coverage survey site J, Badachro	CM	FVS.Ascmac	WW
IMG_1215	06/08/10	BB.I	57.69925	-5.72932	NG 77878 73835	Sea loch egg wrack bed at coverage survey site I, Badachro	CM	FVS.Ascmac	WW

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
IMG_1216	06/08/10	BB.I	57.69925	-5.72932	NG 77878 73835	Sea loch egg wrack bed at coverage survey site I, Badachro	CM	FVS.Ascmac	WW
IMG_1217	06/08/10	BB.H	57.69872	-5.72961	NG 77857 73777	Sea loch egg wrack bed at coverage survey site H, Badachro	CM	FVS.Ascmac	WW
IMG_1218	06/08/10	BB.H	57.69872	-5.72961	NG 77857 73777	Sea loch egg wrack bed at coverage survey site H, Badachro	CM	FVS.Ascmac	WW
IMG_1219	06/08/10	BB.H	57.69872	-5.72961	NG 77857 73777	Sea loch egg wrack bed at coverage survey site H, Badachro	CM	FVS.Ascmac	WW
IMG_1220	06/08/10	BB.G	57.69843	-5.72911	NG 77885 73743	Sea loch egg wrack bed at coverage survey site G, Badachro	CM	FVS.Ascmac	WW
IMG_1221	06/08/10	BB.G	57.69843	-5.72911	NG 77885 73743	Sea loch egg wrack bed at coverage survey site G, Badachro	CM	FVS.Ascmac	WW
IMG_1222	06/08/10	BB.F	57.69835	-5.72834	NG 77930 73731	Sea loch egg wrack bed at coverage survey site F, Badachro	CM	FVS.Ascmac	WW
IMG_1223	06/08/10	BB.F	57.69835	-5.72834	NG 77930 73731	Sea loch egg wrack bed at coverage survey site F, Badachro	CM	FVS.Ascmac	WW
IMG_1224	06/08/10	BB.E	57.69832	-5.72762	NG 77973 73726	Sea loch egg wrack bed at coverage survey site E, Badachro	CM	FVS.Ascmac	WW
IMG_1225	06/08/10	BB.E	57.69832	-5.72762	NG 77973 73726	Sea loch egg wrack bed at coverage survey site E, Badachro	CM	FVS.Ascmac	WW
IMG_1226	06/08/10	BB.D	57.69853	-5.72515	NG 78122 73741	Sea loch egg wrack bed at coverage survey site D, Badachro	CM	FVS.Ascmac	WW
IMG_1227	06/08/10	BB.D	57.69853	-5.72515	NG 78122 73741	Sea loch egg wrack bed at coverage survey site D, Badachro	CM	FVS.Ascmac	WW
IMG_1228	06/08/10	BB.C	57.69868	-5.72439	NG 78168 73755	Sea loch egg wrack bed at coverage survey site C, Badachro	CM	FVS.Ascmac	WW
IMG_1229	06/08/10	BB.C	57.69868	-5.72439	NG 78168 73755	Sea loch egg wrack bed at coverage survey site C, Badachro	CM	FVS.Ascmac	WW
IMG_1230	06/08/10	BB.B	57.69883	-5.72369	NG 78210 73769	Sea loch egg wrack bed at coverage survey site B, Badachro	CM	FVS.Ascmac	WW

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
IMG_1231	06/08/10	BB.B	57.69883	-5.72369	NG 78210 73769	Sea loch egg wrack bed at coverage survey site B, Badachro	CM	FVS.Ascmac	WW
IMG_1232	06/08/10	BB.A	57.69864	-5.72322	NG 78237 73747	Sea loch egg wrack bed at coverage survey site A, Badachro	CM	FVS.Ascmac	WW
IMG_1233	06/08/10	BB.A	57.69864	-5.72322	NG 78237 73747	Sea loch egg wrack bed at coverage survey site A, Badachro	CM	FVS.Ascmac	WW
IMG_1234	06/08/10	BB.A	57.69864	-5.72322	NG 78237 73747	Sea loch egg wrack bed at coverage survey site A, Badachro	CM	FVS.Ascmac	WW
IMG_1235	06/08/10	BB.A	57.69864	-5.72322	NG 78237 73747	Sea loch egg wrack bed at coverage survey site A, Badachro	CM	FVS.Ascmac	WW
IMG_1236	06/08/10	BB.A	57.69864	-5.72322	NG 78237 73747	Sea loch egg wrack bed at coverage survey site A, Badachro	CM	FVS.Ascmac	WW
IMG_1237	06/08/10	BB.A	57.69864	-5.72322	NG 78237 73747	Sea loch egg wrack bed at coverage survey site A, Badachro	CM	FVS.Ascmac	WW
IMG_1238	06/08/10	B1	57.69865	-5.72365	NG 78212 73749	Sea loch egg wrack bed looking west, Badachro	CM	FVS.Ascmac	WW
IMG_1239	06/08/10	B1	57.69865	-5.72365	NG 78212 73749	Sea loch egg wrack bed looking north-east, Badachro	CM	FVS.Ascmac	WW
IMGP0128	10/08/10	ME01	57.8983	-5.17135	NH 12148 94287	MNCR mussel bed survey site - general view, Ullapool River, looking south	CM	Fserr.X	
IMGP0129	10/08/10	ME01	57.8983	-5.17135	NH 12148 94287	MNCR mussel bed survey site - general view, Ullapool River, looking north	CM	Fserr.X, Fves.X	
IMGP0130	10/08/10	ME01	57.8983	-5.17135	NH 12148 94287	MNCR mussel bed survey site - closeup, Ullapool River	CM	Fserr.X	
IMGP0131	10/08/10	ME01	57.8983	-5.17135	NH 12148 94287	MNCR mussel bed survey site - closeup, Ullapool River	CM	Fserr.X	
IMGP0132	10/08/10	ME01	57.89773	-5.1713	NH 12148 94223	bottom of mussel bed looking upshore (north-east), Ullapool River	CM	Fserr.X, Fves.X	
IMGP0133	10/08/10	ME01	57.8983	-5.17135	NH 12148 94287	MNCR mussel bed survey site - closeup showing substrate of pebbles and shells, with few live Mytilus edulis, Ullapool River	CM	Fserr.X	

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
IMGP0134	10/08/10	ME01	57.8983	-5.17135	NH 12148 94287	MNCR mussel bed survey site - closeup showing substrate of pebbles and shells, with few live Mytilus edulis, Ullapool River	CM	Fserr.X	
IMGP0135	10/08/10	ME01	57.8983	-5.17135	NH 12148 94287	MNCR mussel bed survey site - closeup showing substrate of pebbles and shells, with few live Mytilus edulis, Ullapool River	CM	Fserr.X	
IMGP0136	10/08/10	ME01	57.89805	-5.1712	NH 12156 94258	bottom of mussel bed looking south-east, Ullapool River	CM	Fserr.X, Fves.X	
IMGP0137	10/08/10	ME01	57.89805	-5.1712	NH 12156 94258	Ullapool River, looking north-east, with mussel bed in depression in foreground, Ullapool River	CM	Fserr.X, Fves.X	
IMGP0138	10/08/10	ME01	57.89805	-5.1712	NH 12156 94258	Ullapool River, looking east, with mussel bed in depression in foreground, Ullapool River	CM	Fserr.X, Fves.X	
IMG_1240	10/08/10	OD	58.04393	-5.42057	NB 98207 11209	Dense fucoid shore with slipway in background, Old Dornie Harbour	DH		
IMG_1241	10/08/10	OD	58.04393	-5.42057	NB 98207 11209	Dense fucoid shore, Old Dornie Harbour	DH		
IMG_1242	10/08/10	OD	58.0427	-5.42305	NB 98054 11079	Dense fucoid shore, Old Dornie Harbour	DH		
IMG_1243	10/08/10	OD	58.0427	-5.42305	NB 98054 11079	Jetty, Old Dornie Harbour	DH		
IMG_1244	10/08/10	OD	58.04233	-5.42318	NB 98044 11038	*Fucus serratus* and *Laminaria digitata* zones, Old Dornie Harbour	DH		
IMG_1245	10/08/10	OD	58.04233	-5.42318	NB 98044 11038	Fucoid and *Laminaria digitata* zones, Old Dornie Harbour	DH		
IMG_1246	10/08/10	OD	58.04107	-5.42342	NB 98023 10898	Dense fucoids on boulders, Old Dornie Harbour	DH		
IMG_1247	10/08/10	OD	58.04107	-5.42342	NB 98023 10898	Fucoid and *Laminaria digitata* zones, Old Dornie Harbour	DH		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
IMG_1248	10/08/10	OD	58.0439	-5.4198	NB 98252 11203	Fucoids on cobbles on sand, with slipway in background, Old Dornie Harbour	DH		
IMG_1249	10/08/10	OD	58.0439	-5.4198	NB 98252 11203	Fucoids on cobbles on sand, Old Dornie Harbour	DH		
IMG_1250	10/08/10	OD	58.04417	-5.41667	NB 98439 11223	Fucoids on cobbles on sand, Old Dornie Harbour	DH		
IMG_1251	10/08/10	OD	58.04417	-5.41667	NB 98439 11223	Fucoids on cobbles on sand, Old Dornie Harbour	DH		
IMG_1252	10/08/10	OD	58.04503	-5.41542	NB 98517 11316	Fucoids on boulders, Old Dornie Harbour	DH		
IMG_1253	10/08/10	OD	58.04503	-5.41542	NB 98517 11316	Muddy sand at bottom of shore, Old Dornie Harbour	DH		
IMG_1254	10/08/10	OD	58.04527	-5.41685	NB 98434 11346	Muddy sand with scattered fucoid patches at bottom of shore, Old Dornie Harbour	DH		
IMG_1255	10/08/10	OD	58.04527	-5.41685	NB 98434 11346	Fucoids on bedrock outcrop and scattered boulders on muddy sand, Old Dornie Harbour	DH		
IMG_1256	10/08/10	OD	58.0448	-5.41835	NB 98343 11298	Dense *Ascophyllum* and *Fucus vesiculosus* zones, Old Dornie Harbour	DH		
IMG_1257	10/08/10	OD	58.0448	-5.41835	NB 98343 11298	*Fucus vesiculosus* on muddy sand, Old Dornie Harbour	DH		
IMG_1258	10/08/10	OD	58.0445	-5.42038	NB 98221 11271	Dense fucoids on mid and lower shore, Old Dornie Harbour	DH		
IMG_1259	10/08/10	OD	58.0445	-5.42038	NB 98221 11271	Dense fucoids on mid and lower shore, Old Dornie Harbour	DH		
IMG_1260	10/08/10	OD	58.04493	-5.42222	NB 98116 11325	Dense *Ascophyllum* on boulders, Old Dornie Harbour	DH		
IMG_1261	10/08/10	OD	58.04493	-5.42222	NB 98116 11325	Dense *Ascophyllum* on boulders, Old Dornie Harbour	DH		
IMG_1262	10/08/10	OD	58.04595	-5.42297	NB 98077 11440	Dense *Fucus vesiculosus* on cobbles and boulders, Old Dornie Harbour	DH		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
IMG_1263	10/08/10	OD	58.04595	-5.42297	NB 98077 11440	Dense *Fucus vesiculosus* on cobbles and boulders, Old Dornie Harbour	DH		
IMG_1264	10/08/10	OD	58.04615	-5.4212	NB 98182 11457	Dense *Fucus vesiculosus* on cobbles and boulders, Old Dornie Harbour	DH		
IMG_1265	10/08/10	OD	58.04615	-5.4212	NB 98182 11457	Dense *Ascophyllum* and *Fucus vesiculosus* on boulders, Old Dornie Harbour	DH		
IMG_1266	10/08/10	OD	58.04543	-5.4198	NB 98261 11373	Scattered *Fucus vesiculosus* on stones on sand, Old Dornie Harbour	DH		
IMG_1267	10/08/10	OD	58.04543	-5.4198	NB 98261 11373	Scattered *Fucus vesiculosus* on stones on sand, Old Dornie Harbour	DH		
IMG_1268	10/08/10	OD	58.04543	-5.4198	NB 98261 11373	Scattered *Fucus vesiculosus* on stones on sand, Old Dornie Harbour	DH		
IMG_1269	10/08/10	OD	58.04543	-5.4198	NB 98261 11373	Scattered Fucus vesiculosus on stones on sand, Old Dornie Harbour	DH		
IMG_1270	10/08/10	OD	58.04335	-5.4184	NB 98332 11137	Dense *sea loch egg wrack* patch, Old Dornie Harbour	DH	FVS.Ascmac	WW
IMG_1271	10/08/10	OD	58.04335	-5.4184	NB 98332 11137	Dense *sea loch egg wrack* patch, Old Dornie Harbour	DH	FVS.Ascmac	WW
IMG_1272	10/08/10	OD	58.04335	-5.4184	NB 98332 11137	Dense *sea loch egg wrack* patch, Old Dornie Harbour	DH	FVS.Ascmac	WW
IMG_1273	10/08/10	OD	58.04335	-5.4184	NB 98332 11137	Dense *sea loch egg wrack* patch, Old Dornie Harbour	DH	FVS.Ascmac	WW
015	10/08/10	UR.4	57.89745	-5.17092	NH 12170 94191	*Fucus serratus* on pebbles, Ullapool River	AL	Fserr.X	
016	10/08/10	UR.6	57.89758	-5.17118	NH 12155 94206	Dense *Mytilus edulis* with *Fucus vesiculosus* and *F. serratus*, Ullapool River	AL	LMus.Myt.Mx	ME
017	10/08/10	UR.8	57.89783	-5.17127	NH 12151 94234	Pebbles with *Fucus serratus* and sparse *Mytilus edulis*, Ullapool River	AL	Fserr.X	
018	10/08/10	UR.11	57.89848	-5.17123	NH 12156 94307	Clump of *Modiolus modiolus* from shore, Ullapool River	AL		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
019	10/08/10	UR.11	57.89848	-5.17123	NH 12156 94307	Pebbles with *Fucus serratus* and sparse *Mytilus edulis*, Ullapool River	AL	Fserr.X	
020	10/08/10	UR.11	57.89848	-5.17123	NH 12156 94307	Clump of *Modiolus modiolus*, Ullapool River	AL	Fserr.X	
021	10/08/10	UR.11	57.89848	-5.17123	NH 12156 94307	Clump of *Modiolus modiolus* from shore, Ullapool River	AL		
022	10/08/10	UR.11	57.89848	-5.17123	NH 12156 94307	Clump of *Modiolus modiolus* from shore, Ullapool River	AL		
023	10/08/10	UR	57.89971	-5.17096	NH 12179 94442	Bank of gravel and pebbles along western side of river, Ullapool River, looking north-west	AL		
024	10/08/10	UR	57.89971	-5.17096	NH 12179 94442	Bank of gravel and pebbles along western side of river, Ullapool River, looking north-west	AL		
025	10/08/10	UR	57.89971	-5.17096	NH 12179 94442	Bank of gravel and pebbles along western side of river, Ullapool River, looking south	AL		
026	10/08/10	UR.13	57.89867	-5.17097	NH 12173 94326	Gravel and pebbles with scattered *Fucus vesiculosus*, Ullapool River	AL	Fves.X	
027	10/08/10	UR.13	57.89867	-5.17097	NH 12173 94326	Gravel and pebbles with scattered *Fucus vesiculosus*, Ullapool River	AL	Fves.X	
028	10/08/10	UR.15	57.89828	-5.17127	NH 12153 94284	Gravel and pebbles with scattered *Fucus vesiculosus* and *F. serratus*, Ullapool River	AL	Fves.X	
029	10/08/10	UR	57.89971	-5.17096	NH 12179 94442	Bank of gravel and pebbles along western side of river, Ullapool River, looking north	AL		
030	10/08/10	UR	57.89783	-5.17127	NH 12151 94234	Dense fucoids on pebbles, Ullapool River, looking west	AL	Fserr.X, Fves.X	
031	10/08/10	UR	57.89783	-5.17127	NH 12151 94234	Dense fucoids on pebbles, Ullapool River, looking south	AL	Fserr.X, Fves.X	
DSCF1996	10/08/10		57.88044	-5.3722	NH 00152 92876	View of mouth of Little Loch Broom, looking north	CT		
DSCF1997	10/08/10		57.88044	-5.3722	NH 00152 92876	View of mouth of Little Loch Broom, looking north	CT		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
DSCF1998	10/08/10		57.88044	-5.3722	NH 00152 92876	View of head of Little Loch Broom, looking south-east	CT		
DSCF1999	10/08/10		57.79468	-5.57711	NG 87504 83961	View of Loch Thùrnaig, looking west	CT		
DSCF2001	10/08/10		57.79468	-5.57711	NG 87504 83961	View of Loch Thùrnaig, looking west	CT		
DSCF2002	10/08/10		57.79404	-5.58252	NG 87178 83906	Fucoid covered shore, Loch Thùrnaig, looking west	CT		
DSCF2003	10/08/10		57.79404	-5.58252	NG 87178 83906	Fucoid covered shore, Loch Thùrnaig, looking east	CT		
DSCF2004	10/08/10		57.79355	-5.57902	NG 87384 83841	Fucoid covered shore, Loch Thùrnaig	CT		
DSCF2005	10/08/10		57.79355	-5.57902	NG 87384 83841	Fucoid covered shore, Loch Thùrnaig, looking north	CT		
DSCF2006	10/08/10		57.79395	-5.58074	NG 87284 83891	Fucoid covered shore, Loch Thùrnaig	CT		
DSCF2007	10/08/10		57.79395	-5.58074	NG 87284 83891	Fucoid covered shore, Loch Thùrnaig, looking north-east	CT		
DSCF2008	10/08/10		57.79395	-5.58074	NG 87284 83891	Fucoid covered shore, Loch Thùrnaig, looking north-east	CT		
DSCF2009	10/08/10	T2	57.79392	-5.58048	NG 87299 83887	Fucoid covered shore, with sea loch egg wrack patch, Loch Thùrnaig, looking south-east. Position approximate	CT	FVS.Ascmac	WW
DSCF2010	10/08/10	T2	57.79392	-5.58048	NG 87299 83887	Sea loch egg wrack bed, looking east. Position approximate	CT	FVS.Ascmac	WW
DSCF2011	10/08/10	T2	57.79413	-5.58078	NG 87282 83911	Sea loch egg wrack bed, looking north-east. Position approximate	CT	FVS.Ascmac	WW
DSCF2012	10/08/10	T2	57.79413	-5.58078	NG 87282 83911	Sea loch egg wrack bed, looking north-east. Position approximate	CT	FVS.Ascmac	WW
DSCF2013	10/08/10		57.79413	-5.58078	NG 87282 83911	Fucoid covered shore, Loch Thùrnaig, looking north? Position approximate	CT		
DSCF2014	10/08/10	T2	57.79413	-5.58078	NG 87282 83911	Sea loch egg wrack bed, looking north-east. Position approximate	CT	FVS.Ascmac	WW

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
DSCF2015	10/08/10	T2	57.79428	-5.58045	NG 87303 83927	Sea loch egg wrack bed, looking south-east? Position approximate	CT	FVS.Ascmac	WW
DSCF2016	10/08/10	T2	57.79427	-5.58052	NG 87299 83926	Sea loch egg wrack bed, looking north-east. Position approximate	CT	FVS.Ascmac	WW
DSCF2017	10/08/10	T2	57.79427	-5.58052	NG 87299 83926	Sea loch egg wrack bed, looking south-east. Position approximate	CT	FVS.Ascmac	WW
DSCF2018	10/08/10	T2	57.79427	-5.58052	NG 87299 83926	Close-up of sea loch egg wrack. Position uncertain	CT	FVS.Ascmac	WW
DSCF2019	10/08/10	T2	57.79427	-5.58052	NG 87299 83926	Close-up of sea loch egg wrack. Position uncertain	CT	FVS.Ascmac	WW
DSCF2020	10/08/10					Fucoid covered shore, Loch Thùrnaig. Position unknown	CT		
DSCF2021	10/08/10					Fucoid covered shore, Loch Thùrnaig. Position unknown	CT		
DSCF2022	10/08/10					Fucoid covered shore, Loch Thùrnaig. Position unknown	CT		
DSCF2023	10/08/10		57.79364	-5.57919	NG 87374 83852	Fucoid covered upper shore, possibly including sea loch egg wrack. Position approximate, looking north	CT		
DSCF2024	10/08/10					Fucoid covered upper shore, with some sea loch egg wrack, Loch Thùrnaig. Position unknown	CT		
DSCF2025	10/08/10					Fucoid covered upper shore, with some sea loch egg wrack, Loch Thùrnaig. Position unknown	CT		
DSCF2026	10/08/10	T3	57.79225	-5.57853	NG 87405 83695	Mid point of sea loch egg wrack bed, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2027	10/08/10		57.79036	-5.58072	NG 87264 83491	View of eastern coastline of Loch Thùrnaig, looking north-east. Position approximate	CT		
DSCF2028	10/08/10		57.79036	-5.58072	NG 87264 83491	View of eastern coastline of Loch Thùrnaig, looking north. Position approximate	CT		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
DSCF2029	10/08/10		57.79036	-5.58072	NG 87264 83491	View of western coastline of Loch Thùrnaig, looking west. Position approximate	CT		
DSCF2030	10/08/10		57.78774	-5.60176	NG 85998 83266	View of Ob na Ba Ruaidhe, Loch Thùrnaig, looking north-west. Position approximate	CT		
DSCF2031	10/08/10		57.78774	-5.60176	NG 85998 83266	Fucoid covered shore in south-west corner of Ob na Ba Ruaidhe, Loch Thùrnaig, looking west. Position approximate	CT		
DSCF2032	10/08/10		57.78768	-5.60545	NG 85779 83271	Suze Henderson, Ob na Ba Ruaidhe, Loch Thùrnaig. Position approximate	CT		
DSCF2033	10/08/10	T4	57.78704	-5.60451	NG 85831 83197	Mid point of sparse sea loch egg wrack bed, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2034	10/08/10	T4	57.78704	-5.60451	NG 85831 83197	Mid point of sparse sea loch egg wrack bed, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2035	10/08/10	T5	57.78714	-5.60475	NG 85817 83209	Substrate below mixed sea loch egg wrack/loose *Fucus serratus* bed?, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2036	10/08/10	T5	57.78714	-5.60475	NG 85817 83209	Loose *Fucus serratus* in sea loch egg wrack bed, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2037	10/08/10	T5	57.78714	-5.60475	NG 85817 83209	Loose *Fucus serratus* in sea loch egg wrack bed, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2038	10/08/10	T5	57.78714	-5.60475	NG 85817 83209	Mid point of sparse sea loch egg wrack bed, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2039	10/08/10	T5	57.78714	-5.60475	NG 85817 83209	Mid point of sparse sea loch egg wrack bed, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2040	10/08/10	T6	57.78844	-5.60518	NG 85799 83355	Mid point of sparse sea loch egg wrack bed, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2041	10/08/10	T6	57.78844	-5.60518	NG 85799 83355	Mid point of sparse sea loch egg wrack bed, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2042	10/08/10	T7	57.78884	-5.60516	NG 85803 83400	Mid point of sparse sea loch egg wrack bed, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2043	10/08/10	T7	57.78884	-5.60516	NG 85803 83400	Mid point of sparse sea loch egg wrack bed, Loch Thùrnaig	CT	FVS.Ascmac	WW

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
DSCF2044	10/08/10	T1	57.78928	-5.60512	NG 85808 83448	General views of sea loch egg wrack bed T1?, Loch Thùrnaig. Position uncertain	CT	FVS.Ascmac	WW
DSCF2045	10/08/10	T1	57.78928	-5.60512	NG 85808 83448	General views of sea loch egg wrack bed T1?, Loch Thùrnaig. Position uncertain	CT	FVS.Ascmac	WW
DSCF2046	10/08/10	T1	57.78928	-5.60512	NG 85808 83448	General views of sea loch egg wrack bed T1?, Loch Thùrnaig. Position uncertain	CT	FVS.Ascmac	WW
DSCF2047	10/08/10	LT	57.7893	-5.60468	NG 85834 83449	*Ostrea edulis* - closeup, Loch Thùrnaig	CT		OE
DSCF2048	10/08/10	LT	57.7893	-5.60468	NG 85834 83449	*Ostrea edulis* - closeup, Loch Thùrnaig	CT		OE
DSCF2049	10/08/10	LT	57.7893	-5.60468	NG 85834 83449	*Ostrea edulis* - closeup, Loch Thùrnaig	CT		OE
DSCF2050	10/08/10	LT	57.7893	-5.60468	NG 85834 83449	Edge of Ostrea patch?, Loch Thùrnaig. Position approximate	CT		
DSCF2051	10/08/10	LT	57.7893	-5.60468	NG 85834 83449	*Ostrea patch* (submerged), Loch Thùrnaig. Position approximate	CT		
DSCF2052	10/08/10	LT	57.7893	-5.60468	NG 85834 83449	*Ostrea* patch (submerged), Loch Thùrnaig. Position approximate	CT		
DSCF2053	10/08/10	LT	57.78951	-5.60465	NG 85837 83472	*Ostrea* patch (uncovered), Loch Thùrnaig	CT		
DSCF2054	10/08/10	LT	57.78948	-5.6046	NG 85840 83469	Patchy fucoids on pebble-scattered sediment, Loch Thùrnaig, looking south-east. Position approximate	CT	Fves.X	
DSCF2055	10/08/10	T1	57.78948	-5.6046	NG 85840 83469	Patchy fucoids on pebble-scattered sediment, Loch Thùrnaig, looking north-west. Sea loch egg wrack bed in background. Position approximate	CT	Fves.X, FVS.Ascmac	WW
DSCF2056	10/08/10	T1	57.78967	-5.60502	NG 85816 83491	Sea loch egg wrack bed, Loch Thùrnaig, looking north-west? Position approximate	CT	FVS.Ascmac	WW

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
DSCF2057	10/08/10	T1	57.78967	-5.60502	NG 85816 83491	Sea loch egg wrack bed, Loch Thùrnaig, looking north-east? Position approximate	CT	FVS.Ascmac	WW
DSCF2058	10/08/10	T1	57.78967	-5.60502	NG 85816 83491	*Semibalanus balanoides* on pebble, Loch Thùrnaig. Position approximate	CT		
DSCF2059	10/08/10	T1	57.78967	-5.60502	NG 85816 83491	Elver from under sea loch egg wrack, Loch Thùrnaig. Position approximate	CT		
DSCF2060	10/08/10	T1	57.78967	-5.60502	NG 85816 83491	Elver from under sea loch egg wrack, Loch Thùrnaig. Position approximate	CT		
DSCF2061	10/08/10	T1	57.78967	-5.60502	NG 85816 83491	Elver from under sea loch egg wrack, Loch Thùrnaig. Position approximate	CT		
DSCF2062	10/08/10	T1	57.78967	-5.60502	NG 85816 83491	Elver from under sea loch egg wrack, Loch Thùrnaig. Position approximate	CT		
DSCF2063	10/08/10	T1	57.78967	-5.60502	NG 85816 83491	Elver from under sea loch egg wrack, Loch Thùrnaig. Position approximate	CT		
DSCF2064	10/08/10	T1	57.78967	-5.60502	NG 85816 83491	Elver from under sea loch egg wrack, Loch Thùrnaig. Position approximate	CT		
DSCF2065	10/08/10	T1	57.78967	-5.60502	NG 85816 83491	Elver from under sea loch egg wrack, Loch Thùrnaig. Position approximate	CT		
DSCF2066	10/08/10	T1	57.78967	-5.60502	NG 85816 83491	Elver from under sea loch egg wrack, Loch Thùrnaig. Position approximate	CT		
DSCF2067	10/08/10	T1	57.78967	-5.60502	NG 85816 83491	Sea loch egg wrack cleared showing substrate and elver, Loch Thùrnaig. Position approximate	CT		
DSCF2068	10/08/10	T1	57.78967	-5.60502	NG 85816 83491	Sea loch egg wrack cleared showing substrate and elver, Loch Thùrnaig. Position approximate	CT		
DSCF2069	10/08/10					View of freshwater loch, Ross & Cromarty	CT		
DSCF2070	11/08/10	LH01	57.87553	-5.12717	NH 14648 91631	Diving team on RV Serpula (Colin Moore, Colin Trigg, Alastair Lyndon), Loch Broom	SH		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
DSCF2077	13/08/10					Colin Trigg processing *Limaria* sample on Rebecca Ann, Summer Isles	CT		
DSCF2078	13/08/10		58.00295	-5.41993	NB 98014 06647	Diver (Graham Saunders), Summer Isles	CT		
DSCF2079	13/08/10		58.00295	-5.41993	NB 98014 06647	Divers on Rebecca Ann, Summer Isles	CT		
DSCF2104	17/08/10					Seals, Loch Thùrnaig	CT		
DSCF2105	17/08/10					Seals, Loch Thùrnaig	CT		
DSCF2108	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Archidoris pseudoargus* and *Asterias rubens* on organically enriched muddy sand	BJ		
DSCF2109	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	Reduced, organically enriched muddy sand with white bacterial mat	BJ		
DSCF2111	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Anemonia viridis* amongst dense algal turf	BJ		
DSCF2113	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Carcinus maenas*	BJ		
DSCF2114	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	Ascidian largely covered by algal mat	BJ		
DSCF2115	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	Clump of *Ascidiella scabra*?	BJ		
DSCF2117	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Hydractinia echinata*? on hermit crab	BJ		
DSCF2120	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Astropecten irregularis* on sediment	BJ		
DSCF2121	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	Dense *Ascidiella aspersa* on *Ascophyllum nodosum*	BJ		
DSCF2126	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	Large steel ring on sea bed	BJ		
DSCF2128	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	Fouling community on steel ring, with *Ascidia mentula*, serpulid worms and algal turf	BJ		
DSCF2133	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	Small *Ostrea edulis*	BJ		OE

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
DSCF2137	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Anemonia viridis*	BJ		
DSCF2140	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Ostrea edulis*	BJ		OE
DSCF2142	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Marthasterias glacialis*	BJ		
DSCF2144	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Anemonia viridis*	BJ		
DSCF2148	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Carcinus maenas*	BJ		
DSCF2150	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Carcinus maenas*	BJ		
DSCF2154	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	Mixed algal mat	BJ		
DSCF2159	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Halichondria panicea?*	BJ		
DSCF2160	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Halichondria panicea?* and *Hydractinia echinata*?	BJ		
DSCF2161	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Pagurus bernhardus* with *Hydractinia echinata*?	BJ		
DSCF2162	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Pagurus bernhardus* with *Hydractinia echinata*?	BJ		
DSCF2165	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Cancer pagurus* beneath dense *Asperococcus turneri* and *Chorda filum*	BJ		
DSCF2166	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Anemonia viridis*	BJ		
DSCF2168	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	Floating *Ascophyllum nodosum*	BJ		
DSCF2169	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	Floating *Ascophyllum nodosum*	BJ		
DSCF2171	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Echinus esculentus*	BJ		
DSCF2173	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Anemonia viridis*	BJ		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
DSCF2175	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Anemonia viridis*	BJ		
DSCF2177	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Anemonia viridis*	BJ		
DSCF2178	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Anemonia viridis*	BJ		
DSCF2180	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Anemonia viridis*	BJ		
DSCF2181	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Anemonia viridis*	BJ		
DSCF2182	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Anemonia viridis*	BJ		
DSCF2186	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Cerianthus lloydii*	BJ		
DSCF2187	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Cerianthus lloydii* and *Ostrea edulis*	BJ		OE
DSCF2188	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	Pebble and gravel covered sediment	BJ		
DSCF2189	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Asterias rubens*	BJ		
DSCF2191	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	Mussel	BJ		
DSCF2196	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Anemonia viridis* on *Saccharina latissima*	BJ		
DSCF2198	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	Flooded sea loch egg wrack bed	BJ	FVS.Ascmac	WW
DSCF2199	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	Flooded sea loch egg wrack bed	BJ	FVS.Ascmac	WW
DSCF2202	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	Flooded sea loch egg wrack bed	BJ	FVS.Ascmac	WW
DSCF2204	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	Clump of *Mytilus edulis* on rock	BJ		
DSCF2210	18/08/10	LT	57.78879	-5.6046	NG 85836 83392	*Mytilus edulis* close-up	BJ		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
DSCF2214	20/08/10	T2	57.79364	-5.57988	NG 87333 83854	Long shot of sea loch egg wrack bed, Loch Thùrnaig, looking north-west. Position approximate	CT	FVS.Ascmac	WW
DSCF2215	20/08/10	T2	57.79364	-5.57988	NG 87333 83854	Long shot of sea loch egg wrack bed, Loch Thùrnaig, looking west north-west. Position approximate	CT	FVS.Ascmac	WW
DSCF2216	20/08/10	T2	57.79364	-5.57988	NG 87333 83854	Long shot of sea loch egg wrack bed, Loch Thùrnaig, looking west. Position approximate	CT	FVS.Ascmac	WW
DSCF2217	20/08/10	T2	57.79445	-5.58005	NG 87328 83944	Sea loch egg wrack bed from periphery, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2218	20/08/10	T2	57.79455	-5.58087	NG 87280 83958	Sea loch egg wrack bed from periphery, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2219	20/08/10	T2	57.79455	-5.58087	NG 87280 83958	Sea loch egg wrack bed from periphery, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2220	20/08/10	T2	57.79423	-5.5809	NG 87276 83923	Sea loch egg wrack bed from periphery, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2221	20/08/10	T2	57.79423	-5.5809	NG 87276 83923	Sea loch egg wrack bed from periphery, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2222	20/08/10	T2	57.79423	-5.5809	NG 87276 83923	Sea loch egg wrack bed from periphery, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2223	20/08/10	T2	57.7939	-5.58117	NG 87258 83887	Sea loch egg wrack bed from periphery, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2224	20/08/10	T2	57.79387	-5.58047	NG 87299 83881	Sea loch egg wrack bed from periphery, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2225	20/08/10	T2	57.79387	-5.58047	NG 87299 83881	Sea loch egg wrack bed from periphery, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2226	20/08/10	T2	57.79383	-5.58015	NG 87318 83876	Sea loch egg wrack bed from periphery, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2227	20/08/10	T2	57.79392	-5.58048	NG 87299 83886	Sea loch egg wrack bed cover estimation site, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2228	20/08/10	T2	57.79392	-5.58048	NG 87299 83886	Sea loch egg wrack bed cover estimation site, showing substrate. Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2229	20/08/10	T2	57.79398	-5.58088	NG 87275 83895	Sea loch egg wrack bed cover estimation site, Loch Thùrnaig	CT	FVS.Ascmac	WW

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
DSCF2231	20/08/10	T2	57.79398	-5.58088	NG 87275 83895	Sea loch egg wrack bed cover estimation site, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2232	20/08/10	T2	57.79413	-5.58078	NG 87282 83911	Sea loch egg wrack bed along MNCR survey transect?, Loch Thùrnaig. Position uncertain and approximate	CT	FVS.Ascmac	WW
DSCF2233	20/08/10	T2	57.79413	-5.58078	NG 87282 83911	Sea loch egg wrack bed along MNCR survey transect?, Loch Thùrnaig. Position uncertain and approximate	CT	FVS.Ascmac	WW
DSCF2234	20/08/10	T2	57.79413	-5.58078	NG 87282 83911	Sea loch egg wrack bed along MNCR survey transect?, Loch Thùrnaig. Position uncertain and approximate	CT	FVS.Ascmac	WW
DSCF2235	20/08/10	T2	57.79413	-5.58078	NG 87282 83911	Sea loch egg wrack bed along MNCR survey transect?, Loch Thùrnaig. Position uncertain and approximate	CT	FVS.Ascmac	WW
DSCF2236	20/08/10	T2	57.79413	-5.58078	NG 87282 83911	Sea loch egg wrack bed along MNCR survey transect?, Loch Thùrnaig. Position uncertain and approximate	CT	FVS.Ascmac	WW
DSCF2237	20/08/10	T2	57.79413	-5.58078	NG 87282 83911	Sea loch egg wrack bed along MNCR survey transect?, Loch Thùrnaig. Position uncertain and approximate	CT	FVS.Ascmac	WW
DSCF2238	20/08/10	T2	57.79413	-5.58078	NG 87282 83911	Sea loch egg wrack bed along MNCR survey transect?, Loch Thùrnaig. Position uncertain and approximate	CT	FVS.Ascmac	WW
DSCF2239	20/08/10	T2	57.79413	-5.58078	NG 87282 83911	Sea loch egg wrack bed along MNCR survey transect?, Loch Thùrnaig. Position uncertain and approximate	CT	FVS.Ascmac	WW
DSCF2240	20/08/10	T2	57.77728	-5.58107	NG 87166 82038	Sea loch egg wrack bed at cover estimation site, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2241	20/08/10	T2	57.77728	-5.58107	NG 87166 82038	Sea loch egg wrack bed at cover estimation site, Loch Thùrnaig	CT	FVS.Ascmac	WW

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
DSCF2242	20/08/10	T2	57.7942	-5.5808	NG 87282 83919	Sea loch egg wrack bed at cover estimation site, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2243	20/08/10	T2	57.7942	-5.5808	NG 87282 83919	Sea loch egg wrack bed at cover estimation site, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2244	20/08/10	T2	57.79413	-5.58078	NG 87282 83911	Sea loch egg wrack bed at cover estimation site, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2245	20/08/10	T2	57.79413	-5.58078	NG 87282 83911	Sea loch egg wrack bed at cover estimation site, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2246	20/08/10	T2	57.79408	-5.57998	NG 87329 83903	Sea loch egg wrack bed at cover estimation site, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2247	20/08/10	T2	57.79408	-5.57998	NG 87329 83903	Sea loch egg wrack bed at cover estimation site, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2248	20/08/10	T2	57.79415	-5.57998	NG 87330 83911	Sea loch egg wrack bed at cover estimation site, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2249	20/08/10	T2	57.79415	-5.57998	NG 87330 83911	Sea loch egg wrack bed at cover estimation site, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2250	20/08/10	T2	57.79423	-5.58002	NG 87328 83920	Sea loch egg wrack bed at cover estimation site, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2251	20/08/10	T2	57.79423	-5.58002	NG 87328 83920	Sea loch egg wrack bed at cover estimation site, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2252	20/08/10	T2	57.79428	-5.58045	NG 87303 83927	Sea loch egg wrack bed at cover estimation site, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2253	20/08/10	T2	57.79428	-5.58045	NG 87303 83927	Sea loch egg wrack bed at cover estimation site, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2254	20/08/10	T2	57.79448	-5.58033	NG 87311 83949	Sea loch egg wrack bed at cover estimation site, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2255	20/08/10	T2	57.79448	-5.58033	NG 87311 83949	Sea loch egg wrack bed at cover estimation site, Loch Thùrnaig	CT	FVS.Ascmac	WW
DSCF2265	20/08/10		57.71239	-5.67926	NG 80938 75133	Survey team awaiting slippage of RIB, Gairloch slipway	CT		

Table 14.1 continued

Filename	Date	Site	Latitude	Longitude	OS Grid	Description	Phot	Biotope	PMF
DSCF2266	20/08/10		57.71239	-5.67926	NG 80938 75133	Survey team awaiting slippage of RIB, Gairloch slipway	CT		

Table 14.2 Details of video recorded during the drop-down and MNCR phase 2 surveys. Positional data for each run and location of footage on the miniDV tapes is provided in Appendix 2. Surveyors are CM (Colin Moore), CT (Colin Trigg), JP (Joanne Porter), SH (Suzanne Henderson)

Video tape code	Date	Survey	Sites	Surveyor
D-ULLAPOOL-0710-1	22/07/2010	Drop-down	BM1, BM3, BM6, BM5, BM1	CM
D-ULLAPOOL-0710-2	23/07/2010	Drop-down	SG1-8, SG22, SG9-13, SG23, MC3, MC2, MC1, BM7, MB1, MB76-77, MB2	CM
D-ULLAPOOL-0710-3	23/07/2010	Drop-down	MB3-6, BM4, BM2	CM
D-ULLAPOOL-0710-4	24/07/2010	Drop-down	MC4-9, AP1, MC10	CM
D-ULLAPOOL-0710-5	25/07/2010	Drop-down	MB15-26, MB78-79, BM10, MB14, BM11, BM9, BM8	CM
D-ULLAPOOL-0710-6	26/07/2010	Drop-down	BM12-15, MB13, BM16-17, MB10-11, SG24-27, MB12, BM18, MB9, MB8, MB7, MC12, TS1, MC11	CM
D-ULLAPOOL-0710-7	27/07/2010	Drop-down	HM1-5, BM20, HM8, BM19, BM21	CM
D-ULLAPOOL-0710-8	28/07/2010	Drop-down	MB46, FS8, MB45, MB44, MB43, MB54, MB53, MB52, MB51, MB50, MB49, MB47, MB48, GF8, BM51, BM52, BM50, BM47-49	CM
D-ULLAPOOL-0710-9	28/07/2010	Drop-down	BM53, BM54(=GF9)	CM
D-ULLAPOOL-0710-10	29/07/2010	Drop-down	BM55, GF12-13, MB56-58, MB80, MB60, MB59, GF14, BM65, MB74-75, MB81, MB73, MB72, MB61	CM
D-ULLAPOOL-0710-11	29/07/2010	Drop-down	MB62-64, MB69-71, MB68, MB67, MB66, MB65, BM66-69, MC13, MB40-42, GF10	CM
D-ULLAPOOL-0710-12	29/07/2010	Drop-down	GF11	CM
D-ULLAPOOL-0710-13	30/07/2010	Drop-down	BM56, BM58-64, BM57, MB55, MB82, LC4(=GF5), GF4	CM
D-ULLAPOOL-0710-14	30/07/2010	Drop-down	LC3(=GF3), BM27-28	CM
D-ULLAPOOL-0710-15	31/07/2010	Drop-down	MB34, MB33, BM25, BM24, SG21, SG20, SG19, SG18, SG17, SG16, SG15, SG14	CM
D-ULLAPOOL-0710-16	31/07/2010	Drop-down	BM23, MB28, MB83, MB27, BM22, MB29, MB84, MB30, MB32, GF6-7, BM29-30, LC2(=GF2), LC1, BM31-32	CM
D-ULLAPOOL-0810-17	01/08/2010	Drop-down	MB35-36, MB85, MB37-38, FS1-7, FS21, BM33-34, GF1, BM35-36	CM
D-ULLAPOOL-0810-18	02/08/2010	Drop-down	LC6, LC5, BM46, BM45, BM44, BM43	CM

Table 14.2 continued

Video tape code	Date	Survey	Sites	Surveyor
D-ULLAPOOL-0810-19	03/08/2010	Drop-down	BM40, BM39, DM2, BM38, BM37, FS11, FS10, FS9, FS12-20	CM
D-ULLAPOOL-0810-20	04/08/2010	Drop-down	HM6, HM9, HM7, BM41, MB39, BM42, DM1	CM
D-ULLAPOOL-0810-21	05/08/2010	Drop-down	BM26, HM10-11	CM
S-ULLAPOOL-0810-22	09/08/2010	Transect	ML01	SH
S-ULLAPOOL-0810-23	12/08/2010	Transect	LH01	SH
S-ULLAPOOL-0810-24	13/08/2010	Transect	ML02	SH
S-ULLAPOOL-0810-25	15/08/2010	Transect	ZM01	JP
S-ULLAPOOL-0810-26	17/08/2010	Transect	ML03	JP
D-ULLAPOOL-0810-27	17/08/2010	Drop-down	ZM03, OE01	CT
S-ULLAPOOL-0810-28	18/08/2010	Transect	OE01	JP
D-ULLAPOOL-0810-29	19/08/2010	Drop-down	ZM02	CM
D-ULLAPOOL-0810-30	19/08/2010	Drop-down	ZM02	CM
S-ULLAPOOL-0810-31	19/08/2010	Transect	ZM02	JP
S-ULLAPOOL-0810-32	20/08/2010	Transect	ML04	JP

Appendix 15 Log of specimens collected

MCS code = Marine Conservation Society taxonomic code; identifiers include Susan Hamilton (SH) and Colin Moore (CM); location of material includes National Museums of Scotland (NMS) and Heriot-Watt University (HWU)

MCS code	Taxon	Site	Identifier	Location
A00000	*Astrorhyza limicola*	G2	SH	NMS
D10670	*Pennatula phosphorea*	G2	SH	NMS
D10750	*Cerianthus lloydii*	G6	SH	NMS
D13410	*Edwardsia claparedii*	G2	SH	NMS
F00001	PLATYHELMINTHES	G2	SH	NMS
G00460	*Tubulanus polymorphus*	G2	SH	NMS
G00610	Lineidae spp	G2	SH	NMS
J00080	*Priapulus caudatus*	G2	SH	NMS
N00090	*Golfingia elongata*	G22	SH	NMS
N00160	*Nephasoma minutum*	G6	SH	NMS
N00190	*Thysanocardia procera*	G5	SH	NMS
N00279	*Phascolion strombus*	G4	SH	NMS
P00200	*Pisione remota*	G10	SH	NMS
P00550	*Subadyte pellucida*	ML02	SH	NMS
P00600	*Alentia gelatinosa*	ML01	SH	NMS
P00930	*Gattyana cirrhosa*	G2	SH	NMS
P01020	*Harmothoe extenuata*	G6	SH	NMS
P01030	*Harmothoe fragilis*	G23	SH	NMS
P01060	*Harmothoe imbricata*	ML01	SH	NMS
P01080	*Malmgreniella ljungmani*	ML01	SH	NMS
P01100	*Malmgreniella mcintoshi*	G31	SH	NMS
P01170	*Malmgreniella castanea*	G2	SH	NMS
P01180	*Pettibonesia furcosetosa*	G25	SH	NMS
P01230	*Malmgreniella arenicolae*	G5	SH	NMS
P01690	*Pholoe inornata*	G6	SH	NMS
P01730	*Pholoe baltica*	G2	SH	NMS
P01820	*Sigalion squamosus*	ZM02	SH	NMS
P01870	*Sthenelais boa*	G5	SH	NMS
P01890	*Sthenelais limicola*	G11	SH	NMS
P02050	*Eteone longa*	G2	SH	NMS
P02130	*Hesionura elongata*	G10	SH	NMS
P02300	*Pseudomystides limbata*	ML03	SH	NMS
P02540	*Phyllodoce lineata*	G11	SH	NMS
P02550	*Anaitides longipes*	G10	SH	NMS
P02570	*Phyllodoce mucosa*	WW03	SH	NMS
P02710	*Eulalia expusilla*	ML01	SH	NMS
P02770	*Eulalia viridis*	G22	SH	NMS
P02790	*Eulalia mustela*	G6	SH	NMS
P02790	*Eulalia mustela*	G31	SH	NMS
P02820	*Eumida* spp juv/indet	G22	SH	NMS
P02850	*Eumida sanguinea*	ML02	SH	NMS
P02950	*Nereiphylla paretti*	G6	SH	NMS
P03060	*Paranaitis kosteriensis*	ML01	SH	NMS

Appendix 15 continued

MCS code	Taxon	Site	Identifier	Location
P03380	*Sige fusigera*	G32	SH	NMS
P04720	*Glycera alba*	G2	SH	NMS
P04750	*Glycera gigantea*	G31	SH	NMS
P04760	*Glycera lapidum*	G6	SH	NMS
P04790	*Glycera rouxi*	G2	SH	NMS
P04870	*Glycinde nordmanni*	G2	SH	NMS
P04930	*Goniada maculata*	G2	SH	NMS
P05010	*Goniadella gracilis*	G10	SH	NMS
P05210	*Sphaerodoropsis minuta*	ML02	SH	NMS
P05270	*Sphaerodorum gracilis*	G6	SH	NMS
P05410	*Podarkeopsis capensis*	G3	SH	NMS
P05470	*Hesiospina similis*	G31	SH	NMS
P05520	*Kefersteinia cirrata*	G6	SH	NMS
P05630	*Nereimyra punctata*	G6	SH	NMS
P05680	*Ophiodromus flexuosus*	G1	SH	NMS
P05680	*Ophiodromus flexuosus*	G12	SH	NMS
P05780	*Ophiodromus pallidus*	G31	SH	NMS
P06120	*Ancistrosyllis groenlandica*	G3	SH	NMS
P06120	*Ancistrosyllis groenlandica*	G15	SH	NMS
P06365	?*Dioplosyllis* sp	G6	SH	NMS
P06480	*Syllis cornuta*	G4	SH	NMS
P06540	*Syllis* sp E	ML02	SH	NMS
P06542	*Syllis* sp H	G6	SH	NMS
P06543	*Syllis* sp D	G6	SH	NMS
P06610	*Trypanosyllis coeliaca*	ML01	SH	NMS
P07000	*Odontosyllis gibba*	ML02	SH	NMS
P07280	*Syllides benedicti*	G31	SH	NMS
P07440	*Exogone hebes*	G6	SH	NMS
P07450	*Exogone naidina*	ML02	SH	NMS
P07460	*Exogone verugera*	G20	SH	NMS
P07510	*Sphaerosyllis bulbosa*	G6	SH	NMS
P07555	*Sphaerosyllis taylori*	G10	SH	NMS
P07790	*Myrianida* sp	G2	SH	NMS
P08340	*Eunereis longissima*	G20	SH	NMS
P08490	*Platynereis dumerilii*	ML01	SH	NMS
P08630	*Aglaophamus rubella*	G6	SH	NMS
P08700	*Nephtys cirrosa*	G10	SH	NMS
P08710	*Nephtys hombergii*	G2	SH	NMS
P08720	*Nephtys kersivalensis*	G22	SH	NMS
P08740	*Nephtys incisa*	G1	SH	NMS
P09050	*Pareurythoe borealis*	ML02	SH	NMS
P09360	*Aponuphis bilineata*	G6	SH	NMS
P09460	*Nothria britannica*	G10	SH	NMS
P09910	*Nematonereis hebes*	G12	SH	NMS
P10080	*Lumbrineris gracilis*	G2	SH	NMS
P10090	*Lumbrineris hibernica*	G2	SH	NMS
P11040	*Protodorvillea kefersteini*	G10	SH	NMS
P11450	*Orbinia armandi*	G10	SH	NMS

Appendix 15 continued

P11590	*Aricidea wassi*	G2	SH	NMS
P11650	*Aricidea catherinae*	G2	SH	NMS
P11660	*Aricidea cerrutii*	G10	SH	NMS
P11730	*Cirrophorus branchiatus*	G31	SH	NMS
P11850	*Paradoneis lyra*	G2	SH	NMS
P12100	*Apistobranchus tullbergi*	G31	SH	NMS
P12270	*Aonides oxycephala*	ML01	SH	NMS
P12280	*Aonides paucibranchiata*	G6	SH	NMS
P12500	*Laonice bahusiensis*	G6	SH	NMS
P12570	*Malacoceros fuliginosus*	WW03	SH	NMS
P12690	*Minuspio cirrifera*	G18	SH	NMS
P12700	*Minuspio multibranchiata*	G13	SH	NMS
P12700	*Minuspio multibranchiata*	G15	SH	NMS
P12770	*Dipolydora caulleryi*	ML01	SH	NMS
P12790	*Dipolydora flava*	G31	SH	NMS
P12875	*Dipolydora saintjosephi*	ML01	SH	NMS
P13020	*Prionospio fallax*	G1	SH	NMS
P13020	*Prionospio fallax*	G3	SH	NMS
P13030	*Prionospio banyulensis*	G6	SH	NMS
P13120	*Pseudopolydora pulchra*	G4	SH	NMS
P13380	*Microspio mecznikowianus*	G6	SH	NMS
P13430	*Spiophanes bombyx*	G6	SH	NMS
P13440	*Spiophanes kroyeri*	G2	SH	NMS
P13620	*Magelona alleni*	G2	SH	NMS
P13630	*Magelona filiformis*	ZM02	SH	NMS
P13640	*Magelona minuta*	G2	SH	NMS
P13940	*Caulleriella alata*	G31	SH	NMS
P14020	*Chaetozone* sp 'D'	G20	SH	NMS
P14030	*Chaetozone setosa*	G2	SH	NMS
P14050	*Cheatozone christei*	ZM02	SH	NMS
P14080	*Cirratulus cirratus*	G4	SH	NMS
P14091	*Cirratulus caudatus*	G22	SH	NMS
P14280	*Aphelochaeta* sp A	G9	SH	NMS
P14790	*Diplocirrus glaucus*	G2	SH	NMS
P15030	*Macrochaeta clavicornis*	ML01	SH	NMS
P15310	*Capitella capitata*	ZM02	SH	NMS
P15310	*Capitella capitata*	WW03	SH	NMS
P15470	*Dasybranchus caducus*	G21	SH	NMS
P15580	*Mediomastus fragilis*	G2	SH	NMS
P15630	*Notomastus latericeus*	G2	SH	NMS
P15630	*Notomastus latericeus*	G3	SH	NMS
P15645	*Notomastus* sp A	G6	SH	NMS
P15690	*Peresiella clymenoides*	G2	SH	NMS
P16000	*Praxillura longissima*	G2	SH	NMS
P16160	*Euclymeninae* sp A	ML01	SH	NMS
P16230	*Clymenura tricirrata*	ML01	SH	NMS
P16260	*Clymenura johnstoni*	ML01	SH	NMS
P16320	*Euclymene lumbricoides*	G2	SH	NMS
P16340	*Euclymene* sp. A	ML01	SH	NMS
P16380	*Heteroclymene robusta*	G22	SH	NMS

Appendix 15 continued

P16480	*Praxillella affinis*	G2	SH	NMS
P16650	*Nicomache* sp	G22	SH	NMS
P16810	*Rhodine loveni*	G23	SH	NMS
P17190	*Ophelina acuminata*	G18	SH	NMS
P17425	*Scalibregma celticum*	G6	SH	NMS
P17430	*Scalibregma inflatum*	G1	SH	NMS
P17980	*Polygordius* spp indet	G10	SH	NMS
P17990	*Polygordius appendiculatus*	G10	SH	NMS
P18280	*Galathowenia oculata*	G18	SH	NMS
P18360	*Owenia fusiformis*	G2	SH	NMS
P18430	*Amphictene auricoma*	G3	SH	NMS
P18540	*Lagis koreni*	G15	SH	NMS
P18860	*Melinna palmata*	G11	SH	NMS
P18960	*Amage* sp	G23	SH	NMS
P19060	*Ampharete falcata*	G12	SH	NMS
P19100	*Ampharete finmarchica*	G22	SH	NMS
P19160	*Amphicteis gunneri*	G22	SH	NMS
P19740	*Sosane sulcata*	G11	SH	NMS
P19900	*Terebellides stroemi*	G2	SH	NMS
P19950	*Trichobranchus glacialis*	ML01	SH	NMS
P19960	*Trichobranchus roseus*	G22	SH	NMS
P20010	*Amphitritinae spp juv/indet*	G12	SH	NMS
P20190	*Eupolymnia nebulosa*	ML01	SH	NMS
P20310	*Lanice conchilega*	G16	SH	NMS
P20760	*Pista cristata*	G6	SH	NMS
P20860	*Pista lornensis*	G32	SH	NMS
P21030	*Amaeana trilobata*	G31	SH	NMS
P21130	*Lysilla loveni*	G3	SH	NMS
P21170	*Polycirrus* sp 'A'	G6	SH	NMS
P21240	*Polycirrus medusa*	G11	SH	NMS
P21250	*Polycirrus norvegicus*	G6	SH	NMS
P21260	*Polycirrus plumosus*	G1	SH	NMS
P21390	*Streblosoma intestinale*	G2	SH	NMS
P21440	*Thelepus cincinnatus*	G26	SH	NMS
P21690	*Chone duneri*	G6	SH	NMS
P21710	*Chone filicaudata*	ML01	SH	NMS
P21780	*Parasabella* sp A	G11	SH	NMS
P21781	*Parasabella* sp B	G12	SH	NMS
P21870	*Euchone rubrocincta*	G31	SH	NMS
P21880	*Euchone southerni*	G2	SH	NMS
P22040	*Jasmineira caudata*	G6	SH	NMS
P22880	*Hydroides norvegicus*	G6	SH	NMS
P23030	*Pomatoceros lamarcki*	ML01	SH	NMS
P23040	*Pomatoceros triqueter*	G6	SH	NMS
P23090	*Serpula vermicularis*	G22	SH	NMS
P23210	*Apomatus similis*	G22	SH	NMS
P24870	*Tubificoides benedii*	WW03	SH	NMS
P26110	*Grania* spp	G10	SH	NMS
Q00620	*Anoplodactylus petiolatus*	G12	SH	NMS
R00640	*Verruca stroemia*	G6	SH	NMS

Appendix 15 continued

R01940	COPEPODA spp	G18	SH	NMS
R35180	OSTRACODA sp A	G10	SH	NMS
R35180	OSTRACODA sp B	ML01	SH	NMS
S00670	*Gastrosaccus spinifer*	G10	SH	NMS
S01710	*Apherusa bispinosa*	ML02	SH	NMS
S01750	*Apherusa jurinei*	WW03	SH	NMS
S02190	*Monoculodes carinatus*	G10	SH	NMS
S02220	*Monoculodes subnudus*	ML01	SH	NMS
S02280	*Perioculodes longimanus*	ZM02	SH	NMS
S02390	*Synchelidium haplocheles*	G10	SH	NMS
S02450	*Westwoodilla caecula*	G20	SH	NMS
S03920	*Apohyale prevostii*	WW03	SH	NMS
S04290	*Urothoe elegans*	G2	SH	NMS
S04300	*Urothoe marina*	G6	SH	NMS
S04380	*Harpinia antennaria*	G2	SH	NMS
S04380	*Harpinia antennaria*	G18	SH	NMS
S04390	*Harpinia crenulata*	G11	SH	NMS
S04470	*Metaphoxus fultoni*	ML01	SH	NMS
S04940	*Hippomedon denticulatus*	ZM02	SH	NMS
S05110	*Lysianassa plumosa*	ML01	SH	NMS
S05560	*Socarnes erythrophthalmus*	ML01	SH	NMS
S05720	*Tryphosella horingi*	G31	SH	NMS
S05740	*Tryphosella sarsi*	G12	SH	NMS
S06590	*Liljeborgia kinahani*	ML01	SH	NMS
S06840	*Atylus vedlomensis*	G6	SH	NMS
S06900	*Dexamine spinosa*	ML01	SH	NMS
S06910	*Dexamine thea*	ML01	SH	NMS
S07180	*Ampelisca spinipes*	G6	SH	NMS
S07200	*Ampelisca tenuicornis*	G4	SH	NMS
S07220	*Ampelisca typica*	G2	SH	NMS
S07410	*Bathyporeia elegans*	ZM02	SH	NMS
S07430	*Bathyporeia guilliamsoniana*	ZM02	SH	NMS
S07610	*Echinogammarus marinus*	WW03	SH	NMS
S07680	*Gammarus* sp A	WW03	SH	NMS
S07720	*Gammarus finmarchicus*	WW03	SH	NMS
S07740	*Gammarus locusta*	WW03	SH	NMS
S08080	*Abludomelita obtusata*	G4	SH	NMS
S08180	*Animoceradocus semiserratus*	ML01	SH	NMS
S08250	*Cheirocratus sundevallii*	ML03	SH	NMS
S08970	*Gammaropsis lobata*	ML02	SH	NMS
S09120	*Gammaropsis cornuta*	ML03	SH	NMS
S09180	*Microprotopus maculatus*	ZM02	SH	NMS
S09230	*Photis longicaudata*	ZM02	SH	NMS
S09420	*Ericthonius difformis*	ZM02	SH	NMS
S09440	*Ericthonius punctatus*	ML02	SH	NMS
S09550	*Jassa falcata*	G6	SH	NMS
S09740	*Aora gracilis*	ZM02	SH	NMS
S09880	*Leptocheirus hirsutimanus*	ML02	SH	NMS
S09890	*Leptocheirus pectinatus*	G22	SH	NMS
S09960	*Microdeutopus anomalus*	ML03	SH	NMS

Appendix 15 continued

S10220	*Crassicorophium bonnellii*	ML01	SH	NMS
S10320	*Siphonoecetes kroyeranus*	ZM02	SH	NMS
S10390	*Unciola planipes*	G10	SH	NMS
S10720	*Caprella acanthifera*	G30	SH	NMS
S10760	*Caprella linearis*	G6	SH	NMS
S10890	*Parvipalpus capillaceus*	G12	SH	NMS
S10960	*Phtisica marina*	ML01	SH	NMS
S13190	*Gnathia* sp (praniza)	G2	SH	NMS
S13220	*Gnathia oxyuraea*	G2	SH	NMS
S14770	*Jaera ischiostosa*	WW03	SH	NMS
S15640	*Idotea ?linearis*	ZM02	SH	NMS
S15850	*Astacilla dilatata*	G12	SH	NMS
S19210	*Pseudoparatanais batei*	ML01	SH	NMS
S19310	*Tanaopsis graciloides*	G2	SH	NMS
S19940	*Vauntompsonia cristata*	ML01	SH	NMS
S20030	*Bodotria scorpioides*	G6	SH	NMS
S20130	*Iphinoe serrata*	G2	SH	NMS
S20150	*Iphinoe trispinosa*	ZM02	SH	NMS
S20220	*Eudorella truncatula*	ML03	SH	NMS
S20950	*Diastylis* sp indet	G1	SH	NMS
S20980	*Diastylis laevis*	G2	SH	NMS
S20990	*Diastylis lucifera*	G31	SH	NMS
S21690	CARIDEA sp juv	G4	SH	NMS
S22390	*Athanus nitescens*	ML01	SH	NMS
S22620	*Eualus occultus*	ML01	SH	NMS
S22630	*Eualus pusiolus*	ML01	SH	NMS
S23650	*Nephrops norvegicus*	G30	SH	NMS
S23780	*Calocaris macandreae*	G9	SH	NMS
S23780	*Calocaris macandreae*	G32	SH	NMS
S24440	Paguridae sp juv with parasitic copepod	G6	SH	NMS
S24460	*Anapagurus chiroacanthus*	ML02	SH	NMS
S24860	*Galathea intermedia*	G6	SH	NMS
S24880	*Galathea nexa*	G22	SH	NMS
S25020	*Pisidia longicornis*	ML01	SH	NMS
S25530	*Maja squinado*	ML01	SH	NMS
S25850	*Macropodia rostrata*	ML01	SH	NMS
S26730	*Liocarcinus pusillus*	G5	SH	NMS
S26900	*Carcinus maenas*	G6	SH	NMS
S27000	Collembola sp	G2	SH	NMS
W00100	*Chaetoderma nitidulum*	G2	SH	NMS
W00140	*Falcidens crossotus*	G4	SH	NMS
W00550	*Leptochiton asellus*	G6	SH	NMS
W00560	*Leptochiton cancellatus*	G6	SH	NMS
W00740	*Lepidochitona cinerea*	ML01	SH	NMS
W00830	*Callochiton septemvalvis*	ML02	SH	NMS
W01090	*Emarginula fissura*	G22	SH	NMS
W01240	*Tectura* sp juv	ML01	SH	NMS
W01260	*Tectura virginea*	ML02	SH	NMS
W02440	*Lacuna vincta*	ZM02	SH	NMS
W03600	*Hyala vitrea*	G29	SH	NMS

Appendix 15 continued

W04000	*Skeneopsis planorbis*	ML01	SH	NMS
W04420	*Turritella communis*	G2	SH	NMS
W05940	*Turbonilla crenata*	G2	SH	NMS
W05991	*Turbonilla acuta/lactea*	G4	SH	NMS
W05991	*Turbonilla acuta/lactea*	G26	SH	NMS
W07000	*Aporrhais pespelecani*	G22	SH	NMS
W07770	*Euspira pulchellus*	G2	SH	NMS
W08890	*Nassarius reticulatus*	G4	SH	NMS
W09220	*Bela nebula*	G18	SH	NMS
W09690	*Cylichna cylindracea*	G2	SH	NMS
W09770	*Philine* spp	G5	SH	NMS
W09940	*Diaphana minuta*	ZM02	SH	NMS
W10070	*Haminoea* sp	G4	SH	NMS
W10200	*Cylichnina umbilicata*	G5	SH	NMS
W10250	*Volvulella acuminatus*	G4	SH	NMS
W13170	*Onchidorididae spp*	G22	SH	NMS
W16120	BIVALVIA sp A	G5	SH	NMS
W16180	*Nucula nitidosa*	G1	SH	NMS
W16190	*Nucula nucleus*	G22	SH	NMS
W16200	*Nucula sulcata*	G5	SH	NMS
W16360	*Yoldiella* sp juv	G5	SH	NMS
W16500	*Mytilus edulis*	G6	SH	NMS
W16750	*Modiolus modiolus*	ML02	SH	NMS
W17390	*Limaria hians*	ML01	SH	NMS
W17410	*Limaria loscombi*	ML01	SH	NMS
W17520	*Limatula subauricularis*	G5	SH	NMS
W18200	*Pododesmus patelliformis*	G22	SH	NMS
W18380	*Myrtea spinifera*	G2	SH	NMS
W18420	*Lucinoma borealis*	G12	SH	NMS
W18520	*Thyasira flexuosa*	G1	SH	NMS
W19050	*Kurtiella bidentata*	G1	SH	NMS
W19110	*Tellimya ferruginosa*	G1	SH	NMS
W19530	*Goodallia triangularis*	ML02	SH	NMS
W19690	*Acanthocardia echinata*	G5	SH	NMS
W19770	*Parvicardium pinnulatum*	G5	SH	NMS
W19780	*Parvicardium scabrum*	G3	SH	NMS
W20030	*Spisula elliptica*	G10	SH	NMS
W20250	*Ensis ensis*	G6	SH	NMS
W20320	*Phaxas pellucidus*	G9	SH	NMS
W20570	*Tellina fabula*	ZM02	SH	NMS
W20610	*Tellina donacina*	G31	SH	NMS
W20630	*Tellina pygmaea*	G6	SH	NMS
W20870	*Gari fervensis*	G2	SH	NMS
W20890	*Gari costulata*	G6	SH	NMS
W20900	*Gari tellinella*	G6	SH	NMS
W21020	*Abra alba*	G1	SH	NMS
W21040	*Abra nitida*	G1	SH	NMS
W21550	*Gouldia minima*	G3	SH	NMS
W21660	*Dosinia exoleta*	G6	SH	NMS
W21810	*Tapes rhomboides*	G6	SH	NMS

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W21890	*Chamelea striatula*	G2	SH	NMS
W21930	*Clausinella fasciata*	G6	SH	NMS
W22010	*Timoclea ovata*	G6	SH	NMS
W22130	*Mysia undata*	G3	SH	NMS
W22270	*Mya truncata* (juv)	ML03	SH	NMS
W22390	*Corbula gibba*	G1	SH	NMS
W22510	*Hiatella arctica*	G11	SH	NMS
W23500	*Thracia convexa*	G18	SH	NMS
W23510	*Thracia phaseolina*	G4	SH	NMS
W23530	*Thracia villosiuscula*	ML02	SH	NMS
W23610	*Cochlodesma praetenue*	ZM02	SH	NMS
ZA0030	*Phoronis* spp	G4	SH	NMS
ZB0410	*Astropecten irregularis*	G10	SH	NMS
ZB1900	*Asterias rubens*	G11	SH	NMS
ZB2350	*Ophiothrix fragilis*	ML02	SH	NMS
ZB2860	*Amphiura chiajei*	G2	SH	NMS
ZB2880	*Amphiura filiformis*	G2	SH	NMS
ZB3000	*Amphipholis squamata*	G2	SH	NMS
ZB3120	*Ophiocten affinis*	G1	SH	NMS
ZB3550	*Psammechinus miliaris*	ML01	SH	NMS
ZB3880	*Echinocyamus pusillus*	G2	SH	NMS
ZB4070	*Echinocardium cordatum*	G1	SH	NMS
ZB4140	*Brissopsis lyrifera*	G28	SH	NMS
ZB4830	*Ocnus* sp juv	ML01	SH	NMS
ZB5240	*Leptosynapta bergensis*	G5	SH	NMS
ZB5253	*Leptosynapta decaria*	G3	SH	NMS
ZB5270	*Leptosynapta minuta*	ML02	SH	NMS
ZB5320	*Labidoplax buskii*	G2	SH	NMS
ZC0130	*Saccoglossus* spp	ML01	SH	NMS
ZG6860	*Ammodytes tobianus*	ZM02	SH	NMS
ZM720	*Porphyropsis coccinea*	ML02	CM	HWU
ZM1820	*Scinaia turgida*	ML02	CM	HWU
ZM3280	*Kallymenia reniformis*	ML04	CM	HWU
ZM6250	*Polyides rotundus*	OE01	CM	HWU
ZM6480	*Halarachnion ligulatum*	ML02	CM	HWU
ZM6820	*Calliblepharis ciliata*?	ML02	CM	HWU
ZM6930	*Rhodophyllis divaricata*	LH01	CM	HWU
ZM7400	*Chylocladia verticillata*	ML04	CM	HWU
ZM7860	*Aglaothamnion byssoides*	ML01	CM	HWU
ZM7930	*Aglaothamnion gallicum*?	ZM02	CM	HWU
ZM7890	*Callithamnion corymbosum*	ZM01	CM	HWU
ZM8070	*Ceramium* sp	OE01	CM	HWU
ZM8230	*Ceramium nodulosum*	ME01	CM	HWU
ZM8330	*Compsothamnion gracillimum*?	LH01	CM	HWU
ZM8770	*Pleonosporium borreri*	LH01	CM	HWU
ZM9080	*Seirospora interrupta*	ZM02	CM	HWU
ZM9170	*Spermothamnion repens*	ZM01	CM	HWU
ZM10180	*Erythroglossum laciniatum*	LH01	CM	HWU
ZM10380	*Heterosiphonia japonica*	ML01	CM	HWU
ZM10380	*Heterosiphonia japonica*	ML02	CM	HWU

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ZM10380	*Heterosiphonia japonica*	ME01	CM	HWU
ZM11120	*Polysiphonia furcellata*	ML03	CM	HWU
ZR290	*Ectocarpus* sp	ML01	CM	HWU
ZR3250	*Acrothrix gracilis*?	ZM02	CM	HWU
ZR3250	*Acrothrix gracilis*?	ML03	CM	HWU
ZR3540	*Mesogloia vermiculata*	ZM02	CM	HWU
ZR3890	*Cutleria multifida*	ML01	CM	HWU
ZR4320	*Halopteris filicina*	ML04	CM	HWU
ZR4900	*Sporochnus pedunculatus*	ML02	CM	HWU
ZR5000	*Desmarestia viridis*	ML01	CM	HWU
ZR5500	*Asperococcus fistulosus*	ZM02	CM	HWU
ZR6100	*Petalonia* sp?	ML01	CM	HWU
ZS3380	*Cladophora* sp	ML01	CM	HWU
ZS3570	*Cladophora sericea*	ZM02	CM	HWU

Appendix 16 Historical PMF/MPA search feature habitat records for the Ullapool Approaches

Table 16.1 Marine biological surveys carried out in the Ullapool Approaches and other sources of records for PMF habitats and species. The Marine Recorder survey code is given where applicable

Year of survey	Organisation	Survey type	Reference	MR survey code
1764-1969	F. R. Woodward	collation of records of *Atrina fragilis*, including one in survey area	Woodward (1985)	MRMLN0010000012E
1924-1927	E. Wilson	collation of records of *Palinurus*, including two in survey area	Wilson (1952)	MRMLN00100000130
1965-70	Department of Agriculture and Fisheries for Scotland	infaunal surveys of Scottish sandy beaches including 2 in Loch Gairloch, 5 in Loch Ewe and 1 in Gruinard Bay	Eleftheriou & McIntyre, 1976	JNCCMNCR10000326
1977-1979	MCS	3 records (2 in Loch Gairloch, 1 from off Polbain Pier) from the Species Recording Scheme established in 1977 as part of the Underwater Conservation Year	unpublished; limited data in Marine Recorder	MRMLN00400000066
1978	Sheila Smith	survey of littoral epibiota at 1 site in Loch Gairloch, 4 sites in Loch Ewe, 4 sites in Gruinard Bay and 3 sites in Little Loch Broom,	Smith, 1978	JNCCMNCR10000086
1979	SMBA/MBA	littoral survey at 5 sites in Loch Gairloch, 3 sites in Loch Ewe, 4 sites in Gruinard Bay and 6 sites to the north of the Summer Isles	Powell et al., 1980	JNCCMNCR10000265
1979	Sheila Smith	survey of littoral molluscs at one site in Old Dornie Harbour	Smith, 1981	JNCCMNCR10000088
1979	David Jones	sublittoral survey of habitats around the Summer Isles	Jones, 1980	not in MR or data layers
1981	Underwater Conservation Society	Sublittoral surveys of epibiota at 40 sites around the Summer Isles, Priest Island and Eilean Dubh	Dipper, 1981	not in MR but in data layers
1988	Marine Biological Consultants	Seasearch surveys of epibiota at 25 sublittoral sites in Little Loch Broom, 1 littoral and 21 sublittoral sites in Loch Broom and 15 sublittoral sites in the approaches to Loch Broom	Gubbay & Nunn, 1988	JNCCMNCR60000054

Table 16.1 continued

Year of survey	Organisation	Survey type	Reference	MR survey code
1989	Marine Biological Consultants	Seasearch surveys of epibiota at 35 sites in Loch Gairloch, 38 sites in Loch Ewe and 23 sites in Gruinard Bay	Gubbay, 1990	JNCCMNCR60000283
1990	University Marine Biological Station, Millport	MNCR phase 2 surveys of epibiota at 5 littoral and 32 sublittoral sites and eight dredge sites in Loch Gairloch; MNCR phase 2 surveys of epibiota at 6 littoral and 35 sublittoral sites and 11 infaunal sites in Loch Ewe	Howson, 1991	JNCCMNCR10000030
1991	University Marine Biological Station, Millport	MNCR phase 2 surveys of epibiota at 12 sublittoral sites in Little Loch Broom and 5 littoral and 15 sublittoral sites in Loch Broom	Holt, 1991	JNCCMNCR10000035
1993	SNH	littoral survey of habitats in north-east corner of Loch Gairloch	Atkins, 1993	not in MR nor data layers
1994	FRS	benthos at 1 sublittoral site in the outer approaches to Ullapool monitored as part of the National Marine Monitoring Programme	data not in Marine Recorder but included in DEFRA data layers	
1995	Scottish Natural Heritage	ROV survey of 22 sites in Loch Broom	unpublished, but data in Marine Recorder	MRSNH00100000012
1995-1999	FRS	video surveys of *Nephrops* grounds	data not in Marine Recorder but *Funiculina* records included in DEFRA data layers	
1996	SNH	Sublittoral ROV survey at 30 sites around the Summer Isles, Eilean Dubh and Priest Island	unpublished, but data in Marine Recorder	JNCCMNCR30000726
1996	SNH/MCS	Seasearch survey at 66 sites around the Summer Isles, Eilean Dubh, Carn Skerries and Horse Island	Howson & Bradshaw, 1997	JNCCMNCR30000764

Table 16.1 continued

Year of survey	Organisation	Survey type	Reference	MR survey code
2000	SEPA	grab surveys at fishfarm sites in Little Loch Broom (3), Summer Isles (5), Loch Ewe (1), Old Dornie (1)	unpublished, but data in Marine Recorder	MRMLN00400000015, MRMLN00400000027, MRMLN0040000002A
2001	MCS	Seasearch survey at wreck site ("Fairweather V") in the Summer Isles	unpublished, but data in Marine Recorder	MRMCS0020000000E
2004	ERT	grab, video and diver survey of Loch Broom	Briggs, 2004	not in MR
2004	Maris Ecologists	dropdown video survey of shallow habitats at 25 sites in Gruinard Bay, snorkel observations at one maerl site in the Summer Isles and glass bucket survey in possible seagrass habitat in both areas, as well as east of Isle Martin	James, 2004	MRSNH01100000003
2005	MCS	Seasearch surveys at 3 sites in Little Loch Broom and 1 site at Achiltibuie	unpublished, but data in Marine Recorder	MRMCS00200000021
2007	MCS	Seasearch survey at 1 site in mouth of Little Loch Broom	unpublished, but data in Marine Recorder	MRMCS00200000062

Table 16.2 Records of PMF habitats within the Ullapool Approaches area extracted from Marine Recorder (MR). The ID is the number used in the figures and text of this report. The MR code is the MR sample code, with the first number string identifying the survey (see the last three digits of the survey code in Table 16.1), the second string the site, and the third the habitat. The currently assigned biotope is given, together with the original ascription (in brackets)

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
1	030.088.001	Ploc Leacan Donna (Loch Ewe)	14/06/1990	57.86388°N 5.64696°W	Boulders, cobbles and pebbles encrusted with *Pseudolithoderma* and scattered kelp plants. Very heavily grazed. *Ophiura albida* on sand/shell gravel and small pebbles. Small foliose and filamentous algae on mobile pebbles (including *Schmitzia hiscockiana*). Numerous juvenile *Echinus*.	IR.MIR.KR.LhypTX.Pk (MIR.EphR)	15-13	TS
2	030.011.002	Shore at Badachro Inn (Loch Gairloch)	07/06/1990	57.6991°N 5.72389°W	Lower shore (mid eulittoral probably, although this was difficult to determine) of large cobbles on a sediment of coarse shell gravel, mud and pebbles. *Fucus vesiculosus* was dominant, attached to cobbles, with *Ascophyllum nodosum* var. *mackii* in sparse clumps at lowest levels, though it came to dominate higher up the shore. Four core samples were taken from this zone. Samples 1 & 2 contained more sand than 3 & 4. Anoxic mud 2 to 3cm below the surface in all 4.	LR.LLR.FVS.Ascmac (SLR.AscX.mac)		AM
3	326.010.008	Inverasdale (Loch Ewe)	17/09/1966	57.81225°N 5.6665°W		LS.LBR.LMus.Myt (LGS.AP.Pon)	-0.3--0.3	ME
4	035.050.001	Shore NW of Ullapool (Loch Broom)	18/05/1991	57.89973°N 5.17297°W	A wide platform of muddy shingle on the west side of the Ullapool River supported dense *Fucus vesiculosus* and was bound together by *Mytilus edulis* byssus threads.	LS.LBR.LMus.Myt.Mx (SLR.MytX)		ME

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
5	035.045.001	N of Blarnalearoch Loch Broom (Loch Broom)	17/05/1991	57.87351°N 5.12494°W	Muddy shell gravel with sand and small boulders with *Limaria hians* nests on part of the slope nearest the narrows grading slowly to finer mud with *Philine aperta* in 5.5m. *Munida rugosa* under some of the small boulders and cobbles and *Modiolus modiolus* in clumps or under the sediment surface. *Cerianthus lloydii* frequent/common on the shallower areas of sediment.	SS.SBR.SMus.ModHAs (IMX.Lim)	22.5-5.5	HM
6	283.088.002	SE of Sitheanan Dubha (Loch Ewe)	22/09/1989	57.84224°N 5.62404°W	Infralittoral silty mud sediment with *Modiolus modiolus*. This habitat was recorded between 12-15m bcd and consisted of fine mud scattered with shell debris and occasional pebbles. Clumps of *Modiolus modiolus* were frequent and supported *Ascidiella aspersa*, and *Antedon bifida*. Patches of the surface were also covered by *Trailliella*. Brittlestars and crabs were frequent and both *Pecten maximus* and *Aequipecten opercularis* were present. The overall impression was of a habitat supporting a good diversity of species.	SS.SBR.SMus.ModHAs (SCR.ModHAs)	12	HM

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
7	283.090.001	Stithean Dubha/Culconich (Loch Ewe)	22/09/1989	57.84428°N 5.61581°W	Infralittoral silty mud sediment with *Modiolus modiolus*. This habitat was recorded between 12-15m bcd and consisted of fine mud scattered with shell debris and occasional pebbles. Clumps of *Modiolus modiolus* were frequent and supported *Ascidiella aspersa*, and *Antedon bifida*. Patches of the surface were also covered by *Trailliella*. Brittlestars and crabs were frequent and both *Pecten maximus* and *Aequipecten opercularis* were present. The overall impression was of a habitat supporting a good diversity of species.	SS.SBR.SMus.ModHAs (SCR.ModHAs)	14	HM
8	764.004.003	Latto's Rock, from NE (Summer Isles)	30/05/1996	58.02269°N 5.42205°W	Lower infralittoral steep slope of boulders/cobbles and shell grvel. Hydroid and crinoid turf species. Species rich. 15.5-22m bcd.	SS.SBR.SMus.ModHAs (MCR.Oph)	22-15.5	HM

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
9	054.058.001	Rubha Dubh Ard (S) (Loch Broom approaches)	05/10/1988	57.97831°N 5.31629°W	Coarse sand at 26m BCD with decapod burrows and patches of maerl. Gentle slope from 21 - 28 m. Coarse sand/shell fragments/stones at 21 m, many dead shells on top. Some crab excavations. Occasional patches of angular stones. A large number of *Echinus* observed on one of these patches. At 24 - 28 m, a patch of maerl, looked very unhealthy, but living and a lot of fine mud was present. Scenery uninspiring, similar habitat throughout. Nothing unusual.	SS.SCS.CCS (SS.SCS.CCS)	26	MC?
10	283.085.001	Bloc Leacan Donna (Loch Ewe)	22/09/1989	57.86582°N 5.64834°W	Circalittoral gravel and shelly sand waves with *Metridium senile* and *Alcyonium digitatum*. This habitat was predominantly of coarse shelly sand but the surface was scattered with the occasional boulder. The sand was worked into waves up to 15cm deep and 1-1.5 m from crest to crest. Shell debris and small pebbles had collected in the troughs. Mounds were visible on the sand surface and *Metridium senile*, *Alcyonium digitatum* and *Echinus esculentus* occurred on the boulders.	SS.SCS.CCS (CGS)	17	MC?
11	726.018.003	W of Sròn Slugian Uaine (Summer Isles)	05/09/1996	58.01225°N 5.46576°W	Gravel with sand and shell at 32m bcd, supporting *Chaetopterus variopedatus* and *Pecten maximus*.	SS.SCS.CCS (SS.SCS.CCS)	32-32	MC?

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
12	030.035.002	W Longa Island (Loch Gairloch)	03/06/1990	57.73134°N 5.82452°W	A rippled plain of coarse shell gravel with coarse sand at 16-18m bcd. At the shallower end of the plain there was a higher percentage of sand with less shell gravel. Habitat characterised by the anemone *Peachia cylindrica* and the holothurian *Neopentadactyla mixta*. *Pecten miximus* was occasional and the hydroid *Corymorpha nutans* was rare. The brittlestar *Ophiura albida* was frequent. Many juvenile flatfish (possibly sole) and occasional gobies. *Chaetopteros* tubes were frequent.	SS.SCS.CCS.Nmix (CGS.Ven.Neo)	18-16	MC
13	030.037.002	S of Sròn na Caillich, Longa Island (Loch Gairloch)	03/06/1990	57.7264°N 5.80031°W	Plain of shell gravel with some pebbles at 15-19m bcd. *Echinocardium cordatum* present in the gravel with *Neopentadactyla mixta*. Some hydroids attached to pebbles, particularly *Nemertesia* spp. and *Kirchenpaueria pinnata*. Many juvenile flatfish and small shrimp on the gravel surface, and occasional large ascidians. One *Sepia officinalis* seen and *Atelecyclus rotundatus* found.	SS.SCS.CCS.Nmix (CGS.Ven.Neo)	19-15	MC
14	764.028.003	NW Goat Island (Summer Isles)	02/06/1996	57.99682°N 5.35423°W	Coarse sand, shell and pebbles supporting *Lanice* and *Cerianthus*, 13.2-21.3m bcd.	SS.SCS.CCS.Nmix (CGS.Ven.Neo)	21.3-13.2	MC

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
15	764.054.001	North Carn Deas (Summer Isles)	05/06/1996	57.967°N 5.44058°W	Sand plain at 19.2m bcd supporting *Neopentadactyla mixta* and *Ensis siliquosa*.	SS.SCS.CCS.Nmix (CGS.Ven.Neo)	19.2-19.2	MC
16	764.062.002	Carn Skerries (Summer Isles)	03/06/1996	57.96361°N 5.36262°W	Mixed substrate of shell gravel, maerl and sand supporting *Cerianthus*, *Neopentadactyla mixta*, red algae, brittlestars, featherstars, crustaceans. Depth 11.3-13.3m bcd.	SS.SCS.CCS.Nmix (CGS.Ven.Neo)	13.3-11.3	MC
17	283.001.001	Lonemore (Loch Gairloch)	10/09/1989	57.72534°N 5.71819°W	Infralittoral medium sand with *Chorda filum* and *Echinocardium cordatum*. A flat or very gently sloping medium sand habitat whose dominant feature was a scattering of loose and attached algae; *Ulva* sp., *Chorda filum* and red foliose algae. A diatom mat was also present on the sand surface and shell debris, mostly *Ensis* spp. were also found. *Echinocardium cordatum* was noted in the sediment. There was very little working of the sand into burrows or mounds.	SS.SMp.KSwSS (IMX.LsacX)	18	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
18	283.005.005	NE Longa Island (Loch Gairloch)	10/09/1989	57.73634°N 5.80169°W	Infralittoral gravel and coarse sand with occasional pebbles and filamentous and foliose red algae. A predominantly coarse sand habitat with a scattering of pebbles and shell fragments on the surface. Small foliose and filamentous red algae were attached to the pebbles in small clumps. Unattached algae were also scattered on the surface. This habitat was recorded between 11-13m bcd on a virtually flat sea bed.	SS.SMp.KSwSS (IMX.LsacX)	8	KS
19	726.010.001	South of Polbain (Summer Isles)	05/09/1996	58.02855°N 5.39126°W	Coarse sand, gravel and shell with *Cerianthus lloydii* and *Laminaria saccharina* at 8m bcd.	SS.SMp.KSwSS	8-8	KS
20	726.015.001	West Black Rock (2) (Summer Isles)	04/09/1996	58.02622°N 5.4644°W	Coarse sand and gravel with some live maerl and attached algae, including *Laminaria saccharina* and *Desmarestia aculeata* at 9m bcd.	SS.SMp.KSwSS	9-9	KS
21	726.016.001	West Black Rock (Summer Isles)	04/09/1996	58.02561°N 5.46384°W	Shelly gravel, shells and cobbles, with some attached algae, including *Laminaria saccharina*. Depth 12-13.5m bcd.	SS.SMp.KSwSS	13.5-12	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
22	035.044.001	NW Blarnalearoch (Loch Broom)	17/05/1991	57.87035°N 5.11792°W	Shallow slope of cobbles on muddy sand sea bed with dense covering of *Laminaria saccharina*. Cobbles beneath kelp with sparse fauna on; lots of *Tonicella* and *Pomatoceros*. Other algae very sparse - ectocarpoids on kelp fronds and a few *Chordaria* at base of kelp forest.	SS.SMp.KSwSS.LsacMxVS (SIR.LsacRS.Psa)	3-0	KS
23	283.032.001	An t-Saothair (Gruinard Bay)	13/09/1989	57.87141°N 5.51394°W	Infralittoral mixed substrata, pebbles, boulders and sand with *Laminaria hyperborea*. A flat or gently sloping mixed habitat type recorded between 8-16m bcd and consisting of a mixture of substrates. The surface of a coarse shelly sand was covered by abundant and sparse patches of pebbles, cobbles and stones as well as small and medium sized boulders. *Laminaria hyperborea* was present on some of the boulders, foliose red algae were common on the pebbles and cobbles as well as being anchored into the shell sand (eg *Scinia turgida*).	SS.SMp.KSwSS.LsacR.CbPb (MIR.EphR)	7	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
24	283.040.002	Sròn a' Mhoil, Gruinard Island (Gruinard Bay)	14/09/1989	57.87738°N 5.46052°W	Infralittoral cobbles, pebbles and slates on shell sand with foliose red algae and hydroids. This habitat consisted of a mixture of pebbles and sand. The small rounded pebbles (2-3 cm) made up between 30-60% of the habitat and lay on a virtually flat bed of shelly sand. The pebbles provided anchorage for small foliaceous red algae and hydroids. There was a very clean appearance to this habitat.	SS.SMp.KSwSS.LsacR.CbPb (MIR.EphR)	22	KS
25	283.040.003	Sròn a' Mhoil, Gruinard Island (Gruinard Bay)	14/09/1989	57.87738°N 5.46052°W	Infralittoral frequent cobbles, pebbles and slates, clean sand and algal tufts. A predominantly clean sand habitat with cobbles covering between 10-30% of the surface. This habitat was recorded on a flat or gently sloping sea bed between 12-16m bcd. The cobbles supported clumps of red and brown algae as well as hydroids which gave the habitat a very patchy appearance. Occasional crab excavations had modified the habitat.	SS.SMp.KSwSS.LsacR.CbPb (MIR.EphR)	22	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
26	283.042.001	First Coast (Gruinard Bay)	14/09/1989	57.8656°N 5.4965°W	Infralittoral mixed substrata, pebbles, boulders and sand with *Laminaria hyperborea*. A flat or gently sloping mixed habitat type recorded between 8-16m bcd and consisting of a mixture of substrates. The surface of a coarse shelly sand was covered by abundant and sparse patches of pebbles, cobbles and stones as well as small and medium sized boulders. *Laminaria hyperborea* was present on some of the boulders, foliose red algae were common on the pebbles and cobbles as well as being anchored into the shell sand (eg *Scinia turgida*).	SS.SMp.KSwSS.LsacR.CbPb (MIR.EphR)	12	KS
27	283.042.002	First Coast (Gruinard Bay)	14/09/1989	57.8656°N 5.4965°W	Infralittoral frequent cobbles, pebbles and slates, clean sand and algal tufts. A predominantly clean sand habitat with cobbles covering between 10-30% of the surface. This habitat was recorded on a flat or gently sloping sea bed between 12-16m bcd. The cobbles supported clumps of red and brown algae as well as hydroids which gave the habitat a very patchy appearance. Occasional crab excavations had modified the habitat.	SS.SMp.KSwSS.LsacR.CbPb (MIR.EphR)	12	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
28	283.043.001	SE of Gruinard Island (Gruinard Bay)	14/09/1989	57.88303°N 5.45094°W	Infralittoral frequent cobbles, pebbles and slates, clean sand and algal tufts. A predominantly clean sand habitat with cobbles covering between 10-30% of the surface. This habitat was recorded on a flat or gently sloping sea bed between 12-16m bcd. The cobbles supported clumps of red and brown algae as well as hydroids which gave the habitat a very patchy appearance. Occasional crab excavations had modified the habitat.	SS.SMp.KSwSS.LsacR.CbPb (MIR.EphR)	27	KS
29	283.048.002	W of Gruinard Island (Gruinard Bay)	15/09/1989	57.8848°N 5.48487°W	Infralittoral mixed substrata, pebbles, boulders and sand with *Laminaria hyperborea*. A flat or gently sloping mixed habitat type recorded between 8-16m bcd and consisting of a mixture of substrates. The surface of a coarse shelly sand was covered by abundant and sparse patches of pebbles, cobbles and stones as well as small and medium sized boulders. *Laminaria hyperborea* was present on some of the boulders, foliose red algae were common on the pebbles and cobbles as well as being anchored into the shell sand (eg *Scinia turgida*).	SS.SMp.KSwSS.LsacR.CbPb (MIR.EphR)	17	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
30	283.048.003	W of Gruinard Island (Gruinard Bay)	15/09/1989	57.8848°N 5.48487°W	Infralittoral cobbles, pebbles and slates on shell sand with foliose red algae and hydroids. This habitat consisted of a mixture of pebbles and sand. The small rounded pebbles (2-3 cm) made up between 30-60% of the habitat and lay on a virtually flat bed of shelly sand. The pebbles provided anchorage for small foliaceous red algae and hydroids. There was a very clean appearance to this habitat.	SS.SMp.KSwSS.LsacR.CbPb (MIR.EphR)	17	KS
31	030.072.003	Sgeir a'Bhuic (Loch Ewe)	12/06/1990	57.83999°N 5.64618°W	Hydrozoa has been removed from the species list for this record as more specific related taxa were also present, these are now marked as characterising. *Ophiura albida* has been given a nominal abundance value of Present for this record. Shell gravel plain with whole shells and pebbles supporting a good range of foliose and filamentous algae with *Ophiura albida* and *Gibbula magus* common on the sediment surface and *Ensis* burrowing with *Echinocardium*.	SS.SMp.KSwSS.LsacR.Gv (IMX.LsacX)	13.5-9	KS
32	030.076.001	E of An Fhaighear Bheag (Loch Ewe)	12/06/1990	57.8255°N 5.65622°W	Poorly mixed fine sand and shell gravel with shells and pebbles, dominated by foliose algae, with occasional kelp plants at 9m bcd.	SS.SMp.KSwSS.LsacR.Gv (IMX.LsacX)	9.5-9.2	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
33	283.056.002	Off Sròn nan Oban (Loch Ewe)	17/09/1989	57.85135°N 5.68229°W	Infralittoral gravel and coarse sand with occasional pebbles and filamentous and foliose red algae. A predominantly coarse sand habitat with a scattering of pebbles and shell fragments on the surface. Small foliose and filamentous red algae were attached to the pebbles in small clumps. Unattached algae were also scattered on the surface. This habitat was recorded between 11-13m bcd on a virtually flat sea bed.	SS.SMp.KSwSS.LsacR.Gv (MIR.EphR)	11	KS
34	283.058.002	Sròn Meallan a Shamhna (Loch Ewe)	17/09/1989	57.84338°N 5.6781°W	Infralittoral gravel and coarse sand with occasional pebbles and filamentous and foliose red algae. A predominantly coarse sand habitat with a scattering of pebbles and shell fragments on the surface. Small foliose and filamentous red algae were attached to the pebbles in small clumps. Unattached algae were also scattered on the surface. This habitat was recorded between 11-13m bcd on a virtually flat sea bed.	SS.SMp.KSwSS.LsacR.Gv (MIR.EphR)	11	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
35	MRSNH01100000009.09	Gruinard Bay	11/08/2004	57.85929°N 5.48216°W	Poorly sorted medium sand with shell and stone gravel. Site considered as 'outer' edge of *Zostera* bed whilst in-situ but this was due to poor video recorder resolution in the field and this 'drop' should not be considered to represent this easterly boundary. Mixed sediment plain (predominantly sandy but with stone gravel) in upper infralittoral potentially with burrowing bivalves with patchy (~30- 70%) algal cover of a range of filamentous and foliose red algae including short 'wiry' unidentified species (of *Cordylecladia erecta*/ *Ahnfeltia plicata*/ *Gracilaria* sp. *Polyides* sp. type) and *Chorda filum*, *Trailliella*, *Asperococcus* sp., *Desmarestia* sp., *Ulva* sp. with noticeable aggregations of bivalve shells including *Ensis* sp. Potentially a 'blade or a plant' of *Zostera marina* during the sequence but not clear.	SS.SMp.KSwSS.LsacR.Gv (SS.SMp.KSwSS.LsacR.Gv)	5.2	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
36	MRSNH01100000009.10	Gruinard Bay	11/08/2004	57.86043°N 5.48178°W	Plain of medium-coarse sand with sparse proportion of scattered stone gravel lesser fraction of stone gravel than Site 8) in the upper infralittoral with patchy algal cover (~20- 45%). Range of species present but most could not be identified beyond the short 'wiry' component. Conspicuous species included *Asperococcus* sp., *Desmarestia* sp., and *Trailliella*. As at Site 8 there was potentially a 'blade' of *Zostera marina* at the start of the sequence but no clear image and extremely low abundance if present at all. Detailed infaunal information need to refine the asignation. Site considered to be *Zostera* bed whilst in-situ but this was due to poor video recorder resolution in the field.	SS.SMp.KSwSS.LsacR.Gv (SS.SMp.KSwSS.LsacR.Gv)	6.2	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
37	MRSNH01100000009.11	Gruinard Bay	11/08/2004	57.86167°N 5.4819°W	Level plain of firm medium sand with shell debris and a little stone gravel in the infralittoral with patchy scattered clumps of filamentous algal cover (~15- 30%). Range of species present but many could not be identified from the video footage. *Desmarestia* sp., *Ulva* sp., *Laminaria saccharina* drift), *Trailliella* and sparse *Asperococcus* sp. observed. Potentially a 'blade' of *Zostera marina* at the very start of the sequence but no clear image and unlikely. Considered as the 'outer' edge of the *Zostera* bed whilst in-situ but this was due to poor video recorder resolution in the field and this 'drop' should not be considered to represent any northerly boundary	SS.SMp.KSwSS.LsacR.Gv (SS.SMp.KSwSS.LsacR.Gv)	7.5	KS
38	MRSNH01100000009.15	Gruinard Bay	11/08/2004	57.86006°N 5.47883°W	Medium fine sand plain with noticeable shell and gravel fraction. *Cancer pagurus* in a 'sand hole', *Chorda filum*, *Asperococcus* sp., and a range of filamentous algae including scattered low 'wiry' red algae. Overall algal cover ~10 - 35%medium sand plain (unrippled) in upper infralittoral zone potentially with burrowing bivalves	SS.SMp.KSwSS.LsacR.Gv (SS.SMp.KSwSS.LsacR.Gv)	6.1	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
39	MRSNH01100000009.27	Gruinard Bay	11/08/2004	57.8611°N 5.47873°W	Plain of medium sand (unrippled) in upper infralittoral with shell debris (including *Ensis* sp.) and potentially with burrowing bivalves. No seagrass found. Range of unidentified small 'wiry' filamentous algae (of *Cordylecladia erecta*/ *Gracilaria* sp. type) providing a cover of ~10- 30% on the sediment surface. Other algae included *Asperococcus* sp., *Ulva* sp. *Chorda filum* and a single *Asteropecten irregularis* starfish was observed	SS.SMp.KSwSS.LsacR.Gv (SS.SMp.KSwSS.LsacR.Gv)	6.6	KS
40	030.014.003	E of Rubha na Moine (Loch Gairloch)	04/06/1990	57.70606°N 5.72578°W	A wide plain of muddy shell gravel, with a shallow subsurface black layer, between (4 to 5m bcd). Covered by abundant Ectocarpaceae indet.	SS.SMp.KSwSS.LsacR.Mu (IMX.LsacX)	5-4	KS
41	030.046.001	Inner Loch Thùrnaig (Loch Ewe)	14/06/1990	57.78867°N 5.60182°W	Very sheltered embayment at the head of the loch. Sea bed at 7m bcd of sandy mud with pebbles, cobbles and occasional boulders. Filamentous brown algae dominant, particularly *Chorda filum*, with *Laminaria saccharina* occasional. *Cerianthus lloydi* and *Carcinus maenas* frequent.	SS.SMp.KSwSS.LsacR.Mu (IMX.LsacX)	7-6	KS
42	030.059.002	SW of Sidhean Corrach (Loch Ewe)	15/06/1990	57.81°N 5.58985°W	Not very exciting coarse sand with some algae including *Chorda filum* and some Ectocarpaceae. Lots of *Ensis ensis*.	SS.SMp.KSwSS.LsacR.Mu (IMX.LsacX)	11-6	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
43	030.066.001	NE Aird Fraoch (Loch Ewe)	14/06/1990	57.84219°N 5.62285°W	A level sea bed composed of poorly sorted shelly mud with scattered stones covered with filamentous algae, predominantly red algae. Bivalves were common, mainly *Modiolus modiolus* with frequent *Mya* and occasional *Arctica*. Infaunal communities were characterised by terrebellid polychaetes with *Cerianthus lloydi* and *Arenicola* frequent. Mobile fauna included *Inachus dorsettensis*, *Pagurus* and echinoderms. Rare boulders had *Laminaria saccharina*, *Antedon bifida* and *Pomatoceros*. A rich habitat for filamentous algae.	SS.SMp.KSwSS.LsacR.Mu (IMX.LsacX)	1.5-9.5	KS
44	035.047.002	W Corry Point, Loch Broom (Loch Broom)	17/05/1991	57.88141°N 5.13626°W	A sandy mud slope with scattered empty shells with red algae attached. Surface of sediment covered with *Turritella communis* with occasional *Philine aperta*. Epiflora characterised by *Pterosiphonia parasitica* with occasional *Phycodrys*. Infaunal community characterised by *Cerianthus* and polychaetes.	SS.SMp.KSwSS.LsacR.Mu (IMX.LsacX)	12-6	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
45	035.048.001	SE Rubha Buidhe (Loch Broom)	17/05/1991	57.8809°N 5.15663°W	*Cerianthus*, *Turritella* has been removed from the species list for this record as more specific related taxa were also present, these are now marked as characterising. Filamentous red algae has been given a nominal abundance value of Present for this record. Area of small boulders, cobbles and pebbles on muddy sand. Sparse *Laminaria saccharina* with tufts of fine filamentous red algae common on stones. *Pomatoceros* very common on some rocks, *Kirchenpaueria* present on others. *Cerianthus* and *Turritella* prominant in sediment. Fauna and flora similar to Habitat 2 excepting for presence of kelp here and virtual lack of *Mya*.	SS.SMp.KSwSS.LsacR.Mu (IMX.LsacX)	9-8	KS
46	035.063.003	S of Cadha nam Muc (Little Loch Broom)	20/05/1991	57.87885°N 5.31117°W	*Cerianthus* has been removed from the species list for this record as more specific related taxa were also present, these are now marked as characterising. Filamentous brown algae has been given a nominal abundance value of Present for this record. Plain of slightly muddy coarse shelly gravel, with a covering of fine filamentous brown algae, including *Desmarestia viridis* and fine ectocarpoids. *Ensis* and *Cerianthus* frequent in sediment.	SS.SMp.KSwSS.LsacR.Mu (IMX.LsacX)	9-6	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
47	030.020.001	S of Lonemore (Loch Gairloch)	03/06/1990	57.72783°N 5.72517°W	Gentle slope of fine and medium sand to about 6m bcd followed by a slightly steeper slope to 13m bcd. Some broken shells and whole shells of *Ensis arcuatus*, *Gari fervensis*, and a few cast exoskeletons of *Corystes cassivelaunus*. Also depressions in sand with *Cancer pagurus*. Infaunal species including *Ensis arcuatus* and *Labidoplax digitata*.	SS.SMp.KSwSS.LsacR.Sa (IMS.EcorEns)	13-4	KS
48	030.020.002	S of Lonemore (Loch Gairloch)	03/06/1990	57.72783°N 5.72517°W	Muddy fine sand and shell plain from 13 to 19m with patches of diatom film, occasional/frequent *Arenicola marina*, and other burrows/working of the sediment by *Ensis* sp. and large bivalves. Clumps of *Nemertesia ramosa* and occasional red filamentous algae. *Chaetopterus variopedatus*, *Turritella communis*, *Aporrhais pespelecani*, *Antalis* sp. all occasional/frequent. *Astrorhiza* was frequent.	SS.SMp.KSwSS.LsacR.Sa (IMS.EcorEns)	19-13	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
49	030.023.001	An Oirthir (Loch Gairloch)	07/06/1990	57.72848°N 5.73364°W	Fine silty sand with shell fragments and dead shell. Infauna included *Ensis* sp., *Echinocardium chordatum*, *Amphiura filiformis*, *Labidoplax digitata*, and numerous fresh dead shells of *Dosinia* sp.. Clumps of red algae in shell included *Polysiphonia elongata*, *Lomentaria clavellosa* and *Nitophyllum punctatum*. *Gibbula magus* frequent, *Pecten maximus* occasional, and numerous small decapods. *Ophiura albida* and large asteroid species also characteristic.	SS.SMp.KSwSS.LsacR.Sa (IMS.EcorEns)	16-11	KS
50	030.025.001	Port Henderson Bay (Loch Gairloch)	06/06/1990	57.69905°N 5.77695°W	Sand plain (of medium/fine sand) with occasional mounds and depressions. Scattered shell debris on surface. Odd *Laminaria saccharina* plants and a few small algae, particularly *Ceramium* sp.. *Ensis* sp. siphons frequent, occasional *Cerianthus lloydii*, and *Echinocardium cordatum* burrowing in the sand.	SS.SMp.KSwSS.LsacR.Sa (IMS.EcorEns)	7.9-7.4	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
51	030.085.001	SE Sgeir an Eich (Loch Ewe)	12/06/1990	57.85556°N 5.68289°W	Gravel waves ca. 75cm between crests with broken shell deposits in the troughs. Quite a lot of filamentous red algae growing on random pieces of broken shell. A patch of finer sand (flat) was present adjacent to the `waves` covered by a diatom film and small polychaetes. *Ensis* sp. and probably other bivalves were common. (Abundant broken *Dosinia*.)	SS.SMp.KSwSS.LsacR.Sa (CGS.Ven.Neo)	14-14	KS
52	035.048.002	SE Rubha Buidhe (Loch Broom)	17/05/1991	57.8809°N 5.15663°W	Filamentous red algae has been given a nominal abundance value of Present for this record. Plain of medium silty sand at 9m with fragments of unhealthy maerl and occasional pebbles. *Cerianthus* and *Mya truncata* very common with occasional *Modiolus*. Tufts of red algae on cobbles. Some shell dibris, mainly *Turritella* on sediment. Hermit crabs common. Very little variety in the algae.	SS.SMp.KSwSS.LsacR.Sa (IMX.Lcor)	9-9	KS
53	035.065.002	S of Badrallach (Little Loch Broom)	22/05/1991	57.87056°N 5.2738°W	Gently sloping flat of medium and coarse sand, dominated by *Ensis* sp. with occasioanl tufts of algae such as *Chorda filum* and *Chylocladia verticillata*.	SS.SMp.KSwSS.LsacR.Sa (IMX.LsacX)	2-0	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
54	283.014.002	Well Rock (Loch Gairloch)	11/09/1989	57.70049°N 5.70724°W	Infralittoral gravel and muddy sand, loose algal debris. A virtually flat plain of firm muddy sand recorded between 8-15m bcd. The surface was scattered with loose algal debris, notably *Chorda filum*, *Asperococcus bullosus* and *Trailliella*, the latter covering between 15-20% of the surface. Occasional shell debris and dead maerl was noted amongst the habitat at some sites as well as a diatom mat on the sand surface. *Cerianthus lloydii*, *Sabella pavonia* were present in the sand with the occasional *Cancer pagurus* excavating the surface.	SS.SMp.KSwSS.LsacR.Sa (IMX.LsacX)	8	KS
55	283.028.003	NE of Sgeir Dubh Bheag (Loch Gairloch)	12/09/1989	57.70398°N 5.71096°W	Infralittoral gravel and muddy sand, loose algal debris. A virtually flat plain of firm muddy sand recorded between 8-15m bcd. The surface was scattered with loose algal debris, notably *Chorda filum*, *Asperococcus bullosus* and *Trailliella*, the latter covering between 15-20% of the surface. Occasional shell debris and dead maerl was noted amongst the habitat at some sites as well as a diatom mat on the sand surface. *Cerianthus lloydii*, *Sabella pavonia* were present in the sand with the occasional *Cancer pagurus* excavating the surface.	SS.SMp.KSwSS.LsacR.Sa (IMX.LsacX)	16	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
56	283.041.001	Camas a' Chruthaich (Gruinard Bay)	14/09/1989	57.86841°N 5.45966°W	Infralittoral gravel and muddy sand, loose algal debris. A virtually flat plain of firm muddy sand recorded between 8-15m bcd. The surface was scattered with loose algal debris, notably *Chorda filum*, *Asperococcus bullosus* and *Trailliella*, the latter covering between 15-20% of the surface. Occasional shell debris and dead maerl was noted amongst the habitat at some sites as well as a diatom mat on the sand surface. *Cerianthus lloydii*, *Sabella pavonia* were present in the sand with the occasional *Cancer pagurus* excavating the surface.	SS.SMp.KSwSS.LsacR.Sa (IMX.LsacX)	11	KS
57	283.051.001	SW of Gruinard Island (Gruinard Bay)	15/09/1989	57.88071°N 5.50303°W	Infralittoral gravel and muddy sand, loose algal debris. A virtually flat plain of firm muddy sand recorded between 8-15m bcd. The surface was scattered with loose algal debris, notably *Chorda filum*, *Asperococcus bullosus* and *Trailliella*, the latter covering between 15-20% of the surface. Occasional shell debris and dead maerl was noted amongst the habitat at some sites as well as a diatom mat on the sand surface. *Cerianthus lloydii*, *Sabella pavonia* were present in the sand with the occasional *Cancer pagurus* excavating the surface.	SS.SMp.KSwSS.LsacR.Sa (IMX.LsacX)	19	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
58	283.054.001	Boor Rocks (Loch Ewe)	17/09/1989	57.77741°N 5.62763°W	Infralittoral gravel and muddy sand, loose algal debris. A virtually flat plain of firm muddy sand recorded between 8-15m bcd. The surface was scattered with loose algal debris, notably *Chorda filum*, *Asperococcus bullosus* and *Trailliella*, the latter covering between 15-20% of the surface. Occasional shell debris and dead maerl was noted amongst the habitat at some sites as well as a diatom mat on the sand surface. *Cerianthus lloydii*, *Sabella pavonia* were present in the sand with the occasional *Cancer pagurus* excavating the surface.	SS.SMp.KSwSS.LsacR.Sa (IMX.LsacX)	6	KS
59	283.055.002	Off Naast Jetty (Loch Ewe)	17/09/1989	57.79198°N 5.65266°W	Infralittoral gravel and muddy sand, loose algal debris. A virtually flat plain of firm muddy sand recorded between 8-15m bcd. The surface was scattered with loose algal debris, notably *Chorda filum*, *Asperococcus bullosus* and *Trailliella*, the latter covering between 15-20% of the surface. Occasional shell debris and dead maerl was noted amongst the habitat at some sites as well as a diatom mat on the sand surface. *Cerianthus lloydii*, *Sabella pavonia* were present in the sand with the occasional *Cancer pagurus* excavating the surface.	SS.SMp.KSwSS.LsacR.Sa (IMX.LsacX)	11	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
60	283.061.001	An Squiteach Point (Loch Ewe)	17/09/1989	57.83297°N 5.66524°W	Infralittoral gravel and muddy sand, loose algal debris. A virtually flat plain of firm muddy sand recorded between 8-15m bcd. The surface was scattered with loose algal debris, notably *Chorda filum*, *Asperococcus bullosus* and *Trailliella*, the latter covering between 15-20% of the surface. Occasional shell debris and dead maerl was noted amongst the habitat at some sites as well as a diatom mat on the sand surface. *Cerianthus lloydii*, *Sabella pavonia* were present in the sand with the occasional *Cancer pagurus* excavating the surface.	SS.SMp.KSwSS.LsacR.Sa (IMX.LsacX)	15	KS
61	283.073.001	NATO oil depot jetty (Loch Ewe)	21/09/1989	57.82442°N 5.58686°W	Infralittoral gravel and muddy sand, loose algal debris. A virtually flat plain of firm muddy sand recorded between 8-15m bcd. The surface was scattered with loose algal debris, notably *Chorda filum*, *Asperococcus bullosus* and *Trailliella*, the latter covering between 15-20% of the surface. Occasional shell debris and dead maerl was noted amongst the habitat at some sites as well as a diatom mat on the sand surface. *Cerianthus lloydii*, *Sabella pavonia* were present in the sand with the occasional *Cancer pagurus* excavating the surface.	SS.SMp.KSwSS.LsacR.Sa (IMX.LsacX)	19	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
62	283.074.001	N of Rubha Thùrnaig (Loch Ewe)	21/09/1989	57.80616°N 5.59683°W	Infralittoral gravel and muddy sand, loose algal debris. A virtually flat plain of firm muddy sand recorded between 8-15m bcd. The surface was scattered with loose algal debris, notably *Chorda filum*, *Asperococcus bullosus* and *Trailliella*, the latter covering between 15-20% of the surface. Occasional shell debris and dead maerl was noted amongst the habitat at some sites as well as a diatom mat on the sand surface. *Cerianthus lloydii*, *Sabella pavonia* were present in the sand with the occasional *Cancer pagurus* excavating the surface.	SS.SMp.KSwSS.LsacR.Sa (IMX.LsacX)	25	KS
63	283.076.001	Resolution Rock (Loch Ewe)	21/09/1989	57.79619°N 5.6312°W	Infralittoral gravel and muddy sand, loose algal debris. A virtually flat plain of firm muddy sand recorded between 8-15m bcd. The surface was scattered with loose algal debris, notably *Chorda filum*, *Asperococcus bullosus* and *Trailliella*, the latter covering between 15-20% of the surface. Occasional shell debris and dead maerl was noted amongst the habitat at some sites as well as a diatom mat on the sand surface. *Cerianthus lloydii*, *Sabella pavonia* were present in the sand with the occasional *Cancer pagurus* excavating the surface.	SS.SMp.KSwSS.LsacR.Sa (IMX.LsacX)	1	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
64	283.082.001	Aultbea slip (Loch Ewe)	21/09/1989	57.83938°N 5.59846°W	Infralittoral gravel and muddy sand, loose algal debris. A virtually flat plain of firm muddy sand recorded between 8-15m bcd. The surface was scattered with loose algal debris, notably *Chorda filum*, *Asperococcus bullosus* and *Trailliella*, the latter covering between 15-20% of the surface. Occasional shell debris and dead maerl was noted amongst the habitat at some sites as well as a diatom mat on the sand surface. *Cerianthus lloydii*, *Sabella pavonia* were present in the sand with the occasional *Cancer pagurus* excavating the surface.	SS.SMp.KSwSS.LsacR.Sa (IMX.LsacX)	4	KS
65	764.012.001	North Tanera Beg (Summer Isles)	01/06/1996	58.01267°N 5.44378°W	Coarse/medium shell and sand. Hummocky and bioturbated. 50% coverage of organic weed. Depth 7.2m bcd.	SS.SMp.KSwSS.LsacR.Sa (IMX.LsacX)	7.2-7.2	KS
66	764.023.001	Islands W of Eilean Fada M¢r (Summer Isles)	01/06/1996	58.01399°N 5.43815°W	Lower infralittoral sand with occasional *L. saccharina* and abundant *Mya truncata*. Depth 5-7.1m bcd.	SS.SMp.KSwSS.LsacR.Sa (IMX.LsacX)	7.1-5	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
67	MRSNH01100000009.12	Gruinard Bay	11/08/2004	57.86341°N 5.48386°W	Coarse mixed sediment plain of coarse sand with stone gravel, pebbles and scattered cobbles. *Laminaria hyperborea* (scattered plants on available cobbles & boulders ~2 plants per $5m^2$ and *L. saccharina* (scattered long plants ~2m+ ~ $1/5m^2$ with a dense cover of filamentous and foliose algae (70%) (inc. *Bonnemaisonia hamifera* and *Trailliella* on the mixed sediment surface. Kelp cover less than 15% - some patches of open substrate ~5- 10% sediment plain in the infralittoral with filamentous and foliose algae and mixed kelps. Not an ideal biotope fit with mixed kelps.	SS.SMp.KSwSS.LsacR.Sa (SS.SMp.KSwSS.LsacR.Sa)	1.2	KS
68	MRSNH01100000009.13	Gruinard Bay	11/08/2004	57.86218°N 5.48069°W	Hard, coarse/medium sand with a coarser gravel, pebble and cobble fraction.*Laminaria saccharina* plant per $5m^2$ and *Laminaria hyperborea* plant per 20m with *Desmarestia* sp., bushy filamentous red algal turf (inc. *Bonnemaisonia hamifera*, *Trailliella*, *Ulva* sp., and *Dictyota dichotoma*. Algal cover of ~ 85-90%. Not an ideal biotope fit with mixed kelps	SS.SMp.KSwSS.LsacR.Sa (SS.SMp.KSwSS.LsacR.Sa)	8.2	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
69	030.009.002	Sgeir Dubh Bheag (Loch Gairloch)	04/06/1990	57.70375°N 5.70942°W	Algae with many small prosobranchs in amongst it. *Ophiura ophiura* common on all substrata whilst *Ophiura affinis* seemed confined to the boulders. The *Astropecten irregularis* had a strange central bump and were possibly spawning. Thick mat of *Trailliella* and *Phyllophora crispa* covered between 30 to 90% of the sediment surface.	SS.SMp.KSwSS.Pcri (IMX.Pcri)	13.5-6.5	KS
70	035.064.001	E of Badcaul (Little Loch Broom)	20/05/1991	57.87216°N 5.32961°W	Paguridae has been removed from the species list for this record as more specific related taxa were also present, these are now marked as characterising. Extensive plain of coarse muddy sand with a lot of shells and surface debris. Many large boulders embedded in sediment with a sparse growth of *Laminaria hyperborea*. Rocks dominated by *Pseudolithoderma*, with *Antedon*, *Tonicella*, a few hydroids and *Ophiura affinis*. Sediment with a tangled mat of *Phyllophora crispa* covering much of sea bed, with *Akera* amongst algae. Clearing with *Cerianthus* and *Turritella*. Hermit crabs, clams and gastropods frequent on rocks and sediment. High diversity habitat.	SS.SMp.KSwSS.Pcri (IMX.Pcri)	18-11	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
71	283.069.001	Ob na ba Rudidhe (Loch Ewe)	18/09/1989	57.78903°N 5.59849°W	Infralittoral muddy sediment with *Phyllophora crispa*. This habitat was recorded on a fairly flat sea bed between 13-17m bcd. Silt covered *Phyllophora crispa* formed the dominant community but the occasional ascidian was also present on the muddy surface. Some small angular boulders were partially buried in the sediment.	SS.SMp.KSwSS.Pcri (IMX.Pcri)	16	KS
72	283.078.001	S point of Isle of Ewe (Loch Ewe)	21/09/1989	57.81951°N 5.60153°W	Infralittoral muddy sediment with *Phyllophora crispa*. This habitat was recorded on a fairly flat sea bed between 13-17m bcd. Silt covered *Phyllophora crispa* formed the dominant community but the occasional ascidian was also present on the muddy surface. Some small angular boulders were partially buried in the sediment.	SS.SMp.KSwSS.Pcri (IMX.Pcri)	15	KS
73	283.081.001	S of Aird Point (Loch Ewe)	21/09/1989	57.8332°N 5.59448°W	Infralittoral cobbles, pebbles and slates on muddy sand with *Phyllophora crispa*. This habitat consisted of very angular pebbles 2-3 cm across lying on muddy sand which was visible in the occasional clearings. Many of the pebbles were black in appearance (encrusting algae?). *Phyllophora crispa* was abundant and mostly covered by a thin layer of silt. Occasional *Modiolus modiolus*, *Nemertesia ramosa* and *Antedon bifida* were noted in this habitat.	SS.SMp.KSwSS.Pcri (IMX.Pcri)	14	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
74	030.003.002	N of Eilean Shieldaig, Loch Shieldaig (Loch Gairloch)	04/06/1990	57.69359°N 5.6879°W	Plain of very soft, wobbly mud with almost 100% cover of loose-lying algae, mostly *Trailliella*, at 4m. A number of other species were mixed in, particularly *Gracilaria verrucosa* and *Phyllophora crispa*. *Philine aperta* was frequent and there were many *Liocarcinus depurator*. Small gastropods were abundant in the algae. Several *Arenicola marina* mounds broke through the mat, and *Cerianthus lloydii* was present in a clearer area nearer the rock.	SS.SMp.KSwSS.Tra (IMX.Tra)	4-4	KS
75	030.010.001	Channel S of Eilean Horrisdale (Loch Gairloch)	05/06/1990	57.70103°N 5.7162°W	Plain of muddy sand and gravel at 2m. Some areas were entirely covered with a mat of *Trailliella*; others were uncovered, and had *Cerianthus lloydii*, *Chorda filum* and *Arenicola marina*. Diversity rather low.	SS.SMp.KSwSS.Tra (IMX.Tra)	2-2	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
76	030.012.001	S Caolas Bad a'Chrotha (Loch Gairloch)	04/06/1990	57.70221°N 5.72203°W	Filamentous brown algae, Filamentous red algae has been given a nominal abundance value of Present for this record. A sediment plain composed of fine sand and mud with occasional small boulders, pebbles and shell gravel. Scattered human debris; bottles, cans etc. which provided a hard substrata for epifaunal species such as *Pomatoceros triqueter* and *Tectura testudinalis*. Sediment covered with superabundant filamentous algae, both red and brown. *Laminaria saccharina* plants were occasional. Moderate fauna although abundance was low - mainly crustacea. *Pagurus bernhardus*, *Cancer pagurus*, *Liocarcinus depurator*, *Inachus dorsettensis* and *Macropodia rostrata.*	SS.SMp.KSwSS.Tra (IMX.Tra)	6.1-6.1	KS
77	030.054.001	W of Boor Rocks (Loch Ewe)	11/06/1990	57.7767°N 5.63058°W	Shallow plain of muddy sand with shell debris covered by mats of *Trailliella* and Ectocarpaceae. Burrowing bivalves frequent, particularly *Mya truncata* and *Ensis* sp. *Astropecten iregularis* abundant.	SS.SMp.KSwSS.Tra (IMX.Tra)	6-6	KS
78	030.061.002	SW Gualann Mh¢r, Isle of Ewe (Loch Ewe)	14/06/1990	57.8205°N 5.61318°W	Silty habitat, broken shells on mud covered by masses of fluffy red (green!) algae. Mud beneath, not a great diversity of biota.	SS.SMp.KSwSS.Tra (IMX.Tra)	7-5	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
79	030.068.001	S of Oitis Ormiscaig (Loch Ewe)	14/06/1990	57.84774°N 5.6079°W	A firm, fine silty sand in the Bay at 6-7m bcd with ca. %70 cover of *Trailliella* turf and scattered *Modiolus modiolus* and terebellids. Filamentous brown algae frequent and occasional *Laminaria hyperborea* and *L. saccharina*.	SS.SMp.KSwSS.Tra (IMX.Tra)	6.9-6.3	KS
80	035.065.001	S of Badrallach (Little Loch Broom)	22/05/1991	57.87056°N 5.2738°W	*Bonnemaisonia hamifera* has been given a nominal abundance value of Present for this record. Dense mat of *Bonnemaisonia hamifera* (*Trailliella*) with other red algae over muddy gravel. Occasional small boulders and cobbles with *Pomatoceros* and coralline crusts.	SS.SMp.KSwSS.Tra (IMX.Tra)	1-2	KS
81	283.013.001	Rubha mhic Chonnuill (Loch Gairloch)	11/09/1989	57.69884°N 5.70204°W	Infralittoral sandy mud with *Trailliella* and *Ascidiella aspersa*. A virtually flat plain of sandy mud recorded between 12-19m bcd. The dominant community was *Trailliella* which covered between 20-100% of the sea bed. Amongst this, clumps of *Ascidiella aspersa* were frequent, there was shell debris (especially *Turitella*), brittlestars, starfish, and hermit crabs on the surface. The occasional stone or boulder was colonised by *Nemertesia ramosa*. *Pecten maximus* and *Aequipecten opercularis* occurred amongst the algal fluff; no *Cerianthus lloydii* noted at this habitat.	SS.SMp.KSwSS.Tra (IMX.Tra)	23	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
82	283.020.001	E coast Longa Island (Loch Gairloch)	12/09/1989	57.73216°N 5.79116°W	Infralittoral gravel and muddy sand, shell debris and maerl. A gently sloping habitat of muddy sand scattered with shell debris (particularly *Turritella*). The surface was extensively worked and *Cerianthus lloydii*, *Virgularia mirabilis*, and brittlestars were common. This habitat was recorded between 15-23m bcd and was covered by a mat of filamentous `fluffy` algae (*Trailliella* and other species) when it occurred above 16m bcd.	SS.SMp.KSwSS.Tra (IMX.Tra)	18	KS
83	283.022.002	Fraoch Eilean (Loch Gairloch)	12/09/1989	57.70168°N 5.69729°W	Infralittoral sandy mud with *Trailliella* and *Ascidiella aspersa*. A virtually flat plain of sandy mud recorded between 12-19m bcd. The dominant community was *Trailliella* which covered between 20-100% of the sea bed. Amongst this, clumps of *Ascidiella aspersa* were frequent, there was shell debris (especially *Turitella*), brittlestars, starfish, and hermit crabs on the surface. The occasional stone or boulder was colonised by *Nemertesia ramosa*. *Pecten maximus* and *Aequipecten opercularis* occurred amongst the algal fluff; no *Cerianthus lloydii* noted at this habitat.	SS.SMp.KSwSS.Tra (IMX.Tra)	21	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
84	283.027.001	Loch Kerry (Loch Gairloch)	12/09/1989	57.70396°N 5.68073°W	Infralittoral sandy mud with *Trailliella* and *Ascidiella aspersa*. A virtually flat plain of sandy mud recorded between 12-19m bcd. The dominant community was *Trailliella* which covered between 20-100% of the sea bed. Amongst this, clumps of *Ascidiella aspersa* were frequent, there was shell debris (especially *Turitella*), brittlestars, starfish, and hermit crabs on the surface. The occasional stone or boulder was colonised by *Nemertesia ramosa*. *Pecten maximus* and *Aequipecten opercularis* occurred amongst the algal fluff; no *Cerianthus lloydii* noted at this habitat.	SS.SMp.KSwSS.Tra (IMX.Tra)	15	KS
85	283.028.001	NE of Sgeir Dubh Bheag (Loch Gairloch)	12/09/1989	57.70398°N 5.71096°W	Infralittoral sandy mud with *Trailliella* and *Ascidiella aspersa*. A virtually flat plain of sandy mud recorded between 12-19m bcd. The dominant community was *Trailliella* which covered between 20-100% of the sea bed. Amongst this, clumps of *Ascidiella aspersa* were frequent, there was shell debris (especially *Turitella*), brittlestars, starfish, and hermit crabs on the surface. The occasional stone or boulder was colonised by *Nemertesia ramosa*. *Pecten maximus* and *Aequipecten opercularis* occurred amongst the algal fluff; no *Cerianthus lloydii* noted at this habitat.	SS.SMp.KSwSS.Tra (IMX.Tra)	16	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
86	283.029.001	Eileah an t-Sabhail (Loch Gairloch)	12/09/1989	57.6965°N 5.69004°W	Infralittoral sandy mud with *Trailliella* and *Ascidiella aspersa*. A virtually flat plain of sandy mud recorded between 12-19m bcd. The dominant community was *Trailliella* which covered between 20-100% of the sea bed. Amongst this, clumps of *Ascidiella aspersa* were frequent, there was shell debris (especially *Turitella*), brittlestars, starfish, and hermit crabs on the surface. The occasional stone or boulder was colonised by *Nemertesia ramosa*. *Pecten maximus* and *Aequipecten opercularis* occurred amongst the algal fluff; no *Cerianthus lloydii* noted at this habitat.	SS.SMp.KSwSS.Tra (IMX.Tra)	15	KS
87	283.039.001	Miotag (Gruinard Bay)	14/09/1989	57.88128°N 5.44909°W	Infralittoral gravel and muddy sand, shell debris and maerl. A gently sloping habitat of muddy sand scattered with shell debris (particularly *Turritella*). The surface was extensively worked and *Cerianthus lloydii*, *Virgularia mirabilis*, and brittlestars were common. This habitat was recorded between 15-23m bcd and was covered by a mat of filamentous `fluffy` algae (*Trailliella* and other species) when it occurred above 16m bcd.	SS.SMp.KSwSS.Tra (IMX.Tra)	23	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
88	283.046.001	Fraoch Eilean M¢r (Gruinard Bay)	14/09/1989	57.85935°N 5.46216°W	Infralittoral sandy mud with *Trailliella* and *Ascidiella aspersa*. A virtually flat plain of sandy mud recorded between 12-19m bcd. The dominant community was *Trailliella* which covered between 20-100% of the sea bed. Amongst this, clumps of *Ascidiella aspersa* were frequent, there was shell debris (especially *Turitella*), brittlestars, starfish, and hermit crabs on the surface. The occasional stone or boulder was colonised by *Nemertesia ramosa*. *Pecten maximus* and *Aequipecten opercularis* occurred amongst the algal fluff; no *Cerianthus lloydii* noted at this habitat.	SS.SMp.KSwSS.Tra (IMX.Tra)	18	KS
89	283.053.001	W by Boor Rocks (Loch Ewe)	17/09/1989	57.77812°N 5.63443°W	Infralittoral sandy mud with *Trailliella* and *Ascidiella aspersa*. A virtually flat plain of sandy mud recorded between 12-19m bcd. The dominant community was *Trailliella* which covered between 20-100% of the sea bed. Amongst this, clumps of *Ascidiella aspersa* were frequent, there was shell debris (especially *Turitella*), brittlestars, starfish, and hermit crabs on the surface. The occasional stone or boulder was colonised by *Nemertesia ramosa*. *Pecten maximus* and *Aequipecten opercularis* occurred amongst the algal fluff; no *Cerianthus lloydii* noted at this habitat.	SS.SMp.KSwSS.Tra (IMX.Tra)	5	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
90	283.055.001	Off Naast Jetty (Loch Ewe)	17/09/1989	57.79198°N 5.65266°W	Infralittoral sandy mud with *Trailliella* and *Ascidiella aspersa*. A virtually flat plain of sandy mud recorded between 12-19m bcd. The dominant community was *Trailliella* which covered between 20-100% of the sea bed. Amongst this, clumps of *Ascidiella aspersa* were frequent, there was shell debris (especially *Turitella*), brittlestars, starfish, and hermit crabs on the surface. The occasional stone or boulder was colonised by *Nemertesia ramosa*. *Pecten maximus* and *Aequipecten opercularis* occurred amongst the algal fluff; no *Cerianthus lloydii* noted at this habitat.	SS.SMp.KSwSS.Tra (IMX.Tra)	11	KS
91	283.079.001	W coast of Isle of Ewe (Loch Ewe)	21/09/1989	57.82756°N 5.63436°W	Infralittoral sandy mud with *Trailliella* and *Ascidiella aspersa*. A virtually flat plain of sandy mud recorded between 12-19m bcd. The dominant community was *Trailliella* which covered between 20-100% of the sea bed. Amongst this, clumps of *Ascidiella aspersa* were frequent, there was shell debris (especially *Turitella*), brittlestars, starfish, and hermit crabs on the surface. The occasional stone or boulder was colonised by *Nemertesia ramosa*. *Pecten maximus* and *Aequipecten opercularis* occurred amongst the algal fluff; no *Cerianthus lloydii* noted at this habitat.	SS.SMp.KSwSS.Tra (IMX.Tra)	14	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
92	283.088.001	SE of Sitheanan Dubha (Loch Ewe)	22/09/1989	57.84224°N 5.62404°W	Infralittoral sandy mud with *Trailliella* and *Ascidiella aspersa*. A virtually flat plain of sandy mud recorded between 12-19m bcd. The dominant community was *Trailliella* which covered between 20-100% of the sea bed. Amongst this, clumps of *Ascidiella aspersa* were frequent, there was shell debris (especially *Turitella*), brittlestars, starfish, and hermit crabs on the surface. The occasional stone or boulder was colonised by *Nemertesia ramosa*. *Pecten maximus* and *Aequipecten opercularis* occurred amongst the algal fluff; no *Cerianthus lloydii* noted at this habitat.	SS.SMp.KSwSS.Tra (IMX.Tra)	12	KS
93	764.006.001	Latto's Rock, E side. (Summer Isles)	30/05/1996	58.02269°N 5.42205°W	Coarse sand and shell with 50% cover of attached filamentous red algae. Loose kelp. 5.9-9.9m bcd.	SS.SMp.KSwSS.Tra (IMX.Tra)	9.9-5.9	KS
94	764.022.001	Islands W of Eilean Fada M¢r (Summer Isles)	01/06/1996	58.01298°N 5.43873°W	Coarse sand with cobbles and shell supporting *Cerianthus lloydii* and terebellid worms. Depth 6-8m bcd.	SS.SMp.KSwSS.Tra (IMX.Tra)	8-6	KS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
95	030.092.002	Resolution Rock (Loch Ewe)	13/06/1990	57.80283°N 5.63473°W	Pockets of fine muddy sand with live and dead maerl on bedrock. A very silty habitat with sparse fauna. Scattered filamentous brown algae, occasional *Pecten*, *Aequipecten*, *Henricia*, *Solaster* and *Astropecten*. One specimen of *Amalosoma eddystonense* was observed.	SS.SMp.Mrl (IGS.Phy)	14.1-8.1	MB
96	054.060.001	Iolla Bheag (Loch Broom approaches)	05/10/1988	57.97907°N 5.32144°W	Bedrock at 20m BCD with maerl and decapods. Sandy gravel plain, shell debris. Some small boulders. At about 20 m, bedrock with small boulders. Crab excavations. Then maerl bed. Large swathes of maerl lying across sandy gravel. Edge of bed was dead maerl. Less than 10% of bed was dead. Maerl covered a large patch of bedrock and beyond to sandy plain. Kelp on small rock pinnacle 15 - 10 m. Marine life fairly diverse on maerl habitat. No 'impact'.	SS.SMp.Mrl	21	MB
97	283.054.002	Boor Rocks (Loch Ewe)	17/09/1989	57.77741°N 5.62763°W	Infralittoral muddy sand and gravel with maerl. A muddy sand habitat overlain by maerl and other algae. *Psammechinus miliaris* was common in this matrix at this site, where the maerl was in large (5cm) chunky pieces. This habitat was recorded between 9-13m bcd.	SS.SMp.Mrl (IMX.MrlMx)	6	MB

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
98	283.079.002	W coast of Isle of Ewe (Loch Ewe)	21/09/1989	57.82756°N 5.63436°W	Infralittoral muddy sand and gravel with maerl. A muddy sand habitat overlain by maerl and other algae. *Psammechinus miliaris* was common in this matrix at this site, where the maerl was in large (5cm) chunky pieces. This habitat was recorded between 9-13m bcd.	SS.SMp.Mrl (IMX.MrlMx)	14	MB
99	MRMCS0020000010F.01	ardross rock	23/05/2005	57.91166°N 5.41167°W	A seasearch observation level survey covering gullies in a rocky reef with coarse sand and scallovps covered in live maerl in the bottom of the gullies. Gullies were typically about 8m across and 5m deep, with kelp forest growing on the reef tops at about 9m bcd, klep park with short red seaweeds from about 11m bcd to 13m bcd, and the sandy base at atoub 14m bcd. Numerous scallop spat and tiiny white nudibranchs with yellow spots along with hydroids on the kelp fronds, and sea hares and other nudibranchs on the mixed weeds.- rocky reef dominant, also sand and gravel.= large numbers of different types of nudibranchs	SS.SMp.Mrl (MS)	13.8-8.8	MB

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
100	MRMCS00200000115.02	Badluarach Jetty	16/08/2005	57.89744°N 5.38311°W	Coarse sand with shell fragments and pebbles and occasional cobbles with mixed weed. Maerl of sand - extensive live pink area but also area of dead white maerl.habitat breakdown, 5% is shells - but only 3% are empty shells and 2% are live shells, but not specified on form as *Modiolus* and could be other species of shells.	SS.SMp.Mrl (MS)	1.7-0.7	MB
101	030.053.001	Offshore Poolewe (Loch Ewe)	11/06/1990	57.77272°N 5.61571°W	Level sea bed of maerl (at least 90% alive) at 5.5m bcd. The maerl was about 12cm thick, lying on top of the mud. There were occasional *Laminaria saccharina* plants, and large amounts of Ectocarpaceae weed forming a smothering blanket over the maerl. Small *Phycodrys rubens* were common, most bleached to a yellow-green colour. *Limaria hians* present. [NB maerl records added to spp. list and characterising spp. as 'Maerl indet.' until corrected by UMBSM - DWC 3.4.91]	SS.SMp.Mrl.Lgla (IMX.Lcor)	5.5-5.5	MB

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
102	035.059.001	S Leac an Ime, Little Loch Broom (Little Loch Broom)	20/05/1991	57.89969°N 5.38315°W	Level plain of coarse sand and maerl gravel overlain in large areas by live maerl, probably *Lithothamnion glaciale*. This was netted together and the sediment surface stabilised by galleries of *Limaria hians*. *Desmarestia aculeata* was abundant over much of the maerl with huge plants of *Laminaria saccharina*. *Ensis* sp. common in sand - many bivalve shells found but few live ones excavated.	SS.SMp.Mrl.Lgla (IGS.Phy.R)	11-8	MB
103	283.017.001	Leac Bad an Tionail (Loch Gairloch)	11/09/1989	57.70891°N 5.75681°W	Infralittoral gravel and coarse sand with intermittent living and dead maerl. This habitat consisted of coarse sand overlain with patches of maerl worked into waves, at some sites with the maerl lying in the troughs. An estimated 10-30% of the maerl was living. It occurred in the survey area between 15-22m bcd. Some burrows were evident and dead shells were scattered on the surface. *Ascidiella aspersa* were present in the troughs of sand at this site.	SS.SMp.Mrl.Pcal (IGS.Phy)	19	MB

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
104	283.051.002	SW of Gruinard Island (Gruinard Bay)	15/09/1989	57.88071°N 5.50303°W	Infralittoral small rounded boulders on coarse sand and maerl. This habitat was recorded in the survey area between 20-22m bcd and consisted of rounded boulders less than 1.5m across on a bed of coarse sand. Patches of maerl were noted between the boulders and the occasional *Munida rugosa* was observed sheltering amongst the boulders. *Echinus esculentus* was also common.	SS.SMp.Mrl.Pcal (IGS.Phy)	19	MB
105	764.032.004	Goat Island (Summer Isles)	02/06/1996	57.99839°N 5.35235°W	Maerl bed: *Cerianthus* and *Pecten maximus* are dominant macro-inverts. Common: *Luidia*, *Porania*. Generally a current swept site with low siltation.	SS.SMp.Mrl.Pcal (IGS.Phy)	13.6-12.4	MB
106	764.057.005	Carn Skerries (Summer Isles)	03/06/1996	57.96027°N 5.36975°W	Maerl with ripples, live maerl between the dead maerl ripples. Depth 9.1m bcd. *Dosinia* also recorded.	SS.SMp.Mrl.Pcal (IGS.Phy)	9.1-9.1	MB
107	764.061.002	North of the Carn Skerries (Summer Isles)	03/06/1996	57.96578°N 5.36553°W	Maerl slope with burrowing holothurians and anemones; solitary ascidians, and *Buccinum undatum*. Depth 11.2-15.2m bcd.	SS.SMp.Mrl.Pcal (IGS.Phy)	15.2-11.2	MB
108	764.062.002	Carn Skerries (Summer Isles)	03/06/1996	57.96361°N 5.36262°W	Mixed substrate of shell gravel, maerl and sand supporting *Cerianthus*, *Neopentadactyla mixta*, red algae, brittlestars, featherstars, crustaceans. Depth 11.3-13.3m bcd.	SS.SMp.Mrl.Pcal (IGS.Phy)	13.3-11.3	MB

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
109	030.024.003	Leac Bad an Tionail (Loch Gairloch)	05/06/1990	57.70884°N 5.75616°W	Poorly-sorted shell gravel, coarse sand and pebbles (with mud) plain, with scattered maerl, piles of drift algae and clumps of *Ascidiella aspersa* on the surface. Infauna included *Ensis* sp., *Neopentadactyla mixta*, *Chaetopterus variopedatus* and other large bivalves. Small algae on shells, pebbles and *Ascidiella aspers*a tests included fine Ectocarpaceae, various filamentous reds.	SS.SMp.Mrl.Pcal.Nmix (IGS.Phy.HEc)	14.5-9.5	MB
110	030.026.001	Offshore, Sròn na Carra (Loch Gairloch)	06/06/1990	57.69976°N 5.78945°W	Extensive, fairly horizontal sea bed formed into small waves (ripples) about 1m apart and 5 - 10cm high at about 16m bcd. Large number of dead shells on surface, especially in troughs, together with larger pieces of maerl. Characteristic animals included *Pomatocerus triqueter*, *Neopentadactyla mixta* and *Pecten maximus*. There were also occasional Laminaria saccharina plants and various foliose red algae such as *Desmarestia aculeata* and *Rhodophyllis* sp.	SS.SMp.Mrl.Pcal.Nmix (IGS.Phy.HEc)	16.5-16	MB

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
111	283.030.001	NW Gruinard Bay (Gruinard Bay)	13/09/1989	57.90085°N 5.4898°W	Infralittoral small rounded boulders on coarse sand and maerl. This habitat was recorded in the survey area between 20-22m bcd and consisted of rounded boulders less than 1.5m across on a bed of coarse sand. Patches of maerl were noted between the boulders and the occasional *Munida rugosa* was observed sheltering amongst the boulders. *Echinus esculentus* was also common.	SS.SMp.Mrl.Pcal.Nmix (IGS.Phy.HEc)	25	MB
112	283.034.001	N of Gruinard Island (Gruinard Bay)	13/09/1989	57.9031°N 5.47313°W	Infralittoral small rounded boulders on coarse sand and maerl. This habitat was recorded in the survey area between 20-22m bcd and consisted of rounded boulders less than 1.5m across on a bed of coarse sand. Patches of maerl were noted between the boulders and the occasional *Munida rugosa* was observed sheltering amongst the boulders. *Echinus esculentus* was also common.	SS.SMp.Mrl.Pcal.Nmix (IGS.Phy.HEc)	28	MB

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
113	283.034.002	N of Gruinard Island (Gruinard Bay)	13/09/1989	57.9031°N 5.47313°W	Infralittoral gravel and coarse sand covered with continuous bed of maerl. This habitat occurred between 19-30m bcd on a flat or gently sloping sea bed. The maerl was a delicate branching variety (*Phymatolithon calcareum* ?) covering between 80-90% of the sea bed and forming a layer up to 6 cm deep. The surface layer was mostly living maerl and, where the sand had been worked into waves, the maerl was concentrated in the troughs. Pebbles, stones and fragments of shell were scattered amongst the maerl.	SS.SMp.Mrl.Pcal.Nmix (IGS.Phy.HEc)	28	MB
114	283.035.001	N of Gruinard Island (2) (Gruinard Bay)	13/09/1989	57.90131°N 5.47296°W	Infralittoral small rounded boulders on coarse sand and maerl. This habitat was recorded in the survey area between 20-22m bcd and consisted of rounded boulders less than 1.5m across on a bed of coarse sand. Patches of maerl were noted between the boulders and the occasional *Munida rugosa* was observed sheltering amongst the boulders. *Echinus esculentus* was also common.	SS.SMp.Mrl.Pcal.Nmix (IGS.Phy.HEc)	2	MB

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
115	283.035.002	N of Gruinard Island (2) (Gruinard Bay)	13/09/1989	57.90131°N 5.47296°W	Infralittoral gravel and coarse sand covered with continuous bed of maerl. This habitat occurred between 19-30m bcd on a flat or gently sloping sea bed. The maerl was a delicate branching variety (*Phymatolithon calcareum* ?) covering between 80-90% of the sea bed and forming a layer up to 6 cm deep. The surface layer was mostly living maerl and, where the sand had been worked into waves, the maerl was concentrated in the troughs. Pebbles, stones and fragments of shell were scattered amongst the maerl.	SS.SMp.Mrl.Pcal.Nmix (IGS.Phy.HEc)	2	MB
116	283.036.001	NE of Gruinard Island (Gruinard Bay)	13/09/1989	57.90289°N 5.44778°W	Infralittoral gravel and coarse sand with intermittent living and dead maerl. This habitat consisted of coarse sand overlain with patches of maerl worked into waves, at some sites with the maerl lying in the troughs. An estimated 10-30% of the maerl was living. It occurred in the survey area between 15-22m bcd. Some burrows were evident and dead shells were scattered on the surface. *Ascidiella aspersa* were present in the troughs of sand at this site.	SS.SMp.Mrl.Pcal.Nmix (IGS.Phy.HEc)	19	MB

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
117	283.036.002	NE of Gruinard Island (Gruinard Bay)	13/09/1989	57.90289°N 5.44778°W	Infralittoral gravel and coarse sand covered with continuous bed of maerl. This habitat occurred between 19-30m bcd on a flat or gently sloping sea bed. The maerl was a delicate branching variety (*Phymatolithon calcareum* ?) covering between 80-90% of the sea bed and forming a layer up to 6 cm deep. The surface layer was mostly living maerl and, where the sand had been worked into waves, the maerl was concentrated in the troughs. Pebbles, stones and fragments of shell were scattered amongst the maerl.	SS.SMp.Mrl.Pcal.Nmix (IGS.Phy.HEc)	19	MB
118	283.050.001	SW of Gruinard Island (Gruinard Bay)	15/09/1989	57.88108°N 5.48957°W	Infralittoral gravel and coarse sand with occasional boulders and maerl. This habitat was similar to 283,34,2 but is included separately due to the presence of the occasional boulder and a scattering of angular stones amongst the maerl, adding to the diversity of the habitat. Hydroids, encrusting red algae and tube worms colonised the boulder surfaces. It was recorded between 30-32m bcd on a virtually flat sea bed.	SS.SMp.Mrl.Pcal.Nmix (IGS.Phy.HEc)	29	MB

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
119	283.057.001	Sròn nan Oban reef (Loch Ewe)	17/09/1989	57.8522°N 5.68406°W	Infralittoral gravel and coarse sand with intermittent living and dead maerl. This habitat consisted of coarse sand overlain with patches of maerl worked into waves, at some sites with the maerl lying in the troughs. An estimated 10-30% of the maerl was living. It occurred in the survey area between 15-22m bcd. Some burrows were evident and dead shells were scattered on the surface. *Ascidiella aspersa* were present in the troughs of sand at this site.	SS.SMp.Mrl.Pcal.Nmix (IGS.Phy.HEc)	12	MB
120	283.061.002	An Squiteach Point (Loch Ewe)	17/09/1989	57.83297°N 5.66524°W	Infralittoral gravel and coarse sand with intermittent living and dead maerl. This habitat consisted of coarse sand overlain with patches of maerl worked into waves, at some sites with the maerl lying in the troughs. An estimated 10-30% of the maerl was living. It occurred in the survey area between 15-22m bcd. Some burrows were evident and dead shells were scattered on the surface. *Ascidiella aspersa* were present in the troughs of sand at this site.	SS.SMp.Mrl.Pcal.Nmix (IGS.Phy.HEc)	15	MB

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
121	283.062.001	Camas na Muil Bay (Loch Ewe)	17/09/1989	57.8391°N 5.67092°W	Infralittoral gravel and coarse sand with intermittent living and dead maerl. This habitat consisted of coarse sand overlain with patches of maerl worked into waves, at some sites with the maerl lying in the troughs. An estimated 10-30% of the maerl was living. It occurred in the survey area between 15-22m bcd. Some burrows were evident and dead shells were scattered on the surface. *Ascidiella aspersa* were present in the troughs of sand at this site.	SS.SMp.Mrl.Pcal.Nmix (IGS.Phy.HEc)	14	MB
122	764.031.002	NW tip of Meall nan Gabhar (Goat Island) (Summer Isles)	02/06/1996	57.99827°N 5.35369°W	Maerl bed on very gently shelving sea floor. Maerl clumps quite small - 50% live and 50% dead, many empty bivalve shells amongst the maerl. Occasional *Cerianthus* and *Neopentadactyla mixta*. Some *Antedon bifida* washed off rock above; occasional *Porania*, *Marthasterias*, *Luidia ciliaris* and *Liocarcinus*. Depth 13.7-14.7m bcd.	SS.SMp.Mrl.Pcal.Nmix (IGS.Phy)	14.7-13.7	MB
123	764.041.004	S Iolla Mh¢r (Summer Isles)	02/06/1996	57.97547°N 5.3458°W	Live maerl bed on coarse shell/sand, 13.4-15.4m bcd.	SS.SMp.Mrl.Pcal.Nmix (IGS.Phy)	15.4-13.4	MB
124	764.054.002	North Carn Deas (Summer Isles)	05/06/1996	57.967°N 5.44058°W	Mixed substrate of pebbles and cobbles and maerl at 19.2m bcd. Supporting echinoderms and ascidians.	SS.SMp.Mrl.Pcal.Nmix (IGS.Phy.R)	19.2-19.2	MB

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
125	764.057.001	Carn Skerries (Summer Isles)	03/06/1996	57.96027°N 5.36975°W	Maerl and fine sand at 17.1m bcd. Species included *Ascidia mentula*, *M. glacialis* and *Antedon bifida*.	SS.SMp.Mrl.Pcal.Nmix (IGS.Phy)	17.1-17.1	MB
126	764.058.004	W of Carn Skerries (Summer Isles)	03/06/1996	57.96075°N 5.36878°W	Dead maerl sand ripples of 10-15cm high. Live maerl in troughs. Shallowing as area enters bay. Few other occasional species.	SS.SMp.Mrl.Pcal.Nmix (IGS.Phy)	9.1-9.1	MB
127	764.059.003	Carn Skerries (Summer Isles)	03/06/1996	57.9585°N 5.36857°W	Muddy shell gravel and maerl with shell debris and pebbles. Numerous clumps of foliose and filamentous red and brown algae. *Neopentadctyla* and *Cerianthus* frequent. Depth 14.2-17.2m bcd.	SS.SMp.Mrl.Pcal.Nmix (IGS.Phy)	17.2-14.2	MB
128	764.059.004	Carn Skerries (Summer Isles)	03/06/1996	57.9585°N 5.36857°W	Steep slope of sand and dead maerl, clay underneath, some live maerl. *Neopentadactyla mixta* common, bivalves common including *Ensis*. Depth 17.2-25.2m bcd.	SS.SMp.Mrl.Pcal.Nmix (CGS.Ven.Neo)	25.2-17.2	MB
129	764.060.001	North-west Carn Skerries (Summer Isles)	03/06/1996	57.9623°N 5.36775°W	Sloping coarse sand and maerl, largely covered with filamentous brown algae and occasional *Laminaria saccharina*. *Echinus*, *Asterias*, *Neopentadactyla*, brittlestars, ascidians and crabs present. Depth 12.2-17.2m bcd.	SS.SMp.Mrl.Pcal.Nmix (IGS.Phy)	17.2-12.2	MB

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
130	030.055.002	NE Boor Rocks (Loch Ewe)	13/06/1990	57.77804°N 5.62786°W	Bed of maerl (?*Lithothamnion corallioides*) on muddy sand at 5m. Large areas of very silty *Laminaria saccharina*, and considerable amounts of Ectocarpaceae on the maerl. Many small *Psammechinus miliaris*. Clumps of maerl bound by Trailiella, so apparently fairly stable. Not very diverse.	SS.SMp.Mrl.Pcal.R (IMX.Lcor)	5-5	MB
131	030.031.001	E end of Caolas Beag channel (Loch Gairloch)	03/06/1990	57.73725°N 5.78027°W	Ceramiales has been removed from the species list for this record as more specific related taxa were also present, these are now marked as characterising. Plain of coarse sand with shell gravel and abundant shell debris at 3-4m. A slight tidal curent was detectable. Several patches of *Zostera marina* and many scattered clumps of filamentous brown and red algae, including large patches of Ectocarpaceae indet. *Ensis* sp. was abundant and *Arctica islandica* was frequent. Sediment contained many cirratulids.	SS.SMp.SSgr.Zmar (IMS.Zmar)	4-3	SG

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
132	283.004.002	N Caolas Beag (Loch Gairloch)	10/09/1989	57.7452°N 5.80598°W	Infralittotal gravel and clean, coarse, rippled sand with *Zostera marina* bed. A coarse sand habitat with a very clean appearance, worked into waves and ripples, and recorded in depths up to 9m bcd. *Zostera marina* was the visually dominant community in this habitat, occuring in patches which were dense in places and containing flowering individuals at the time of the survey. Some shell debris (mainly *Ensis* sp) was also observed on the surface with attached foliose red algae.	SS.SMp.SSgr.Zmar (IMS.Zmar)	3	SG
133	283.010.002	Caolas Beag Narrows (Loch Gairloch)	10/09/1989	57.74108°N 5.79378°W	Infralittotal gravel and clean, coarse, rippled sand with *Zostera marina* bed. A coarse sand habitat with a very clean appearance, worked into waves and ripples, and recorded in depths up to 9m bcd. *Zostera marina* was the visually dominant community in this habitat, occuring in patches which were dense in places and containing flowering individuals at the time of the survey. Some shell debris (mainly *Ensis* sp) was also observed on the surface with attached foliose red algae.	SS.SMp.SSgr.Zmar (IMS.Zmar)	6	SG

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
134	MRSNH01100000009.07	Gruinard Bay	11/08/2004	57.85902°N 5.47935°W	Fine (slightly silty) sand with shell debris and larger shells inc. *Ensis* sp. shells on the surface. *Zostera marina* bed on upper infralittoral silty sand.*Zostera marina* (variable coverage from 5- 35%) with filamentous red algae (inc. 'fluffy' balls of *Trailliella,* sparse *Ulva* sp. and *Asperococcus* sp. Brown diatom film on the sediment surface in places.the limited 'overview' footage taken the seagrass bed area looked to cover at least 25m2	SS.SMp.SSgr.Zmar (SS.SMp.SSgr.Zmar)	4	SG
135	MRSNH01100000009.17	Gruinard Bay	11/08/2004	57.86164°N 5.45684°W	*Zostera marina* seagrass (25- 60% patchy cover) with clumped aggregations of filamentous algae on upper infralittoral silty sand inshore edge of the seagrass bed). Scattered shell debris.poor quality video footage taken from the side of the RIB using an 'Aquapack' bag over a handycam	SS.SMp.SSgr.Zmar (SS.SMp.SSgr.Zmar)	-0.7	SG
136	MRSNH01100000009.18	Gruinard Bay	11/08/2004	57.8602°N 5.45705°W	Hummocked fine silty sand with seagrass. Scattered shell debris including *Ensis* sp.*Zostera marina* seagrass (5- 25% very patchy cover) with clumped aggregations of filamentous algae. *Zostera marina* bed on upper infralittoral silty sand. Very poor quality video footage taken from the side of the RIB using an 'Aquapack' bag over a handycam	SS.SMp.SSgr.Zmar (SS.SMp.SSgr.Zmar)	0.5	SG

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
137	MRSNH01100000009.19	Gruinard Bay	11/08/2004	57.85966°N 5.45724°W	Fine silty sand with seagrass (southern edge of the seagrass bed). Scattered shell debris including *Ensis* sp. *Zostera marina* seagrass bed 10% sparse and very patchy cover) on infralittoral silty sand. Groups of sand eels *Ammodytes tobianus* present.Very poor quality video footage taken from the side of the RIB using an 'Aquapack' bag over a handycam	SS.SMp.SSgr.Zmar (SS.SMp.SSgr.Zmar)	0.4	SG
138	MRSNH01100000009.24	Gruinard Bay	11/08/2004	57.8614°N 5.45777°W	Fine silty sand with *Arenicola marina* mounds and seagrass.*Zostera marina* seagrass (30- 65% patchy cover) with *Arenicola marina* casts and small clumped aggregations of filamentous algae. Outwith the *Zostera* bed boundaries the fine silty sand was hummocked with *A. marina* casts and had similar aggregations of drift filamentous algae (~5% cover).*Zostera marina* bed on upper infralittoral silty sand.	SS.SMp.SSgr.Zmar (SS.SMp.SSgr.Zmar)	0.7	SG
139	054.057.001	Cul a'Bhogha (Loch Broom approaches)	04/10/1988	57.93261°N 5.20561°W	Mud plain at 23m BCD with polychaete casts and decapod burrows. Silty mud plain varying from 27 - 22 m. Occasional worm mounds with casts. Shell debris and crab excavations present. No unusual features and no 'impact'.	SS.SMu.CFiMu (SS.SMu.CFiMu)	23	BM?

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
140	035.061.001	NE Druim Donn, Little Loch Broom (Little Loch Broom)	20/05/1991	57.88972°N 5.34542°W	A level sea bed at 34m composed of mixed stones lying on sandy mud. Stones were covered with coralline crusts, tube worms, including *Placostegus tridentatus* and hydroids. Sediment communtities were characterised by holothurians and *Amphiura* sp. The large featherstar *Leptometra celtica* was frequent.	SS.SMu.CFiMu.BlyrAchi (CMX.ModHo)	34-34	DM
141	030.005.001	Flowerdale Bay (Loch Gairloch)	06/06/1990	57.70721°N 5.68945°W	Plain of soft burrowed mud with *Nephrops norvegicus* and possibly other burrows. Some *Pennatula phosphorea*, including some very small individuals. Several tiny gastropods on the sediment surface and a number of tellinids. Rather barren. Visibility very poor.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	34-34	BM
142	030.015.001	N of Rubha na Moine (Loch Gairloch)	04/06/1990	57.70976°N 5.72532°W	A level plain of soft mud and scattered empty shells characterised by *Pennatula phosphorea*, *Virgularia mirabilis* and *Arenicola marina*. Abundant small fine tubes - presumably amphipods'. Large *Ophiura ophiura* were common, *Asterias rubens* was occasional. In addition, Terebellidae indet., *Ascidiella aspersa*, *Aphrodita aculeata* and *Chaetopterus variopedatus* were rare.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	37.2-37.2	BM

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
143	030.021.001	W of Strath Bay (Loch Gairloch)	03/06/1990	57.72267°N 5.73649°W	Quite firm mud with holes and burrows and lots of *Pennatula phosphorea*. Patches of dead *Antalis entalis* shells. Not much to see.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	37.4-37.4	BM
144	030.038.001	Flowerdale Bay (Loch Gairloch)	07/06/1990	57.7069°N 5.68791°W	Polychaeta has been removed from the species list for this record as more specific related taxa were also present, these are now marked as characterising. Dredge site; mud with *Abra alba* and some polychaetes. Quite a large sample, from Flowerdale Bay.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	34-34	BM
145	030.040.001	SE of Longa Island (Loch Gairloch)	08/06/1990	57.72439°N 5.71691°W	Dredge site, substratum not recorded, south of Lonemore (Gairloch). Abundant *Antalis* and *Pennatula* in the sample.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph)	28-28	BM
146	030.041.001	N Glas Eilean (Loch Gairloch)	07/06/1990	57.71341°N 5.7173°W	Dredge site to the west of Glas Eilean. Quite a small sample of mud with *Abra*, *Liocarcinus depurator* but nothing big.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	39-39	BM
147	030.042.001	S of Cnoc a Chairn Deirg (Loch Gairloch)	08/06/1990	57.72435°N 5.75758°W	Dredge site- a good haul of muddy sand with a variety of small species such as *Myrtea spinifera* and *Antalis* present.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph)	38-38	BM
148	030.043.001	SE of Longa Island (Loch Gairloch)	07/06/1990	57.72096°N 5.77487°W	Dredge site between Cearn a Chreagan and Leac Bad in middle of Loch Gairloch. Muddy. Small sample.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	5-5	BM

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
149	030.048.001	Central Loch Thùrnaig (Loch Ewe)	14/06/1990	57.79439°N 5.59364°W	Lunar landscape scenery, large mounds and burrows created by *Nephrops*, with scattered *Cerianthus* and *Pennatula* at 25m bcd.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	25-25	BM
150	030.056.001	NW An Sagart (Loch Ewe)	13/06/1990	57.79304°N 5.63458°W	Gradually sloping sea bed of mud, shell gravel and pebbles with occasional boulder outcrops. *Pennatula phosphorea* frequent on the pebbles and gravel areas, *Nephrops norvegicus* on slightly muddier patches and *Neocrania anomala* and *Metridium senile* on the larger boulders. Hydroids frequent. *Turritella* shells abundant with hermit crabs inside - no live ones seen.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	25-25	BM
151	030.058.001	Offshore, N of Rubha Thùrnaig (Loch Ewe)	13/06/1990	57.80942°N 5.59615°W	Deep, soft mud plain at 40m bcd; burrowed by *Nephrops* with occasional *Pennatula phosphorea*. Not much other life!	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	41-41	BM
152	030.074.001	S of Camas Beithe (Loch Ewe)	13/06/1990	57.83134°N 5.64367°W	Firm mud plain with occasional small burrows and mounds at 33 m bcd. *Pennatula* common and *Turritella* frequent, with occasional *Virgularia* and *Cerianthus*.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	33-33	BM

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
153	030.094.001	E Resolution Rock (Loch Ewe)	11/06/1990	57.80978°N 5.62751°W	*Amphiura*, Cirratulidae has been removed from the species list for this record as more specific related taxa were also present, these are now marked as characterising. An anchor dredge sample from the basin to the east of Resolution Rock, Loch Ewe. A very full haul of soft mud with cirratulids and *Amphiura*. Also large bivalves.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	66.7-66.7	BM
154	035.043.001	E of Dùn Lagaidh ruined fort (Loch Broom)	18/05/1991	57.87386°N 5.11789°W	*Arctica islandica* has been given a nominal abundance value of Present for this record. Deep shelly mud with *Pennatula phosphorea* (F) and *Turritella communis* (C) at 30 to 38m bcd. A few *Aequipecten opercularis* and *Arctica islandica* on the sediment and one *Psolus phantapus* found. Slight current.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph)	37.5-3.5	BM
155	035.067.002	Sròn Creag na Ceapaich (Little Loch Broom)	20/05/1991	57.85868°N 5.24641°W	A gently sloping soft mud plain characterised by *Turritella communis* and *Pennatula*. Mud extensively burrowed by indeterminate animals (possibly gobies). Brittlestars: *Amphiura* spp. and *Ophiura ophiura* were common. Scattered epibenthic fauna: *Asterias*, *Crossaster*, *Facelina* and pagurids.	SS.SMu.CFiMu.SpnMeg (SS.SMu.CFiMu.SpnMeg)	17-14	BM

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
156	283.002.004	Sròn nah Airde (Loch Gairloch)	10/09/1989	57.71074°N 5.69485°W	Circalittoral gravel and worked muddy sand with sea pens. This habitat consisted of flat or gently sloping muddy sand which was extensively worked and covered by tracks. Shell debris, small stones and pebbles which were scattered on the surface supported hydroids. *Virgularia mirabilis*, *Pennatula phosphorea* and *Ascidiella aspersa* were common with brittlestars and starfish. Occasional *Modiolus modiolus* was also observed in this habitat. In places it graded into a habitat of gravel and muddy sand with shell debris and maerl, similar but in the infralittoral.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph.HAs)	22	BM
157	283.020.002	E coast Longa Island (Loch Gairloch)	12/09/1989	57.73216°N 5.79116°W	Circalittoral gravel and worked muddy sand with sea pens. This habitat consisted of flat or gently sloping muddy sand which was extensively worked and covered by tracks. Shell debris, small stones and pebbles which were scattered on the surface supported hydroids. *Virgularia mirabilis*, *Pennatula phosphorea* and *Ascidiella aspersa* were common with brittlestars and starfish. Occasional *Modiolus modiolus* was also observed in this habitat. In places it graded into a habitat of gravel and muddy sand with shell debris and maerl, similar but in the infralittoral.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph.HAs)	18	BM

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
158	283.021.001	Carn Dearg (Loch Gairloch)	12/09/1989	57.72589°N 5.76026°W	Circalittoral gravel and worked muddy sand with sea pens. This habitat consisted of flat or gently sloping muddy sand which was extensively worked and covered by tracks. Shell debris, small stones and pebbles which were scattered on the surface supported hydroids. *Virgularia mirabilis*, *Pennatula phosphorea* and *Ascidiella aspersa* were common with brittlestars and starfish. Occasional *Modiolus modiolus* was also observed in this habitat. In places it graded into a habitat of gravel and muddy sand with shell debris and maerl, similar but in the infralittoral.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph.HAs)	33	BM
159	283.022.003	Fraoch Eilean (Loch Gairloch)	12/09/1989	57.70168°N 5.69729°W	Circalittoral gravel and worked muddy sand with sea pens. This habitat consisted of flat or gently sloping muddy sand which was extensively worked and covered by tracks. Shell debris, small stones and pebbles which were scattered on the surface supported hydroids. *Virgularia mirabilis*, *Pennatula phosphorea* and *Ascidiella aspersa* were common with brittlestars and starfish. Occasional *Modiolus modiolus* was also observed in this habitat. In places it graded into a habitat of gravel and muddy sand with shell debris and maerl, similar but in the infralittoral.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph.HAs)	21	BM

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
160	283.024.001	W of Gairloch Hotel (Loch Gairloch)	12/09/1989	57.72593°N 5.69808°W	Circalittoral gravel and worked muddy sand with sea pens. This habitat consisted of flat or gently sloping muddy sand which was extensively worked and covered by tracks. Shell debris, small stones and pebbles which were scattered on the surface supported hydroids. *Virgularia mirabilis*, *Pennatula phosphorea* and *Ascidiella aspersa* were common with brittlestars and starfish. Occasional *Modiolus modiolus* was also observed in this habitat. In places it graded into a habitat of gravel and muddy sand with shell debris and maerl, similar but in the infralittoral.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph.HAs)	27	BM
161	283.025.001	Sròn na h-Airde (Loch Gairloch)	12/09/1989	57.71248°N 5.69671°W	Circalittoral gravel and worked muddy sand with sea pens. This habitat consisted of flat or gently sloping muddy sand which was extensively worked and covered by tracks. Shell debris, small stones and pebbles which were scattered on the surface supported hydroids. *Virgularia mirabilis*, *Pennatula phosphorea* and *Ascidiella aspersa* were common with brittlestars and starfish. Occasional *Modiolus modiolus* was also observed in this habitat. In places it graded into a habitat of gravel and muddy sand with shell debris and maerl, similar but in the infralittoral.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph.HAs)	27	BM

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
162	283.028.004	NE of Sgeir Dubh Bheag (Loch Gairloch)	12/09/1989	57.70398°N 5.71096°W	Circalittoral gravel and worked muddy sand with sea pens. This habitat consisted of flat or gently sloping muddy sand which was extensively worked and covered by tracks. Shell debris, small stones and pebbles which were scattered on the surface supported hydroids. *Virgularia mirabilis*, P*ennatula phosphorea* and *Ascidiella aspersa* were common with brittlestars and starfish. Occasional *Modiolus modiolus* was also observed in this habitat. In places it graded into a habitat of gravel and muddy sand with shell debris and maerl, similar but in the infralittoral.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph.HAs)	16	BM
163	283.043.002	SE of Gruinard Island (Gruinard Bay)	14/09/1989	57.88303°N 5.45094°W	Circalittoral gravel and worked muddy sand with sea pens. This habitat consisted of flat or gently sloping muddy sand which was extensively worked and covered by tracks. Shell debris, small stones and pebbles which were scattered on the surface supported hydroids. *Virgularia mirabilis*, *Pennatula phosphorea* and *Ascidiella aspersa* were common with brittlestars and starfish. Occasional *Modiolus modiolus* was also observed in this habitat. In places it graded into a habitat of gravel and muddy sand with shell debris and maerl, similar but in the infralittoral.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph.HAs)	27	BM

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
164	283.043.003	SE of Gruinard Island (Gruinard Bay)	14/09/1989	57.88303°N 5.45094°W	Circalittoral muddy sediments and worked sandy mud with sea pens. A virtually flat habitat type of sandy mud recorded between 25-30m bcd in Loch Gairloch. The surface was worked into occasional mounds and covered by tracks, however *Nephrops* burrows were not observed in this habitat. *P. phosphorea* and *Virgularia* were present and a conspicuous feature was the number of small sandy tubes which stood up to 1 cm proud of the surface and were extremely abundant (amphipod tubes ?). A honeycomb like cast of unknown origin was also common on the surface at some of these sites.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph.HAs)	27	BM
165	283.043.004	SE of Gruinard Island (Gruinard Bay)	14/09/1989	57.88303°N 5.45094°W	Circalittoral fine muddy sediments with *Pennatula phosphorea* and *Nephrops norvegicus*. This habitat consisted of Pennatula phosphorea beds on a virtually flat sea bed of fine mud. *Nephrops norvegicus* burrows were present in this habitat and *Liocarcinus depurator* was also observed. Small sandy tubes approximately 1cm high were very common on the surface.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	27	BM

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
166	283.044.001	SE Gruinard Island (2) (Gruinard Bay)	14/09/1989	57.88294°N 5.45431°W	Circalittoral gravel and worked muddy sand with sea pens. This habitat consisted of flat or gently sloping muddy sand which was extensively worked and covered by tracks. Shell debris, small stones and pebbles which were scattered on the surface supported hydroids. *Virgularia mirabilis*, *Pennatula phosphorea* and *Ascidiella aspersa* were common with brittlestars and starfish. Occasional *Modiolus modiolus* was also observed in this habitat. In places it graded into a habitat of gravel and muddy sand with shell debris and maerl, similar but in the infralittoral.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph.HAs)	2	BM
167	283.045.001	Seana Chreag, Gruinard Island (Gruinard Bay)	14/09/1989	57.89025°N 5.44995°W	Circalittoral gravel and worked muddy sand with sea pens. This habitat consisted of flat or gently sloping muddy sand which was extensively worked and covered by tracks. Shell debris, small stones and pebbles which were scattered on the surface supported hydroids. *Virgularia mirabilis*, *Pennatula phosphorea* and *Ascidiella aspersa* were common with brittlestars and starfish. Occasional *Modiolus modiolus* was also observed in this habitat. In places it graded into a habitat of gravel and muddy sand with shell debris and maerl, similar but in the infralittoral.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph.HAs)	41	BM

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
168	283.046.002	Fraoch Eilean M¢r (Gruinard Bay)	14/09/1989	57.85935°N 5.46216°W	Circalittoral gravel and worked muddy sand with sea pens. This habitat consisted of flat or gently sloping muddy sand which was extensively worked and covered by tracks. Shell debris, small stones and pebbles which were scattered on the surface supported hydroids. *Virgularia mirabilis*, *Pennatula phosphorea* and *Ascidiella aspersa* were common with brittlestars and starfish. Occasional *Modiolus modiolus* was also observed in this habitat. In places it graded into a habitat of gravel and muddy sand with shell debris and maerl, similar but in the infralittoral.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph.HAs)	18	BM
169	283.059.001	Off Midtown School (Loch Ewe)	17/09/1989	57.82405°N 5.66265°W	Circalittoral gravel and worked muddy sand with sea pens. This habitat consisted of flat or gently sloping muddy sand which was extensively worked and covered by tracks. Shell debris, small stones and pebbles which were scattered on the surface supported hydroids. *Virgularia mirabilis*, *Pennatula phosphorea* and *Ascidiella aspersa* were common with brittlestars and starfish. Occasional *Modiolus modiolus* was also observed in this habitat. In places it graded into a habitat of gravel and muddy sand with shell debris and maerl, similar but in the infralittoral.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph.HAs)	16	BM

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
170	283.060.001	Channel an Squiteach (Loch Ewe)	17/09/1989	57.78854°N 5.64726°W	Circalittoral gravel and worked muddy sand with sea pens. This habitat consisted of flat or gently sloping muddy sand which was extensively worked and covered by tracks. Shell debris, small stones and pebbles which were scattered on the surface supported hydroids. *Virgularia mirabilis*, *Pennatula phosphorea* and *Ascidiella aspersa* were common with brittlestars and starfish. Occasional *Modiolus modiolus* was also observed in this habitat. In places it graded into a habitat of gravel and muddy sand with shell debris and maerl, similar but in the infralittoral.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph.HAs)	27	BM
171	283.063.003	Sìtheanan Dubha Bay (Loch Ewe)	18/09/1989	57.84564°N 5.63112°W	Circalittoral gravel and worked muddy sand with sea pens. This habitat consisted of flat or gently sloping muddy sand which was extensively worked and covered by tracks. Shell debris, small stones and pebbles which were scattered on the surface supported hydroids. *Virgularia mirabilis*, *Pennatula phosphorea* and *Ascidiella aspersa* were common with brittlestars and starfish. Occasional *Modiolus modiolus* was also observed in this habitat. In places it graded into a habitat of gravel and muddy sand with shell debris and maerl, similar but in the infralittoral.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph.HAs)	11	BM

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
172	283.071.002	N of Ploc an Rubha, Loch Thùrnaig (Loch Ewe)	18/09/1989	57.79621°N 5.59921°W	Circalittoral gravel and worked muddy sand with sea pens. This habitat consisted of flat or gently sloping muddy sand which was extensively worked and covered by tracks. Shell debris, small stones and pebbles which were scattered on the surface supported hydroids. *Virgularia mirabilis*, *Pennatula phosphorea* and *Ascidiella aspersa* were common with brittlestars and starfish. Occasional *Modiolus modiolus* was also observed in this habitat. In places it graded into a habitat of gravel and muddy sand with shell debris and maerl, similar but in the infralittoral.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph.HAs)	2	BM
173	283.071.003	N of Ploc an Rubha, Loch Thùrnaig (Loch Ewe)	18/09/1989	57.79621°N 5.59921°W	Circalittoral fine muddy sediments with *Pennatula phosphorea* and *Nephrops norvegicus*. This habitat consisted of *Pennatula phosphorea* beds on a virtually flat sea bed of fine mud. *Nephrops norvegicus* burrows were present in this habitat and *Liocarcinus depurator* was also observed. Small sandy tubes approximately 1cm high were very common on the surface.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	2	BM

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
174	283.072.003	Rubha' Ard na Bà (Loch Ewe)	18/09/1989	57.79785°N 5.60442°W	Circalittoral gravel and worked muddy sand with sea pens. This habitat consisted of flat or gently sloping muddy sand which was extensively worked and covered by tracks. Shell debris, small stones and pebbles which were scattered on the surface supported hydroids. *Virgularia mirabilis*, *Pennatula phosphorea* and *Ascidiella aspersa* were common with brittlestars and starfish. Occasional *Modiolus modiolus* was also observed in this habitat. In places it graded into a habitat of gravel and muddy sand with shell debris and maerl, similar but in the infralittoral.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph.HAs)	26	BM
175	283.075.002	Off An Sagart Point (Loch Ewe)	21/09/1989	57.79096°N 5.62562°W	Circalittoral gravel and worked muddy sand with sea pens. This habitat consisted of flat or gently sloping muddy sand which was extensively worked and covered by tracks. Shell debris, small stones and pebbles which were scattered on the surface supported hydroids. *Virgularia mirabilis*, *Pennatula phosphorea* and *Ascidiella aspersa* were common with brittlestars and starfish. Occasional *Modiolus modiolus* was also observed in this habitat. In places it graded into a habitat of gravel and muddy sand with shell debris and maerl, similar but in the infralittoral.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph.HAs)	12	BM

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
176	283.077.001	N of Rubha' Ard na Bà (Loch Ewe)	21/09/1989	57.80125°N 5.6115°W	Circalittoral gravel and worked muddy sand with sea pens. This habitat consisted of flat or gently sloping muddy sand which was extensively worked and covered by tracks. Shell debris, small stones and pebbles which were scattered on the surface supported hydroids. *Virgularia mirabilis*, *Pennatula phosphorea* and *Ascidiella aspersa* were common with brittlestars and starfish. Occasional *Modiolus modiolus* was also observed in this habitat. In places it graded into a habitat of gravel and muddy sand with shell debris and maerl, similar but in the infralittoral.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph.HAs)	38	BM
177	283.080.001	S of Sgeir a Bhuic (Loch Ewe)	21/09/1989	57.83798°N 5.64721°W	Circalittoral gravel and worked muddy sand with sea pens. This habitat consisted of flat or gently sloping muddy sand which was extensively worked and covered by tracks. Shell debris, small stones and pebbles which were scattered on the surface supported hydroids. *Virgularia mirabilis*, *Pennatula phosphorea* and *Ascidiella aspersa* were common with brittlestars and starfish. Occasional *Modiolus modiolus* was also observed in this habitat. In places it graded into a habitat of gravel and muddy sand with shell debris and maerl, similar but in the infralittoral.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph.HAs)	21	BM

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
178	283.083.002	Gob na Lice/Rubh' a' Choin (Loch Ewe)	22/09/1989	57.85177°N 5.6368°W	Circalittoral gravel and worked muddy sand with sea pens. This habitat consisted of flat or gently sloping muddy sand which was extensively worked and covered by tracks. Shell debris, small stones and pebbles which were scattered on the surface supported hydroids. Virgularia mirabilis, *Pennatula phosphorea* and *Ascidiella aspersa* were common with brittlestars and starfish. Occasional *Modiolus modiolus* was also observed in this habitat. In places it graded into a habitat of gravel and muddy sand with shell debris and maerl, similar but in the infralittoral.	SS.SMu.CFiMu.SpnMeg (CMS.VirOph.HAs)	2	BM
179	283.089.001	Al buoy, SW of Ormiscaig (Loch Ewe)	22/09/1989	57.84777°N 5.61953°W	Circalittoral fine muddy sediments with *Pennatula phosphorea* and *Nephrops norvegicus*. This habitat consisted of Pennatula phosphorea beds on a virtually flat sea bed of fine mud. *Nephrops norvegicus* burrows were present in this habitat and *Liocarcinus depurator* was also observed. Small sandy tubes approximately 1cm high were very common on the surface.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	14	BM

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
180	035.038.001	E Letters (Loch Broom)	18/05/1991	57.84467°N 5.09126°W	A level soft mud plain at 31m extensively burrowed by Nephrops (?). Many large mounds by unidentified animals. Occasional sea pens: *Funiculina* and sickly looking *Pennatula*. Occasional snake blennies and small plaice.	SS.SMu.CFiMu.SpnMeg.Fun (CMU.SpMeg.Fun)	31-31	BM FQ
181	035.042.004	W Leckmelm (Loch Broom)	18/05/1991	57.86552°N 5.09878°W	A steep slope of firm mud with scattered *Funiculina quadrangularis*, frequent *Pennatula phosphorea* and *Virgularia mirabilis*, but relatively little else. *Caryophyllia smithii* and coralline crusts on a small boulder.	SS.SMu.CFiMu.SpnMeg.Fun (CMU.SpMeg.Fun)	23.5-16.5	BM FQ
182	035.049.001	SW of Torranacosh, Loch Broom (Loch Broom)	17/05/1991	57.88808°N 5.14612°W	Muddy shell gravel and whole empty shells with occasional boulders at 16-19m bcd. Occasional small *Funiculina quadrangularis* with frequent *Pennatula phosphorea* and *Cerianthus lloydii*, and frequent *Turritella communis*. Occasional *Munida rugosa* under the boulders, with crustose coralline algae on upward-facing surfaces.	SS.SMu.CFiMu.SpnMeg.Fun (CMU.SpMeg.Fun)	19-16	BM FQ
183	726.003.001	Tanera More Bay (Summer Isles)	05/09/1996	58.01298°N 5.39199°W	Soft mud, burrowed by *Nephrops norvegicus* and the sea pen *Pennatula phosphorea* and *Funiculina quadrangularis*, at 41m bcd.	SS.SMu.CFiMu.SpnMeg.Fun (SS.SMu.CFiMu.SpnMeg.Fun)	41-41	BM FQ

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
184	035.045.001	N of Blarnalearoch, Loch Broom (Loch Broom)	17/05/1991	57.87351°N 5.12494°W	Muddy shell gravel with sand and small boulders with *Limaria hians* nests on part of the slope nearest the narrows grading slowly to finer mud with *Philine aperta* in 5.5m. *Munida rugosa* under some of the small boulders and cobbles and *Modiolus modiolus* in clumps or under the sediment surface. *Cerianthus lloydii* frequent/common on the shallower areas of sediment.	SS.SMx.IMx.Lim (IMX.Lim)	22.5-5.5	FS
185	035.046.001	Narrows Sruth Lagaidh, Loch Broom (Loch Broom)	17/05/1991	57.87717°N 5.12964°W	Gradual slope of sandy mud with pebbles and shell debris. Slope was terraced with most pebbles on the outer edges of the ledges, consolidated by *Limaria hians* galleries. Variety of hydroids on the pebbles. Galatheids in the *Limaria* galleries. A few tufts of algae above 13m.	SS.SMx.IMx.Lim (IMX.Lim)	21-13	FS
186	035.059.001	S Leac an Ime, Little Loch Broom (Little Loch Broom)	20/05/1991	57.89969°N 5.38315°W	Level plain of coarse sand and maerl gravel overlain in large areas by live maerl, probably *Lithothamnion glaciale*. This was netted together and the sediment surface stabilised by galleries of *Limaria hians*. *Desmarestia aculeata* was abundant over much of the maerl with huge plants of *Laminaria saccharina*. *Ensis* sp. common in sand - many bivalve shells found but few live ones excavated.	SS.SMx.IMx.Lim (IMX.Lim)	11-8	FS

Table 16.2 continued

ID	MR code	Site name	Date	Position	Description	Biotope	Depth (m)	PMFs
187	764.061.004	North of the Carn Skerries (Summer Isles)	03/06/1996	57.96578°N 5.36553°W	Dead maerl stick together in large mats with filamentous green algae. *Limaria hians* present, together with many bivalve siphons. Depth 15.2-17.2m bcd.	SS.SMx.IMx.Lim (IMX.Lim)	17.2-15.2	FS
188	764.065.001	Between islands of Carn Skerries (Summer Isles)	03/06/1996	57.95973°N 5.36294°W	*Limaria hians* on mixed substrate of maerl (20% of which is alive), shelly coarse sand and scattered bivalve shells. Sediment is hummocky as result of burrowing crabs etc. Depth 15.3m bcd. Other species include spider crabs, hermit crabs, burrowing bivalves, *Luidia* and brittlestars.	SS.SMx.IMx.Lim (IMX.Lim)	15.3-15.3	FS

Table 16.3 Records of Arctica islandica *from the Ullapool Approaches area. The ID is the record code used in the figures and text of this report. The MR code is the Marine Recorder sample code, with the first number string identifying the survey (see Table 16.2), the second string the site, and the third the habitat. All records of presence extracted from Marine Recorder, apart from A29-A32*

ID	MR code	Site name	Date	Latitude	Longitude	Depth (m)	SACFOR	Habitat
A1	030.028.001	SE of Ceann a'Chreagan (Loch Gairloch)	03/06/1990	57.730172	-5.7633239	7.5	O	Sandy bottom covered by filamentous brown algae, 6.5m
A2	030.031.001	E end of Caolas Beag channel (Loch Gairloch)	03/06/1990	57.737254	-5.7802661	3-4	C	Coarse sand with *Zostera marina* and bivalves at 3-4m
A3	030.056.001	NW An Sagart (Loch Ewe)	13/06/1990	57.793037	-5.6345834	25	O	Lower circalittoral; mud/shell/gravel/pebbles/boulders.
A4	030.057.001	SE of Midtown (Loch Ewe)	09/06/1990	57.797166	-5.6545082	16.8-17.7	F	Mixed sandy/muddy sediment; broken shells, stones
A5	030.064.001	W of NATO jetty (Loch Ewe)	14/06/1990	57.825829	-5.5912128	22-24	F	Gradual slope; sandy mud/pebbles/cobbles/boulders.
A6	030.067.001	The Sound (centre) (Loch Ewe)	15/06/1990	57.846006	-5.6119385	11.8	R	Shelly mud with shells and pebbles at 12m (suction sample)
A7	030.071.001	N entrance to Sound (Loch Ewe)	14/06/1990	57.850193	-5.6352906	21.0-22.4	R	Hydroid-covered cobbles and pebbles on sediment.
A8	030.084.004	Eilean Rubh' a'Choin (Loch Ewe)	15/06/1990	57.855499	-5.6445959	10	R	Mobile pebbles/coarse shell gravel/cobbles at 10m bcd
A9	030.095.001	End of Fisher Point (Loch Ewe)	11/06/1990	57.820075	-5.6447214	51.5	R	Dredge of muddy sand at 51m
A10	035.037.001	Head of loch, W side (Loch Broom)	17/05/1991	57.849738	-5.0862977	7-12	R	Soft mud plain at 7-12m with rare boulder
A11	035.037.002	Head of loch, W side (Loch Broom)	17/05/1991	57.849738	-5.0862977	12-21	O	Sandy mud slope from 12-21m with occasional boulder
A12	035.039.003	W of Balnoster (Loch Broom)	18/05/1991	57.847581	-5.0862816	11-18	R	Sandy mud slope at 11-18m bcd

Table 16.3 continued

ID	MR code	Site name	Date	Latitude	Longitude	Depth (m)	SACFOR	Habitat
A13	035.040.001	NW of Ardindrean, Loch Broom (Loch Broom)	18/05/1991	57.853065	-5.104622	8.5-14.5	R	Muddy sand, boulders and cobbles with *Pennatula phosphorea*
A14	035.042.002	W Leckmelm (Loch Broom)	18/05/1991	57.865501	-5.0987519	-0.5-3.5	O	Muddy sand with diatom film and *Labiodoplax digitata*
A15	035.042.003	W Leckmelm (Loch Broom)	18/05/1991	57.865521	-5.0987812	3.5-16.5	F	Steep sandy mud with *Pennatula phosphorea* at 3-16m
A16	035.042.004	W Leckmelm (Loch Broom)	18/05/1991	57.865521	-5.0987812	16.5-23.5	F	Firm mud with *Funiculina quadrangularis*
A17	035.043.001	E of D—n Lagaidh ruined fort (Loch Broom)	18/05/1991	57.873861	-5.1178865	30.5-37.5	P	Deep shelly mud with *Pennatula phosphorea* at 30-38m
A18	035.044.003	NW Blarnalearoch (Loch Broom)	17/05/1991	57.870355	-5.1179202	8-17	R	Stones on muddy fine sand
A19	035.045.001	N of Blarnalearoch, Loch Broom (Loch Broom)	17/05/1991	57.873508	-5.1249409	5.5-22.5	O	Muddy shell gravel and sand slope at 5-22m
A20	035.047.003	W Corry Point, Loch Broom (Loch Broom)	17/05/1991	57.881407	-5.1362568	12-21	R	Shelly, sandy mud with dense *Turritella* at 12-21m
A21	035.048.001	SE Rubha Buidhe (Loch Broom)	17/05/1991	57.880902	-5.1566287	8-9	R	Stones on muddy sand with *Laminaria saccharina*
A22	035.048.002	SE Rubha Buidhe (Loch Broom)	17/05/1991	57.880902	-5.1566287	9	R	Plain of medium silty sand with maerl and cobbles
A23	035.049.001	SW of Torranacosh, Loch Broom (Loch Broom)	17/05/1991	57.888084	-5.1461206	16-19	O	Muddy shell gravel with occasional boulders at 16-19m
A24	035.053.003	Below Cnoc na Moine, Loch Broom (Loch Broom)	19/05/1991	57.912674	-5.1979232	6-23	R	Shelly muddy sand slope with few shells/boulders at 6-23m

Table 16.3 continued

ID	MR code	Site name	Date	Latitude	Longitude	Depth (m)	SACFOR	Habitat
A25	035.054.003	SW Rhue, outer Loch Broom (Loch Broom)	19/05/1991	57.91976	-5.2162898	10-22	O	Muddy sand with shell gravel and pebbles 10-22m bcd
A26	035.057.001	N of Red Cliffs caves, outer Little Loch Broom (Little Loch Broom)	22/05/1991	57.908826	-5.414577	23-24	O	Sparse maerl on coarse muddy sand
A27	035.057.002	N of Red Cliffs caves, outer Little Loch Broom (Little Loch Broom)	22/05/1991	57.908826	-5.414577	23-24	R	Muddy coarse sand and gravel at 23-24m
A28	035.060.001	S of Scoraig, Little Loch Broom (Little Loch Broom)	22/05/1991	57.907379	-5.3745865	13-20	R	Coarse muddy sand with pebbles and shells at 13-20m
A29	MRMCS0020000005F.01	Fishfarm site 3, Carn Deag	10/06/2001	57.926752	-5.348587	3.7-25.7	P	Sediment sea bed
A30	054.034.001	West of Sron Creagna Ceapaich	02/10/1988	57.856723	-5.256185	22.5	P	
A31	054.011.001	Rubha Buidhe	29/09/1988	57.885245	-5.1662909	9.5	P	
A32	054.057.001	Cul a'Bhogha	04/10/1988	57.932613	-5.2056128	23	P	Mud plain at 23m BCD with polychaete casts and decapod burrows

Table 16.4 Species PMF records for the Ullapool Approaches area extracted from the MARLIN and DEFRA data layers. Records are largely extracted from Marine Recorder (MR), in which case the MR survey code is given. Otherwise, the source of data is provided. ID is the code used for the record in the text and figures of this report. Phymatolithon calcareum *is included as a possible indicator of maerl biotopes*

ID	Species	SACFOR	MR survey code	Date	Site name	Latitude	Longitude	PMF
MAR01	*Glossus humanus*	R	JNCCMNCR10000030	14/06/1990	Central Loch Thùrnaig (Loch Ewe)	57.79439	-5.59364	GH
MAR02	*Leptometra celtica*	C	JNCCMNCR10000035	22/05/1991	Outer sill (Little Loch Broom)	57.90970	-5.39879	LC
MAR03	*Leptometra celtica*	F	JNCCMNCR10000035	20/05/1991	NE Druim Donn, Little Loch Broom (Little Loch Broom)	57.88972	-5.34542	LC
MAR04	*Leptometra celtica*	R	JNCCMNCR10000035	19/05/1991	Eilean na Mile, Loch Broom approaches (Loch Broom)	57.91806	-5.24789	LC
MAR05	*Leptometra celtica*	C	MRSNH00100000012	08/08/1995	SW of Rubha Cadail (mouth of loch Broom)	57.92247	-5.23672	LC
D1	*Atrina fragilis*	P	MRMLN0010000012E	01/01/1999	Loch Ewe	57.89623	-5.77637	AP
D2	*Funiculina quadrangularis*	P	MRSNH00100000012	09/08/1995	East of Ardindrean	57.84495	-5.08944	FQ
D3	*Funiculina quadrangularis*	P	JNCCMNCR10000035	18/05/1991	E Letters (Loch Broom)	57.84467	-5.09126	FQ
D4	*Funiculina quadrangularis*	P	MRSNH00100000012	09/08/1995	South East of Loggie	57.85969	-5.09411	FQ
D5	*Funiculina quadrangularis*	P	JNCCMNCR10000035	18/05/1991	W Leckmelm (Loch Broom)	57.86552	-5.09878	FQ
D6	*Funiculina quadrangularis*	P	MRSNH00100000012	09/08/1995	East of An Acairseid	57.87296	-5.11342	FQ
D7	*Funiculina quadrangularis*	P	JNCCMNCR10000035	17/05/1991	SW of Torranacosh, Loch Broom (Loch Broom)	57.88808	-5.14612	FQ
D8	*Funiculina quadrangularis*	P	MRSNH00100000012	08/08/1995	South of Creag nam Fiadh	57.90550	-5.19767	FQ
D9	*Funiculina quadrangularis*	P	MRSNH00100000012	08/08/1995	Middle of outer basin, Loch Broom	57.91901	-5.22550	FQ
D10	*Funiculina quadrangularis*	P	JNCCMNCR30000726	05/09/1996	Tanera More Bay (Summer Isles)	58.01298	-5.39199	FQ
D11	*Funiculina quadrangularis*	P	MRMLN0040000005A	24/07/1994	Minches (NMP 85)	57.99997	-5.66000	FQ
D12	*Funiculina quadrangularis*	P	FRS	08/11/1995	LB95045	57.84600	-5.08300	FQ
D13	*Funiculina quadrangularis*	P	FRS	08/11/1995	LB95042	57.84000	-5.08500	FQ
D14	*Funiculina quadrangularis*	P	FRS	08/11/1995	LB95046	57.84600	-5.08800	FQ
D15	*Funiculina quadrangularis*	P	FRS	08/11/1995	LB95048	57.84500	-5.09500	FQ
D16	*Funiculina quadrangularis*	P	FRS	08/11/1995	LB95055	57.85800	-5.10300	FQ

Table 16.4 continued

ID	Species	SACFOR	MR survey code	Date	Site name	Latitude	Longitude	PMF
D17	*Funiculina quadrangularis*	P	FRS	08/11/1995	BT95014	58.02200	-5.36600	FQ
D18	*Funiculina quadrangularis*	P	FRS	08/11/1995	BT95018	58.00000	-5.36600	FQ
D19	*Funiculina quadrangularis*	P	FRS	08/11/1995	BT95017	58.01200	-5.36800	FQ
D20	*Funiculina quadrangularis*	P	FRS	08/11/1995	BT95002	58.02300	-5.37600	FQ
D21	*Funiculina quadrangularis*	P	FRS	08/11/1995	BT95038	58.01300	-5.37600	FQ
D22	*Funiculina quadrangularis*	P	FRS	08/11/1995	BT95001	58.02700	-5.38000	FQ
D23	*Funiculina quadrangularis*	P	FRS	18/06/1999	NM99532	58.00900	-5.60000	FQ
D24	*Funiculina quadrangularis*	P	FRS	18/06/1999	NM99530	57.97300	-5.73900	FQ
D25	*Ostrea edulis*	O	MRMLN00400000015	01/01/1984	Colgach, Old Dorney Harbour	58.04492	-5.41997	OE
D26	*Ostrea edulis*	A	JNCCMNCR10000086	17/08/1978	Loch Thurnaig, Loch Ewe (Wester Ross)	57.79300	-5.57618	OE
D27	*Palinurus elephas*	P	MRMLN00100000129	01/01/1956	Scourie Bank	58.03708	-5.43868	PE
D28	*Palinurus elephas*	P	MRMLN00100000130	01/01/1927	Off Inverasdale	57.82100	-5.64318	PE
D29	*Palinurus elephas*	P	MRMLN00100000130	01/01/1924	South Rudh'Re	57.85258	-5.85274	PE
D30	*Phymatolithon calcareum*	P	Dipper (1981)	30/08/1981		58.00342	-5.42021	MB
D31	*Phymatolithon calcareum*	P	Dipper (1981)	04/09/1981		58.02135	-5.42192	MB
D32	*Phymatolithon calcareum*	P	Dipper (1981)	04/09/1981		58.01699	-5.45030	MB
D33	*Phymatolithon calcareum*	P	Dipper (1981)	02/09/1981		58.02864	-5.45142	MB
D34	*Phymatolithon calcareum*	P	Dipper (1981)	09/09/1981		58.02568	-5.46130	MB
D35	*Phymatolithon calcareum*	P	JNCCMNCR10000030	12/06/1990	SE Sgeir an Eich (Loch Ewe)	57.85556	-5.68289	MB

Table 16.5 PMF records from the 2004 survey of Loch Broom by Briggs (2004). The updated biotope is given, together with the original ascription (in brackets). Coordinates represent the centre of the site

Site	Date	Depth	Substratum	Biota	Biotope	Position	Method	PMFs
V1	4-7/7/2004	77.52-77.52	Fine silty mud, with one or two tracks.	*Pennatula phosphorea, Nephrops norvegicus* and *Asterias rubens*.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	57.92059°N 5.23145°W	video	BM
V2	4-7/7/2004	76.22-71.22	Same as way point 1. Fine silty mud, with mounds and burrows.	*Pennatula phosphorea.*	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	57.91809°N 5.22125°W	video	BM
V12	4-7/7/2004	46.84-48.54	Silty sand with shell debris and drift weed; burrows.	*Virgularia mirabilis, Nephrops norvegicus*, *Asterias rubens*, *Echinus esculentus* and *Luidia ciliaris*. Drift kelp; *Nephrops norvegicus* burrows.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	57.87232°N 5.11384°W	video	BM
V13	4-7/7/2004	33.04-33.71	Level bottom. Silty sandy shell gravel, with small stones and shells.	Lots of *Pennatula phosphorea* and occasional *Asterias rubens. Cerianthus lloydii* and *Lanice conchilega* also present.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	57.86995°N 5.10738°W	video	BM
V13b	4-7/7/2004	24.71-23.71	Flat plain of silty sand. Not many features except a few burrows.	*Virgularia mirabilis, Pennatula phosphorea, Asterias rubens* and drift *Laminaria saccharina*.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	57.84936°N 5.08757°W	video	BM
V13c	4-7/7/2004	25.1-24.76	Silty sand with small bits of shell debris and a flocculent layer.	*Pennatula phosphorea* and *Asterias rubens*.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	57.84746°N 5.08764°W	video	BM

Table 16.5 continued

Site	Date	Depth	Substratum	Biota	Biotope	Position	Method	PMFs
V14	4-7/7/2004	23.96-23.66	Silty mud or sand. Lots of burrows.	*Funiculina quadrangularis, Virgularia mirabilis* and lots of *Pennatula phosphorea.*	SS.SMu.CFiMu.SpnMeg.Fun (CMU.SpMeg.Fun)	57.84253°N 5.08590°W	video	BM FQ
V15	4-7/7/2004	23.46-23.36	Silty sand with one or two burrows; smooth, flat and featureless.	*Pennatula phosphorea, Urticina* sp and a small fish.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	57.83862°N 5.08464°W	video	BM
V16	4-7/7/2004	27.52-27.82	Silty sand with burrows. Flat and featureless.	Lots of *Pennatula phosphorea*, and one or two *Nephrops norvegicus* burrows.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	57.84006°N 5.08783°W	video	BM
V16a	4-7/7/2004	30.05-29.75	Dark silty mud.	*Virgularia mirabilis* and *Pennatula phosphorea*.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	57.84920°N 5.09261°W	video	BM
V16b	4-7/7/2004	35.75-36.15	Dark silty mud.	*Pennatula phosphorea* and *Asterias rubens*.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	57.85330°N 5.09914°W	video	BM
V17	4-7/7/2004	36.85-36.72	Dark silty mud.	Lots of *Pennatula phosphorea* and *Asterias rubens*. *Nephrops norvegicus*.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	57.86923°N 5.11130°W	video	BM
V18	4-7/7/2004	37.12-40.12	Shelly gravelly sand and silt with stones.	*Pennatula phosphorea, Cerianthus lloydii, Asterias rubens* and a nemertean worm (*Lineus* sp). Galatheidae indet and *Munida rugosa*. *Pomatoceros triqueter* on stones.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	57.87335°N 5.11844°W	video	BM

Table 16.5 continued

Site	Date	Depth	Substratum	Biota	Biotope	Position	Method	PMFs
V21	4-7/7/2004	15.7-16.3	Flat silty sand. Tide swept, with drift weed.	*Virgularia mirabilis* and *Pennatula phosphorea*. *Asterias rubens* and burrows.	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	57.88701°N 5.14991°W	video	BM
G4	4-7/7/2004	27.32	Dark brown soft silt, with leaf litter and fine shell. Smell of hydrogen sulphide.	Nemertea, *Brissopsis lyrifera.*	SS.SMu.CFiMu.BlyrAchi (CMU.BriAchi)	57.84863°N 5.09973°W	grab	DM
G7	4-7/7/2004	21.79	Dark brown soft silt, with some fine sand and broken shell. Hydrogen sulphide smell.	*Pennatula phosphorea.*	SS.SMu.CFiMu.SpnMeg (CMU.SpMeg)	57.85295°N 5.08663°W	grab	BM
G11	4-7/7/2004	20.39	Mud with shell gravel. Angular stones and *Turritella* shells.	*Amphiura chiajei.*	SS.SMu.CFiMu.BlyrAchi (CMU.BriAchi)	57.89117°N 5.14587°W	grab	DM
BD1	06/07/2004	1.6-13.4			SS.SMp.KSwSS (IMX.LsacX)	57.87873°N 5.12823°W	dive	KS
BD2	06/07/2004	5.3-22.3			SS.SMp.KSwSS (IMX.LsacX)	57.87603°N 5.13015°W	dive	KS
BD4	06/07/2004	1.2-19.2			SS.SMu.CFiMu.SpnMeg.Fun (CMU.SpMeg.Fun)	57.84854°N 5.08495°W	dive	BM FQ
BD6	07/07/2004	8.8-16.8			SS.SMx.IMx.Lim (IMX.Lim)	57.87558°N 5.12670°W	dive	FS

Appendix 17 Overview of GIS product

The project was compiled using ArcGIS Map 9.3 and OSGB36 projection. Coordinates were recorded in WGS84 and converted to British National Grid using the Ordnance Survey transformation algorithm, utilising the software, Grid Inquest (Geodetic Software Solutions Ltd., Newcastle upon Tyne).

The files are stored on DVD in the following structure:

Directory: **Ullapool_GIS_BNG** - All GIS files
Directory: **Figures** - all outputted maps (and other figures) for report
Directory: **Spreadsheets** - GIS and other data in Excel spreadsheet form

Directory: Ullapool_GIS_BNG

Table 17.1 Project, shape and symbology files

File	Content
Ullapool_2010.mxd	ArcGIS 9.3 map file
Badluarach_maerl_survey.shp	Badluarach maerl bed dive survey data
Badluarach_maerl_survey.lyr	symbology file for corresponding shape file
Broom_Limaria_survey.shp	Loch Broom *Limaria* bed dive survey data
Broom_Limaria_survey.lyr	symbology file for corresponding shape file
coast25.shp	MHWS Scottish coastline (for context, supplied by SNH)
feature_polygons.shp	ouline of surveyed maerl, *Limaria*, seagrass and wig wrack beds and oyster and mussel patches
feature_polygons.lyr	symbology file for corresponding shape file
Gairloch_Zostera_density.shp	*Zostera* shoot density survey data from NW Loch Gairloch
Zostera_density.lyr	symbology file for shoot density surveys in Loch Gairloch (see above) and Gruinard (see below)
Grab_sites.shp	grab survey data
grab_sites.lyr	symbology file for corresponding shape file
Gruinard_Zostera_density.shp	*Zostera* shoot density survey data from SE Gruinard Bay
mackaii_density_survey.shp	*Ascophyllum nodosum* ecad *mackaii* (wig wrack) density survey data
mackaii_density_survey.lyr	symbology file for corresponding shape file
minor_mackaii_beds.shp	location and size of smaller wig wrack beds
MSS_Gairloch_photos.shp	data from MSS photo survey of Loch Gairloch
MSS_Gairloch_photos_biotopes.lyr	symbology file for corresponding shape file, showing biotopes
MSS_Gairloch_photos_PMFs.lyr	symbology file for corresponding shape file, showing PMFs
Multigrab_sites.shp	counts of *Arctica islandica* from multiple grab survey
Multigrab_sites.lyr	symbology file for corresponding shape file
Mytilus_density.shp	abundance data for *Mytilus* at the mouth of the Ullapool River
Mytilus_density.lyr	symbology file for corresponding shape file
Photo_log.shp	locations of photos taken during the survey
Poolewe_maerl_survey.shp	Poolewe maerl bed dive survey data
Poolewe_maerl_survey.lyr	symbology file for corresponding shape file

Table 17.1 continued

File	Content
Survey_limit.shp	seaward limit of 2010 survey
Thurnaig_oyster_survey.shp	oyster density data from shore and dive surveys in Loch Thùrnaig
Thurnaig_oyster_survey.lyr	symbology file for corresponding shape file
transect&recce_lines.shp	lines joining start and end points of MNCR transects and recce dives
transect&recce_lines.lyr	symbology file for corresponding shape file
transect&recce_sites.shp	midpoints of MNCR surveys and recce dives with biotopes and PMFs
transect&recce_sites.lyr	symbology file for corresponding shape file
video_lines.shp	lines joining start and end points of video survey runs
Video_sites.shp	midpoints of video survey sites with biotopes and PMFs
Video_sites_biotopes.lyr	symbology file for corresponding shape file, showing biotopes
Video_sites_PMFs.lyr	symbology file for corresponding shape file, showing PMFs

Table 17.2 List of affiliated index, projection and metadata files. Note that the file, Ullapool_2010_xslttransformation.xml serves as the metadata file for the survey as a whole

Badluarach_maerl_survey.dbf	mackaii_density_survey.dbf
Badluarach_maerl_survey.prj	mackaii_density_survey.prj
Badluarach_maerl_survey.sbn	mackaii_density_survey.sbn
Badluarach_maerl_survey.sbx	mackaii_density_survey.sbx
Badluarach_maerl_survey.shp.xml	mackaii_density_survey.shp.xml
Badluarach_maerl_survey.shx	mackaii_density_survey.shx
Badluarach_maerl_survey_xslttransformation.xml	mackaii_density_survey_xslttransformation.xml
Broom_Limaria_survey.dbf	minor_mackaii_beds.dbf
Broom_Limaria_survey.prj	minor_mackaii_beds.prj
Broom_Limaria_survey.sbn	minor_mackaii_beds.sbn
Broom_Limaria_survey.sbx	minor_mackaii_beds.sbx
Broom_Limaria_survey.shp.xml	minor_mackaii_beds.shp.xml
Broom_Limaria_survey.shx	minor_mackaii_beds.shx
Broom_Limaria_survey_xslttransformation.xml	minor_mackaii_beds_xslttransformation.xml
coast25.DBF	MSS_Gairloch_photos.dbf
coast25.prj	MSS_Gairloch_photos.prj
coast25.sbn	MSS_Gairloch_photos.sbn
coast25.sbx	MSS_Gairloch_photos.sbx
coast25.shp.xml	MSS_Gairloch_photos.shp.xml
coast25.shx	MSS_Gairloch_photos.shx
feature_polygons.dbf	MSS_Gairloch_photos_xslttranformation.xml
feature_polygons.prj	Multigrab_sites.dbf
feature_polygons.sbn	Multigrab_sites.prj
feature_polygons.sbx	Multigrab_sites.sbn
feature_polygons.shp.xml	Multigrab_sites.sbx
feature_polygons.shx	Multigrab_sites.shp.xml
feature_polygons_xslttransformation.xml	Multigrab_sites.shx
Gairloch_Zostera_density.dbf	Multigrab_sites_xslttransformation.xml
Gairloch_Zostera_density.prj	Mytilus_density.dbf
Gairloch_Zostera_density.sbn	Mytilus_density.prj
Gairloch_Zostera_density.sbx	Mytilus_density.sbn
Gairloch_Zostera_density.shp.xml	Mytilus_density.sbx
Gairloch_Zostera_density.shx	Mytilus_density.shp.xml
Gairloch_Zostera_density_xslttransformation.xml	Mytilus_density.shx
Grab_sites.dbf	Mytilus_density_xslttransformation.xml
Grab_sites.prj	Photo_log.dbf
Grab_sites.sbn	Photo_log.prj
Grab_sites.sbx	Photo_log.sbn
Grab_sites.shp.xml	Photo_log.sbx
Grab_sites.shx	Photo_log.shp.xml
Grab_sites_xslttransformation.xml	Photo_log.shx
Gruinard_Zostera_density.dbf	Photo_log_xslttransformation.xml
Gruinard_Zostera_density.prj	
Gruinard_Zostera_density.sbn	
Gruinard_Zostera_density.sbx	
Gruinard_Zostera_density.shp.xml	
Gruinard_Zostera_density.shx	
Gruinard_Zostera_density_xslttransformation.xml	

Table 17.2 continued

Poolewe_maerl_survey.dbf	transect&recce_sites.dbf
Poolewe_maerl_survey.prj	transect&recce_sites.prj
Poolewe_maerl_survey.sbn	transect&recce_sites.sbn
Poolewe_maerl_survey.sbx	transect&recce_sites.sbx
Poolewe_maerl_survey.shp.xml	transect&recce_sites.shp.xml
Poolewe_maerl_survey.shx	transect&recce_sites.shx
Poolewe_maerl_survey_xslttransformation.xml	transect&recce_sites_xslttransformation.xml
schema.ini	Ullapool_2010.mxd.xml
scratch	Ullapool_2010_xslttransformation.xml
Photo_log.dbf	video_lines.dbf
Photo_log.prj	video_lines.prj
Photo_log.sbn	video_lines.sbn
Photo_log.sbx	video_lines.sbx
Photo_log.shp.xml	video_lines.shp.xml
Photo_log.shx	video_lines.shx
Photo_log_xslttransformation.xml	video_lines_xslttransformation.xml
Thurnaig_oyster_survey.dbf	Video_sites.dbf
Thurnaig_oyster_survey.prj	Video_sites.prj
Thurnaig_oyster_survey.sbn	Video_sites.sbn
Thurnaig_oyster_survey.sbx	Video_sites.sbx
Thurnaig_oyster_survey.shp.xml	Video_sites.shp.xml
Thurnaig_oyster_survey.shx	Video_sites.shx
Thurnaig_oyster_survey_xslttransformation.xml	Video_sites_biotopes.lyr.xml
transect&recce_lines.dbf	Video_sites_xslttransformation.xml
transect&recce_lines.prj	
transect&recce_lines.sbn	
transect&recce_lines.sbx	
transect&recce_lines.shp.xml	
transect&recce_lines.shx	
transect&recce_lines_xslttransformation.xml	

Table 17.3 Fields for shape files with data attributes. Field type shows the code for data type (S=string, N=numeric, D=date), field length and number of decimal places

File name and field	Content	Type
Badluarach_maerl_survey.shp		
Site	Site code	S254
Date_	Date	D8
LatWGS84	WGS84 Latitude	N19.11
LongWGS84	WGS84 Longitude	N19.11
easting	BNG easting	N10
northing	BNG northing	N10
Depth_BSL	Depth below sea level (m)	N19.11
Rise	Tidal rise (m)	N19.11
Depth_CD	Depth below chart datum (m)	N19.11
Live_maerl	Live maerl cover (%)	S254
Dead_maerl	Dead maerl cover (%)	N10
Maerl_thic	Live maerl thickness (cm)	S254
Nest_cover	*Limaria* nest cover (%)	N10
Nest_thick	*Limaria* nest thickness (cm)	N10
Limaria_se	*Limaria* observed? (Y/N)	S254
Isolated_n	Isolated *Limaria* nests observed? (Y/N)	S254
Sediment	Sediment type	S254
Kelp_cover	Kelp cover (%)	S254
Main_kelp	Main kelp species (Sacc = *Saccharina latissima*)	S254
Algal_turf	Algal turf cover (%)	N10
Surveyor	Surveyor initials	S254
Comments	Comments	S254
Biotope	Biotope code	S254
PMF	PMF code	S254
Time	Time (BST)	S7
feature_polygons.shp		
Id	Feature category ID	N6
Location	Location	S30
Area	Area of polygon (m2)	N11.5
Feature	Feature type	S30
Gairloch_Zostera_density.shp		
SITE	Site code	S10
RUN	Video run no.	N4
TIME_GMT	Time (GMT)	S10
DENSITY	Shoot density (modified SACFOR scale)	S7
DEPTH_CD	Depth below chart datum (m)	S11
COMMENTS	Field comments	S60
LATWGS84	WGS84 latitude	N16.5
LONGWGS84	WGS84 longitude	N16.5
EASTING	BNG easting	N7
NORTHING	BNG northing	N8

Table 17.3 continued

File name and field	Content	Type
Grab_sites.shp		
SITE	Site code	S5
EASTING	BNG easting	N9
NORTHING	BNG northing	N10
LATWGS84	WGS84 latitude	N11.5
LONGWGS84	WGS84 longitude	N12.5
TIME	Time (BST)	S5
DATE_	Date	S10
DEPTH_BSL	Depth below sea level (m)	N11.1
DEPTH_CD	Depth below chart datum (m)	N10.1
SUBSTRATE	Substrate	S34
AREA	Sample area (m^2)	S13
VIDEO_SITE	Corresponding video sample site	S11
BIOTOPE	Biotope code	S26
LOCATION	Location	S10
PMF1	PMF (first)	S6
PMF2	PMF (second)	S6
PMF3	PMF (third)	S6
Gruinard_Zostera_density.shp		
WPT	GPS waypoint number	S7
SITE	Site code	S7
DEPTH_BSL	Depth below sea level (m)	N10.1
DEPTH_CD	Depth below chart datum (m)	N9.1
TIME_BST	Time (BST)	S9
COVER__	*Zostera* cover (%)	S10
SHOOT_DENS	Shoot density (modified SACFOR scale)	S13
SUBSTRATE	Substrate	S30
COMMENTS	Field comments	S90
METHOD	diver or glass bucket (GBB) survey method	S18
LATWGS84	WGS84 Latitude	N10.5
LONGWGS84	WGS84 Longitude	N11.5
EASTING	BNG easting	N7
NORTHING	BNG northing	N8
mackaii_density_survey.shp		
Bed	Code for mackaii bed	S254
Site	Code for density survey site	S254
Cover_perc	*Mackaii* cover (%)	N10
Thickness	*Mackaii* thickness (cm)	N10
Substrate	Substrate	S254
Latitude	WGS84 Latitude	N19.11
Longitude	WGS84 Longitude	N19.11
Easting	BNG easting	N10
Northing	BNG northing	N10
Location	Location	S254
Photos	Photo nos.	S254

Table 17.3 continued

File name and field	Content	Type
minor_mackaii_beds.shp		
Location	Location	S254
Bed	Code for *mackaii* bed	S254
Substrate	Substrate	S254
Size_m	Estimated bed size (m)	S254
Cover_Per	*Mackaii* cover (%)	N10
Thickness	*Mackaii* thickness (cm)	N10
Latitude	WGS84 Latitude	N19.11
Longitude	WGS84 Longitude	N19.11
easting	BNG easting	N10
northing	BNG northing	N10
Photo	Photo nos.	S254
MSS_Gairloch_photos.shp		
ID	Photo no.	N10
Box	Survey area no.	N10
Lat	WGS84 Latitude	N19.11
Long	WGS84 Longitude	N19.11
Easting	BNG easting	N10
Northing	BNG northing	N10
Date_	Date	D8
Biotope1	First biotope	S254
Biotope2	Second biotope	S254
Biotope3	Third biotope	S254
Uncertain	Uncertain biotope assignation (Y)	S254
PMF1	First PMF	S254
PMF2	Second PMF	S254
Notes	Comments	S254
Substrate	Substrate description	S254
Biota1	Biota description (first 254 characters)	S254
Biota2	Biota description (next 254 characters)	S254
Time	Time (hh:mm:ss GMT)	S10
Multigrab_sites.shp		
SITE	Site code	S4
EASTING	BNG easting	N7
NORTHING	BNG northing	N7
LATWGS84	WGS84 Latitude	N15.5
LONGWGS84	WGS84 Longitude	N16.5
TIME	Time (BST)	S5
DATE_	Date	S10
DEPTH_BSL	Depth below sea level (m)	S12
DEPTH_CD	Depth below chart datum (m)	S12
SUBSTRATE	Substrate description	S42
NO_LIVE	No. live *Arctica* recorded	S7
NO_SHELLS	No. empty shell valves	N9
NO_GRABS	No. grabs taken at site	N9
LOCATION	Location	S15
PMF	Priority Marine Feature (AI = *Arctica islandica*)	S5

Table 17.3 continued

File name and field	Content	Type
Mytilus_density.shp		
SITE	Site code	S8
LATWGS84	WGS84 Latitude	N10.5
LONGWGS84	WGS84 Longitude	N11.5
EASTING	BNG easting	N7
NORTHING	BNG northing	N8
SUBSTRATE	Substrate description	S20
COVER_PERC	*Mytilus* cover (%)	S11
NO_PER_SQM	*Mytilus* density (no./m2)	S11
SACFOR	*Mytilus* density (SACFOR)	S10
FUC_COVER	Total fucoid cover (%)	N10
FVES_COVER	*Fucus vesiculosus* cover (%)	N11
FSER_COVER	*Fucus serratus* cover (%)	N11
PHOTO	Photo nos.	S8
NOTES	Comments	S77
Photo_log.shp		
Image	Image identifier (filename)	S254
Latitude	WGS84 Latitude	N19.11
Longitude	WGS84 Longitude	N19.11
Easting	BNG easting	N10
Northing	BNG northing	N10
OS_Grid	OS alphanumeric grid reference	S254
Date_	Date	D8
Site	Site code	S254
Descrip	Description of photo subject	S254
Photogr_er	Photographer	S254
Poolewe_maerl_survey.shp		
SITE	Site code	S4
LATWGS84	WGS84 Latitude	N10.5
LONGWGS84	WGS84 Longitude	N11.5
EASTING	BNG easting	N7
NORTHING	BNG northing	N8
DATE_	Date	S10
TIME_IN	Time diver in (BST)	N7
DEPTH_BSL	Depth below sea level (m)	N10.1
RISE	Tidal rise (m)	N4.1
DEPTH_CD	Depth below chart datum (m)	N9.1
LIVE_MAERL	Live maerl cover (%)	S17
THICKNESS	Thickness live maerl (cm)	S18
DEAD_MAERL	Dead maerl cover (%)	N18
SEDIMENT	Substrate description	S62
NEST_COVER	*Limaria* nest cover (%)	N17
LIMARIA	*Limaria* seen (Y/N)	S12
NESTS	Isolated *Limaria* nests seen (Y/N)	S13
ALG_COVER	Algal cover (%)	N13
MAT	Algal mat present (Y/N)	S15

Table 17.3 continued

File name and field	Content	Type
KELP_COVER	Kelp cover (%)	S17
KELP_SP	Main kelp species (Sacc = *Saccharina latissima*)	S27
BIOTOPE	Biotope	S24
PMF	PMF	S5
COMMENTS	Comments	S211
SURVEYOR	Surveyor initials	S8
Thurnaig_oyster_survey.shp		
Site	Site code	S254
Latitude	WGS84 Latitude	N19.11
Longitude	WGS84 Longitude	N19.11
Easting	BNG easting	N10
Northing	BNG northing	N10
SACFOR	*Ostrea edulis* abundance (SACFOR)	S254
Survey	Survey type (dive/shore)	S254
Surveyor	Surveyor initials	S254
Date_	Date	D8
Comment	Comments	S254
Photo	Photo nos.	S254
transect&recce_lines.shp		
SITE	Site ID	S6
LOCATION	Location	S35
LATSTART	WGS84 Latitude at start	N8.5
LONGSTART	WGS84 Longitude at start	N9.5
LATEND	WGS84 Latitude at end	N8.5
LONGEND	WGS84 Longitude at end	N9.5
EASTSTART	BNG easting at start	N8
NORTHSTART	BNG northing at start	N9
EASTEND	BNG easting at end	N8
NORTHEND	BNG northing at end	N9
SURVEY		S15
transect&recce_sites.shp		
SITE	Site ID	S6
LOCATION	Location	S35
TARGET_PMF	PMF targeted by survey	S12
PMF	PMF recorded by survey	S5
BIOTOPE1	First biotope	S25
BIOTOPE2	Second biotope	S25
LATSTART	WGS84 Latitude at start (99.99999=null)	N8.5
LONGSTART	WGS84 Longitude at start (-9.99999=null)	N9.5
LATEND	WGS84 Latitude at end (99.99999=null)	N8.5
LONGEND	WGS84 Longitude at end (-9.99999=null)	N9.5
LATMID	WGS84 Latitude at midpoint	N8.5
LONGMID	WGS84 Longitude at midpoint	N9.5
EASTSTART	BNG easting at start (999999=null)	N8
NORTHSTART	BNG northing at start (999999=null)	N9
EASTEND	BNG easting at end (999999=null)	N8

Table 17.3 continued

File name and field	Content	Type
NORTHEND	BNG northing at end (999999=null)	N9
EASTMID	BNG easting at midpoint	N8
NORTHMID	BNG northing at midpoint	N9
SURVEY	survey type	S15
DEPTH_STRT	Depth below chart datum (m) at start	S12
DEPTH_END	Depth below chart datum (m) at end	S12
BEARING_M	Transect/recce dive bearing from start	S12
DATE_	Date	D8
SURVEYORS	Surveyor initials	S12
video_lines.shp		
SITE	Site code	S254
EAST_IN	BNG easting at start of video run	N14
NORTH_IN	BNG northing at start of video run	N14
EAST_OUT	BNG easting at end of video run	N14
NORTH_OUT	BNG northing at end of video run	N14
Video_sites.shp		
Site	Site code	S254
Date_	Date	D8
Depth_in_C	Depth below chart datum (m) at start of video run	N19.11
Depth_out_	Depth below chart datum (m) at end of video run	N19.11
Lat_in	WGS84 Latitude at start	N19.11
Long_in	WGS84 Longitude at start	N19.11
East_in	BNG easting at start	N10
North_in	BNG northing at start	N10
Lat_out	WGS84 Latitude at end	N19.11
Long_out	WGS84 Longitude at end	N19.11
East_out	BNG easting at end	N10
North_out	BNG northing at end	N10
Easting_mi	BNG easting at midpoint	N10
Northing_m	BNG northing at midpoint	N10
Substrate	Substrate description	S254
Biota1	Biota description (first 254 characters)	S254
Biota2	Biota description (next 254 characters)	S254
Biotope1	First biotope	S254
Biotope2	Second biotope	S254
Biotope3	Third biotope	S254
Uncertain	Uncertain biotope assignation (Y)	S254
Comments	Comments (mainly on biotope assignation)	S254
PMF1	First PMF	S254
PMF2	Second PMF	S254
PMF3	Third PMF	S254

Directory: Figures

Fig1.jpg – Fig32.jpg + FigApp3.jpg - all report figures in jpeg format
Figures_CorelDraw.cdr - report figures in original Corel Draw format

Directory: Spreadsheets

The following Excel spreadsheet files contain information used in the GIS and other data acquired during the project or collected from historical records.

Spreadsheet file	Content
Historical_data.xls	Historical survey data from Marine Recorder and the Briggs (2004) survey of Loch Broom
Infauna.xls	Data from the infaunal survey, including species abundances, community parameters (total abundance, diversity, biotopes, PMFs), raw PSA data (weights on sieves) and PSA summary descriptors
Limaria&maerl_surveys.xls	Data from the dive surveys of the maerl beds at Badluarach and Poolewe and the *Limaria* bed at Sruth Lagaidh
Mackaii_beds.xls	Density and other data from main *mackaii* beds in Loch Thùrnaig and Badachro and minor beds in Loch Thùrnaig. Trackpoint locations are provided for the boundaries of the major beds in Loch Thùrnaig and Badachro
MNCR_data.xls	SACFOR abundance data for all MNCR surveys
MSS_Gairloch_survey.xls	Results from the MSS photo survey of Loch Gairloch in March 2010
Mytilus.xls	Data from surveys of *Mytilus* density and delineation of distribution boundary
Ostrea.xls	*Ostrea edulis* data from shore search in Old Dornie Harbour and shore and dive survey sites in Loch Thùrnaig
Photo_data.xls	Photo image data in accordance with MEDIN specifications
Photolog.xls	Photo log, as specified in the Statement of Requirements for the contract. Note that for the hyperlinks to photos to operate, all photos must be in one directory and the spreadsheet file should be run from the same directory. The most current version of the file will be found in the Spreadsheets directory and this copy should be pasted to the photo directory.
Specimen_log.xls	List of biological specimens retained, with repository details.
Spreadsheets.xls	This table of contents
Video_data.xls	Video data in accordance with MEDIN specifications
Videolog.xls	Video log, as specified in the Statement of Requirements for the contract. Note that for the hyperlinks to mpeg4 videos to operate, all video files must be in one directory and the spreadsheet file should be run from the same directory. The most current version of the file will be found in the Spreadsheets directory and this copy should be pasted to the video directory.
Zostera.xls	*Zostera marina* shoot density estimates derived during surveys of beds in Loch Gairloch and Gruinard bay

Appendix 18 Survey log

Outline of daily activities during the field survey of the Ullapool Approaches (19th July - 21st August 2010)

Org.	Personnel	Code
HWU	Colin Moore	CM
HWU	Dan Harries	DH
HWU	Graham Saunders	GS
HWU	Alastair Lyndon	AL
HWU	Joanne Porter	JP
HWU	Alessandro Icardi	AI
HWU	Lewis Cowie	LC
SNH	Colin Trigg	CT
SNH	Suzanne Henderson	SH
SNH	Ben James	BJ
SNH	Emily Greenall	EG

Date	Day	Activity
19/07/2010	MON	1700 RV Serpula arrives Loch Shieldaig (Gairloch) with CM
20/07/2010	TUE	0900-1130 reconnaissance of *Ascophyllum nodosum mackaii* bed in Badachro Bay, Loch Gairloch (CM)
21/07/2010	WED	0845 - 1230 delineation and MNCR phase 2 survey of Badachro *mackaii* bed (CM). AI and LC arrive Loch Shieldaig 2200. Video team (CM, AI, LC) depart for B&B accommodation in Camusnagaul, Little Loch Broom
22/07/2010	THU	0830 depart Camusnagaul for Gairloch. Load Serpula and set up dropdown video and grab gear. Worked 4 video, 3 grab and one multigrab sites. Video site BM1 repeated as camera initially set to auto shutdown after 5 minutes. Returned to Shieldaig mooring at 1910.
23/07/2010	FRI	0730 depart Camusnagaul for Gairloch. Depart Shieldaig at 0838 for Gairloch Pier to fuel boat and then worked remaining 29 sites in Gairloch. Worked 2 extra sites to south of Loch Gairloch as maerl bed continued beyond area of search. Also worked 2 extra sites on northern coast as *Zostera* continued beyond predicted area. Returned Shieldaig at 1820 and Camusnagaul at 2045.
24/07/2010	SAT	0800 depart Camusnagaul for Gairloch. Picked up cans of diesel for Serpula from Gairloch harbour master, departing Shieldaig mooring at 10.17. Worked outer sites between Loch Gairloch and Loch Ewe. One grab site not completed due to big seas off Rubha Reidh. Arrived Aultbea Pier, Loch Ewe 16.10, sieved grab samples and taxi back to Shieldaig to collect van. Returned Camusnagaul 2030. Moved from B&B to self-catering accommodation in Camusnagaul.
25/07/2010	SUN	0720 depart Camusnagaul for Aultbea, departing Aultbea mooring at 0820 on Serpula for survey of inner Loch Ewe: 19 video sites, 4 grabs and 4 multigrabs. Worked extra video sites at north and south end of Poolewe maerl bed as bed far more extensive than previous records suggest. One of the video lights flooded and the lighting fuse blew. Continued with battery-powered light until discharged, then switched to grabbing. Returned to Aultbea at 1800 and Camusnagaul at 2030 to pickle samples.

Appendix 18 continued

Date	Day	Activity
26/07/2010	MON	0725 depart Camusnagaul for Aultbea. Obtained new fuses from Aultbea but farther investigation revealed a short in the lamp connector. Eventually departed Aultbea for survey at 10.26: 21 video sites (using battery-powered light), 3 grab and 3 multigrab sites. Worked 4 video sites in Firemore Bay following report from Mellon Charles marine lab of *Zostera* bed in north of Bay.1740 returned Aultbea, 2025 returned Camusnagaul. Pickled samples and worked on flooded lamp connector.
27/07/2010	TUE	0735 depart Camusnagaul for Aultbea. Following work on video light system departed Aultbea for survey of north-east Loch Ewe (Isle of Ewe channel) at 10.04. Worked 9 video sites and then sailed for Camusnagaul, arriving 1515. Transferred video system to MV Rebecca Ann, returning accommodation at 1700.
28/07/2010	WED	0800 depart Camusnagaul in Rebecca Ann for survey of Loch Broom approaches (22 video sites). Battery-powered light ran out early in day, so cut pin on shorting connector which allowed one of the main video lights to operate - this gave satisfactory illumination. Rebecca Ann developed reliability problems with echo sounder readings greater than 69 m. 1815 returned Camusnagaul.
29/07/2010	THU	0800 video team joined for day on Rebecca Ann by SNH party of 4 (CT + 3). Video survey of Summer Isles (36 sites), returning Camusnagaul 1800.
30/07/2010	FRI	0830 depart Camusnagaul on Rebecca Ann for survey of outermost sites. 11 video sites and 2 minigrabs at one site in outer area and 5 video sites in lower Little Loch Broom. Returned Camusnagaul 1730. Rebecca Anne echo sounder satisfactory on this day. Video zoom failed due to snapped LED control wire in housing.
31/07/2010	SAT	0800 depart Camusnagaul in Rebecca Ann for video survey of Gruinard Bay. 23 sites in Gruinard Bay completed and 6 in central Little Loch Broom. Camera caught on creel line at last site but undamaged. Returned Camusnagaul 1815.
01/08/2010	SUN	0800 transferred video equipment to Serpula. 0930 departed Camusnagaul in Serpula for video and grab survey of Little Loch Broom: 18 video, 5 grab and 3 multigrab sites. 1834 returned Camusnagaul, then sample pickling.
02/08/2010	MON	0819 depart Camusnagaul in Serpula for Ullapool, arriving Ullapool Pier 1035. Winch losing hydraulic fluid, so split winch hose replaced by engineer. 1218 depart Pier for grabbing and video survey of outer Loch Broom: 6 video, 1 grab and 3 multigrab sites. 1741 left Serpula on Ullapool mooring, returning Camusnagaul by road at 1935, after provisioning.
03/08/2010	TUE	0800 depart Camusnagaul in van for Ullapool. 0925 depart Ullapool mooring in Serpula for survey of Loch Broom narrows and upper basin. Did 17 video sites, 3 grabs and 6 multigrabs. Returned Ullapool mooring 1740 and Camusnagaul 1915.
04/08/2010	WED	0800 depart Camusnagaul in van for Ullapool. 0921 depart Ullapool mooring in Serpula for survey of Loch Broom narrows area and lower basin. Did 7 video sites, 2 grabs and 3 multigrabs. 1255 alongside Ullapool Pier for diesel. 1355 CM and LC depart Pier for Camusnagaul, carrying out 1 multigrab en route. 1721 arrived Camusnagaul. AI drove van back from Ullapool to Camusnagaul.

Appendix 18 continued

Date	Day	Activity
05/08/2010	THU	0800 depart for Serpula. 0832 depart Camusnagaul in Serpula for Gruinard Bay. Worked one video site off mouth of Little Loch Broom and 2 grabs in Gruinard Bay. Assessed area around SE of Gruinard Island for potential *Zostera* beds but fishfinder indicated dense kelp. Attempted to determine presence of *Limaria* at Badluarach site in Little Loch Broom by 4 deployments of mini grab between sites FS5 and FS7, where dense maerl apparently bound together, according to video footage. Live maerl in all grabs but no *Limaria*, nor nest material, observed. Following local report of a *Modiolus* bed at the head of Little Loch Broom, 2 video runs carried out but no *Modiolus* seen. Returned Camusnagaul 1355. Offloaded video and most of grabbing gear from Serpula,
06/08/2010	FRI	0730 departed Camusnagaul in van for Badachro, Loch Gairloch. Surveyed *mackaii* at 15 sites along bed. Returned Camusnagaul 1300. PM: cleaned accommodation for change of base on following day and carried out computer and paperwork.
07/08/2010	SAT	0850 AI and LC depart for Edinburgh. CM moved to new self-catering accommodation at Durnamuck, Little Loch Broom and spent day planning for diving survey work. 1130 CT and SH arrive from Ullapool. 2300 DH, AL, and GS arrive Durnamuck from Edinburgh.
08/08/2010	SUN	0815 sort equipment for start of diving survey and transport to Serpula. 1120 depart Camusnagaul mooring for survey of Badluarach maerl bed (ML01) in Little Loch Broom. Carried out surveys of % live maerl etc. at stations along 3 transects. Personnel: CM, DH, AL, GS, CT, SH. 1757 returned Camusnagaul. Evening: transcription of survey data and planning of future survey work.
09/08/2010	MON	0830 dive team met at Camusnagaul for loading Serpula, departing 0915 for Badluarach maerl bed. Carried out MNCR phase 2 with CT site selection and line laying, DH fauna, CM algae, AL fish and other fauna, GS stills, SH video, CT 4 faunal cores and 1 PSA core. Also 2 spot dives (DH, AL) to complete survey of maerl bed extent. 1733 Serpula returned Camusnagaul and then offloaded gear. Evening: sieving and preserving core samples.
10/08/2010	TUE	1100 depart Camusnagaul for shore work. SNH (CT, SH) searched Loch Thurnaig for *mackaii* beds, delineating and carrying out phase 2 survey of westernmost bed. Also searched for *Ostrea*, finding small population at western end. DH searched Old Dornay Harbour for *Ostrea* and CM, AL and GS surveyed mussel bed at mouth of Ullapool River. Delineated boundary, recorded density at a number of stations and carried out phase 2 survey. Returned Durnamuck 1730.
11/08/2010	WED	0754 CM and DH departed Camusnagaul mooring in Serpula for Ullapool, where AL, CT, SH and GS were picked up. Survey of *Limaria* bed in Loch Broom narrows (LH01). Recorded *Limaria* and *Modiolus* density at 9 sites. Returned Ullapool mooring at 1906 and Durnamuck at 2030.

Appendix 18 continued

Date	Day	Activity
12/08/2010	THU	0745 team met at Camusnagaul to load cylinders, departing in vans for Ullapool. 0905 depart Ullapool mooring in Serpula for *Limaria* bed in Loch Broom narrows. Phase 2 survey of bed: DH (fauna), CM (algae), GS (stills), SH (video), CT (site choice, line laying and collection of 3 x 0.1m^2 quadrats of nest material). Also spot dives for *Limaria* density at 6 sites. Van Veen grabs at 9 sites, mini Van Veen at one site. Returned Ullapool 1830, unloaded diving gear, returning Durnamuck in vans 2030. JP arrived in evening.
13/08/2010	FRI	AL departed for Edinburgh. 0810 depart Durnamuck for Camusnagaul. Loaded Rebecca Ann for Summer Isles maerl site survey (ML02). CT laid line, DH fauna, CM algae, GS stills, SH video, JP coring. Reccied 2 sites north and south of Carn Skerries for validation of *Limaria* bed records (CT site MB52, CM site FS8) - no *Limaria* found. Returned Camusnagaul 1715. Unloaded gear and sieved samples, returning Durnamuck 1900. SH departed for Inverness.
14/08/2010	SAT	"Day off". 1000 JP and CM depart Durnamuck for Ullapool in van. JP gets provisions, CM departs Ullapool mooring at 1112 in Serpula, arriving Camusnagaul 1342. PM: paperwork, specimen identification and survey planning.
15/08/2010	SUN	0800 team meet at Camusnagaul, load Serpula and launch the RIB, Aphrodite. 0930 Serpula departs for Gruinard Bay, followed by Aphrodite, with JP taking van to Aultbea and DH picking her up in second van and continuing to Gruinard Bay, where both picked up in RIB. Surveyed Gruinard Bay for *Zostera* distribution and carried out phase 2 survey on *Zostera* bed at site ZM01. Both vessels then sailed for Aultbea, Loch Ewe, where crews picked up by DH at 2050. Returned Durnamuck 2200.
16/08/2010	MON	0800 BJ arrives from Inverness and CT departs. 0810 depart Durnamuck for Aultbea. 0940 depart Aultbea mooring in Serpula for survey of Poolewe maerl bed (ML03). Spot dives at 10 sites. 1645 returned Aultbea. 1800 returned Durnamuck.
17/08/2010	TUE	0800 depart Durnamuck for Aultbea. 0930 depart Aultbea mooring in Serpula and Aphrodite for work in Loch Ewe. Phase 2 survey at site ML03: DH line laying and fauna, CM algae, GS stills, JP video, DH coring. *Zostera* search of Firemore Bay from Aphrodite (BJ, CT) and of oysters in Loch Thurnaig. 1718 vessels return Aultbea mooring. 1900 team return Durnamuck.
18/08/2010	WED	0800 depart Durnamuck for Aultbea. 0926 depart Aultbea mooring in Serpula and Aphrodite for Loch Thurnaig oyster dive survey. CT and BJ zigzagged around bay for *Ostrea* presence. Phase 2 survey at densest *Ostrea* location (OE01). DH fauna, CM algae, GS stills, JP video. 1514 Serpula departs for Loch Gairloch (CM, JP), arriving Loch Shieldaig mooring 1845. Meanwhile validation dive by CT for *Modiolus* bed from Aphrodite in Isle of Ewe Sound. CT and BJ then sailed Aphrodite to Shieldaig, whilst DH drove van to Shieldaig.
19/08/2010	THU	0800 depart Durnamuck for Gairloch, departing Loch Shieldaig mooring in Serpula and Aphrodite at 0940. Fuelled Serpula at Gairloch Harbour, then carried out *Zostera* distribution survey in NE Loch Gairloch from Aphrodite and Serpula. 2000 returned Shieldaig mooring, returning Durnamuck at 2200, following transport of tender outboard to engineer in Poolewe for repairs. Evening: EG arrived.

Appendix 18 continued

Date	Day	Activity
20/08/2010	FRI	0800 depart Durnamuck for Loch Gairloch. 1045 depart Shieldaig mooring in Serpula and Aphrodite for survey of maerl bed ML04 on south side of loch. DH line laying and fauna, CM algae, GS stills, JP video. Wind suddenly increased and conditions, combined with forecast, resulted in diving being abandoned. 1415 returned Shieldaig mooring. Meanwhile CT and EG surveyed largest easternmost Loch Thurnaig *mackaii* bed. Slipped Aphrodite at high water (1700) on Gairloch slipway. Collected outboard frtom Poolewe, returning Durnamuck at 1940.
21/08/2010	SAT	0800 packing equipment and cleaning accommodation, departing self-catering at 1030. SNH and HW team met at Camusnagaul for final packing of vehicles and trailer and collation of data. 1230 JP departs for Edinburgh, DH, GS and CM travel to Loch Shieldaig mooring, dropping CM at Serpula at 1400. DH and GS depart for Edinburgh in van.
22/08/2010	SUN	0545 Serpula sails (with CM) for Loch Creran

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