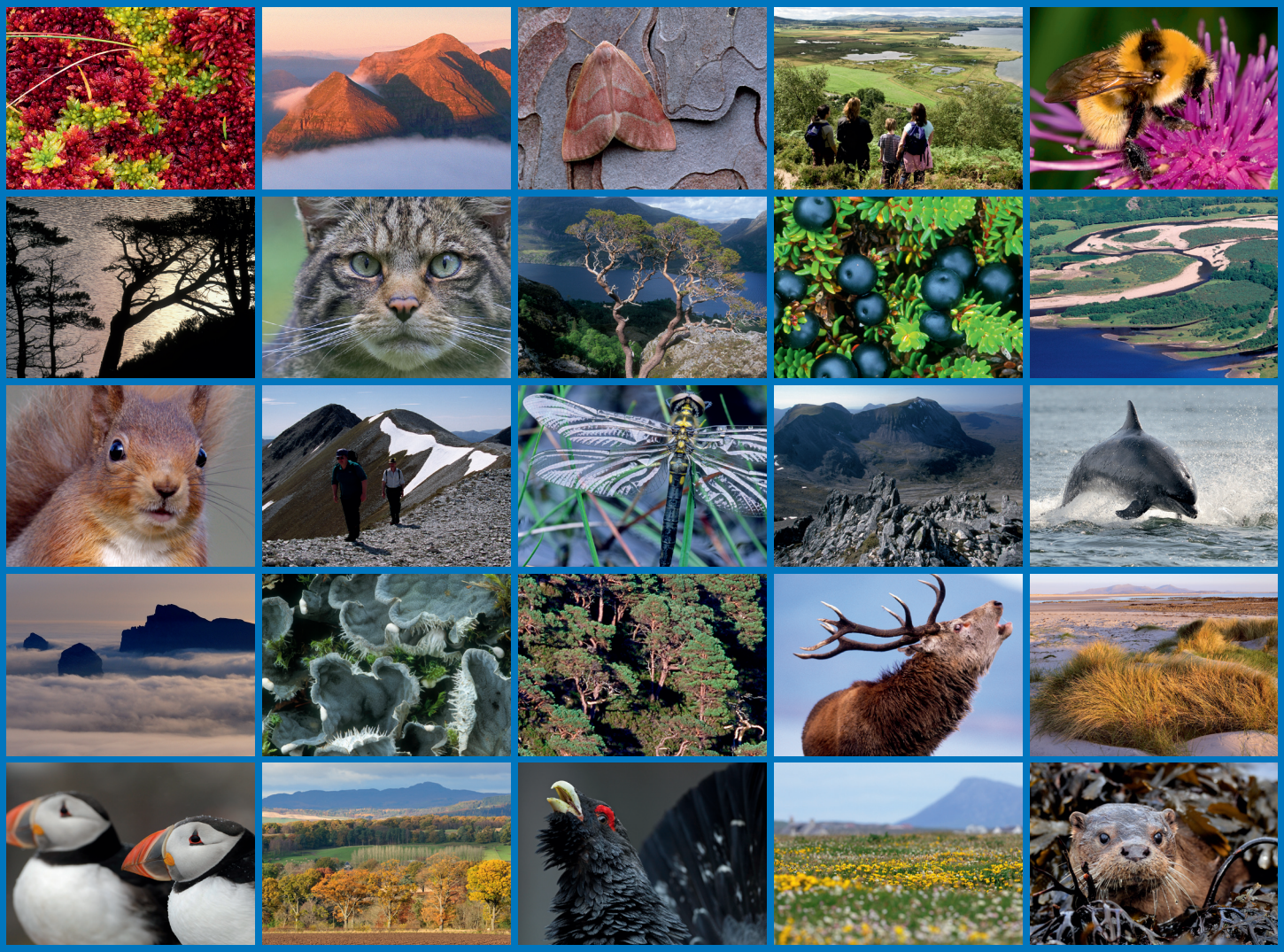
Scottish Natural Heritage
Commissioned Report No. 378

The establishment of site condition monitoring of the marine features of Loch Laxford Special Area of Conservation



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COMMISSIONED REPORT

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The establishment of site condition monitoring of the marine features of Loch Laxford Special Area of Conservation

(ROAME No. F05AC701)

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This report should be quoted as:

Moore, C. G., Harries, D. B., Porter, J. S. and Lyndon, A. R. (2010). The establishment of site condition monitoring of the marine features of Loch Laxford Special Area of Conservation. *Scottish Natural Heritage Commissioned Report No. 378 (ROAME No. F05AC701).*

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COMMISSIONED REPORT

Summary

The establishment of site condition monitoring of the marine features of Loch Laxford Special Area of Conservation

Commissioned Report No. 378 (ROAME No. F05AC701)
Contractor: Heriot-Watt University
Year of publication: 2010

Background

Loch Laxford is located just south of Cape Wrath at the north-western tip of Scotland. The loch system, comprising the main loch together with its two arms, Loch Dùghaill and Loch a' Chad-Fi, was established as a Special Area of Conservation (SAC) in 2005, being judged to be one of the best examples in the UK of a 'large shallow inlet and bay' and for the possession of extensive reef habitats.

Scottish Natural Heritage (SNH) in association with the other country agencies have established a series of common standards for the monitoring of sites of nature conservation interest. The purpose of this monitoring is essentially to determine whether the desired condition of the features of interest for which the site was designated is being achieved, enabling judgements to be made about whether the management of the site is appropriate, or whether changes may be necessary. The purpose of the current study was to initiate site condition monitoring of the littoral and sublittoral reefs and inlet and bay features within the SAC. This was done to establish a baseline biological data set that would facilitate the assessment of the condition of the habitats in the future and to allow a judgement to be formed on the current condition of these habitats. The main approach taken to achieve these objectives was to perform a video survey of the sublittoral reef and sediment biotopes (different habitats with their recurring characteristic species communities) at 135 sites, together with infaunal grab sampling of sediments at 30 sites, and to survey the shore and nearshore reef and sediment biotopes along relocatable transects at eleven sites. Surveys were also performed along transects at three maerl sites and the distribution of the unattached form of the knotted wrack, *Ascophyllum nodosum* ecad *mackayi*, and beds of the mussel, *Mytilus edulis*, were examined at the head of Loch Laxford.

Main findings

- The video survey found sedimentary habitats to dominate the sublittoral area of the SAC, with reef habitats largely confined to a narrow coastal fringe, apart from a tongue of bedrock and boulder reefs extending from the tip of the Ardmore peninsular. Of the 135 sites examined, 41 (30%) contained reef habitats.

- The SAC was found to contain a high diversity of biotopes, with 88 being recorded, of which 53 were reef biotopes.

- Grazed *Laminaria hyperborea* biotopes dominated infralittoral rock in the outer part of the SAC, with forests extending to at least 8 m and parks to at least 17 m. Circalittoral bedrock and boulder substrates were recorded down to 49 m, generally supporting species-poor faunal and algal crust communities. In more sheltered areas of the SAC kelp forests became dominated by *Saccharina latissima* or cape-form *L. hyperborea*, below which circalittoral rock supported ascidian dominated communities.

- Sediments in the outer, more exposed part of the SAC were mostly coarse gravelly sands supporting communities dominated by the polychaete, *Mediomastus fragilis*, and venerid bivalve molluscs. With increasing shelter these sediments became replaced by muddy sands and muds characterised by megafaunal mounds and burrows and seapens, including *Funiculina quadrangularis*. In very sheltered, shallow (<16 m) embayments and channels this habitat was replaced by muddy sands or muds supporting dense populations of the sea slug, *Philine aperta*. Extensive areas of muddy sand in the inner part of the SAC were coated in algal mats or turfs.

- Beds of the maerl species, *Phymatolithon calcareum*, were recorded at three sites in the SAC. Infaunal abundance and diversities were amongst the highest recorded in the SAC, with the shallowest site also supporting a very high epibiotic diversity.

- The eelgrass, *Zostera marina*, was not found within the SAC, despite surveys at three sites where previous information suggested it may be present.

- *Ascophyllum nodosum* ecad *mackayi* was recorded at six sites at the head of Loch Laxford and discrete beds mapped at three of these sites. *Mytilus edulis* beds were recorded at three sites at the head of the loch, with mapping undertaken at the two major sites.

- Comparison with the results of previous surveys of the SAC revealed no temporal change in reef extent, or in biotope composition or distribution of the inlet and bay or the reef features of the SAC that cannot be explained by methodological differences or natural drivers.

- Little evidence of significant adverse anthropogenic impact on the interest features of the SAC was revealed. The presence of a mussel farm at one of the maerl sites was causing localised modification of the habitat through the deposition of dead shells. This is likely to be modifying the community composition and may be influencing the distribution of the biotope. The introduced Pacific red alga, *Heterosiphonia japonica*, was recorded predominantly in the vicinity of a salmon farm site, with the related shipping activity being a possible vector. However, there is no evidence to suggest that its presence is adversely affecting the ecology of the loch.

- Recommendations are given regarding the future monitoring of the inlet and bay and reef features of interest within the SAC.

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ACKNOWLEDGEMENTS

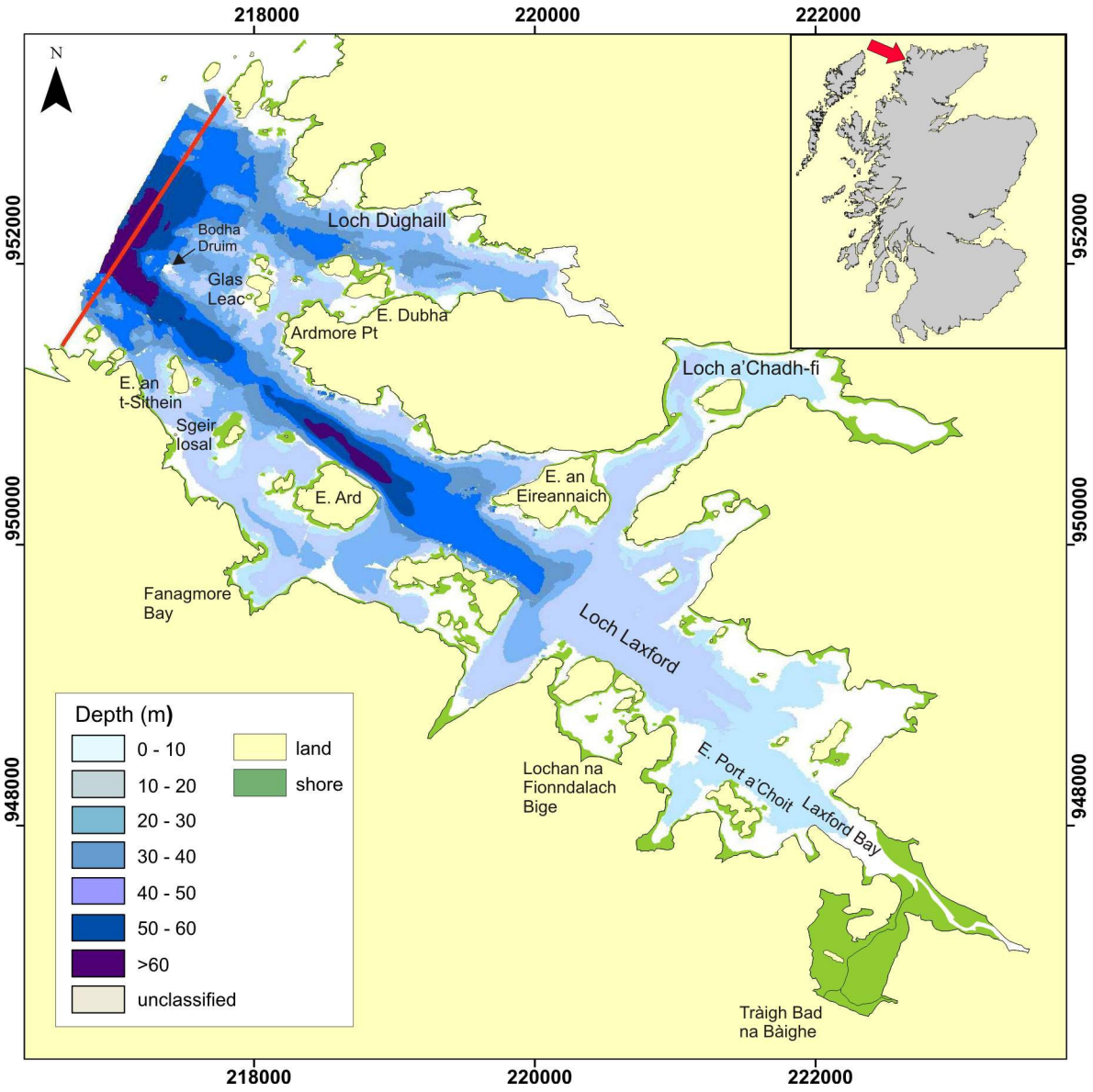
We would like to thank Dr Colin Trigg, Dr Graham Saunders and the following Heriot-Watt personnel for their contribution to the fieldwork: Dr Bev Wood, Lewis Cowie, Lionel Jouvet and Josie Kirk. We are also indebted to the SNH team of Laura Steel, Suzanne Henderson, Carol Hume, Jane Dodd and Laura Clark. Maia Strachan carried out the particle size analysis and Sue Hamilton (22 Bryce Crescent, Currie, Midlothian) the infaunal sorting and identification. Loch Duart Ltd. kindly provided mooring facilities in Fanagmore Bay.

1 INTRODUCTION

1.1 The Loch Laxford system

Loch Laxford is located 24 km to the south of Cape Wrath at the north-western tip of mainland Scotland (Figure 1). The SAC consists of the main loch, with its complex fjardic shape and numerous small islands, and two large subsidiary lochs, Lochs Dùghaill and a'Chadh-Fi, extending from its north shore.

Figure 1 *The location and extent of Loch Laxford SAC, with bathymetry from Bates* et al. *(2004). Red line marks seaward boundary of the SAC*



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The central channel of Loch Laxford is relatively straight, running along the line of a major geological fault, but the coastline is long and convoluted, incorporating several deeply incised embayments. Loch Laxford has a single sill southwest of Ardmore Point rising to around 40 m depth. Depths at the mouth of the loch reach 70 m, whilst east of the sill the seabed drops down to 68 m before rapidly shallowing to 20 m south of Eilean an Eireannaich, with shallow waters extending throughout the eastern half of Loch Laxford and

the whole of Loch a'Chad-Fi. In Loch Dùghaill a 30 m sill extends across the loch at its midpoint with depths attaining 35 m in the upper basin and 49 m in the lower basin.

The entrance to the loch system faces northwest into the North Minch, and the outermost part of the loch is therefore very exposed. However, the entrance is relatively narrow and the many reefs and islands near it combine to reduce wave action such that most of the loch is sheltered. Extremely sheltered conditions are found in Loch a'Chadh-Fi, in the small lagoon-like Lochan na Fionndalach Bige on the south coast, as well as in Laxford Bay at the head of the loch. Laxford Bay narrows to around 400 m, and from that point inwards is mostly intertidal. The River Laxford drains over the shore here and conditions are brackish. Tràigh Bad na Bàighe is an inlet that opens into the south side of Laxford Bay, connected to the main loch by a narrow channel with sills. There is an area of shallow tidal rapids linking Lochan na Fionndalach Bige to Loch Laxford. The rest of the coastline of Loch Laxford is predominantly steep and rocky with both bedrock and boulder shores dominated by fucoid algae, especially *Ascophyllum nodosum*.

The Loch Laxford system was designated as a Special Area of Conservation (SAC) in 2005 under the EC Habitats Directive (92/43/EEC), the entire site occupying 1221.33 hectares. All of the site apart from Loch Dùghaill was already a Marine Consultation Area. SAC designation was based on the possession of two Annex 1 interest features. The area was judged to be one of the best examples in the UK of a 'large shallow inlet and bay'. Although this Annex 1 feature incorporates reef habitats, in view of their extensive presence 'reefs' have been designated as a second qualifying feature in their own right.

1.2 Condition Monitoring of Loch Laxford SAC

Conservation objectives have been developed that together define the desired favourable condition of the qualifying habitats, 'large shallow inlets and bays' and 'reefs'. Site Condition Monitoring (SCM) is undertaken to determine whether this status is being maintained and to guide site management action where appropriate. The purpose of the current study was to initiate SCM of the interest features of the Loch Laxford SAC. This inaugural work was undertaken in such a way as to achieve the following objectives:

- to establish a baseline biological data set that will facilitate the assessment of the favourable condition status of the habitats in the future; and
- to allow Scottish Natural Heritage to form a judgement on the current condition of the habitats in the light of existing SAC management measures.

The main approach taken to fulfil these objectives was to complete an extensive drop-down video survey of the inlet and bay habitats of the SAC, supplemented by infaunal sampling, in order to characterise the major biotopes and to perform MNCR phase 2 surveys of reef and sediment biotopes along relocatable transects spanning littoral and inshore sublittoral environments. Mapping was also carried out of *Mytilus edulis* and *Ascophyllum nodosum* ecad *mackayi* beds.

1.2.1 Common Standards Monitoring

In order to ensure a uniform approach to the monitoring of the condition of features, guidance has been drawn up on the general approach to be taken in condition monitoring (Anon, 1998). Thus, for the purposes of monitoring, each feature is represented by a series of attributes, which are measurable indicators of the condition of the feature at the site. For each attribute (e.g. extent of a habitat or presence of representative/notable biotopes), a target is set which is considered to correspond to the favourable condition of the feature.
In the case of the Loch Laxford SAC the Annex I 'large shallow inlet and bay' and 'reef' features fall under the Common Standards Monitoring guidance produced, respectively, for

inlets and bays, and littoral rock and inshore sublittoral rock (Inter-Agency Marine Monitoring Group, 2004a,b). The Inter-Agency Marine Monitoring Group lists the attributes of these habitats and corresponding targets that should form the basis of the site condition monitoring (Tables 1, 2).

Table 1 Site attributes that should be utilised to define the condition of inlets and bays (Inter-Agency Marine Monitoring Group, 2004a)

Attribute	**Target**
Extent	No change in extent of whole feature
Diversity of component habitats	Maintain the variety of habitats identified for the site, allowing for natural succession or known cyclical change.
Distribution/spatial pattern of habitats	Maintain the distribution and/or spatial arrangement of biotopes, allowing for natural succession or known cyclical change.
Water quality	Target values should default to appropriate national or international standards where appropriate. If sufficient local data are available to establish the baseline condition, site-specific targets can be set.

Table 2 Site attributes that should be utilized to define the condition of littoral and inshore sublittoral rock features in site condition monitoring (Inter-Agency Marine Monitoring Group, 2004b). The use of the first three attributes is mandatory

Attribute	**Target**
Extent	No change in extent of intertidal rock and inshore sublittoral rock
Biotope composition of the intertidal rock and inshore sublittoral rock	Maintain the variety of biotopes identified for the site, allowing for natural succession or known cyclical changes
Distribution of biotopes. Spatial arrangement of biotopes at specified locations	Maintain the distribution and/or spatial arrangement of biotopes, allowing for natural succession or known cyclical changes
Extent of sub-feature or representative/notable biotopes	No change in the extent of the biotope(s) identified for the site, allowing for natural succession or known cyclical changes
Presence of representative or notable biotopes	Maintain the presence of the specified biotope, allowing for natural succession or known cyclical changes
Species composition of representative or notable biotopes	No decline in biotope quality due to change in species composition or loss of notable species, allowing for natural succession or known cyclical changes
Presence and/or abundance of specified species	Maintain presence and/or abundance of specified species Absence of the specified species (such as an undesirable or non-native species)

According to the definition of '*reefs*' given by the Interpretation Manual of European Union Habitats (European Commission, 2007), potential reef substrate includes bedrock, boulders and cobble fields, with 'cobbles' generally exceeding 64 mm in diameter. Furthermore, it states that within the National Marine Habitat Classification for Britain and Ireland (version

03.02), reef biotopes are listed under the following higher biotope categories: 'Littoral rock and other hard substrata (biotopes beginning with LR)'; 'Infralittoral rock and other hard substrata (IR)'; 'Circalittoral rock and other hard substrata (CR)'; 'Littoral biogenic reefs (LBR)' and 'Sublittoral biogenic reefs (SBR)'.

1.3 Previous marine biological studies

The major marine biological surveys of Loch Laxford are summarized in Table 3. As part of the Scottish Marine Biological Association/Marine Biological Association intertidal survey of Great Britain, three sites were examined in Loch Laxford in 1979 (Powell *et al.*, 1980; Bishop and Holme, 1980). They regarded the inner part of the loch as a site of marine biological importance, highlighting in particular Tràigh Bad na Bàighe, a sediment-filled inlet with extensive areas of muddy sand. They also noted the presence of *Ascophyllum nodosum* ecad *mackayi* here, previously recorded as occurring in large beds at the head of the loch by Gibb (1957). Tràigh Bad na Bàighe is the only extensive habitat of its type on the west coast of Sutherland and it was rated of national conservation importance. They also examined the shallow tidal rapids site at Sruth Mor, which was rated of local importance in view of its moderately rich rocky reef community.

Table 3 Previous marine biological surveys of Loch Laxford

Year of survey	Organization	Survey type	Reference
1979	Scottish Marine Biological Association & Marine Biological Association	surveys of 3 littoral sites	Powell *et al.*, 1980
1979	Sheila Smith	survey of 1 littoral site	Smith, 1981
1984	Sheila Smith	MNCR phase 2 surveys of 2 littoral and 28 sublittoral sites	Smith, 1985
1991	University Marine Biological Station, Millport & Marine Nature Conservation Review	MNCR phase 2 surveys of 9 littoral and 22 sublittoral sites	Holt, 1991
1994	Environment and Resource Technology	broadscale biotope mapping survey of littoral and sublittoral, including detailed infaunal analysis of grab samples at 6 sites and video recording at 1 site	Environment and Resource Technology Ltd, 1994
2001	Posford Haskoning	broadscale biotope mapping survey of littoral, including records of zonation patterns at 64 sites	Posford Haskoning Ltd, 2001
2001	Universities of St Andrews and Heriot-Watt	broadscale biotope mapping survey of sublittoral, including ROV or dropdown video recordings at 60 sites, MNCR phase 2 diver surveys at 16 sites and detailed infaunal analysis of grab samples at 23 sites	Bates *et al.*, 2004

As a follow-on to the SMBA/MBA study in the same year Smith (1981) also examined Sruth Mor, with emphasis on the molluscs, although also describing the general zonation in the channel. She regarded this site as one of the richest shores in west Sutherland.

The first sublittoral survey of the loch was carried out in 1984 by a team led by Smith (1985). Records of interest include maerl off Sgeir Iosal, abundant *Modiolus modiolus*, together with maerl, in the inner loch north-east of Eilean Port a'Choit (**SS.SBR.SMus.ModHAs**) and the presence of *Leptometra celtica* in the mouth of the SAC.

A joint UMBS Millport/MNCR team surveyed the littoral and sublittoral habitats of the loch, together with those in Lochs Inchard, Broom and Little Loch Broom, in 1991 (Holt, 1991). Further data are presented on the communities of Tràigh Bad na Bàighe, including observation of a dense bed of *Mytilus edulis* in the entrance channel. The survey included littoral and sublittoral sites at the tidal rapids at Sruth Mor, where both *Lithothamnion glaciale* and *Phymatolithon calcareum* were recorded as frequent on coarse sediment in the channel (**SS.SMp.Mrl.Lgla**). Holt (1991) also recorded *P. calcareum* as rare on a plain of coarse shell sand south of Eilean an t-Sithein (**SS.SSa.IMuSa.EcorEns**) and as frequent in the troughs of duned shell gravel southeast of Glas Leac (**SS.SMp.Mrl.Pcal.Nmix**). In line with the findings of Smith (1985), Holt (1991) observed the rock surface beneath the kelp forests and parks to be generally heavily grazed by *Echinus esculentus*, but at a very exposed rock pinnacle at the mouth of the loch, Bodha Druim, foliose algae richly coated the rock and stipes (**IR.HIR.KFaR.LhypR.Ft**), accompanied on vertical faces by a rich fauna of polyclinids, *Corynactis viridis*, *Alcyonium digitatum* and a hydroid/bryozoan turf (**IR.HIR.KFaR.LhypRVt**). Below the kelp, a rich circalittoral turf community included *Flustra foliacea*, *Securiflustra securifrons*, *Cliona celata*, *Axinella infundibuliformis*, *Coryne viridis*, *Antedon bifida* and *Corella compressa* (ascribed in Marine Recorder to **CR.MCR.EcCr.AdigVt**).

The littoral habitats of part of the SAC (excluding the outermost part of Loch Laxford and the whole of Loch Dùghaill) were mapped by Environment and Resource Technology Ltd (1994) in 1994. They provide distribution maps of the 12 biotopes that they identified using the 1994 MNCR scheme (Connor, 1994), including the *Ascophyllum nodosum* ecad *mackayi* biotope. Environment and Resource Technology Ltd (1994) also mapped the sublittoral biotopes; however, coverage was severely restricted by the weather conditions. Moreover, the relevance of the data for the present site condition monitoring work is limited by the low level of groundtruthing and the biotope classification scheme used, which is difficult to equate with the current system.

Biotope mapping of the littoral habitats of the SAC (excluding a short stretch of exposed shore at the western extremity) was also carried out in 2001 by Posford Haskoning Ltd (2001). Due to the narrow nature of the shores, much of the coastline was only mapped at a higher biotope complex level, although detailed biotope zonation sequences are provided for 64 sites. Of particular note is the detailed biotope mapping of Tràigh Bad na Bàighe and Laxford Bay, including distribution patterns for sedimentary, mussel and *Ascophyllum nodosum* ecad *mackayi* biotopes. Amongst the areas of *A. nodosum* ecad *mackayi* were patches of an unattached form of *Fucus serratus*, previously recorded for Scotland by Lewis (1957) but not in Loch Laxford.

Bates *et al.* (2004) carried out a sublittoral broadscale biotope mapping survey of the SAC in 2001. As in previous studies most of the infralittoral was found to be dominated by *Saccharina latissima* and grazed *L. hyperborea biotopes*, but communities with rich faunal and algal components were recorded in the more exposed locations (**IR.HIR.KFaR.LhypFa**, **IR.HIR.KFaR.LhypR.Ft**). In the circalittoral, records of note include the finding of *Swiftia pallida* along the north-east coast of Eilean Ard. This appears to be the northernmost record for the UK and the only record for mainland Scotland north of Loch Duich, apart from more

recent Seasearch records at the same site (National Biodiversity Network Gateway, 2009). *Funiculina quadrangularis* was also recorded at a single site west of Eilean an Eireannaich (**SS.SMu.CFiMu.SpnMeg.Fun**) and patchy maerl adjacent to a mussel farm north-west of Eilean Ard (**SS.SMp.Mrl.Pcal**).

In addition to the major surveys described above, a number of more limited marine biological studies have been carried out (Howson and Chambers, 2000). Walker (1947) and Gibb (1950) included Loch Laxford in a survey of the fucoid resources in Scotland, reporting that Loch Laxford contained around 116 tons of fucoids per mile, with the main species being *Ascophyllum nodosum*, *Fucus vesiculosus* and *F. serratus*. As part of a wider study Lewis (1957) described the distribution of a number of littoral species within Loch Laxford. MacKinnon (1986) reported the species records of an Eastwood Sub-Aqua Club expedition to Loch Laxford.

James (2004) carried out a survey of *Zostera marina* beds in north-west Scotland in 2004. The study included the identification of possible sites through discussions with local fishermen and divers and an examination of existing aerial photography and mapping to determine suitable substrate. Although no areas were actually visited in Loch Laxford, three locations were identified as possible *Z. marina* sites: Lochan na Fionndalach Bige, south of Eilean Port a' Choit and north of Eilean an Eireannaich.

1.4 Human usage of Loch Laxford SAC

Loch Laxford is situated in a remote and very sparsely populated region of the Highlands, with human access to most of the coastline very difficult, except by boat. Despite the presence of several sheltered anchorages, due to its northerly location and lack of relevant facilities, the level of visiting recreational craft is likely to be very low. Tourist activities in the loch include sea kayaking from the adventure school based in the upper basin of Loch a'Chadh-Fi and wildlife pleasure cruises (Laxford Cruises) operating throughout the summer from Fanagmore. Loch Laxford is not a widely recognised locality for scuba diving, with probably a very low level of activity.

Local creel boats work the loch for *Nephrops*, lobsters and crabs (Dipper and Johnston, 2005). The intensity of fishing is unknown.

There are currently five licences for Atlantic salmon farm sites and five for mussel sites, although they are not all occupied at present. Figure 2 shows the location of the licensed areas, with an indication of the areas actually occupied, based on aerial photography from 2004 and 2006 and observations during the 2001 (Bates *et al.*, 2004) and current surveys. The mussel sites appear to be continuously occupied, apart from the Eilean an Eireannaich site (Figure 2, S2), whereas the salmon farms are subject to a system of fallowing for a complete year in every three (Loch Duart Ltd, 2009). It is clear that substantial areas of the inner region of the loch are occupied by mussel lines, whilst in the outer part of the loch a mussel farm off the north-west of Eilean Ard (M5) lies within 40 m of an area of seabed supporting maerl (Bates *et al.*, 2004).

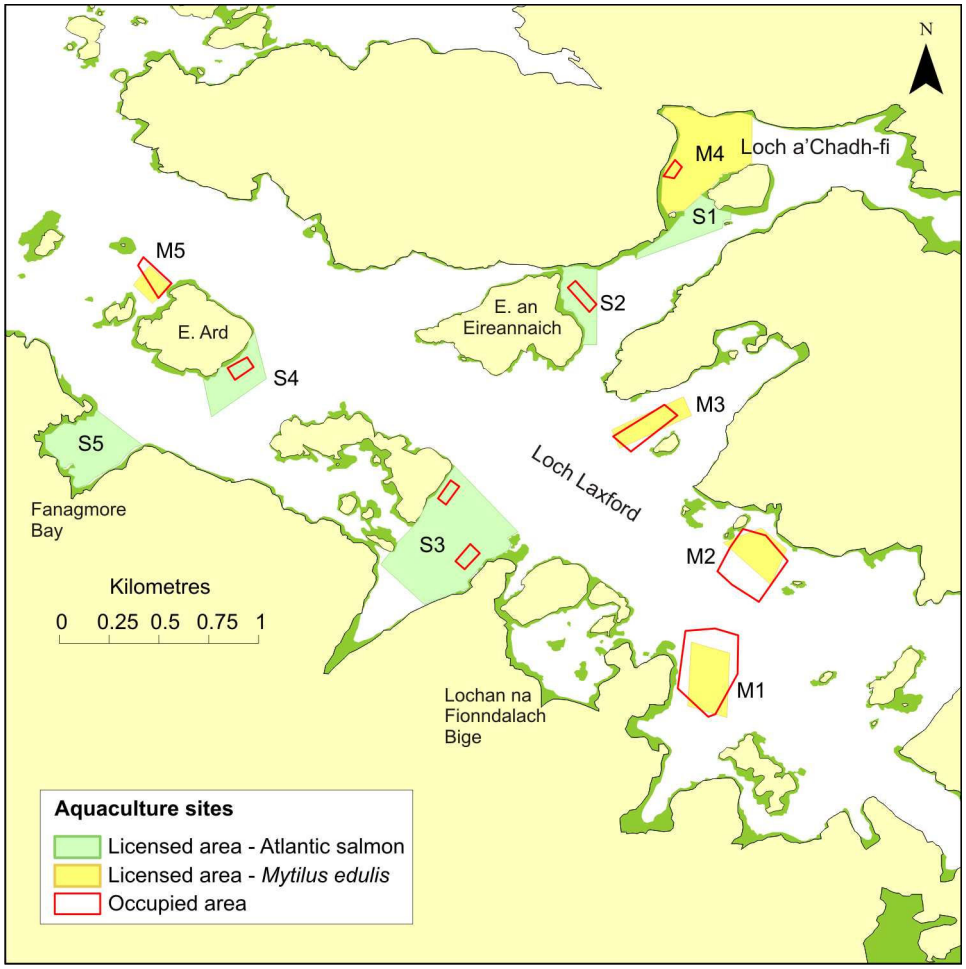
The salmon farms were believed to have contributed to high levels of imposex recorded in dogwhelk populations in the loch, resulting from the release of tributyltin (TBT) from antifouling coatings (Davies *et al.*, 1987). Evidence from elsewhere would suggest that it is likely that recovery will now have taken place, following the banning of this usage of TBT in 1987.

Paracentrotus lividus is a sea urchin with its northern distributional limit defined approximately by the 8°C winter isotherm (Boudouresque and Verlaque, 2007). Although recorded sporadically elsewhere on the Scottish West coast, caged urchins were introduced

and subsequently removed from Loch Laxford as part of a polyculture experiment to investigate the possibility of farming this species in association with Atlantic salmon at sites off Eilean Ard (Figure 2, S4) and Bagh na Fionndalach Moire (Figure 2, S3) (Cook and Kelly, 2007). There are some concerns relating to the impact of the possible establishment of this species on the ecology of the loch (SNH, pers comm.).

Another introduced species, the Japanese skeleton shrimp, *Caprella mutica*, was recorded at a Laxford salmon farm site in 2004 (Cook *et al.*, 2007). The species is indigenous to north-east Asia but is currently one of the most rapidly spreading species in Europe. Often associated with man-made structures, especially fish farms on the west coast of Scotland, it is thought to be spreading through the movement of vessels. It is an aggressive species, outcompeting the native European *Caprella linearis* for space.

Figure 2 The location of aquaculture sites within the Loch Laxford SAC. Areas of occupation were determined from aerial photographic surveys in 2004 and 2006. S2 farm extent approximate



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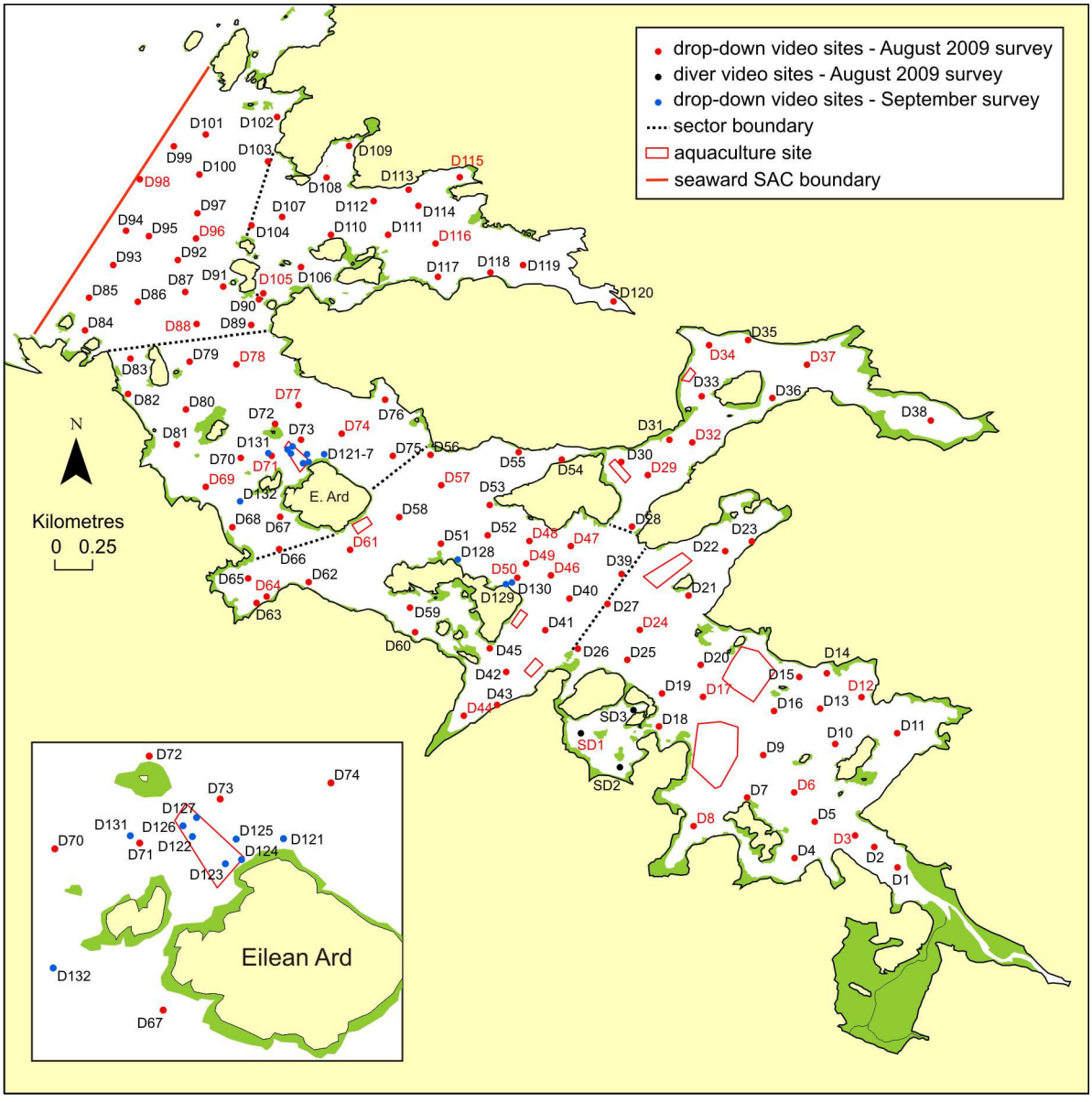
As a preliminary investigation into the maximization of macroalgal production as part of a polyculture system with Atlantic salmon, the nutrient plume around the Eilean Ard cage site (Figure 2, S4) was studied by Sanderson *et al.* (2008). They found enhanced levels of seawater ammonium out to a distance of at least 50 m, sufficient to enhance macroalgal growth (Sanderson *et al.*, 2009). Clearly there is the potential for some impact on natural algal communities in the vicinity.

2 METHODS

2.1 Video survey

To provide information on the diversity and distribution of biotopes a drop-down video survey of the SAC was planned. The SAC was divided into six sectors (Figure 3), with the area of each (below chart datum) being estimated from respective polygons within ArcGIS. 120 video sites (D1 – D120) were allocated in proportion to area, with minor adjustment to ensure good biotope coverage. Initially, the video sites examined as groundtruth stations in the 2001 broadscale survey (Bates *et al.*, 2004), as well as several of the dive sites from the 2001 survey, were selected for examination in 2009 (66 in total). With the aid of the 2001 broadscale biotope map, additional sites were positioned within each sector to ensure good geographical spread and good coverage of the range of biotopes, depths, exposure and anthropogenic activities (Figure 3).

Figure 3 Video survey sites. Red labels indicate where infaunal samples were also collected



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The video survey was carried out from 2nd – 6th August 2009 from the vessel *RV Serpula* working out of Fanagmore Bay. 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 100 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 proforma (Appendix 1). The runs were mostly of 2 - 3 minutes duration.

A further three sites within the lagoon-like Lochan na Fionndalach Bige were examined by spot dives (SD1 – SD3) on 18th August 2009. At each site one diver videoed the habitat using a Panasonic DX100B 3 chip digital camera in a Seapro housing, whilst a second diver recorded the biota present, using the SACFOR abundance scale, and substrate details on a slate.

Following the survey, additional video material was supplied by SNH from a further twelve drop-down sites, mostly in the vicinity of the Eilean Ard mussel farm, which is adjacent to a maerl bed. This was collected from the SNH RIB, *Aphrodite*, on 3rd September 2009, using similar methodology to that used in the main survey. The video equipment used is described in Howson *et al.* (2006). The field site labels, 1 – 12, were recoded D121 – D132 for this report.

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 as 'reef', 'non-reef' or 'mixed' habitats based on the presence of reef biotopes or a mixture of reef and non-reef biotopes. Reef biotopes were regarded as those falling under the higher biotope categories of Infralittoral Rock and Circalittoral Rock (Connor *et al.*, 2004). Depths were related to chart datum by determination of the tidal rise at the secondary port of Loch Laxford using TotalTide software (Hydrographic Office, Taunton).

2.2 Infaunal survey

To provide information on the diversity and distribution of sediment biotopes a grab survey was carried out from *RV Serpula* from 5th – 7th August 2009. To facilitate temporal comparisons the 23 sites sampled in 2001 by Bates *et al.* (2004) were revisited, although some adjustments due to navigational hazards such as creel lines were necessary. An additional seven sites were also sampled (Figure 3, Table 3.1). All 30 sites were also included in the video survey to facilitate more reliable biotope identification. Grab locations were chosen to give good geographical spread and coverage of different habitats (exposure, sediment type and depth) and a wide range of biotopes. Some sites were positioned close to aquaculture facilities and other forms of anthropogenic influence. A single 0.1 m^2 Van Veen grab sample was taken at each station, with a c.150 ml subsample taken for particle size analysis before sieving the remainder on a 1 mm mesh. At five sites, representing a broad range of sediment types, the sediment was passed through a 0.5 mm sieve on site, but subsequently separated into 0.5 mm and 1 mm fractions in the laboratory. This was to facilitate comparisons with the 2001 survey (Bates *et al.*, 2004), which employed a 0.5 mm mesh. The sample position, depth and time were noted.

An additional macrobenthic sample was taken by diver at site SD1 in the shallow embayment, Lochan na Fionndalach Bige, inaccessible to the survey vessel. This consisted of eight pooled 10.3 cm diameter cores, about 20 cm in length, which represents a sampling

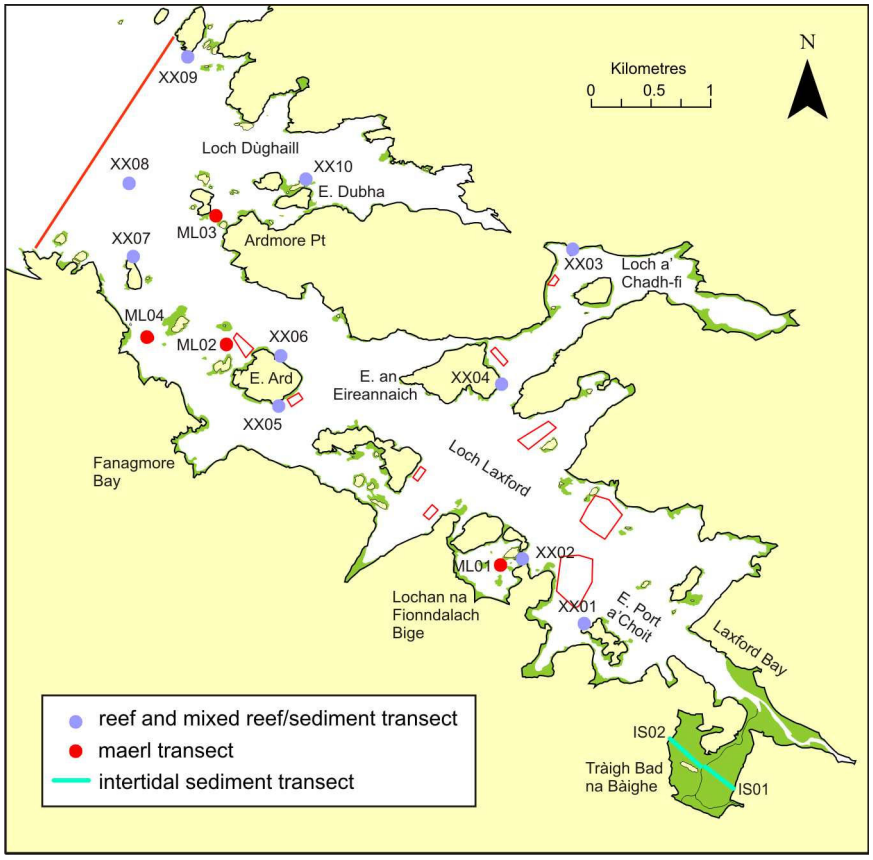
area of 0.0667 m^2. This material was sieved using a 1 mm mesh. A 5 cm diameter core was also taken for particle size analysis.

In the laboratory the macrobenthos was sorted, identified to species where possible, and counted. Sediment samples for grain size analysis were dry sieved using a nest of sieves from –2 to 4 phi at 0.5 phi intervals, following separation and measurement of the silt/clay fraction by puddling the sample of known weight, which had been soaked in sodium hexametaphosphate, through a 63 µm sieve. The sediment grain size parameters, median grain size and phi quartile deviation, were obtained by interpolation of the cumulative weight percentage curves.

2.3 Reef and mixed reef/sediment transects

These transects were designed to examine biotope diversity and distribution of reef and sediment habitats, as well as the species composition of representative reef biotopes. Most transects extended from the rocky shore and traversed intertidal reef, subtidal reef and, if within safe depth limits, subtidal sediment habitats.

Figure 4 Location of transect sites



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Relocatable transects were established at nine sites (Figure 4, Table 4), with transect XX09 not surveyed due to adverse weather conditions. Relocation details are provided in Appendix 5. As well as providing good geographical coverage representative of a broad range of wave exposure and biotopes, the locations were selected to allow temporal comparisons with previous data and in some cases, were in areas at risk from anthropogenic activities. To mark the transect, fixed, relocatable points were established at the top of the

shore. Transect markers consisted of a galvanized metal piton hammered into a rock crevice or a wooden stake hammered into the vegetation; a second piton was sometimes positioned lower down the shore. The position of the marker was fixed by dGPS and several photographs taken of it from different viewpoints, with the position of the camera recorded by dGPS and the bearing to the marker taken with a sight-bearing compass. To ensure that all necessary data were collected, all information relating to positioning of the transect marker was entered into a transect relocation form in the field (Appendix 1).

Table 4 Summary of all transects (reef and mixed reef/sediment, maerl, and intertidal sediment) surveyed by MNCR phase 2 methodology

Full code and site name	Section code	Habitat type	Samples taken	Zone sampled	Date
LL09XX01 Eilean Port a' Choit W	IR01 SR01 SS01	intertidal reef subtidal reef subtidal sediment			20/08/2009
LL09XX02 Sruth Mor	IR02 SR02	intertidal reef subtidal reef			18/08/2009
LL09XX03 Ardmore	IR03 SR03 SS03	intertidal reef subtidal reef subtidal sediment			19/08/2009
LL09XX04 Eilean an Eireannaich E	IR04 SR04 SS04	intertidal reef subtidal reef subtidal sediment	 grab	 S6	19/08/2009
LL09XX05 Eilean Ard S	IR05 SR05 SS05	intertidal reef subtidal reef subtidal sediment	 algae grab	 S2 S6	16/08/2009
LL09XX06 Eilean Ard NE	IR06 SR06 SS06	intertidal reef subtidal reef subtidal sediment	 algae	 S5	12/08/2009, 13/08/2009
LL09XX07 Eilean an t-Sithein N	IR07 SR07	intertidal reef subtidal reef			11/08/2009
LL09XX08 Bodha Druim	SR08	subtidal reef	algae	S1	10/08/2009
LL09XX10 Eilean Dubha NE	IR10 SR10 SS10	intertidal reef subtidal reef subtidal sediment	 algae grab	 S4 S6	17/08/2009
LL09ML01 Sruth Mor SW	ML01	maerl bed	cores, algae		14/08/2009
LL09ML02 Eilean Ard NW	ML02	maerl bed	cores		12/08/2009, 13/08/2009
LL09ML04 Sgeir Iosal SW	ML04	maerl bed	cores		09/08/2009, 10/08/2009
LL09IS01 Tràigh Bad na Bàighe E	IS01	intertidal sediment	cores	5, 6	21/08/2009
LL09IS02 Tràigh Bad na Bàighe W	IS02	intertidal sediment	cores	2,3,4,5	21/08/2009

The route of the transect was marked by a 200 m graduated line attached to the transect marker. The line followed a constant bearing down the shore and extended into the subtidal, where it was laid along the seabed by diver, with the addition of weights at strategic points. The transect generally extended for a distance of 100 m in the subtidal, except where local conditions, such as the depth exceeding 30 m, prevented this. The transect end was attached to a buoyed shot line, and the position fixed. The intertidal section traversed rock

and has been coded LL09IRnn, whilst the subtidal section traversed rock (LL09SRnn), and in some cases, sediment habitats (LL09SSnn) (Table 4). nn represents the transect number. The entire transect has been coded LL09XXnn.

The transect was split up into a series of zones which were defined in terms of differences in the composition of the biological community and/or by changes in substrate type. All subtidal work was carried out with the use of scuba. Zone boundaries along the transect were recorded in terms of distance along the graduated line and vertical height relative to the station marker. Intertidally, this height was determined using an inclinometer; subtidally, the depth of water was measured. Subtidally, the depth and distance was also measured at major topographical features and, where appropriate, at 5 metre intervals, enabling a detailed profile of the transect to be subsequently drawn. In the field, all profile data was entered onto a proforma (Appendix 1). Heights on the shore were related to chart datum by levelling the water's edge to the station marker and determining the tidal rise at this time using TotalTide. Depths were also converted to chart datum by subtracting the tidal rise at the time of recording.

A band 2 m either side of the tape was surveyed intertidally and subtidally. Within each zone records were taken of substrate type and biota using the MNCR SACFOR scale of abundance, with collection of material for laboratory examination where *in situ* identification was not possible. Abundance was assessed over the zone as a whole, except where stated otherwise. Subtidally, a digital video camera (Panasonic DX100B in a Seapro housing or Sony DCR-TRV900 in an Amphibico Navigator 900 housing) and a digital still camera (Canon 400D digital SLR with 17 mm wide-angle lens and Sea & Sea housing or Fujifilm S2 Pro digital SLR with 16 mm lens and Subal FS2 housing) were used to make representative visual recordings of the transect zones. Intertidally, the Panasonic video camera was used to record the zones, but the digital still camera was a Pentax Optio W10. Data collected in each intertidal zone along the transect was entered onto a biotope recording form in the field (Appendix 1). Subtidally, the data was entered onto a blank slate. Based on the physical and biological data collected, biotopes were subsequently allocated to each zone using Connor *et al.* (2004).

One of the sites, Bodha Druim, was a wave-surged, submerged rock pinnacle in the mouth of Loch Laxford and so the methodology was slightly modified. The upper end of the transect line was temporarily marked by a buoyed shot line, which was position fixed. As this position was close to the lower kelp forest boundary, the divers continued the transect for an estimated 15 m farther up the slope.

Recorded distances between points along the transects were converted to horizontal distances by trigonometry and the height and distance data used to construct transect profiles using Excel. The profiles were then imported into a graphics package (CorelDraw) for annotations summarizing the substrate type, dominant biota and biotopes along the transects.

To facilitate biotope assignation, at some sites (Table 4) where sediment samples were not collected from the vicinity of the transect by the grab survey, a grab sample was taken from the prevalent sediment zone for infaunal and particle size analysis using the protocols given in section 2.2 above.

To assess the species composition and richness of representative reef biotopes, a method involving the proxy use of macroalgae was trialled at four of the sites (Table 4). At each site an infralittoral or upper circalittoral zone was selected, where a macroalgal census was carried out by a diver. The larger macroalgae were identified *in situ* and collections were made from all subhabitats likely to support macroalgae, including rock, kelp stipes and fronds, algal turf species and faunal turf species, such as bryozoans and hydroids. Material

was placed in mesh bags and specimen bottles and returned to the laboratory for identification and the compilation of an algal inventory for the zone.

2.4 Maerl bed transects

Short diver transects were employed to confirm the existence of maerl beds, to facilitate biotope assignation and to assess their current status. Based on the drop-down video results and previous surveys of Loch Laxford, four maerl sites were selected for detailed examination (Table 4, Figure 4). However, it was clearly evident from a preliminary diver examination of site ML03 that no maerl bed was present, and so no further observations were made here.

At each site the location was marked with a shot line for the duration of the survey and the dGPS position of the line recorded. A diver survey of the area was conducted using slightly modified MNCR phase 2 methodology. A 25 m tape transect line was marked out on the seabed 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. A band 2 m either side of the tape was surveyed by one diver, who noted the presence, and where possible, estimates of the abundance of conspicuous biota, collecting material which needed to be identified in the laboratory. A second diver concentrated on producing a full macroalgal inventory, by *in situ* identification and collection of material for laboratory identification. To supplement the real-time visual records and collections, the transect band was videoed using a hand-held digital video camera and still photographs taken of the maerl and associated community using a digital still camera, as described above.

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 2.2 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 2.2.

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, biotopes were subsequently allocated using Connor *et al.* (2004).

2.5 Intertidal sediment transects

Tràigh Bad na Bàighe represents the only well-developed shore supporting sediment biotopes within the SAC. Two transects were worked here to examine biotope diversity and distribution (Table 4, Figure 4).

To mark the transect, fixed, relocatable points were established at the top of the shore. Transect markers consisted of wooden stakes driven into the upper region of the saltmarsh, augmented at one site by a galvanized metal piton hammered into a supralittoral rock crevice. Relocation data were collected as described in section 2.3.1. To ensure that all necessary data were collected, all information relating to positioning of the transect marker was entered into a transect relocation form in the field (Appendix 1).

The transect followed a constant bearing down the shore, which was measured with a sight-bearing compass, and extended down to the main drainage channel running along the centre of the bay.

The transect was divided into zones based on distinct changes in physical or biological characteristics, with zone boundaries being marked with canes. Within the central region of each zone a survey station was selected that represented conditions typical of the zone. The height of zone boundaries and stations below the permanent transect markers was measured using a surveyor's level. The distances of these points from the transect marker was measured using a 30 m tape measure for the narrow upper zones and the range facility on the surveyor's level for the lower zones. Station positions and zone transitions were recorded by dGPS.

Data collected at each station along the transect was entered into a station recording form in the field (Appendix 1). At each station a note was taken of the approximate shore level (upper/mid/lower), substrate type, moisture level, sediment surface features, depth of anaerobic layer and the nature of the habitat. Five replicate photo quadrats of the sediment surface were taken by photographing a haphazardly thrown 0.25 m^2 quadrat using a Pentax Optio W10 digital still camera. Additional general views of the site were photographed and digital video footage taken of the area around all the stations and along the transect.

At each station representing a sedimentary biotope, eight replicate core samples of 10.3 cm diameter and 20 cm length were taken at random and pooled. The sediment was sieved on a 1 mm mesh sieve and the sievings stored in 5% buffered formalin for analysis of the macrobenthos. A 5 cm diameter core sample to a depth of 20 cm was taken for grain size analysis. Assessment of the abundance of macrobenthic infauna from the core samples was supplemented by *in situ* assessment of abundance by recording estimates of the abundance of casts of *Arenicola marina*, epibiota, and of conspicuous animals found in digging over a total area of approximately 1 m^2 to a depth of c. 20 cm. Where necessary, samples of these animals were preserved for confirmation of identification back in the laboratory.

Infaunal and particle size analysis followed the methods described in section 2.2.

Beach profiles, based on surveyors' level measurements of intertidal height and range were graphed using Excel and subsequently annotated within CorelDraw to produce summaries of the physical and biological characteristics of the transects

Based on the physicochemical characteristics of the sediment and the characterization of the fauna obtained from the cores and *in situ* observations, the transect stations, and the zones along the transect that they represented, were ascribed to biotopes using the 2004 habitat classification system (Connor *et al.*, 2004). To aid this process all species data for all stations were transformed to the SACFOR scale of abundance.

2.6 *Zostera marina* survey

The three sites identified as possible eelgrass sites by James (2004) were surveyed for the presence of *Z. marina*. These were the channels between the islands Eilean Port a'Choit and Eilean an Eireannaich and the mainland, and the lagoon-like Lochan na Fionndalach Bige (see Figure 19). Each area was traversed by RIB, employing a glass-bottomed bucket to aid observation. At two of the sites (Lochan na Fionndalach Bige and Eilean Port a'Choit) the route of the vessel was recorded using the tracking facility of the GPS receiver.

2.7 *Ascophyllum nodosum* ecad *mackayi* survey

Beds of *A. nodosum* ecad *mackayi* were surveyed within Tràigh Bad na Bàighe on 21st August 2009, and along the northern and southern shores at the head of Loch Laxford by an SNH team on 3rd September 2009. At each location the shoreline was walked to identify areas of occurrence of the variety. Within these areas transects perpendicular to the

shoreline were worked at intervals of approximately 30 m. Transects extended from above to below the occurrence of the alga. dGPS fixes were taken of the start and end of the transect and of the position of maximum abundance of the alga. Maximum abundance was also recorded, determined by visual estimation of the percentage cover of the substrate within an area of approximately 4 m^2, being 2 m either side and 2 m along the line of the transect. Where discrete beds of *A. nodosum* ecad *mackayi* were present the periphery of the bed was mapped using multiple dGPS fixes. The appearance of the beds was also recorded by digital still photography.

2.8 *Mytilus edulis* survey

Mussel beds in the entrance channel to Tràigh Bad na Bàighe were mapped by an SNH team on 3rd September 2009. The periphery of each of the two major beds in the area was walked, whilst recording multiple dGPS fixes. The position of a third, small bed was recorded by a single dGPS fix and its length and width estimated by eye. For mapping purposes the bed was defined as having a coverage of *Mytilus edulis* >50%. Maximum abundance was recorded by estimation of the number of live mussels per 0.01 m^2 or per 0.1 m^2 within the densest region of the bed. The appearance of the beds was also recorded by digital still photography.

3. RESULTS

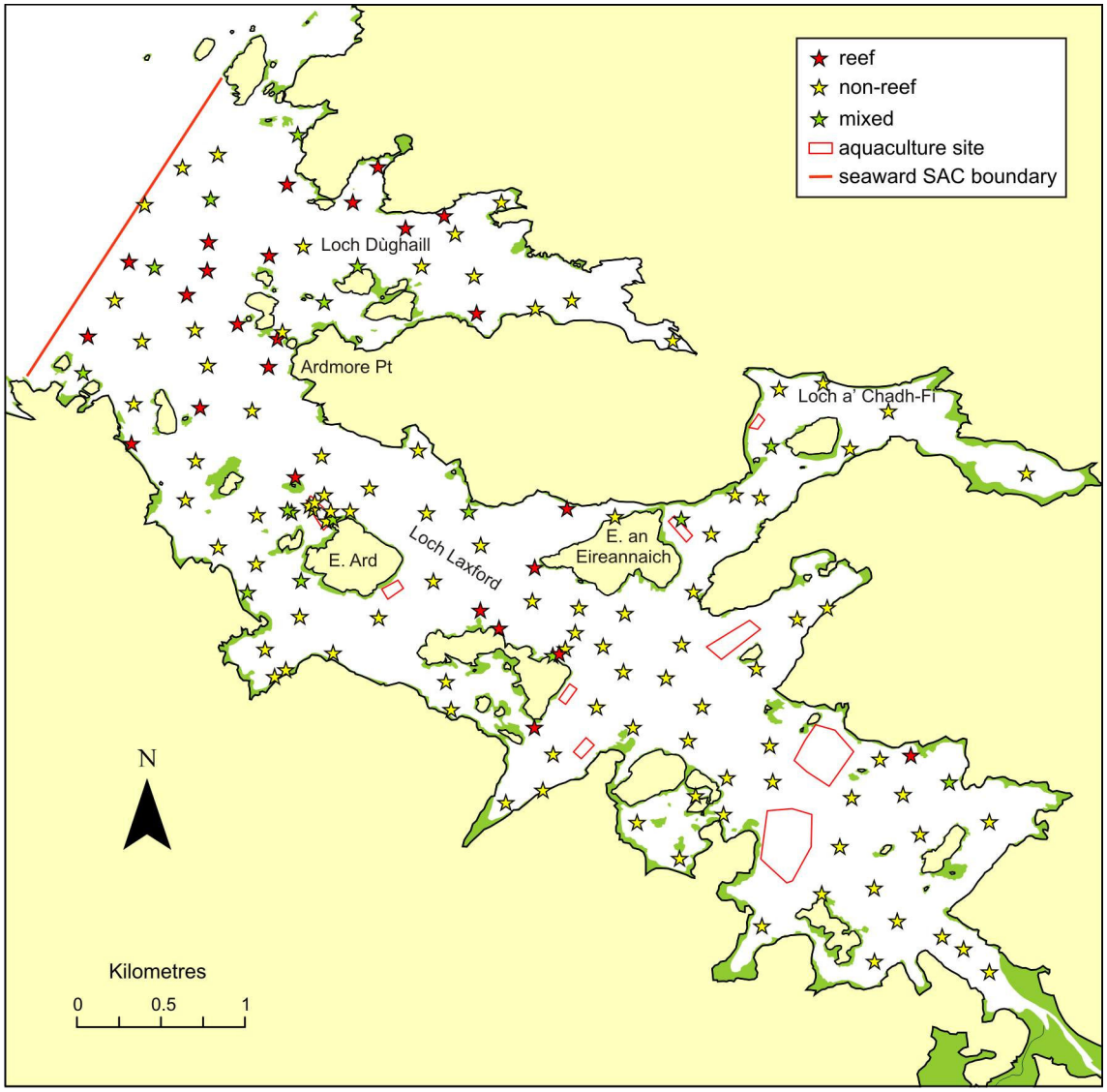
3.1 Video survey

3.1.1 Reef extent

Figure 5 shows the categorization of the video records according to the presence of reef habitat. The feature was recorded at 41 of the 135 sites (30%), although at 16 of these sites both reef and non-reef habitats were observed.

The details for individual sites are given in Appendix 2 (Tables 2.1 and 2.2). There is a clear pattern of dominance by sediments, with reef habitats being largely confined to a narrow coastal fringe, apart from a tongue of bedrock and boulder reefs extending in a north-westerly direction from the tip of the Ardmore peninsular.

Figure 5 Observations of reef habitats from video records at 135 sites. The presence of both reef and non-reef habitats at a site is designated 'mixed'



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3.1.2 Biotope composition

Details of the biotopes recorded at each of the 135 video sites are provided in Table 2.2. It should be noted that the steep nature of the rocky coastline fringing most of the SAC, combined with the strong wind conditions during much of the video work, limited the efficacy of dropdown video in monitoring the range of infralittoral biotopes.

A total of 45 biotopes were identified from the video records. The recording frequency for each of these biotopes is given in Table 5. Seventeen biotopes can be clearly distinguished as reef biotopes, falling chiefly into two major groups. Of the 49 reef biotope records, 17 are faunal and algal crusts, while 25 are kelp sites.

Table 5 Frequency of biotope records obtained during the current video survey and that of 2001 (Bates et al.*, 2004)*

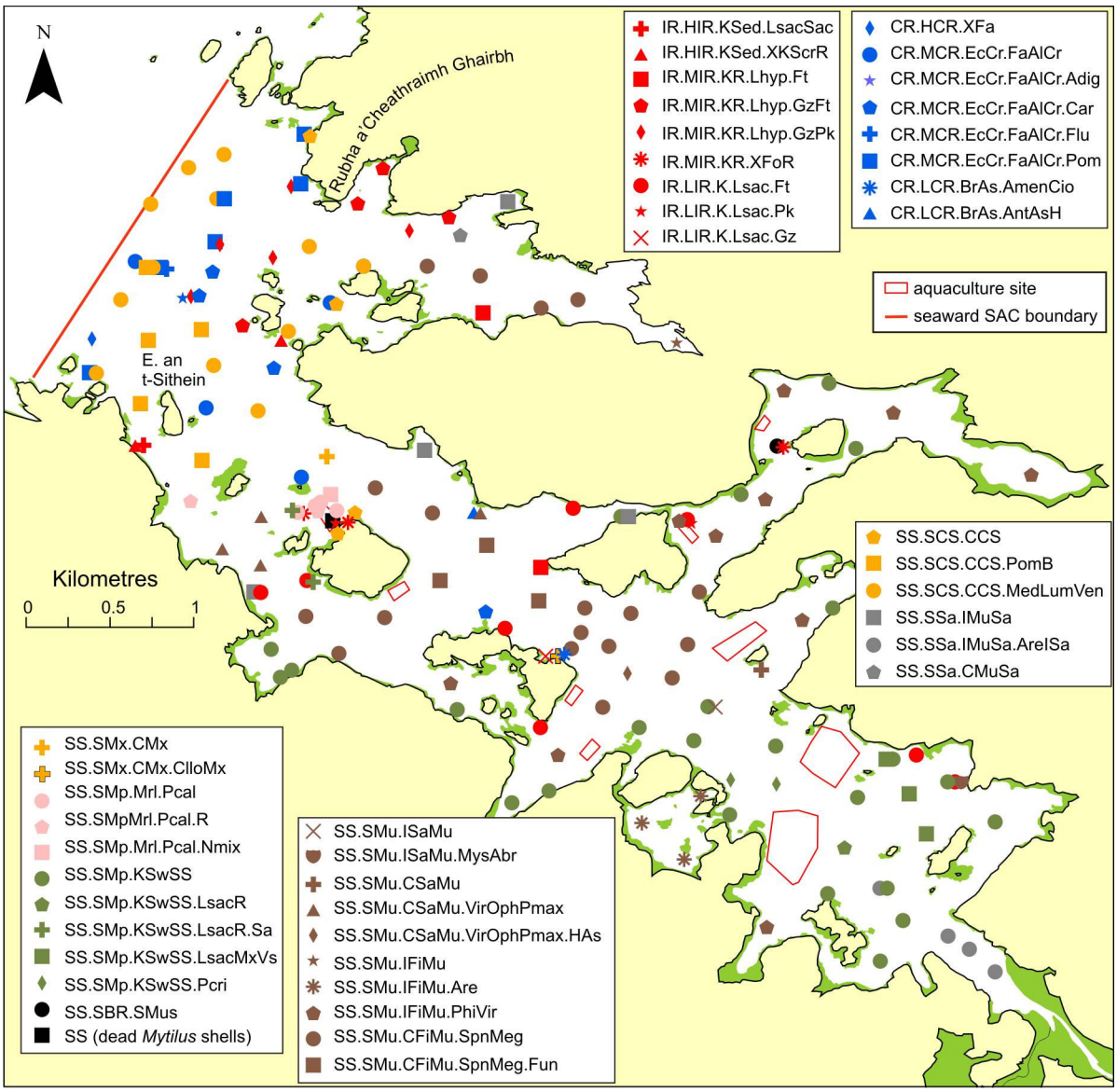
Biotope	2009	2001
IR.HIR.KFaR.Ala.Ldig		1
IR.HIR.KSed.LsacSac	1	1
IR.HIR.KSed.XKScrR	2	4
IR.MIR.KR.Lhyp		1
IR.MIR.KR.Lhyp.Ft	2	
IR.MIR.KR.Lhyp.GzFt	4	5
IR.MIR.KR.Lhyp.GzPk	5	2
IR.MIR.KR.XFoR	4	
IR.LIR.K.LhypLsac.Ft		2
IR.LIR.K.Lsac.Ft	8	11
IR.LIR.K.Lsac.Pk	2	3
IR.LIR.K.Lsac.Gz	1	2
CR.HCR.XFa	1	
CR.MCR.EcCr.FaAlCr	5	11
CR.MCR.EcCr.FaAlCr.Adig	1	
CR.MCR.EcCr.FaAlCr.Car	4	1
CR.MCR.EcCr.FaAlCr.Flu	1	
CR.MCR.EcCr.FaAlCr.Pom	6	
CR.LCR.BrAs		1
CR.LCR.BrAs.AmenCio	1	
CR.LCR.BrAs.AntAsH	1	
SS.SCS.ICS		2
SS.SCS.CCS	4	2
SS.SCS.CCS.PomB	5	1
SS.SCS.CCS.MedLumVen	12	6
SS.SSa.IMuSa	4	

Biotope	2009	2001
SS.SSA.IMuSa.EcorEns		1
SS.SSa.IMuSa.AreISa	4	2
SS.SSa.CMuSa	1	
SS.SMu.ISaMu	1	1
SS.SMu.ISaMu.MysAbr	1	
SS.SMu.ISaMu.Cap		1
SS.SMu.CSaMu	1	
SS.SMu.CSaMu.VirOphPmax	4	4
SS.SMu.CSaMu.VirOphPmax.HAs	1	1
SS.SMu.IFiMu	1	
SS.SMu.IFiMu.Are	3	
SS.SMu.IFiMu.PhiVir	10	13
SS.SMu.CFiMu.SpnMeg	18	9
SS.SMu.CFiMu.SpnMeg.Fun	3	1
SS.SMX.CMx	1	1
SS.SMx.CMx.ClloMx	1	
SS.SMp.Mrl.Pcal	4	1
SS.SMp.Mrl.Pcal.R	2	
SS.SMp.Mrl.Pcal.Nmix	1	
SS.SMp.KSwSS	24	14
SS.SMp.KSwSS.LsacR	1	
SS.SMp.KSwSS.LsacR.Sa	2	
SS.SMp.KSwSS.LsacMxVs	3	
SS.SMp.KSwSS.Pcri	2	1
SS.SBR.SMus	1	
SS (dead mussel shells)	1	1

3.1.3 Biotope distribution

The distribution of the biotope records from the video survey is shown in Figure 6.

Figure 6 Distribution of biotope records from the video survey in 2009



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Starting at the mouth of the loch system (west of a line from Rubha a'Cheathraimh Ghairbh to Eilean an t-Sithein), at the few coastal sites where infralittoral observations were made, a bedrock substrate supported grazed *Laminaria hyperborea* forest (**IR.MIR.KR.Lhyp.GzFt**), to at least 8 m, and grazed *L. hyperborea* park (**IR.MIR.KR.Lhyp.GzPk**), to at least 17 m. Beyond 40 m, to the maximum depth examined of 64 m, much of the seabed in the mouth of the loch system was covered in coarse sand with shell gravel. Particularly in the southern region of the mouth the sand was formed into waves, with little surface evidence of life (**SS.SCS.CCS.MedLumVen**) or was densely covered in pebbles, cobbles and boulders encrusted with *Pomatoceros* (**SS.SCS.CCS.PomB**), whereas towards the mouth of Loch Dùghaill a more stable, slightly siltier sediment exhibited small infaunally-produced sediment mounds (**SS.SCS.CCS.MedLumVen**). Circalittoral bedrock and boulder substrates were recorded at several of the outer sites down to 49 m, particularly off the northwest of the

Ardmore peninsular, where they were interspersed with areas of coarse sand. The rock was generally of grazed appearance supporting crusts of *Parasmittina trispinosa* (very extensive in places), *Pomatoceros* and, in shallower waters, coralline algae (**CR.MCR.EcCr.FaAlCr.Pom**). At some sites the crust biota was augmented by *Caryophyllia smithii* (**CR.MCR.EcCr.FaAlCr.Car**), patches of *Flustra foliacea* (**CR.MCR.EcCr.FaAlCr.Flu**), dense *Alcyonium digitatum* (**CR.MCR.EcCr.FaAlCr.Adig**) or fairly sparse erect bryozoans and sponges, such as *Porella compressa* and *Axinella infundibularis*? (**CR.MCR.EcCr.FaAlCr**). Although localised patches of hydroids were present at several of the faunal crust sites, at one site at the southern entrance to the SAC the bedrock substrate was largely covered in a hydroid/bryozoan turf (**CR.HCR.XFa**). The offshore rocky seabed to the northwest of the Ardmore peninsular rises into the infralittoral in places, where a grazed *L. hyperborea* park was recorded (**IR.MIR.KR.Lhyp.GzPk**).

In Loch Dùghaill the coastal fringe of infralittoral bedrock and boulders supported *L. hyperborea* forest and park that varied in the density of the algal understorey. Along the northern coastline a light algal turf of a probably fast-growing *Trailliella*-like species gave the appearance of a recently-grazed substrate (**IR.MIR.KR.Lhyp.GzFt** & **Pk)**, whereas the rock and stipe surfaces were more heavily colonized by foliose and filamentous algae at the only southern coastline site examined (**IR.MIR.KR.Lhyp.Ft**). Circalittoral rock was only encountered at two sites near the southern entrance to the loch, where the substrate appeared well-grazed (**CR.MCR.EcCr.FaAlCr**). Much of the main body of the loch appeared floored with sediments of muddy sand and mud featuring many megafaunal mounds and burrows. Such sites have been ascribed to **SS.SMU.CFiMu.SpnMeg**, although the characterizing seapens, *Virgularia mirabilis* and *Pennatula phosphorea* were not always in evidence. A site at 6 m depth in the sheltered inlet at the head of the loch revealed little surface life apart from occasional crabs and drift weed on diatom-covered mud (**SS.SMu.IFiMu**).

In the main body of Loch Laxford beyond Eilean an t-Sithein the predominant infralittoral coastal fringe biotope observed was *Saccharina latissima* forest on boulders and bedrock (**IR.LIR.K.Lsac.Ft**). In channels amongst the islands sand-scoured kelp communities were found supporting both *L. hyperborea* and *S. latissima* on bedrock and boulders (**IR.HIR.KSed.XKScrR**) or just *S. latissima* on boulders (**IR.HIR.KSed.LsacSac**). A single example of a rich *L. hyperborea* forest was recorded on a bedrock slope at the western tip of Eilean an Eireannaich, where the dense kelp overlay a profuse understorey of foliose red algae (**IR.MIR.KR.Lhyp.Ft**). Most of Loch Laxford is floored by sediments. In the main channel the seabed slopes steeply from 40 to 20 m south of Eilean an Eireannaich. In the deeper water to the northwest the coarse sandy sediments typical of the outer part of the SAC become modified into muddy sands and muds in the more sheltered conditions. These sediments were worked into megafaunal mounds and burrows, including those of *Nephrops norvegicus* and *Goneplax rhomboides* (**SS.SMU.CFiMu.SpnMeg**). A dense turf of *Amphiura* spp. arms were often seen emerging from the sediment, as well as numerous *Munida rugosa*. In addition to the seapens, *Virgularia mirabilis* and *Pennatula phosphorea*, observed at some of these sites, three sites between Eilean Ard and Eilean an Eireannaich supported occasional or frequent specimens of *Funiculina quadrangularis* in mud at depths of 43 – 46 m (**SS.SMU.CFiMu.SpnMeg.Fun**). **SS.SMU.CFiMu.SpnMeg** was also recorded in shallower muddy sediments (to 17 m) south of Eilean Ard and Eilean an Eireannaich; however, the shallow (<20 m) sediments in the main channel beyond the entrance to Loch a'Chadh-Fi, often with a surface scatter of pebbles, cobbles and sometimes boulders, supported predominantly algal-dominated communities. The algal component was in places dominated by a forest or park of *S. latissima* (**SS.SMp.KSwSS.LsacMxVs**, **SS.SMp.KSwSS.LsacR**) but was mostly in the form of an algal mat, often with complete coverage of the seabed. The identity of the species was generally unclear, and, although at some sites the material was clearly loose-lying, the proportion of attached material was not always evident. Such sites have been allocated the biotope **SS.SMp.KSwSS**. At two sites

the mat consisted of a dense layer of free-living *Phyllophora crispa* (**SS.SMp.KSwSS.Pcri**). Algal mats were also observed in most of the embayments examined, including Fanagmore Bay, where it was found to include *Audouinella floridula*, *Trailliella intricata*, *Sphacelaria* sp., *Phyllophora crispa* and *Ulva* spp. Areas of shallow mud in some of these very sheltered bays supported dense populations of *Philine aperta*, together with their balloon-shaped egg masses and *Virgularia mirabilis* (**SS.SMU.IFiMu.PhiVir**). In shallow water (1 – 9 m) at the head of the loch the fine sandy sediment was formed into dense *Arenicola* hummocks (**SS.SSA.IMuSa.ArelSa**), which retained increasing amounts of algal material in the troughs with increasing depth, merging eventually into **SS.SMp.KSwSS**. In the very shallow (<5 m) enclosed bay, Lochan na Fionndalach Bige, the seabed was predominantly a soft, jelly-like mud covered by a green film of *Oscillatoria* and supporting a fairly sparse scavenging epifauna of *Carcinus maenas*, sand gobies and *Buccinum undatum*, with *Arenicola* hummocks locally common (**SS.SMU.IFiMu.Are**).

Beds of the maerl species, *Phymatolithon calcareum*, were observed in two areas between Eilean Ard and Eilean an t-Sithein. The richer site was in the channel west of Sgeir Iosal at 14 m, where dense maerl supported a light, patchy algal turf including *Desmarestia aculeata*, *Saccharina latissima* and other filamentous and foliose species (**SS.SMPMrl.Pcal.R**). The other bed was between the islands northwest of Eilean Ard in the vicinity of a mussel farm, where several video sites were located. The densest live maerl (frequent – common) was observed to the northeast of the mussel lines, on sediments of maerl gravel on sand at 18 m (**SS.SMp.Mrl.Pcal**), and maerl and shell gravel at 25 m (**SS.SMp.Mrl.Pcal.Nmix**). At the westernmost site, which was probably close to the western boundary of the bed, a muddy medium sand supported sparse, patchy *P. calcareum* and erect algae at depths of 13 – 15 m (**SS.SMp.Mrl.Pcal**). The four stations closest to the mussel lines appear impacted by their presence, although the quality of the video footage was fairly poor. The seabed was blanketed with dead mussel shells at two of the sites, with scattered maerl rhodoliths amongst the shells at one site but absent at the other. At the other sites live maerl was apparently sparse. At all of these four sites there appeared to be an impoverished epifaunal community.

Sites in the very sheltered Loch a'Chadh-Fi were predominantly soft muds supporting *Philine aperta*, accompanied in places by *Virgularia mirabilis* and *Sagartiogeton laceratus* (**SS.SMU.IFiMu.PhiVir**). Close to the shore algal mats or turfs were found on muddy sand or mud (**SS.SMp.KSwSS**). In the narrow, current-swept channel west of Eilean a'Chadh-Fi a mixed substrate of sand, pebbles, cobbles and shells included *Modiolus modiolus*, although the proportion of living specimens was unclear (**SS.SBR.SMus**).

3.2 Infaunal survey

Thirty of the dropdown video sites were sampled by grab, whilst diver cores were obtained from the very shallow Lochan na Fionndalach Bige (Figure 3). Grabs were also taken along three of the relocatable mixed reef/sediment transects and diver cores from three maerl beds (Figure 4). Site details for all these sample sites are given in Appendix 3 (Table 3.1). Species abundance data for these sites are provided in Table 3.4, with total abundance, diversity and biotope allocations in Table 3.5. Accompanying particle size analysis data are given in Table 3.3 (raw data), Figure 3.1 (cumulative weight curves) and Table 3.2 (summarial descriptors).

Figure 7 Detrended correspondence analysis ordination of the logged species abundance data from all sublittoral infaunal samples. Symbols show biotope allocation

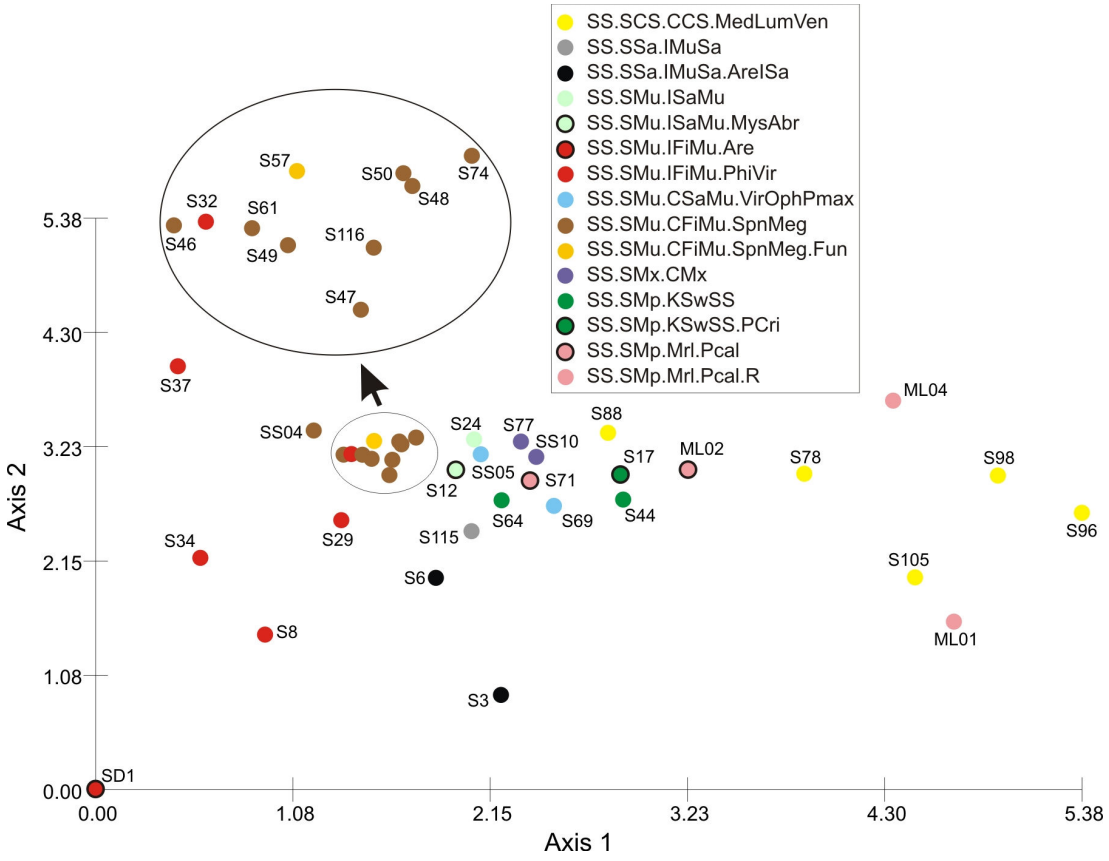


Table 6 Summary of biotope groupings of infaunal samples

Sites	Biotope	Abund. (no./0.1m^2)	No. taxa	Silt/clay (%)	Depth (m)
S78, S88, S96, S98, S105	SS.SCS.CCS.MedLumVen	141-462	31-87	1-27	16-62
S115	SS.SSa.IMuSa	1364	106	11	13
S3, S6	SS.SSa.IMuSa.AreISa	550-559	25-87	14-45	5-8
S24	SS.SMu.ISaMu	433	81	21	15
S12	SS.SMu.ISaMu.MysAbr	206	32	33	5
SD1	SS.SMu.IFiMu.Are	24	1	55	1
S8, S29, S32, S34, S37	SS.SMu.IFiMu.PhiVir	7-255	3-36	31-84	5-16
S69, SS05	SS.SMu.CSaMu.VirOphPmax	293-405	50-61	29	17-18
S46, S47, S48, S49, S50, S61, S74, S116, SS04	SS.SMu.CFiMu.SpnMeg	89-613	30-76	14-43	15-57
S57	SS.SMu.CFiMu.SpnMeg.Fun	255	44	34	44
S77, SS10	SS.SMx.CMx	377-603	72-88	14-25	25-57
S44, S64	SS.SMp.KSwSS	83-276	18-51	21-26	5-12
S17	SS.SMp.KSwSS.PCri	134	45	44	14
S71, ML02	SS.SMp.Mrl.Pcal	797-1080	98-105	21-27	17-18
ML01, ML04	SS.SMp.Mrl.Pcal.R	720-1161	56-77	8-18	5-15

Multidimensional scaling analysis of the species abundance data introduced a marked distortion of the pattern of similarities between the sites (the well-known horseshoe effect, see e.g. Gauch, 1982) and so detrended correspondence analysis was employed, in association with sediment composition and observational data, to assist with biotope allocation.

The main trend in the species abundance data, as summarized by axis 1 of the ordination (Figure 7), is clearly related to sediment composition, with coarse sandy stations on the right and mud stations on the left. The classification of the sites into biotopes is shown on Figure 7 and the characteristics of these groupings summarized in Table 6.

The exposed deep outer sites of coarse sand are referable to **SS.SCS.CCS.MedLumVen**. Generally of moderate abundance and diversity, they were dominated by the polychaetes, *Mediomastus fragilis*, *Aonides paucibranchiata* and *Glycera lapidum*, and the bivalve molluscs, *Timoclea ovata*, *Gouldia minima*, *Moerella pygmeae* and *Gari tellinella*. The more sheltered of these sites (S78, S88) had a significant admixture of silt/clay and a community intermediate between the more exposed sites and the muddier biotopes higher up the loch system.

In both Loch Laxford and Loch Dùghaill coarse sands graded into muddy sands characterised by megafaunal mounds and burrows (**SS.SMu.CFiMu.SpnMeg**), with moderate levels of abundance and diversity. Although some of the sites allocated to this biotope had high levels of silt/clay (>25%) and supported populations of the characteristic *Nephrops norvegicus*, *Virgularia mirabilis* and *Pennatula phosphorea*, other less muddy sites supported only smaller burrow-forming species and apparently few or no seapens. The tight cluster of all of the allocated sites in the ordination shows that the overall species composition was fairly uniform and so all the sites have been referred to **SS.SMu.CFiMu.SpnMeg**, based on the video evidence of the presence of larger megafaunal species at some of these sites. An equally valid approach would be to allocate some of the sites to circalittoral sandy mud biotopes (**SS.SMu.CSaMu**). The sites are probably representative of stages along a continuum between these two biotopes. One of the clustered sites (S57) supported *Funiculina quadrangularis* and so was referred to **SS.SMu.CFiMu.SpnMeg.Fun**.

Sites S77 in Loch Laxford and SS10 in Loch Dùghaill represent conditions intermediate between the exposed coarse sediments of the outer SAC and the megafaunally worked muddy sediments in the middle reaches of Loch Laxford and Loch Dùghaill. These poorly sorted mixed sediments of shell gravel and muddy sand (not well represented by the particle size results due possibly to small sample sizes) supported an infaunal community of moderate abundance and fairly high diversity dominated by the polychaetes, *Mediomastus fragilis*, *Scalibregma inflatum* and *Minuspio cirrifera*, and the bivalve, *Thyasira flexuosa/gouldi* (**SS.SMx.CMx**).

Sites with the lowest axis 1 scores in Figure 7 are very muddy sands and sandy muds from very sheltered, shallow inlets. Most had an epifauna characterised by *Philine aperta* and an infauna of low abundance and diversity dominated by the bivalves, *Abra nitida* and *Mysella bidentata*, and the polychaetes, *Prionospio fallax* and *Tharyx killariensis* (**SS.SMu.IFiMu.PhiVir**). The most impoverished sediment sampled throughout the survey was the gelatinous sandy mud in Lochan na Fionndalach Bige (SD1). Although diver observations revealed *Arenicola marina* to be common in places, the core samples taken contained just one species, *Nephtys hombergii*. The site has been referred to the biotope, **SS.SMu.IFiMu.Are**, but is possibly intermediate between this and **SS.SMu.IFiMu.Beg**.

At the head of Loch Laxford sites S3 and S6 were located in an area of dense *Arenicola marina* mounds of muddy sand (**SS.SSa.IMuSa.AreISa**). The infauna was moderately

abundant and dominated by the polychaetes, *Capitella capitata*, *Spio filicornis* and *Pseudopolydora* cf. *paucibranchiata* and nemerteans. Very high numbers of *C. capitata* at one of the sites may have been linked to the large amounts of algal material collecting in the troughs between the *Arenicola* hummocks. A slightly muddy rippled sand site at the head of a bay in Loch Dùghaill (S115) supported a similar fauna, although differing in strong dominance by the polychaetes, *Exogone* spp. and *Paradoneis lyra*, and the oligochaete, *Tubificoides pseudogaster*. This site was the richest examined in terms of both abundance and diversity (Table 6). It was ascribed to the biotope **SS.SSa.IMuSa**, although the infaunal community was close to that of the sandy mud biotope **SS.SMu.ISaMu.MysAbr**, to which the much siltier site S12 was referred.

The extensive areas of shallow seabed in the inner half of Loch Laxford and in its sheltered bays covered by algal mats were represented by three sample sites. At sites S44 and S64 the underlying sediment beneath the mat was a muddy sand supporting an infauna of moderate abundance and diversity dominated by the polychaetes, *Lumbrineris gracilis* and *Mediomastus fragilis* (**SS.SMp.KSwSS**). At the third site the very muddy sand was covered by a layer of *Phyllophora crispa*, beneath which the fauna was essentially similar to the other sites (**SS.SMp.KSwSS.Pcri**).

Sites S69 and SS05 to the west and south of Eilean Ard were muddy sands, with scattered gravel or pebbles, supporting *Virgularia mirabilis* (**SS.SMu.CSaMu.VirOphPmax**). The moderately abundant and diverse infauna was dominated by the polychaetes, *Mediomastus fragilis*, *Lumbrineris gracilis* and *Scalibregma inflatum*, and the bivalves, *Thyasira flexuosa/gouldi* and *Mysella bidentata*.

Grab site S71 and core sample sites, ML01, ML02 and ML04 were all located on maerl beds. Apart from site S115, these samples contained the most abundant infauna whilst the samples from S71 and ML02, which were from the same maerl bed to the north-west of Eilean Ard, displayed with S115 the highest diversity. In fact the number of taxa in the maerl core samples will have been underestimated in comparison to the grab samples, as only a third of the grabbed area was sampled. The infaunal maerl results are further described in section 3.4.

3.3 Reef and mixed reef/sediment transects

3.3.1 Biotope composition

Fifty-two biotopes were recorded during the MNCR phase 2 surveys along the nine transects, of which 19 were littoral and 33 sublittoral (Table 7). The latter included 10 sediment biotopes recorded at the deeper ends of six of the transects. In combination with the records from the other surveys, this constitutes a total biotope count of 88 for the SAC, made up of six littoral sediment, 21 littoral rock, 29 sublittoral sediment and 32 sublittoral rock biotopes.

3.3.2 Biotope distribution

Details of the physical and biological characteristics of the transects are given in Appendix 4 (Tables 4.1 and 4.2) and information necessary for relocation of the sites in Appendix 5. SACFOR abundances for the biota in each zone, obtained during the MNCR phase 2 survey, are given in Appendix 4 (Tables 4.3 – 4.11).

Table 7 Biotopes recorded during the surveys along reef transects, mixed reef/sediment transects and intertidal sediment transects. Occurrences are given as yyyy.n where yyyy is the abbreviated site code and n the transect zone. X signifies the section of a mixed transect

Biotope	Site and zone
LR.HLR.MusB.MytB	IR07.4
LR.HLR.MusB.Cht.Cht	IR07.3, IR10.3
LR.HLR.MusB.Sem.Sem	IR10.4
LR.HLR.FT.FserT	IR02.6
LR.MLR.BF.FspiB	IR05.4, IR06.4
LR.MLR.BF.FvesB	IR04.5, IR10.5
LR.MLR.BF.Fser.R	IR06.6
LR.LLR.F.Pel	IR01.3, IR02.3, IR03.3, IR04.3, IR05.3, IR06.3
LR.LLR.F.Fspi.FS	IR02.4, IR04.4
LR.LLR.F.FspiX	IS01.3
LR.LLR.F.Fves.FS	IR01.4, IR02.5, IR03.3, IR05.5, IR06.5
LR.LLR.F.FvesX	IS01.4, IS02.1
LR.LLR.F.Asc.FS	IR01.5, IR03.4
LR.LLR.F.Fserr.FS	IR01.6, IR03.5, IR04.6, IR05.6
LR.FLR.Lic.YG	IR01.1, IR02.1, IR03.1, IR04.1, IR05.1, IR06.1, IR07.1, IR10.1, IS02.A
LR.FLR.Lic.Ver.Ver	IR01.2, IR02.2, IR03.2, IR04.2, IR05.2, IR06.2, IR07.2, IR10.2
LR.FLR.Rkp	IR02.1, IR05.1, IR05.3, IR06.1
LR.FLR.Rkp.Cor.Cor	IR07.4, IR10.4
LR.FLR.Rkp.G	IR05.2
IR.HIR.KFaR.Ala.Myt	SR07.1
IR.HIR.KFaR.Ala.Ldig	SX10.1
IR.HIR.KFaR.LhypR.Ft	SR07.3, SR08.1
IR.HIR.KFaR.LhypRVt	SR08.2
IR.MIR.KR.Ldig.Ldig	SX04.1, SX06.1, SR07.2
IR.MIR.KR.LhypT.Ft	SR02.1
IR.MIR.KR.LhypTX.Ft	SR02.2
IR.MIR.KR.Lhyp.Ft	SR07.3
IR.MIR.KR.Lhyp.Pk	SR07.4
IR.MIR.KR.Lhyp.GzFt	SX06.2, SX10.2
IR.MIR.KR.LhypVt	SX10.3
IR.LIR.K.LhypLsac.Gz	SX06.3
IR.LIR.K.Lsac.Ft	SX01.1, SX03.2, SX04.3, SX05.2
IR.LIR.K.Lsac.Pk	SX03.3
IR.LIR.K.LhypCape	SX04.2, SX05.1
IR.LIR.Lag.ProtFur	SX03.1
IR.FIR.SG.CRSpAsAn	SX10.5
CR.HCR.XFa.CvirCri	SR08.3, SR08.4
CR.MCR.EcCr	SX10.4
CR.MCR.EcCr.FaAlCr	SR07.5
CR.MCR.EcCr.FaAlCr.Car	SX10.5
CR.LCR.BrAs.AmenCio	SX03.4, SX03.5, SX04.4, SX04.5, SX05.3, SX05.4, SX05.5
CR.LCR.BrAs.AntAsH	SX06.4, SX06.5, SX06.6, SX06.7

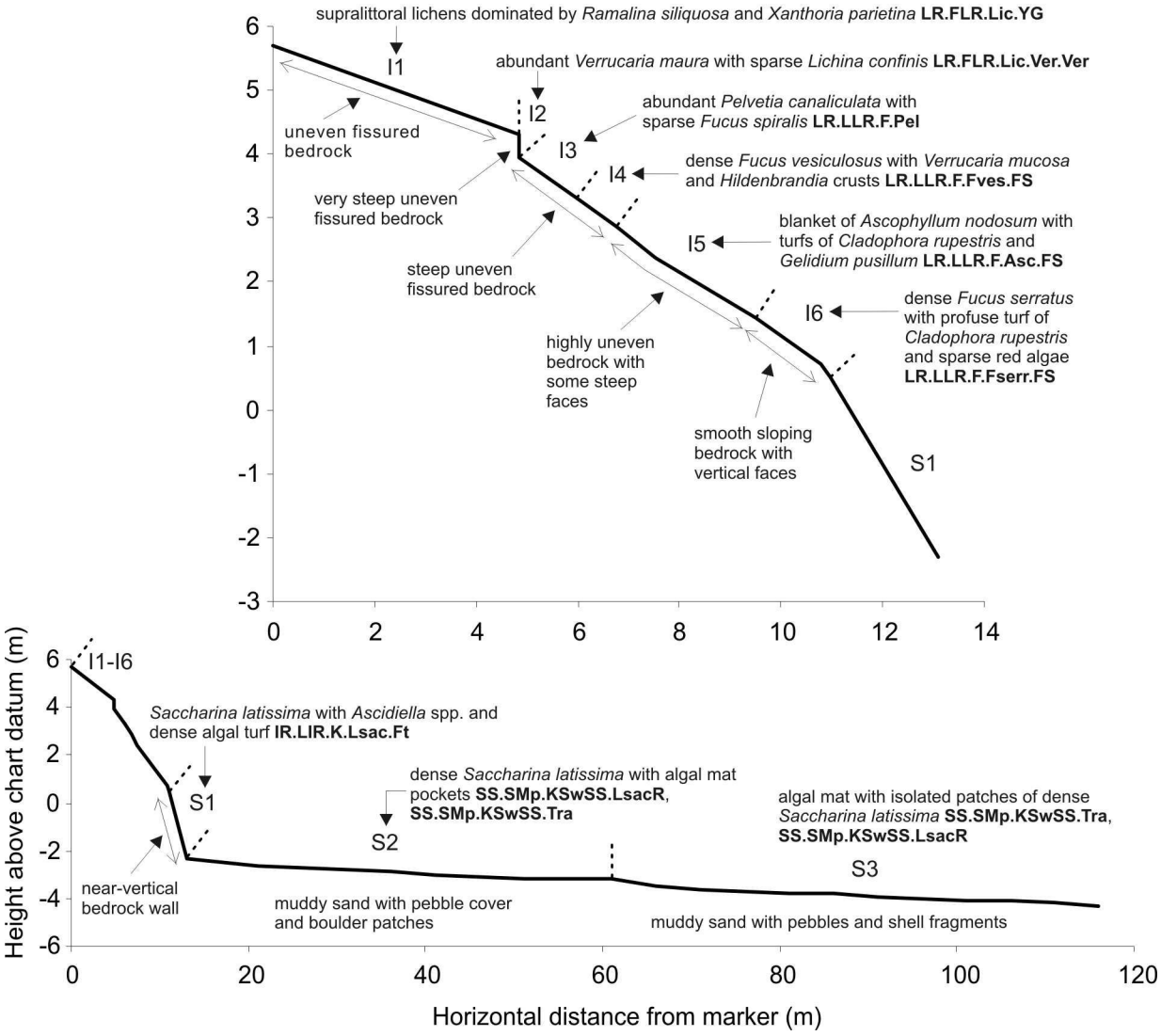
Table 7 continued

Biotope	Site and zone
LS.LCS.Sh.BarSh	IS01.2
LS.LSa.St.Tal	IS02.A
LS.LSa.MuSa.HedMacEte	IS01.5, IS01.6, IS02.3, IS02.4, IS02.5
LS.LMx.GvMu.HedMx.Cvol	IS02.2
LS.LMp.Sm	IS01.1, IS02.B
SS.SCS.CCS	SX06.6, SX06.8
SS.SSa.CMuSa	SX03.5
SS.SMu.IFiMu.PhiVir	SX03.6
SS.SMu.CSaMu.VirOphPmax	SX05.6
SS.SMu.CFiMu.SpnMeg	SX04.6, SX05.7
SS.SMu.CFiMu.SpnMeg.Fun	SX04.6
SS.SMx.CMx	SX10.6
SS.SMx.CMx.ClloMx	SX05.4
SS.SMp.KSwSS.LsacR	SX01.2, SX01.3
SS.SMp.KSwSS.Tra	SX01.2, SX01.3

3.3.2.1 Eilean Port a'Choit W (LL09IR01, LL09SR01, LL09SS01) (Figure 8)

This site near the head of Loch Laxford was chosen to be representative of the sheltered upper region of the loch and because it was close to a source of potential anthropogenic influence in the form of a mussel farm. It was also very close to a shore site previously examined by Posford Haskoning Ltd (2001).

Figure 8 Eilean Port a'Choit W transect profile with summary of the substrates, dominant biota and biotopes recorded within the component zones. Upper diagram shows details of the intertidal zones



For the most part the shore consisted of highly uneven bedrock, very steep in places, with a narrow sublittoral rock wall giving way to a muddy sand plain. The gently sloping but highly irregular supralittoral zone supported a lichen flora dominated by *Ramalina siliquosa* and *Xanthoria parietina* (**LR.FLR.Lic.YG**). Below this zone a steep irregular rock slope supported bands of *Verrucaria maura* with patchy *Lichina confinis* (**LR.FLR.Lic.Ver.Ver**), *Pelvetia canaliculata* with crusts of *V. maura* and *Hildenbrandia* spp. (**LR.LLR.F.Pel**) and *Fucus vesiculosus* with crusts of *Verrucaria mucosa* and *Hildenbrandia* spp. (**LR.LLR.F.Fves.FS**). No distinct *Fucus spiralis* zone was observed although small quantities were present in the *Pelvetia* and *F. spiralis* zones. The most extensive littoral zone consisted of a blanket of *Ascophyllum nodosum* over highly uneven bedrock. Beneath

the blanket *Semibalanus balanoides* and *Patella vulgata* were both common and there was a patchy turf of *Gelidium pusillum* and, particularly in the lower part of the zone, *Cladophora rupestris* (**LR.LLR.F.Asc.FS**). Below the *Ascophyllum* zone, the *Cladophora* turf became profuse and was accompanied by a fairly sparse red algal flora dominated by *Membranoptera alata*, *Polysiphonia stricta* and *Plumaria plumosa* under a canopy of dense *Fucus serratus* (**LR.LLR.F.Fserr.FS**). From around 0.5 m above chart datum a near-vertical rock wall dropped to the sedimentary plain at 2.3 m. The wall supported *Saccharina latissima* and a dense silty algal turf dominated by *Trailliella intricata*, *Phyllophora crispa* and *Delesseria sanguinea*, as well as numerous *Ascidiella aspersa* and *A. scabra* (**IR.LIR.K.Lsac.Ft**). Most of the transect, from a distance of 17 m to the end of the transect at 120 m, covered an area of muddy sand with a surface cover of pebbles. There were also frequent boulders to a distance of 65 m (3.2 m depth), beyond which they became sparse. The biota of the inshore section was dominated by dense *S. latissima*, *Chorda filum* and *Trailliella intricata* (**SS.SMp.KSwSS.LsacR**), with *T. intricata* forming a mat in gaps in the kelp canopy (**SS.SMp.KSwSS.Tra**). Beyond 65 m to the end of the transect at a depth of 4.3 m there was an extensive *T. intricata* mat (**SS.SMp.KSwSS.Tra**), with large isolated patches of mostly detached *S. latissima* plants (**SS.SMp.KSwSS.LsacR**).

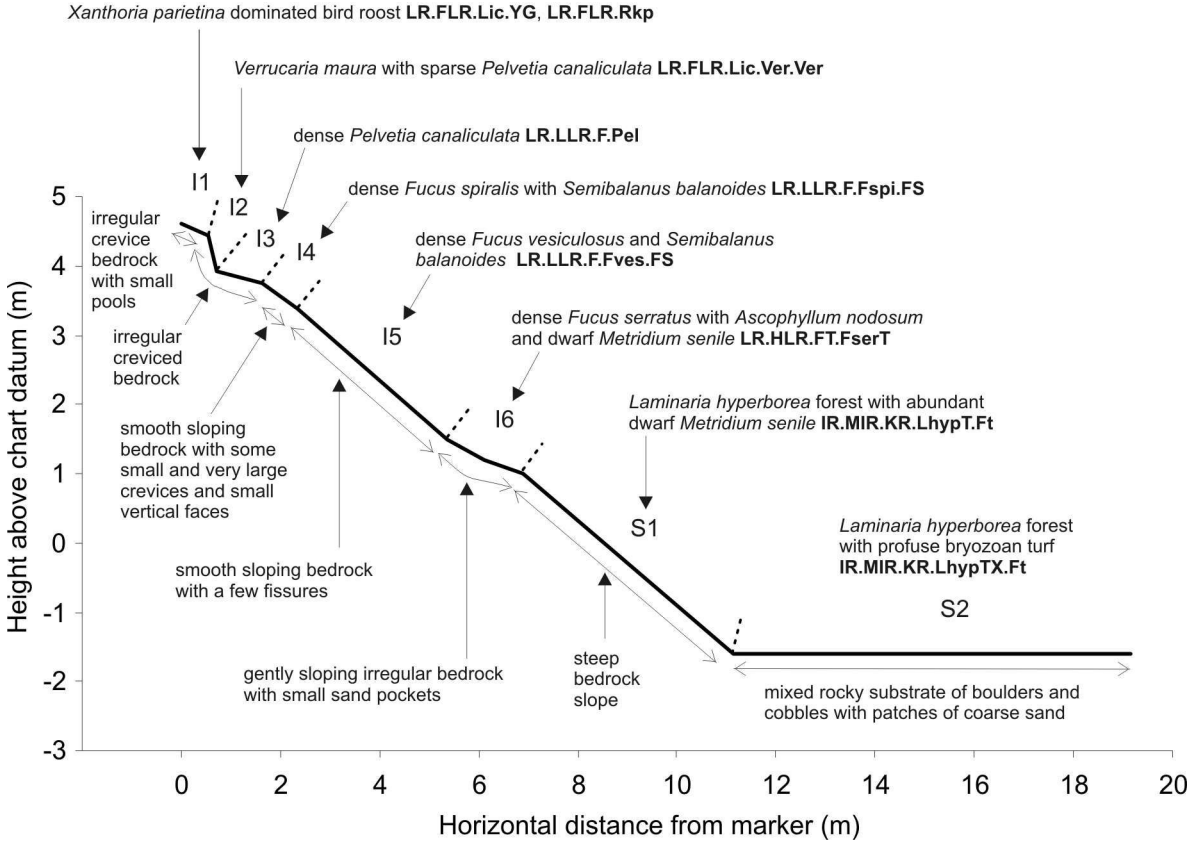
3.3.2.2 Sruth Mor (LL09IR02, LL09SR02) (Figure 9)

This transect was selected to represent the larger of two tidal rapids connecting the inlet Lochan na Fionndalach Bige with Loch Laxford. It was located on the southeastern side of an islet in the centre of the entrance channel.

The marker piton was located at the summit of the islet in an area of uneven, creviced bedrock with small pools containing no observable biota (**LR.FLR.Rkp**). The area was used as a bird roost with a patchy mixed turf of *Prasiola stipitata* and *Rosenvingiella radicans*; however, the rock surface was lichen-dominated, especially by *Xanthoria parietina* (**LR.FLR.Lic.YG**). Below this zone a 0.5 m wide band of *Verrucaria maura* (**LR.FLR.Lic.Ver.Ver**) was followed by a 1 m wide band of *Pelvetia canaliculata* on a similar substrate of uneven bedrock (**LR.LLR.F.Pel**). Beneath the *Pelvetia* there were crusts of *Verrucaria maura*, *V. mucosa* and *Hildenbrandia* spp. Below the *Pelvetia* zone the shore topography changed to a slope of smooth bedrock for most of the intertidal section of the transect. At the top of this slope a dense band of *Fucus spiralis*, with some *Pelvetia*, was accompanied by frequent *Hildenbrandia* spp. and *V. mucosa*. *Semibalanus balanoides* was common here but the zone has been ascribed to **LR.LLR.F.FspiFS**, rather than **LR.MLR.BF.FspiB**, in view of its sheltered nature. Below the *F. spiralis* band was the most extensive zone on the shore, dominated by *Fucus vesiculosus* but with patches of *Ascophyllum nodosum* (**LR.LLR.F.Fves.FS**). The red algal flora was poorly developed but beneath the fucoids *S. balanoides* was abundant and *Patella vulgata* common. The presence of dwarf *Metridium senile*, which was common towards the bottom of the zone, was indicative of the accelerated tidal currents. At the bottom of the shore small pockets in the bedrock were filled with sand but most of this area was covered in dense *Fucus serratus*, with smaller quantities of *A. nodosum*. The fronds of *F. serratus* supported encrusting bryozoans, including *Alcyonidium hispida*, *Flustrellidra hispida* and *Electra pilosa*, and the hydroid, *Dynamena pumila*, with frequent dwarf *M. senile* on the rock surface (**LR.HLR.FT.serT**). The *F. serratus* zone extended to around 1 m above chart datum, below which a steep bedrock slope descended to the channel bottom at a depth of 1.6 m. The slope supported a forest of *Laminaria hyperborea*, with *L. digitata* also present, but not zone-forming, in the upper part of the slope. Beneath the kelp the faunal community was dominated by abundant dwarf *M. senile* and *S. balanoides* (locally abundant) and a moderate algal turf included *Phycodrys rubens*, *Cryptopleura ramosa*, *Cladophora* sp. and *Bryopsis* plumosa (**IR.MIR.KR.LhypT.Ft**). The transect continued across the channel over a mixed substrate of boulders and cobbles with small patches of coarse sand. The forest of *L. hyperborea* continued, together with numerous *M. senile*; however, the faunal community

became dominated by a profuse bryozoan turf consisting largely of *Eucratea loricata*, with lesser quantities of *Crisia* sp. and *Scruparia* sp. (**IR.MIR.KR.LhypTX.Ft**). The algal community on the rock surface was not well developed apart from extensive pink and red crusts, but there was a rich stipe flora including *Palmaria palmata*, *Ptilota gunneri* and *Membranoptera alata*.

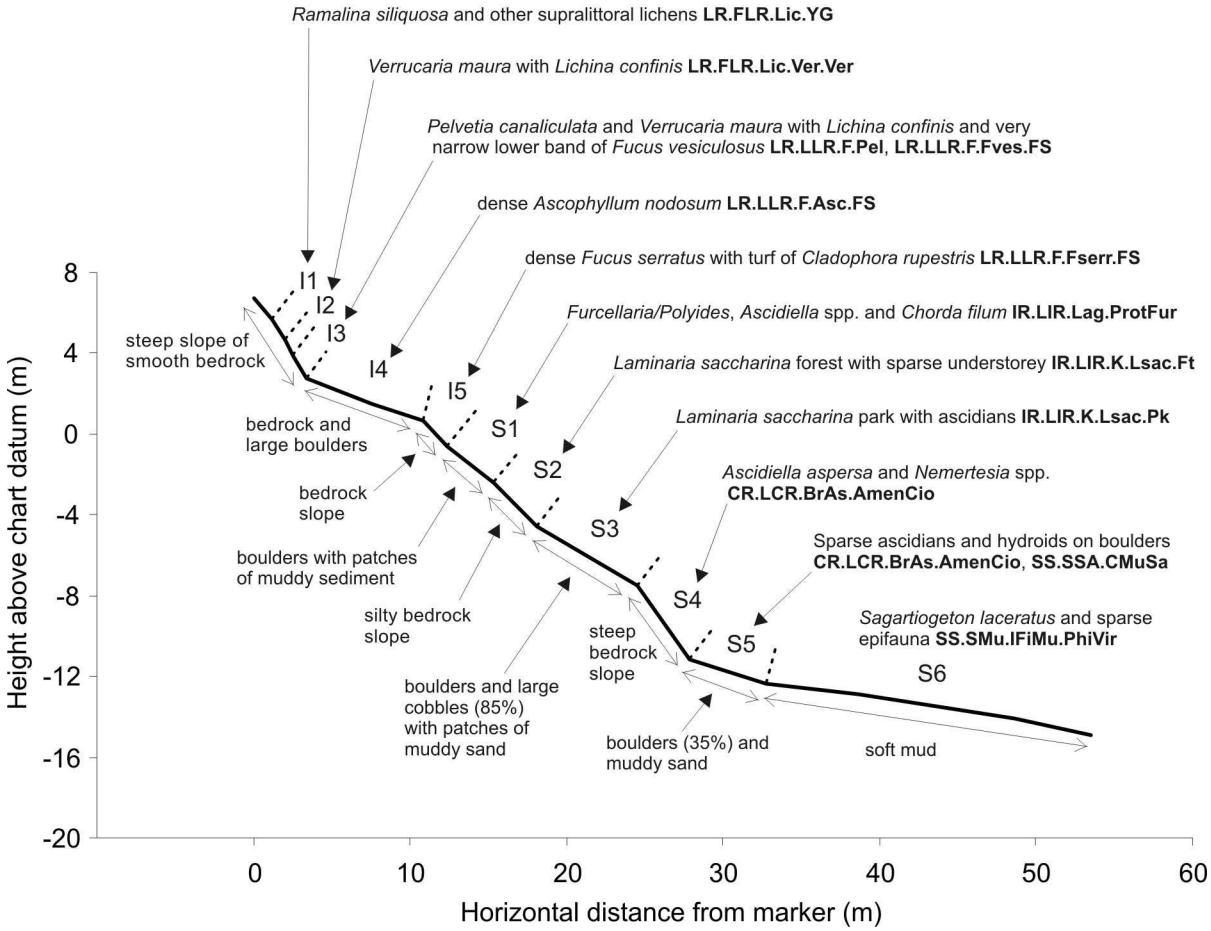
Figure 9 Sruth Mor transect profile with summary of the substrates, dominant biota and biotopes recorded within the component zones



3.3.2.3 Ardmore (LL09IR03, LL09SR03, LL09SS03) (Figure 10)

This site was chosen to represent very sheltered conditions within Loch a'Chad-Fi and was located in the north-western corner of the loch.

Figure 10 Ardmore transect profile with summary of the substrates, dominant biota and biotopes recorded within the component zones



The supralittoral, littoral fringe and upper eulittoral regions of the shore consisted of a steep slope (c. 55°) of smooth bedrock, followed by a gentle slope of bedrock and boulders over the lower part of the shore. At the top of the shore a bank of heather and grass gave way to narrow bands of supralittoral lichens (**LR.FLR.Lic.YG**) and *Verrucaria maura* (**LR.FLR.Lic.Ver.Ver**), with a patchy band of *Lichina confinis* straddling the boundary between the latter biotope and the following fucoid-dominated zone. *V. maura* also extended into this fucoid zone but the biomass was dominated by a patchy turf of *Pelvetia canaliculata* (**LR.LLR.F.Pel**). *F. spiralis* was also present in the form of small isolated patches, though forming no distinct zone. At the base of this steep upper shore bedrock slope there was a very narrow (c. 10 cm) band of dense *F. vesiculosus* (**LR.LLR.F.Fves.FS**). The bedrock and boulders of most of the flatter, lower region of the shore was blanketed in *Ascophyllum nodosum* (**LR.LLR.F.Asc.FS**). Rock beneath the blanket supported turfs of *Cladophora rupestris* and *Gelidium pusillum*, with the fauna dominated by *Semibalanus balanoides* and *Patella vulgata*, both of which were common. The lower margin of the *Ascophyllum* zone appeared to be unusually low (around MLWS). Below this, a zone of *Fucus serratus* occupied the sublittoral fringe, extending from around 0.7 m above to 0.6 m below chart datum. It was incompletely surveyed by diver but was seen to consist of a dense cover of *F. serratus* overlaying a turf of *Cladophora rupestris* on a

bedrock slope (**LR.LLR.F.Fserr.FS**). The bedrock slope gave way to a zone of boulders and patches of muddy sediment to a depth of 2.4 m. Common species here included *Furcellaria*/*Polyides*, *Ascidiella* spp. and *Chorda filum*, although much of the biomass consisted of decomposing *F. serratus*. The zone has been tentatively ascribed to **IR.LIR.Lag.ProtFur**. Below this zone a forest of *Saccharina latissima* on a silty bedrock slope extended to a depth of 4.6 m (**IR.LIR.K.Lsac.Ft**). There were large numbers of *Ascidiella aspersa* on the kelp fronds, as well as on the underlying rock, but otherwise the associated community was sparse. From a depth of 4.6 m to 7.5 m the *S. latissima* population thinned to a park on boulders and large cobbles with a richer algal and faunal understorey, especially of ascidians (**IR.LIR.K.Lsac.Pk**). Below the kelp park a steep bedrock slope extended for a distance of 5 m down to 11.2 m depth. Occasional foliose algae were present, including *Delesseria sanguinea*, but the biota was dominated by *A. aspersa*, *Nemertesia antennina* and *N. ramosa*, all of which were common. The biota falls between the biotopes **CR.LCR.BrAs.AmenCio** and **CR.LCR.BrAs.AntAsH** but has been referred to the former due to its low diversity and complete absence of recorded echinoderms. At the base of the slope a similar community continued on boulders (**CR.LCR.BrAs.AmenCio**) scattered on muddy sand (**SS.SSA.CMuSa**). At 12.4 m depth until the end of the transect at 14.9 m the substrate was soft mud, initially scattered with shells and shell fragments. The most conspicuous biota were the numerous *Sagartiogeton laceratus*, with other epifaunal life sparse. *Virgularia mirabilis* was present at low density. The biotope falls between **SS.SMu.IFiMu.PhiVir** and **SS.SMu.CFiMu.SpnMeg**, but has been ascribed to the former as no megafaunal features were observed.

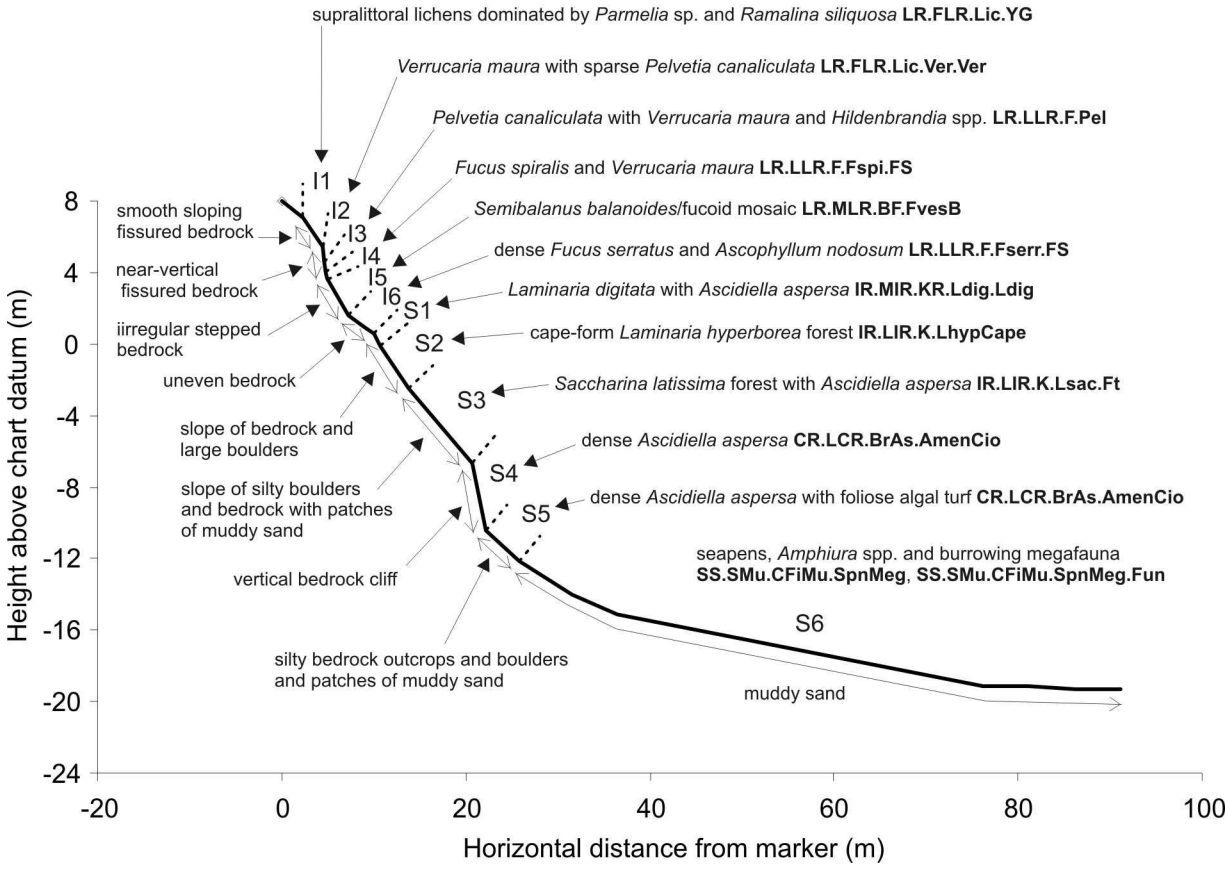
3.3.2.4 Eilean an Eireannaich E (LL09IR04, LL09SR04, LL09SS04) (Figure 11)

This site was selected as representative of the middle of Loch Laxford and of the circalittoral reef biotope, **CL.LCR.BrAs.AmenCio**. The precise location was also studied by diver transect in 2001 (Bates *et al.*, 2004). The transect ran out from the eastern side of Eilean an Eireannaich into the entrance channel to Loch a'Chadh-Fi.

The upper shore was of steep bedrock, which started to level out in a narrow supralittoral zone, backed by a gently-sloping bank of heather. The topographically smooth supralittoral rock was dominated by lichens, especially *Parmelia* sp. and *Ramalina siliquosa* (**LR.FLR.Lic.YG**). Below this the upper shore was widely encrusted with *Verrucaria maura*, which was accompanied in narrow consecutive zones by sparse *Pelvetia canaliculata* (**LR.FLR.Lic.Ver.Ver**), dense *P. canaliculata* and *Hildenbrandia* spp. (**LR.LLR.F.Pel**) and *Fucus spiralis* (**LR.LLR.F.FspiFS**). Below the F. spiralis zone the shore topography changed to irregular bedrock steps. Patches of *F. vesiculosus* and *Ascophyllum nodosum* occurred generally on the more vertical faces, with steep faces covered in dense *Semibalanus balanoides* and *Patella vulgata*. Red algae were sparse (**LR.MLR.BF.FvesB**). At the bottom of the shore the bedrock became less uneven and the profile flatter which permitted dense coverage by *F. serratus* and *A. nodosum*. Beneath the fucoids red algal diversity was low but there was a patchy turf of *Gelidium pusillum* and *Mastocarpus stellatus* and frequent *S. balanoides* (**LR.LLR.F.Fserr.FS**). A narrow (c. 1 m wide) band of *Laminaria digitata* occurred below the fucoids, accompanied by dense *Ascidiella aspersa* and extensive pink coralline crusts (**IR.MIR.KR.Ldig.Ldig**). Below this zone a slope of bedrock and large boulders extended from a depth of 0.1 to 6.7 m. An upper 4 m wide band was strongly dominated by cape-form *L. hyperborea* (**IR.LIR.K.LhypCape**), with large plants of *Saccharina latissima* dominating a lower 8 m wide band, where the rock was silted and interspersed with patches of muddy sand (**IR.LIR.K.Lsac.Ft**). Kelp fronds and the rock substrate supported profuse growths of *Ascidiella aspersa*. A vertical bedrock cliff extended from a depth of 6.7 to 10.4 m and supported superabundant *A. aspersa*, scattered hydroids and extensive pink and red algal crusts (**CL.LCR.BrAs.AmenCio**). At the base of the cliff a narrow band of large boulders on muddy sand and bedrock outcrops supported a similar community, though with the addition of a red algal turf (including *Bonnemaisonia*

asparagoides?, *Trailliella intricata* and *Delesseria sanguinea*). Rocky substrates gave way to a gentle slope of muddy sand from 12.1 m to the end of the transect at 19.3 m. The sediment contained frequent megafaunal burrows, with both *Munida rugosa* and *Nephrops norvegicus* being observed as occupants. There were large numbers of *Amphiura* arms emerging from the sediment and *Virgularia mirabilis* and *Pennatula phosphorea* were present, with dense patches of the latter species (**SS.SMu.CFiMu.SpnMeg**). The sediment became muddier with depth and this was accompanied by a modification of the species composition, with *Funiculina quadrangularis* and *Sagartiogeton laceratus* appearing in deeper water (**SS.SMu.CFiMu.SpnMeg.Fun**).

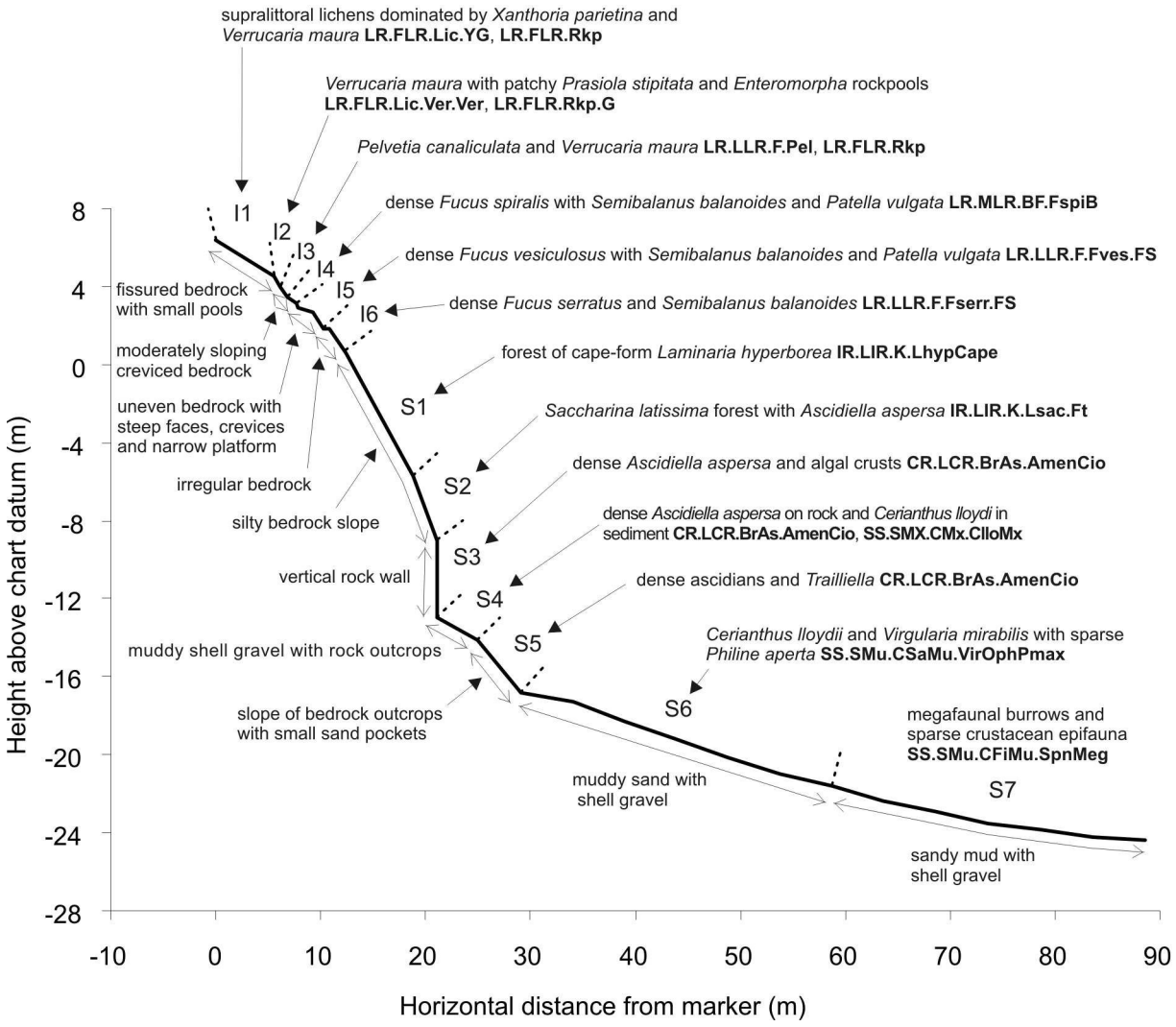
Figure 11 Eilean an Eireannaich E transect profile with summary of the substrates, dominant biota and biotopes recorded within the component zones



3.3.2.5 Eilean Ard S (LL09IR05, LL09SR05, LL09SS05) (Figure 12)

This transect was positioned within 75 m of a salmon farm (lying fallow at the time of the survey) on the southern side of Eilean Ard. It was also selected on the basis of the existence of good comparative data for this site from the 2001 survey (Bates *et al.*, 2004).

Figure 12 Eilean Ard S transect profile with summary of the substrates, dominant biota and biotopes recorded within the component zones



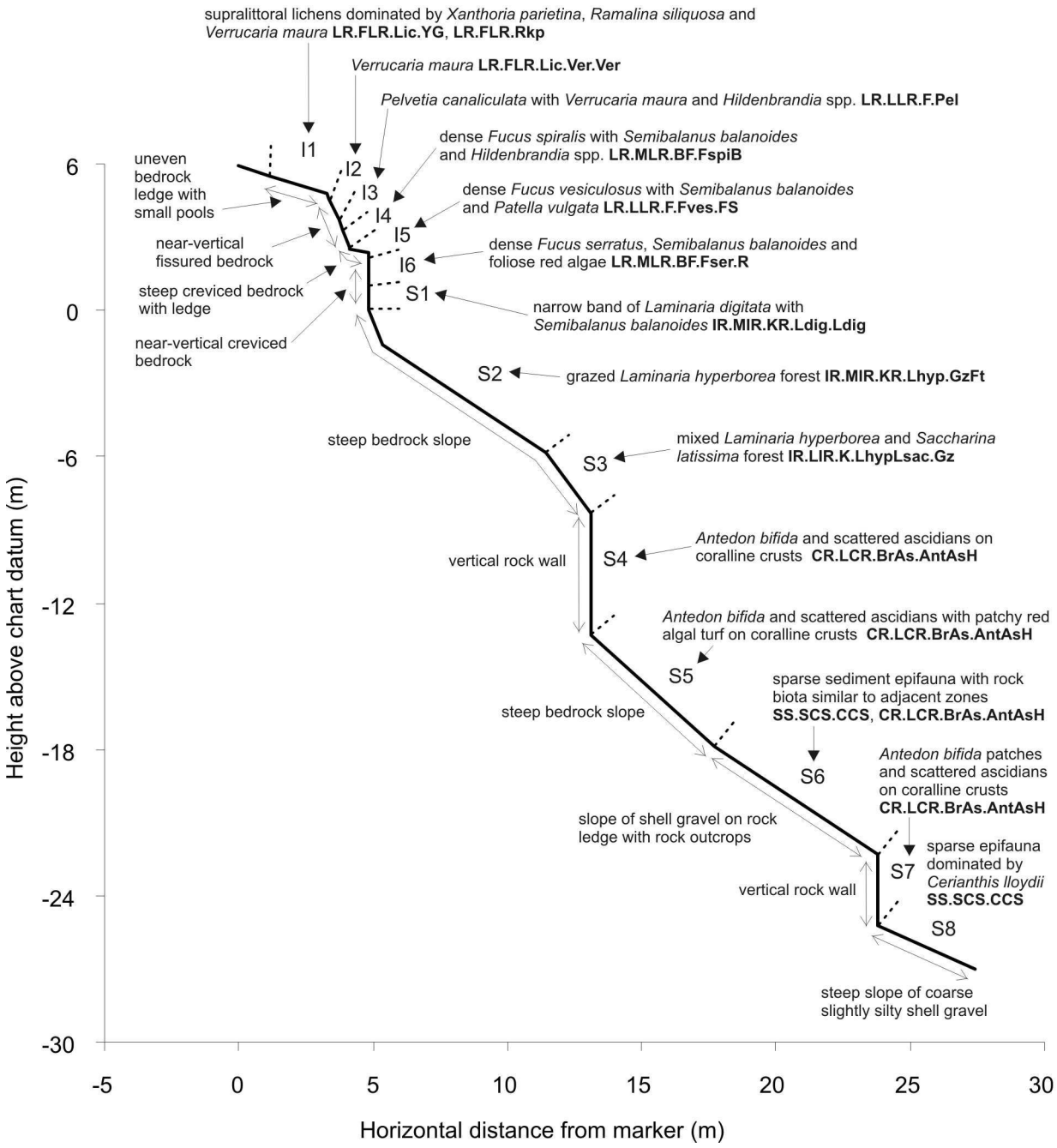
The marker stake was positioned at the transition between a heather slope and the bedrock shore. Below the heather, the supralittoral zone of gently sloping but fissured rock was dominated by *Xanthoria parietina*, accompanied in the lower half by *Verrucaria maura* (**LR.FLR.Lic.YG**). Small rockpools contained no evident biota (**LR.FLR.Rkp**). *Verrucaria maura* dominated the following zone (**LR.FLR.Lic.Ver.Ver**), encrusting fairly smooth but fissured rock containing small pools with *Ulva intestinalis* (**LR.FLR.Rkp.G**). Below this zone *V. maura* remained abundant on the smooth but creviced rock slope but was accompanied by a patchy band of *Pelvetia canaliculata* (**LR.LLR.F.Pel**) and some small bare rockpools (**LR.FLR.Rkp**). *Chthamalus montagui* and *Semibalanus balanoides* were both recorded in this zone but at very low density. A band of dense *Fucus spiralis* followed on a similar substrate, but here the fucoid was accompanied by many *S. balanoides* and *Patella vulgata* (**LR.MLR.BF.FspiB**). Below this zone the shore became flatter but of uneven topography with steep faces, crevices and a narrow rock platform. This most extensive of the shore

zones consisted of a dense blanket of *Fucus vesiculosus* overlying fairly dense *S. balanoides* and *P. vulgata* (**LR.LLR.F.Fves.FS**). This zone gave way to a band of dense *Fucus serratus* overlying abundant *S. balanoides*, with a sparse red algal flora (**LR.LLR.F.Fserr.FS**). From 0.6 m above chart datum to a depth of 9 m a silty bedrock slope supported kelp forest. The upper part was dominated by cape-form *Laminaria hyperborea* but *Saccorhiza polyschides* was also common (**IR.LIR.K.LhypCape**). The kelp fronds and stipes supported profuse epibiota, especially *Ascidiella aspersa*, *A. scabra*, *Membranipora membranacea*, *Scrupocellaria reptans*, *Lacuna vincta* and Ectocarpaceae sp., with the rock supporting extensive algal crusts and frequent *Dictyota dichotoma*. The lower part of the forest below 5.7 m depth was dominated by *Saccharina latissima*, but the rock supported a similar understorey biota, except for large numbers of *A. aspersa* (**IR.LIR.K.Lsac.Ft**). Below the forest there was a 4 m vertical rock wall extending to a depth of 13 m, dominated by ascidians (especially *A. aspersa*) and algal crusts (**CL.LCR.BrAs.AmenCio**). Below the wall a band of muddy shell gravel was populated by numerous *Cerianthus lloydii* and *Pagurus bernhardus* (**SS.SMx.CMx.CIloMx**), with small rock outcrops providing a substrate for dense patches of *A. aspersa* (**CL.LCR.BrAs.AmenCio**). From 14.1 to 16.8 m depth a bedrock slope with small sand pockets supported a rich ascidian fauna (mainly *A. aspersa*, *Ascidia mentula* and *Corella parallelogramma*) and an extensive red algal turf, which was predominantly *Trailliella intricata* but contained occasional *Heterosiphonia japonica* (**CL.LCR.BrAs.AmenCio**). The bedrock slope gave way to a gently sloping sedimentary seabed, extending to the end of the transect at a depth of 24.4 m. This gradually changed from muddy sand with shell gravel, with a dense surface cover of shell fragments and pebbles, to a softer sandy mud with sparser shell gravel content at the end of the transect. The muddy sand supported abundant *C. lloydii*, frequent (locally common) *Virgularia mirabilis* and sparse *Ophiura ophiura* and *Philine aperta*. These characteristics are not readily referable to a biotope, possibly lying between **SS.SMu.IFiMu.PhiVir** and **SS.SMu.CSaMu.VirOphPmax**, to which it has been ascribed. Of particular interest is the presence of much detached *H. japonica* in this zone. Sandy mud occupied the final 30 m of the transect. This contained frequent megafaunal burrows (probably *Munida rugosa*) and a fairly sparse epifauna of mobile crustaceans including *Liocarcinus depurator*, *P. bernhardus*, *Macropodia* sp. and *Carcinus maenas*. A 2009 dropdown video station about 60 m south of the end of the transect recorded seapens and *Nephrops norvegicus* burrows. The zone has been ascribed to **SS.SMu.CFiMu.SpnMeg**, although it appears transitional in nature.

3.3.2.6 Eilean Ard NE (LL09IR06, LL09SR06, LL09SS06) (Figure 13)

The Eilean Ard NE transect was located midway along the very steep northeast coast of the island. It was selected to represent an example of the ascidian and *Antedon* dominated circalittoral biotope, **CR.LCR.BrAs.AntAsH**, typical of the middle of Loch Laxford, and as the only site in the region where *Swiftia pallida* has been recorded (Bates *et al.*, 2004). There was also good comparative data available for both the shore (Posford Haskoning Ltd, 2001) and for the sublittoral reef habitats (Bates *et al.*, 2004).

Figure 13 Eilean Ard NE transect profile with summary of the substrates, dominant biota and biotopes recorded within the component zones



The bedrock cliffs fringing the coastline continued down the shore and sublittorally to a depth of 25 m in a sequence of vertical or near-vertical walls and very steep slopes, with occasional ledges which trapped sediment pockets. Most of the supralittoral zone occupied a ledge, with the somewhat uneven rock being encrusted with lichens, particularly *Ramalina siliquosa*, *Xanthoria parietina* and *Verrucaria maura* (**LR.FLR.Lic.YG**). Small pools revealed no evidence of life (**LR.FLR.Rkp**). Below this zone the upper shore was of near-vertical rock, which supported bands of *V. maura* (**LR.FLR.Lic.Ver.Ver**), *Pelvetia canaliculata* with extensive crusts of *Hildenbrandia* spp. and *V. maura* (**LR.LLR.F.Pel**) and *Fucus spiralis* with extensive developments of *Hildenbrandia* spp. and *Semibalanus balanoides* (**LR.MLR.BF.FspiB**). Dense *Fucus vesiculosus* clothed the middle of the shore, which included a narrow ledge. Beneath the fucoid sward there was abundant *S. balanoides* and

frequent *Patella vulgata*, with *Nucella lapillus* and *Actinia equina* being common (**LR.LLR.F.Fves.FS**). At the bottom of the shore a band of *Fucus serratus* was accompanied by abundant foliose red algae, predominantly *Palmaria palmata*, and *S. balanoides* (**LR.MLR.BF.Fser.R**). This was followed by a narrow band of *Laminaria digitata*, with *S. balanoides* and *Membranoptera alata* (**IR.MIR.KR.Ldig.Ldig**). From around chart datum to a depth of 8.3 m a steep rock slope supported kelp forest. *Laminaria hyperborea* was abundant down to 5.8 m with the rock supporting extensive algal crusts and numerous *Echinus esculentus* but with sparse erect algae, apart from *Desmarestia aculeata* (**IR.MIR.KR.Lhyp.GzFt**). Kelp fronds and stipes, however, were fairly richly endowed with epibiota. In the lower part of the forest *Saccharina latissima* became abundant and *L. hyperborea* sub-dominant. Understorey algae remained sparse apart from frequent *D. aculeata* (**IR.LIR.K.LhypLsac.Gz**). Below 8.3 m down to 25 m the steep, and in places vertical, rocky substrate supported a similar community, although this was split into zones based on slight compositional changes, inclination or the presence of shell gravel. The rock was extensively covered in crusts, mostly of coralline algae but also *Parasmittina trispinosa* and *Pomatoceros* spp. The erect fauna was largely composed of dense patches of *Antedon bifida*, with scattered ascidians, especially *Ascidia mentula* and *A. virginea*, frequent *Caryophyllia smithii*, sparse hydroids (*Halecium halecinum*, *Nemertesia antennina*) and a patchy bryozoan turf. This has been referred to **CR.LCR.BrAs.AntAsH** but it is also close to **CL.LCR.BrAs.AmenCio.Ant**. There were some changes with depth. In particular, *Neocrania anomala* was only recorded below a depth of 22 m and *Swiftia pallida* on bedrock outcrops at around 27 m just outside of the transect band. In the upper part of this biotope, where the rock inclination was less steep (from 13 to 18 m depth), the rock also supported a red algal turf, dominated by *Bonnemaisonia asparagoides*. Below this zone, from 18 to 22 m depth, a ledge retained an area of shell gravel with little life visible (**SS.SCS.CCS**). The rocky section of the transect met the sedimentary seabed at a depth of 27 m, where a slope of slightly silty shell gravel supported frequent *Cerianthus lloydii* (**SS.SCS.CCS**).

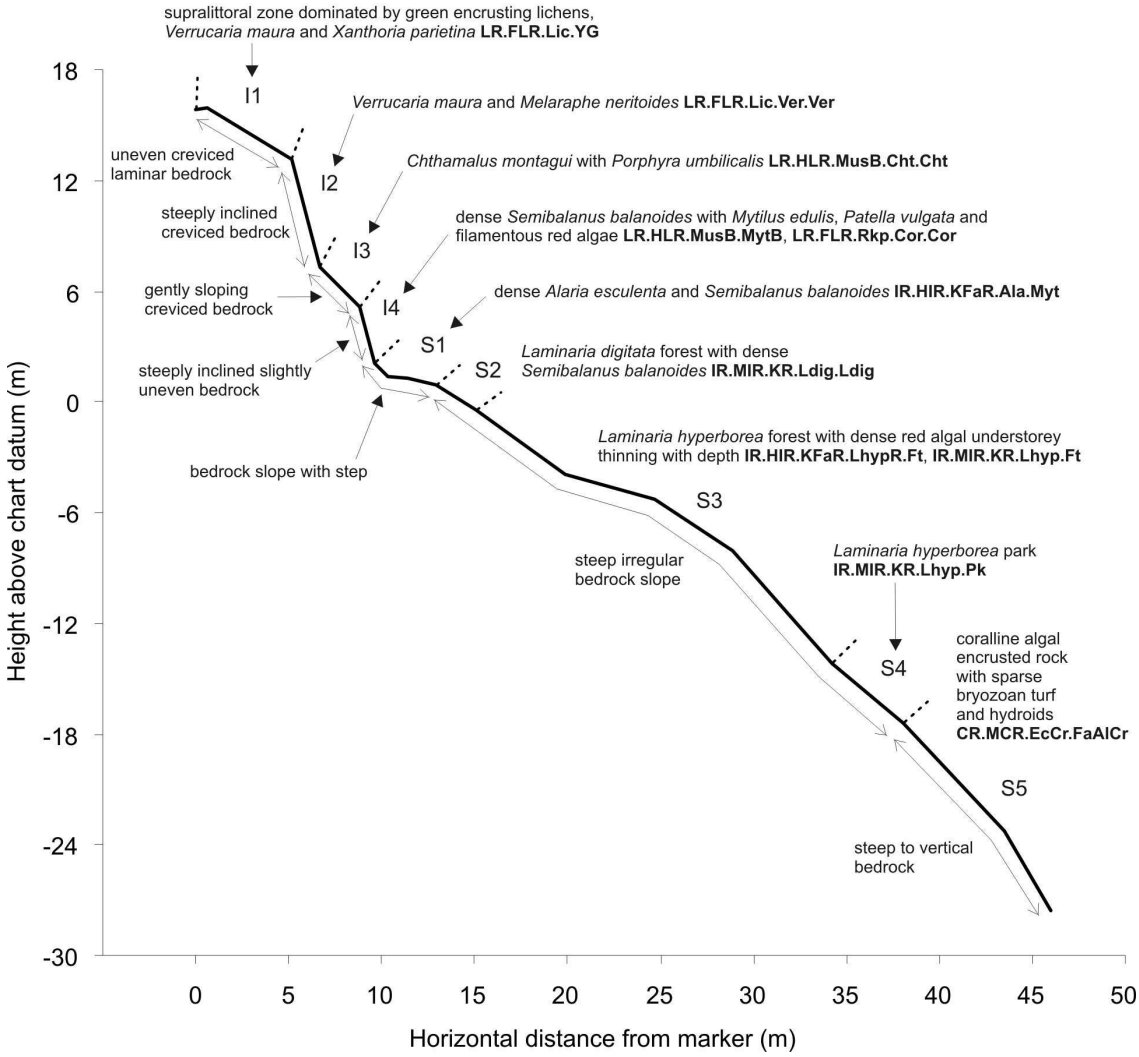
3.3.2.7 Eilean an t-Sithein N (LL09IR07, LL09SR07) (Figure 14)

The transect was located at the northern tip of the island Eilean an t-Sithein which lies at the mouth of Loch Laxford. It was selected to represent exposed conditions and as an example of a rich *Laminaria hyperborea* forest, the site having been surveyed in 2001 by Bates *et al.* (2004).

The steep bedrock shore continued into the subtidal as steep or near-vertical faces extending to a depth of at least 28 m. The transect marker was located within an area of uneven but mostly upward facing, laminar rock near the top of the island. The biota was dominated by green encrusting lichens, *Verrucaria maura* and *Xanthoria parietina* (**LR.FLR.Lic.YG**). Small rockpools containing *Ulva* sp. (**LR.FLR.Rkp.G**) were present just on the shoreward side of the start of the transect. This supralittoral zone rapidly steepened to a near-vertical wall of creviced bedrock with extensive coverage of *V. maura* and numerous *Melaraphe neritoides* (**LR.FLR.Lic.Ver.Ver**). From the base of the wall a gently sloping section of rock supported a band of *Chthamalus montagui* with a dense patchy turf of *Porphyra umbilicalis* (**LR.HLR.MusB.Cht.Cht**), which gave way to a steep, slightly irregular slope with an almost complete cover of *Semibalanus balanoides* (**LR.HLR.MusB.MytB**). Frequent *Mytilus edulis* were scattered amongst the barnacles, and in the lower half of the zone there was a patchy band of filamentous red algae, strongly dominated by *Aglaothamnion sepositum*. Irregularities in the rock retained small pools lined with pink encrusting coralline algae and containing *Corallina officinalis* and *Sagartia elegans* (**LR.FLR.Rkp.Cor.Cor**). At a height of around 2.1 m above chart datum the dense barnacle cover continued but the red algae were replaced by a dense band of *Alaria esculenta* (**IR.HIR.KFar.Ala.Myt**) and then at around 0.9 m above chart datum by a dense band of *Laminaria digitata* (**IR.MIR.KR.Ldig.Ldig**), with only a narrow region of overlap of the two kelp species. From a depth of 0.4 m to 14.2 m the steep irregular bedrock slope supported a

forest of *Laminaria hyperborea*, which varied in nature with increasing depth. In shallower waters large kelp plants supported a dense foliose red algal stipe flora, with a superabundant foliose red algal understorey, dominated by *Odonthalia dentata*, and areas of dense *Scrupocellaria* turf (**IR.HIR.KFar.LhypR.Ft**). Towards the bottom of the kelp forest the plants were smaller and the stipe and understorey flora less rich (**IR.MIR.KR.Lhyp.Ft**). Below 14.2 m the kelp thinned to a park with an understorey of frequent algae, dominated by *Callophyllis laciniata*, *Dictyota dichotoma*, *Bonnemaisonia asparagoides* and *Phycodrys rubens* (**IR.MIR.KR.Lhyp.Pk**). From a depth of 17.4 m to the end of the transect at 27.6 m the very steep bedrock was of fairly bare appearance, although extensively coated by a crust of coralline algae (**CR.MCR.EcCr.FaAlCr**). Amongst the erect forms there were sparse bryozoans and hydroids and, in the upper half of the zone, the same understorey flora found in the adjacent kelp park.

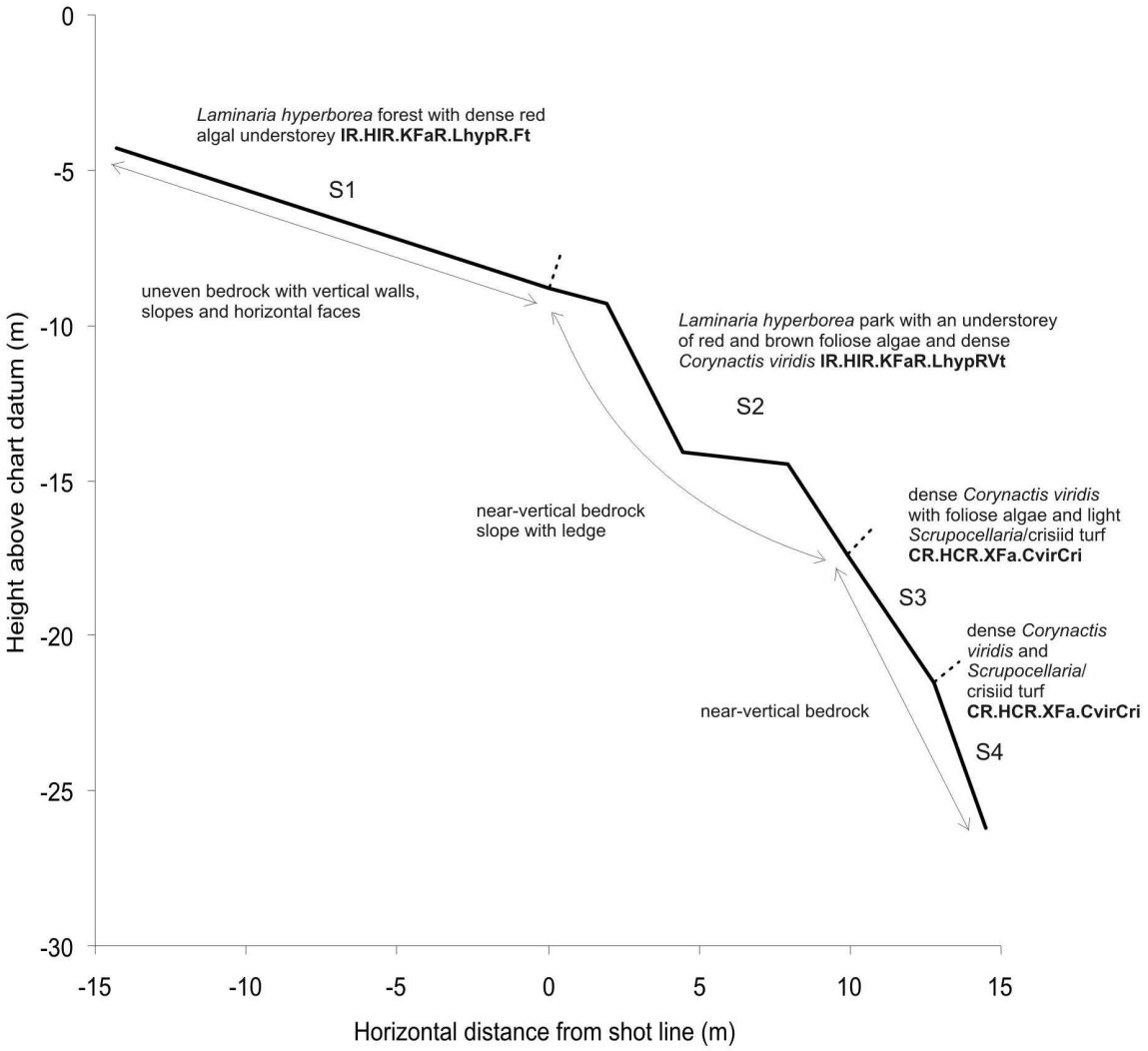
Figure 14 Eilean an t-Sithein N transect profile with summary of the substrates, dominant biota and biotopes recorded within the component zones



3.3.2.8 Bodha Druim (LL09SR08) (Figure 15)

Bodha Druim is a submerged rocky pinnacle in the mouth of Loch Laxford. It rises from around 40 m to 4 m depth and represents the most wave-exposed conditions in the SAC. Transect LL09SR08 was located on the steeper western side of the pinnacle, where Holt (1991) carried out an MNCR phase 2 survey in 1991.

Figure 15 Bodha Druim transect profile with summary of the substrates, dominant biota and biotopes recorded within the component zones



The upper part of the transect was located in an area of uneven topography with slopes of variable gradient, vertical walls and horizontal terraces from a depth of 4.3 m to 8.8 m. The rock supported a dense forest of *Laminaria hyperborea* with the fronds densely coated in *Obelia geniculata*, *Membranipora membranacea* and *Callithamnion* sp., and the stipes with profuse coverage by foliose red algae, especially *Ptilota gunneri*. The understorey took the form of a superabundant sward of foliose red algae, including *Phycodrys rubens*, *Delesseria sanguinea* and *Odonthalia dentata*, which were densely encrusted with *Electra pilosa*. Amongst the algae were frequent dwarf *Metridium senile* and *Sagartia elegans* (**IR.HIR.KFar.LhypR.Ft**). Below 8.8 m to 17.4 m depth the rock was predominantly near-vertical, with a 3 m wide ledge at around 14 m. In this zone the kelp thinned to a park and the understorey algal turf was also reduced, being recorded as only common, and including *Callophyllis laciniata*, *Bonnemaisonia asparagoides*, *Dictyota dichotoma* and *Desmarestia viridis*. However there was dense coverage by *Corynactis viridis* and a patchy bryozoan turf. Overall *Alcyonium digitatum* was recorded as frequent, but it formed a dense 2 m wide band at around 16 m depth. The biotope falls between **IR.HIR.KFar.LhypRVt** and **IR.MIR.KR.LhypVt** but has been ascribed to the former on the basis of the density of *Corynactis*. From a depth of 17.4 m to the end of the transect at 26.2 m the near-vertical rock was extensively encrusted with pink coralline algae but continued to support dense *C.*

viridis and a bryozoan turf, comprising *Scrupocellaria reptans*, *Crisia eburnea* and *Crisidia cornuta*. This turf became abundant in the deeper water below 21.5 m, where it was accompanied by the larger foliose bryozoans, *Securiflustra securifrons* and *Flustra foliacea*, the latter forming a dense 1 m wide band at a depth of 24 m (**CR.HCR.XFa.CvirCri**). Above this zone, between 17.4 m and 21.5 m was a transitional zone, where the bryozoan turf was less developed but the algal turf typical of the shallower zone, **IR.MIR.KR.LhypVt**, was present at moderate density. This zone has also been referred to **CR.HCR.XFa.CvirCri**.

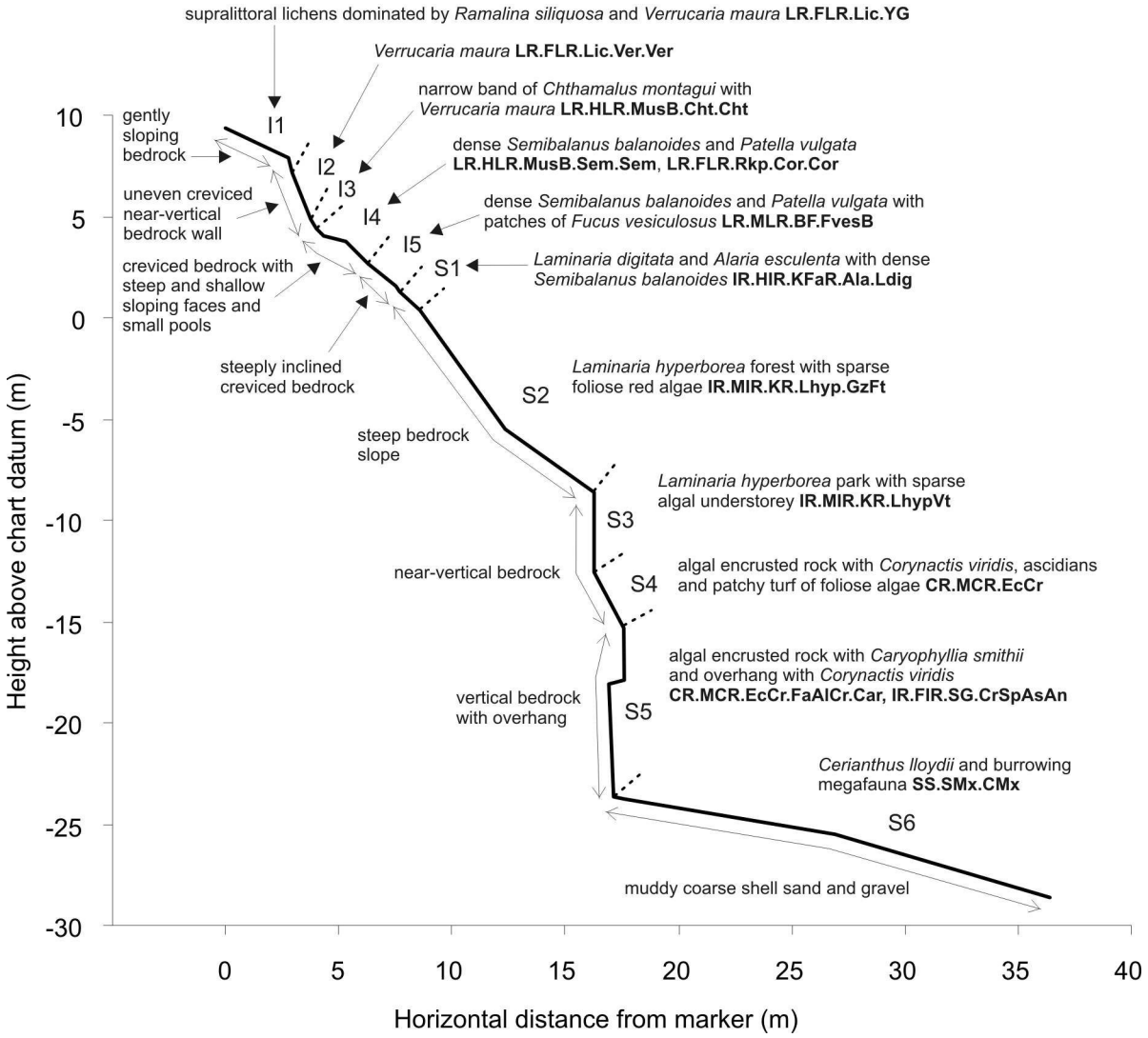
3.3.2.9 Eilean Dubha NE (LL09IR10, LL09SR10, LL09SS10) (Figure 16)

Transect LL09XX10 was located off the northeastern corner of the Dubha Islands (Eileanan Dubha) off the southern shore of Loch Dùghaill. The site was selected to represent the predominantly moderately exposed coastline of this loch and because of the availability of previous data for this area (Bates *et al.*, 2004).

The transect commenced in the supralittoral zone on a gently sloping bedrock platform at the foot of a bedrock cliff. The biota was dominated by a patchwork of *Ramalina siliquosa* and *Verrucaria maura* (**LR.FLR.Lic.YG**). The platform gave way to a 3 m near-vertical rock wall which was extensively encrusted with *V. maura* (**LR.FLR.Lic.Ver.Ver**), accompanied by a narrow band of *Chthamalus montagui* and *Patella vulgata* at its base (**LR.HLR.MusB.Cht.Cht**). Below the rock wall the profile became more variable with both steep and shallow slopes of smooth creviced bedrock supporting a dense cover of *Semibalanus balanoides* and *P. vulgata*, with *Nucella lapillus* and *Actinia equina* concentrated in crevices (**LR.HLR.MusB.Sem.Sem**). Small rockpools were lined with pink coralline algae and contained abundant *P. vulgata*, together with *S. balanoides*, *A. equina* and *Ulva intestinalis* (**LR.FLR.Rkp.Cor.Cor**). Towards the bottom of the shore the profile steepened and the open rock community just described was augmented with patches of *Fucus vesiculosus* and sparse red algae (mostly *Ceramium shuttleworthianum*) (**LR.MLR.BF.FvesB**). The sublittoral fringe extended to a height of 1.25 m above chart datum as a narrow band of *Alaria esculenta* and *Laminaria digitata* with a dense coating of *S. balanoides* on a steep bedrock slope (**IR.HIR.KFar.Ala.Ldig**). This gave way to a forest of *L. hyperborea* extending to the bottom of the rock slope at around 9 m depth. The kelp stipes supported a fairly rich epibiotic community of foliose red algae, *Dictyota dichotoma*, *Halichondria panicea* and *Botryllus schlosseri* but the rock appeared mostly well-grazed with sparse foliose algae and extensive coverage by coralline crusts (**IR.MIR.KR.Lhyp.GzFt**), although a richer faunal component was present towards the upper margin of the zone, including a well-developed *Scrupocellaria*/crisiid turf. Below the kelp forest a rock wall, varying in inclination from near-vertical to vertical, extended from 9 m to the sedimentary seabed at 24 m. The *L. hyperborea* population persisted as a park on the upper part of this wall to a depth of 13 m (**IR.MIR.KR.LhypVt**), accompanied by a richer algal understorey dominated by *D. dichotoma*, *Trailliella intricata*, *Bonnemaisonia asparagoides* and *Callophyllis laciniata*. The lower section of the wall from 15 - 24 m was well-grazed by many *Echinus esculentus* and the rock surface was extensively encrusted with coralline algae and supported a graze-resistant fauna, especially *Caryophyllia smithii*, which became common in deeper water, *Pomatoceros* and *Balanus crenatus*. Larger erect forms were represented by frequent *Antedon bifida* and *Ascidia mentula*. This zone does not fit easily into the biotope classification system but has been ascribed to **CR.MCR.EcCr.FaAlCr.Car**. Towards the top of the zone the presence of an overhang caused some local modification to the community, with the appearance of dense *Corynactis viridis*, together with much *Esperiopsis fucorum*?, *Metridium senile* and a sparse *Scrupocellaria*/crisiid turf (**IR.FIR.SG.CrSpAsAn**). Above this zone and below the kelp park was a narrow 2 – 3 m wide transitional zone with a similar fauna to the lower zone but accompanied by a patchy algal turf extending downwards from the kelp park (**CR.MCR.EcCr**). At the foot of the rock wall a slope of poorly sorted slightly muddy sand extended from 24 m to the end of the transect at 29 m. The sand had a very high shell gravel content, particularly in the form of a surface veneer, but was sufficiently

cohesive to allow the presence of megafaunal burrows (possibly of *Munida rugosa*), as well as frequent *Cerianthus lloydii* (**SS.SMx.CMx**).

Figure 16 Eilean Dubha NE transect profile with summary of the substrates, dominant biota and biotopes recorded within the component zones



3.3.3 Species composition and diversity of representative reef biotopes

The composition and diversity of the algal community was examined by thorough collections of algal material in two infralittoral and two circalittoral zones (representing different biotopes) at four reef sites. The results are summarised in Table 8, with detailed composition given in Appendix 4 (Table 4.12). Diversity was at a minimum (20 species) within the very wave-exposed upper infralittoral kelp forest at Bodha Druim (LL09SR08), and at a maximum (35 species) at the most sheltered site, a kelp forest close to the salmon farm at Eilean Ard S (LL09SR05). At all sites the flora was strongly dominated by red algae, with green algae barely represented. At all sites the algal survey provided a considerably higher species count than the accompanying standard MNCR phase 2 methodology (Table 8).

Table 8 Number of algal species recorded by collections in zones along four sublittoral reef transects (LL09SR05, LL09SR06, LL09SR08, LL09SR10) and at two maerl sites (LL09ML01, LL09ML04). Also given is the species number recorded during contemporaneous MNCR phase 2 surveys

Transect	SR05	SR06	SR08	SR10	ML01	ML04
Zone	2	5	1	4		
Biotope	Lsac.Ft	AntAsH	LhypR.Ft	EcCr	Pcal.R	Pcal.R
No. red algae	26	18	18	20	37	25
No. brown algae	6	6	2	4	22	5
No. green algae	2	0		1	8	1
Total no. species	35	24	20	25	71	31
No. species by MNCR 2	6	8	8	6	23	10

Several species of interest were recorded, all belonging to the red algal order, Ceramiales. *Antithamnion densum* was found growing on *Bonnemaisonia asparagoides* and *Dictyota dichotoma* at circalittoral sites in Loch Laxford (LL09SR06) and Loch Dùghaill (LL09SR10). This species has only recently been recorded for the British Isles. It was first found on the west coast of Ireland (Guiry and Maggs, 1991) and has subsequently been recorded at a single UK site, off the Isle of May in the Firth of Forth (Moore *et. al.*, 2009).

Sphondylothamnion multifidum has a southwesterly distribution in the UK. All previous records are from south of the Isle of Skye, apart from a single record from Loch Torridon (Hardy and Guiry, 2003; National Biodiversity Network Gateway, 2010a). During the current survey the species was found at a single site in Loch Dùghaill (LL09SR10), which extends its known northerly distributional limit.

The introduced species, *Heterosiphonia japonica*, recorded during the MNCR phase 2 survey at two circalittoral zones at Eilean Ard S (LL09SR05), was also recorded here during the algal survey. It was found in the *Saccharina latissima* forest, as an epiphyte on several species, including *Rhodophyllis divaricata*, *Phycodrys rubens*, *Delesseria sanguinea*, *Callophyllis laciniata*, *H. plumosa* and *S. latissima*. It was also found on *C. laciniata* at the Loch Dùghaill site, although it appeared to be very sparse, only two small specimens (<3 mm) being recorded.

3.4 Maerl bed transects

General details of the three maerl beds selected for survey are given in Table 6.1 (Appendix 6), with sediment characteristics in Appendix 3 (Tables 3.2, 3.3 and Figure 3.1), and detailed composition of the biota in Tables 6.2 (Appendix 6) and 3.4 (Appendix 3).

Transect LL09ML01 was located within the lagoon-like Lochan na Fionndalach Bige at the southwestern end of the tidal rapids channel at Sruth Mor, where Holt (1991) surveyed the maerl bed in 1991. The sediment consisted of a heterogeneous mix of coarse sand and shell gravel with a surface scatter of dead shells at a depth of 4.3 – 5.1 m. Live maerl was fairly sparse and consisted mainly of *Phymatolithon calcareum*, but with some hedgehog stones of *Lithothamnion glaciale* also present. *Chorda filum* was common and *Saccharina latissima* frequent and the sediment supported a patchy algal turf, reaching 30-40% cover in places, dominated by *Rhodomela confervoides*, *Cystoclonium purpureum*, *Uronema* sp.? and *Asperococcus bullosus*. Amongst the fauna, crabs were particularly common, particularly *Carcinus maenas* and *Cancer pagurus*, as well as *Cerianthus lloydii*. In all, 51 taxa were recorded along the transect, which has been ascribed to the biotope **SS.SMp.Mrl.Pcal.R**.

Transect LL09ML02 was sited close to a mussel farm northwest of Eilean Ard at a depth of 17.8 m. Bates *et al.* (2004) carried out an MNCR phase 2 survey on the maerl bed in 2001. The sediment was markedly finer than LL09ML01, consisting of muddy sand with maerl gravel and dead *Mytilus* shells (locally 1-5% cover) and a 20-30 % cover of drift kelp. Patchy live *Phymatolithon calcareum* at 20-30% overall cover supported a very sparse algal flora and a fairly sparse fauna, including *Amphiura* spp. and *Neopentadactyla mixta*. Only 33 taxa were recorded along the transect, which has been ascribed to the biotope **SS.SMp.Mrl.Pcal**.

As a result of finding a dense maerl bed to the southwest of Sgeir Iosal during the dropdown video survey, a diver transect was also located here (LL09ML04). The substrate was of maerl gravel with a scatter of dead shells. This site represents the richest maerl bed observed in the SAC with a 60-70% cover of live *Phymatolithon calcareum*. The algal flora was dominated by browns, with frequent *Saccharina latissima* and occasional *Desmarestia aculeata*. There was also a light patchy turf of filamentous and foliose red algae, especially *Bonnemaisonia asparagoides*, *Trailliella intricata* and *Porphyra* sp. Within the sediment were occasional *Neopentadactyla mixta* and large bivalve siphons, whilst epifauna included frequent *Liocarcinus corrugatus*, *Galathea intermedia*, *Asterias rubens* and *Callionymus lyra*. 36 taxa were recorded along the transect, which has been ascribed to **SS.SMp.Mrl.Pcal.R**.

Diver reconnaissance of a further site, in the channel between Ardmore Point and Glas Leac (LL09ML03), where maerl had been previously reported (Holt, 1991), revealed only very scattered rhodoliths of *P. calcareum* on duned shell gravel and so no transect was established here.

In addition to the MNCR phase 2 surveys, algal inventories were drawn up for the two algally richer maerl beds, LL09ML01 and LL09ML04, based on thorough collections of algal material. The detailed species composition at these sites is given in Appendix 4 (Table 4.12) and diversity in Table 8. A highly diverse flora (71 species) was recorded at the shallower lagoon-like site (LL09ML01), with 31 species being found at the deeper LL09ML04 site. The community at both sites was dominated by red algae, although there were significant proportions of green and brown species at LL09ML01, perhaps reflecting the shallower, and possibly lower-salinity, conditions.

Several species worthy of note were recorded. *Antithamnion densum* (also recorded on reef transects – see section 3.3) was found growing on *Desmarestia aculeata* at LL09ML04. *Audouinella saviana* (=*Acrochaetium savianum*) was recorded as an epiphyte on maerl and several other species at LL09ML01. This species is rarely recorded in the UK, the only other Scottish record being for the Isle of Mull (Hardy and Guiry, 2003; National Biodiversity Network Gateway, 2010b). However, according to Hardy and Guiry (2003), this microscopic species is probably of wide occurrence.

Calliblepharis jubata was also recorded at LL09ML01. This species has a southwestern distribution in the UK, with the most northerly mainland record being for the Isle of Mull (Hardy and Guiry, 2003; National Biodiversity Network Gateway, 2010c). It has recently been recorded on a maerl bed in North Uist in the Outer Hebrides (Moore *et al.*, 2006) but the current record extends its known northerly range.

Heterosiphonia japonica was recorded as an epiphyte on *Phyllophora crispa* at LL09ML01. Fronds attained a length of 10 cm, although it was a minor component of the algal cummunity, estimated as representing much less than 1% of total algal biomass.

Maerl infauna

The species abundance data for the individual replicate core samples taken at each site are given in Appendix 6 (Table 6.3), with overall site values for abundance and diversity (derived from pooled cores) in Appendix 3 (Table 3.5).

A total of 168 taxa were recorded from the four replicate core samples at the three sites. Although fewer taxa were found at Lochan na Fionndalach Bige (56), than elsewhere (78-98), there was no significant difference in taxon richness between the sites (oneway ANOVA), nor in abundance (oneway ANOVA) or Shannon-Wiener diversity (Kruskal-Wallis). There was, however, a difference in the composition of the community (ANOSIM, p=0.29), with LL09ML01 numerically dominated by nematodes, LL09ML02 by *Pseudopolydora* cf. *paucibranchiata*, and LL09ML04 by crustaceans.

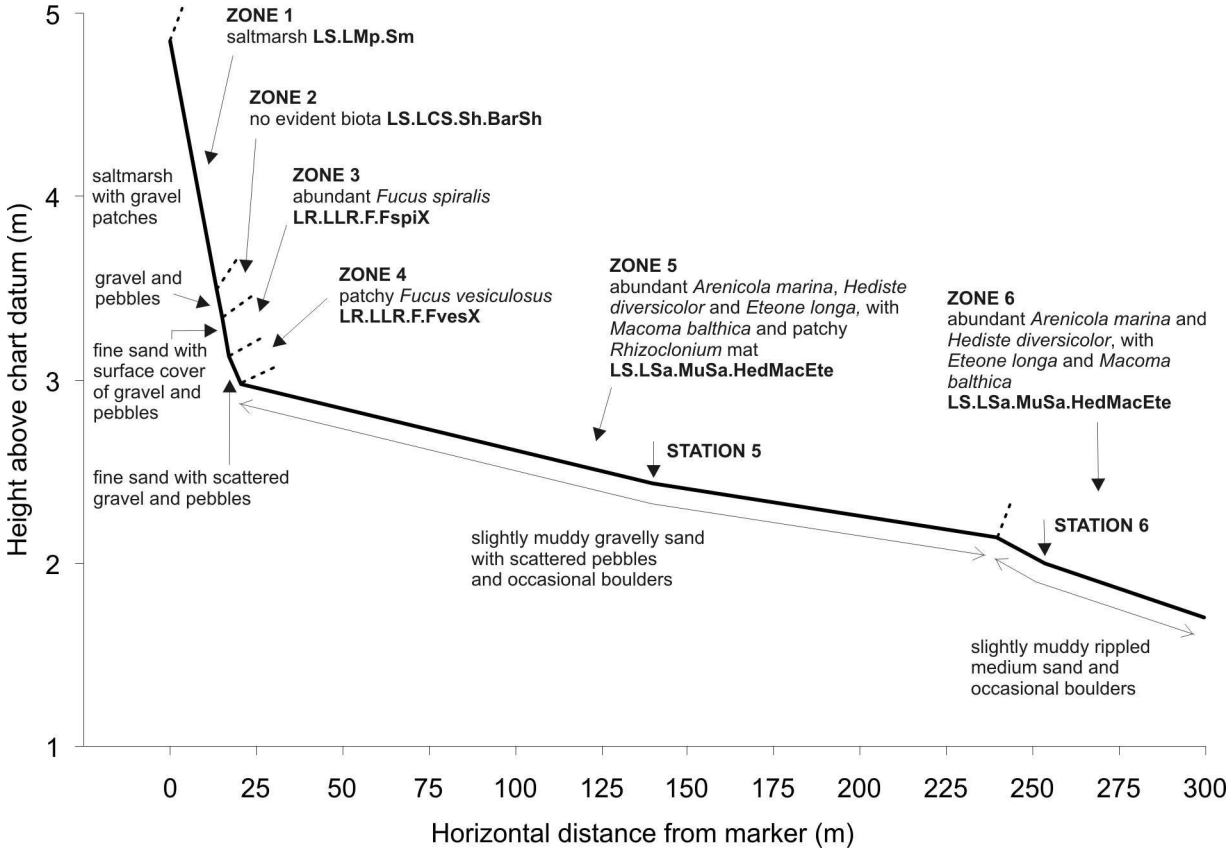
3.5 Intertidal sediment transects

Details of the biological and physical characteristics of the two transects surveyed within Tràigh Bad na Bàighe are given in Appendix 7 (Table 7.1) and Appendix 4 (Table 4.2) and information necessary for relocation of the sites in Appendix 5. Infaunal species abundance data for the core samples taken at six sites are provided in Appendix 7 (Table 7.2), with additional records of the surface biota and larger infaunal species in Appendix 7 (Table 7.3). All biological records are summarized as SACFOR abundances in Appendix 7 (Table 7.4). Accompanying particle size analysis data are given in Appendix 3 in the form of raw data (Table 3.3), cumulative weight curves (Figure 3.1) and summarial descriptors (Table 3.2).

3.5.1 Tràigh Bad na Bàighe E (LL09IS01) (Figure 17)

The location of this transect was on the eastern side of the bay, extending from the fringing saltmarsh to the drainage channel passing along the centre of the bay (Figure 4). Just below the saltmarsh (**LS.LMp.Sm**) was a narrow band of mixed gravel and pebbles (**LS.LCS.Sh.BarSh**), followed by fine sand with gravel and pebbles supporting bands of patchy *Fucus spiralis* (**LR.LLR.F.FspiX**) and *F. vesiculosus* (**LR.LLR.F.FvesX**). The great majority of the transect traversed an extensive sediment flat composed of very slightly muddy (2% silt/clay), poorly sorted, gravelly sand supporting a patchy algal mat dominated by the green filamentous alga, *Rhizoclonium riparium*. The infauna was dominated by abundant *Arenicola marina*, *Hediste diversicolor*, *Eteone longa* and oligochaetes, with *Macoma balthica*, *Hydrobia ulvae*, *Capitella capitata* and *Pygospio elegans* also common. Juvenile *Cerastoderma edule* were frequent in the core samples but no adult specimens were observed. These characteristics correspond closely with the 1997 biotope **LMU.HedMac.Are** (Connor *et al.*, 1997), but under the 2004 classification scheme (Connor *et al.*, 2004) the habitat falls between **LSa.MuSa.HedMacEte** and **LS.LSa.MuSa.MacAre**. It has been referred to the former in view of the high density of *H. diversicolor* and *H. ulvae*, even though dense lugworms are not typical of the biotope. At the bottom of the shore the sediment changed to rippled medium sand in the vicinity of the drainage channel. The algal mat virtually disappeared but otherwise the composition of the community remained essentially similar (**LSa.MuSa.HedMacEte**).

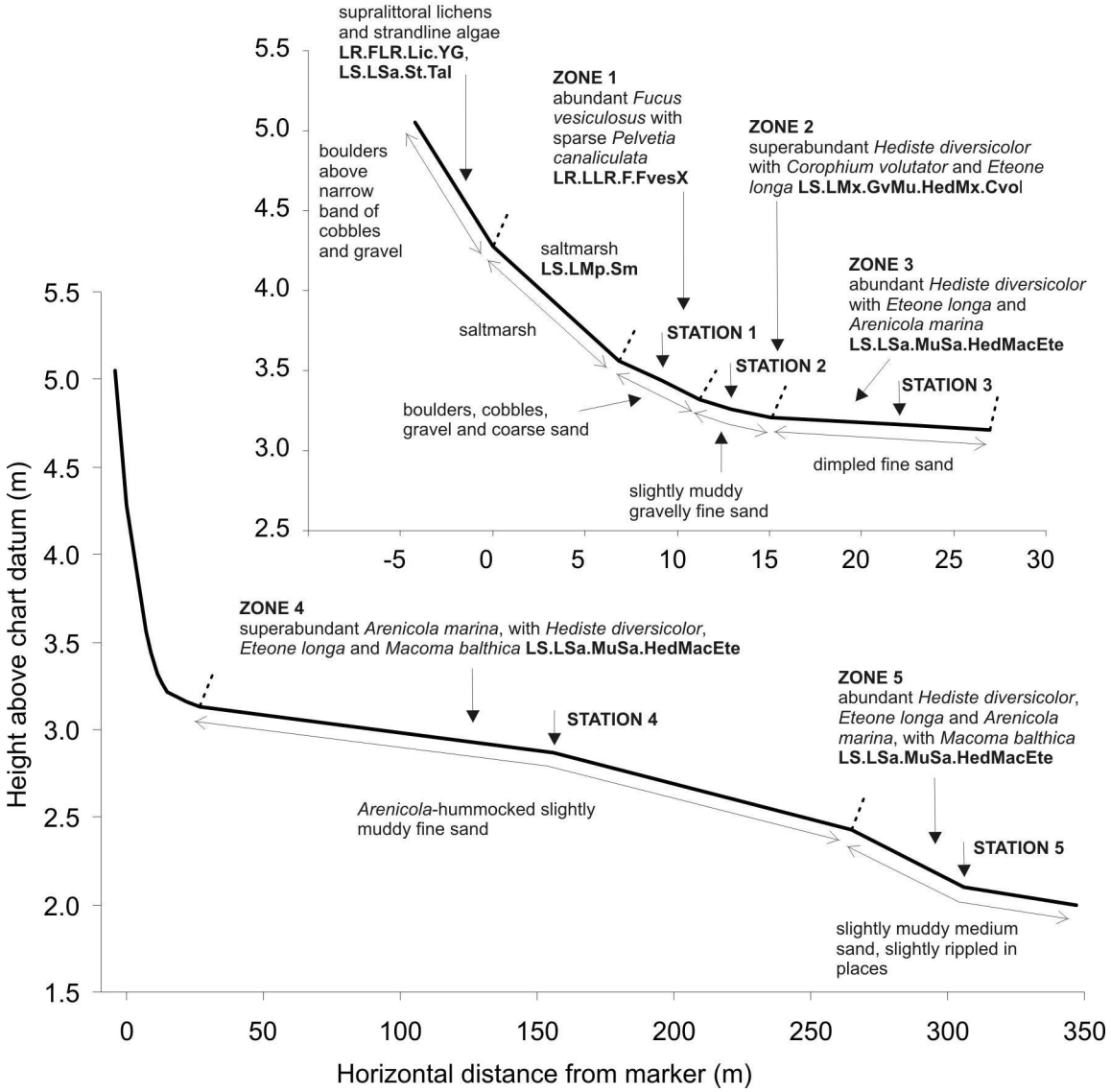
Figure 17 Tràigh Bad na Bàighe E transect profile with summary of the substrates, dominant biota and biotopes recorded within the component zones



3.5.2 *Tràigh Bad na Bàighe W (LL09IS02)*

This transect also extended from the fringing saltmarsh to the main drainage channel, but on the western side of the bay. Below the saltmarsh (**LS.LMp.Sm**) was a band of coarse mixed sediment supporting fucoids dominated by *Fucus vesiculosus* (**LR.LLR.F.FvesX**).

Figure 18 Tràigh Bad na Bàighe W transect profile with summary of the substrates, dominant biota and biotopes recorded within the component zones



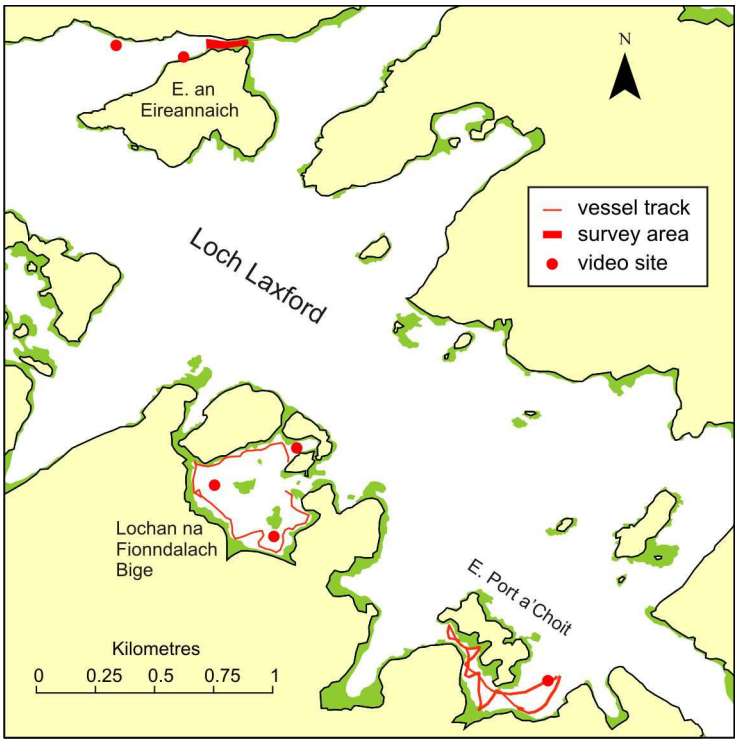
Below this the sediment flat commenced with a narrow band of slightly muddy, gravelly sand. *Arenicola marina* was absent from this area, the fauna being dominated by superabundant *Hediste diversicolor*. A number of species were common in this zone, including *Corophium volutator*, *Eteone longa*, *Pygospio elegans*, oligochaetes and *Hydrobia ulvae* (**LS.LMx.GvMu.HedMx.Cvol**). The gravelly sand gave way to a broader zone of fine sand (1% silt/clay content) formed into slight depressions or dimples by the lugworm population. The depressions retained standing water and were coated with a brown microalgal film, or in places, with a pink bacterial film. The infauna was dominated by *Hediste diversicolor*, accompanied by the same species as listed for the previous zone, but with the addition of large numbers of *Arenicola marina*. Although *Macoma balthica* was not recorded here, the community was otherwise very similar to that recorded for most of the

eastern transect and has been referred to the same biotope, **LSa.MuSa.HedMacEte**. Most of the transect passed through a region of lugworm-hummocked, slightly muddy (6% silt/clay), well-sorted, fine sand retaining much standing water. The fauna was essentially the same as that of the previous zone, apart from an increased density of *A. marina* and the appearance of moderate numbers of *Macoma balthica* and juvenile *Cerastoderma edule*. It has been ascribed to the same biotope. At the bottom of the transect, in the vicinity of the drainage channel, the sediment coarsened somewhat into a slightly muddy medium sand, formed in places into slight ripples. There was, however, no significant change in species composition (**LSa.MuSa.HedMacEte**).

3.6 *Zostera marina* survey

Figure 19 shows the areas surveyed by glass-bottomed bucket for the presence of *Z. marina*, with dGPS vessel tracks provided for two of the three sites. At each site it is estimated that depths examined were generally between approximately 0 – 1 m below chart datum, varying beyond these limits at times. The locations of dropdown video and diver observations sites in the vicinity are also shown. No living plants of *Z. marina* were observed by any means, nor was there any evidence of the presence of the species in the loch system, in the form of drift material on the sea surface, seabed or shores.

Figure 19 Areas surveyed for the presence of Zostera marina*, showing vessel tracks for two of the sites and area surveyed for a third site. Nearby video sites also shown.*



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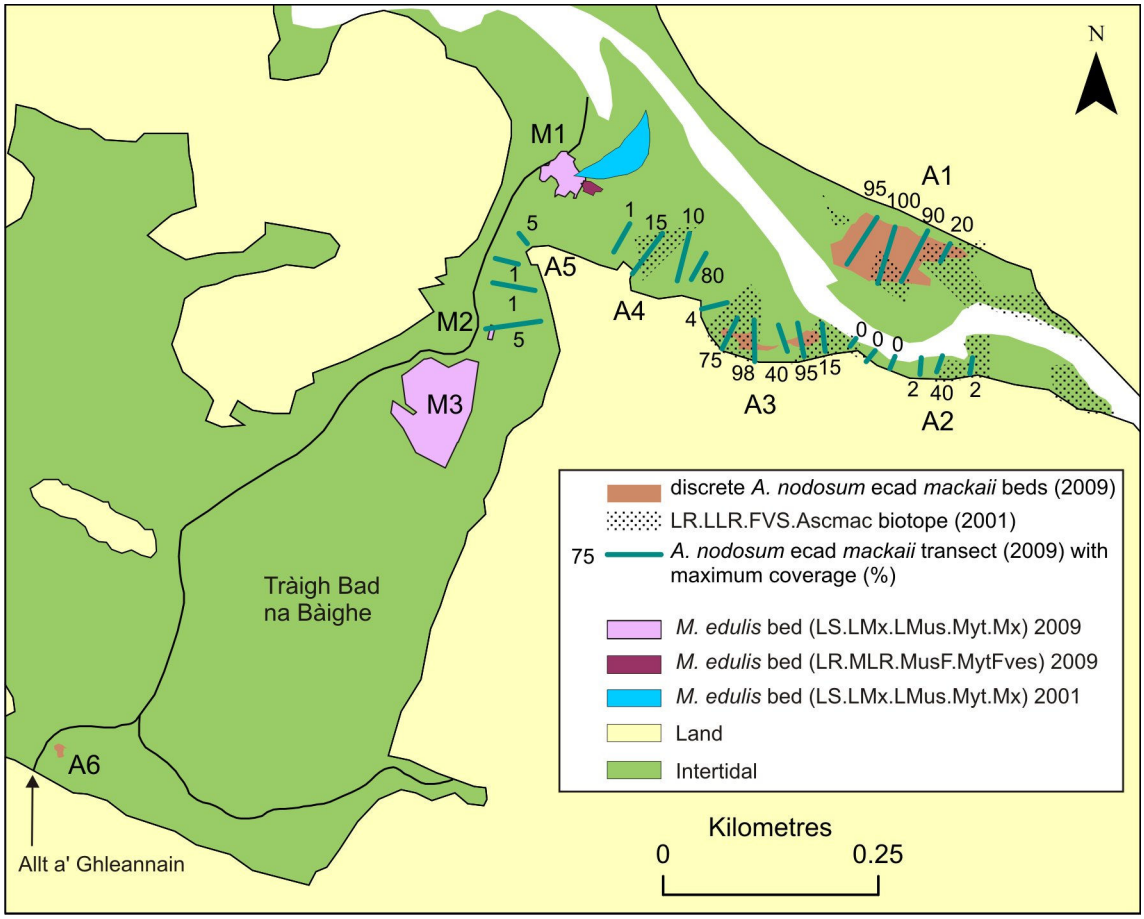
3.7 *Ascophyllum nodosum* ecad *mackayi* survey

Appendix 8 (Table 8.1) gives the details of the 24 transects surveyed, together with recorded estimates of maximum percentage cover of the alga along each of the transects. Figure 20 shows transect positions and maximum cover values, together with the distribution of the

major beds, for the head of Loch Laxford. Positional fixes marking the boundaries of the beds are listed in Appendix 8 (Table 8.2).

Figure 20 Distribution of Ascophyllum nodosum *ecad* mackayi *(areas A1-A6) and* Mytilus edulis *beds (M1-M3) in 2009 and 2001 (Posford Haskoning Ltd., 2001) at the head of Loch Laxford.*



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The ecad was recorded in five areas at the head of the loch, in some cases forming discrete dense beds. The most extensive bed was located on the northern shore (A1, Figure 20). Towards the centre of the bed coverage reached 100% but reduced to occasional or scattered clumps amongst other algae, mostly *Fucus vesiculosus*, near the upper and lower margins. The estimated area of this bed was 7338 m^2, based on measurement of the polygon within ArcGIS 9.1. A discrete bed was also present on the southern shore (A3, Figure 20). The bed narrowed midway along but coverage was mostly between 40% and 98%. *A. nodosum* ecad *mackayi* was mixed with *F. vesiculosus* near the upper boundary and *A. nodosum* near the lower boundary. The aerial extent was estimated as 1092 m^2. More diffuse areas of occurrence were found to the east (A2) and to the west (A4), and a region of very scattered clumps at the mouth of Tràigh Bad na Bàighe (A5).

The shoreline of Tràigh Bad na Bàighe was surveyed, apart from the northernmost embayment and the western side of the entrance channel (where no *A. nodosum* ecad *mackayi* had been recorded hitherto). The ecad was recorded from a single area, adjacent to the inflow into the bay of the major stream, Allt a' Ghleannain, where it formed a dense, discrete bed (A6). As the bed was very small (about 16 m in width and 142 m^2 in area), the boundary was mapped but no transects were carried out. Coverage attained 100% at the

centre of the bed and averaged around 90% over the bed as a whole, with patches of *F. vesiculosus* also present.

3.8 *Mytilus edulis* survey

Table 7 gives details of the mussel beds surveyed in the entrance channel to Tràigh Bad na Bàighe and their distribution is shown in Figure 20. Positional fixes recorded along the boundaries of the beds are given in Appendix 9 (Table 9.1). Bed M1 at the mouth of the channel was largely composed of a mixed pebble/gravel substrate with some small cobbles and boulders supporting dense mussels overlain by dense *Fucus vesiculosus* and smaller quantities of *Ascophyllum nodosum* (**LS.LMx.LMus.Myt.Mx**). However, on the eastern side of the bed a small area of bedrock supported dense mussels with *F. vesiculosus* and *A. nodosum* (**LR.MLR.MusF.MytFves**). The largest mussel bed (M3) flanked the eastern side of the channel on a similar mixed substrate to bed M1, with the mussels again overlain by a blanket of *F. vesiculosus* (**LS.LMx.LMus.Myt.Mx**). Mussel density was greatest along the northern edge of the bed, adjacent to the channel. Between these beds a much smaller bed (M2) on a similar mixed substrate was recorded (**LS.LMx.LMus.Myt.Mx**). This was not mapped but the area was estimated as 16 m x 5 m.

Table 9 Details of Mytilus edulis *beds surveyed*

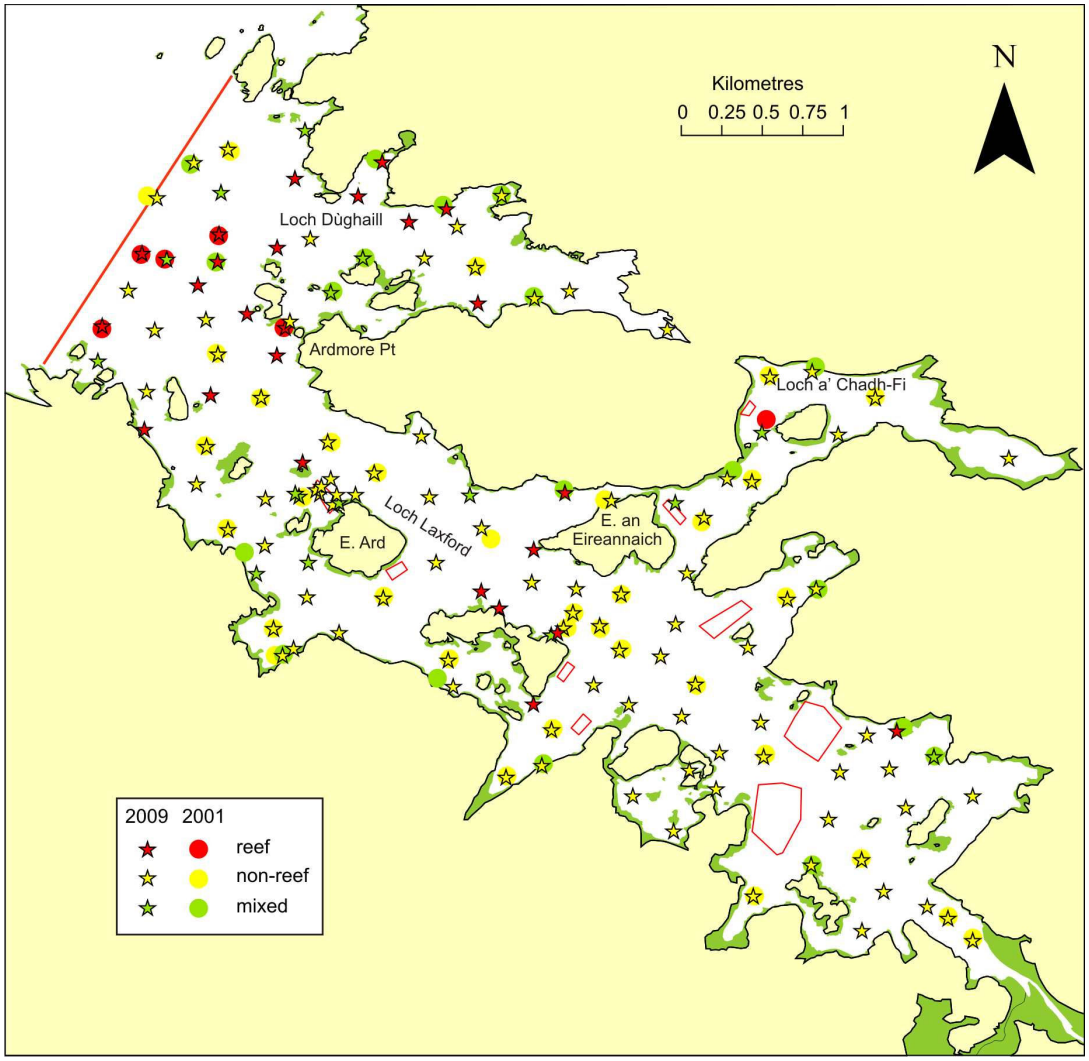
Bed	**Area (m^2)**	**Maximum density ($no.m^{-2}$)**	**Position of maximum density estimation**	
			Latitude	**Longitude**
M1	1833	2500	58.37965	-5.03447
M2	c. 80	150	58.37791	-5.03570
M3	8250	1200	58.37760	-5.03697

4 DISCUSSION

4.1 Reef extent

Biotopes from the 2001 drop-down and ROV video survey by Bates *et al.* (2004) were reassigned biotope codes according to Connor *et al.* (2004), with reference to the original video material to minimize interpretational differences. Sites supporting biotopes falling within the rock biotope complexes IR and CR were categorized as reef sites, whereas sedimentary sites within the SS complex were designated non-reef sites. A comparison of the distribution of reef sites in 2001 and 2009 is given in Figure 21.

Figure 21 Comparison of the distribution of reef habitats in 2009 and 2001 (Bates et al.*, 2004)*



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Both surveys show the same basic pattern of reef distribution, with reefs largely confined to a narrow coastal fringe, except for the offshore reefs in the mouth of the loch system. The major difference revealed by Figure 21 lies in the large number of near-shore sites where mixed habitats were found in 2001 but only non-reef habitats in 2009. This merely reflects the ability of the ROV to investigate shallower terrain. As would be expected, these data provide no evidence for a reduction in reef extent over this eight year period. The sensitivity of dropdown video surveying in monitoring reef extent in areas where much of the rock is in the form of steep, narrow, coastal bands will be very low.

4.2 Biotope diversity, composition and distribution

4.2.1 Video survey

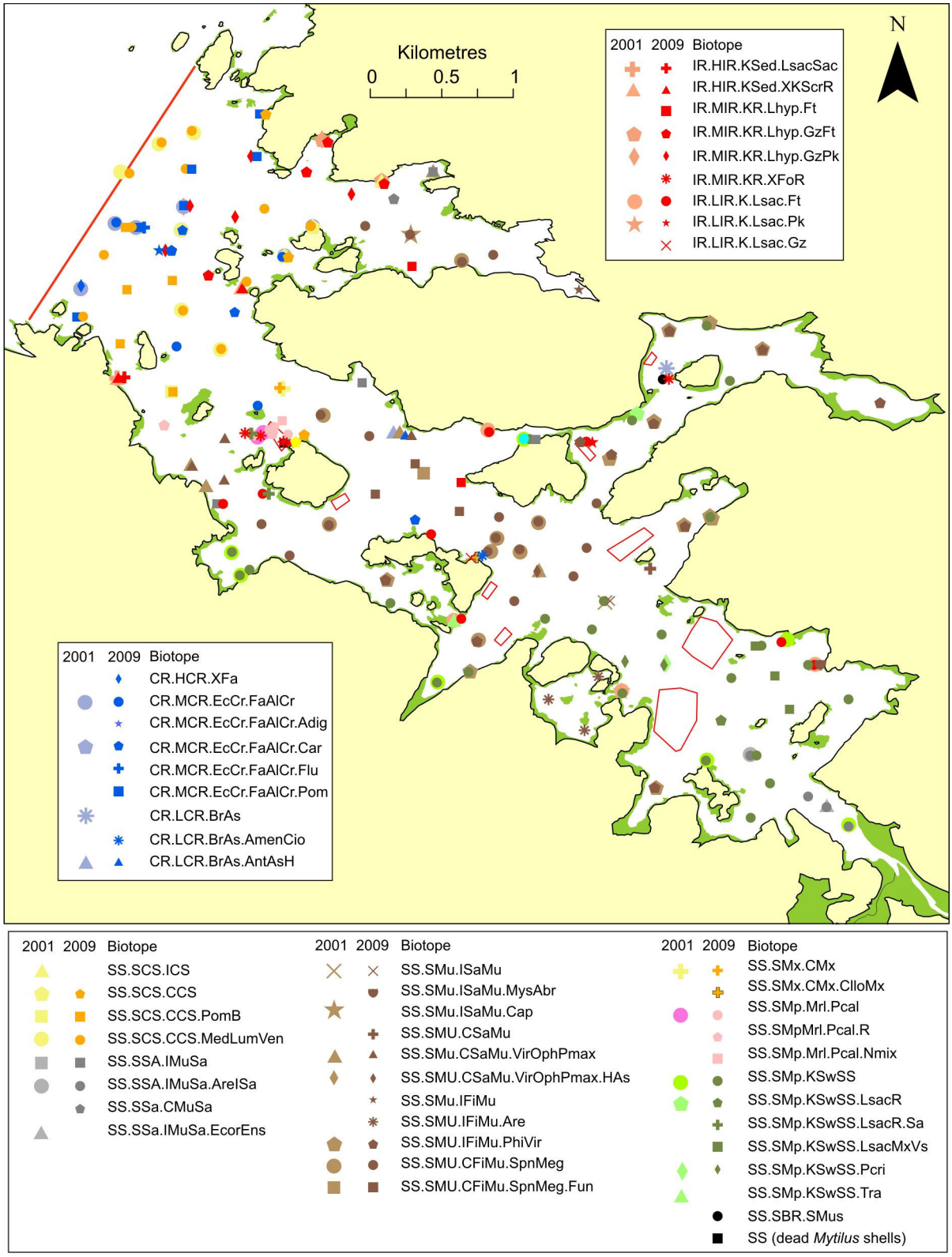
A total of 45 biotopes were identified from the video records at 135 sites during the 2009 survey (Table 5), of which 15 were distinguished as reef biotopes. During the 2001 video survey (Bates *et al.*, 2004), which covered 59 sites within the SAC, 31 biotopes were recorded, of which 13 were reef biotopes. If the comparison is restricted to the same 56 sites sampled by video in both years, then 26 biotopes were recorded in 2009 (including 10 reef types) and 24 (including seven reef types) over the same depth range in 2001. The very slight difference is accounted for by the greater discrimination of **FaAlCr** biotopes in 2009. There is no indication of a real temporal change in biotope diversity.

Figure 22 compares the distribution of biotope records for the 2001 and 2009 surveys. To aid in temporal comparisons only those biotopes are shown for the 2001 survey that were recorded at similar locations and depths to the 2009 observations – this includes some sites sampled by divers in 2001. In terms of composition, for the 60 sites sampled in both years, 25 of the biotopes found in 2001 were also recorded in 2009. Four biotopes were not refound. Two of these were probably due to locational differences. The site in the tidally-swept channel in Loch a'Chadh-Fi supporting dense *Ascidiella aspersa* on boulders (**CR.LCR.BrAs**) was avoided in 2009 due to the proximity of moorings. Similarly, the single record of infralittoral coarse sand (**SS.SCS.ICS**) was probably not repeated in 2009 due to a small geographical difference in the camera tracks. *Trailliella* beds (**SS.SMp.KSwSS.Tra**) were not recognised in 2009 as this category was subsumed within the complex **SS.SMp.KSwSS** in the absence of sufficiently detailed algal data. The organically-enriched, opportunistic polychaete dominated muddy biotope (**SS.SMu.ISaMu.Cap**) present at a single site in Loch Dùghaill in 2001 (S116) was perhaps not recorded in 2009 due to a natural temporal reduction in the organic content of the sediment. Figure 22 shows a high level of correspondence between the biotopes recorded in both years. Of the 60 sites sampled, exact matches were recorded at 40. Partial matches were found at a further ten sites, where some, but not all, members of a suite of biotopes were recorded in both years. Different biotopes were noted at a further ten sites, of which five were considered to have probably resulted from locational differences and five from natural, temporal change. Of these, in two cases, an increase in the accumulation of drift algae may have caused a switch from **SS.SMU.IFiMu.PhiVir** to **SS.SMp.KSwSS**. By contrast at a third site an apparent increase in the abundance of *Philine aperta* led to a change from **SS.SMU.CFiMu.SpnMeg** to **SS.SMU.IFiMu.PhiVir**. At a fourth muddy sand site where **SS.SMu.CSaMu.VirOphPmax** was recorded in 2001, the absence of *Virgularia mirabilis* in 2009 resulted in the nomination of the complex **SS.SSA.IMuSa**. However, the perceived absence of *V. mirabilis* is not a reliable criterion to use in biotope assignation due to the periodic withdrawal of this species into the sediment. A fifth apparent temporal change from **SS.SMu.ISaMu.Cap** to **SS.SMU.CFiMu.SpnMeg** has already been discussed. In conclusion, it appears that minor temporal changes have taken place in biotope composition and distribution over the last eight years but they have not affected the quality of the features of interest and are unlikely to be related to anthropogenic influences.

Smith (1984) reported the presence of abundant *Modiolus modiolus* at a site north-east of Eilean Port a'Choit, which has been subsequently interpreted in Marine Recorder as representing the biotope, **SS.SBR.SMus.ModHAs**. As one of the 2009 video sites (D6) was 75 m from the recorded position of the *Modiolus* bed and failed to record the presence of *Modiolus*, a reconnaissance of the area by diver was also carried out in 2009, based on the recorded position. Only very low numbers of *Modiolus* were reported. Although this could be interpreted as a long-term temporal reduction in *Modiolus* abundance leading to the loss of this biotope from the area, it could also be the result of imprecision of the pre-GPS

positional data, combined with a highly localised bed. It should be noted that a similar *Modiolus* biotope was recorded in 2009 (**SS.SBR.SMus**) but in Loch a'Chadh-Fi.

Figure 22 Comparison of the distribution of biotope records from the current video survey (2009) and from the 2001 broadscale mapping survey (Bates et al.*, 2004)*



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4.2.2 Infaunal survey

Bates *et al.* (2004) examined the infauna from 23 sites in 2001, employing a 0.5 mm mesh sieve. Although a 1 mm sieve was generally used in 2009, to facilitate comparisons with previous data the grab samples were double sieved, using 0.5 mm and 1 mm sieves, at 5 sites spanning the range of sediment types from very muddy sand to coarse sand. It was found that use of the finer sieve led to an increase in the number of taxa by 9-39% (mean, 20%) and an increase in total abundance by 4-46% (mean, 34%).

Comparison of taxon richness between years based on the 22 sites that were virtually identically located in both years revealed significantly lower diversity in 2009 ($p<0.001$, two-way ANOVA). However, when the 2009 data were adjusted for sieve mesh size by applying the mean percentage gain from use of a 0.5 mm mesh, there was no difference in diversity ($p=0.149$). In the case of total abundance there was a markedly lower abundance in 2009 (mean, 486 ind./m^2) than in 2001 (mean, 861 ind./m^2) when adjusted for sieve mesh differences ($p<0.001$, two-way ANOVA). Although this may indicate a real temporal change, the validity of the correction factor applied for the use of a coarser sieve is questionable in view of the high variability in loss of material from individual samples. The apparent temporal difference is exacerbated by the exceptionally high abundance recorded in 2001 at the S116 Loch Dùghaill site, where ninety-nine percent of the fauna comprised just five annelid taxa characteristic of organic enrichment (*Capitella capitata*, *Malacoceros fuliginosa* and three tubificid species). In 2009 the site was a fairly typical example of **SS.SMu.CFiMu.SpnMeg**, with these taxa absent, apart from low numbers of *C. capitata*.

4.2.3 Reef and mixed reef/sediment transects

The sequence of biotopes recorded along the transects in 2009 is compared with the sequence expected from previous surveys in Table 10. Due to differences in survey site locations, levels of recorded and published detail, methodologies and the degree of uncertainty in biotope predictions from acoustic-based broadscale mapping, comparisons can only be made at a crude level.

Posford Haskoning Ltd (2001) recorded the sequence of shore biotopes at a site about 35 m from the Eilean Port a'Choit W transect (LL09XX01) in 2001 (Table 10). The sequence recorded in 2009 was very similar except for the absence of a distinct *Fucus spiralis* band and the presence of a narrow *F. vesiculosus* band above the *Ascophyllum* zone. Bates *et al.* (2004) examined the sublittoral biotopes along a slightly more exposed ROV transect off the northern tip of Eilean Port a'Choit, 140 m away. The same biotopes were present in 2009, apart from **IR.LIR.K.LhypLsac.Ft**, which was probably due to the more sheltered conditions. According to the 2001 broadscale biotope survey of Bates *et al.* (2004), the transect should have extended into a region of **SS.SMu.IFiMu.PhiVir**, which occupies much of Weaver's Bay. This will not represent a temporal change, as the pebbly muddy sand substrate in 2009 is inconsistent with the presence of such a biotope, and so it is probable that this mud biotope has a more restricted distribution in the bay than suggested by Bates *et al.* (2004).

Holt (1991) carried out a phase 2 shore survey in the tidal rapids at Sruth Mor, though in an area of different shore topography to the 2009 transect (LL09XR02). Although there is a high degree of similarity in the biotopes recorded in the littoral fringe and in the lower half of the eulittoral, the variation in rock inclinations over the upper eulittoral at the Holt (1991) site led to a *Fucus vesiculosus*/*Semibalanus balanoides* mosaic (**LR.MLR.BF.FvesB**) on steep faces and dense *Ascophyllum nodosum* (**LR.LLR.F.Asc.FS**) on upward faces. In 2009 the eulittoral region of the transect consisted predominantly of a uniform rocky slope supporting dense *F. vesiculosus* overlying dense *S. balanoides* (**LR.LLR.F.Fves.FS**); however, both **LR.MLR.BF.FvesB** and **LR.LLR.F.Asc.FS** were observed to be present within the rapids area. Different sublittoral fringe biotopes were recorded in the two surveys, possibly only

resulting from a lower abundance of *Laminaria digitata* along the 2009 transect. Following investigation of the rapids area in 1979, with an emphasis on the Mollusca, Smith (1981) regarded the rapids as a faunally-rich site supporting an extensive fauna amongst the boulders and rock ridges, although when revisited in 1984 (Smith, 1984) she recorded a considerably less rich fauna. The SMBA/MBA Intertidal Survey Unit (Powell *et al.*, 1980) also visited this site in 1979 but found that the boulders yielded little of interest. The species richness in 2009 appeared typical for a Laxford sheltered shore and similar to that recorded by Holt (1991), although the habitats sampled by Smith (1981) were not investigated in 2009. There is no good evidence for a temporal change in the communities since 1984.

A survey of the littoral and sublittoral biotopes of a site in the northwestern corner of Loch a'Chadh-Fi, close to the 2009 transect (LL09XX03) was carried out by Holt (1991). There was close agreement in the sequence of littoral biotopes, apart from the recognition in 1991 of a distinct *Fucus spiralis* zone, which may arise from a locational difference. In the sublittoral, *Saccharina latissima* forest with a sparse understorey was recorded on both occasions, although this has been referred to **IR.LIR.KVS.LsacPsaVS** (*Laminaria saccharina* and *Psammechinus miliaris* on variable salinity grazed infralittoral rock) in Marine Recorder. As *Psammechinus* was absent and echinoderm grazers were sparse, this has been regarded as a fairly impoverished version of **IR.LIR.K.Lsac.Ft** in 2009. However, there is little reason to believe that there has been a temporal change in the community, except along the upper biotope boundary. The kelp forest extended into the sublittoral fringe in 1991 but in 2009 this region was dominated by *Furcellaria/Polyides*, *Ascidiella* spp. and *Chorda filum*, all of which were recorded in 1991, and so it appears that the upper margin of the kelp may have become depressed in 2009. This could possibly be related to the large quantity of decaying fucoids collecting in this area in 2009. Below the kelp park differences in biotope sequences are related to differences in substrates between the surveyed sites, although there may be a temporal change in the zone of soft mud at the bottom of the 2009 transect. The same biotope (**SS.SMu.IFiMu.PhiVir**) was recorded in the same area in 2001 by Bates *et al.* (2004); however, the snake blenny, *Lumpenus lampretaeformis*, noted as being numerous in 2001 was not recorded in 2009, nor were its burrows. However, at the nearby site studied by Holt (1991) burrows tentatively ascribed to *L. lampretaeformis* were only recorded below 18 m. This was deeper than the end of the 2009 transect, so the apparent absence in 2009 may be due to patchiness.

Earlier comparative data for the Eilean an Eireannaich E transect (LL09XX04) is lacking for the intertidal section. Posford Haskoning Ltd. (2001) noted the sequence of zones for a site on the opposite shore of the channel and this is given in Table 10, although they describe the shore as being vertical. In fact the zonal sequence is very similar, apart from the middle of the shore, where the discrepancy probably results from different physical conditions. The sublittoral section of the 2009 transect was examined in 2001 by Bates *et al.* (2004). The sequence of reef biotopes is the same in both years, except that the 2001 *Saccharina latissima* kelp forest was subdivided in 2009 into a narrow upper cape-form *Laminaria hyperborea* band and a broader lower *S. latissima* band. *Saccharina latissima* was also present in the upper band in 2009. It may have been dominant here in 2001, or the presence of distinct bands may have been overlooked in 2001. Although the vertical cliff biotope, **CL.LCR.BrAs.AmenCio**, was recognized in both years there has been a temporal change in the composition of the community. This was dominated by ascidians in 2001, with *Ciona intestinalis* being recorded as common and *Ascidiella aspersa* as frequent. In 2009 *C. intestinalis* was not recorded, the rock being coated in a profuse turf of *Ascidiella aspersa*.

Table 10 Comparison of biotope sequences recorded along the 2009 reef and mixed reef/sediment transects with those predicted by previous surveys in 1984, 1991 and 2001 (see Table 3 for references)

2009 biotope sequence	predicted biotope sequence
LL09IR01, LL09SRSR01 & LL09SS01	
LR.FLR.Lic.YG	LR.FLR.Lic.YG
LR.FLR.Lic.Ver.Ver	LR.FLR.Lic.Ver.Ver
LR.LLR.F.Pel	LR.LLR.F.Pel
LR.LLR.F.Pel	LR.LLR.F.Fspi
LR.LLR.F.Fves.FS	LR.LLR.F.Asc.FS
LR.LLR.F.Asc.FS	LR.LLR.F.Asc.FS
LR.LLR.F.Fserr.FS	LR.LLR.F.Fserr.FS
IR.LIR.K.Lsac.Ft	IR.LIR.K.LhypLsac.Ft
IR.LIR.K.Lsac.Ft	IR.LIR.K.Lsac.Ft
SS.SMp.KSwSS.LsacR & SS.SMp.KSwSS.Tra	SS.SMp.KSwSS.LsacR & SS.SMp.KSwSS.Tra
SS.SMp.KSwSS.Tra, SS.SMp.KSwSS.LsacR	SS.SMu.IFiMu.PhiVir
LL09IR02 & LL09SR02	
LR.FLR.Lic.YG, LR.FLR.Rkp	
LR.FLR.Lic.Ver.Ver	LR.FLR.Lic.Ver.Ver
LR.LLR.F.Pel	LR.MLR.BF.PelB
LR.LLR.F.Fspi.FS	LR.MLR.BF.PelB
LR.LLR.F.Fves.FS	LR.LLR.F.Asc.FS LR.MLR.BF.FvesB
LR.LLR.F.Fves.FS	LR.LLR.F.Fves.FS
LR.HLR.FT.FserT	LR.HLR.FT.FserT
IR.MIR.KR.LhypT.Ft	IR.MIR.KT.LdigT
IR.MIR.KR.LhypTX.Ft	
LL09IR03, LL09SR03 & LL09SS03	
LR.FLR.Lic.YG	
LR.FLR.Lic.Ver.Ver	LR.FLR.Lic.Ver.Ver
LR.LLR.F.Pel	LR.MLR.BF.PelB
LR.LLR.F.Pel	LR.LLR.F.Fspi
LR.LLR.F.Fves.FS	LR.LLR.F.Fves
LR.LLR.F.Asc.FS	LR.LLR.F.Asc.FS
LR.LLR.F.Fserr.FS	LR.LLR.F.Fserr.FS
IR.LIR.Lag.ProtFur	
IR.LIR.K.Lsac.Ft	IR.LIR.KVS.LsacPsaVS
IR.LIR.K.Lsac.Pk	IR.LIR.K.Lsac.Pk
CR.LCR.BrAs.AmenCio	
CR.LCR.BrAs.AmenCio, SS.SSA.CMuSa	SS.SMx.CMx
SS.SMu.IFiMu.PhiVir	SS.SMu.IFiMu.PhiVir/SS.SMx.CMx
	SS.SMu.ISaMu.SundAasp
	SS.SMu.CFiMu.SpnMeg

2009 biotope sequence	predicted biotope sequence
LL09IR04, LL09SR04 & LL09SS04	
LR.FLR.Lic.YG	LR.FLR.Lic.YG
LR.FLR.Lic.Ver.Ver	LR.FLR.Lic.Ver.B
LR.LLR.F.Pel	LR.LLR.F.Pel
LR.LLR.F.Fspi.FS	LR.LLR.F.Pel
LR.MLR.BF.FvesB	LR.LLR.F.Fves
LR.MLR.BF.FvesB	LR.LLR.F.Asc.FS
LR.MLR.BF.FvesB	LR.HLR.MusB.Sem.Sem
LR.LLR.F.Fserr.FS	LR.LLR.F.Fserr.FS
IR.MIR.KR.Ldig.Ldig	IR.MIR.KR.Ldig.Ldig
IR.LIR.K.LhypCape	IR.LIR.K.Lsac.Ft
IR.LIR.K.Lsac.Ft	IR.LIR.K.Lsac.Ft
CR.LCR.BrAs.AmenCio	CR.LCR.BrAs.AmenCio
SS.SMu.CFiMu.SpnMeg	SS.SMu.CSaMu.VirOph Pmax
SS.SMu.CFiMu.SpnMeg.Fun	
LL09IR05, LL09SR05 & LL09SS05	
LR.FLR.Lic.YG, LR.FLR.Rkp	LR.FLR.Lic.YG
LR.FLR.Lic.Ver.Ver, LR.FLR.Rkp.G	LR.FLR.Lic.Ver.Ver
LR.LLR.F.Pel, LR.FLR.Rkp	LR.LLR.F.Pel
LR.MLR.BF.FspiB	LR.LLR.F.Fspi/FspiB
LR.LLR.F.Fves.FS	LR.LLR.F.Fves
LR.LLR.F.Fserr.FS	LR.LLR.F.Fserr.FS
IR.LIR.K.LhypCape	IR.LIR.K.LhypLsac.Ft
IR.LIR.K.Lsac.Ft	IR.LIR.K.LhypLsac.Ft
CR.LCR.BrAs.AmenCio	CR.LCR.BrAs.AmenCio
CR.LCR.BrAs.AmenCio, SS.SMX.CMx.CIloMx	CR.LCR.BrAs.AmenCio
CR.LCR.BrAs.AmenCio	CR.LCR.BrAs.AmenCio
SS.SMu.CSaMu.VirOph Pmax	SS.SMu.IFiMu.PhiVir
SS.SMu.CFiMu.SpnMeg	SS.SMu.CFiMu.SpnMeg

Table 10 continued

2009 biotope sequence	predicted biotope sequence	2009 biotope sequence	predicted biotope sequence
LL09IR06, LL09SR06 & LL09SS06		**LL09SR08**	
LR.FLR.Lic.YG, LR.FLR.Rkp	LR.FLR.Lic.YG	IR.HIR.KFaR.LhypR.Ft	IR.HIR.KFaR.LhypR.Ft
LR.FLR.Lic.Ver.Ver	LR.FLR.Lic.Ver.Ver	IR.HIR.KFaR.LhypRVt	IR.HIR.KFaR.LhypRVt
LR.LLR.F.Pel	LR.LLR.F.Pel	CR.HCR.XFa.CvirCri	CR.HCR.XFa.CvirCri/ CR.MCR.EcCr.AdigVt
LR.MLR.BF.FspiB	LR.LLR.F.Pel	**LL09IR10, LL09SR10 & LL09SS10**	
LR.LLR.F.Fves.FS	LR.LLR.F.Fves	LR.FLR.Lic.YG	LR.FLR.Lic.YG
LR.MLR.BF.Fser.R	LR.MLR.BF.Fser.R	LR.FLR.Lic.Ver.Ver	LR.FLR.Lic.Ver.Ver
IR.MIR.KR.Ldig.Ldig	IR.MIR.KR.Ldig	LR.HLR.MusB.Cht.Cht	LR.LLR.F.Pel
IR.MIR.KR.Lhyp.GzFt	IR.MIR.KR.Lhyp.GzFt	LR.HLR.MusB.Sem.Sem, LR.FLR.Rkp.Cor.Cor	LR.MLR.BF.FvesB
IR.LIR.K.LhypLsac.Gz	IR.LIR.K.Lsac.Ft	LR.MLR.BF.FvesB	LR.MLR.BF.Fser.R
CR.LCR.BrAs.AntAsH	CR.LCR.BrAs.AntAsH	IR.HIR.KFaR.Ala.Ldig	IR.MIR.KR.Ldig.Ldig
CR.LCR.BrAs.AntAsH	CR.LCR.BrAs.AntAsH	IR.MIR.KR.Lhyp.GzFt	IR.MIR.KR.Lhyp.GzFt
SS.SCS.CCS CR.LCR.BrAs.AntAsH	CR.LCR.BrAs.AntAsH	IR.MIR.KR.LhypVt	IR.MIR.KR.LhypVt
CR.LCR.BrAs.AntAsH	CR.LCR.BrAs.AntAsH	CR.MCR.EcCr	IR.FIR.SG.CrSpAsAn/ CR.LCR.BrAs.AmenCio
SS.SCS.CCS		IR.FIR.SG.CrSpAsAn	IR.FIR.SG.CrSpAsAn/ CR.LCR.BrAs.AmenCio
LL09IR07, LL09SR07		CR.MCR.EcCr.FaAlCr.Car	CR.MCR.EcCr.AdigVt/ CR.LCR.BrAs.AmenCio
LR.FLR.Lic.YG	LR.FLR.Lic.YG	SS.SMx.CMx	SS.SMu.CFiMu.SpnMeg
LR.FLR.Lic.Ver.Ver	LR.FLR.Lic.Ver		
LR.HLR.MusB.Cht.Cht	LR.HLR.MusB.MytB		
LR.HLR.MusB.MytB, LR.FLR.Rkp.Cor.Cor	LR.HLR.MusB.MytB		
LR.HLR.MusB.MytB, LR.FLR.Rkp.Cor.Cor	LR.HLR.MusB.Sem.Sem		
IR.HIR.KFaR.Ala.Myt	IR.HIR.KFaR.Ala.Ldig		
IR.MIR.KR.Ldig.Ldig	IR.HIR.KFaR.Ala.Ldig		
IR.HIR.KFaR.LhypR.Ft IR.MIR.KR.Lhyp.Ft	IR.HIR.KFaR.LhypR.Ft		
IR.MIR.KR.Lhyp.Pk	CR.MCR.EcCr.FaAlCr		
CR.MCR.EcCr.FaAlCr	CR.MCR.EcCr.FaAlCr		

A temporal change also appears to have taken place along the sedimentary section of the Eilean an Eireannaich E transect. In 2001 the sediment was observed to be muddy shelly sand with a surface scattering of dead shells, coated in a microalgal film and supporting an abundant population of the epifaunal *Ophiura ophiura*, as well as the seapens, *Pennatula phosphorea* and *Virgularia mirabilis* (**SS.SMU.CSaMu.VirOphPmax**). Although the seapens remained in 2009, the sediment appeared finer in 2009, with a much reduced shell content. There was no evidence of a microalgal film or of epifaunal ophiuroids. On the other hand, infaunal *Amphiura* spp. were abundant. It appears that a temporal change in the sediment structure has led to a change in community composition and hence the switch in biotope to **SS.SMu.CFiMu.SpnMeg**. **SS.SMu.CFiMu.SpnMeg.Fun** was recorded at the deeper end of the transect only in 2009, but the 2001 survey did not extend to such depths. It is to be expected that the apparent temporal changes observed at this site are due to natural phenomena.

There are good comparative data for the Eilean Ard S site (LL09XX05). Posford Haskoning Ltd. (2001) recorded the biotope sequence along the shore in 2001 and in the same year Bates *et al.* (2004) performed a diver survey of the sublittoral reef and sediment habitats. The same littoral zones were recognized in both years (Table 10). There is also strong agreement for the sublittoral zones, except for the kelp forest. In 2009 the kelp forest was divided into an upper *Laminaria hyperborea* forest, with some *Saccorhiza polyschides* (**IR.LIR.K.LhypCape**) and a lower *Saccharina latissima* forest (**IR.LIR.K.Lsac.Ft**). In 2001 a single mixed kelp forest biotope was recognized (**IR.LIR.K.LhypLsac.Ft**), although the original MNCR phase 2 record form notes the dominance of *L. hyperborea* in shallow areas and *S. latissima* in deeper areas, and the presence of *S. polyschides*. Thus there may have been no real change in biotope composition. However, there are some distinct temporal changes in abundance sublittorally. In 2001 *Antedon bifida* was recorded from all zones and formed a dominant member of the sublittoral rock wall fauna (**CL.LCR.BrAs.AmenCio**), whereas in 2009 it was unrecorded in this zone and only found in low numbers in the *S. latissima* forest. In 2001 the dominant solitary ascidian within the biotope **CL.LCR.BrAs.AmenCio** was *Ciona intestinalis*, with *Ascidiella aspersa* being unrecorded, whereas *A. aspersa* was dominant in 2009 and *C. intestinalis* sparse. In 2001 the inshore muddy sand zone supported frequent *Philine aperta* and its egg masses. In 2009 *P. aperta* was rare and the egg masses absent. As the 2001 survey took place in mid July and the 2009 survey in mid August, this latter difference may be a seasonal phenomenon. In all these examples of change there is no reason to implicate anthropogenic influence. The appearance in 2009 of the introduced red alga, *Heterosiphonia japonica*, is discussed in section 4.3.

Posford Haskoning Ltd. (2001) examined the littoral biotope sequence on the steep northeastern coast of Eilean Ard, 175 m east of the 2009 Eilean Ard NE site (LL09IR06). There is close agreement between the surveys (Table 10), apart from the lack of recognition of a *Fucus spiralis* zone in 2001. Much of the 2001 survey was carried out by observations from a boat and so this is a possible cause of the difference on this very steep shore. The sublittoral habitats at this site were examined in 2001 by Bates *et al.* (2004). The biotope sequences recorded are basically the same in both years, except for the lower part of the kelp forest. Both surveys recorded grazed *Laminaria hyperborea* forest down to around 6 m. Below this Bates *et al.* (2004) recorded a *Saccharine latissima* forest extending to 13.5 m on upper surfaces, but in 2009 there was a 3 m band of mixed *S. latissima* and *L. hyperborea* before the rock slope gave way to a vertical cliff at 8 m. Although the GPS positions indicate that the sites are within 15 m of each other, there is a high degree of topographical heterogeneity along this coastline. It is likely that the presence of the cliff precluded the development of the *S. latissima* forest in 2009 and it is therefore possible that the mixed forest biotope recorded in 2009 merely represents the transitional phase between the two kelp biotopes recognized in 2001. Although the presence of sediment biotopes were not recorded along the 2001 transect (Table 10), the original MNCR phase 2 record form reports the presence of occasional muddy sand ledges and the start of a steep slope of muddy sand with shell gravel at 25 m. In fact this may represent a biotope change as the sediment observed in 2009 was a slightly silty shell gravel. Reference to the 2001 video material has confirmed that the sediment was significantly finer in that year. This represents the only distinct temporal change identified at this site. This site was the only recorded location within the SAC for *Swiftia pallida* in 2001, when it was noted as being a rare component of the biotope, **CR.LCR.BrAs.AntAsH**. It was refound in 2009 as scattered colonies on bedrock outcrops emerging from a slope of shell gravel at about 27 m.

There are no good comparative earlier data available for the littoral section of the exposed Eilean an t-Sithein N site (LL09XX07), although Posford Haskoning Ltd. (2001) briefly described the zonation on the exposed coastline just to the west of the island in 2001 (given in Table 10). They also identified a barnacle/mussel dominated eulittoral zone (**LR.HLR.MusB.MytB**) but did not note the *Chthamalus montagui* band above this

(**LR.HLR.MusB.Cht.Cht**), which was observed in 2009. Also, in 2001 the mussel population declined in the lower eulittoral (**LR.HLR.MusB.Sem.Sem**), which was not the case in 2009. As both an upper eulittoral **LR.HLR.MusB.Cht.Cht** zone and a lower eulittoral **LR.HLR.MusB.MytB** zone were recorded from a slightly more sheltered site to the southwest of the island in 2001, this difference may be merely due to localised variability. Bates *et al.* (2004) carried out a diver transect survey of the site in 2001. In the sublittoral fringe they noted a mixed *Alaria*/*Laminaria digitata* zone (**IR.HIR.KFaR.Ala.Ldig**) extending from 0.5 m to 2 m above chart datum. In 2009 there was a distinct upper *Alaria* band (extending to about 2 m above chart datum) where *L. digitata* was absent (**IR.HIR.KFar.Ala.Myt**) and a lower band where *Alaria* was absent (**IR.MIR.KR.Ldig.Ldig**) extending to just below chart datum, with only a narrow region of overlap of the two kelps, where the 2001 biotope, **IR.HIR.KFaR.Ala.Ldig**, could have been interpreted as being present. This may represent a temporal change but the difficulty of recording in this wave-surged zone must be kept in mind. Most of the infralittoral in both years was occupied by *L. hyperborea* forest extending to around 14 m. Although the only biotope recorded in 2001 was the floristically rich **IR.HIR.KFar.LhypR.Ft** (Bates *et al.*, 2004), it is clear from the original records that there was a transition from this biotope to the less rich **IR.MIR.KR.Lhyp.Ft** with increasing depth, as was seen in 2009. There do, however, appear to be temporal changes in abundance, with *Antedon bifida* being recorded as abundant and *Corynactis viridis* as common in 2001, whereas in 2009 both species were unrecorded. Below 14 m the *L. hyperborea* park extending to a depth of 17.4 m was only observed in 2009, which may represent a slight deepening of the kelp population in 2009 or could possibly be due to slight differences in the line of the transects. The circalittoral zone in both years was mostly grazed-looking algally-encrusted rock (**CR.MCR.EcCr.FaAlCr**); however, there were some distinct differences in the erect fauna. As was observed in the kelp forest, there was a marked change in the abundance of *Antedon bifida* and *Corynactis viridis*, which dropped from abundant and common respectively in 2001, to rare in 2009.

Comparative data for the very exposed Bodha Druim pinnacle (LL09SR08) are available from the 1991 survey by Holt (1991). However, although the 2009 transect lay within 15 m of the recorded position for the 2001 survey, this was on the northwest face of the pinnacle, whereas Holt (1991) described the location as the southwest side of the pinnacle. Thus, there is likely to be a difference in location and aspect between the surveys. Both surveys recorded dense *Laminaria hyperborea* forest with a very rich understorey of foliose red algae on the top of the pinnacle (**IR.HIR.KFar.LhypR.Ft**), although this was recorded as extending 3 m deeper in 2009, which may reflect a topographical difference between the sites. Below this shallow zone both surveys recorded *L. hyperborea* on steep rock with an understorey of red algae, a patchy bryozoan/hydroid turf and many *Corynactis viridis* (**IR.MIR.KR.LhypVt**). However, there were a number of differences: in 2001 the red algal turf was denser and was accompanied by a rich fauna of polyclinids, not recorded in 2009, and the community appeared more diverse. There may be a real temporal change, possible resulting from the recorded increase in the abundance of the grazer, *Echinus esculentus*, or the difference could be explicable in terms of locational or methodological differences. This zone extended to 20 m in 2001 but only 17 m in 2009, although a transitional zone extending to 21 m was recorded in 2009. A more diverse zone was also recorded in 2001 towards the bottom of the steep rock slope beyond 20 m. This has been referred to the same 2009 biotope (**CR.HCR.XFa.CvirCri**) by Howson and Chambers (2000), although in Marine Recorder it has been ascribed to **CR.MCR.EcCr.AdigVt**. The 2001 survey extended 10 m deeper than in 2009 and included a bedrock shelf, sloping off at 36 m. Holt (2001) noted a number of depth-related changes within this zone, such as *C. viridis* only appearing in shallower water and *Caryophyllia smithii*, erect sponges and *Clavelina lepadiformis* becoming frequent to common only on deeper rock, which probably explains the absence of these deeper species, and possibly several others, from the 2009 transect. This greater range of depths and habitats surveyed in 2001, as well as the locational difference, complicates temporal comparisons, but within the same depth range there is a marked difference in the density of

Antedon bifida which was abundant in 2001 but rare in 2009. A similar reduction in abundance of this species (common in 2001 but unrecorded in 2009) was noted for the **IR.MIR.KR.LhypVt** zone.

For the moderately exposed Loch Dùghaill transect on the northeast corner of Eileanan Dubha (LL09XX10), the nearest shore site studied previously was 400 m to the southeast in more sheltered conditions. The sequence of shore biotopes recorded by Posford Haskoning Ltd. (2001) is presented in Table 10. The zonational difference between the surveys is explicable in terms of exposure. The pattern of sublittoral biotopes can be predicted from surveys by Bates *et al.* (2004) in 2001 (about 50 m to the east) and by Holt (1991) in 1991 and Smith (1984) in 1984, both examining the northern sublittoral cliff face of Eilean Dubha, about 250 m to the west. Table 10 compares the 2009 biotope sequence with that expected on rocky substrates of similar topography and depth characteristics from these earlier surveys. Biotope sequence along the rocky section of the 2009 transect is generally as might be expected from the earlier surveys. There are some differences in extent of some of the biotopes but this could result from the different physical conditions at the sites. Below the kelp zones the narrow transitional biotope, **CR.MCR.EcCr**, was not recognized in previous years but this may only be an interpretational difference. Holt (1991) identified a band of dense *Corynactis viridis*, *Metridium senile* and *Antedon bifida* (**IR.FIR.SG.CrSpAsAn**) above a much sparser zone of algal-encrusted rock with *Caryophyllia smithii* (**CR.MCR.EcCr.AdigVt**). A similar sequence was observed along the vertical cliff in 2009, although the lower band was referred to **CR.MCR.EcCr.FaAlCr.Car** in view of the low abundance of *Alcyonium digitatum*. Bates *et al.* (2004) recorded the presence of the ascidian-dominated biotope, **CR.LCR.BrAs.AmenCio**, in place of these two zones, but it is likely that the 2009 site experiences greater exposure. In 2009 the vertical cliff gave way to a slope of poorly sorted sediment composed of a slightly muddy sand with a high shell gravel content, particularly on the surface (**SS.SMx.CMx**). According to Bates *et al.* (2004) the seabed north of Eileanan Dubha corresponds to an area of transition from a coarse sand and gravel biotope to the west (**SS.CCS.MedLumVen**) to a silty sand with megafaunal burrows in the greater shelter to the east (**SS.SMu.CFiMu.SpnMeg**). This would explain the presence of the heterogeneous sediment biotope at the 2009 site. There is no strong evidence to suggest that a temporal change in the fauna and flora has occurred at this site.

4.2.4 Maerl beds

Holt (1991) carried out an MNCR phase 2 survey in the vicinity of the Sruth Mor site (LL09ML01) in 1991, although over a greater depth range of 3 – 7 m. The habitat and biota appear generally similar, although differences include the abundant *Ensis* recorded in 1991, but unrecorded in 2009, and the algal turf, patchy but overall abundant in 2009, but unrecorded in 1991. Holt described the maerl density as sparse, although both *Phymatolithon calcareum* and *Lithothamnion glaciale* have been recorded as frequent. In 2009 both species were far less abundant than this, with the dominant *P. calcareum* attaining just 1-5% cover in patches. Holt recorded a total of 22 taxa, compared to 54 taxa noted during the basic MNCR phase 2 survey in 2009 (or 109 taxa when the results of the algal census are included). The 1991 site has been referred to the biotope **SS.SMp.Mrl.Lgla** in Marine Recorder, whereas the 2009 data better fits **SS.SMp.Mrl.Pcal.R**, albeit with a fairly poorly developed red algal flora. In view of possible methodological differences no conclusions can be drawn regarding possible temporal diversity change; however, it does seem likely that a reduction in maerl density has occurred. Prior to establishment of the 2009 transect, wider reconnaissance by diver was carried out and this failed to reveal areas in the vicinity that supported richer maerl densities.

Bates *et al.* (2004) carried out an MNCR phase 2 survey of a site within 70 m of transect LL09ML02 in 2001. As in 2009, they recorded a patchy *Phymatolithon calcareum* maerl bed

on a silty sediment with a sparse alga flora and fairly sparse fauna of similar composition to 2009 (**SS.SMp.Mrl.Pcal**). Divers recorded a similar number of taxa in 2001 (25) to that found in 2009 (33). Although a slightly higher maerl abundance was recorded in 2001 (abundant, rather than common), evidence for real temporal change is weak in view of the patchy nature of this bed and the element of subjectivity in the method of density measurement.

The core samples taken at this site revealed an infauna dominated by the suspension and deposit feeding polychaete, *Pseudopolydora* cf. *paucibranchiata*. *P. paucibranchiata* is commonly associated with the presence of organic enrichment (e.g. Trannum *et al.*, 2006) and so the dominance of this species may be an indication of an impact from the discharge of faecal and pseudofaecal wastes from the mussel farm located around 100 m away. During the grab survey the only samples where *P.* cf. *paucibranchiata* was the dominant species was from a site on the same maerl bed (S71) and close to the site of the Eilean Ard salmon farm (S61).

No previous data exist for the rich maerl bed southwest of the island, Sgeir Iosal (LL09ML04). During a survey of Loch Laxford in 1984, Smith (1984) noted the presence of maerl in the channel northwest of the island but provided little useful comparative data for this site.

No transect was carried out at site LL09ML03 as a result of a preliminary diver survey of the area revealing only very sparsely scattered rhodoliths of *P. calcareum*. In 1991 at this site Holt (1991) recorded frequent *P. calcareum* (i.e. 10-19% cover), with the maerl located in the troughs of the shell gravel dunes. There does appear to be a temporal reduction in maerl density at this site but natural temporal change is not unexpected in view of the highly hydrodynamic conditions on the seabed in this channel, exemplified by the duned sediment.

4.2.5 Intertidal sediments

The description of the sediment flats of Tràigh Bad na Bàighe by Powell *et al.* (1980) is interpreted in Marine Recorder as representing the biotope **LS.LSa.MuSa.HedMacEte**, which fits with the predominant biotope recorded along both of the transects examined in 2009. On the other hand, data collected by the 1991 MNCR survey (Holt, 1991) has been interpreted in Marine Recorder as representing the presence of three biotopes: **LS.LMu.UEst.Hed.Cvol** adjacent to the saltmarsh, **LS.LSa.MuSa.MacAre** on the upper to midshore and **LS.LSa.MuSa.CerPo** on the midshore. In 2009 a very similar *Hediste diversicolor* and *Corophium volutator* biotope was recorded adjacent to the saltmarsh on the western transect (**LS.LMx.GvMu.HedMx.Cvol**), with the remaining sediment flat areas supporting **LS.LSa.MuSa.HedMacEte**. The recorded distribution of **LS.LSa.MuSa.MacAre** in 1991 appears to have been very localised within an area not examined in 2009. Based on the information available, the identity and distribution of the **MuSa.CerPo** biotope in 1991 is most uncertain and, indeed, there is no evidence from these previous surveys that change has taken place in the sediment biotopes of Tràigh Bad na Bàighe.

Posford Haskoning Ltd. (2001) mapped the distribution of the biotopes within the embayment in 2001. Although they reported a total of nine sediment biotopes within Tràigh Bad na Bàighe, not all were mapped and so their distribution is unknown. Most of the sediment flats were mapped as three biotopes. The 2009 eastern transect traversed areas mapped as an upper zone of **LS.LMu.MEst.HedMac** and lower zone of **LS.LSa.MuSa.CerPo**. Posford Haskoning Ltd. (2001) described the **MEst.HedMac** habitat as sandy mud, which is a totally different habitat to that encountered in 2009. However, the transect runs close to the northern margin of the mapped **MEst.HedMac** distribution and so this discrepancy possibly relates to the precision of mapping. A target note records the characteristics of the **MuSa.CerPo** biotope as consisting of polychaetes and *Cerastoderma*

in muddy sand. This is also true of the **HedMacEte** biotope recorded here in 2009 and so there appears little indication of temporal change. The western 2009 transect crossed an area mapped as **LS.LSa.MuSa.MacAre**. The **HedMacEte** biotope recorded here in 2009 is very close to this and was identified with the aid of core samples, which were not collected during the 2001 broadscale survey. In a target note, Posford Haskonng Ltd. (2001) recorded the presence of a muddy sand *Corophium* biotope (**LS.LSa.MuSa.BatCare**) close to the upper end of the western transect. A similar biotope was noted here in 2009 (**LS.LMx.GvMu.HedMx.Cvol**). Again, the difference may just reflect different interpretations based on different levels of available data.

4.2.6 Zostera marina

James (2004) identified three possible sites for the presence of *Zostera marina* within the SAC, based on information such as the presence of suitable habitats or discussions with local fishermen and divers. A glass-bottomed bucket survey at these sites failed to reveal any evidence of the presence of the species, nor did the dropdown video, transect and grab surveys throughout the SAC. No floating or demersal drift material was observed throughout the 2009 fieldwork. Discussions with a resident boatman who regularly passes through one of the possible sites, the Eilean an Eireannaich channel, further suggested its absence here. Thus, in view of the intensity of marine biological examination of the loch system over the last 25 years, it seems unlikely that the species occurs within the SAC.

4.2.7 Ascophyllum nodosum ecad mackayi

The areas of occurrence and coverage estimates of *Ascophyllum nodosum* ecad *mackayi* at the head of Loch Laxford are compared with the distribution of the biotope **LR.LLR.FVS.Ascmac** mapped in 2001 by Posford Haskoning Ltd. (2001) in Figure 20. Although Posford Haskoning Ltd (2001) did not record the very sparse occurrence of the ecad at site A5 in the mouth of Tràigh Bad na Bàighe, they did map the biotope at all the other 2009 sites at the head of Loch Laxford. Temporal comparisons are limited by the differences in aims and methods used, which obviates discussion of change in extent. However, there is an indication of a distributional change, with less penetration of the biotope up the estuary in 2009 on both the northern and southern shores.

Posford Haskoning Ltd (2001) did not map any *A. nodosum* ecad *mackayi* beds in Tràigh Bad na Bàighe in 2001, although a target note just east of the Allt a' Ghleannain discharge recorded its presence here within an area of approximately 10 x 40 m. A smaller bed (c. 16 x 16 m) was mapped here in 2009 (A6, Figure 20). Aerial photography from 2004 also suggests that the bed was previously more extensive.

4.2.8 Mytilus edulis beds

Posford Haskoning Ltd. (2001) recorded just one mussel bed in Loch Laxford, which flanked the mouth of the entrance channel to Tràigh Bad na Bàighe (Figure 20). It was ascribed to the biotope, **LR.MLR.MusF.MytFves**, although **LS.LMx.LMus.Myt.Mx** is likely to be a better fit. Its distribution was almost entirely different from the channel entrance bed examined in 2009. Moreover, the distribution of the 2009 bed completely spanned the position of the entrance channel indicated by the 2001 biotope map. If the 2001 map is accurate in this respect, then it signifies a marked change in the route of the channel between surveys. The much larger mussel bed, M3, was not observed by Posford Haskoning Ltd. (2001). However most of the area occupied by this bed was mapped in 2001 as '*Fucus vesiculosus* on mid eulittoral mixed substrata' (**LR.LLR.F.Fves.X**), which is what it would have appeared to be when observed from a distance in 2009, due to the presence of a fucoid blanket obscuring the mussels. Thus there is no strong evidence for a change in the status of the mussel beds

in the area, although there may have been some modification to the distribution of the outermost bed, resulting from a change in the course of the channel.

4.2.9 All habitats

Table 11 lists the biotopes recorded throughout the current survey and records the frequency of their occurrence. These data are also provided for the previous major surveys of the SAC. In addition to these surveys the Scottish Marine Biological Association/Marine Biological Association intertidal survey of Great Britain (Powell *et al.*, 1980) examined three sites in the loch, one of which has subsequently been referred to a biotope within Marine Recorder (**LS.LSa.MuSa.HedMacEte**). The biotopes updated to the 2004 classification scheme (Connor et al., 2004) have been taken from Marine Recorder for the surveys by Smith (1985) and Holt (1991). The 1994 broadscale mapping survey by Environment and Resource Technology Ltd. (1994) employed an early version of the MNCR biotope classification system (Connor, 1994), which prevented conversion of the nine sublittoral biotopes they recorded, although 11 of the 12 intertidal biotopes were updated. Environment and Resource Technology Ltd. (1994) recorded the biotopes present at 70 locations around the coastline of Loch a'Chadh-Fi and most of Loch Laxford, which accounts for the high frequencies in Table 11. On the other hand, the intertidal broadscale survey by Posford Haskoning (2004) provided biotope lists for each of eight sectors within the SAC, based on the 1997 classification system (Connor *et al.*, 1997a,b), which have been updated. The video, grab and diver records from the 2001 sublittoral broadscale survey (Bates *et al.*, 2004) have been updated, and in many cases reinterpreted, based on re-examination of the original video and raw data.

Table 11 shows that the area covered by the SAC contains a highly diverse suite of habitats, with 140 biotopes being recorded by the various surveys (excluding the higher biotope complexes). Most biotopes were recorded by the current survey (88, including 53 reef biotopes), which is similar to the combined total from the 2001 littoral and sublittoral broadscale surveys (85, including 55 reef biotopes). Biotopes previously recorded in the SAC but not observed during the 2009 survey are likely to be very localised in their distribution or the subjects of interpretational differences. Not only is the ascription of habitat data to biotopes often an imprecise process, but also the conversion of records between biotope classification schemes can introduce apparent temporal differences, the **LR.MLR.BF.Fser** and **LR.HLR.FR.Pal** biotopes possibly being examples of this. Methodological differences between surveys are also responsible for varying the range of biotopes observed. For example supplementation of the drop-down video observations with an ROV allowed the shallower infralittoral habitats, such as **IR.LhypLsac.Ft**, to be investigated. Bearing in mind these considerations there is no clear indication that temporal change in the biotope diversity or composition of the SAC has taken place.

Table 11 Comparison of the biotopes recorded during the current survey (09) with surveys in 1984 (84) by Smith (1985), 1991 (91) by Holt (1991), 1994 (94) by Environment and Resource Technology Ltd. (1994), 2001 (01^{l}) by Posford Haskoning Ltd. (2001) and 2001 (01^{s}) by Bates et al. (2004). Numbers represent site records except for the Posford Haskoning survey where they are coastal sectors (out of eight)

Biotope	84	91	94	01^{l}	01^{s}	09
LR	1					
LR.HLR.MusB.MytB			7	3		1
LR.HLR.MusB.Cht.Cht			15	3		2
LR.HLR.MusB.Sem		1				
LR.HLR.MusB.Sem.Sem				4		1
LR.HLR.MusB.Sem.FvesR				2		
LR.HLR.FR.Pal			11			
LR.HLR.FT.FserT		1				1
LR.HLR.FT.FserTX		1				
LR.MLR.BF.PelB		3		1		
LR.MLR.BF.FspiB		3				2
LR.MLR.BF.FvesB		1	21	4		2
LR.MLR.BF.Fser			7	5		
LR.MLR.BF.Fser.R				2		1
LR.MLR.BF.Fser.Bo				1		
LR.MLR.MusF.MytFves				1		1
LR.MLR.MusF.MytFR				3		
LR.LLR.F.Pel		6	49	8		6
LR.LLR.F.Fspi		3				
LR.LLR.F.Fspi.FS		1		7		2
LR.LLR.F.FspiX						1
LR.LLR.F.Fves		4				
LR.LLR.F.Fves.FS		1		7		5
LR.LLR.F.FvesX				6		2
LR.LLR.F.Asc.FS		8	42	7		2
LR.LLR.F.Asc.X	1			6		
LR.LLR.F.Fserr.FS		4		1		4
LR.LLR.F.Fserr.X		2		1		
LR.LLR.FVS.AscVS		3		1		
LR.LLR.FVS.Ascmac		2	3	4		6
LR.LLR.FVS.Fcer		1				
LR.LLR.FVS.FserVS		2		1		
LR.FLR.Lic.YG		1	38	8		9
LR.FLR.Lic.Ver			70	1		
LR.FLR.Lic.Ver.B				2		
LR.FLR.Lic.Ver.Ver		10		8		8
LR.FLR.Rkp		1				3
LR.FLR.Rkp.Cor.Cor						2
LR.FLR.Rkp.G				1		1
LR.FLR.CvOv.SpR				1		
LR.FLR.Eph.BLitX				1		

Biotope	84	91	94	01^{l}	01^{s}	09
IR	2					
IR.HIR.KFaR	1					
IR.HIR.KFaR.Ala					1	
IR.HIR.KFaR.Ala.Myt					1	1
IR.HIR.KFaR.Ala.Ldig					3	1
IR.HIR.KFaR.LhypFa					2	
IR.HIR.KFaR.LhypR.Ft		1			1	2
IR.HIR.KFaR.LhypRVt	2	1				1
IR.HIR.KSed	1					
IR.HIR.KSed.LsacSac					1	1
IR.HIR.KSed.XKScrR	1				5	2
IR.MIR.KR.Ldig.Ldig	1	4		5	3	3
IR.MIR.KR.Ldig.Bo		1		1		
IR.MIR.KT.LdigT		1				
IR.MIR.KR.LhypT.Ft					1	1
IR.MIR.KR.LhypT.Pk					2	
IR.MIR.KR.LhypTX.Ft						1
IR.MIR.KR.Lhyp	3				1	
IR.MIR.KR.Lhyp.Ft		3			1	3
IR.MIR.KR.Lhyp.Pk		1				1
IR.MIR.KR.Lhyp.GzFt	2	2			13	6
IR.MIR.KR.Lhyp.GzPk	5	3			4	5
IR.MIR.KR.LhypVt	2					1
IR.MIR.KR.XFoR						4
IR.LIR.K.LhypLsac.Ft		1			4	
IR.LIR.K.LhypLsac.Gz	1					1
IR.LIR.K.Lsac.Ldig					1	
IR.LIR.K.Lsac	1					
IR.LIR.K.Lsac.Ft	1	3			16	12
IR.LIR.K.Lsac.Pk		2			5	3
IR.LIR.K.Lsac.Gz					2	1
IR.LIR.KVS.LsacPsaVS		1				
IR.LIR.K.LhypCape		1				2
IR.LIR.Lag.ProtFur						1
IR.FIR.SG.CrSpAsAn		2				1
CR	1					
CR.HCR	1					
CR.HCR.XFa						1
CR.HCR.XFa.CvirCri						1
CR.MCR	1					
CR.MCR.EcCr						1

Table 11 continued

Biotope	84	91	94	01[l]	01[s]	09
CR.MCR.EcCr.FaAlCr					16	6
CR.MCR.EcCr.FaAlCr.Adig						1
CR.MCR.EcCr.FaAlCr.Car					3	5
CR.MCR.EcCr.FaAlCr.Flu						1
CR.MCR.EcCr.FaAlCr.Pom						6
CR.MCR.EcCr.AdigVt		3			2	
CR.LCR.BrAs	1				1	
CR.LCR.BrAs.AmenCio					3	4
CR.LCR.BrAs.AntAsH		3			2	3
CR.LCR.BrAs.NeoPro.FS		1				
LS	1					
LS.LCS.Sh.BarSh				1		1
LS.LSa.St.Tal						1
LS.LSa.FiSa.Po				1		
LS.LSa.MuSa		1				
LS.LSa.MuSa.CerPo		2		1		
LS.LSa.MuSa.MacAre		1		1		
LS.LSa.MuSa.HedMacEte						2
LS.LSa.MuSa.BatCare				1		
LS.LMu.MEst.HedMac				1		
LS.LMu.MEst.HedMacScr				1		
LS.LMu.UEst.Hed.Cvol		1				
LS.LMx				3		
LS.LMx.GvMu.HedMx.Cvol						1
LS.LBR.LMus.Myt.Mx		1				3
LS.LMp.Sm		2		1		2
SS.SCS.ICS	3				2	
SS.SCS.CCS	1				4	5
SS.SCS.CCS.PomB					1	5
SS.SCS.CCS.MedLumVen					6	12
SS.SCS.CCS.Nmix		1				
SS.SSa.IMuSa						4
SS.SSA.IMuSa.EcorEns		1			2	

Biotope	84	91	94	01[l]	01[s]	09
SS.SSa.IMuSa.AreISa		1			2	4
SS.SSa.CMuSa						2
SS.SMu.ISaMu					1	1
SS.SMu.ISaMu.MysAbr						1
SS.SMu.ISaMu.SundAasp		1				
SS.SMu.ISaMu.Cap					1	
SS.SMu.CSaMu	1					1
SS.SMu.CSaMu.VirOphPmax		2			6	5
SS.SMu.C..VirOphPmax.HAs					2	1
SS.SMu.IFiMu	1					1
SS.SMu.IFiMu.Are						3
SS.SMu.IFiMu.PhiVir		1			16	11
SS.SMu.CFiMu.BlyrAchi		2				
SS.SMu.CFiMu.SpnMeg	1	4			11	20
SS.SMu.CFiMu.SpnMeg.Fun					1	4
SS.SMX.CMx		1			1	2
SS.SMx.CMx.CIloMx		1				2
SS.SMx.CMx.CIloMx.Nem		1				
SS.SMX.CMx.OphMx					1	
SS.SMp.Mrl.Pcal	1				2	4
SS.SMp.Mrl.Pcal.R						3
SS.SMp.Mrl.Pcal.Nmix						1
SS.SMp.KSwSS					14	24
SS.SMp.KSwSS.LsacR					1	2
SS.SMp.KSwSS.LsacR.Sa						2
SS.SMp.KSwSS.LsacMxVs						3
SS.SMp.KSwSS.LsacCho	1					
SS.SMp.KSwSS.Tra					2	1
SS.SMp.KSwSS.Pcri					1	2
SS.SBR.SMus						1
SS.SBR.SMus.ModHAs	1					
SS (dead *Mytilus* shells)					1	1

4.3 Anthropogenic impact

A number of biotopes recorded during the 2009 survey fall within definitions of UK biodiversity action plan priority habitats (Biodiversity Reporting and Information Group, 2007). These are listed in Table 12. The SAC also supports at least six species nominated as UK BAP priority species: *Phymatolithon calcareum*, *Ascophyllum nodosum* ecad *mackayi*, *Funiculina quadrangularis*, *Swiftia pallida*, *Gadus morhua* and *Pollachius virens*.

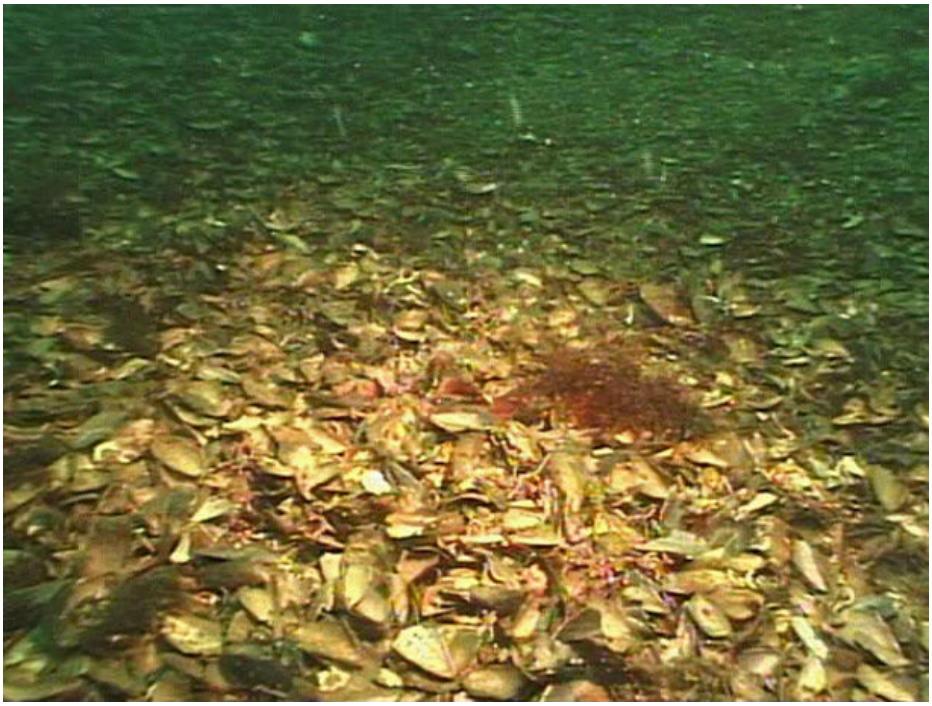
The maerl bed to the north-west of Eilean Ard is being influenced by the presence of the mussel farm here (M5, Figure 2). With maerl being recorded as common at sites on both sides of the rows of mussel lines, it is probable that the farm is sited over an area that once supported significant quantities of maerl. The drop-down video survey revealed that the habitat in the vicinity of the mussel lines is being modified by the deposition of mussel shells, which attain complete coverage of the seabed in places. Live maerl is generally sparse (Figure 24) and there appears to be an impoverished epibiotic community. Although it is

likely that maerl is being smothered by the deposition, it is possible that some live maerl persists through transport from adjacent areas.

Table 12 UK biodiversity action plan priority habitats represented in Loch Laxford SAC

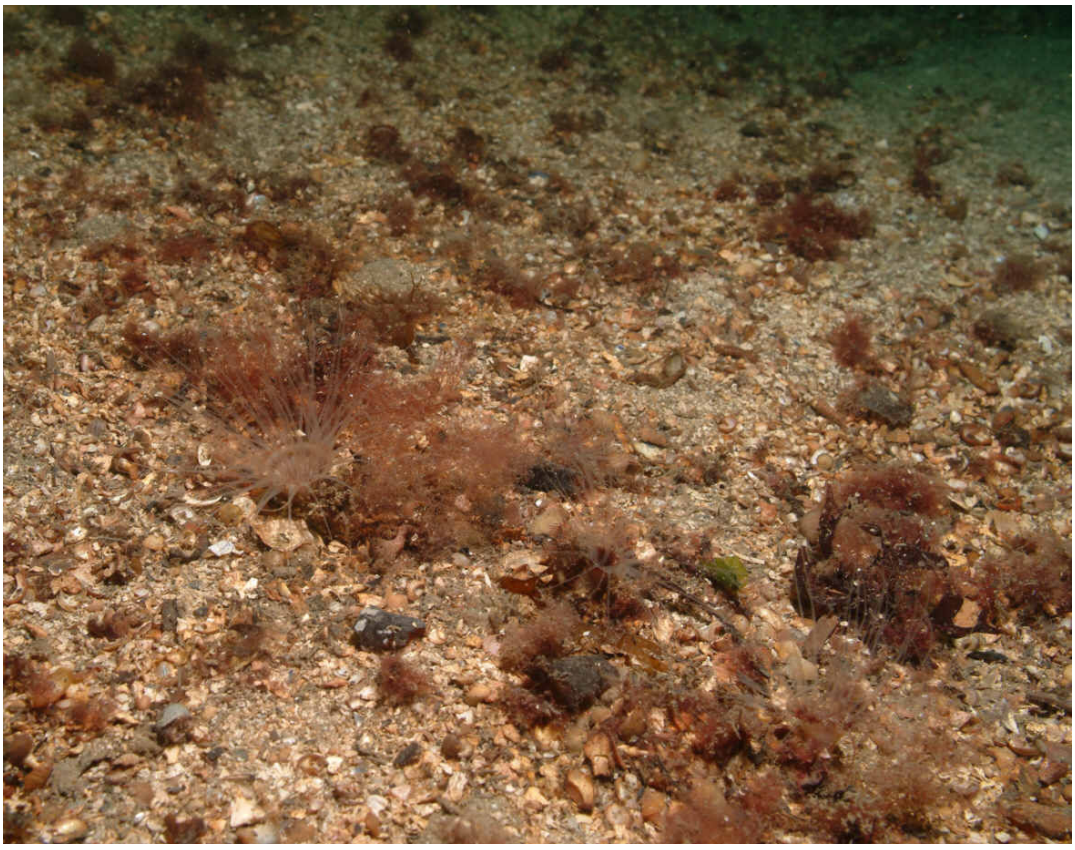
Habitat	**Laxford biotopes**
blue mussel beds	LS.LBR.LMus.Myt.Mx
estuarine rocky habitats	LR.LLR.FVS.Ascmac
intertidal mudflats	LS.LSa.MuSa.HedMacEte
maerl beds	SS.SMp.Mrl.Pcal SS.SMp.Mrl.Pcal.R SS.SMp.Mrl.Pcal.Nmix
mud habitats in deep water	SS.SMu.CFiMu.SpnMeg, SS.SMu.CFiMu.SpnMeg.Fun SS.SMu.CSaMu SS.SMu.CSaMu.VirOphPmax SS.SMu.C..VirOphPmax.HAs
sheltered muddy gravels	LS.LMx.GvMu.HedMx.Cvol
sublittoral sands and gravels	SS.SCS.ICS, SS.SCS.CCS SS.SCS.CCS.PomB SS.SCS.CCS.MedLumVen SS.SSa.IMuSa SS.SSa.IMuSa.AreISa SS.SSa.CMuSa
tide-swept channels	LR.HLR.FT.FserT IR.MIR.KR.LhypT.Ft IR.MIR.KR.LhypTX.Ft

Figure 23 Video frame grab from site D127 showing maerl thalli amongst a layer of Mytilus edulis *shells*



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). Its recorded presence during the current survey represents a considerable northward extension of its known UK distribution. 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). This may explain its prevalence in the close vicinity of the salmon farm off Eilean Ard.

Figure 24 Unattached patches of Heterosiphonia japonica *on sediment in zone S6 of the Eilean Ard SE transect (LL09SS05)*



It was recorded attached to rock and algae and as unattached material on sediment in three of the infralittoral and upper circalittoral zones, although its presence was probably more widespread. The abundance appears to be generally fairly low, although frequent patchy drift material was observed on sediment (Figure 24). It was also found to be a rare component of the algal community at a site in Loch Dùghaill and on the maerl bed in Lochan na Fionndalach Bige.

Heterosiphonia japonica has become a dominant member of the macroalgal flora at some of the Argyll sites examined by Moore and Harries (2009), even forming a virtual macroalgal monoculture at one location. However, its impact on other species is uncertain. Husa *et al.* (2008) found that the success of the species in south-western Norway has had no adverse effect on algal species richness. However, it is known that dense settlement can take place on faunal and floral substrates, including the rhodoliths of maerl beds (Husa *et al.*, 2004) and

the species has been recorded at seven out of 10 maerl beds examined in Brittany (Sjøtun *et al.*, 2008). Thus *H. japonica* may represent a threat to the conservation value of a variety of habitats, including maerl beds. At present, however, it is only a minor component of the highly diverse community of one of the Laxford maerl beds, with no evidence of a significant ecological impact there.

The red alga *Antithamnion densum* was recorded at three sites in the SAC, the only other British record for this species being for the Firth of Forth (Moore *et al.*, 2009). The species is believed to have been introduced from the South Atlantic (Rueness *et al.*, 2007), although it is also possible that it is a native member of the British flora, which has been previously overlooked due to its inconspicuousness and rarity (C. Maggs, pers. comm.). There is no evidence to suggest that it represents a threat to the biotopes of the SAC.

Northward extensions to the known ranges of the red algae *Calliblepharis jubata* and *Sphondylothamnion multifidum* were recorded during the current survey. Whilst this could be a consequence of climate change, it is also possible that it may merely result from increasing investigation of suitable habitats in the region.

No clear evidence of an impact of salmon farming on the conservation interests of the SAC was identified. There will be localised modification of the sediment habitats within the vicinity of active sites due to organic enrichment, but the extent of this was not examined. There was no indication that the Eilean Ard farm, fallow at the time of the survey, was influencing the adjacent reef biotopes, apart from the possibility that related boat activity may have been the vector for the introduction of *Heterosiphonia japonica*.

Throughout the survey no evidence was revealed of any establishment in the the loch of the urchin, *Paracentrotus lividus*, following culture experiments at two salmon farm sites in 2005-6 (Cook and Kelly, 2007). Despite a detailed survey of the biota along a mixed reef and sediment transect within 75 m of one of the experimental sites, no evidence of the persistence of *P. lividus* within the SAC was obtained.

At the time of the survey there was a moderate level of creel fishing taking place on the reefs within the SAC. Whilst some physical damage from smothering and scour by ground tackle will take place, the impacts of creeling have been found elsewhere to be minor, except to brittle taxa (Eno *et al.*, 1996). Although seafans, such as *Swiftia pallida*, are vulnerable to mobile fishing gear (Tansley, 2006), Eno *et al.* (1996) found that the related *Eunicella verrucosa* was “remarkably resilient” to impact from lobster pots.

At the only known location of *Swiftia pallida* in the SAC, towards the base of the steep rock slope along the northern coast of Eilean Ard, the colonies are likely to be protected from trawling. This not true, however, for the deep mud habitats, **SS.SMu.CFiMu.SpnMeg** and **SS.SMu.CFiMu.SpnMeg.Fun**, the latter supporting the nationally scarce *Funiculina quadrangularis*. It is believed that physical disturbance from demersal fishing activities poses the greatest threat to *F. quadrangularis* populations (Greathead *et al.*, 2007), which cannot withdraw into the sediment, unlike the other British seapen species. *Funiculina quadrangularis* shares its habitat with *Nephrops norvegicus*. During the 2009 survey the only form of fishing for *N. norvegicus* appeared to be long strings of creels deployed on deep mud across the main Loch Laxford channel between Eilean Ard and Eilean an Eireannaich. Eno *et al.* (1996) concluded that creeling has a less damaging effect than trawling on the species as it has the ability to right itself if hit by a creel pot. The Inshore Fishing (Prohibition of Fishing and Fishing Methods) (Scotland) Order 2004 introduced a seasonal ban on the use of mobile fishing gear within the waters of the SAC between 1st October and 31st March. The extent of trawling for *Nephrops* outside of this period is unknown.

The extent of scallop dredging within the SAC is also unknown. No evidence of this activity was observed during the survey, either in the form of vessels or dredge tracks. The habitat likely to be at greatest risk is maerl, which is known to be highly vulnerable to this form of fishing (Hall-Spencer and Moore, 2000).

To facilitate a judgement on the present condition of the reef and inlet and bay features within the SAC, the following conclusions can be drawn:

- From what is known concerning the activities that have the potential to reduce the extent of the inlet and bay feature or the reef feature, there is no reason to believe that such activities have led to a reduction in extent between the surveys of 2001 (Posford Haskoning, 2001; Bates *et al.*, 2004) and 2009.

- The 2009 video survey provides no indication that subtidal reef extent has diminished between the surveys of 2001 and 2009.

- No adverse changes in diversity , composition or distribution of reef biotopes, nor in the species composition or species abundance of reef biotopes are discernible between the 2009 survey and earlier surveys. Any apparent differences are largely explicable in terms of differences in methodology, site locations and data interpretation.

- Changes in the abundance of a few reef species appear to have taken place but these are mostly likely to have resulted from natural processes. An exception is the appearance of *Heterosiphonia japonica*, although this currently does not appear to represent a threat to the condition of the interest features of the SAC.

- A minor change in the diversity of sediment habitats may have occurred between 1984 and 2009 due to loss of a dense *Modiolus* bed biotope. However, there is incomplete evidence for such a change, which is likely to be, in any event, due to natural processes.

- It is possible that at one maerl site there is localised modification of the spatial pattern and species composition of the maerl biotope resulting from the deposition of dead mussel shells from the lines of a *Mytilus edulis* farm.

4.4 Recommendations

Detailed recommendations for future monitoring of the SAC are given in the Site Attribute Tables (Appendix 14). This section discusses some aspects of the monitoring programme.

Sublittoral biotope diversity, composition, distribution and species composition should continue to be monitored by means of video survey at 120 stations, supplemented by infaunal analysis at 30 stations, representing a broad range of physical conditions. To increase geographical knowledge of the SAC over time, not all the same sites need to be monitored during each monitoring event, but in order to make valid temporal comparisons a substantial number of sites will need to be resampled.

The nine fixed reef and mixed reef/sediment transects and the two littoral sediment transects should continue to be monitored to provide supplementary data on biotope diversity, composition, distribution and species composition. If possible, transect LL09XX09, not surveyed in 2009 due to adverse weather conditions, should be included in the programme to provide better representation of the outer region of the SAC.

While both the video and transect surveys provide crude mechanisms for monitoring reef extent, temporal change will be better assessed through the monitoring of relevant human activities.

In view of the potential for damage by fishing activities to the habitats of the SAC, especially to maerl beds and deep water mud habitats, it is recommended that an attempt is made to quantify the level of these activities as part of the condition monitoring programme.

It seems probable that mussel farming at one site is adversely affecting maerl abundance, as well as the composition and diversity of the associated community. Maerl beds are a part of the large shallow inlet and bay notified feature and also represent a UK biodiversity action plan priority habitat. The Common Standards Monitoring Guidance (Inter-Agency Marine Monitoring Group, 2004c) provides scope for the monitoring of appropriate habitats that reflect the condition of the complex feature. It is therefore recommended that the species composition of the maerl beds forms a part of the monitoring programme, as this will be influenced by such factors as water quality, chemical and physical disturbance by aquaculture and fishing activities, and the proliferation of invasive species. This has been incorporated into the Site Attribute Table for the inlet and bay feature (Appendix 14, Table 14.1) under the attributes 'species composition of representative or notable biotopes' and 'presence or abundance of specified species'.

It is suggested that the impact of mussel farming on the maerl bed at the Eilean Ard site is worthy of more detailed study in order to identify the nature and extent of damage in terms of the impact on the community and the spatial scale of the effect. Such information will be of value in management of this SAC and possibly also in a wider geographical context.

The trialling of the production of algal censuses for certain sites suggests that the approach may offer a potentially useful means of monitoring the species composition of many representative or notable biotopes. In addition to producing a detailed characterisation of the composition of the algae, a major element of many biotopes, it also provides a measure of biodiversity. In the absence of anthropogenic influences, Wells and Wilkinson (2003) have found that macroalgal species richness, unlike species composition, displays high inter-annual stability.

The inclusion of this form of algal monitoring increases the likelihood of identifying distributional changes resulting from climate change and for identifying the appearance and spread of invasive species. Furthermore, macroalgal communities respond to such anthropogenic influences as the presence of eutrophication, toxic substances and habitat disturbance (Wells *et al.*, 2007).

The quantification of epibiotic communities using quadrats offers the advantage of permitting a statistical basis for temporal comparisons of abundance, composition and diversity, although natural temporal variation and high spatial variability can significantly reduce the efficacy of this approach for condition monitoring of communities. Moreover, there are serious limitations with respect to the habitat type and species that can be monitored. These are essentially restricted to small or low-profile, common species on two-dimensional habitats, which hopefully are a reliable proxy for the biotope community as a whole. While algal censusing also only considers one component of the community, it can accommodate a much broader spectrum of subhabitats within a biotope, and the entire species size spectrum.

A serious disadvantage of the quadrat approach is the potential for high inter-worker variability. This can lead to high within-site variability or the possibility that temporal differences in interpretation by different workers are regarded as evidence of temporal

change. The degree of inter-worker variation in the laboratory identification of algal material might be expected to be low, and is amenable to assessment through the retention of material.

It is suggested that further work is needed to develop the use of algal censusing in condition monitoring. An appropriate protocol for characterising the composition and diversity of the algal community of a transect zone should be developed. This would entail consideration of sampling methods, sampling intensity and the range of algal forms to be included.

The derivation of a complete species inventory for the area of a transect band passing through a zone theoretically obviates the need for statistically-based temporal comparisons, as the whole statistical population is censused. In practice, however, slight variations in the line of the transect, as well as slight differences in sampling, may cause differences between monitoring events and so the extent of variation caused by such factors needs to be assessed. Even if significant variation is introduced by such factors it should still be possible to provide a statistical basis to temporal comparisons of diversity by the adoption of a two-way analysis of variance design, which assesses temporal change at a site based on censuses at different depths, or temporal change over an area based on censuses at different sites.

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Appendix 1 Data recording forms

Appendix 1.1 Drop-down video survey recording form

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 Reef transect relocation and site form

LOCH LAXFORD SCM 2009 **DATE:** **TEAM:**

REEF TRANSECT RELOCATION AND SITE FORM

TRANSECT (e.g. Sruth Mor/LL09IR02)	
TYPE OF MARKER	
DESCRIPTION OF POSITION (add sketch of transect line)	
GPS (WGS84, dec. degrees)	
WPT NO.	
BRIEF DESCRIPTION OF HABITATS BETWEEN MARKER AND ZONE 1 (e.g. heather)	
PHOTO 1 OF MARKER (down transect):	
PHOTO NO.	
GPS	
WPT NO.	
COMPASS BEARING	
PHOTO 2 OF MARKER:	
PHOTO NO.	
GPS	
WPT NO.	
COMPASS BEARING	
PHOTO 3 OF MARKER:	
PHOTO NO.	
GPS	
WPT NO.	
COMPASS BEARING	
BEARING OF TRANSECT	
FEATURES TO AIM FOR	
HEIGHT ABOVE CD (to be added)	
VIDEO OVERVIEW OF TRANSECT ?	Intertidal: Y/N Subtidal: Y/N
POSITION OF WATER'S EDGE DURING SUBLITT. WORK	Tape: Height below marker: Time:

SKETCH

Appendix 1.3 Profile data form

SITE: LL09____ DATE: _____
TIME: _____ RECORDER: _____

DISTANCE (m)	HT/DPTH/ANGLE (m)	FEATURE
		WATER'S EDGE

Time of water's edge measurements: _____

PROFILE SKETCH OVERLEAF…..

Appendix 1.4 Reef biotope recording form

LOCH LAXFORD SCM 2009 DATE: TEAM:

REEF BIOTOPE RECORDING FORM

TRANSECT (e.g. Sruth Mor/LL09IR02)			
Time (start-end)			
INTERTIDAL OR SUBTIDAL			
UPPER BIOTOPE/HABITAT BOUNDARY			
HT BELOW STATION MARKER (x.xx m) OR DEPTH (x.x m)			
DISTANCE ALONG TAPE (x.xx m)			
LOWER BIOTOPE/HABITAT BOUNDARY			
HT BELOW STATION MARKER (x.xx m) OR DEPTH (x.x m)			
DISTANCE ALONG TAPE (x.xx m)			
BIOTOPE (probably to be added later)			
QUADRAT COUNTS? Y/N		HABITAT PHOTOS? Y/N	
PHOTO QUADRAT Nos.		HAB PHOTO Nos.	
PHYSICAL DESCRIPTION			
BIOLOGICAL DESCRIPTION			
BIOTA ABUNDANCES (tube no.)			

Appendix 1.5 Sediment transect relocation form

LOCH LAXFORD SCM 2009 DATE: TEAM:

SEDIMENT TRANSECT RELOCATION FORM

TRANSECT (e.g. LL09IS01)	
TYPE OF MARKER	
DESCRIPTION OF POSITION (add sketch below if helpful)	
GPS (WGS84, dec. degrees)	
WPT NO.	
PHOTO 1 OF MARKER (down transect):	
PHOTO NO.	
GPS	
COMPASS BEARING	
PHOTO 2 OF MARKER:	
PHOTO NO.	
GPS	
COMPASS BEARING	
PHOTO 3 OF MARKER:	
PHOTO NO.	
GPS	
COMPASS BEARING	
BEARING OF TRANSECT	
FEATURES TO AIM FOR	
HEIGHT ABOVE CD (to be added)	
VID O'VIEW OF T'SECT & ADJ. AREA (Y/N)	
T'SECT PROF SKETCH + SUPRA ZONES (Y/N)	

SKETCH

Appendix 1.6 Sediment station recording form

LOCH LAXFORD SCM 2009 DATE: TEAM:

SEDIMENT STATION RECORDING FORM

STATION/ZONE NUMBER (e.g. 1)		
GPS (WGS84, dec. degrees)		
WPT NO.		
APPROX. SHORE HEIGHT (U/M/L)		
HT BELOW STATION MARKER (cm)		Range (m):
SUBSTRATE (M,SM,MS,fS,mS,cS,G etc)		
MOISTURE (standing, w'logged,damp,dry)		
SURFACE FEATURES (e.g. rippled)		
DEPTH OF BLACK LAYER (cm)		
HABITAT NOTES		
BIOTA ABUNDANCES (surface)		
BIOTA ABUNDANCES (digover)		
BIOTOPE:	HABITAT PHOTO NOs	

PHOTO QUADRATS NOs		ID SPECIMENS COLLECTED (Y/N)	
VIDEO (Y/N)	PSA CORE (Y/N)	8 FAUNAL CORES (Y/N)	

UPPER BIOTOPE/HABITAT BOUNDARY		
GPS		
WPT NO.		
HT BELOW STATION MARKER (cm)		Range (m):
LOWER BIOTOPE/HABITAT BOUNDARY		
GPS		
WPT NO.		
HT BELOW STATION MARKER (cm)		Range (m):

Appendix 2 Drop-down video survey data

Table 2.1 Details of sites and video records collected for the drop-down video survey. Video from sites D121-D132 was obtained by SNH from a subsequent survey. Video from sites SD1-SD3 was obtained by diver

Site	Latitude in	Longitude in	Latitude out	Longitude out	Depth in (m)	Depth out (m)	Date	Video tape no.	Video in (m:s)	Video out (m:s)
D1	58.38317	-5.03980	58.38347	-5.04040	0.9	1.1	04/08/2009	D-LAXFORD-0809-5	25:55	28:55
D2	58.38433	-5.04253	58.38448	-5.04288	2.7	3.0	04/08/2009	D-LAXFORD-0809-5	24:34	25:55
D3	58.38495	-5.04478	58.38518	-5.04517	4.6	5.2	04/08/2009	D-LAXFORD-0809-5	22:53	24:34
D4	58.38345	-5.05153	58.38353	-5.05220	1.4	1.3	04/08/2009	D-LAXFORD-0809-5	20:23	22:53
D5	58.38567	-5.04943	58.38588	-5.04975	6.8	6.9	04/08/2009	D-LAXFORD-0809-5	18:08	20:23
D6	58.38735	-5.05190	58.38772	-5.05247	8.3	8.9	04/08/2009	D-LAXFORD-0809-5	15:45	18:08
D7	58.38693	-5.05720	58.38717	-5.05760	5.8	7.4	04/08/2009	D-LAXFORD-0809-5	14:06	15:45
D8	58.38508	-5.06315	58.38522	-5.06352	5.3	4.8	04/08/2009	D-LAXFORD-0809-5	12:16	14:06
D9	58.38950	-5.05560	58.38973	-5.05610	10.3	10.6	04/08/2009	D-LAXFORD-0809-5	10:23	12:16
D10	58.39035	-5.04748	58.39073	-5.04815	2.2	2.5	04/08/2009	D-LAXFORD-0809-5	08:01	10:23
D11	58.39117	-5.04050	58.39128	-5.04092	2.8	3.0	04/08/2009	D-LAXFORD-0809-5	06:20	08:01
D12	58.39322	-5.04477	58.39338	-5.04535	4.5	4.6	04/08/2009	D-LAXFORD-0809-5	04:36	06:20
D13	58.39243	-5.04940	58.39270	-5.05015	3.5	3.8	04/08/2009	D-LAXFORD-0809-5	02:40	04:36
D14	58.39455	-5.04880	58.39467	-5.04928	4.3	4.6	04/08/2009	D-LAXFORD-0809-5	01:16	02:40
D15	58.39425	-5.05192	58.39443	-5.05230	7.0	7.6	04/08/2009	D-LAXFORD-0809-5	00:00	01:16
D16	58.39215	-5.05460	58.39245	-5.05528	10.6	11.1	04/08/2009	D-LAXFORD-0809-4	56:15	57:59
D17	58.39280	-5.06273	58.39300	-5.06327	13.7	13.9	04/08/2009	D-LAXFORD-0809-4	54:49	56:15
D18	58.39092	-5.06755	58.39088	-5.06753	7.9	8.1	04/08/2009	D-LAXFORD-0809-4	54:05	54:49
D19	58.39290	-5.06738	58.39318	-5.06787	14.8	15.0	04/08/2009	D-LAXFORD-0809-4	52:19	54:05
D20	58.39470	-5.06318	58.39525	-5.06438	14.9	17.8	04/08/2009	D-LAXFORD-0809-4	49:17	52:19
D21	58.39880	-5.06490	58.39880	-5.06537	12.5	10.9	04/08/2009	D-LAXFORD-0809-4	47:21	49:17
D22	58.40155	-5.06097	58.40143	-5.06120	10.9	11.5	04/08/2009	D-LAXFORD-0809-4	43:40	47:21
D23	58.40220	-5.05800	58.40225	-5.05798	6.9	7.4	04/08/2009	D-LAXFORD-0809-4	41:08	43:40
D24	58.39662	-5.07027	58.39723	-5.07120	15.0	15.3	04/08/2009	D-LAXFORD-0809-4	38:15	41:08
D25	58.39480	-5.07152	58.39528	-5.07232	15.1	15.0	04/08/2009	D-LAXFORD-0809-4	35:30	38:15
D26	58.39533	-5.07717	58.39585	-5.07775	12.7	15.9	04/08/2009	D-LAXFORD-0809-4	31:58	35:30
D27	58.39808	-5.07403	58.39872	-5.07488	16.6	17.3	04/08/2009	D-LAXFORD-0809-4	28:29	31:58
D28	58.40275	-5.07165	58.40308	-5.07188	18.0	18.9	04/08/2009	D-LAXFORD-0809-4	25:24	28:29
D29	58.40585	-5.07013	58.40597	-5.07037	15.4	15.3	04/08/2009	D-LAXFORD-0809-4	23:21	25:24
D30	58.40658	-5.07323	58.40680	-5.07370	7.2	7.9	04/08/2009	D-LAXFORD-0809-4	19:39	23:21
D31	58.40803	-5.06788	58.40822	-5.06758	2.2	2.0	04/08/2009	D-LAXFORD-0809-4	17:45	19:39
D32	58.40793	-5.06527	58.40795	-5.06563	11.3	11.6	04/08/2009	D-LAXFORD-0809-4	15:36	17:45
D33	58.41070	-5.06443	58.41080	-5.06475	10.4	13.5	04/08/2009	D-LAXFORD-0809-4	12:59	15:36
D34	58.41377	-5.06387	58.41395	-5.06433	17.0	11.3	04/08/2009	D-LAXFORD-0809-4	10:38	12:59
D35	58.41418	-5.05945	58.41420	-5.05948	6.3	6.1	04/08/2009	D-LAXFORD-0809-4	10:02	10:38
D36	58.41078	-5.05640	58.41102	-5.05658	3.5	4.1	04/08/2009	D-LAXFORD-0809-4	05:50	10:02
D37	58.41287	-5.05265	58.41300	-5.05345	5.3	5.7	04/08/2009	D-LAXFORD-0809-4	02:42	05:50
D38	58.40987	-5.03832	58.40985	-5.03868	1.5	3.3	04/08/2009	D-LAXFORD-0809-4	00:00	02:42

Table 2.1 continued

Site	Latitude in	Longitude in	Latitude out	Longitude out	Depth in (m)	Depth out (m)	Date	Video tape no.	Video in (m:s)	Video out (m:s)
D39	58.39990	-5.07260	58.40008	-5.07302	16.5	16.5	06/08/2009	D-LAXFORD-0809-7	16:24	19:52
D40	58.39830	-5.07840	58.39835	-5.07885	20.1	22.4	06/08/2009	D-LAXFORD-0809-7	13:11	16:24
D41	58.39635	-5.08097	58.39627	-5.08107	25.0	25.9	06/08/2009	D-LAXFORD-0809-7	09:43	13:11
D42	58.39375	-5.08517	58.39373	-5.08540	19.4	18.9	06/08/2009	D-LAXFORD-0809-7	06:55	09:43
D43	58.39177	-5.08603	58.39177	-5.08605	8.3	8.4	06/08/2009	D-LAXFORD-0809-7	04:49	06:55
D44	58.39103	-5.08975	58.39107	-5.08960	11.5	11.7	06/08/2009	D-LAXFORD-0809-7	02:15	04:49
D45	58.39512	-5.08720	58.39512	-5.08700	5.6	7.0	06/08/2009	D-LAXFORD-0809-7	00:00	02:15
D46	58.39963	-5.08060	58.39953	-5.08043	41.6	40.7	06/08/2009	D-LAXFORD-0809-6	51:18	54:04
D47	58.40142	-5.07852	58.40148	-5.07822	18.4	18.1	06/08/2009	D-LAXFORD-0809-6	47:56	51:18
D48	58.40160	-5.08325	58.40158	-5.08308	30.7	29.8	06/08/2009	D-LAXFORD-0809-6	44:47	47:56
D49	58.40027	-5.08350	58.40017	-5.08345	47.9	47.8	06/08/2009	D-LAXFORD-0809-6	41:10	44:47
D50	58.39940	-5.08442	58.39925	-5.08432	42.0	38.8	06/08/2009	D-LAXFORD-0809-6	36:34	41:10
D51	58.40122	-5.09325	58.40118	-5.09333	27.3	23.5	06/08/2009	D-LAXFORD-0809-6	33:42	36:34
D52	58.40185	-5.08800	58.40163	-5.08813	45.5	45.3	06/08/2009	D-LAXFORD-0809-6	29:51	33:42
D53	58.40365	-5.08792	58.40337	-5.08785	8.2	11.8	06/08/2009	D-LAXFORD-0809-6	27:14	29:51
D54	58.40655	-5.07998	58.40667	-5.07998	9.2	9.2	06/08/2009	D-LAXFORD-0809-6	24:55	27:14
D55	58.40687	-5.08490	58.40673	-5.08443	7.2	10.3	06/08/2009	D-LAXFORD-0809-6	22:39	24:55
D56	58.40648	-5.09490	58.40678	-5.09550	21.3	11.1	03/08/2009	D-LAXFORD-0809-3	11:48	14:13
D57	58.40470	-5.09353	58.40503	-5.09342	43.3	42.6	06/08/2009	D-LAXFORD-0809-6	17:23	22:39
D58	58.40268	-5.09815	58.40302	-5.09883	44.4	43.0	03/08/2009	D-LAXFORD-0809-3	09:04	11:48
D59	58.39732	-5.09643	58.39752	-5.09700	14.9	15.1	03/08/2009	D-LAXFORD-0809-3	07:15	09:04
D60	58.39587	-5.09575	58.39597	-5.09598	6.7	6.1	03/08/2009	D-LAXFORD-0809-3	05:31	07:15
D61	58.40060	-5.10355	58.40080	-5.10418	25.5	23.9	03/08/2009	D-LAXFORD-0809-3	02:48	05:31
D62	58.39857	-5.10805	58.39890	-5.10873	19.4	22.1	03/08/2009	D-LAXFORD-0809-3	00:00	02:48
D63	58.39717	-5.11388	58.39720	-5.11395	8.4	8.0	03/08/2009	D-LAXFORD-0809-2	54:49	57:10
D64	58.39758	-5.11277	58.39757	-5.11270	8.0	7.0	03/08/2009	D-LAXFORD-0809-2	53:14	54:49
D65	58.39862	-5.11497	58.39867	-5.11518	13.7	13.1	03/08/2009	D-LAXFORD-0809-2	51:51	53:14
D66	58.40045	-5.11160	58.40075	-5.11277	24.0	23.8	03/08/2009	D-LAXFORD-0809-2	47:37	51:51
D67	58.40237	-5.11163	58.40252	-5.11210	7.2	7.3	03/08/2009	D-LAXFORD-0809-2	45:58	47:37
D68	58.40162	-5.11702	58.40173	-5.11712	9.3	6.8	03/08/2009	D-LAXFORD-0809-2	45:03	45:58
D69	58.40395	-5.12022	58.40418	-5.12068	17.3	17.1	03/08/2009	D-LAXFORD-0809-2	43:05	45:03
D70	58.40577	-5.11643	58.40595	-5.11698	20.2	15.7	03/08/2009	D-LAXFORD-0809-2	40:35	43:05
D71	58.40598	-5.11292	58.40610	-5.11333	14.6	13.1	03/08/2009	D-LAXFORD-0809-2	39:17	40:35
D72	58.40788	-5.11270	58.40815	-5.11335	21.2	32.1	03/08/2009	D-LAXFORD-0809-2	37:28	39:17
D73	58.40702	-5.10968	58.40733	-5.10965	25.2	32.0	06/08/2009	D-LAXFORD-0809-6	12:58	17:23
D74	58.40748	-5.10512	58.40768	-5.10512	62.9	59.7	06/08/2009	D-LAXFORD-0809-6	08:26	12:58
D75	58.40630	-5.09918	58.40662	-5.09918	50.4	49.2	06/08/2009	D-LAXFORD-0809-6	04:59	08:26
D76	58.40963	-5.10033	58.40970	-5.10040	9.3	8.1	06/08/2009	D-LAXFORD-0809-6	02:50	04:59
D77	58.40907	-5.11015	58.40910	-5.11012	59.2	58.8	06/08/2009	D-LAXFORD-0809-6	00:00	02:50
D78	58.41133	-5.11740	58.41123	-5.11692	42.8	42.6	02/08/2009	D-LAXFORD-0809-1	11:56	14:14
D79	58.41135	-5.12272	58.41122	-5.12218	23.9	26.1	02/08/2009	D-LAXFORD-0809-1	09:07	11:56

Table 2.1 continued

Site	Latitude in	Longitude in	Latitude out	Longitude out	Depth in (m)	Depth out (m)	Date	Video tape no.	Video in (m:s)	Video out (m:s)
D80	58.40850	-5.12290	58.40857	-5.12228	22.7	22.7	02/08/2009	D-LAXFORD-0809-1	06:47	09:07
D81	58.40640	-5.12377	58.40643	-5.12335	14.2	14.3	02/08/2009	D-LAXFORD-0809-1	04:50	06:47
D82	58.40927	-5.12953	58.40920	-5.12912	9.1	15.2	02/08/2009	D-LAXFORD-0809-1	01:18	04:50
D83	58.41138	-5.12947	58.41128	-5.12915	23.7	24.2	02/08/2009	D-LAXFORD-0809-1	00:00	01:18
D84	58.41292	-5.13480	58.41290	-5.13453	24.3	23.6	02/08/2009	D-LAXFORD-0809-1	14:14	15:27
D85	58.41488	-5.13448	58.41485	-5.13378	28.7	26.4	02/08/2009	D-LAXFORD-0809-1	15:27	18:46
D86	58.41477	-5.12895	58.41473	-5.12838	55.4	56.6	02/08/2009	D-LAXFORD-0809-1	18:46	21:09
D87	58.41550	-5.12360	58.41545	-5.12288	38.8	37.9	02/08/2009	D-LAXFORD-0809-1	21:09	24:03
D88	58.41363	-5.12215	58.41358	-5.12142	58.8	56.4	02/08/2009	D-LAXFORD-0809-1	24:03	27:04
D89	58.41372	-5.11595	58.41372	-5.11570	19.5	24.5	02/08/2009	D-LAXFORD-0809-1	27:04	29:12
D90	58.41525	-5.11520	58.41528	-5.11505	14.9	16.9	02/08/2009	D-LAXFORD-0809-1	29:12	30:40
D91	58.41593	-5.11930	58.41595	-5.11918	7.5	7.0	02/08/2009	D-LAXFORD-0809-1	30:40	31:29
D92	58.41737	-5.12460	58.41740	-5.12388	17.1	14.1	02/08/2009	D-LAXFORD-0809-1	31:29	33:52
D93	58.41690	-5.13192	58.41692	-5.13143	63.8	63.4	02/08/2009	D-LAXFORD-0809-1	33:52	35:34
D94	58.41898	-5.13063	58.41908	-5.12988	48.5	47.6	02/08/2009	D-LAXFORD-0809-1	35:34	38:26
D95	58.41872	-5.12802	58.41875	-5.12683	39.0	37.2	02/08/2009	D-LAXFORD-0809-1	38:26	42:14
D96	58.41870	-5.12265	58.41865	-5.12200	23.6	30.2	02/08/2009	D-LAXFORD-0809-1	42:14	44:36
D97	58.42022	-5.12262	58.42027	-5.12198	19.2	19.1	02/08/2009	D-LAXFORD-0809-1	44:36	47:33
D98	58.42207	-5.12933	58.42213	-5.12885	61.4	60.4	02/08/2009	D-LAXFORD-0809-1	47:33	49:25
D99	58.42413	-5.12565	58.42430	-5.12492	55.0	49.8	02/08/2009	D-LAXFORD-0809-1	49:23	52:20
D100	58.42253	-5.12263	58.42268	-5.12217	37.1	24.6	02/08/2009	D-LAXFORD-0809-1	52:20	54:28
D101	58.42493	-5.12210	58.42518	-5.12240	45.7	46.3	03/08/2009	D-LAXFORD-0809-2	00:00	01:24
D102	58.42617	-5.11407	58.42615	-5.11405	21.4	21.5	03/08/2009	D-LAXFORD-0809-2	01:24	02:41
D103	58.42350	-5.11490	58.42367	-5.11557	15.8	24.8	03/08/2009	D-LAXFORD-0809-2	02:41	04:43
D104	58.41965	-5.11643	58.41998	-5.11712	14.4	17.3	03/08/2009	D-LAXFORD-0809-2	04:43	07:03
D105	58.41562	-5.11472	58.41573	-5.11488	16.5	14.5	03/08/2009	D-LAXFORD-0809-2	07:03	08:10
D106	58.41730	-5.11058	58.41732	-5.11072	8.1	7.2	03/08/2009	D-LAXFORD-0809-2	08:10	08:36
D107	58.42023	-5.11298	58.42047	-5.11362	43.0	41.4	03/08/2009	D-LAXFORD-0809-2	08:33	11:03
D108	58.42270	-5.10815	58.42277	-5.10837	12.0	12.1	03/08/2009	D-LAXFORD-0809-2	12:27	13:14
D109	58.42465	-5.10577	58.42463	-5.10588	6.9	7.1	03/08/2009	D-LAXFORD-0809-2	11:03	12:27
D110	58.41930	-5.10735	58.41938	-5.10802	28.1	40.8	03/08/2009	D-LAXFORD-0809-2	13:14	15:51
D111	58.41947	-5.10085	58.41980	-5.10148	29.7	23.0	03/08/2009	D-LAXFORD-0809-2	15:51	18:11
D112	58.42143	-5.10267	58.42153	-5.10300	15.5	9.7	03/08/2009	D-LAXFORD-0809-2	18:11	19:29
D113	58.42220	-5.09878	58.42217	-5.09903	10.6	12.2	03/08/2009	D-LAXFORD-0809-2	19:29	20:35
D114	58.42127	-5.09758	58.42150	-5.09813	21.3	18.8	03/08/2009	D-LAXFORD-0809-2	20:35	23:04
D115	58.42308	-5.09302	58.42298	-5.09353	11.1	14.7	03/08/2009	D-LAXFORD-0809-2	23:04	26:00
D116	58.41907	-5.09545	58.41930	-5.09638	33.2	35.6	03/08/2009	D-LAXFORD-0809-2	26:00	28:54
D117	58.41708	-5.09502	58.41718	-5.09533	5.1	9.7	03/08/2009	D-LAXFORD-0809-2	28:54	31:42
D118	58.41750	-5.08908	58.41750	-5.08973	18.3	16.4	03/08/2009	D-LAXFORD-0809-2	31:42	33:53
D119	58.41802	-5.08538	58.41827	-5.08630	28.1	27.9	03/08/2009	D-LAXFORD-0809-2	33:53	35:45
D120	58.41612	-5.07493	58.41613	-5.07523	5.5	6.2	03/08/2009	D-LAXFORD-0809-2	35:45	37:28

Table 2.1 continued

Site	Latitude in	Longitude in	Latitude out	Longitude out	Depth in (m)	Depth out (m)	Date	Video tape no.	Video in (m:s)	Video out (m:s)
D121	58.40622	-5.10697	58.40659	-5.10741	41.9	41.9	03/09/2009	D-LAX-0909-1	00:00	03:10
D122	58.40618	-5.11075	58.40611	-5.11064	16.4	16.4	03/09/2009	D-LAX-0909-1	03:10	05:34
D123	58.40562	-5.10933	58.40559	-5.10909	18.1	18.1	03/09/2009	D-LAX-0909-1	05:34	08:24
D124	58.40572	-5.10867	58.40573	-5.10932	13.3		03/09/2009	D-LAX-0909-1	08:24	12:34
D125	58.40617	-5.10893	58.40610	-5.10891	17.7	17.7	03/09/2009	D-LAX-0909-1	12:34	13:46
D126	58.40640	-5.11116	58.40630	-5.11129	15.7	15.7	03/09/2009	D-LAX-0909-1	13:46	15:58
D127	58.40659	-5.11062	58.40643	-5.11040	17.4	17.4	03/09/2009	D-LAX-0909-1	15:58	17:25
D128	58.40031	-5.09126	58.40011	-5.09092	14.5	14.5	03/09/2009	D-LAX-0909-1	17:25	21:19
D129	58.39898	-5.08569	58.39866	-5.08438	16.3	16.3	03/09/2009	D-LAX-0909-1	21:19	27:09
D130	58.39911	-5.08501	58.39870	-5.08361	32.2	32.2	03/09/2009	D-LAX-0909-1	27:09	32:31
D131	58.40613	-5.11333	58.40587	-5.11314	14.9	11.4	03/09/2009	D-LAX-0909-1	32:31	36:04
D132	58.40317	-5.11627	58.40338	-5.11567	15.8	18.8	03/09/2009	D-LAX-0909-1	36:04	40:15
SD1	58.39030	-5.07632	58.39058	-5.07790	1.0	0.7	18/08/2009	S-LAXFORD-0809-21	04:05	19:40
SD2	58.38848	-5.07185	58.38848	-5.07185	0.5	0.5	18/08/2009	S-LAXFORD-0809-21	19:40	24:36
SD3	58.39187	-5.07048	58.39187	-5.07048	0.1	0.1	18/08/2009	S-LAXFORD-0809-21	24:36	28:46

Table 2.2 Substrates, biota and biotopes recorded during the 2009 video survey and biotopes recorded at the same sites in 2001 (Bates et al.*, 2004). Video records from 2001 have been reassigned biotope codes according to Connor* et al. *(2004) and in some cases reinterpreted following examination of the raw data. Also shown is whether Annex 1 reef habitat was present (mixed = both reef and non-reef habitats present). Refer to Table 2.1 for positional information.*

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D1	Densely hummocked fine sand with very scattered boulders	Abundant *Arenicola* mounds with scattered small tufts of fine, filamentous algae (O) and clumps of *Chorda* (F), accompanied by *Fucus serratus* on boulders (R). *Carcinus*? (O), *Pagurus bernhardus* (P), *Lanice conchilega* (P)	non-reef	SS.SSA.IMuSa.AreISa	SS.SMp.KSwSS
D2	Densely hummocked fine sand	Abundant *Arenicola* mounds with patchy mats of filamentous algae (C), particularly in troughs of lugworm mounds. *Chorda* (F)	non-reef	SS.SSA.IMuSa.AreISa	SS.SSA.IMuSa.AreISa
D3	Densely hummocked fine sand with occasional boulders	Abundant *Arenicola* mounds with extensive mats of filamentous algae (A), especially in lows. *Laminaria hyperborea* (O), *Chorda* (O)	non-reef	SS.SSA.IMuSa.AreISa	
D4	Fine or medium sand with admixture of gravel and pebbles	Sediment mostly covered in thick algal mat (85%) probably made up mostly of loose-lying plants, including filamentous and foliose reds and *Ulva lactuca*. *Saccharina latissima* (O), Chorda (C), *Arenicola*? (P)	non-reef	SS.SMp.KSwSS	
D5	Muddy fine or medium sand	Sediment almost completely covered (95%) by thick loose-lying algal mat, mostly of filamentous species. *Saccharina latissima* (O), *Liocarcinus* sp. (P)	non-reef	SS.SMp.KSwSS	
D6	Slightly muddy sand	Initially dense *Arenicola* (A) with scattered patches of algal turf (possibly loose-lying). Turf increases in density, eventually covering most of sediment (S), accompanied by *Saccharina latissima* (F). *Liocarcinus* sp. (P)	non-reef	SS.SSA.IMuSa.AreISa SS.SMp.KSwSS	SS.SSA.IMuSa.AreISa SS.SMp.KSwSS

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D7	Slightly muddy sand	Almost complete cover by algal mat (90%), dominated by filamentous, probably loose-lying, species. *Saccharina latissima* (O), *Chorda* (O), *Carcinus* (P).	non-reef	SS.SMp.KSwSS	SS.SMp.KSwSS
D8	Soft mud	Mud surface dominated by *Philine aperta* (F-C) and its egg masses. *Aequipecten opercularis* (R), *Carcinus* (R), *Chorda* (P)	non-reef	SS.SMU.IFiMu.PhiVir	SS.SMU.IFiMu.PhiVir
D9	Slightly muddy sand with a dense cover of pebbles and cobbles	Park of *Saccharina latissima* (F) with pebbles and cobbles supporting a c. 50% turf of filamentous algae. *Asterias rubens* (R)	non-reef	SS.SMp.KSwSS.LsacR	
D10	Unclear, but apparently dense cover of pebbles and cobbles on sediment	Dense forest of *Saccharina latissima* (S), with fronds supporting luxuriant Ectocarpaceae indet. and some *Membranipora membranacea*. *Chorda* (F)	non-reef	SS.SMp.KSwSS.LsacMxVs	
D11	Pebbles and cobbles on muddy sand	Thick and virtually complete cover by dense mat of loose-lying algae, predominantly filamentous, but also containing foliose forms. Flora includes apparently *Trailliella* but this appears to be a minor component. *Saccharina latissima* (O)	non-reef	SS.SMp.KSwSS	
D12	Briefly steep rock visible, giving way to plain of muddy sand with scatter of pebbles	Rock supporting dense cover of *Saccharina latissima* (A). Sediment with bare areas containing small mounds and *Lanice conchilega* (P) and small patches of filamentous algae. Other areas with dense cover of algal mat or turf	mixed	IR.LIR.K.Lsac.Ft SS.SMU.ISaMu.MysAbr SS.SMp.KSwSS	IR.LIR.K.Lsac.Ft SS.SSA.IMuSa.EcorEns SS.SMp.KSwSS

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D13	Unclear, but apparently stones, including scattered small boulders, on sediment	Mostly dense *Saccharina latissima* (A) and *Chorda* (A) but areas of algal turf (S) - chiefly filamentous but includes *Ulva lactuca* and *Desmarestia aculeata*. *Membranipora membranacea* (P) on kelp fronds	non-reef	SS.SMp.KSwSS.LsacMxVs	
D14	Unclear, but possibly stones or small boulders	Dense, silted *Saccharina latissima* forest (S) with *Gibbula cineraria* (P) on fronds	reef	IR.LIR.K.Lsac.Ft	IR.LIR.K.Lsac.Ft SS.SMp.KSwSS
D15	Pebbles and cobbles on sand with scattered boulders	Patches of dense, silted *Saccharina latissima* and extensive areas of filamentous algal turf (S), with *Eupolymnia nebulosa* (P) and *Asperococcus* sp.	non-reef	SS.SMp.KSwSS.LsacMxVs SS.SMp.KSwSS	
D16	Sand	Thick mat of loose-lying filamentous algae (S) with occasional *Saccharina latissima*	non-reef	SS.SMp.KSwSS	
D17	Muddy sand	Thick mat of loose-lying *Phyllophora crispa* (S) with occasional *Saccharina latissima*	non-reef	SS.SMp.KSwSS.Pcri	SS.SMp.KSwSS.Pcri
D18	Muddy sand	Filamentous algal mat (S), much of it possibly loose-lying. Conspicuous drift weed includes *Fucus serratus* and *Laminaria* sp.	non-reef	SS.SMp.KSwSS	IR.LIR.K.Lsac.FtIR.LIR.K.Lsac.Pk
D19	Muddy sand with scattered cobbles and pebbles	*Phyllophora crispa* bed (A), some apparently attached but most probably loose-lying. *Saccharina latissima* (O), Corallinaceae pink crusts R) and *Pomatoceros* (F) on cobbles	non-reef	SS.SMp.KSwSS.Pcri	

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D20	Muddy sand with scattered boulders and cobbles	Patchy algal turf, at least in part loose-lying, mostly filamentous (A) but also containing foliose species including *Phyllophora crispa* (P). *Saccharina latissima* (F), *Carcinus maenas*? (R), *Aequipecten opercularis* (R), *Munida rugosa* (F), *Asterias rubens* (O), *Modiolus modiolus* (R), *Pomatoceros* sp. (C), Serpulidae indet. (P), *Nemertesia antennina* (O)	non-reef	SS.SMp.KSwSS	
D21	Mud or muddy sand	Abundant *Amphiura* sp. arms emerging from sediment, which supports extensive brown diatomaceous film (A). *Aequipecten opercularis* (R). Occasional drift weed	non-reef	SS.SMU.CSaMu	
D22	Mud	Intially a burrow and some megafaunal mounds but mostly flat sediment covered in a brown diatomaceous film (A), with frequent *Virgularia mirabilis*. *Carcinus* (R), *Asterias rubens* (R)	non-reef	SS.SMU.IFiMu.PhiVir	SS.SMU.IFiMu.PhiVir
D23	Muddy sand with scattered cobbles and pebbles	Patchy filamentous red algal turf (A), at least partly loose-lying. *Saccharina latissima* (O), Gobiidae sp. (P), *Pagurus bernhardus* (P), *Asterias rubens* (R)	non-reef	SS.SMp.KSwSS	SS.SMU.IFiMu.PhiVir
D24	Muddy sand with gravel and scattered cobbles and pebbles; some patches of denser cobbles	Patchy algal turf (overall C) with extensive areas of fairly bare sediment. *Saccharina latissima* (O), *Carcinus*? (P), *Liocarcinus* sp. (P). *Turritella communis* shells present but possibly all unoccupied	non-reef	SS.SMp.KSwSS SS.SMU.ISaMu	SS.SMU.ISaMu
D25	Muddy sand	Patchy, loose-lying algal mat (A). *Marthasterias glacialis* (R), *Asterias rubens*? (R), *Virgularia* (R)	non-reef	SS.SMp.KSwSS	

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D26	Slightly gravelly muddy sand with sparse scatter of shells, pebbles and cobbles	Patchy, loose-lying algal mat (A). Echinus esculentus (R), Nemertesia antennina (O)	non-reef	SS.SMp.KSwSS	
D27	Mud	Megafaunal mounds (C), *Amphiura* sp. (A), *Virgularia* (O), *Pennatula* (R), *Liocarcinus* sp.? (R)	non-reef	SS.SMU.CFiMu.SpnMeg	
D28	Mud	Some megafaunal mounds. *Pennatula* (O), *Amphiura* sp. (C), *Cerianthus lloydii* (R), *Pagurus bernhardus* (R), *Asterias* (R)	non-reef	SS.SMU.CFiMu.SpnMeg	
D29	Mud	Initially dense *Philine aperta* with egg masses (F, locally C) and many *Amphiura* arms (A). *Virgularia* (F), *Pennatula* (O)	non-reef	SS.SMU.IFiMu.PhiVir	SS.SMU.IFiMu.PhiVir
D30	Bedrock slope with boulders towards the bottom, giving way to mud plain	Dense silted *Saccharina latissima* (S), below which is a narrow band of dense red algae (S) and *Ascidiella aspersa* (C, locally A) and occasional *S. latissima*. Mud with extensive cover by brown diatomaceous film (A). Small burrows (P), *Philine aperta* (O) with some egg masses, *Aequipecten opercularis* (R), *Amphiura* sp. (P)	mixed	IR.LIR.K.Lsac.Ft IR.LIR.K.Lsac.Pk SS.SMU.IFiMu.PhiVir	
D31	Muddy sand	Dense *Saccharina latissima* (A) but with open sediment patches with patchy turf of, possibly loose-lying, red filamentous algae. *Chorda* (C)	non-reef	SS.SMp.KSwSS	SS.SMp.KSwSS

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D32	Mud with boulder	Numerous *Philine aperta* (F) and egg masses on mud surface, with brown diatomaceous film (C). Emerging from sediment *Sagartiogeton laceratus* (F) and *Amphiura* sp. arms (A). *Virgularia* (O), *Liocarcinus* sp. (R), *Carcinus* (R), *Metridium senile* on boulder	non-reef	SS.SMU.IFiMu.PhiVir	SS.SMU.IFiMu.PhiVir
D33	Rock slope giving way to current-swept channel bed of sand with surface scatter of pebbles, cobbles and shells	Rock slope with dense cover of foliose red algae (S), including *Delesseria sanguinea*? (P), *Ascidiella aspersa* (C) and *Nemertesia ramosa*. Sediment with many shells, especially *Modiolus modiolus*, although the proportion of living *Modiolus* in unclear. Shells and stones supporting red algal turf (C), serpulid polychaetes (C) and *N. ramosa* (O). *Archidoris pseudoargus* spawn ribbons (F)	mixed	SS.SBR.SMus IR.MIR.KR.XFoR	CR.LCR.BrAs
D34	Soft mud	Patches of *Ascidiella aspersa* initially but mostly absent. *Sagartiogeton laceratus* (F, locally C), *Virgularia* (O), *Aequipecten opercularis* (R), Pleuronectiformes sp. (R), *Pagurus bernhardus* (R), *Laminaria* sp. R, probably drift), *Echinus esculentus* (R)	non-reef	SS.SMU.IFiMu.PhiVir	SS.SMU.IFiMu.PhiVir
D35	Mixed substrate of pebbles, cobbles and shells on muddy sand	Light, patchy algal turf, possibly drift	non-reef	SS.SMp.KSwSS	SS.SMU.IFiMu.PhiVir
D36	Mud	Complete cover by filamentous algal mat, probably all loose-lying, with patches of silted *Saccharina latissima* (overall F) and *Chorda* (F). *Asterias* (R), *Carcinus* (R)	non-reef	SS.SMp.KSwSS	
D37	Soft mud	Dense *Philine aperta* and its egg masses	non-reef	SS.SMU.IFiMu.PhiVir	SS.SMU.IFiMu.PhiVir

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
		(C)			
D38	Soft mud	*Philine aperta* and its egg masses (F)	non-reef	SS.SMU.IFiMu.PhiVir	
D39	Mud with numerous mounds	Mud with megafaunal mounds, brown diatomaceous film (C) and emerging arms of *Amphiura* sp. (C-A). *Virgularia* (O), *Pennatula* (R), *Cerianthus* (R), *Carcinus*? (R)	non-reef	SS.SMU.CFiMu.SpnMeg	
D40	Muddy sand with scattered boulders and cobbles	Sediment with surface scatter of serpulid tubes (probably mostly *Serpula vermicularis*) and a little live *Phymatolithon calcareum* (R). *Lanice conchilega* (P). Boulders support hydroid turf (A on boulders, overall F), including *Halecium halecinum*? (P) and *Nemertesia antennina* (O) and encrusted with pink coralline algae (P), *Balanus* spp. (P) and serpulids, including *Pomatoceros* (P) and *S. vermicularis*, the latter occurring as dense patches on some boulders (locally A-S). *Munida* (F), *Echinus* (R), *Marthasterias* (R)	non-reef	SS.SMU.CSaMu.VirOphPmax.HAs	SS.SMU.CSaMu.VirOphPmax.HAs
D41	Muddy sand	Sediment with abundant *Amphiura* spp. and patchy mat of loose-lying *Phyllophora crispa* (F) and small megafaunal mounds (O). *Aequipecten* (R), Asteroidea indet. (R)	non-reef	SS.SMU.CFiMu.SpnMeg	
D42	Soft mud	Sediment with superabundant *Amphiura* spp. *Philine* overall occasional (locally C), *Virgularia* (R), *Asterias* (R)	non-reef	SS.SMU.IFiMu.PhiVir	SS.SMU.CFiMu.SpnMeg
D43	Muddy sediment	Sediment mostly covered by drift algae, including *Saccharina latissima* (O). *Carcinus* (P)	non-reef	SS.SMp.KSwSS	SS.SMU.IFiMu.PhiVir
D44	Muddy sediment	Dense mat (100% cover) of mostly filamentous, loose-lying algae.	non-reef	SS.SMp.KSwSS	SS.SMp.KSwSS

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
		Aequipecten (P)			
D45	Bedrock and boulders with sand patches	Dense *Saccharina latissima* (S) with fronds supporting *Membranipora* (O) and *Anemonia viridis* (P). Understorey includes algal turf and *Ascidiella aspersa* (C). *Aequipecten* (P), *Echinus* (P)	reef	IR.LIR.K.Lsac.Ft	IR.LIR.K.Lsac.Ft SS.SMp.KSwSS.Tra
D46	Muddy sand	Sediment with many megafaunal mounds (C) and a few burrows. *Amphiura* spp. (A), *Munida* (F), *Pennatula* (R)	non-reef	SS.SMU.CFiMu.SpnMeg	SS.SMU.CFiMu.SpnMeg
D47	Muddy sand	Sediment with megafaunal mounds (C) and burrows, including *Nephrops* (P) and scatter of drift kelp. *Amphiura* spp (A), *Cerianthus* (O), *Liocarcinus* sp. (R), *Munida* (R), *Pennatula* (R), *Virgularia* (R), *Turritella* (P, but possibly empty shells)	non-reef	SS.SMU.CFiMu.SpnMeg	SS.SMU.CFiMu.SpnMeg
D48	Muddy sand with scattered pebbles, cobbles and boulders	Sediment with some megafaunal mounds and burrows, *Amphiura* spp. (C), *Cerianthus* (O), *Munida* (O) and *Turritella* (P, but possible empty shells). Stones supporting hydroid turf (O, but C on larger boulders), including *Nemertesia antennina* (R) and *N. ramosa* (R) and serpulid worms (C), including *Pomatoceros* and *Serpula vermicularis*? *Asterias* (R), *Pagurus bernhardus* (R)	non-reef	SS.SMU.CFiMu.SpnMeg	
D49	Very muddy sand	Abundant *Amphiura* spp. with sparse megafaunal mounds. *Munida* (F), *Liocarcinus* sp. (R), *Turritella* shells	non-reef	SS.SMU.CFiMu.SpnMeg	SS.SMU.CFiMu.SpnMeg
D50	Muddy sand	Some megafaunal mounds and burrows. *Amphiura* (F-C), *Munida* (F), *Carcinus* (R), *Echinus* (O), drift kelp	non-reef	SS.SMU.CFiMu.SpnMeg	SS.SMU.CFiMu.SpnMeg

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D51	Steep bedrock slope with sand gullies	Rock of grazed appearance, encrusted with pink coralline algae and supporting *Caryophyllia smithii* (F-C), possibly *Pomatoceros* (P) and hydroid patches (O), including *Halecium halecinum* (P)	reef	CR.MCR.EcCr.FaAlCr.Car	
D52	Mud	Megafaunal mounds and burrows, including *Nephrops* (P), with abundant *Amphiura* spp. arms and frequent *Munida*. *Funiculina* (O), *Pennatula* (R), *Echinus* (R)	non-reef	SS.SMU.CFiMu.SpnMeg.Fun	
D53	Bedrock slope	Forest of *Laminaria hyperborea* (A) with dense understorey of foliose red algae (A). Stipes not densely epiphytised but with *Alcyonium digitatum* (R) and *Ciona intestinalis* (P). *Echinus* (O)	reef	IR.MIR.KR.Lhyp.Ft	
D54	Slightly muddy fine sand	Initially sediment with patchy cover of drift algae (A), which changes to largely bare, slightly rippled plain	non-reef	SS.SMp.KSwSS SS.SSA.IMuSa	SS.SMp.KSwSS
D55	Bedrock	Forest of *Saccharina latissima* (A) with understorey turf of red and brown algae (C) and pink coralline algal crust (F)	reef	IR.LIR.K.Lsac.Ft	IR.LIR.K.Lsac.Ft
D56	Steep slope of slightly muddy coarse sand and bedrock	Video unclear but sediment supporting *Cerianthus* (P) and *Lanice* (P), with rock supporting hydroid turf, *Caryophyllia smithii* (P), *Pomatoceros* (C), Ascidia mentula? and Echinus (P)	mixed	CR.LCR.BrAs.AntAsH SS.SMu.CSaMu.VirOphPmax	CR.LCR.BrAs.AntAsH SS.SMu.CSaMu.VirOphPmax
D57	Mud	Megafaunal mounds and burrows, including *Nephrops*. *Funiculina* (O), *Pennatula* (R), *Munida* (O)	non-reef	SS.SMU.CFiMu.SpnMeg.Fun	SS.SMU.CFiMu.SpnMeg.Fun
D58	Mud	Megafaunal mounds with *Funiculina* (F), *Munida* (F), *Pennatula* (O) and *Liocarcinus* sp. (O)	non-reef	SS.SMU.CFiMu.SpnMeg.Fun	

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D59	Soft mud	Brown diatomaceous film (C) and *Virgularia* (O)	non-reef	SS.SMU.IFiMu.PhiVir	SS.SMU.IFiMu.PhiVir
D60	Mud	Dense mat of loose-lying, mostly filamentous algae	non-reef	SS.SMp.KSwSS	
D61	Mud	Megafaunal mounds and burrows, including *Nephrops*. *Amphiura* spp. (A), *Virgularia* (O), *Pennatula* (R), *Liocarcinus* sp. (R), *Asterias* (R)	non-reef	SS.SMU.CFiMu.SpnMeg	SS.SMU.CFiMu.SpnMeg
D62	Muddy sand	Megafaunal mounds and burrows with some drift kelp. *Liocarcinus* sp. (R), *Aequipecten opercularis* (R), *Lanice* (R)	non-reef	SS.SMU.CFiMu.SpnMeg	
D63	Slightly gravelly muddy sand	Patchy algal mat (A) and occasional *Saccharina latissima*	non-reef	SS.SMp.KSwSS	SS.SMp.KSwSS
D64	Muddy sand	Almost complete cover of sediment by loose-lying algal mat (S), with occasional *Saccharina latissima*. Mat includes *Audouinella floridula*, *Trailliella intricata*, *Sphacelaria* sp., *Phyllophora crispa*, *Ulva* sp., *Chorda filum*, *Asperococcus* sp.? and *Fucus serratus*	non-reef	SS.SMp.KSwSS	
D65	Mud or muddy sand	Almost complete cover of sediment by mat of mainly foliose and filamentous red algae, much possibly being *Phyllophora crispa*. Occasional *Saccharina latissima*, also possibly drift	non-reef	SS.SMp.KSwSS	SS.SMp.KSwSS
D66	Muddy sand	Megafaunal burrows and mounds with occasional *Virgularia* and some drift kelp. *Asterias* (O), *Liocarcinus* sp. (R), *Echinus* (R), *Amphiura* spp. (P)	non-reef	SS.SMU.CFiMu.SpnMeg	

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D67	Possibly rock, then medium sand	Inititially dense forest of *Saccharina latissima* (S) with fronds supporting *Membranipora* (P) and Ectocarpaceae (P), then apparently clean sand with a dense cover of algae, some of which may be loose-lying. Lighting creates difficulty in identification of red algae but species include *S. latissima* (O), *Chorda*, *Desmarestia aculeata*, *Ulva lactuca*, *Asperococcus* sp. and Ectocarpaceae spp. *Macropodia* sp. (P)	mixed	IR.LIR.K.Lsac.Ft SS.SMp.KSwSS.LsacR.Sa	
D68	Uneven/irregular plain of rippled muddy sand with perhaps admixture of shell gravel, then steep bedrock slope at end	Brown diatomaceous film (C) and patchy algal turf (C), though sediment predominantly bare. Rock with forest of *Saccharina latissima* (A-S), *Asterias* (P), serpulid worms (C)	mixed	SS.SSA.IMuSa IR.LIR.K.Lsac.Ft	
D69	Medium or coarse sand with scattered pebbles, cobbles and occasional boulders	Occasional *Virgularia* in sediment, with cobbles and boulders encrusted with coralline pink algae (P) and serpulid worms (P). *Echinus* (O). Much drift algae, especially kelp.	non-reef	SS.SMu.CSaMu.VirOphPmax	SS.SMu.CSaMu.VirOphPmax
D70	Mixed sediment of medium sand with shell gravel and many scattered shells and pebbles on the surface	Large patches of drift weed including kelp. Shells and pebbles encrusted with pink coralline algae and serpulid worms and supporting small amounts of foliose red algae (R) and filamentous algae O). Sparse living maerl possibly present. *Arenicola* (P), *Echinus* (O), Gobiidae (P), *Virgularia* (P)	non-reef	SS.SMu.CSaMu.VirOphPmax	

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D71	Slightly muddy medium sand with shell gravel and surface scatter of shells, with bedrock outcrops towards end	Tufts of algae present, some drift but also sparse attached algae including *Saccharina latissima* (O), foliose red (R), filamentous reds (R) and *Dictyota* (R), as well as sparse *Phymatolithon calcareum*. Some megafaunal mounds present and Gobiidae (P). Bedrock with dense algal turf (S) but with areas encrusted with pink coralline algae (F) and serpulid worms (C). *Echinus* (F), *Hyas* sp. (P)	mixed	SS.SMp.Mrl.Pcal IR.MIR.KR.XFoR	SS.SMp.Mrl.Pcal
D72	Near-vertical cliff with ledges and then boulders on coarse sand at the bottom	Rock surface well-grazed with *Echinus* common. Rock supports extensive crusts of *Parasmittina* (F), pink coralline algae (C) and *Pomatoceros* (C, locally A). Sparse hydroids (probably *Kirchenpaueria pinnata* - R) and *Caryophyllia smithii* (P)	reef	CR.MCR.EcCr.FaAlCr	
D73	Maerl and shell gravel overlying slightly muddy sand with scattered shells	Live *Phymatolithon calcareum* varies between C and F and supports sparse filamentous red algae (R). Some megafaunal mounds	non-reef	SS.SMp.Mrl.Pcal.Nmix	
D74	Muddy sand	Megafaunal burrows and mounds with frequent *Turritella*. *Munida* (O), *Liocarcinus* sp? (O), *Asterias* (O), *Callionymus lyra* (R)	non-reef	SS.SMU.CFiMu.SpnMeg	SS.SMU.CFiMu.SpnMeg
D75	Mud	Megafaunal mounds and burrows with *Pennatula* (O) and *Virgularia* (R). *Munida* (F), *Goneplax* (R)	non-reef	SS.SMU.CFiMu.SpnMeg	
D76	Muddy sand with admixture of gravel and shell. Rock in the distance at the end	Sediment with patchy algal turf (O), some of which probably drift. *Liocarcinus* sp. (F), *Pagurus bernhardus* (F), *Arenicola* (P), *Turritella* (P)	non-reef	SS.SSA.IMuSa	

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D77	Muddy sand with shell gravel and shell debris on surface	Many small megafaunal mounds and possibly some burrows with many *Turritella* (C) and *Munida* (F)	non-reef	SS.SMX.CMx	SS.SMX.CMx
D78	Very slightly muddy shelly coarse sand in long waves with a few shells in troughs	Very sparse epibiota. Serpulid worms on shells	non-reef	SS.SCS.CCS.MedLumVen	SS.SCS.CCS.MedLumVen
D79	Bedrock and boulders with small pockets of shell gravel in interstices	Rock of grazed appearance with *Echinus* common. Surface profusely encrusted with *Parasmittina* (C) and with pink coralline algae (O), *Pomatoceros* (C, locally A on steeper faces) and *Balanus* spp. (F). *Caryophyllia smithii*? (R), *Asterias* (O), *Alcyonidium diaphanum*? (R), sparse hydroids including *Kirchenpaueria pinnata* (O), *Securiflustra*? (R)	reef	CR.MCR.EcCr.FaAlCr	
D80	Dense cover of pebbles and cobbles (c.50%) over coarse shelly sand	Stones encrusted with pink coralline algae (O) and serpulid worms (probably both *Serpula vermicularis* and *Pomatoceros* spp.). *Lanice* (P), *Liocarcinus* sp. (R)	non-reef	SS.SCS.CCS.PomB	SS.SCS.CCS.PomB
D81	Maerl with scattered shells	Dense *Phymatolithon calcareum* (C) with light, patchy algal turf (F) including *Desmarestia aculeata* (O), *Saccharina latissima* (O) and filamentous and foliose species	non-reef	SS.SMPMrl.Pcal.R	

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D82	Slope of bedrock and boulders giving way to horizontal boulder field	Rock slope with mixed forest of *Laminaria hyperborea* (A) and *Saccharina latissima* (A), with fronds supporting Ectocarpaceae indet., *Membranipora*, *Electra*, *Gibbula cineraria* and *Obelia geniculata* and stipes lightly epiphytised with foliose red algae, including *Phycodrys rubens*. Rock encrusted with pink coralline algae (C), red (C) and dark red (O) algae, with sparse turf of foliose and filamentous red algae. *Echinus* (P). Boulder field with park of *S. latissima* (C) with rock encrusted with pink coralline (F) and dark red/brown (O-F) algae and supporting a patchy turf of filamentous and foliose red algae (C)	reef	IR.HIR.KSed.XKScrR IR.HIR.KSed.LsacSac	IR.HIR.KSed.XKScrR IR.HIR.KSed.LsacSac
D83	Coarse shelly sand with dense cover (65%) of pebbles, cobbles and small boulders	Stones encrusted with pink coralline (F) and red (F) algae and serpulids (probably mostly *Pomatoceros* - A, with some *Serpula* - P). *Lanice* (R), *Echinus* (R)	non-reef	SS.SCS.CCS.PomB	
D84	Mosaic of low bedrock outcrops and boulders and areas of coarse sand	Rock of grazed/scoured appearance, densely encrusted with *Pomatoceros* (A), pink coralline algae (F), dark red algae (C) and *Parasmittina* (R). *Alcyonium digitatum*? (R), foliose red algae (R)	mixed	CR.MCR.EcCr.FaAlCr.Pom SS.SCS.CCS.MedLumVen	

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D85	Bedrock	Rock mostly covered in hydroid/bryozoan turf (c.60%), mostly short, but including *Nemertesia antennina* (F) and *Alcyonidium diaphanum* (O). Where turf is thin or absent the rock is encrusted with pink coralline algae (R), *Parasmittina* (R-O) and *Pomatoceros* (C). *Caryophyllia* (F, locally C), *Asterias* (O), *Echinus* (F), *Ascidia virginea* (O), *Porella compressa* (O)	reef	CR.HCR.XFa	CR.MCR.EcCr.FaAlCr
D86	Dense boulders (small, medium and large) and cobbles (overall c.75% cover) on coarse sand	Rock probably heavily scoured and densely coated in *Pomatoceros* (A) and small amounts of *Parasmittina* (R) and hydroids (R). *Echinus* (R). Sediment with *Lanice* (R)	non-reef	SS.SCS.CCS.PomB	
D87	Pebbles, cobbles and small boulders (c.50% cover) on coarse sand	Stones densely encrusted with *Pomatoceros* (A). *Asterias* (R), *Marthasterias* (R), Paguridae sp. (P), *Pagurus prideauxi* (R), *Adamsia carcinopiodos* (R)	non-reef	SS.SCS.CCS.PomB	
D88	Muddy shell gravel with sparse scatter of pebbles and shells	Small megafaunal mounds and pits of finer sediment. *Munida* (O), Asteroidea sp. (R), *Pomatoceros* on shells and pebbles (F)	non-reef	SS.SCS.CCS.MedLumVen	SS.SCS.CCS.MedLumVen
D89	Mostly smooth bedrock	Rock of grazed appearance though much of rock surface covered by a very short, patchy hydroid turf (A); the remainder encrusted with pink coralline (C) and dark red algae (O), *Pomatoceros* (F, locally C) and *Parasmittina* (O). *Echinus* (C), *Nemertesia antennina* (F), Anomiidae (P). *Caryophyllia smithii* present, though abundance uncertain	reef	CR.MCR.EcCr.FaAlCr.Car	

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D90	Bedrock and boulders with patches of coarse sand	Sand scoured park of *Laminaria hyperborea* (C) and *Saccharina latissima* (F), with *L. hyperborea* fronds supporting *Membranipora* and *Obelia geniculata*. Rock surface encrusted with pink coralline algae (C), dark red algae (F) and *Pomatoceros* (C) and supporting a patchy turf of filamentous and foliose red algae (F-C)	reef	IR.HIR.KSed.XKScrR	IR.HIR.KSed.XKScrR
D91	Bedrock	Forest of *Laminaria hyperborea* (A) supporting sparse *Membranipora* on fronds (R) and little on stipes. Rock appearing grazed with occasional clumps of *Dictyota dichotoma* but extensive crusts of pink coralline algae (A) and dark red algae (F). *Pomatoceros* (C), *Echinus* (P)	reef	IR.MIR.KR.Lhyp.GzFt	
D92	Uneven bedrock topography with horizontal, steeply-sloping and vertical faces	Shallows with grazed park of *Laminaria hyperborea*. Stipes well grazed but fronds supporting moderate amounts of *Membranipora* (F). Rock encrusted with pink coralline (C), dark red (O) and red (P) algae and sparse foliose species (including *Callophyllis laciniata*, R). *Echinus* (P). As camera descends a brief distant glimpse of dense *Alcyonium digitatum* (A) on near-vertical rock face. End of video shows grazed rock encrusted with pink coralline algae (C), *Parasmittina* (F, locally C) and *Pomatoceros* (C) but upward-facing rock with extensive cover (S) of bryozoan/hydroid turf, mostly very short but with scattered clumps of *Kirchenpaueria pinnata*? (O). *Echinus* (C), Asterias rubens? (R), *Solaster endeca*? (R),	reef	IR.MIR.KR.Lhyp.GzPk CR.MCR.EcCr.FaAlCr.Car CR.MCR.EcCr.FaAlCr.Adig	

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
		Caryophyllia smithii (O)			
D93	Waves of coarse sand with accumulations of shell in troughs	No benthic life visible	non-reef	SS.SCS.CCS.MedLumVen	
D94	Boulders	Grazed or scoured rock surface with extensive encrustations of *Pomatoceros* (A) and *Parasmittina* (O, locally F). Erect forms include sparse hydroids, *Porella compressa*? (O), *Axinella infundibularis*? (R) and erect sponges indet. (P). *Echinus* (C)	reef	CR.MCR.EcCr.FaAlCr	CR.MCR.EcCr.FaAlCr

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D95	Boulders intially, then mostly flat bedrock with areas of waved coarse sand, densely covered in cobbles and pebbles towards the end of the run	Grazed or scoured rock surface encrusted with *Pomatoceros* (C) and *Parasmittina* (O, locally F). Horizontal surfaces generally have a short, thin hydroid/bryozoan turf but one region has dense *Flustra* (C). Occasional erect orange sponges/bryozoans. *Porania* (R), *Anseropoda* (R), *Asterias* (R), *Echinus* (R). Sediment with *Lanice* (P) and pebble/cobble cover densely encrusted with *Pomatoceros* (A)	mixed	CR.MCR.EcCr.FaAlCr.Pom CR.MCR.EcCr.FaAlCr.Flu SS.SCS.CCS.MedLumVen SS.SCS.CCS.PomB	CR.MCR.EcCr.FaAlCr
D96	Mostly smooth, upward-facing bedrock, sloping down to boulders at end	Grazed or scoured, mostly silted, rock surface encrusted with pink coralline algae (C), *Pomatoceros* (C) and *Parasmittina* (R). Frequent *Caryophyllia smithii*. *Echinus* (C), *Porania* (R), *Asterias* (R), hydroids (O)	reef	CR.MCR.EcCr.FaAlCr.Car	CR.MCR.EcCr.FaAlCr SS.SCS.CCS.MedLumVen
D97	Boulders, then smooth bedrock	Initially, bedrock extensively encrusted with pink coralline algae (A), dark red algae (O) and *Pomatoceros* (A), with *Parasmittina* (R-O overall but S locally on verticals). Horizontal surfaces silted and with short, light hydroid turf but patches of taller hydroids, including *Kirchenpaueria pinnata* (F). *Echinus* (C). Towards end of run the rock supports a patchy turf of short red algae, possibly fast-growing Antithamnieae spp. (A, at least locally) and tufts of *Nemertesia antennina* (F). There are widely scattered plants of *Laminaria hyperborea* (O) and *Saccharina latissima* (O), and this may be the lower margin of a grazed kelp park	reef	CR.MCR.EcCr.FaAlCr.Pom IR.MIR.KR.Lhyp.GzPk	CR.MCR.EcCr.FaAlCr IR.MIR.KR.Lhyp.GzPk

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D98	Waves of coarse shell sand with scattered shells in troughs	*Callionymus lyra* (P)	non-reef	SS.SCS.CCS.MedLumVen	SS.SCS.CCS.MedLumVen
D99	Coarse shell sand with scattered shells and pits	Shells encrusted with serpulid worms (P), *Lanice*? (P), *Munida*? (R), *Pecten maximus* (P). Megafaunal pits and small mounds	non-reef	SS.SCS.CCS.MedLumVen	SS.SCS.CCS.MedLumVen
D100	Medium-coarse sand with scattered pebbles and cobbles, then boulders	Initially, sediment with many small mounds and megafaunal pits and some *Lanice* (P), with serpulids on stones. Boulders of grazed appearance, with crusts of *Parasmittina* (O) and *Pomatoceros* (C, locally A on verticals) and many *Echinus* (C). *Porella*? (F), *Ascidia mentula*? (R), Asteroidea sp. (R), *Luidia ciliaris* juv.? (R), *Pawsonia saxicola* (P)	mixed	SS.SCS.CCS.MedLumVen CR.MCR.EcCr.FaAlCr.Pom	
D101	Slightly waved coarse sand with sparsely scattered shells	No life seen but small mounds and sparse drift kelp	non-reef	SS.SCS.CCS.MedLumVen	SS.SCS.CCS.MedLumVen
D102	Boulders and cobbles, silted on upper faces, interrupted by area of coarse? sand	Boulders of grazed appearance, encrusted with pink coralline (A) and dark red (F) algae and *Pomatoceros* (C, locally A). View of sand poor	mixed	CR.MCR.EcCr.FaAlCr.Pom SS.SCS.CCS	

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D103	Steep, ledged bedrock slope giving way to boulder field	Initially grazed park of *Laminaria hyperborea* (C) with some *Saccharina* latissima (P). Rock encrusted with pink coralline algae (A) and *Pomatoceros* (C). *Echinus* (C), *Membranipora* (O). Below the park the bedrock and boulders are of grazed appearance with encrustations of pink coralline algae (C), *Parasmittina* (O) and *Pomatoceros* (C, locally A on verticals). Echinoderms include *Echinus* (C), 7-armed *Solaster endeca* (P) and Asteroidea indet. (F - probably *Asterias*). Just below the kelp park the rock supports a patchy algal turf, probably mostly *Dictyota* (F)	reef	IR.MIR.KR.Lhyp.GzPk CR.MCR.EcCr.FaAlCr.Pom	
D104	Uneven bedrock	Park of *Laminaria hyperborea*, varying in abundance from F to C. *Saccharina latissima* at low density (P). *L. hyperborea* fronds supporting *Membranipora* and *Obelia geniculata* (S on some plants). Rock surface generally appearing grazed with encrustations of pink coralline algae (A), dark red algae (O), *Parasmittina* (R) and *Pomatoceros* (C), although patches of hydroids and algal turfs (O). *Echinus* (F)	reef	IR.MIR.KR.Lhyp.GzPk	
D105	Waves of shell gravel with shells in troughs	Small tufts of red algae on shells (R), Gobiidae (P), *Neopentadactyla mixta*? (P)	non-reef	SS.SCS.CCS.MedLumVen	

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D106	Edge of coarse/medium sand area with boulders and then bedrock in background	Visibility poor, but rock of grazed or scoured appearance with crusts of coralline algae (P) and *Pomatoceros* (P). *Echinus* (P)	mixed	CR.MCR.EcCr.FaAlCr SS.SCS.CCS	CR.MCR.EcCr.FaAlCr SS.SCS.CCS
D107	Slightly silty coarse sand with scatter of shells	Sediment with megafaunal pits and small mounds. *Lanice* (R). Shells with serpulid worms (P)	non-reef	SS.SCS.CCS.MedLumVen	
D108	Uneven bedrock	Forest of *Laminaria hyperborea* (A) with sparse *Saccharina latissima* (P) and possibly *Saccorhiza polyschides* (R). Kelp fronds with *Obelia geniculata* and good cover of *Membranipora* (F). Rock appears grazed, with a crust of pink coralline algae (P), but with possibly recent growth of short, tufted filamentous red alga (A, possibly *Trailliella*), *Callophyllis laciniata* (R), *Dictyota* (P)	reef	IR.MIR.KR.Lhyp.GzFt	
D109	Boulders	Forest of *Laminaria hyperborea* (A) with fronds supporting *Membranipora* (F) and *Gibbula cineraria* (P). Rock surface appears moderately grazed with crusts of pink coralline algae (C), but supports fairly sparse foliose red algae (O) and patches of *Dictyota* (P)	reef	IR.MIR.KR.Lhyp.GzFt	IR.MIR.KR.Lhyp.GzFt IR.MIR.KR.Lhyp.GzPk
D110	Very steep rock slope, then plain of slightly silty coarse sand	Distant view, but rock apparently well-grazed, with Echinus (P). Sediment with megafaunal pits and small mounds and scattered algal debris	mixed	CR.MCR.EcCr.FaAlCr SS.SCS.CCS.MedLumVen	CR.MCR.EcCr.FaAlCr CR.MCR.EcCr.FaAlCr.Car SS.SCS.CCS
D111	Muddy sand	Large megaunal mounds and burrows, with possibly *Sagartiogeton*-like anemones (P)	non-reef	SS.SMU.CFiMu.SpnMeg	

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D112	Irregular bedrock and boulders with small pockets of coarse sand	Park of *Laminaria hyperborea* (C), with very sparse *Saccharina latissima* (P). Rock encrusted with pink coralline (C) and red algae and with little coverage by foliose algae, but short turf of fine filamentous red algae, possibly *Trailliella* (S in places) and patches of *Dictyota*? (O) *Echinus* (P).	reef	IR.MIR.KR.Lhyp.GzPk	
D113	Boulders with small coarse sand patches	Forest of *Laminaria hyperborea* with fronds supporting *Membranipora* (R) and *Gibbula cineraria* (P) and stipes generally lightly epiphytised, with some *Ascidiella* sp. (P). Rock with crusts of pink coralline algae (C), red algae (C) and *Pomatoceros* (C) and a short turf of fine filamentous red algae (C, *Trailliella*?) and some patches of foliose red algae (O?). Rock possibly recovering from grazing	reef	IR.MIR.KR.Lhyp.GzFt	IR.MIR.KR.Lhyp.GzFt IR.HIR.KSed.XKScrR SS.SCS.ICS
D114	Slightly muddy sand with scatter of gravel, pebbles and shells	Megafaunal pits and many small mounds. *Lanice* (P), Holothuroidea sp. (P)	non-reef	SS.SSa.CMuSa	
D115	Slightly muddy,irregularly-rippled fine sand	Brown diatomaceous film (O-F) and scatter (5-10%) of algae, probably mostly drift, including *Chorda* and *Saccharina latissima*. *Pagurus bernhardus* (R), *Liocarcinus* sp. (R).	non-reef	SS.SSa.IMuSa	SS.SMu.CSaMu.VirOphPmax
D116	Mud with many megafaunal mounds	*Asterias* (O), Pisces indet. (R)	non-reef	SS.SMU.CFiMu.SpnMeg	SS.SMu.ISaMu.Cap

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D117	Bedrock	Forest of *Laminaria hyperborea*, with fronds supporting much *Membranipora* (C), together with Ectocarpaceae indet. (P) and *Scrupocellaria reptans* (R). Some stipes heavily epiphytised with foliose and filamentous red algae and *Ulva* sp.. Patchy algal understorey but overall C-A, including *Delesseria sanguinea* (R) and *Dictyota* (O). *Echinus* apparently not common (P)	reef	IR.MIR.KR.Lhyp.Ft	
D118	Poorly sorted muddy sand with scatter of gravel on surface	Many megafaunal burrows	non-reef	SS.SMU.CFiMu.SpnMeg	SS.SMU.CFiMu.SpnMeg
D119	Mud	Sediment with brown diatomaceous film (F) and many megafaunal burrows and mounds. *Virgularia* (O), *Pennatula* (O)	non-reef	SS.SMU.CFiMu.SpnMeg	
D120	Mud	Sediment with brown diatomaceous film (F) and scattered drift weed. *Chorda* (R), *Liocarcinus*? (O), Paguridae indet. (O)	non-reef	SS.SMu.IFiMu	
D121	Slightly silty coarse sand with scattered shells	Occasional *Munida rugosa* and sparse drift algae	non-reef	SS.SCS.CCS	
D122	Apparently maerl gravel on sand	Live maerl present, although poor video quality makes abundance determination difficult (probably O-F). Patchy algal turf (F) but sparse mobile epifauna	non-reef	SS.SMPMrl.Pcal.R	
D123	Complete cover of bivalve shells and shell debris, great majority being *Mytilus edulis*	Drift algae, mostly kelp, covering around 20% of the seabed. Very little evidence of living organisms	non-reef	SS	

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D124	Silted bedrock slope giving way to waves of coarse sand	Observations limited by poor video quality. Initially kelp park, mostly seemingly *Saccharina latissima*, with rock encrusted with pink coralline algae (P), a patchy red algal turf (O-F) and frequent *Echinus esculentus* and *Kirchenpaueria pinnata*. Below the park the algal turf is patchy but common, including apparently *Dictyota dichotoma* and red algae. Echinus becomes common. View of sediment very poor	mixed	IR.LIR.K.Lsac.Pk IR.MIR.KR.XFoR SS.SCS.CCS	
D125	Maerl gravel on fine? sand with scatter of shells, including 10% coverage by *Mytilus edulis* shells locally	Poor video quality but live maerl apparently frequent, with sparse algae. No epifauna apparent	non-reef	SS.SMPMrl.Pcal	
D126	Maerl gravel with scattered shells, especially *Mytilus edulis* (10% cover locally)	Poor video quality but apparently very little live maerl (R) and little other life apparent, apart from very sparse algae and a single *Liocarcinus depurator*	non-reef	SS.SMPMrl.Pcal	
D127	Virtually complete cover of *Mytilus edulis* shells and fragments	Scattered rhodoliths of live *Phymatolithon calcareum* amongst mussel shells. Scattered drift algae and possibly sparse attached algae but no fauna observed	non-reef	SS.SMPMrl.Pcal	

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
D128	Bedrock, boulders and sand patches	*Saccharina latissima* forest (A), possibly with occasional *Saccorhiza polyschides*. Understorey of *Desmarestia aculeata* (O) and sparse foliose and filamentous red algae. *Asterias rubens* (C), *Echinus esculentus* (P). Possibly a sediment scoured habitat	reef	IR.LIR.K.Lsac.Ft	
D129	Slightly silty medium-coarse sand with pebbles and shells, then boulders with sand patches	Initially abundant *Cerianthus lloydii* with sparse tufts of algae; *Pagurus bernhardus* (R). Boulders well-grazed (and probably also scoured) with *Echinus* common, locally abundant; *Saccharina latissima* (F)	mixed	SS.SMx.CMx.ClloMx IR.LIR.K.Lsac.Gz	
D130	Initially brief view of sediment, but mostly bedrock, with silted upward faces	Generally bare-looking rock with pink coralline algal crusts (C), *Caryophyllia smithii* (C) and *Pomatoceros* (P). Dense patches of *Ciona intestinalis* (F, locally S). *Echinus* (P), *Porania* (P), *Marthasterias* (P), *Munida* (P)	reef	CR.LCR.BrAs.AmenCio	
D131	Initially coarse? sand with surface scatter of shells and stones, giving way to bedrock	Sand with shells and stones supporting patches of algae (red and probably brown) (C). Bedrock supporting algal turf (A) of filamentous and foliose red algae; *Echinus esculentus* (F). Dense kelp in distance at end of run	mixed	SS.SMp.KSwSS.LsacR.Sa IR.MIR.KR.XFoR	
D132	Slightly silty shelly sand	Occasional *Virgularia* and *Cerianthus* and frequent small burrows (*Munida*?); *Liocarcinus depurator* (R), *Asterias rubens* (R)	non-reef	SS.SMu.CSaMu.VirOphPmax	

Table 2.2 continued

Site	Substrate	Biota	Reef	Biotopes (2009)	Biotopes (2001)
SD1	Gelatinous mud	Mud covered with green film (S), with *Carcinus* (F) and sparse *Buccinum undatum* (P), *Pomatoschistus minutus* (P), *Pagurus bernhardus* (P) with *Hydractinia echinata* (P), *Aequipecten* (O) and drift kelp (R) supporting *Macropodia* sp.(P) and *Ascidiella* sp. (P). *Arenicola* also present, with its hummocks becoming common towards the end. Maximum depth 2.8 m below chart datum	non-reef	SS.SMU.IFiMu.Are	
SD2	Gelatinous mud	Mud with green film (A), *Carcinus* (F), *Pomatoschistus minutus* (F, locally C), *Arenicola* (P) and drift kelp (R) with *Ascidiella* sp. (P). Old, eroded pits and hummocks	non-reef	SS.SMU.IFiMu.Are	
SD3	Gelatinous mud	Mud with green film (A), *Carcinus* (P), *Pomatoschistus minutus* (P), *Buccinum undatum* (P), Pleuronectiformes juv. (P) and drift algae (R). Old, eroded pits and hummocks	non-reef	SS.SMU.IFiMu.Are	

Appendix 3 Infaunal survey data

Table 3.1 Sample details and in situ *characterisation of the sediment for the infaunal survey*

Site	Longitude	Latitude	Date	Depth (m)	Mesh (mm)	Gear	Sediment
S3	58.38495	-5.04478	05/08/09	4.7	1.0	grab	muddy fine sand
S6	58.38735	-5.05190	05/08/09	8.4	0.5	grab	slightly muddy sand
S8	58.38508	-5.06315	05/08/09	4.8	1.0	grab	soft smelly mud
S12	58.39322	-5.04477	05/08/09	5.0	1.0	grab	muddy sand
S17	58.39280	-5.06273	06/08/09	14.0	1.0	grab	muddy sand
S24	58.39662	-5.07027	06/08/09	14.7	1.0	grab	muddy sand
S29	58.40585	-5.07013	06/08/09	15.3	0.5	grab	soft mud
S32	58.40793	-5.06527	06/08/09	11.1	1.0	grab	slightly sandy mud
S34	58.41377	-5.06387	06/08/09	15.9	1.0	grab	smelly soft mud
S37	58.41287	-5.05265	06/08/09	5.1	1.0	grab	smelly soft mud
S44	58.39103	-5.08975	06/08/09	12.1	1.0	grab	soft mud
S46	58.39963	-5.08060	07/08/09	40.3	1.0	grab	muddy sand
S47	58.40142	-5.07852	07/08/09	19.6	0.5	grab	muddy sand
S48	58.40182	-5.08403	07/08/09	32.5	1.0	grab	muddy sand
S49	58.40027	-5.08350	07/08/09	48.1	1.0	grab	very muddy sand
S50	58.39940	-5.08442	07/08/09	43.4	1.0	grab	shelly muddy sand
S57	58.40470	-5.09353	07/08/09	43.6	1.0	grab	slightly sandy mud
S61	58.40060	-5.10355	07/08/09	25.5	1.0	grab	mud
S64	58.39758	-5.11277	07/08/09	5.1	1.0	grab	muddy sand
S69	58.40395	-5.12022	05/08/09	17.3	1.0	grab	medium sand
S71	58.40598	-5.11292	05/08/09	17.0	1.0	grab	slightly shelly muddy sand
S74	58.40748	-5.10512	05/08/09	57.4	1.0	grab	muddy sand
S77	58.40907	-5.11015	05/08/09	57.2	1.0	grab	shelly muddy sand
S78	58.41133	-5.11740	05/08/09	43.0	1.0	grab	muddy shelly sand
S88	58.41363	-5.12215	05/08/09	59.1	1.0	grab	muddy shell gravel
S96	58.41853	-5.12225	05/08/09	32.2	0.5	grab	shelly coarse sand
S98	58.42207	-5.12933	05/08/09	61.7	1.0	grab	coarse shell sand
S105	58.41562	-5.11472	05/08/09	16.4	1.0	grab	shell gravel
S115	58.42308	-5.09302	05/08/09	12.5	0.5	grab	muddy sand
S116	58.41907	-5.09545	05/08/09	33.0	1.0	grab	mud
SD1	58.39030	-5.07632	20/08/09	0.5	1.0	8 cores	gelatinous mud
ML01	58.39033	-5.07175	14/08/09	5.1	1.0	4 cores	coarse sand with shell gravel
ML02	58.40583	-5.11247	12/08/09	17.8	1.0	4 cores	muddy sand with maerl gravel
ML04	58.40623	-5.12348	10/08/09	15.2	1.0	4 cores	maerl gravel
SS04	58.40388	-5.07203	19/08/09	*15.0*	1.0	grab	muddy sand
SS05	58.40153	-5.10410	16/08/09	17.7	1.0	grab	muddy sand with shell gravel
SS10	58.41885	-5.10233	17/08/09	25.0	1.0	grab	muddy sand with shell gravel

Table 3.2 Particle size characteristics of all sediments sampled for infaunal analysis. $MD_{ø}$ = median grain diameter in phi units, Md_{μ} = median grain diameter in microns, $QD_{ø}$ = phi quartile deviation

Site	$MD_{ø}$	Md_{μ}	$QD_{ø}$	% silt/clay	% sand	% gravel	% fine sand	% medium sand	% coarse sand
S3	3.9	67		44.81	53.61	1.58	52.64	0.84	0.14
S6	1.9	268	1.20	13.59	85.44	0.97	34.14	45.56	5.74
S8				68.00	21.02	10.97	3.69	3.12	14.22
S12	1.9	268		32.97	63.85	3.18	15.17	29.69	19.00
S17	3.4	95		44.30	52.78	2.92	19.67	21.14	11.97
S24	1.4	379	1.40	20.61	79.32	0.06	16.30	48.34	14.68
S29	1.4	379		34.40	54.65	10.95	10.49	16.39	27.78
S32	1.2	435		30.70	61.38	7.92	11.75	21.67	27.96
S34				83.89	10.52	5.60	2.04	2.76	5.71
S37	0.3	812		42.25	44.92	12.83	2.53	6.73	35.66
S44	1.1	467		25.91	57.43	16.67	14.40	19.25	23.78
S46	2.5	177	1.45	17.38	69.90	12.72	40.02	20.87	9.02
S47	1.2	435	1.45	13.53	80.18	6.29	24.71	37.70	17.77
S48	0.7	616	2.25	23.11	67.78	9.11	15.37	22.78	29.63
S49	2.7	154		29.48	68.04	2.48	32.29	20.32	15.43
S50	0.5	707	2.25	24.33	72.44	3.23	9.98	24.70	37.76
S57	2.8	144		34.44	60.39	5.17	23.21	19.54	17.63
S61	3.7	77		43.39	56.00	0.61	38.08	9.74	8.18
S64	1.1	467	1.80	20.67	68.89	10.44	17.27	31.32	20.30
S69	2.6	165		29.38	67.20	3.42	34.29	26.42	6.49
S71	1.7	308	1.55	20.95	75.52	3.53	23.34	33.22	18.96
S74	2.1	233	1.70	22.53	68.38	9.09	28.39	27.08	12.91
S77	2.1	233	2.15	24.55	71.87	3.58	25.96	14.98	30.93
S78	-0.7	1625	0.95	13.20	78.74	8.06	5.25	11.12	62.36
S88	-0.1	1072		26.75	71.63	1.62	9.20	13.23	49.20
S96	-0.2	1149	0.55	0.54	96.86	2.61	0.38	40.21	56.26
S98	-0.5	1414	0.45	0.88	96.75	2.37	0.49	19.02	77.23
S105	-0.2	1149	0.65	3.01	89.29	7.70	0.28	37.55	51.46
S115	1.5	354	1.05	10.77	88.92	0.31	24.73	50.44	13.75
S116	2.3	203		28.58	67.63	3.79	24.34	21.09	22.20
SS04	2.1	233		39.27	57.95	2.78	11.40	25.58	20.97
SS05	1.7	308		29.14	69.90	0.96	17.04	35.22	17.63
SS10	0.6	660	1.45	14.04	83.86	2.11	14.53	37.44	31.89
SD1				54.51	37.08	8.41	5.29	12.19	19.60
ML01	0.3	812	0.95	8.06	81.85	10.10	3.90	47.03	30.92
ML02	2.5	177		27.32	68.94	3.75	29.52	14.82	24.60
ML04	-0.2	1149	1.05	17.94	76.16	5.90	3.15	22.28	50.73
IS01/5	-0.1	1072	1.90	2.12	74.14	23.73	21.74	24.73	27.67
IS01/6	0.9	536	0.90	1.84	93.18	4.98	22.10	59.76	11.33
IS02/2	2.0	250		2.62	62.98	34.40	47.06	13.35	2.57
IS02/3	2.3	203	0.35	1.05	98.68	0.27	68.31	29.93	0.44
IS02/4	3.0	125	0.30	5.61	94.31	0.08	91.11	3.05	0.14
IS02/5	1.3	406	0.80	2.27	97.73	0.00	28.27	67.03	2.44

Table 3.3 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															
	S3	**S6**	**S8**	**S12**	**S17**	**S24**	**S29**	**S32**	**S34**	**S37**	**S44**	**S46**	**S47**	**S48**	**S49**	**S50**
-2.0	1.6	1.0	11.0	3.2	2.9	0.1	11.0	7.9	5.6	12.8	16.7	12.7	6.3	9.1	2.5	3.2
-1.5	0.0	0.3	6.0	3.2	1.6	1.8	11.1	6.3	2.2	12.2	8.1	2.6	3.8	4.2	3.5	2.8
-1.0	0.0	0.5	4.5	3.8	2.5	2.0	8.5	8.7	1.4	11.6	6.7	2.3	4.1	6.1	5.0	6.3
-0.5	0.0	1.2	2.4	5.8	3.4	3.2	4.7	6.7	1.5	7.9	4.9	1.9	4.2	9.1	4.0	14.4
0.0	0.1	3.7	1.3	6.3	4.4	7.7	3.5	6.2	0.7	4.0	4.0	2.2	5.7	10.2	3.0	14.2
0.5	0.0	9.6	1.0	7.3	6.4	12.9	4.5	6.6	0.8	2.8	4.3	3.3	9.1	8.2	3.8	9.8
1.0	0.7	13.9	0.7	8.1	5.2	13.9	4.2	5.6	0.5	1.7	4.5	5.0	11.0	6.2	4.3	6.4
1.5	0.1	12.2	0.7	7.6	4.3	11.9	4.1	5.1	0.7	1.2	5.2	5.9	9.8	4.5	5.5	4.8
2.0	0.1	9.8	0.7	6.7	5.2	9.6	3.6	4.4	0.7	1.0	5.3	6.8	7.8	3.9	6.7	3.6
2.5	0.4	8.3	0.6	5.0	5.0	5.8	2.8	3.5	0.6	0.8	4.2	7.9	7.0	3.4	7.4	2.5
3.0	3.5	11.4	0.8	4.6	5.5	4.8	3.0	3.7	0.1	0.8	4.6	14.9	8.0	4.0	11.7	2.5
3.5	25.7	8.9	1.3	2.9	4.3	3.1	2.4	2.7	0.7	0.5	3.0	12.3	5.5	3.6	8.6	2.3
4.0	23.0	5.5	0.9	2.6	4.8	2.6	2.2	1.9	0.6	0.4	2.5	4.9	4.2	4.3	4.6	2.6
>4	44.8	13.6	68.0	33.0	44.3	20.6	34.4	30.7	83.9	42.2	25.9	17.4	13.5	23.1	29.5	24.3

Sieve (phi)	Site														
	S57	**S61**	**S64**	**S69**	**S71**	**S74**	**S77**	**S78**	**S88**	**S96**	**S98**	**S105**	**S115**	**S116**	**SD1**
-2.0	5.2	0.6	10.4	3.4	3.5	9.1	3.6	8.1	1.6	2.6	2.4	7.7	0.3	3.8	8.4
-1.5	3.7	1.2	2.9	1.0	3.8	1.6	5.1	2.7	5.7	3.6	5.7	4.1	0.6	4.8	6.3
-1.0	4.9	2.1	3.6	1.2	4.3	2.5	9.8	25.9	17.6	8.0	14.6	8.5	1.5	6.8	5.4
-0.5	5.2	2.4	5.6	2.0	5.0	3.4	10.5	25.3	19.3	18.4	29.3	17.0	3.7	6.1	4.3
0.0	3.9	2.4	8.2	2.3	5.9	5.4	5.5	8.4	6.6	26.2	27.5	21.9	7.9	4.5	3.5
0.5	5.1	2.3	9.3	2.6	6.8	6.8	3.4	3.7	3.3	23.3	12.8	22.6	12.3	5.6	3.1
1.0	4.9	1.9	8.8	3.8	7.7	6.4	3.1	2.8	2.6	12.7	4.0	11.5	14.5	4.9	2.6
1.5	5.1	2.2	7.2	7.9	9.1	6.4	3.8	2.4	3.4	3.9	1.7	3.2	12.8	5.2	3.2
2.0	4.4	3.3	6.0	12.1	9.7	7.5	4.7	2.2	4.0	0.3	0.5	0.3	10.9	5.4	3.3
2.5	4.0	5.0	4.9	12.1	8.7	8.1	4.9	1.8	3.2	0.1	0.1	0.0	8.5	4.8	2.3
3.0	5.4	10.0	5.4	11.3	7.9	9.9	7.2	2.0	2.5	0.1	0.2	0.1	7.8	5.9	1.2
3.5	6.5	12.0	4.2	7.8	4.9	7.3	7.7	1.0	2.3	0.1	0.1	0.2	5.3	7.1	1.1
4.0	7.3	11.0	2.8	3.2	1.9	3.1	6.2	0.5	1.3	0.1	0.0	0.0	3.2	6.5	0.7
>4	34.4	43.4	20.7	29.4	21.0	22.5	24.6	13.2	26.7	0.5	0.9	3.0	10.8	28.6	54.5

Table 3.3 continued

Sieve (phi)	Site											
	SS04	**SS05**	**SS10**	**ML01**	**ML02**	**ML04**	**IS01/5**	**ISO1/6**	**IS02/2**	**IS02/3**	**IS02/4**	**IS02/5**
-2.0	2.8	1.0	2.1	10.1	3.7	5.9	23.7	5.0	34.4	0.3	0.1	0.0
-1.5	1.9	1.1	2.4	5.6	5.1	5.3	5.4	0.3	1.6	0.1	0.0	0.0
-1.0	3.2	2.3	5.3	6.9	7.0	11.8	5.4	0.3	0.3	0.1	0.0	0.1
-0.5	5.9	5.6	10.7	8.0	7.7	18.7	8.8	1.5	0.4	0.1	0.1	0.2
0.0	10.0	8.6	13.5	10.4	4.9	14.9	8.1	9.2	0.3	0.1	0.0	2.1
0.5	9.2	10.8	14.7	15.3	3.8	10.5	6.8	18.1	0.5	0.3	0.2	12.9
1.0	6.4	9.8	11.5	16.0	3.2	6.1	6.2	18.0	0.9	0.9	0.1	25.8
1.5	5.4	8.3	6.9	10.7	3.3	3.5	5.4	13.3	3.4	6.2	0.6	17.8
2.0	4.6	6.3	4.3	5.0	4.5	2.2	6.3	10.4	8.7	22.6	2.2	10.5
2.5	3.4	5.0	3.2	1.9	5.9	1.2	9.5	7.9	14.5	38.4	6.0	9.4
3.0	2.6	4.6	3.6	1.1	10.2	0.8	9.4	8.0	22.9	25.5	42.8	11.4
3.5	3.1	4.3	4.4	0.6	8.6	0.7	2.5	5.1	8.5	3.6	36.5	5.9
4.0	2.3	3.1	3.3	0.3	4.8	0.4	0.4	1.1	1.2	0.8	5.8	1.5
>4	39.3	29.1	14.0	8.1	27.3	17.9	2.1	1.8	2.6	1.1	5.6	2.3

Figure 3.1 Cumulative weight of sediment retained on sieves at 0.5 phi intervals for all infaunal samples collected by grab or core

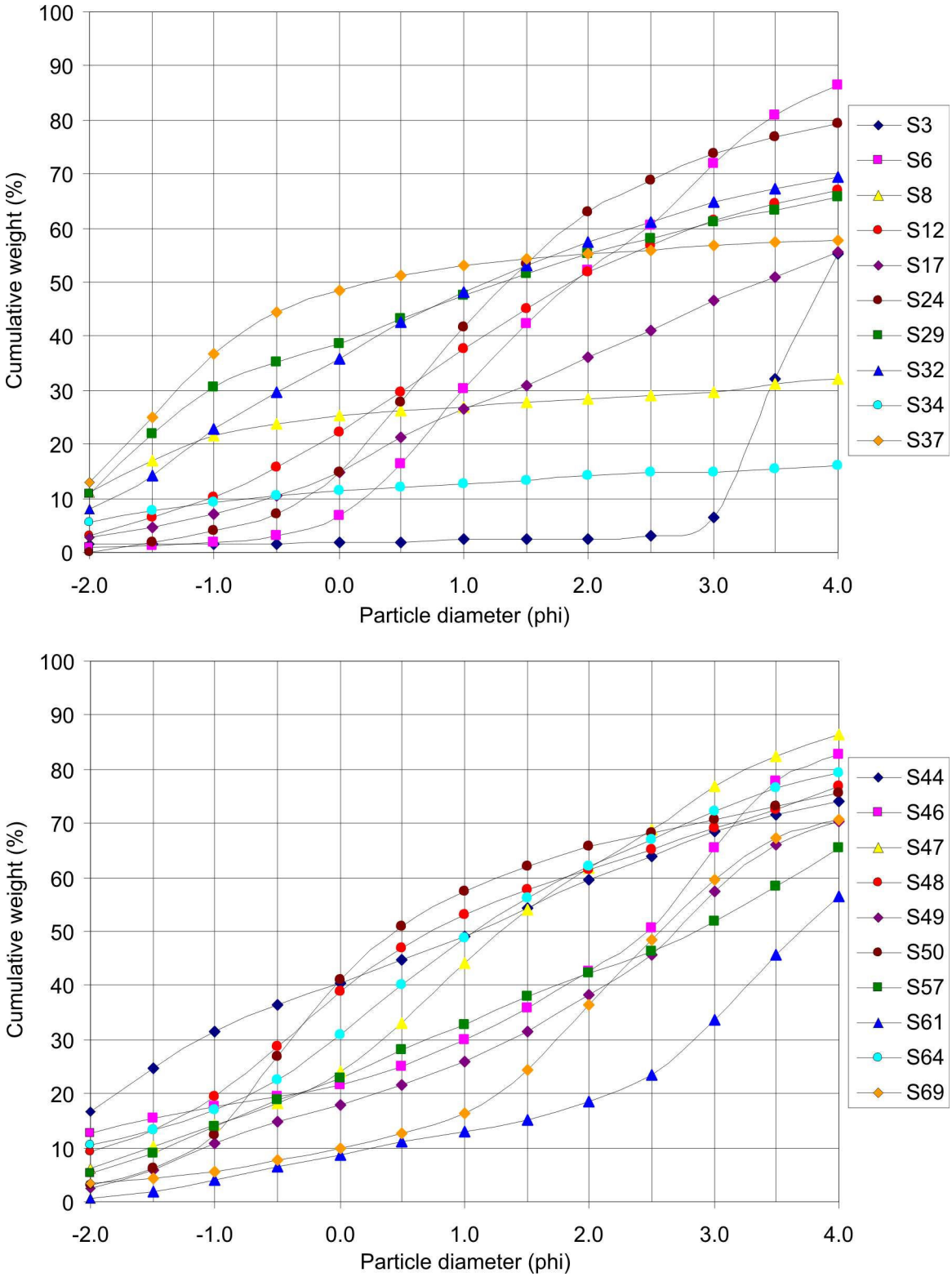
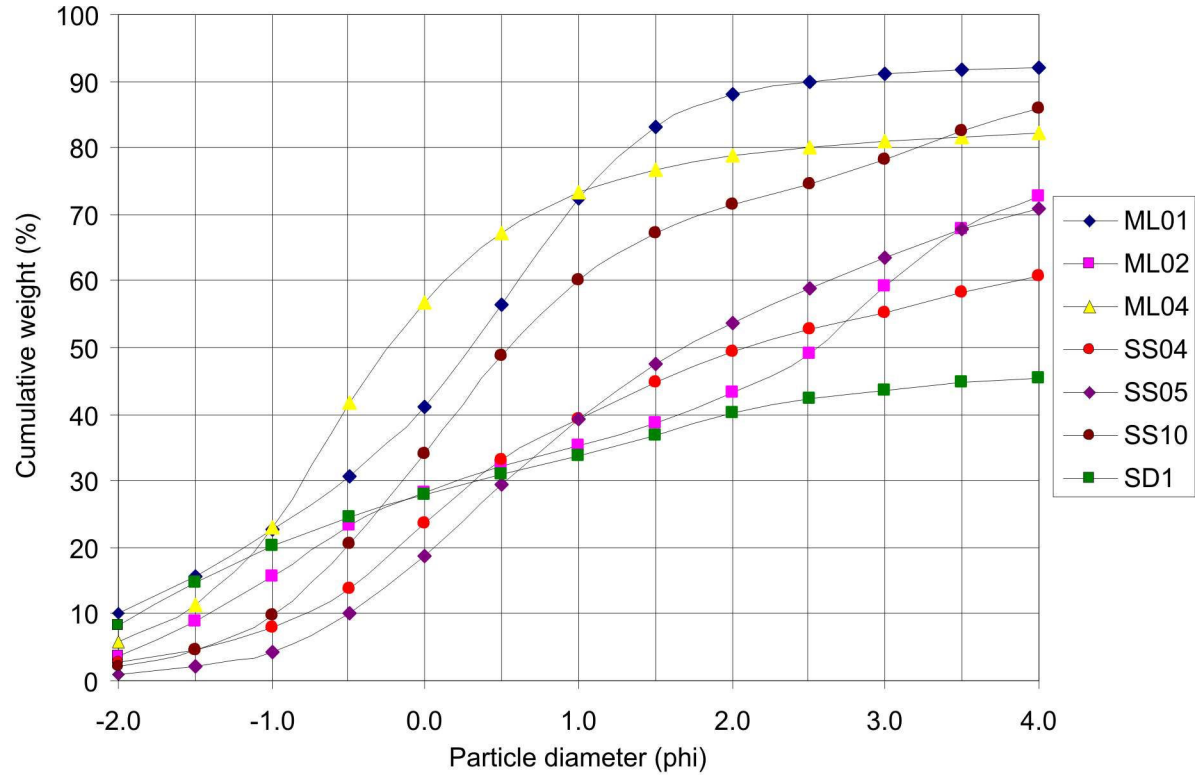


Figure 3.1 continued



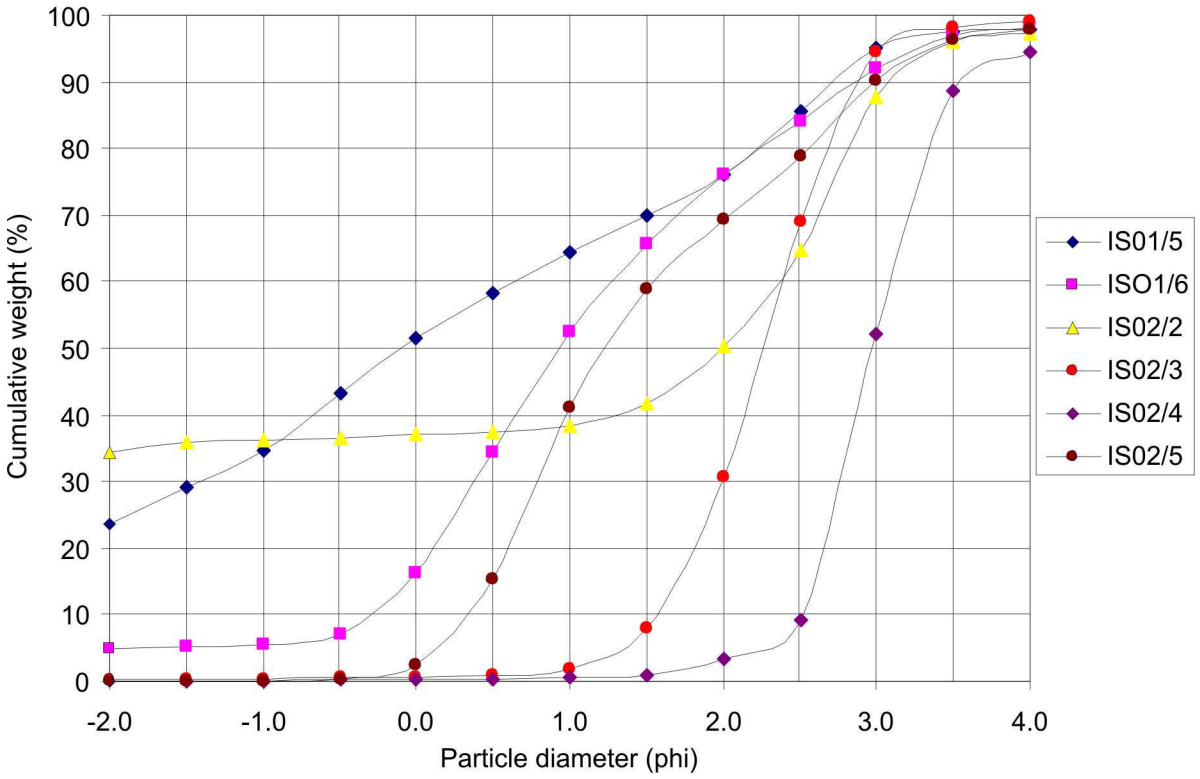


Table 3.4 Abundance of infauna (no./0.1 m^2) in 30 grab samples taken during the grab survey (S3-S115), 3 grab samples taken along transects (SS04-SS10) and 8 pooled cores collected by diver from site SD1. Five samples sieved through both 1 mm and 0.5 mm screens

Taxa	**Site**	**S3**	**S6**	**S6**	**S8**	**S12**	**S17**	**S24**	**S29**	**S29**	**S32**	**S34**	**S37**	**S44**	**S46**
	Sieve mesh (mm)	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**
Astrorhyza limicola								1							1
Cerianthus lloydii			1					1							
Edwardsia claparedii			1			5		8			1				
Oligocladus sanguinolentus															
NEMERTEA spp		112	20	5							1				1
Tubulanus polymorphus										1					
Cerebratulus spp			1			1	1		1					1	
Oerstedia dorsalis									2						
NEMATODA >1cm		12	1						1						
Priapulus caudatus															
CHAETOGNATHA		5	1	2											
Golfingia sp juv				1											
Golfingia elongata			5	1				5							
Golfingia margaritacea			1												
Golfingia vulgaris			1												
Thysanocardia procera			3			2		2			3				2
Phascolion strombus								1							
Pisione remota															
Polynoidae spp juv/indet							4								
Gattyana cirrosa							1	4			1				
Harmothoe sp A			2					1							
Harmothoe fragilis															
Harmothoe imbricata															
Harmothoe (M) mcintoshi							2								
Harmothoe (M) furcosetosa							1								
Harmothoe (M) arenicolae															
Pholoe inornata															
Pholoe baltica							2	1	1		7			1	9
Pholoe assimilis		3								1				1	
Sthenelais limicola															
Eteone longa						1									1
Hesionura elongata															
Pseudomystides limbata															
Anaitides groenlandica															
Anaitides mucosa		7	3						1						
Anaitides rosea			3	3				1							
Eulalia expusilla															
Eulalia mustela															
Eumida spp juv/indet		1													

Table 3.4 continued

Taxa	Site	S3	S6	S6	S8	S12	S17	S24	S29	S29	S32	S34	S37	S44	S46
	Sieve mesh (mm)	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**
Eumida bahusiensis			10	1											
Eumida ockelmanni															
Paranaitis kosteriensis								1							
Lacydonia miranda															
Glycera spp juv															
Glycera alba			7			2	1	6						1	
Glycera fallax															
Glycera lapidum															
Glycera rouxii								3							1
Goniada maculata			3			6	1	4						1	1
Sphaerodoridium claparedii										1					
Sphaerodorum gracilis															
Podarkeopsis capensis															
Gyptis rosea															
Hesiospina similis			3	1		1								5	
Kefersteinia cirrata															
Nereimyra punctata								2							
Ophiodromus flexuosus									1		2			1	
Podarke pallida															
Ancistrosyllis groenlandica															
Glyphohesione klatti															
Eurysyllis tuberculata															
Ehlersia cornuta															
Syllis vittata															
Syllis sp G															
Syllis sp H															
Trypanosyllis coeliaca															
Odontosyllis gibba			1					1							
Streptosyllis websteri															
Syllides benedicti															
Syllides japonica															
Brania swedmarki															
Exogone hebes			8	15			1		1	3	1				
Exogone naidina															
Exogone verugera								3							
Sphaerosyllis bulbosa															
Sphaerosyllis taylori										4					
Sphaerosyllis tetralix										1					
Autolytinae sp (sacconereis)															
Nereididae sp juv															
Neanthes irrorata						1									
Nereis longissima															
Platynereis dumerilii			2			1									
Aglaophamus rubella															
Nephtys spp juv		6	1						3	2					
Nephtys hombergii		3	1		1										
Nephtys kersivalensis															

Table 3.4 continued

Taxa	Site	S3	S6	S6	S8	S12	S17	S24	S29	S29	S32	S34	S37	S44	S46
	Sieve mesh (mm)	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**
Nephtys incisa									5		23	1			10
Aponuphis bilineata															
Marphysa bellii															
Nematonereis unicornis															
Lumbrineris gracilis			38	1		55	19	68						17	
Lumbrineris (A) hibernica															1
Lumbrineris (S) magnidentata															
Ougia macilenta		1													
Ougia subaequalis									1						
Parougia caeca			6	5		1									
Parougia eliasoni															
Protodorvillea kefersteini		2					1							14	
Orbinia sp juv															
Orbinia sertulata								1							
Scoloplos armiger		1		1											
Aricidea spp juv/indet						1									
Aricidea minuta			22	29											
Aricidea catherinae			3	1				1							
Aricidea cerrutii															
Cirrophorus branchiatus								2							
Levinsenia gracilis								4							
Paradoneis sp A															
Paradoneis armata															
Paradoneis lyra			3	1											
Apistobranchus tullbergi															
Poecilochaetus serpens		1	1												
Spionidae spp juv/indet			1												
Spionidae sp A															
Aonides oxycephala								1							
Aonides paucibranchiata							2								
Laonice bahusiensis															
Laonice sarsi															
Malacoceros fuliginosus															
Malacoceros vulgaris							3								
Minuspio cirrifera			6				3	18						1	
Minuspio multibranchiata															
Polydora caeca								1							
Polydora caulleryi			2				1								
Polydora flava															
Prionospio fallax		8	22	7	3	24		4	43	12	1	4		4	9
Prionospio banyulensis															
Pseudopolydora cf. *paucibranchiata*		5	53	59		1	2	43		5	3		2		1
Pseudopolydora pulchra															
Spio filicornis		24	39	36				13							1
Microspio mecznikowianus			7	4				1							
Spiophanes bombyx															
Spiophanes kroyeri								3							

Table 3.4 continued

Taxa	Site	S3	S6	S6	S8	S12	S17	S24	S29	S29	S32	S34	S37	S44	S46
	Sieve mesh (mm)	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**
Magelona alleni								6							
Magelona filiformis			6												
Magelona minuta								1	9	4	7				2
Cirratulidae spp indet				2						3					
Caulleriella alata						1	1								
Tharyx killariensis		1	7	2		1		8	33	18	6	1			4
Caulleriella zetlandica															
Chaetozone sp 'D'			1					1							
Chaetozone setosa		1	5	2					24	8	1				2
Cirratulus cirratus								1							
Aphelochaeta marioni								2							
Aphelochaeta sp A							8								
Monticellina sp															
Diplocirrus glaucus			12			1	2		1		4				18
Diplocirrus stopbowitzi															
Flabelligera affinis															
Pherusa plumosa															
Macrochaeta sp															
Macrochaeta clavicornis			1												
Capitella capitata		336	23	17											
Dasybranchus caducus											1				1
Mediomastus fragilis		14	8			13	3	5	20	6	8			13	2
Notomastus latericeus			4			11	4	8			8			10	1
Peresiella clymenoides		1						10							
Maldanidae spp juv/indet			1	4				4		3	4				6
Praxillura longissima			2												
Clymenura tricirrata			1					15							
Clymenura sp indet															
Clymenura johnstoni															
Euclymene lumbricoides			1												1
Euclymene oerstedii			7				2								
Euclymene sp. A								6							
Praxillella affinis								2			1				3
Praxillella gracilis											1				
Rhodine gracilior								7			3				
Ophelia sp juv															
Ophelina sp indet															
Ophelina acuminata															
Scalibregma celticum			1												
Scalibregma inflatum						3	20	13			7			1	6
Polygordius sp indet															
Polygordius appendiculatus															
Polygordius lacteus															
Galathowenia oculata								1							
Owenia fusiformis			6				9	6							
Amphictene auricoma															
Lagis koreni			4							1					1
Ampharetidae sp indet								2							

Table 3.4 continued

Taxa	Site	S3	S6	S6	S8	S12	S17	S24	S29	S29	S32	S34	S37	S44	S46
	Sieve mesh (mm)	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**
Melinna palmata			1			10		5			17				2
Ampharete sp indet															
Ampharete baltica					1										
Ampharete falcata															
Ampharete lindstroemi		2						8							
Amphicteis gunneri								1							
Anobothrus gracilis															
Sosane sulcata								3							
Terebellides stroemi						9		1						3	
Trichobranchus roseus		1							4	1	4				
Amphitritinae spp juv/indet															
Amphitritides gracilis															
Lanassa venusta															
Lanice conchilega						2									
Neoamphitrite sp indet															
Phisidia aurea															
Pista cristata						1	2							2	
Amaeana trilobata															
Polycirrus medusa															
Polycirrus norvegicus							1	1							
Polycirrus plumosus							8	5	1		1			6	3
Thelepodinae sp?															
Parathelepus collaris															
Streblosoma intestinalis															1
Sabellidae sp indet															
Chone duneri															
Chone filicaudata															
Euchone southerni															
Jasmineira caudata							1	49							
Hydroides norvegica							1	2							
Pomatoceros sp juv/indet								2							
Pomatoceros lamarcki															
Pomatoceros triqueter								3							
Tubificoides pseudogaster agg		8	4				1								
Limnodriloides sp															
Grania spp															
Anoplodactylus petiolatus		1													
Verruca stroemia								P							
Balanus balanus															
Rhodinicola rugosum								1							
Herpyllobius polynoes															
OSTRACODA type 2		2													
OSTRACODA type 1															
OSTRACODA type 3															
Nebalia borealis															
Nebalia herbstii															
Heteromysis formosa							1								
AMPHIPODA spp indet															

Table 3.4 continued

Taxa	Site	S3	S6	S6	S8	S12	S17	S24	S29	S29	S32	S34	S37	S44	S46
	Sieve mesh (mm)	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**
Monoculodes carinatus															
Perioculodes longimanus		7		1											
Synchelidium haplocheles			5	2											
Paramphilochoides odontonyx				1											
Leucothoe incisa															
Leucothoe lilljeborgi			4								1				1
Stenothoe sp															
Urothoe elegans															
Urothoe marina															
Harpinia antennaria			7	9											
Harpinia pectinata															
Parametaphoxus fultoni				3											
Acidostoma nodiferum															
Lysianassa plumosa															
Socarnes erythrophthalmus															
Tryphosella sarsi															
Atylus vedlomensis															
Ampelisca brevicornis			7												
Ampelisca diadema															
Ampelisca spinipes															
Ampelisca tenuicornis			11	4				1							
Ampelisca typica								1							
Melitidae sp indet				1											
Ceradocus semiserratus															
Cheirocratus sp ♀						1									
Cheirocratus sundevallii			3												
Isaeidae spp ♀/indet			3	6				1							
Gammaropsis cornuta															
Microprotopus maculatus															
Photis longicaudata															
Jassa marmorata															
Aoridae spp ♀/indet			1					2							
Aora gracilis															
Leptocheirus pectinatus															
Corophium bonnellii		1													
Siphonoecetes kroyeranus															
Caprella linearis							1								
Pariambus typicus				1											
Parvipalpus capillaceus															
Phtisica marina			2					1							
Gnathia sp (praniza)															
Arcturella dilatata															
Araphura brevimana															
Tanaopsis graciloides			2												
Vauntompsonia cristata			1												
Iphinoe serrata															
Eudorella truncatula			1							1					
Pseudocuma longicornis															

Table 3.4 continued

Taxa	Site	S3	S6	S6	S8	S12	S17	S24	S29	S29	S32	S34	S37	S44	S46
	Sieve mesh (mm)	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**
Diastylis rugosa															
Eualus pusiolus							1								
Philoceras sp juv		2													
Philoceras echinulatus			1												
Anapagurus hyndmanni															
Cestopagurus timidus								1							
Pagurus cuanensis															
Galathea intermedia							4	3							
Munida rugosa															
Atelecyclus rotundatus															
Portunidae sp indet															
Liocarcinus sp indet								1							
Liocarcinus pusillus															
Chaetoderma nitidulum															
Falcidens crossotus															1
SOLENOGASTRES spp juv															
Leptochiton asellus															
Leptochiton cancellatus															
GASTROPODA sp indet							1								
Tectura sp juv							2								
Gibbula cineraria							1								
Lacuna vincta															
Onoba semicostata			1												
Hyala vitrea															
Turritella communis								8			5				2
Aporrhais pespelecani								1							
Polinices pulchellus															
Hinia sp juv							1								
Cylichna cylindracea															
Philine spp juv															
Philine aperta													3		
Diaphana minuta				1											
Retusa umbilicata			1												
Rhizorus acuminatus															
NUDIBRANCHIA spp															
Onchidorididae spp							2								
Archidoris pseudoargus															
PELECYPODA spp indet									2						
PELECYPODA sp A															
Nucula nitidosa			4			1	1								1
Nucula nucleus							1								
Crenella decussata															
Glycymeris glycymeris															
Limaria loscombi															
Limatula sulcata															
Palliolum tigerinum															
Similipecten similis															
Myrtea spinifera															

Table 3.4 continued

Taxa	Site	S3	S6	S6	S8	S12	S17	S24	S29	S29	S32	S34	S37	S44	S46
	Sieve mesh (mm)	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**
Lucinoma borealis							2								
Thyasira flexuosa/gouldi			83	4	1	39	3	3	2	5	5				4
Mysella bidentata			3			2	1	3	8	8	51				6
Tellimya ferruginosa															
Acanthocardia echinata								1							1
Parvicardium exiguum			1												
Parvicardium ovale															
Parvicardium scabrum			1					1							
Ensis arcuatus															
Ensis ensis															
Phaxas pellucidus			4												
Tellinidae sp indet															
Arcopagia crassa															
Fabulina fabula			1												
Moerella pygmaea															
Gari tellinella															1
Abra alba			5			6	4	6	4						8
Abra nitida		2	1		5	1			24	2	57	3	2		58
Gouldia minima															
Dosinia sp juv					1										
Dosinia exoleta															
Tapes rhomboides															
Chamelea gallina			2			1		1			2				
Clausinella fasciata															
Timoclea ovata			2												
Mysia undata			1												
Mya truncata (juv)			3	1											
Corbula gibba						1		1							1
Thracia phaseolina											1				2
Thracia villosiuscula															
Cochlodesma praetenue															
Phoronis spp			2	1				7			2				3
OPHIUROIDEA sp juv															
Ophiothrix fragilis															
Ophiocomina nigra															
Amphiuridae spp juv														1	
Amphiura chiajei									2		3				15
Amphiura filiformis								3	3		11				9
Amphipholis squamata					1										
Ophiura affinis															
Ophiura albida															
Echinocyamus pusillus															
Echinocardium flavescens															
Leptopentacta elongata															
Leptosynapta sp indet															
Leptosynapta bergensis									1		1				3
Leptosynapta decaria															
Saccoglossus spp								2							

Table 3.4 continued

Taxa	Site	S3	S6	S6	S8	S12	S17	S24	S29	S29	S32	S34	S37	S44	S46
	Sieve mesh (mm)	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**
Branchistoma lanceolatum															
Chironomidae		3													

Table 3.4 continued

Taxa	Site	S47	S47	S48	S49	S50	S57	S61	S64	S69	S71	S74	S77	S78	S88
	Sieve mesh (mm)	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Astrorhyza limicola		1									4				1
Cerianthus lloydii						3		1			1	2	4		5
Edwardsia claparedii					2	4	1		3	2	7	1	2		
Oligocladus sanguinolentus														2	
NEMERTEA spp		2		12	5	4		1	1	1	2	15	23	5	1
Tubulanus polymorphus				2	2	2	2				1	2	1	1	2
Cerebratulus spp						1				1	2		4	3	1
Oerstedia dorsalis													1		
NEMATODA >1cm														13	
Priapulus caudatus				2		1			1			3	1		
CHAETOGNATHA															
Golfingia sp juv													1	3	1
Golfingia elongata									1		3				1
Golfingia margaritacea															
Golfingia vulgaris									2		4	1			
Thysanocardia procera		2		2	1	3	3	1	4		3	6	3		2
Phascolion strombus		1			1	3	1	3				12	11		1
Pisione remota															
Polynoidae spp juv/indet		1				1	1		1					9	
Gattyana cirrosa				1	4	3		1		1	4	5	1		
Harmothoe sp A							1					1			1
Harmothoe fragilis													1		
Harmothoe imbricata										1					
Harmothoe (M) mcintoshi														4	4
Harmothoe (M) furcosetosa															
Harmothoe (M) arenicolae						1								1	
Pholoe inornata		3											1		
Pholoe baltica			1	1	24	11	1	20	4	11	2	15	11	17	17
Pholoe assimilis		1													
Sthenelais limicola		1									1	1	1		
Eteone longa					1						1	1		1	
Hesionura elongata															
Pseudomystides limbata					1										1
Anaitides groenlandica								1			1				
Anaitides mucosa		1						1	1	2	2				1
Anaitides rosea			1		1			2							
Eulalia expusilla														1	
Eulalia mustela														1	
Eumida spp juv/indet		1				1									
Eumida bahusiensis					1			3	1						
Eumida ockelmanni						1									
Paranaitis kosteriensis		1		1											
Lacydonia miranda														3	
Glycera spp juv															
Glycera alba		1		6		2			2	4	1		6		
Glycera fallax															
Glycera lapidum		2							1					11	1

Table 3.4 continued

Taxa	Site	S47	S47	S48	S49	S50	S57	S61	S64	S69	S71	S74	S77	S78	S88
	Sieve mesh (mm)	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Glycera rouxii				1								3			
Goniada maculata		2		8		12		1	2	1	3		1	1	2
Sphaerodoridium claparedii															
Sphaerodorum gracilis													2	5	1
Podarkeopsis capensis		1				1			1						
Gyptis rosea														2	
Hesiospina similis											2			15	
Kefersteinia cirrata															
Nereimyra punctata										1					
Ophiodromus flexuosus				1			2					3			
Podarke pallida										1					
Ancistrosyllis groenlandica		1						1							
Glyphohesione klatti							1								
Eurysyllis tuberculata														2	
Ehlersia cornuta		2			1	2	1					3	1	2	
Syllis vittata															
Syllis sp G															
Syllis sp H															
Trypanosyllis coeliaca														7	
Odontosyllis gibba														3	1
Streptosyllis websteri															
Syllides benedicti														1	
Syllides japonica											2				
Brania swedmarki															
Exogone hebes		4	1							2	4			1	
Exogone naidina							1								
Exogone verugera		8	1			3			1	8	7				1
Sphaerosyllis bulbosa															
Sphaerosyllis taylori											1			1	
Sphaerosyllis tetralix															
Autolytinae sp (sacconereis)														1	
Nereididae sp juv		1													
Neanthes irrorata															
Nereis longissima											1				
Platynereis dumerilii															
Aglaophamus rubella															
Nephtys spp juv		4			1										
Nephtys hombergii										1					
Nephtys kersivalensis											2	1	1		
Nephtys incisa		7		2	9	1	3	2	1			5			
Aponuphis bilineata										5	3			2	4
Marphysa bellii						1									
Nematonereis unicornis														1	2
Lumbrineris gracilis		19	1	11	1	3			33	15	17	3	3	18	7
Lumbrineris (A) hibernica		1			1	2		1							
Lumbrineris (S) magnidentata															
Ougia macilenta															
Ougia subaequalis						1					1				

Table 3.4 continued

Taxa	Site	S47	S47	S48	S49	S50	S57	S61	S64	S69	S71	S74	S77	S78	S88
	Sieve mesh (mm)	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Parougia caeca									1			1			
Parougia eliasoni		1	3												
Protodorvillea kefersteini										1	2			1	
Orbinia sp juv								1							
Orbinia sertulata							1				1				
Scoloplos armiger										1	4				
Aricidea spp juv/indet															
Aricidea minuta															
Aricidea catherinae											3				
Aricidea cerrutii										3	1			4	
Cirrophorus branchiatus															1
Levinsenia gracilis		4		10		4		3				5	1		
Paradoneis sp A															
Paradoneis armata											1				
Paradoneis lyra					3			2	31	54	63	2			
Apistobranchus tullbergi										1	54				
Poecilochaetus serpens															
Spionidae spp juv/indet															
Spionidae sp A															
Aonides oxycephala									1	1	1				
Aonides paucibranchiata													2		
Laonice bahusiensis						2								2	
Laonice sarsi													1		
Malacoceros fuliginosus															
Malacoceros vulgaris															
Minuspio cirrifera		3		6	3	12	1		1	7	12	24	19	12	2
Minuspio multibranchiata		4				2	1	1							
Polydora caeca															
Polydora caulleryi									3		2				
Polydora flava											3				
Prionospio fallax		80	3	6	16	16	3	6	36			7			
Prionospio banyulensis														1	
Pseudopolydora cf. *paucibranchiata*		20	4	1	1	2	5	122	17	1	161		2	1	1
Pseudopolydora pulchra									1	2	3				
Spio filicornis		1						1	3	5	20				
Microspio mecznikowianus									1						
Spiophanes bombyx										1	1				
Spiophanes kroyeri		2			1	6						7	2		10
Magelona alleni						1					3	3	3		1
Magelona filiformis															
Magelona minuta		15	1	1	2	1	1	9		5	13	4	2		
Cirratulidae spp indet		4													
Caulleriella alata											1				
Tharyx killariensis		75	1	2	4	14	3	4		1	7	21	10		
Caulleriella zetlandica										1					
Chaetozone sp 'D'				1		1				25	3	1	2		1
Chaetozone setosa		9		4	9	11	22	1		1	1	32	19		
Cirratulus cirratus															

Table 3.4 continued

Taxa	Site	S47	S47	S48	S49	S50	S57	S61	S64	S69	S71	S74	S77	S78	S88
	Sieve mesh (mm)	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Aphelochaeta marioni															
Aphelochaeta sp A											2	1			
Monticellina sp				1										1	
Diplocirrus glaucus		15		12	29	22	16	1	2	1	19	29	2	1	
Diplocirrus stopbowitzi														1	
Flabelligera affinis														1	
Pherusa plumosa															1
Macrochaeta sp															
Macrochaeta clavicornis									1					1	
Capitella capitata										1					
Dasybranchus caducus		1			2	1	1					2	4		
Mediomastus fragilis		58	1	28	10	17	27	13	30	43	133	111	240	63	27
Notomastus latericeus		13	1	13	2	4	3	12	12	1	6	3	8	7	4
Peresiella clymenoides		11		2		5					2	9	2		10
Maldanidae spp juv/indet		6	1	3	1	5	5	2			1	3			
Praxillura longissima									1						
Clymenura tricirrata									2						
Clymenura sp indet											1				
Clymenura johnstoni														1	
Euclymene lumbricoides				1								2			
Euclymene oerstedii					2				1						
Euclymene sp. A															
Praxillella affinis		5	1	4	4	5	5	12			4	2	1		
Praxillella gracilis															
Rhodine gracilior		6											1		
Ophelia sp juv															
Ophelina sp indet															
Ophelina acuminata		2						2			2				
Scalibregma celticum						2			2	1					
Scalibregma inflatum		51	1	54	23	10	31	7	4	7	22	85	88	18	10
Polygordius sp indet													2		
Polygordius appendiculatus															
Polygordius lacteus														5	
Galathowenia oculata											5		1	3	
Owenia fusiformis		2		2		15	2	2	1	3	10	5	11		7
Amphictene auricoma											1		1		
Lagis koreni															
Ampharetidae sp indet															1
Melinna palmata		4		5	2	5		3	6						
Ampharete sp indet					2										
Ampharete baltica															
Ampharete falcata							1						1		
Ampharete lindstroemi		2		1		3	2	2			10	2	1		
Amphicteis gunneri		1			1	2									
Anobothrus gracilis							1				1				
Sosane sulcata						2					1		2		1
Terebellides stroemi		2		9		14	1	1	4		2		3		
Trichobranchus roseus		12				1								1	

Table 3.4 continued

Taxa	Site	S47	S47	S48	S49	S50	S57	S61	S64	S69	S71	S74	S77	S78	S88
	Sieve mesh (mm)	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Amphitritinae spp juv/indet															
Amphitritides gracilis														1	
Lanassa venusta														1	
Lanice conchilega						1		1				1			
Neoamphitrite sp indet	1														
Phisidia aurea													1		
Pista cristata											1			4	
Amaeana trilobata														5	1
Polycirrus medusa											1				
Polycirrus norvegicus	1		1	1					1	4		3	3	4	
Polycirrus plumosus	1		9	1	4		13	9	11	4	19	14	2	6	
Thelepodinae sp?													1		
Parathelepus collaris															
Streblosoma intestinalis	1		1				2								
Sabellidae sp indet															
Chone duneri															
Chone filicaudata													2		
Euchone southerni													1		
Jasmineira caudata	1							21	12	35					
Hydroides norvegica															
Pomatoceros sp juv/indet															
Pomatoceros lamarcki								1							
Pomatoceros triqueter															
Tubificoides pseudogaster agg									1	9					
Limnodriloides sp															
Grania spp										2					
Anoplodactylus petiolatus											1				
Verruca stroemia											P	P			
Balanus balanus														1	
Rhodinicola rugosum															
Herpyllobius polynoes															
OSTRACODA type 2		1													
OSTRACODA type 1											2				
OSTRACODA type 3	1	1													
Nebalia borealis										1					
Nebalia herbstii															
Heteromysis formosa															
AMPHIPODA spp indet											1				
Monoculodes carinatus															
Perioculodes longimanus															
Synchelidium haplocheles															
Paramphilochoides odontonyx															
Leucothoe incisa															
Leucothoe lilljeborgi				1			4	1							
Stenothoe sp															
Urothoe elegans									4						
Urothoe marina															
Harpinia antennaria															

Table 3.4 continued

Taxa	Site	S47	S47	S48	S49	S50	S57	S61	S64	S69	S71	S74	S77	S78	S88
	Sieve mesh (mm)	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Harpinia pectinata															
Parametaphoxus fultoni											2				
Acidostoma nodiferum												1			
Lysianassa plumosa									1					3	
Socarnes erythrophthalmus													1	13	
Tryphosella sarsi														1	
Atylus vedlomensis													1		
Ampelisca brevicornis						1									
Ampelisca diadema											1				
Ampelisca spinipes															1
Ampelisca tenuicornis								1			8	2	3		
Ampelisca typica															
Melitidae sp indet															
Ceradocus semiserratus														7	
Cheirocratus sp ♀										2					
Cheirocratus sundevallii											1				
Isaeidae spp ♀/indet															
Gammaropsis cornuta															
Microprotopus maculatus															
Photis longicaudata											2		1		1
Jassa marmorata								2							
Aoridae spp ♀/indet									1	1					
Aora gracilis															
Leptocheirus pectinatus			1					1			1				
Corophium bonnellii									3						
Siphonoecetes kroyeranus											1				
Caprella linearis															
Pariambus typicus		1		1							1				
Parvipalpus capillaceus		1												1	
Phtisica marina		1													
Gnathia sp (praniza)														1	
Arcturella dilatata							1								
Araphura brevimana															
Tanaopsis graciloides				1					1						2
Vauntompsonia cristata															
Iphinoe serrata					1										
Eudorella truncatula															
Pseudocuma longicornis															
Diastylis rugosa															
Eualus pusiolus															
Philoceras sp juv															
Philoceras echinulatus															
Anapagurus hyndmanni													2		1
Cestopagurus timidus															
Pagurus cuanensis						1					1	1			
Galathea intermedia											1		4	1	2
Munida rugosa														1	
Atelecyclus rotundatus											1				

Table 3.4 continued

Taxa	Site	S47	S47	S48	S49	S50	S57	S61	S64	S69	S71	S74	S77	S78	S88
	Sieve mesh (mm)	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Portunidae sp indet															
Liocarcinus sp indet															
Liocarcinus pusillus											1				
Chaetoderma nitidulum					2		1					1			
Falcidens crossotus												1			
SOLENOGASTRES spp juv															
Leptochiton asellus														5	1
Leptochiton cancellatus										1					
GASTROPODA sp indet															
Tectura sp juv															
Gibbula cineraria											1				
Lacuna vincta										1					
Onoba semicostata															
Hyala vitrea				1											
Turritella communis		15		8	8	14	7			1		32	14		4
Aporrhais pespelecani															
Polinices pulchellus															
Hinia sp juv															
Cylichna cylindracea						1						1			
Philine spp juv							2								1
Philine aperta															
Diaphana minuta															1
Retusa umbilicata															
Rhizorus acuminatus															
NUDIBRANCHIA spp							2								
Onchidoriddidae spp															
Archidoris pseudoargus														3	
PELECYPODA spp indet				2				1							
PELECYPODA sp A															
Nucula nitidosa		3		2		1									
Nucula nucleus						1					1	2			
Crenella decussata															
Glycymeris glycymeris														1	
Limaria loscombi														1	
Limatula sulcata															
Palliolum tigerinum														2	
Similipecten similis															1
Myrtea spinifera				3		3		1				12	7		3
Lucinoma borealis												3			3
Thyasira flexuosa/gouldi		3		22	3	16	6	2	7	7	16	13	14	1	
Mysella bidentata		15		6	14			13		8	4	4		1	
Tellimya ferruginosa															
Acanthocardia echinata					2	3		1		1					
Parvicardium exiguum															
Parvicardium ovale												1	1		1
Parvicardium scabrum									2		2			2	2
Ensis arcuatus										2					
Ensis ensis											1				

Table 3.4 continued

Taxa	Site	S47	S47	S48	S49	S50	S57	S61	S64	S69	S71	S74	S77	S78	S88
	Sieve mesh (mm)	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Phaxas pellucidus		2		1		2		3			6	2			
Tellinidae sp indet											1				
Arcopagia crassa														1	
Fabulina fabula															
Moerella pygmaea										1					
Gari tellinella						1								3	
Abra alba		6		6	1	23	1	39	7	1	4	6			
Abra nitida		28		5	58	41	76	21			1	32	2		
Gouldia minima														32	2
Dosinia sp juv															
Dosinia exoleta										1	3	1	2	1	
Tapes rhomboides														1	
Chamelea gallina		1				3									
Clausinella fasciata														9	1
Timoclea ovata		1			1		1				3		1	71	12
Mysia undata		2			2	3		3				1			
Mya truncata (juv)									1		1			1	
Corbula gibba		11		2	1	5		1				3	4		
Thracia phaseolina		1		1	2	3	2	5		1		1	1		
Thracia villosiuscula														3	
Cochlodesma praetenue										3	3				
Phoronis spp											2				
OPHIUROIDEA sp juv															
Ophiothrix fragilis														7	
Ophiocomina nigra															
Amphiuridae spp juv													1	2	
Amphiura chiajei		6		14	31	8	3	2				24	2		
Amphiura filiformis		3		3	32	3		17		7	3		8	1	
Amphipholis squamata													1	2	
Ophiura affinis											1				
Ophiura albida										1			3		
Echinocyamus pusillus											1			3	1
Echinocardium flavescens															
Leptopentacta elongata															
Leptosynapta sp indet											1				
Leptosynapta bergensis		1					3								
Leptosynapta decaria						1									
Saccoglossus spp				1						1					2
Branchistoma lanceolatum															
Chironomidae															

Table 3.4 continued

Taxa	Site	S96	S96	S98	S105	S115	S115	S116	SS04	SS05	SS10	SD1
	Sieve mesh (mm)	**1**	**0.5**	**1**	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**
Astrorhyza limicola												
Cerianthus lloydii								1		4		
Edwardsia claparedii				1	2	1		5	3	8		
Oligocladus sanguinolentus												
NEMERTEA spp			1	5	2	4	2			3	5	
Tubulanus polymorphus										2		
Cerebratulus spp										1	1	
Oerstedia dorsalis												
NEMATODA >1cm		7	2	10	15	3					2	
Priapulus caudatus											1	
CHAETOGNATHA												
Golfingia sp juv						2						
Golfingia elongata									2		3	
Golfingia margaritacea												
Golfingia vulgaris										7		
Thysanocardia procera						7		1	2	5	5	
Phascolion strombus						1					1	
Pisione remota		11	8	15	2							
Polynoidae spp juv/indet				2	2	1	1				6	
Gattyana cirrosa										1	1	
Harmothoe sp A												
Harmothoe fragilis												
Harmothoe imbricata												
Harmothoe (M) mcintoshi					3							
Harmothoe (M) furcosetosa												
Harmothoe (M) arenicolae						1				1	1	
Pholoe inornata						1						
Pholoe baltica						6	1		1	3	9	
Pholoe assimilis											2	
Sthenelais limicola						1						
Eteone longa												
Hesionura elongata					1							
Pseudomystides limbata												
Anaitides groenlandica										1		
Anaitides mucosa					2	6						
Anaitides rosea							1			2		
Eulalia expusilla												
Eulalia mustela		1										
Eumida spp juv/indet												
Eumida bahusiensis						3	1					
Eumida ockelmanni												
Paranaitis kosteriensis						1		2				
Lacydonia miranda												
Glycera spp juv						1						
Glycera alba						3						
Glycera fallax				2								
Glycera lapidum		21	3	15	11	1					2	
Glycera rouxii											1	

Table 3.4 continued

Taxa	Site	S96	S96	S98	S105	S115	S115	S116	SS04	SS05	SS10	SD1
	Sieve mesh (mm)	**1**	**0.5**	**1**	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**
Goniada maculata						2		1		1	3	
Sphaerodoridium claparedii												
Sphaerodorum gracilis												
Podarkeopsis capensis						1						
Gyptis rosea			2	2								
Hesiospina similis				3	1							
Kefersteinia cirrata		2		2								
Nereimyra punctata												
Ophiodromus flexuosus											1	
Podarke pallida							1				1	
Ancistrosyllis groenlandica												
Glyphohesione klatti								1				
Eurysyllis tuberculata												
Ehlersia cornuta					4							
Syllis vittata		2										
Syllis sp G		4										
Syllis sp H			1									
Trypanosyllis coeliaca					1							
Odontosyllis gibba				1							1	
Streptosyllis websteri						8	20					
Syllides benedicti						1	2					
Syllides japonica						1	1					
Brania swedmarki			1									
Exogone hebes						129	122				2	
Exogone naidina												
Exogone verugera						84	49				24	
Sphaerosyllis bulbosa		7	6	4							3	
Sphaerosyllis taylori			5	1		2					1	
Sphaerosyllis tetralix					1		1					
Autolytinae sp (sacconereis)												
Nereididae sp juv						1						
Neanthes irrorata												
Nereis longissima												
Platynereis dumerilii												
Aglaophamus rubella				1								
Nephtys spp juv									1			
Nephtys hombergii						1						24
Nephtys kersivalensis										1	1	
Nephtys incisa								4	7			
Aponuphis bilineata										1	2	
Marphysa bellii												
Nematonereis unicornis												
Lumbrineris gracilis						15	1			32		
Lumbrineris (A) hibernica												
Lumbrineris (S) magnidentata		1										
Ougia macilenta							1					
Ougia subaequalis												
Parougia caeca					1	17	13					
Parougia eliasoni												

Table 3.4 continued

Taxa	Site	S96	S96	S98	S105	S115	S115	S116	SS04	SS05	SS10	SD1
	Sieve mesh (mm)	**1**	**0.5**	**1**	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**
Protodorvillea kefersteini		13		9								
Orbinia sp juv												
Orbinia sertulata												
Scoloplos armiger												
Aricidea spp juv/indet						2						
Aricidea minuta						27	36					
Aricidea catherinae						3	3					
Aricidea cerrutii				5	2						6	
Cirrophorus branchiatus											4	
Levinsenia gracilis						1	1	11			1	
Paradoneis sp A						1						
Paradoneis armata												
Paradoneis lyra						348	134	1				
Apistobranchus tullbergi								1			20	
Poecilochaetus serpens												
Spionidae spp juv/indet						3					1	
Spionidae sp A						1						
Aonides oxycephala		1				2						
Aonides paucibranchiata				11	57	1						
Laonice bahusiensis				2							1	
Laonice sarsi												
Malacoceros fuliginosus					1	1						
Malacoceros vulgaris						2						
Minuspio cirrifera						12	1	1		3	17	
Minuspio multibranchiata												
Polydora caeca												
Polydora caulleryi										2		
Polydora flava												
Prionospio fallax						7	3	9	1	4	1	
Prionospio banyulensis												
Pseudopolydora cf. *paucibranchiata*						32	19	1		53	6	
Pseudopolydora pulchra												
Spio filicornis		5	2		1	31	17				2	
Microspio mecznikowianus					1							
Spiophanes bombyx												
Spiophanes kroyeri									1			
Magelona alleni						2				2		
Magelona filiformis												
Magelona minuta								10			9	
Cirratulidae spp indet											1	
Caulleriella alata						1						
Tharyx killariensis						49	22					
Caulleriella zetlandica												
Chaetozone sp 'D'											2	
Chaetozone setosa						2						
Cirratulus cirratus												
Aphelochaeta marioni												
Aphelochaeta sp A												

Table 3.4 continued

Taxa	Site	S96	S96	S98	S105	S115	S115	S116	SS04	SS05	SS10	SD1
	Sieve mesh (mm)	**1**	**0.5**	**1**	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**
Monticellina sp									1			
Diplocirrus glaucus						19		56	2		7	
Diplocirrus stopbowitzi				1								
Flabelligera affinis												
Pherusa plumosa												
Macrochaeta sp			1									
Macrochaeta clavicornis												
Capitella capitata								5				
Dasybranchus caducus									8			
Mediomastus fragilis	1		6	22	35	10	34		18	16		
Notomastus latericeus	1		2		8		6	1	41			
Peresiella clymenoides										3		
Maldanidae spp juv/indet					3	1	5	1	2	1		
Praxillura longissima												
Clymenura tricirrata												
Clymenura sp indet												
Clymenura johnstoni												
Euclymene lumbricoides								2		1		
Euclymene oerstedii												
Euclymene sp. A												
Praxillella affinis					2		6			3		
Praxillella gracilis												
Rhodine gracilior								1				
Ophelia sp juv		1										
Ophelina sp indet										1		
Ophelina acuminata					1							
Scalibregma celticum					11				2	7		
Scalibregma inflatum	1				8	1	34	3	12	25		
Polygordius sp indet	16	1	8	2								
Polygordius appendiculatus	9	3	1	1								
Polygordius lacteus				1								
Galathowenia oculata					3	4	3		1	4		
Owenia fusiformis					6		4	3	1	5		
Amphictene auricoma												
Lagis koreni												
Ampharetidae sp indet												
Melinna palmata					3			6	7			
Ampharete sp indet												
Ampharete baltica												
Ampharete falcata												
Ampharete lindstroemi					3	3		1	1	4		
Amphicteis gunneri												
Anobothrus gracilis												
Sosane sulcata												
Terebellides stroemi												
Trichobranchus roseus					1			1				
Amphitritinae spp juv/indet							1					
Amphitritides gracilis												
Lanassa venusta												

Table 3.4 continued

Taxa	Site	S96	S96	S98	S105	S115	S115	S116	SS04	SS05	SS10	SD1
	Sieve mesh (mm)	**1**	**0.5**	**1**	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**
Lanice conchilega												
Neoamphitrite sp indet												
Phisidia aurea		1										
Pista cristata				1						3		
Amaeana trilobata												
Polycirrus medusa		3	1	4								
Polycirrus norvegicus				1	11			1			1	
Polycirrus plumosus						3		6	1	1	2	
Thelepodinae sp?												
Parathelepus collaris			1	3								
Streblosoma intestinalis												
Sabellidae sp indet										1		
Chone duneri		3		1	1		1					
Chone filicaudata		1			5							
Euchone southerni										1		
Jasmineira caudata				1		11	1				43	
Hydroides norvegica				5								
Pomatoceros sp juv/indet												
Pomatoceros lamarcki					1							
Pomatoceros triqueter												
Tubificoides pseudogaster agg						55	21					
Limnodriloides sp											1	
Grania spp				1	2							
Anoplodactylus petiolatus												
Verruca stroemia				P								
Balanus balanus												
Rhodinicola rugosum												
Herpyllobius polynoes											1	
OSTRACODA type 2						1	3				4	
OSTRACODA type 1				1			1				1	
OSTRACODA type 3												
Nebalia borealis						1						
Nebalia herbstii						1	1					
Heteromysis formosa												
AMPHIPODA spp indet			1									
Monoculodes carinatus				1	1							
Perioculodes longimanus						3	1					
Synchelidium haplocheles				1	1							
Paramphilochoides odontonyx												
Leucothoe incisa		1										
Leucothoe lilljeborgi						1	1		1	4		
Stenothoe sp			1									
Urothoe elegans						7	4					
Urothoe marina					9							
Harpinia antennaria												
Harpinia pectinata						3	1					
Parametaphoxus fultoni					1	1	1					
Acidostoma nodiferum												
Lysianassa plumosa												

Table 3.4 continued

Taxa	Site	S96	S96	S98	S105	S115	S115	S116	SS04	SS05	SS10	SD1
	Sieve mesh (mm)	**1**	**0.5**	**1**	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**
Socarnes erythrophthalmus												
Tryphosella sarsi												
Atylus vedlomensis				2	1							
Ampelisca brevicornis							1					
Ampelisca diadema				1								
Ampelisca spinipes				1								
Ampelisca tenuicornis						33	14				6	
Ampelisca typica												
Melitidae sp indet												
Ceradocus semiserratus					1							
Cheirocratus sp ♀												
Cheirocratus sundevallii						7						
Isaeidae spp ♀/indet												
Gammaropsis cornuta						3	4					
Microprotopus maculatus						1	1					
Photis longicaudata						3	10			1	4	
Jassa marmorata												
Aoridae spp ♀/indet											1	
Aora gracilis						1						
Leptocheirus pectinatus							1				2	
Corophium bonnellii						2						
Siphonoecetes kroyeranus						14	7					
Caprella linearis												
Pariambus typicus						6	4					
Parvipalpus capillaceus												
Phtisica marina							1					
Gnathia sp (praniza)											1	
Arcturella dilatata						3						
Araphura brevimana											1	
Tanaopsis graciloides						22	14			1		
Vauntompsonia cristata												
Iphinoe serrata												
Eudorella truncatula												
Pseudocuma longicornis						1						
Diastylis rugosa						1						
Eualus pusiolus												
Philoceras sp juv												
Philoceras echinulatus												
Anapagurus hyndmanni					3							
Cestopagurus timidus												
Pagurus cuanensis												
Galathea intermedia				1								
Munida rugosa												
Atelecyclus rotundatus												
Portunidae sp indet											1	
Liocarcinus sp indet												
Liocarcinus pusillus						1					1	
Chaetoderma nitidulum								1				
Falcidens crossotus								1				

Table 3.4 continued

Taxa	Site	S96	S96	S98	S105	S115	S115	S116	SS04	SS05	SS10	SD1
	Sieve mesh (mm)	**1**	**0.5**	**1**	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**
SOLENOGASTRES spp juv			2									
Leptochiton asellus												
Leptochiton cancellatus												
GASTROPODA sp indet												
Tectura sp juv												
Gibbula cineraria												
Lacuna vincta												
Onoba semicostata								2				
Hyala vitrea												
Turritella communis								2		1		
Aporrhais pespelecani											1	
Polinices pulchellus		3		2	1	1						
Hinia sp juv								1				
Cylichna cylindracea								2			1	
Philine spp juv												
Philine aperta												
Diaphana minuta												
Retusa umbilicata												
Rhizorus acuminatus								1				
NUDIBRANCHIA spp		1										
Onchidorididae spp												
Archidoris pseudoargus												
PELECYPODA spp indet						1			1	1		
PELECYPODA sp A							1					
Nucula nitidosa						2		3		3	1	
Nucula nucleus						1		1			3	
Crenella decussata		1				1						
Glycymeris glycymeris												
Limaria loscombi												
Limatula sulcata		1		3								
Palliolum tigerinum				1								
Similipecten similis				4								
Myrtea spinifera								2		1	2	
Lucinoma borealis						5				4	3	
Thyasira flexuosa/gouldi					1	161	1	65	1	123	20	
Mysella bidentata			1			25	1	1		13	4	
Tellimya ferruginosa						1						
Acanthocardia echinata						1		1				
Parvicardium exiguum												
Parvicardium ovale												
Parvicardium scabrum					1	5					4	
Ensis arcuatus												
Ensis ensis						14					1	
Phaxas pellucidus						4		1		2	1	
Tellinidae sp indet												
Arcopagia crassa				1								
Fabulina fabula												
Moerella pygmaea		15		7							1	
Gari tellinella		4		11								

Table 3.4 continued

Taxa	Site	S96	S96	S98	S105	S115	S115	S116	SS04	SS05	SS10	SD1
	Sieve mesh (mm)	**1**	**0.5**	**1**	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**1**
Abra alba						8		4	2	17	6	
Abra nitida						2		93	3		1	
Gouldia minima					1						1	
Dosinia sp juv												
Dosinia exoleta					1					1	5	
Tapes rhomboides												
Chamelea gallina												
Clausinella fasciata												
Timoclea ovata						3					8	
Mysia undata						1			1		1	
Mya truncata (juv)						3				1		
Corbula gibba								9			5	
Thracia phaseolina								4			4	
Thracia villosiuscula		1										
Cochlodesma praetenue												
Phoronis spp								3				
OPHIUROIDEA sp juv		1	5	1								
Ophiothrix fragilis												
Ophiocomina nigra					1							
Amphiuridae spp juv				3	2			1				
Amphiura chiajei									18		4	
Amphiura filiformis						4			12		1	
Amphipholis squamata										3	1	
Ophiura affinis												
Ophiura albida												
Echinocyamus pusillus					3							
Echinocardium flavescens								1				
Leptopentacta elongata				1								
Leptosynapta sp indet												
Leptosynapta bergensis								2		1		
Leptosynapta decaria												
Saccoglossus spp									1		1	
Branchistoma lanceolatum		2		1								
Chironomidae												

Table 3.5 Infaunal community data for all sublittoral samples collected. H'_e and H'_2 = Shannon-Wiener function using log_e and log_2, J' = Pielou's evenness index

Site	Sample area (m^2)	Abundance (no./0.1m^2)	No. taxa	H'_e	H'_2	J'	Biotope	Silt/clay (%)
S3	0.100	559	25	1.48	2.13	0.46	SS.SSa.IMuSa.ArelSa	44.81
S6	0.100	550	87	3.60	5.19	0.81	SS.SSa.IMuSa.ArelSa	13.59
S8	0.100	13	7	1.69	2.44	0.87	SS.SMu.IFiMu.PhiVir	68.00
S12	0.100	206	32	2.51	3.62	0.72	SS.SMu.ISaMu.MysAbr	32.97
S17	0.100	134	45	3.27	4.72	0.86	SS.SMp.KSwSS.PCri	44.30
S24	0.100	433	81	3.56	5.13	0.81	SS.SMu.ISaMu	20.61
S29	0.100	198	26	2.47	3.57	0.76	SS.SMu.IFiMu.PhiVir	34.40
S32	0.100	255	36	2.75	3.96	0.77	SS.SMu.IFiMu.PhiVir	30.70
S34	0.100	9	4	1.22	1.75	0.88	SS.SMu.IFiMu.PhiVir	83.89
S37	0.100	7	3	1.08	1.56	0.98	SS.SMu.IFiMu.PhiVir	42.25
S44	0.100	83	18	2.37	3.41	0.82	SS.SMp.KSwSS	25.91
S46	0.100	207	43	2.95	4.26	0.78	SS.SMu.CFiMu.SpnMeg	17.38
S47	0.100	584	76	3.35	4.83	0.77	SS.SMu.CFiMu.SpnMeg	13.53
S48	0.100	306	54	3.33	4.80	0.83	SS.SMu.CFiMu.SpnMeg	23.11
S49	0.100	334	52	3.09	4.45	0.78	SS.SMu.CFiMu.SpnMeg	29.48
S50	0.100	391	74	3.75	5.40	0.87	SS.SMu.CFiMu.SpnMeg	24.33
S57	0.100	255	44	2.73	3.93	0.72	SS.SMu.CFiMu.SpnMeg.Fun	34.44
S61	0.100	379	55	2.88	4.15	0.72	SS.SMu.CFiMu.SpnMeg	43.39
S64	0.100	276	51	3.09	4.46	0.79	SS.SMp.KSwSS	20.67
S69	0.100	293	61	3.22	4.64	0.78	SS.SMu.CSaMu.VirOphPmax	29.38
S71	0.100	797	105	3.31	4.78	0.71	SS.SMp.Mrl.Pcal	20.95
S74	0.100	613	69	3.26	4.70	0.77	SS.SMu.CFiMu.SpnMeg	22.53
S77	0.100	603	72	2.69	3.89	0.63	SS.SMx.CMx	24.55
S78	0.100	462	87	3.55	5.12	0.80	SS.SCS.CCS.MedLumVen	13.20
S88	0.100	189	59	3.49	5.04	0.86	SS.SCS.CCS.MedLumVen	26.75
S96	0.100	141	31	2.90	4.18	0.84	SS.SCS.CCS.MedLumVen	0.54
S98	0.100	170	50	3.47	5.01	0.89	SS.SCS.CCS.MedLumVen	0.88
S105	0.100	184	43	2.78	4.01	0.74	SS.SCS.CCS.MedLumVen	3.01
S115	0.100	1364	106	3.16	4.56	0.68	SS.SSa.IMuSa	10.77
S116	0.100	411	48	2.75	3.97	0.71	SS.SMu.CFiMu.SpnMeg	28.58
SS04	0.100	89	30	2.88	4.16	0.85	SS.SMu.CFiMu.SpnMeg	39.27
SS05	0.100	405	50	2.71	3.92	0.69	SS.SMu.CSaMu.VirOphPmax	29.14
SS10	0.100	377	88	3.82	5.52	0.85	SS.SMx.CMx	14.04
ML01	0.033	1161	56	3.21	4.63	0.80	SS.SMp.Mrl.Pcal.R	8.06
ML02	0.033	1080	98	3.70	5.34	0.81	SS.SMp.Mrl.Pcal	27.32
ML04	0.033	720	77	3.77	5.43	0.87	SS.SMp.Mrl.Pcal.R	17.94
SD1	0.067	24	1	0.00	0.00	0.00	SS.SMu.IFiMu.Are	54.51

Appendix 4 Reef and mixed reef/sediment transect data

Table 4.1 Zone boundaries, substrates, dominant biota and biotopes recorded along nine reef or mixed reef/sediment transects

Zone	Tape distance (m)		Height above chart datum (m)		Substrate	Biogenic features of zone	Biotopes
	upper	lower	max	min			
TRANSECT: EILEAN PORT A' CHOIT W (LL09IR01, LL09SR01 & LL09SS01)							
I1	0.0	5.1	5.70	4.31	uneven fissured bedrock	supralittoral lichens dominated by *Ramalina siliquosa* and *Xanthoria parietina*	LR.FLR.Lic.YG
I2	5.1	5.4	4.31	3.96	very steep uneven fissured bedrock	abundant *Verrucaria maura* with sparse *Lichina confinis*	LR.FLR.Lic.Ver.Ver
I3	5.4	6.7	3.96	3.31	steep uneven fissured bedrock	abundant *Pelvetia canaliculata* with sparse *Fucus spiralis*	LR.LLR.F.Pel
I4	6.7	7.6	3.31	2.86	steep uneven fissured bedrock	dense *Fucus vesiculosus* with *Verrucaria mucosa* and *Hildenbrandia* crusts	LR.LLR.F.Fves.FS
I5	7.6	11.8	2.86	1.45	highly uneven bedrock with some steep faces	blanket of *Ascophyllum nodosum* with turfs of *Cladophora rupestris* and *Gelidium pusillum*	LR.LLR.F.Asc.FS
I6	11.8	13.5	1.45	0.50	smooth sloping bedrock with vertical faces	dense *Fucus serratus* with profuse turf of *Cladophora rupestris* and sparse red algae	LR.LLR.F.Fserr.FS
S1	13.5	17.0	0.50	-2.30	near-vertical bedrock wall	*Saccharina latissima* with *Ascidiella* spp. and dense algal turf	IR.LIR.K.Lsac.Ft
S2	17.0	65.0	-2.30	-3.20	muddy sand with pebble cover and boulder patches	dense *Saccharina latissima* with algal mat pockets	SS.SMp.KSwSS.LsacR SS.SMp.KSwSS.Tra
S3	65.0	120.0	-3.20	-4.30	muddy sand with pebbles and shell fragments	algal mat with isolated patches of dense *Saccharina latissima*	SS.SMp.KSwSS.Tra SS.SMp.KSwSS.LsacR
TRANSECT: SRUTH MOR (LL09IR02 & LL09SR02)							
I1	0.0	0.6	4.60	4.43	irregular creviced bedrock with small pools	*Xanthoria parietina* dominated; bird roost	LR.FLR.Lic.YG, LR.FLR.Rkp
I2	0.6	1.1	4.43	3.92	irregular creviced bedrock	*Verrucaria maura* with sparse *Pelvetia canaliculata*	LR.FLR.Lic.Ver.Ver
I3	1.1	2.1	3.92	3.76	irregular creviced bedrock	dense *Pelvetia canaliculata*	LR.LLR.F.Pel
I4	2.1	2.9	3.76	3.38	smooth sloping bedrock with some small and very large crevices and small vertical faces	dense *Fucus spiralis* with *Semibalanus balanoides*	LR.LLR.F.Fspi.FS

Table 4.1 continued

Zone	Tape distance (m)		Height above chart datum (m)		Substrate	Biogenic features of zone	Biotopes
	upper	lower	max	min			
I5	2.9	6.4	3.38	1.50	smooth sloping bedrock with a few fissures	dense *Fucus vesiculosus* and *Semibalanus balanoides*	LR.LLR.F.Fves.FS
I6	6.4	8.0	1.50	1.00	gently sloping irregular bedrock with small sand pockets	dense *Fucus serratus* with *Ascophyllum nodosum* and dwarf *Metridium senile*	LR.HLR.FT.FserT
S1	8.0	13.0	1.00	-1.60	steep bedrock slope	*Laminaria hyperborea* forest with abundant dwarf *Metridium senile*	IR.MIR.KR.LhypT.Ft
S2	13.0	21.0	-1.60	-1.60	mixed rocky substrate of boulders and cobbles with patches of coarse sand	Laminaria hyperborea forest with profuse bryozoan turf	IR.MIR.KR.LhypTX.Ft
TRANSECT: ARDMORE (LL09IR03, LL09SR03 & LL09SS03)							
I1	1.6	2.9	5.66	4.65	steeply sloping smooth fissured bedrock	*Ramalina siliquosa* and other supralittoral lichens	LR.FLR.Lic.YG
I2	2.9	3.8	4.65	3.89	steeply sloping smooth fissured bedrock	*Verrucaria maura* with *Lichina confinis*	LR.FLR.Lic.Ver.Ver
I3	3.8	5.2	3.89	2.79	steep bedrock slope	*Pelvetia canaliculata* and *Verrucaria maura* with *Lichina confinis* and very narrow lower band of *Fucus vesiculosus*	LR.LLR.F.Pel, LR.LLR.F.Fves.FS
I4	5.2	13.0	2.79	0.70	gentle slope of bedrock and large boulders	dense *Ascophyllum nodosum*	LR.LLR.F.Asc.FS
I5	13.0	15.0	0.70	-0.60	bedrock slope	dense *Fucus serratus* with turf of *Cladophora rupestris*	LR.LLR.F.Fserr.FS
S1	15.0	18.5	-0.60	-2.40	boulders with patches of muddy sediment	*Furcellaria*/*Polyides*, *Ascidiella* spp. and *Chorda filum*	IR.LIR.Lag.ProtFur
S2	18.5	22.0	-2.40	-4.60	silty bedrock slope	*Saccharina* latissima forest with sparse understorey	IR.LIR.K.Lsac.Ft
S3	22.0	29.0	-4.60	-7.50	boulders and large cobbles (85%) with patches of muddy sand	*Saccharina* latissima park with ascidians	IR.LIR.K.Lsac.Pk
S4	29.0	34.0	-7.50	-11.20	steep bedrock slope	*Ascidiella aspersa* and *Nemertesia* spp.	CR.LCR.BrAs.AmenCio
S5	34.0	39.0	-11.20	-12.40	boulders (35%) and muddy sand	Sparse ascidians and hydroids on boulders	CR.LCR.BrAs.AmenCio SS.SSA.CMuSa

Table 4.1 continued

Zone	Tape distance (m)		Height above chart datum (m)		Substrate	Biogenic features of zone	Biotopes
	upper	lower	max	min			
S6	39.0	60.0	-12.40	-14.90	soft mud with shells and shell fragments at inshore end of zone	*Sagartiogeton laceratus* and sparse epifauna	SS.SMu.IFiMu.PhiVir
TRANSECT: EILEAN AN EIREANNICH E (LL09IR04, LL09SR04 & LL09SS04)							
I1	2.5	5.2	7.08	5.42	smooth sloping fissured bedrock	Supralittoral lichens dominated by *Parmelia* sp. and *Ramalina siliquosa*	LR.FLR.Lic.YG
I2	5.2	6.0	5.42	4.60	near-vertical fissured bedrock	*Verrucaria maura* with sparse *Pelvetia canaliculata*	LR.FLR.Lic.Ver.Ver
I3	6.0	6.6	4.60	4.02	near-vertical fissured bedrock	*Pelvetia canaliculata* with *Verrucaria maura* and *Hildenbrandia* spp.	LR.LLR.F.Pel
I4	6.6	7.0	4.02	3.68	near-vertical fissured bedrock	*Fucus spiralis* and *Verrucaria maura*	LR.LLR.F.Fspi.FS
I5	7.0	10.2	3.68	1.58	irregular stepped bedrock	Semibalanus balanoides/fucoid mosaic	LR.MLR.BF.FvesB
I6	10.2	13.0	1.58	0.60	uneven bedrock	dense *Fucus serratus* and *Ascophyllum nodosum*	LR.LLR.F.Fserr.FS
S1	13.0	14.0	0.60	-0.10	bedrock slope	*Laminaria digitata* with *Ascidiella aspersa*	IR.MIR.KR.Ldig.Ldig
S2	14.0	18.0	-0.10	-2.50	slope of bedrock and large boulders	cape-form *Laminaria hyperborea* forest	IR.LIR.K.LhypCape
S3	18.0	26.0	-2.50	-6.70	slope of silty boulders and bedrock with patches of muddy sand	*Saccharina latissima* forest with *Ascidiella aspersa*	IR.LIR.K.Lsac.Ft
S4	26.0	30.0	-6.70	-10.40	vertical bedrock cliff	dense *Ascidiella aspersa*	CR.LCR.BrAs.AmenCio
S5	30.0	34.0	-10.40	-12.10	silty bedrock outcrops and boulders and patches of muddy sand	dense *Ascidiella aspersa* with foliose algal turf	CR.LCR.BrAs.AmenCio
S6	34.0	100.0	-12.10	-19.30	muddy sand	seapens, *Amphiura* spp. and burrowing megafauna	SS.SMu.CFiMu.SpnMeg SS.SMu.CFiMu.SpnMeg.Fun
TRANSECT: EILEAN ARD S (LL09IR05, LL09SR05 & LL09SS05)							
I1	0.0	5.9	6.41	4.51	gently sloping fissured bedrock with small pools	supralittoral lichens dominated by *Xanthoria parietina* and *Verrucaria maura*	LR.FLR.Lic.YG, LR.FLR.Rkp

Table 4.1 continued

Zone	Tape distance (m)		Height above chart datum (m)		Substrate	Biogenic features of zone	Biotopes
	upper	lower	max	min			
I2	5.9	6.6	4.51	3.99	fissured bedrock with small pools	*Verrucaria maura* with patchy *Prasiola stipitata* and *Enteromorpha* rockpools	LR.FLR.Lic.Ver.Ver, LR.FLR.Rkp.G
I3	6.6	7.5	3.99	3.47	moderately sloping creviced bedrock with small pools	*Pelvetia canaliculata* and *Verrucaria maura*	LR.LLR.F.Pel, LR.FLR.Rkp
I4	7.5	8.4	3.47	3.16	moderately sloping creviced bedrock	dense *Fucus spiralis* with *Semibalanus balanoides* and *Patella vulgata*	LR.MLR.BF.FspiB
I5	8.4	11.5	3.16	1.83	uneven bedrock with steep faces, crevices and narrow platform	dense Fucus vesiculosus with Semibalanus balanoides and Patella vulgata	LR.LLR.F.Fves.FS
I6	11.5	14.0	1.83	0.60	irregular bedrock	dense *Fucus serratus* and *Semibalanus balanoides*	LR.LLR.F.Fserr.FS
S1	14.0	23.0	0.60	-5.70	silty bedrock slope	forest of cape-form Laminaria hyperborea	IR.LIR.K.LhypCape
S2	23.0	27.0	-5.70	-9.00	silty bedrock slope	*Saccharina latissima* forest with *Ascidiella aspersa*	IR.LIR.K.Lsac.Ft
S3	27.0	31.0	-9.00	-13.00	vertical rock wall	dense *Ascidiella aspersa* and algal crusts	CR.LCR.BrAs.AmenCio
S4	31.0	35.0	-13.00	-14.10	muddy shell gravel with rock outcrops	dense *Ascidiella aspersa* on rock and *Cerianthus lloydi* in sediment	CR.LCR.BrAs.AmenCio SS.SMX.CMx.ClloMx
S5	35.0	40.0	-14.10	-16.80	slope of bedrock outcrops with small sand pockets	dense ascidians and *Trailliella*	CR.LCR.BrAs.AmenCio
S6	40.0	70.0	-16.80	-21.60	muddy sand with shell gravel	*Cerianthus lloydii and Virgularia mirabilis* with sparse *Philine aperta*	SS.SMu.CSaMu.VirOph Pmax
S7	70.0	100.0	-21.60	-24.40	sandy mud with shell gravel	megafaunal burrows and sparse crustacean epifauna	SS.SMu.CFiMu.SpnMeg
TRANSECT: EILEAN ARD NE (LL09IR06, LL09SR06 & LL09SS06)							
I1	1.2	3.7	5.52	4.58	uneven bedrock ledge with small pools	supralittoral lichens dominated by *Xanthoria parietina, Ramalina siliquosa* and *Verrucaria maura*	LR.FLR.Lic.YG, LR.FLR.Rkp
I2	3.7	4.7	4.58	3.69	near-vertical fissured bedrock	*Verrucaria maura*	LR.FLR.Lic.Ver.Ver
I3	4.7	5.1	3.69	3.27	near-vertical fissured bedrock	Pelvetia canaliculata with Verrucaria maura and Hildenbrandia spp.	LR.LLR.F.Pel

Table 4.1 continued

Zone	Tape distance (m)		Height above chart datum (m)		Substrate	Biogenic features of zone	Biotopes
	upper	lower	max	min			
I4	5.1	5.8	3.27	2.61	near-vertical fissured bedrock	dense *Fucus spiralis* with *Semibalanus balanoides* and *Hildenbrandia* spp.	LR.MLR.BF.FspiB
I5	5.8	6.6	2.61	2.40	steep creviced bedrock with ledge	dense *Fucus vesiculosus* with *Semibalanus balanoides* and *Patella vulgata*	LR.LLR.F.Fves.FS
I6	6.6	8.0	2.40	1.00	near-vertical creviced bedrock	dense *Fucus serratus*, *Semibalanus balanoides* and foliose red algae	LR.MLR.BF.Fser.R
S1	8.0	9.0	1.00	0.00	near-vertical bedrock	narrow band of *Laminaria digitata* with *Semibalanus balanoides*	IR.MIR.KR.Ldig.Ldig
S2	9.0	18.0	0.00	-5.80	steep bedrock slope	grazed *Laminaria hyperborea* forest	IR.MIR.KR.Lhyp.GzFt
S3	18.0	21.0	-5.80	-8.30	steep bedrock slope	mixed *Laminaria hyperborea* and *Saccharina latissima* forest	IR.LIR.K.LhypLsac.Gz
S4	21.0	26.0	-8.30	-13.30	vertical rock wall	*Antedon bifida* and scattered ascidians on coralline crusts	CR.LCR.BrAs.AntAsH
S5	26.0	32.5	-13.30	-17.90	steep bedrock slope	*Antedon bifida* and scattered ascidians with patchy red algal turf on coralline crusts	CR.LCR.BrAs.AntAsH
S6	32.5	40.0	-17.90	-22.30	slope of shell gravel on rock ledge with rock outcrops	sparse sediment epifauna with rock biota similar to adjacent zones	SS.SCS.CCS CR.LCR.BrAs.AntAsH
S7	40.0	43.0	-22.30	-25.30	vertical rock wall	*Antedon bifida* patches and scattered ascidians on coralline crusts	CR.LCR.BrAs.AntAsH
S8	43.0	47.0	-25.30	-27.00	steep slope of coarse slightly silty shell gravel	sparse epifauna dominated by *Cerianthis lloydii*	SS.SCS.CCS
TRANSECT: EILEAN AN SITHEIN N (LL09IR07, LL09SR07)							
I1	0.0	6.0	15.81	13.11	uneven creviced laminar bedrock	supralittoral zone dominated by green encrusting lichens, *Verrucaria maura* and *Xanthoria parietina*	LR.FLR.Lic.YG
I2	6.0	12.0	13.11	7.31	steeply inclined creviced bedrock	*Verrucaria maura* and *Melaraphe neritoides*	LR.FLR.Lic.Ver.Ver
I3	12.0	15.0	7.31	5.19	gently sloping creviced bedrock	*Chthamalus montagui* with *Porphyra umbilicalis*	LR.HLR.MusB.Cht.Cht
I4	15.0	18.2	5.19	2.10	steeply inclined slightly uneven bedrock	dense *Semibalanus balanoides* with *Mytilus edulis*, *Patella vulgata* and filamentous red	LR.HLR.MusB.MytB, LR.FLR.Rkp.Cor.Cor

Table 4.1 continued

Zone	Tape distance (m)		Height above chart datum (m)		Substrate	Biogenic features of zone	Biotopes
	upper	lower	max	min			
						algae	
S1	18.2	21.5	2.10	0.90	bedrock slope with step	dense *Alaria esculenta* and *Semibalanus balanoides*	IR.HIR.KFaR.Ala.Myt
S2	21.5	24.0	0.90	-0.40	steep irregular bedrock slope	*Laminaria digitata* forest with dense *Semibalanus balanoides*	IR.MIR.KR.Ldig.Ldig
S3	24.0	47.0	-0.40	-14.20	steep irregular bedrock slope	*Laminaria hyperborea* forest with dense red algal understorey thinning with depth	IR.HIR.KFaR.LhypR.Ft, IR.MIR.KR.Lhyp.Ft
S4	47.0	52.0	-14.20	-17.40	steep irregular bedrock slope	*Laminaria hyperborea* park	IR.MIR.KR.Lhyp.Pk
S5	52.0	65.0	-17.40	-27.60	steep to vertical bedrock	coralline algal encrusted rock with sparse bryozoan turf and hydroids	CR.MCR.EcCr.FaAlCr
TRANSECT: BODHA DRUIM (LL09SR08)							
S1	-15.0	0.0	-4.30	-8.80	uneven bedrock with vertical walls, slopes and horizontal faces	*Laminaria hyperborea* forest with dense red algal understorey	IR.HIR.KFaR.LhypR.Ft
S2	0.0	10.0	-8.80	-17.40	near-vertical bedrock slope with ledge	*Laminaria hyperborea* park with an understorey of red and brown foliose algae and dense *Corynactis viridis*	IR.HIR.KFaR.LhypRVt
S3	10.0	15.0	-17.40	-21.50	near-vertical bedrock	dense *Corynactis viridis* with foliose algae and light *Scrupocellaria*/crisiid turf	CR.HCR.XFa.CvirCri
S4	15.0	20.0	-21.50	-26.20	near-vertical bedrock	dense *Corynactis viridis* and *Scrupocellaria*/crisiid turf	CR.HCR.XFa.CvirCri
TRANSECT: EILEAN DUBHA E (LL09IR10, LL09SR10 & LL09SS10,)							
I1	0.0	3.8	9.34	7.20	gently sloping bedrock	supralittoral lichens dominated by *Ramalina siliquosa* and *Verrucaria maura*	LR.FLR.Lic.YG
I2	3.8	6.3	7.20	4.85	uneven creviced near-vertical bedrock wall	*Verrucaria maura*	LR.FLR.Lic.Ver.Ver
I3	6.3	6.8	4.85	4.43	uneven creviced near-vertical bedrock wall	narrow band of *Chthamalus montagui* with *Verrucaria maura*	LR.HLR.MusB.Cht.Cht
I4	6.8	9.8	4.43	2.65	creviced bedrock with steep and shallow sloping faces and small pools	dense *Semibalanus balanoides* and *Patella vulgata*	LR.HLR.MusB.Sem.Sem LR.FLR.Rkp.Cor.Cor

Table 4.1 continued

Zone	Tape distance (m)		Height above chart datum (m)		Substrate	Biogenic features of zone	Biotopes
	upper	lower	max	min			
I5	9.8	11.8	2.65	1.25	steeply inclined creviced bedrock	dense *Semibalanus balanoides* and *Patella vulgata* with patches of *Fucus vesiculosus*	LR.MLR.BF.FvesB
S1	11.8	13.0	1.25	0.40	steep bedrock slope	*Laminaria digitata* and *Alaria esculenta* with dense *Semibalanus balanoides*	IR.HIR.KFaR.Ala.Ldig
S2	13.0	25.0	0.40	-8.60	steep bedrock slope	*Laminaria hyperborea* forest with sparse foliose red algae	IR.MIR.KR.Lhyp.GzFt
S3	25.0	29.0	-8.60	-12.60	near-vertical bedrock	*Laminaria hyperborea* park with sparse algal understorey	IR.MIR.KR.LhypVt
S4	29.0	32.0	-12.60	-15.30	near-vertical bedrock	algal encrusted rock with *Corynactis viridis*, ascidians and patchy turf of foliose algae	CR.MCR.EcCr
S5	32.0	40.5	-15.30	-23.80	vertical bedrock with overhang	algal encrusted rock with *Caryophyllia smithii* and overhang with *Corynactis viridis*	CR.MCR.EcCr.FaAlCr.Car IR.FIR.SG.CRSpAsAn
S6	40.5	60.0	-23.80	-28.60	muddy coarse shell sand and gravel	*Cerianthus lloydii* and burrowing megafauna	SS.SMx.CMx

Table 4.2 Profile data recorded along nine reef or combined reef/sediment transects and two intertidal sediment transects

Feature	Tape distance (m)	Height above chart datum (m)	Horizontal distance (m)
TRANSECT: EILEAN PORT A' CHOIT W (LL09IR01, LL09SR01 & LL09SS01)			
stake	0.0	5.7	0.00
zone I1/I2 boundary	5.1	4.3	4.85
zone I2/I3 boundary	5.4	4.0	4.85
zone I3/I4 boundary	6.7	3.3	5.98
zone I4/I5 boundary	7.6	2.9	6.76
trough	8.5	2.4	7.52
zone I5/I6 boundary	11.8	1.5	9.49
water's edge	13.3	0.7	10.79
zone I6/S1 boundary	13.5	0.5	10.99
zone S1/S2 boundary	17.0	-2.3	13.09
	25.0	-2.6	21.08
	30.0	-2.7	26.08
	35.0	-2.8	31.08
	40.0	-2.9	36.08
	45.0	-3.0	41.08
	50.0	-3.1	46.08
	55.0	-3.2	51.08
	60.0	-3.2	56.08
zone S2/S3 boundary	65.0	-3.2	61.08
	70.0	-3.5	66.07
	75.0	-3.6	71.07
	80.0	-3.7	76.07
	85.0	-3.8	81.07
	90.0	-3.8	86.07
	95.0	-3.9	91.06
	100.0	-4.0	96.06
	105.0	-4.1	101.06
	110.0	-4.1	106.06
	115.0	-4.2	111.06
end of transect	120.0	-4.3	116.06
TRANSECT: SRUTH MOR (LL09IR02 & LL09SR02)			
piton	0.0	4.6	0.00
zone I1/I2 boundary	0.6	4.4	0.53
zone I2/I3 boundary	1.1	3.9	0.71
zone I3/I4 boundary	2.1	3.8	1.65
zone I4/I5 boundary	2.9	3.4	2.35
zone I5/I6 boundary	6.4	1.5	5.36
water's edge	7.2	1.2	6.10
zone I6/S1 boundary	8.0	1.0	6.88
zone S1/S2 boundary	13.0	-1.6	11.15
end of transect	21.0	-1.6	19.15

Table 4.2 continued

Feature	Tape distance (m)	Height above chart datum (m)	Horizontal distance (m)
TRANSECT: ARDMORE (LL09IR03, LL09SR03 & LL09SS03)			
stake	0.0	6.7	0.00
upper zone I1 boundary	1.6	5.7	1.19
zone I1/I2 boundary	2.9	4.7	2.01
zone I2/I3 boundary	3.8	3.9	2.49
zone I3/I4 boundary	5.2	2.8	3.36
water's edge	9.6	1.5	7.56
zone I4/I5 boundary	13.0	0.7	10.87
zone I5/S1 boundary	15.0	-0.6	12.39
zone S1/S2 boundary	18.5	-2.4	15.39
zone S2/S3 boundary	22.0	-4.6	18.11
zone S3/S4 boundary	29.0	-7.5	24.48
zone S4/S5 boundary	34.0	-11.2	27.85
zone S5/S6 boundary	39.0	-12.4	32.70
	45.0	-12.9	38.68
	50.0	-13.5	43.64
	55.0	-14.1	48.61
end of transect	60.0	-14.9	53.54
TRANSECT: EILEAN AN EIREANNICH E (LL09IR04, LL09SR04 & LL09SS04)			
stake	0.0	8.0	0.00
upper zone I1 boundary	2.5	7.1	2.29
zone I1/I2 boundary	5.2	5.4	4.42
zone I2/I3 boundary	6.0	4.6	4.64
zone I3/I4 boundary	6.6	4.0	4.79
zone I4/I5 boundary	7.0	3.7	4.88
zone I5/I6 boundary	10.2	1.6	7.29
water's edge	12.0	0.9	8.98
zone I6/S1 boundary	13.0	0.6	9.96
zone S1/S2 boundary	14.0	-0.1	10.68
zone S2/S3 boundary	18.0	-2.5	13.88
zone S3/S4 boundary	26.0	-6.7	20.69
zone S4/S5 boundary	30.0	-10.4	22.21
zone S5/S6 boundary	34.0	-12.1	25.83
	40.0	-14.0	31.52
	45.0	-15.1	36.40
	85.0	-19.1	76.20
	90.0	-19.1	81.20
	95.0	-19.3	86.19
end of transect	100.0	-19.3	91.19

TRANSECT: EILEAN ARD S (LL09IR05, LL09SR05 & LL09SS05)			
stake	0.0	6.4	0.00
zone I1/I2 boundary	5.9	4.5	5.53
zone I2/I3 boundary	6.6	4.0	6.07
zone I3/I4 boundary	7.5	3.5	6.81
zone I4/I5 boundary	8.4	3.2	7.65
bottom of step	8.7	2.9	7.80

Table 4.2 continued

Feature	Tape distance (m)	Height above chart datum (m)	Horizontal distance (m)
bottom of platform	10.2	2.7	9.24
zone I5/I6 boundary	11.5	1.8	10.27
water's edge	12.0	1.8	10.77
zone I6/S1 boundary	14.0	0.6	12.37
zone S1/S2 boundary	23.0	-5.7	18.80
zone S2/S3 boundary	27.0	-9.0	21.06
zone S3/S4 boundary	31.0	-13.0	21.06
zone S4/S5 boundary	35.0	-14.1	24.90
zone S5/S6 boundary	40.0	-16.8	29.11
	45.0	-17.3	34.09
	50.0	-18.3	38.99
	55.0	-19.2	43.90
	60.0	-20.1	48.82
	65.0	-21.0	53.74
zone S6/S7 boundary	70.0	-21.6	58.70
	75.0	-22.4	63.64
	80.0	-22.9	68.62
	85.0	-23.5	73.58
	90.0	-23.8	78.57
	95.0	-24.2	83.55
end of transect	100.0	-24.4	88.55
TRANSECT: EILEAN ARD NE (LL09IR06, LL09SR06 & LL09SS06)			
stake	0.0	5.9	0.00
upper zone I1 boundary	1.2	5.5	1.13
top of steep slope	3.5	4.8	3.31
zone I1/I2 boundary	3.7	4.6	3.37
zone I2/I3 boundary	4.7	3.7	3.70
zone I3/I4 boundary	5.1	3.3	3.87
zone I4/I5 boundary	5.8	2.6	4.10
bottom of steep slope	5.9	2.5	4.14
zone I5/I6 boundary	6.6	2.4	4.83
water's edge	7.5	1.5	4.83
zone I6/S1 boundary	8.0	1.0	4.83
zone S1/S2 boundary	9.0	0.0	4.83
base of steep slope	10.5	-1.4	5.37
zone S2/S3 boundary	18.0	-5.8	11.44
zone S3/S4 boundary	21.0	-8.3	13.10
zone S4/S5 boundary	26.0	-13.3	13.10
zone S5/S6 boundary	32.5	-17.9	17.69
zone S6/S7 boundary	40.0	-22.3	23.77
zone S7/S8 boundary	43.0	-25.3	23.77
end of transect	47.0	-27.0	27.39
TRANSECT: EILEAN AN SITHEIN N (LL09IR07, LL09SR07)			
pitons	0.0	15.8	0.00
crest	0.6	16.0	0.58
zone I1/I2 boundary	6.0	13.1	5.16
zone I2/I3 boundary	12.0	7.3	6.69
piton	12.4	7.0	6.98

Table 4.2 continued

Feature	Tape distance (m)	Height above chart datum (m)	Horizontal distance (m)
zone I3/I4 boundary	15.0	5.2	8.82
zone I4/S1 boundary	18.2	2.1	9.65
bottom of steep slope	18.9	1.4	10.35
water's edge	20.0	1.3	11.44
zone S1/S2 boundary	21.5	0.9	12.89
zone S2/S3 boundary	24.0	-0.4	15.03
	30.0	-3.9	19.90
	35.0	-5.3	24.70
	40.0	-8.1	28.84
	45.0	-11.8	32.20
zone S3/S4 boundary	47.0	-14.2	34.20
zone S4/S5 boundary	52.0	-17.4	38.05
	60.0	-23.3	43.45
end of transect	65.0	-27.6	46.00
TRANSECT: BODHA DRUIM (LL09SR08)			
start of transect	-15.0	-4.3	-14.30
zone S1/S2 boundary	0.0	-8.8	0.01
start of wall	2.0	-9.3	1.95
base of wall	4.5	-14.1	4.45
edge of shelf	8.0	-14.5	7.92
zone S2/S3 boundary	10.0	-17.4	9.92
zone S3/S4 boundary	15.0	-21.5	12.78
end of transect	20.0	-26.2	14.49
TRANSECT: EILEAN DUBHA E (LL09IR10, LL09SR10, LL09SS10)			
stake	0.0	9.3	0.00
top of cliff	3.1	7.9	2.73
zone I1/I2 boundary	3.8	7.2	2.90
zone I2/I3 boundary	6.3	4.9	3.75
zone I3/I4 boundary	6.8	4.4	4.03
piton	7.3	4.0	4.33
lower edge of platform	8.3	3.8	5.29
zone I4/I5 boundary	9.8	2.7	6.30
water's edge	11.4	1.6	7.51
zone I5/S1 boundary	11.8	1.3	7.71
zone S1/S2 boundary	13.0	0.4	8.55
	20.0	-5.5	12.32
zone S2/S3 boundary	25.0	-8.6	16.24
zone S3/S4 boundary	29.0	-12.6	16.24
zone S4/S5 boundary	32.0	-15.3	17.55
overhang	34.6	-17.9	17.55
zone S5/S6 boundary	40.5	-23.8	17.58
	50.0	-25.5	26.93
end of transect	60.0	-28.6	36.44
TRANSECT: TRAIGH BAD NA BAIGHE E (LL09IS01)			
stake	0.0	4.9	0.00
zone I1/I2 boundary	13.6	3.5	13.53
zone I2/I3 boundary	15.0	3.4	14.92
zone I3/I4 boundary	17.2	3.1	17.11

Table 4.2 continued

Feature	Tape distance (m)	Height above chart datum (m)	Horizontal distance (m)
zone I4/I5 boundary	20.8	3.0	20.67
station 5	139.6	2.4	139.51
zone I5/I6 boundary	239.6	2.1	239.51
station 6	253.6	2.0	253.51
end of transect	299.6	1.7	299.51
TRANSECT: TRAIGH BAD NA BAIGHE W (LL09IS02)			
piton	-4.3	5.1	-4.23
stake	0.0	4.3	0.00
upper zone 1 boundary	6.9	3.6	6.86
station 1	9.2	3.4	9.18
zone 1/2 boundary	11.3	3.3	11.26
station 2	13.0	3.3	12.95
zone 2/3 boundary	15.1	3.2	15.05
station 3	22.0	3.2	21.95
zone 3/4 boundary	27.0	3.1	26.95
station 4	156.0	2.9	155.95
zone 4/5 boundary	265.0	2.4	264.95
station 5	306.0	2.1	305.95
end of transect	347.0	2.0	346.95

Table 4.3 SACFOR abundance records for species recorded in zones during the MNCR phase 2 survey of the transect at Eilean Port a' Choit W (LL09IR01, LL09SR01, LL09SS01)

Taxa	Zone								
	I1	**I2**	**I3**	**I4**	**I5**	**I6**	**S1**	**S2**	**S3**
Halichondria panicea						R			
Dynamena pumila					R	R			
Chaetopterus variopedatus									P
Chone infundibuliformis									P
Myxicola sarsii									P
Sabella pavonina								P	
Spirorbidae spp.						C			
Semibalanus balanoides			R	R	C(A)	O			
Paguridae sp.								P	
Pagurus bernhardus								P	P
Galathea sp.								P	
Macropodia sp.									F
Liocarcinus depurator									F
Carcinus maenas			P			P	P	F(C)	F(C)
Anurida maritima			P						
Polyplacophora spp.								P	
Patella vulgata					C				
Gibbula cineraria								P[4]	P
Littorina mariae					P	P			
Littorina obtusata					P	P			
Littorina saxatilis			P						
Buccinum undatum									P
Aequipecten opercularis								P	P[4]
Pecten maximus								P	P
Alcyonidium gelatinosum					R				
Alcyonidium hirsutum					R	R			
Flustrellidra hispida					R	R			
Electra pilosa						R			
Scrupocellaria sp.							P		
Henricia sanguinolenta								P	
Asterias rubens								F	F
Echinus esculentus								P	
Corella parallelogramma									P[6]
Ascidiella aspersa							C(A)	O	P[6]
Ascidiella scabra							P		
Ascidia mentula									P
Dendrodoa grossularia								P	
Botryllus schlosseri									P
Scyliorhinus canicula									P

Table 4.3 continued

Taxa	Zone								
	I1	**I2**	**I3**	**I4**	**I5**	**I6**	**S1**	**S2**	**S3**
Gadus morhua									P
Pollachius pollachius								P	
Pollachius virens							P		
Trisopterus minutus								P	
Spinachia spinachia								P	
Syngnathus acus								P	P
Ctenolabrus rupestris									P
Pholis gunnellus							P		
Gobiusculus flavescens							P	P	
Pomatoschistus minutus									P
Anaptychia fusca	R								
Lichina confinis		R							
Ochrolechia parella	R								
Parmelia sp.	R								
Ramalina siliquosa	C								
Tephromela atra	R	R							
Verrucaria maura	O	A	C						
Verrucaria mucosa			R	F					
Xanthoria parietina	F	R							
encrusting green & black lichen	R								
thick green encrust. lichen	R								
encrusting grey lichen	F								
Bryophyta sp.	R								
Armeria maritima	R								
Graminae spp.	O								
Audouinella floridula					R				
Trailliella intricata							S	A	S
Gelidium pusillum				O	C				
Hildenbrandia sp.			C	F	R	R			
Corallinaceae (indet. pink crust)					R	F	C		
Phyllophora crispa							C		
Mastocarpus stellatus						R			
Chondrus crispus						R			
Cystoclonium purpureum						R		O	O
Ceramium nodulosum						R			
Plumaria plumosa						O			
Delesseria sanguinea							F		
Membranoptera alata						F			
Polysiphonia lanosa					F	R			
Polysiphonia stricta						O			
Ectocarpaceae sp.							P[4]		P[4]
Pilayella littoralis						R			

Table 4.3 continued

Taxa	Zone								
	I1	**I2**	**I3**	**I4**	**I5**	**I6**	**S1**	**S2**	**S3**
Elachista fucicola					R	R			
Sphacelaria sp.					R				
Sphacelaria fusca						R			
Asperococcus sp.									O
Chorda filum								C	A
Laminaria sp. (juvenile)						R			
Laminaria saccharina							C	A	C
Ascophyllum nodosum				R	S	O			
Fucus serratus					R	S			
Fucus spiralis			O	O					
Fucus vesiculosus				A	R				
Pelvetia canaliculata			A	R					
Ulva compressa					R	R			
Ulva lactuca						R			
Cladophora sp.					R				
Cladophora rupestris				O	F(A)	S			

() locally

[1] in pools

[2] in crevices

[3] on kelp stipes

[4] on kelp fronds

[5] unattached

Table 4.4 SACFOR abundance records for species recorded in zones during the MNCR phase 2 survey of the transect at Sruth Mor (LL09IR02, LL09SR02). See Table 4.3 for key to symbols

Taxa	Zone							
	I1	**I2**	**I3**	**I4**	**I5**	**I6**	**S1**	**S2**
Halichondria panicea					R	R		R
Myxilla sp.?								P
Haliclona viscosa?								P
Hydrozoa sp.								P[3]
Tubularia sp.								P
Clava multicornis					R	R		
Dynamena pumila					R	O		
Laomedea flexuosa					P			
Obelia sp.								P[3]
Alcyonium digitatum								O
Metridium senile					P(C)	F	A	
Metridium senile (dwarf form)								C(A)
Polychaeta sp.						P		
Pomatoceros spp.								R
Spirorbidae spp.						R		
Prostigmata sp.	P							
Semibalanus balanoides			R	C	A	O	O(A)	
Balanus crenatus								R
Hyas sp.								P
Cancer pagurus						P		P
Carcinus maenas					P	P		
Anurida maritima				P				
Patella vulgata				F	C			
Littorina littorea				P	P			
Littorina mariae					P	P		
Littorina obtusata				P	P	P		
Littorina saxatilis		P	P	P				
Nucella lapillus					F	C		
Polycera quadrilineata								P
Mytilus edulis				R	R			
Dosinia sp.								P
Crisiidae spp.								P
Alcyonidium sp.								P[3]
Alcyonidium hirsutum					R	R		
Flustrellidra hispida					R	O		
Umbonula littoralis								R
Escharoides coccinea								R
Scruparia sp.								P
Eucratea loricata								S
Membranipora membranacea								R[4]
Electra pilosa						R		
Henricia sanguinolenta						P		
Asterias rubens								C
Marthasterias glacialis								P
Ascidiella sp.								C

Table 4.4 continued

Taxa	Zone							
	I1	**I2**	**I3**	**I4**	**I5**	**I6**	**S1**	**S2**
Botryllus schlosseri								P
Pholis gunnellus								P
Caloplaca spp.	R	R						
Verrucaria maura	F	A	F	P				
Verrucaria mucosa			R	F				
Xanthoria parietina	C	R						
green lichen	R							
grey-green lichen indet.	F							
Rhodophyceae (red crusts)								C
Palmaria palmata								P[3]
Dilsea carnosa								P
Callophyllis laciniata								P
Hildenbrandia sp.			O	F	R	R		
Corallinaceae (indet. pink crust)					R			A
Mastocarpus stellatus					R	R		
Plocamium cartilagineum								P
Ptilota gunneri								P[3]
Cryptopleura ramosa							P	
Delesseria sanguinea								P
Membranoptera alata						R		P[3]
Phycodrys rubens							P	P
Odonthalia dentata								P
Polysiphonia lanosa					O	P		
Elachista fucicola						R		
Laminaria digitata							P	
Laminaria hyperborea							A	A
Ascophyllum nodosum					F	F		
Fucus serratus					R	A		
Fucus spiralis			R	A				
Fucus vesiculosus					A	R		
Pelvetia canaliculata		R	A	O				
Ulva compressa					R	O		
Ulva lactuca						R		
Prasiola stipitata	P							
Rosenvingiella radicans	P							
Cladophora sp.							P	R
Bryopsis plumosa							P	
Foliose algae							F	O

Table 4.5 SACFOR abundance records for species recorded in zones during the MNCR phase 2 survey of the transect at Ardmore (LL09IR03, LL09SR03, LL09SS03). See Table 4.3 for key to symbols

Taxa	Zone										
	I1	**I2**	**I3**	**I4**	**I5**	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**
Leucosolenia sp.				P							
Suberites sp.								P			
Suberites carnosus									R		
Clione celata								P			
Hydrozoa spp.								P			
Hydractinia echinata								P			
Halecium halecinum									R		
Halecium halecinum?										R	
Kirchenpaueria pinnata									R	P	
Nemertesia antennina									C		
Nemertesia ramosa									C	O	
Dynamena pumila				O							
Virgularia mirabilis											P
Sagartiogeton laceratus											F(C)
Pomatoceros spp.										R	
Protula/Serpula spp.								P			
Spirorbidae spp.				R	R						
Balanomorpha sp.									R		
Semibalanus balanoides			R	C							
Balanus balanus										R	
Balanus crenatus										R	
Ligia oceanica			P								
Pagurus bernhardus								P	P	P	O(F)
Hyas sp.										P	P
Macropodia sp.								P	P		
Liocarcinus depurator											P
Carcinus maenas				P		P		F	P	P	F
Anurida maritima			P								
Polyplacophora spp.							P				
Lepidochitona cinerea				P							
Tonicella sp.								P			
Patella vulgata				C							
Littorina littorea			C	F							
Littorina mariae				F							
Littorina obtusata				P							
Littorina saxatilis				P							
Nucella lapillus				P							
Buccinum undatum									P		
Mytilus edulis				R							
Chlamys varia var. *nivea*								P			
Aequipecten opercularis											P
Pecten maximus										P	
Anomiidae spp.										P	
Scrupocellaria sp.										R	
Asterias rubens						P	P	P		P	

Table 4.5 continued

Taxa	Zone										
	I1	**I2**	**I3**	**I4**	**I5**	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**
Ophiura albida							P				
Echinus esculentus						P	P				P
Ascidiella spp.						C(A)		C(A)		P	
Ascidiella aspersa							C		C(F)		
Ascidia mentula								P			
Ascidia virginea									P		
Botryllus schlosseri								P			
Pomatoschistus minutus											(C)
Pleuronectes sp.											P
Anaptychia fusca	R										
Caloplaca spp.		R									
Lichina confinis		O	O								
Ochrolechia parella	R										
Parmelia omphalodes	R										
Ramalina siliquosa	R										
Tephromela atra	R										
Verrucaria maura		C	C								
Verrucaria mucosa				R							
Xanthoria parietina	R	R									
grey-green lichen indet.		P									
encrusting grey lichen	R										
Graminae spp.	R										
Gelidium pusillum				C							
Hildenbrandia sp.			R	R							
Corallinaceae (indet. pink crust)				P			C	O		O	
Chondrus crispus				P	O						
Polyides rotundus					O						
Polyides/Furcellaria sp.						C					
Ceramium sp.				R							
Delesseria sanguinea							P	P	P		
Membranoptera alata				P							
Phycodrys rubens										O	
Polysiphonia lanosa				F							
Phaeophyceae sp.								C			
Asperococcus sp.								O			
Chorda filum						C		P			
Laminaria saccharina						P	A(C)	C			
Ascophyllum nodosum				S							
Fucus serratus				P	S						
Fucus spiralis			R								
Fucus vesiculosus			R	R							
Pelvetia canaliculata			F								
Halidrys siliquosa						P					
Cladophora rupestris				C	S						
Cladophora sericea				P							
Foliose algae									O		

Table 4.6 SACFOR abundance records for species recorded in zones during the MNCR phase 2 survey of the transect at Eilean an Eireannaich E (LL09IR04, LL09SR04, LL09SS04). See Table 4.3 for key to symbols

						Zone						
Taxa	**I1**	**I2**	**I3**	**I4**	**I5**	**I6**	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**
Suberites carnosus											P	
Halichondria panicea						R						
Hydractinia echinata												P
Halecium halecinum										(O)		
Kirchenpaueria pinnata										O		
Nemertesia antennina												P
Nemertesia ramosa												P
Polyplumaria frutescens?											P	
Dynamena pumila						R						
Funiculina quadrangularis												P
Virgularia mirabilis												P
Pennatula phosphorea												F(C)
Cerianthus lloydii												F(C)
Actinia equina					F							
Metridium senile												P
Sagartiogeton laceratus												(O)
Caryophyllia smithii									P		F	
Pomatoceros spp.							C			C	P	
Spirorbidae spp.						R			P[4]			
Polychaete/amphipod tube turf										A		
Semibalanus balanoides			R	R	A	F	R					
Balanus crenatus											R	
Ligia oceanica		P										
Nephrops norvegicus												P
Pagurus bernhardus												P
Munida rugosa										F	F	P
Inachus sp.												P
Macropodia sp.									P			
Cancer pagurus						P	P		P	P	P	
Liocarcinus depurator											P	P
Necora puber											P	
Carcinus maenas						P						
Anurida maritima				P	P							
Patella vulgata			F	F	C							
Calliostoma zizyphinum										P		
Lacuna vincta									P[4]			
Littorina littorea			P	P	P							
Littorina mariae					P	P						
Littorina obtusata				P	P	P						

Table 4.6 continued

						Zone						
Taxa	**I1**	**I2**	**I3**	**I4**	**I5**	**I6**	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**
Littorina saxatilis		(F)	P		F							
Nucella lapillus					F	F						
Mytilus edulis					R							
Aequipecten opercularis									P			
Alcyonidium hirsutum						R						
Flustrellidra hispida					R	R						
Parasmittina trispinosa										R		
Membranipora membranacea									P[4]			
Electra pilosa						R						
Scrupocellaria reptans									P[4]			
Bugula sp.										P		
Porania pulvillus										P		
Asterias rubens							P		P	P	P	F
Marthasterias glacialis										P		
Amphiura spp.												A
Echinus esculentus									P			
Clavelina lepadiformis										P		
Diplosoma listerianum									P[4]			
Corella parallelogramma											P	
Ascidiella aspersa							A	A	C(A)	S	A	
Ascidiella scabra?								P				
Ascidia mentula									P	P		
Botryllus schlosseri										P		
Triglidae sp.												P
Callionymus lyra											P	
Pomatoschistus minutus												P
Thorogobius ephippiatus								P		P		
Pleuronectiformes sp.												P
Caloplaca spp.		R										
Lichina confinis		R										
Ochrolechia parella	R											
Parmelia sp.	F											
Ramalina siliquosa	O											
Tephromela atra	R											
Verrucaria sp.					O							
Verrucaria maura		S	A	C								
Verrucaria mucosa			R	O								
Xanthoria parietina		R										
encrusting green & black lichen	R											
encrusting grey lichen	O											
Calluna vulgaris	P											
Graminae spp.	O											

Table 4.6 continued

						Zone						
Taxa	**I1**	**I2**	**I3**	**I4**	**I5**	**I6**	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**
Rhodophyceae (red crusts)						R				A		
Bonnemaisonia asparagoides?											P	
Trailliella intricata											P	
Gelidium pusillum					R	C						
Hildenbrandia sp.			C	R	R							
Corallinaceae (indet. pink crust)					R	O	S		C	A		
Mastocarpus stellatus						F						
Delesseria sanguinea									P		P	
Membranoptera alata						R						
Polysiphonia lanosa					O	C						
Polysiphonia stricta					R							
Ectocarpaceae sp.									P[4]			
Desmarestia aculeata									A			
Asperococcus sp.									O			
Chorda filum									F			
Laminaria digitata							A					
Laminaria hyperborea								C				
Laminaria saccharina								P	C(A)		P[5]	
Ascophyllum nodosum					O	C						
Fucus serratus						C						
Fucus spiralis				F								
Fucus vesiculosus					F	R						
Pelvetia canaliculata		R	A	O								
Ulva compressa						R						
Ulva lactuca						R						
Cladophora rupestris					P	R						
Foliose algae									A		A	

Table 4.7 SACFOR abundance records for species recorded in zones during the MNCR phase 2 survey of the transect at Eilean Ard S (LL09IR05, LL09SR05, LL09SS05). See Table 4.3 for key to symbols

Taxa	Zone												
	I1	**I2**	**I3**	**I4**	**I5**	**I6**	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**	**S7**
Halichondria panicea						R							
Eudendrium sp.									R				
Kirchenpaueria pinnata									R		R		
Dynamena pumila					R	R							
Sertularella sp.									R				
Alcyonium digitatum							P[3]		O				
Virgularia mirabilis												F(C)	
Cerianthus lloydii										C		A	P
Actinia equina					F								
Sagartia elegans							(F)		P		P		
Caryophyllia smithii								P	O		O(F)		
Eupolymnia nebulosa											P		
Hydroides sp.									O				
Salmacina/Filograna sp.							P						
Spirorbidae spp.						R							
Chthamalus montagui			R										
Semibalanus balanoides			R	C	C	A							
Balanus crenatus							R(F)	R	R				
Ligia oceanica			P										
Pagurus bernhardus										C		F	O(F)
Munida rugosa (burrows)												P	F
Hyas sp.												P	
Inachus sp.												(C)	P
Macropodia sp.													P
Liocarcinus depurator												P	O
Necora puber							P	P	P		P		
Carcinus maenas						P							
Anurida maritima			P										
Lepidochitona cinerea					P								
Patella vulgata				F	C	F							
Gibbula cineraria							P[4]						
Calliostoma zizyphinum							P[4]	P	P				
Lacuna vincta							P[4]						
Littorina mariae					P	P							
Littorina obtusata				O	F	P							
Littorina saxatilis		P	P										
Nucella lapillus					F	F							
Philine aperta												R	
Mytilus edulis					R								

Table 4.7 continued

Taxa	Zone												
	I1	**I2**	**I3**	**I4**	**I5**	**I6**	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**	**S7**
Pecten maximus													P
Thracia phaseolina												P	
Crisia eburnea							P^3		O				
Alcyonidium hirsutum						R							
Flustrellidra hispida					R	R							
Membranipora membranacea							P^4						
Electra pilosa						R							
Scrupocellaria reptans							P^4, P^3		P				
Scrupocellaria scruposa									P				
Antedon bifida								P					
Astropecten irregularis												P	P
Crossaster papposus												P	
Asterias rubens									P			P	P
Ophiura albida											P		
Ophiura ophiura?												P	
Echinus esculentus							F	P	F		F		
Clavelina lepadiformis									P		P		
Polyclinidae sp.							P^3						
Ciona intestinalis									P		P		
Corella parallelogramma											F		
Ascidiella aspersa							P^4, P^3	C(F)	C(F)	C	C		
Ascidiella scabra							P^4, P^3						
Ascidia mentula											F		
Botryllus schlosseri							P^3		R				
Taurulus bubalis								P					
Pholis gunnellus								P				P	
Callionymus lyra										P		P	
Ramalina siliquosa	R												
Tephromela atra	R												
Verrucaria maura	F	C	A	O									
Verrucaria mucosa			R										
Xanthoria parietina	F	R											
green lichens indet.	R												
light green lichens indet.	R												
bright green lichens indet.	R												
grey lichens indet.	O												
Bryophyta sp.	R												
Calluna vulgaris	R												
Graminae spp.	R												
Rhodophyceae (red crusts)							A	C	A		A		

Table 4.7 continued

Taxa	Zone												
	I1	**I2**	**I3**	**I4**	**I5**	**I6**	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**	**S7**
Trailliella intricata											S		
Callophyllis laciniata							P, P[3]	P					
Hildenbrandia sp.		R	R	C	P								
Corallinaceae (indet. pink crust)					F	O	F	C	C		C		
Erythrodermis traillii									O				
Mastocarpus stellatus					F	O							
Plocamium cartilagineum							O						
Delesseria sanguinea							O	P			R		
Membranoptera alata						R							
Phycodrys rubens									P				
Heterosiphonia plumosa							O		O				
Heterosiphonia japonica											O	F[5]	
Polysiphonia lanosa					R								
Polysiphonia stricta					R	O							
Ectocarpaceae sp.							P[4]						
Elachista fucicola						R							
Dictyota dichotoma							F, P[3]	F	O	P	O		
Laminaria hyperborea							A(C)						
Laminaria saccharina								A			R		
Saccorhiza polyschides							C						
Ascophyllum nodosum					R								
Fucus serratus					O	S							
Fucus spiralis				S									
Fucus vesiculosus					S								
Pelvetia canaliculata		R	C	R									
Ulva compressa					R	O							
Ulva intestinalis		P[1]											
Ulva lactuca					R								
Prasiola stipitata	R	O											
Cladophora rupestris					R								
Filamentous green alga							P[3]						
Beggiatoa sp.										P			
Toxisarcon alba												P	

Table 4.8 SACFOR abundance records for species recorded in zones during the MNCR phase 2 survey of the transect at Eilean Ard NE (LL09IR06, LL09SR06, LL09SS06). See Table 4.3 for key to symbols

Taxa	Zone													
	I1	**I2**	**I3**	**I4**	**I5**	**I6**	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**	**S7**	**S8**
Guancha lacunosa													P	
Halichondria panicea						R	R							
Stauromedusae sp.								P[4]						
Hydrozoa spp.							O							
Halecium halecinum										O			O	
Nemertesia antennina													P	
Dynamena pumila					O	O								
Alcyonium digitatum								O		R	R			
Swiftia pallida														P
Cerianthus lloydii														F
Actinia equina				F	C									
Urticina eques										P				
Sagartia elegans													P	
Caryophyllia smithii										F	F(C)		F	
Pomatoceros spp.											P		C	
Protula tubularia													P	
Salmacina/Filograna sp.								P						
Semibalanus balanoides			R	C	A	A	C							
Balanus crenatus								R	R		P		F	
Patella vulgata				O	F									
Gibbula cineraria								P[4]					P	
Calliostoma zizyphinum								P4						
Lacuna vincta								P[4]						
Littorina mariae				P	P	P								
Littorina obtusata				O	P									
Littorina saxatilis		O	F											
Aporrhais pespelecani													P	
Nucella lapillus					C	F								
Polycera faeroensis													P	
Anomiidae spp.													F	
Neocrania anomala													(C)	
Alcyonidium sp.							P							
Alcyonidium diaphanum													P	
Alcyonidium hirsutum						R								
Flustrellidra hispida					R	R								
Parasmittina trispinosa								R		R	R		R	
Membranipora membranacea								A[4]						
Securiflustra securifrons													P	
Scrupocellaria/Crisia spp.								O		O			O	

Table 4.8 continued

Taxa	Zone													
	I1	**I2**	**I3**	**I4**	**I5**	**I6**	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**	**S7**	**S8**
Antedon bifida										C	F		(A)	
Porania pulvillus										P			P	
Marthasterias glacialis								P						
Echinus esculentus								F(C)		C	F(C)		P	
Clavelina lepadiformis										P	R			
Ciona intestinalis										P	P		P	
Corella parallelogramma													P	
Ascidiella sp.										(C)				
Ascidiella aspersa											P			
Ascidia mentula											O(F)		F(C)	
Ascidia virginea											P		F(C)	
Botryllus schlosseri								R		P				
Thorogobius ephippiatus										P				
Ochrolechia parella	R													
Ramalina siliquosa	F	R												
Tephromela atra	R													
Verrucaria maura	O	S	C	R										
Xanthoria parietina	F	R												
encrusting green & black lichen	O													
grey-green lichen indet.	R													
grey lichens indet.	R													
Bryophyta sp.	O													
Armeria maritima	R													
Rhodophyceae (red crusts)								F	F	C	F		C	
Audouinella purpurea				O	R									
Bonnemaisonia asparagoides										P	C			
Trailliella intricata											(S)			
Palmaria palmata						A								
Callophyllis laciniata								P		O	O	P		
Hildenbrandia sp.				A										
Hildenbrandia rubra			C											
Corallinaceae (indet. pink crust)					R			A	A	A	A		A	
Mastocarpus stellatus					O									
Plocamium cartilagineum									P					
Lomentaria articulata						O								
Ceramium sp.								P[4]						
Plumaria plumosa						O								
Ptilota gunneri								P[3]						
Cryptopleura ramosa								P[3]						
Delesseria sanguinea											P	P		
Membranoptera alata						R	F							
Phycodrys rubens								P[3]	P					

Table 4.8 continued

Taxa	Zone													
	I1	**I2**	**I3**	**I4**	**I5**	**I6**	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**	**S7**	**S8**
Ectocarpaceae sp.								P[4]						
Elachista fucicola					R									
Dictyota dichotoma								P	O		O	P		
Desmarestia aculeata								F	F					
Laminaria digitata							A							
Laminaria hyperborea								A	C(A)					
Laminaria saccharina									A		P			
Fucus serratus						A	P							
Fucus spiralis				A										
Fucus vesiculosus					S									
Pelvetia canaliculata			A											
Ulva compressa					O	R								
Foliose algae								O				O		
Toxisarcon alba														P

Table 4.9 SACFOR abundance records for species recorded in zones during the MNCR phase 2 survey of the transect at Eilean an t-Sithein N (LL09IR07, LL09SR07). See Table 4.3 for key to symbols

Taxa	Zone								
	I1	**I2**	**I3**	**I4**	**S1**	**S2**	**S3**	**S4**	**S5**
Nemertesia antennina									F
Abietinaria abietina							P	R	
Obelia sp.?							P		
Obelia geniculata							P[4]		
Alcyonium digitatum							O		R
Actinia equina				C					
Urticina sp.									P
Metridium senile (dwarf form)					O				
Sagartia elegans				P[1]	P	P			
Corynactis viridis									R
Caryophyllia smithii									P
Pomatoceros spp.								C	F(O)
Salmacina/Filograna sp.							O		
Chthamalus montagui			C						
Chthamalus stellatus			P						
Semibalanus balanoides				S	A	A			
Balanus crenatus									R
Ligia oceanica		P							
Cancer pagurus							P		
Necora puber							P		
Patella vulgata			F	C					
Patella spp.					F				
Helcion pellucidum							P[4]		
Calliostoma zizyphinum							P	P	P
Lacuna vincta							P[4]		
Littorina neglecta			P						
Littorina saxatilis		(F)	F						
Melarhaphe neritoides		C							
Trivia sp.									P
Nucella lapillus				R					
Aplysia punctata							O	P	
Polycera faeroensis							P		P
Mytilus edulis				F	O				
Crisiidae spp.									O(F)
Alcyonidium diaphanum									C(F)
Parasmittina trispinosa							R	R	R
Securiflustra securifrons									R
Scrupocellaria sp.							O(S)		
Scrupocellaria/Crisia spp.								O	

Table 4.9 continued

Taxa	Zone								
	I1	**I2**	**I3**	**I4**	**S1**	**S2**	**S3**	**S4**	**S5**
Bugula sp.							P		
Bugula flabellata									O
Antedon bifida									P
Luidia ciliaris									P
Porania pulvillus							P		F
Crossaster papposus									P
Henricia sanguinolenta						P	P		
Stichastrella rosea									P
Asterias rubens						C	F	C	C
Marthasterias glacialis						P	P	P	
Echinus esculentus							F(C)	F(C)	F(C)
Pawsonia saxicola							P		
Polyclinidae sp.							P		
Diplosoma listerianum							P		
Lissoclinum perforatum							P		
Ascidia virginea									P
Botryllus schlosseri						O	R		
Ramalina siliquosa	R								
Tephromela atra	O								
Verrucaria maura	C	S	F						
Xanthoria parietina	O								
encrusting green lichen	C								
Rhodophyceae (red crusts)							P		A
Porphyra umbilicalis			A	R	R				
Bonnemaisonia asparagoides								P	P
Callophyllis laciniata							P	P	P
Hildenbrandia sp.			R						
Corallinaceae (indet. pink crust)				P[1]	R	S	P	A	
Corallina officinalis				O, P[1]					
Mastocarpus stellatus				R[1]	R				
Mastocarpus stellatus (petrocelis)					R				
Aglaothamnion sepositum				F(C)	R				
Callithamnion tetragonum							P[4]		
Ceramium shuttleworthianum				R					
Cryptopleura ramosa							P		
Delesseria sanguinea							P		
Membranoptera alata							P		
Phycodrys rubens							P	P	P
Odonthalia dentata							P		
Foliose red algae						O	C	F	O
Phaeophyceae (indet. brown crust)							P		
Ectocarpus fasciculatus					R				

Table 4.9 continued

Taxa	Zone								
	I1	**I2**	**I3**	**I4**	**S1**	**S2**	**S3**	**S4**	**S5**
Hincksia granulosa					F				
Hincksia hincksiae					R				
Dictyota dichotoma							P	P	P
Desmarestia ligulata							P		
Petalonia fascia?					R				
Laminaria digitata					P	S			
Laminaria hyperborea							A	C	
Alaria esculenta				P[1]	A				

Table 4.10 SACFOR abundance records for species recorded in zones during the MNCR phase 2 survey of the transect at Bodha Druim (LL09SR08). See Table 4.3 for key to symbols

Taxa	Zone			
	S1	**S2**	**S3**	**S4**
Halichondria panicea	P[3]			
Tubularia larynx				P
Abietinaria abietina		P		P
Obelia geniculata	A[4]	P[4]		
Alcyonium digitatum	O(A)	F(S)		
Urticina felina		P		P
Metridium senile (dwarf form)	F			
Sagartia elegans	P			P
Corynactis viridis		C	C	C
Pomatoceros spp.			C	P
Salmacina/Filograna sp.		P		
Balanus crenatus			O	C
Helcion pellucidum	P[4]			
Calliostoma zizyphinum	P	R		
Lacuna vincta		P[4]		
Trivia sp.			P	O
Aplysia punctata		P	P	
Polycera faeroensis			O	(O)
Anomiidae spp.				P
bryozoan turf		P		
Crisidia cornuta			R	P
Crisia eburnea			R	P
Alcyonidium diaphanum			P	
Parasmittina trispinosa	R			O
Membranipora membranacea	C[4]	P[4]		
Electra pilosa	(S)			
Flustra foliacea				F(S)
Securiflustra securifrons				F
Scrupocellaria reptans		P	O	C
Scrupocellaria/Crisia spp.	O			
Bugula sp.				R
Antedon bifida			P	P
Luidia ciliaris				P
Porania pulvillus		P	F	P
Henricia sanguinolenta	F	P		
Asterias rubens	P			P
Marthasterias glacialis		P	P	P
Echinus esculentus	P	F	P	P
Lissoclinum perforatum	P			
Botryllus schlosseri	R	P		
Bonnemaisonia asparagoides		P	P	
Trailliella intricata?		P		
Callophyllis laciniata		P	P	
Corallinaceae (indet. pink crust)	C	O	A	C

Table 4.10 continued

Taxa	Zone			
	S1	**S2**	**S3**	**S4**
Plocamium cartilagineum			P	
Callithamnion tetragonum	F[4]			
Ptilota gunneri	P[3]			
Delesseria sanguinea	P			
Phycodrys rubens	P		P	
Odonthalia dentata	P			
Foliose red algae	S			R
Dictyota dichotoma		P	P	
Desmarestia viridis		P		
Laminaria hyperborea	A	C		
Foliose algae		C	C	

Table 4.11 SACFOR abundance records for species recorded in zones during the MNCR phase 2 survey of the transect at Eilean Dubha NE (LL09IR10, LL09SR10, LL09SS10). See Table 4.3 for key to symbols

Taxa	Zone										
	I1	**I2**	**I3**	**I4**	**I5**	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**
Clathrina coriacea							P				
Suberites sp.											P
Clione celata										P	
Halichondria panicea					R		P[3]				
Esperiopsis fucorum?										R	
Halecium halecinum								O	O	R(O)	
Kirchenpaueria pinnata									R	R	
Abietinaria abietina							R				
Alcyonium digitatum							R	P	R	O	
Cerianthus lloydii											F
Actinia equina				F, C[1]	C						
Urticina sp.							(A)				
Metridium senile										(F)	
Sagartia elegans							P		P		
Corynactis viridis									F	S	
Caryophyllia smithii									P	F(C)	
Chaetopterus variopedatus											P
Pomatoceros spp.							(A)			C	
Polychaete/amphipod tube turf							P				
Prostigmata sp.		P									
Chthamalus montagui			F	R							
Semibalanus balanoides			R	S, F[1]	S	S					
Balanus crenatus							R	R	O	O	
Pagurus bernhardus											P
Munida rugosa										P	
Munida rugosa (burrows)											O
Inachus sp.											P
Cancer pagurus							P				
Liocarcinus depurator											P
Necora puber										P	
Patella vulgata			F	C, A[1]	C	F					
Helcion pellucidum							P[4]				
Gibbula cineraria							P[4]				
Calliostoma zizyphinum							P, P[4]	P			
Lacuna vincta							F[4]				
Littorina mariae					P						
Littorina neglecta				P	P						
Littorina saxatilis		(A)	P	P							
Trivia monacha							P				
Nucella lapillus				C	C						

Table 4.11 continued

Taxa	Zone										
	I1	**I2**	**I3**	**I4**	**I5**	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**
Polycera faeroensis										P	
Polycera sp.									P		
Mytilus edulis				R	O						
Pecten maximus											P
Anomiidae spp.										P	
Parasmittina trispinosa									R	R	
Membranipora membranacea							C[4]				
Electra pilosa							P				
Scrupocellaria/Crisia spp.							O			O	
Antedon bifida							P		P	F	
Astropecten irregularis											P
Porania pulvillus							P				
Crossaster papposus										P	
Henricia sanguinolenta							P			P	
Asterias rubens										P	
Marthasterias glacialis							F	P			
Ophiocomina nigra										P	
Ophiura albida											P
Echinus esculentus							P	F(C)	P	C	
Polyclinidae sp.							P				
Diplosoma listerianum							P				
Corella parallelogramma										P	
Ascidia mentula									F	F	
Botryllus schlosseri							P, P[3]				
Myoxocephalus scorpius											P
Gobiidae sp.				P[1]							
Caloplaca spp.		R									
Lichina confinis		R									
Ochrolechia parella	R										
Parmelia sp.	R										
Ramalina siliquosa	F										
Tephromela atra	R										
Verrucaria maura	F	S	A								
Verrucaria mucosa			R								
Xanthoria parietina	R	R									
encrusting green & black lichen	R										
Bryophyta sp.	R										
Armeria maritima	R										
Graminae spp.	O										
Rhodophyceae (red crusts)							C	F	C	A	
Porphyra umbilicalis					O						
Audouinella daviesii							P				

Table 4.11 continued

Taxa	Zone										
	I1	**I2**	**I3**	**I4**	**I5**	**S1**	**S2**	**S3**	**S4**	**S5**	**S6**
Bonnemaisonia asparagoides								O	O		
Trailliella intricata								F			
Palmaria palmata							P^3				
Callocolax neglectus							P				
Callophyllis laciniata							P, P^3	P	P		
Hildenbrandia sp.		P	P	R							
Corallinaceae (indet. pink crust)				S^1			A	A	A	C(A)	
Mastocarpus stellatus					R						
Plocamium cartilagineum							P, P^3				
Aglaothamnion sepositum					R						
Callithamnion tetragonum							P^4				
Ceramium nodulosum							P				
Ceramium shuttleworthianum					O						
Ptilota gunneri							P^3				
Cryptopleura ramosa							P, P^3				
Delesseria sanguinea							P^3				
Membranoptera alata							P^3				
Haraldiophyllum bonnemaisonii							P, P^3				
Phycodrys rubens							P^3		P		
Polysiphonia brodiei					R						
Polysiphonia brodiei?							P				
Foliose red algae							O(F)				
Ectocarpaceae sp.							P^4				
Ectocarpus fasciculatus							P^3				
Hincksia hincksiae					R						
Elachista fucicola					R						
Dictyota dichotoma							P^3	F	F		
Desmarestia viridis							P^3				
Laminaria digitata						A					
Laminaria hyperborea							A	C			
Alaria esculenta						C(A)					
Fucus vesiculosus					C						
Pelvetia canaliculata			R								
Ulva intestinalis				O^1	R						
Cladophora sp.?					R						
Bryopsis plumosa				P^1							
Foliose algae								F	C		

Table 4.12 Species recorded by algal census along two maerl transects (LL09ML01, LL09ML04) and within specific zones along four sublittoral reef transects (LL09SR05, LL09SR06, LL09SR08, LL09SR10). Species are recorded as present (P), or the substrate on which they were found is given: A (algae), M (live or dead maerl), R (rock, including stones), S (shell), Z (animals)

Species	Transect	ML01	ML04	SR05	SR06	SR08	SR10
	Zone			**2**	**5**	**1**	**4**
	Biotope	Pcal.R	Pcal.R	Lsac.Ft	AntAsH	LhypR.Ft	EcCr
Rhodophyceae (red crusts)			S	R	R	R	R
Stylonema alsidii		A		A			
Erythrotrichia bertholdii				A			
Erythrotrichia carnea		A	A		A		A
Porphyropsis coccinea			A				
Audouinella daviesii			AM	A			
Audouinella floridula		RM					
Audouinella saviana		AM					
Audouinella secundata?					A		
Scinaia turgida			S				
Atractophora hypnoides?		M					
Bonnemaisonia asparagoides			PM	P	P		P
Trailliella intricata		A	AM	P	P	A	A
Dilsea carnosa		P					
Callophyllis laciniata			S	A	P	P	P
Kallymenia reniformis						P	
Peyssonnelia sp.		SR					
Corallinaceae (indet. pink crust)		R		R	R	R	R
Lithothamnion glaciale		R					
Lithothamnion sonderi?		R					
Phymatolithon calcareum		P	P				
Phyllophora crispa		R					
Phyllophora pseudoceranoides		P					
Chondrus crispus		R					
Polyides rotundus		R	S				
Plocamium cartilagineum		P	S	A		P	P
Furcellaria lumbricalis		R					
Halarachnion ligulatum			M				
Calliblepharis jubata		R					
Cystoclonium purpureum		P					
Rhodophyllis divaricata		R	M	A	P	P	P
Cordylecladia erecta		RM					
Chylocladia verticillata		A					
Lomentaria articulata				A			
Lomentaria clavellosa				A			
Ceramiaceae sp.		A		P			
Antithamnion densum			A		A		A
Aglaothamnion sp.		A					

Table 4.12 continued

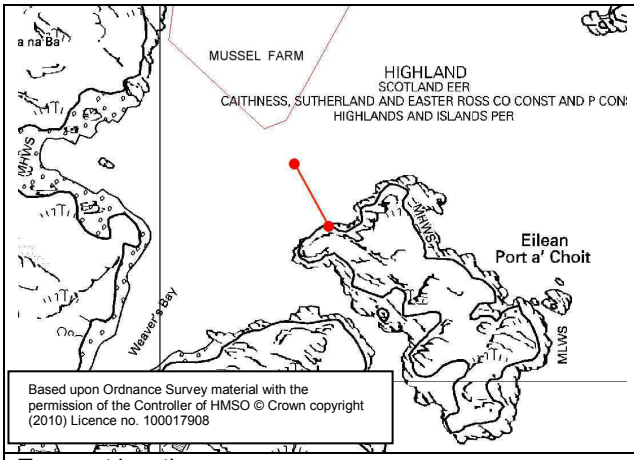
Species	Transect	ML01	ML04	SR05	SR06	SR08	SR10
	Zone			2	5	1	4
Aglaothamnion bipinnatum			A	A		Z	
Aglaothamnion bipinnatum?							P
Aglaothamnion byssoides			A				
Callithamnion tetragonum					P	A	
Ceramium sp.			SM		A		
Ceramium nodulosum?		A					
Ceramium shuttleworthianum							A
Compsothamnion thuyoides			M	A	A		A
Plumaria plumosa		AR					
Pterothamnion crispum?							P
Pterothamnion plumula			MS	A			
Ptilota gunneri						A	
Sphondylothamnion multifidum							P
Acrosorium venulosum			M				
Cryptopleura ramosa						P	P
Delesseria sanguinea		P		P	P	P	
Membranoptera alata		P		A		A	
Haraldiophyllum bonnemaisonii		P				A	
Nitophyllum punctatum				P			
Phycodrys rubens			S	P	A	A	P
Erythroglossum laciniatum							P
Heterosiphonia plumosa		P	A	P			
Heterosiphonia japonica		A		A			A
Brongniartella byssoides		P	M	A	A		
Odonthalia dentata						P	
Polysiphonia elongata?		S					A
Polysiphonia elongella				P			
Polysiphonia elongella?					P		
Polysiphonia fucoides		R					
Polysiphonia stricta			AM			A	
Pterosiphonia parasitica		A	M	A	A	A	P
Rhodomela confervoides		P		P	P		
Phaeophyceae (indet. brown crust)		M				P	
Phaeophyceae sp.		S					
Ectocarpus fasciculatus		A		A	P		P
Ectocarpus fasciculatus?				P			
Ectocarpus siliculosus		A					
Hincksia? sp.		A					
Pilayella littoralis		A					
Hecatonema maculans		A					
Elachista stellaris?		A					
Stilophora? sp.		AM					

Table 4.12 continued

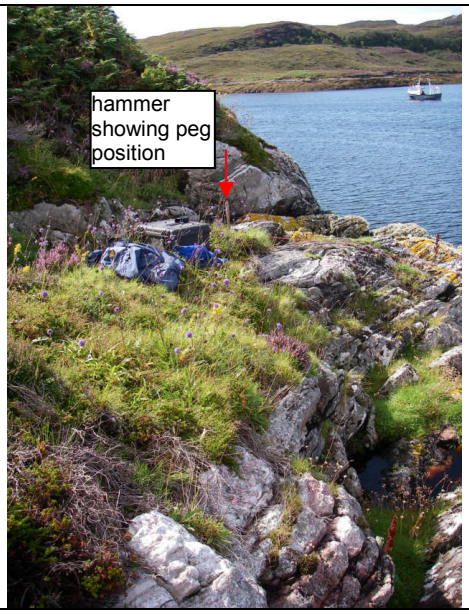
Species	Transect	ML01	ML04	SR05	SR06	SR08	SR10
	Zone			**2**	**5**	**1**	**4**
Cutleria multifida		AM					
Cutleria multifida (*Aglaozonia*)			SM				
Sphacelaria cirrosa		A	A	A	A		A
Sphacelaria plumula		S		A	A		
Sphacelaria radicans?		M					
Dictyota dichotoma		P	PM	RA	P		P
Desmarestia aculeata		P	P		P		
Myriotrichia? sp.		A					
Asperococcus fistulosus		A					
Asperococcus bullosus		R					
Chorda filum		R					
Laminaria sp. (juvenile)							P
Laminaria hyperborea		R				R	
Saccharina latissima		R	P	P	R		
Halidrys siliquosa		R					
Uronema? sp.		PAM					
Acrochaete sp.		A					
Syncoryne reinkei?		A					
Ulvella/Pringsheimiella sp.		A					
Ulva sp.		M					
Ulva lactuca		P					
Acrosiphonia arcta							P
Chaetomorpha ligustica		A		P			
Cladophora sp.		R	SM				
Filamentous green alga				A			
Schizonema sp.		A					
Calothrix confervicola		A					
Lyngbya infixa		A					
Lyngbya sp.		P					
filamentous blue-green alga				P			
Number of species		**71**	**31**	**35**	**24**	**20**	**25**

Appendix 5 Transect relocation sheets

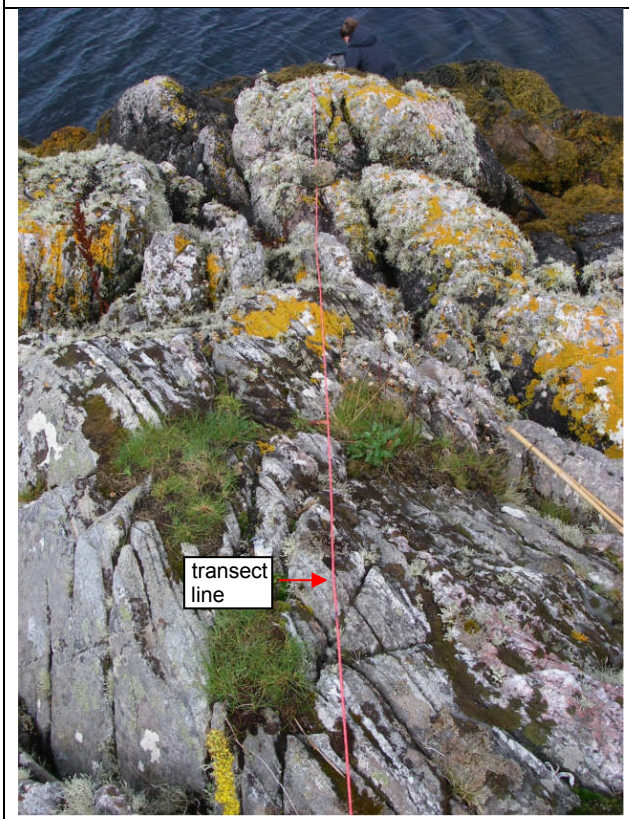
Transect name	Eilean Port a' Choit W
Site code	LL09IR01, LL09SR01, LL09SS01
Position of marker	58.38603°N 5.05897°W
Type of marker	wooden peg 25 mm square c. 15 cm proud of grass
Bearing of transect from top (°M)	335
Position of offshore transect end	58.38690°N 5.05998°W
Access	by boat



Transect location

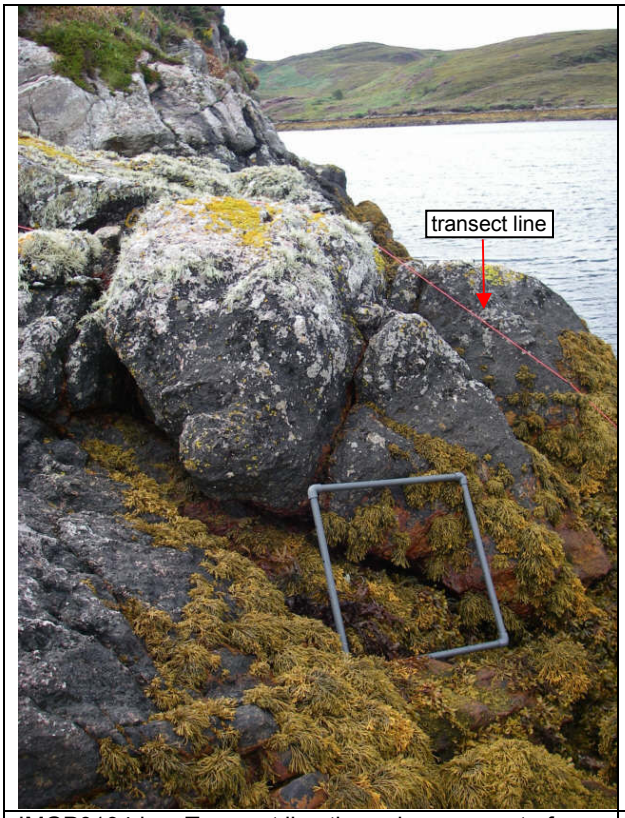


IMGP0197.jpg Towards piton from 58.38605°N 5.05887°W, 263°M



IMGP0194.jpg Down transect line from 58.38603°N 5.05897°W, 335°M

IMGP0198.jpg Towards piton from 58.38603°N 5.05910°W, 99°M



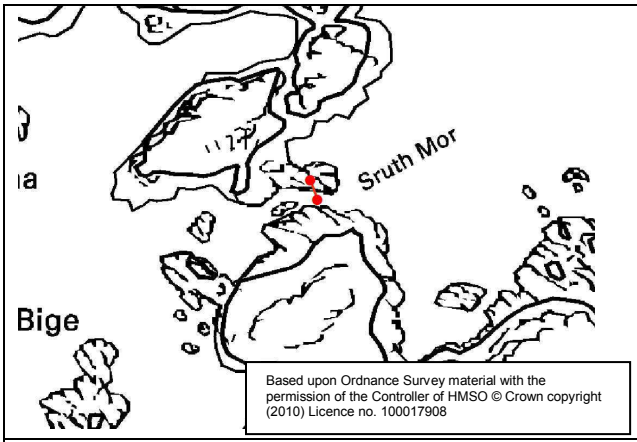
IMGP0194.jpg Transect line through upper part of transect

IMGP0183.jpg Transect line through middle part of transect

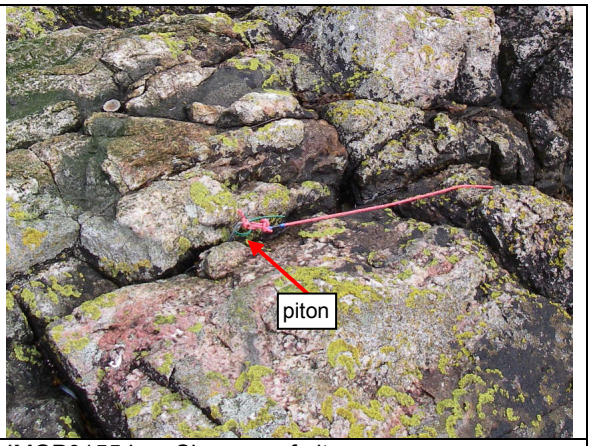
IMGP0174.jpg Transect line through lower part of transect (zone I5)

IMGP0174.jpg Close-up of marker peg

Transect name	Sruth Mor
Site code	LL09IR02, LL09SR02
Position of marker	58.39093 °N 5.06872 °W
Type of marker	galvanised piton in rock crevice
Bearing of transect from top (°M)	160
Position of offshore transect end	58.39078°N 5.06860°W
Access	by boat



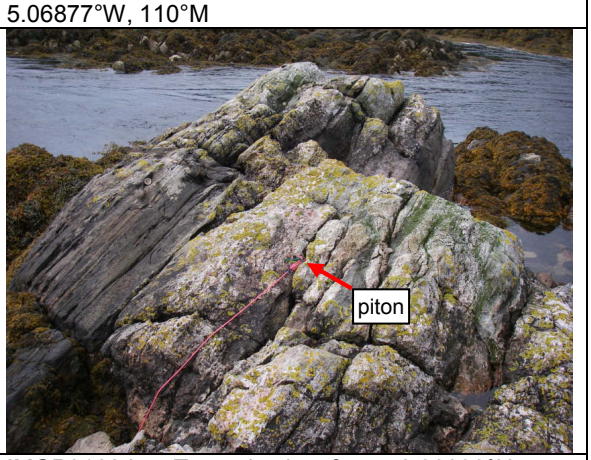
Transect location



IMGP0155.jpg Close-up of piton

IMGP0159.jpg View down transect line from 58.39093 °N 5.06872 °W, 160°M

IMGP0161 Towards piton from 58.39093°N 5.06877°W, 110°M



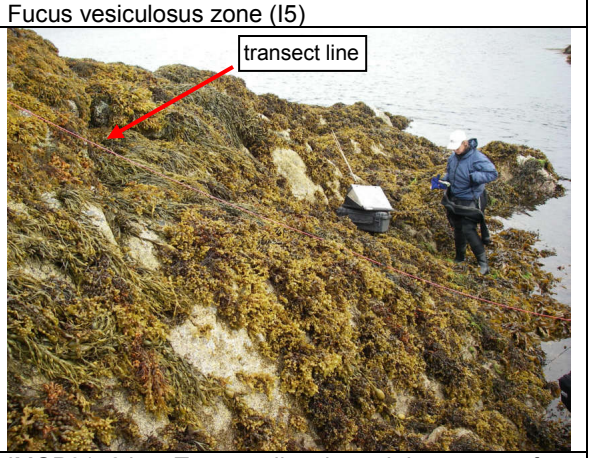
IMGP0162.jpg Towards piton from 58.39093°N 5.06867°W, 301°M

IMGP0151.jpg Transect line through *Verrucaria* zone (I2)

IMGP0149.jpg Transect line through *Pelvetia* zone (I3)

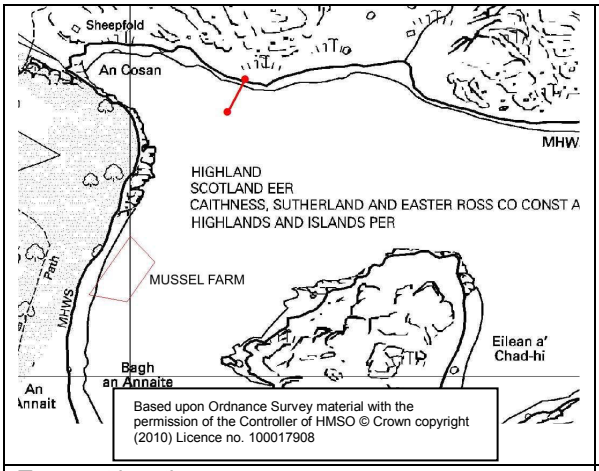
IMGP0130.jpg Transect line through *Fucus serratus* zone (I6)

IMGP0134.jpg Transect line through upper part of Fucus vesiculosus zone (I5)

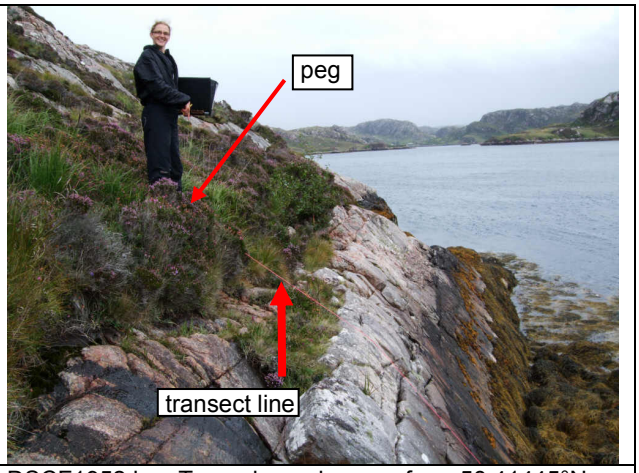


IMGP0142.jpg Transect line through lower part of transect

Transect name	Ardmore
Site code	LL09IR03, LL09SR03, LL09SS03
Position of marker	58.41443°N 5.06327°W
Type of marker	wooden peg 25 mm square amongst heather
Additional marker	piton in rock crevice, 2.3 m on tape, 58.41443°N 5.06325°W
Bearing of transect from top (°M)	204
Position of offshore transect end	58.41400°N 5.06365°W
Access	by boat

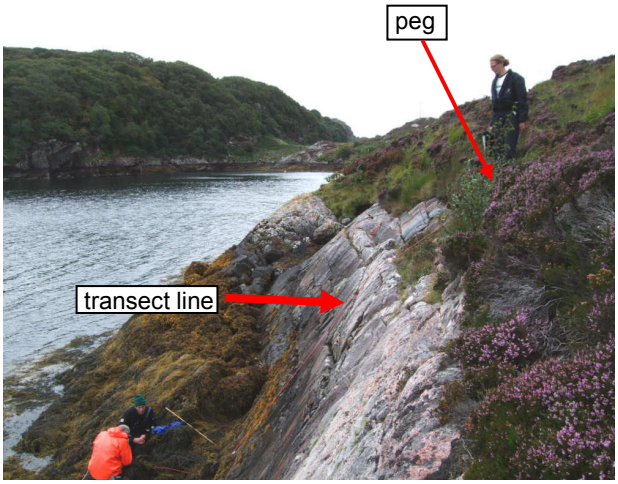


Transect location



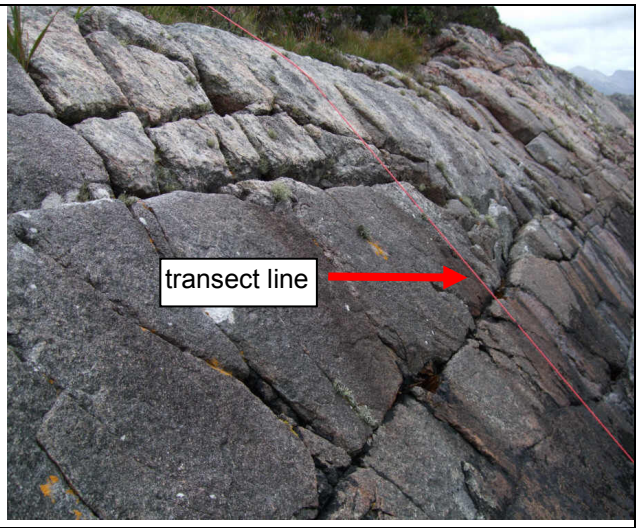
DSCF1952.jpg Towards marker peg from 58.41445°N 5.06337°W, 145°M

DSCF1943.jpg Down transect from 58.41443°N 5.06327°W, 204°M.



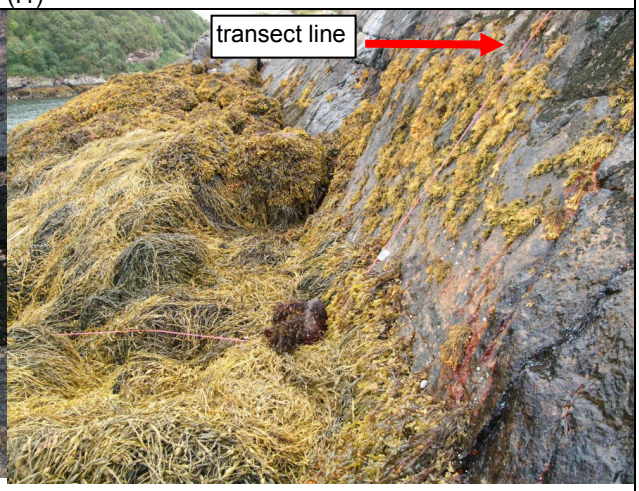
DSCF1953.jpg Towards piton from 58.41442°N 5.06313°W, 298°M

DSCF1955.jpg Close-up of marker peg



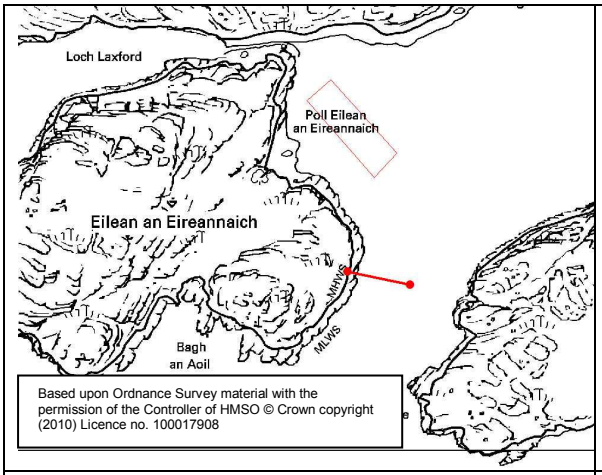
DSCF1951.jpg Transect line through supralittoral zone (l1)

DSCF1951.jpg Transect line through *Verrucaria* (l2) and *Pelvetia* (l3) zones

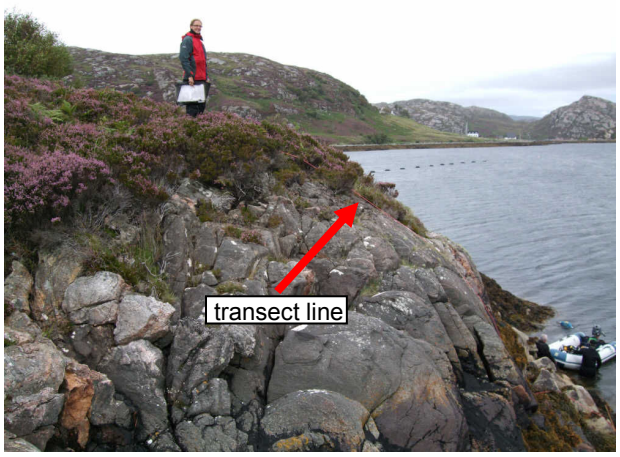


DSCF1942.jpg Transect line through *Pelvetia* (l3) and *Ascophyllum* (l4) zones

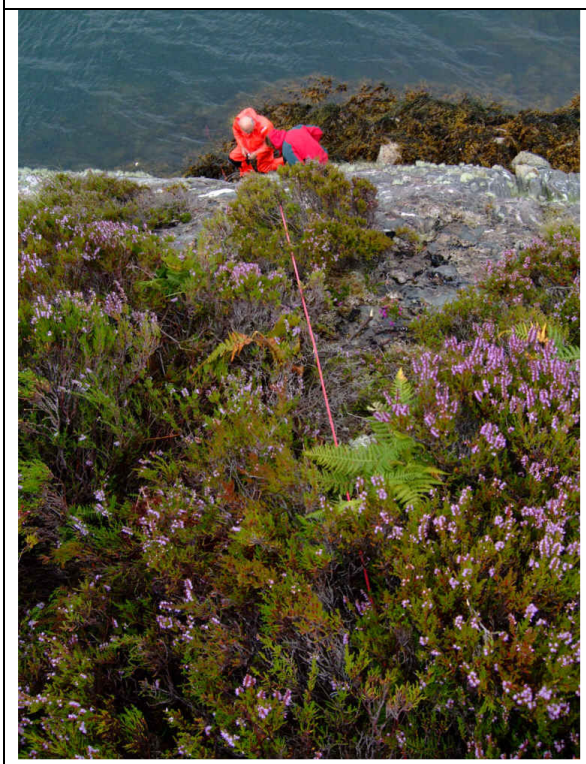
Transect name	Eilean an Eireannaich E
Site code	LL09IR04, LL09SR04, LL09SS04
Position of marker	58.40398°N 5.07325°W
Type of marker	wooden peg 25 mm square amongst heather
Additional marker	piton in rock crevice, 3.75 m on tape, 58.40395°N 5.07322°W
Bearing of transect from top (°M)	108
Position of offshore transect end	58.40383°N 5.07153°W
Access	by boat



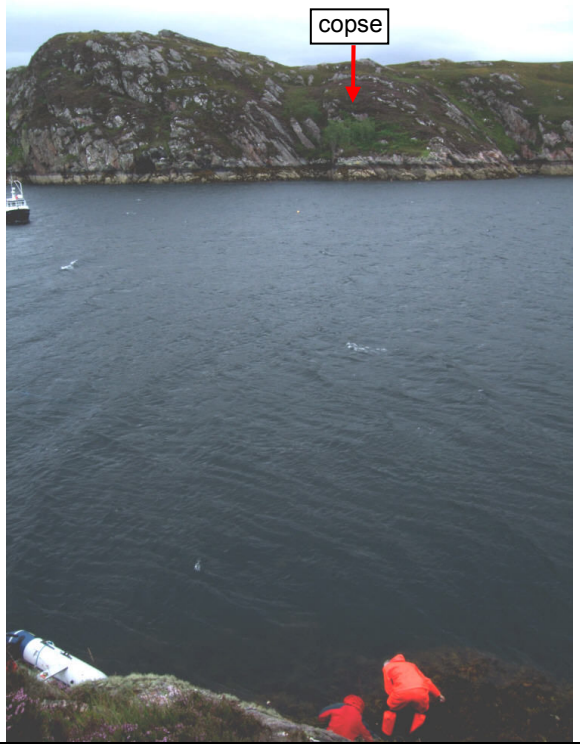
Transect location



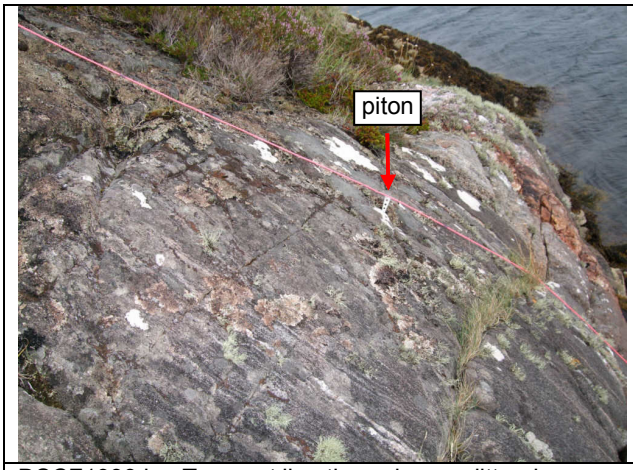
DSCF1931.jpg Towards marker peg (at surveyor's feet) from 58.40395°N 5.07322°W, 10°M



DSCF1922.jpg Down transect from 58.40398°N 5.07325°W, 108°M.

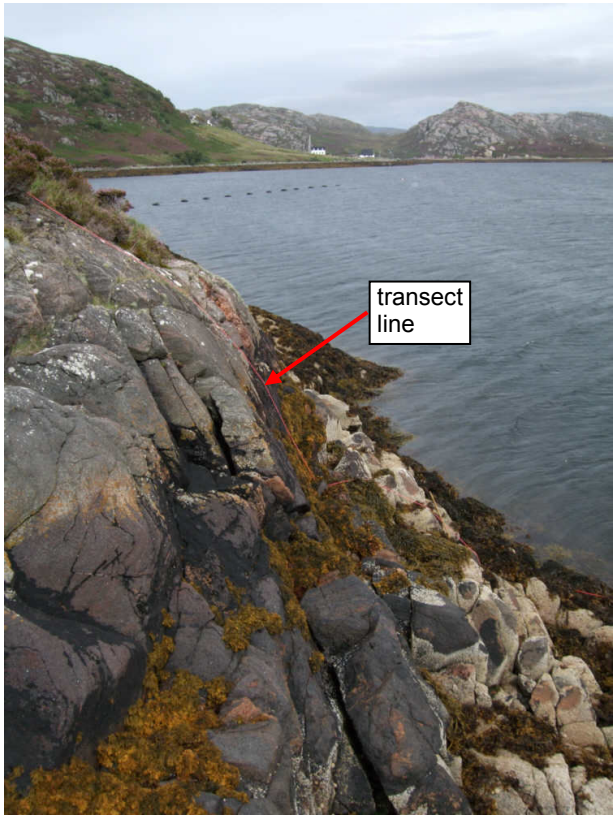


DSCF1924.jpg Copse on opposite shore is target for the transect line

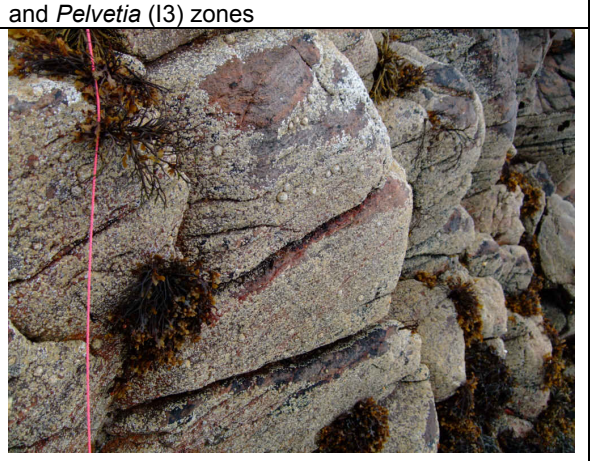


DSCF1933.jpg Transect line through supralittoral zone (I1) showing additional marker piton

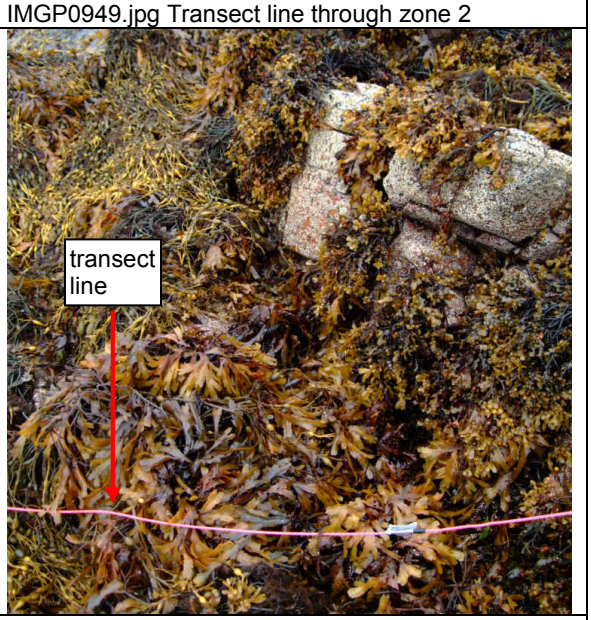
DSCF1916.jpg Transect line through *Verrucaria* (I2) and *Pelvetia* (I3) zones



DSCF1932.jpg Transect line down transect

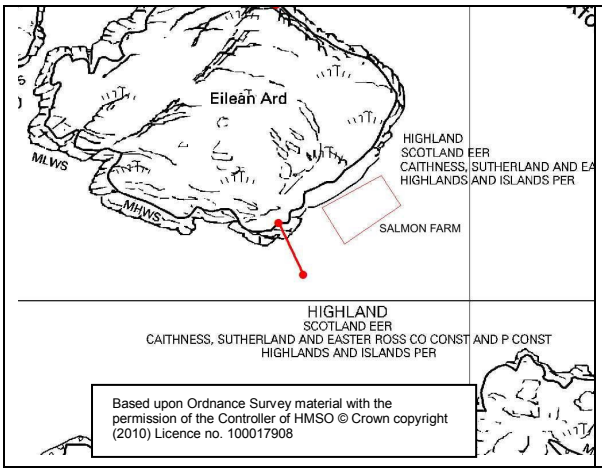


IMGP0949.jpg Transect line through zone 2

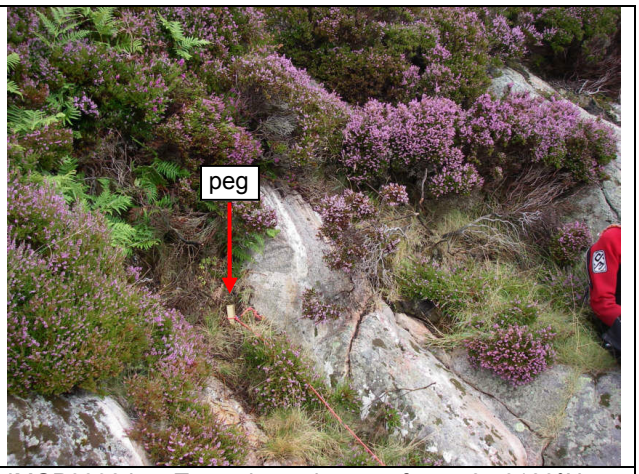


DSCF1896.jpg Transect line through upper part of *Fucus serratus* zone (I6)

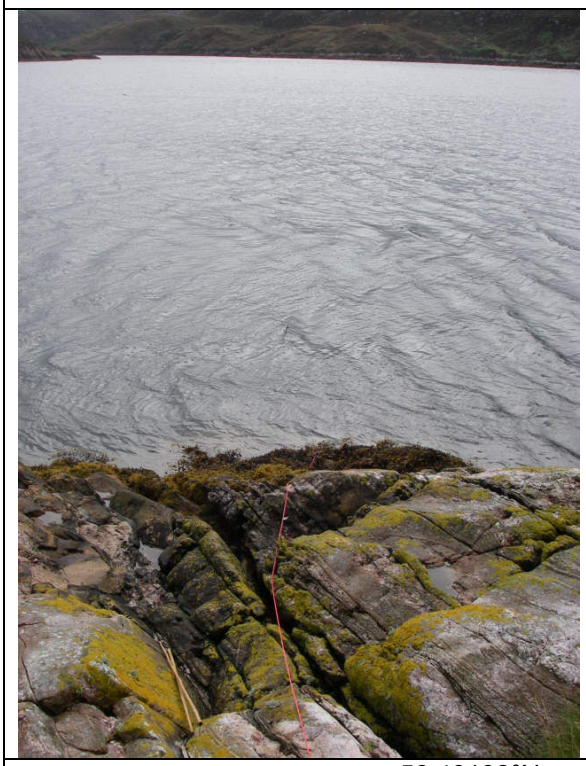
Transect name	Eilean Ard S
Site code	LL09IR05, LL09SR05, LL09SS05
Position of marker	58.40182°N 5.10462°W
Type of marker	wooden peg 25 mm square in grass at base of heather slope
Bearing of transect from top (°M)	160
Position of offshore transect end	58.40108°N 5.10385°W
Access	by boat



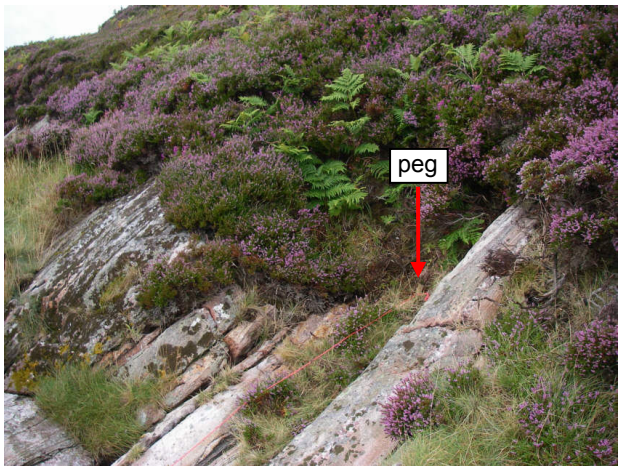
Transect location



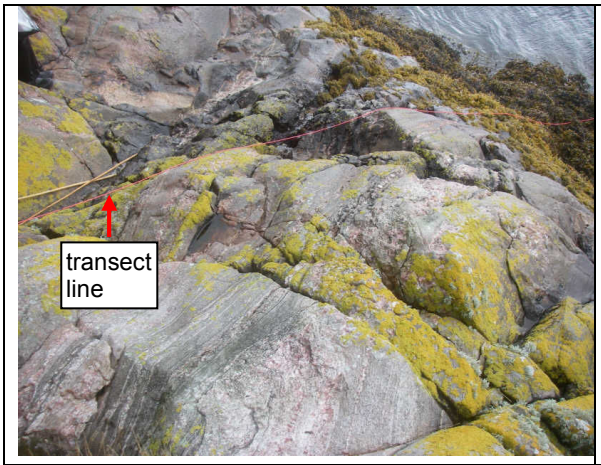
IMGP0098.jpg Towards marker peg from 58.40180°N 5.10462°W, 13°M



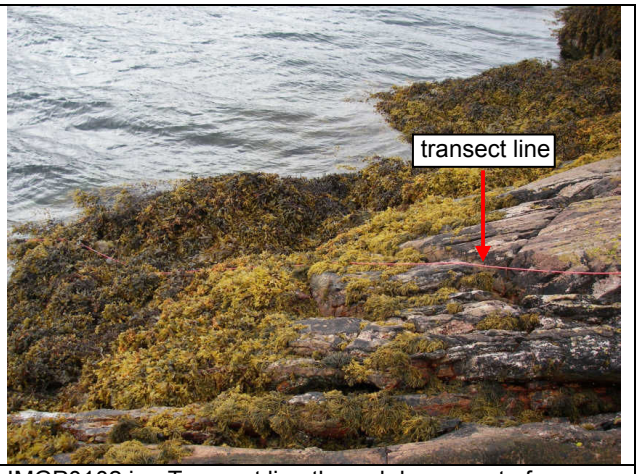
IMGP0097.jpg Down transect from 58.40182°N 5.10462°W, 160°M



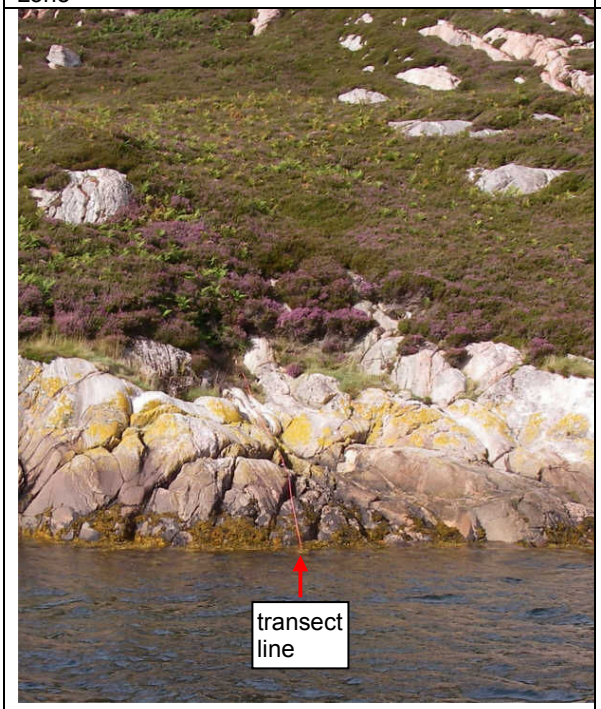
IMGP0099.jpg Towards marker peg from 58.40182°N 5.10458°W, 297°M



IMGP0093.jpg Transect line through supralittoral zone



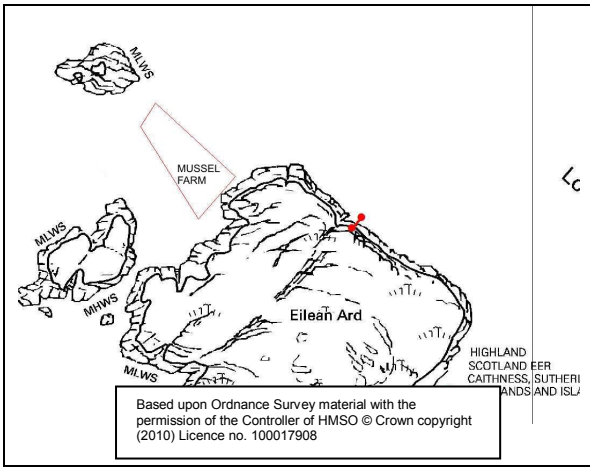
IMGP0102.jpg Transect line through lower part of transect



IMGP0105.jpg Transect location seen from offshore

IMGP0077.jpg Transect line through *Fucus vesiculosus* (l5), *F. spiralis* (l4), *Pelvetia* (l3) and *Verrucaria* (l2) zones

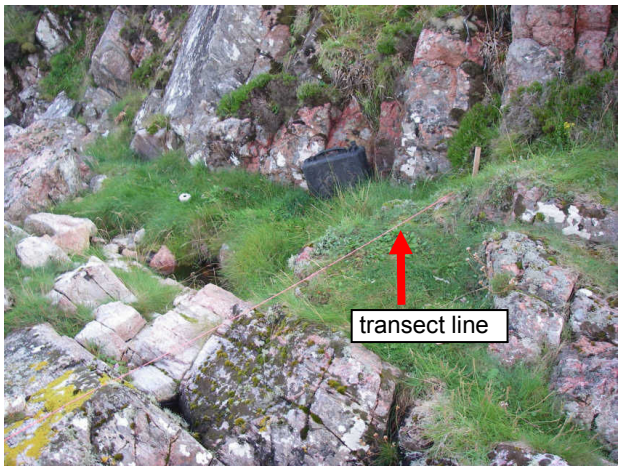
Transect name	Eilean Ard NE
Site code	LL09IR06, LL09SR06, LL09SS06
Position of marker	58.40505°N 5.10497°W
Type of marker	wooden peg 25 mm square in grass at base of heather bank; c. 30 cm proud of grass
Bearing of transect from top (°M)	40
Position of offshore transect end	58.40523°N 5.10470°W
Access	By boat



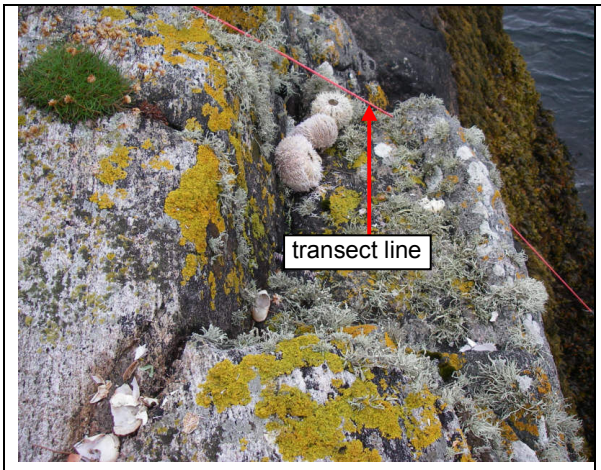
Transect location

IMGP0042.jpg Towards marker peg from 58.40507°N 5.10492°W, 287°M

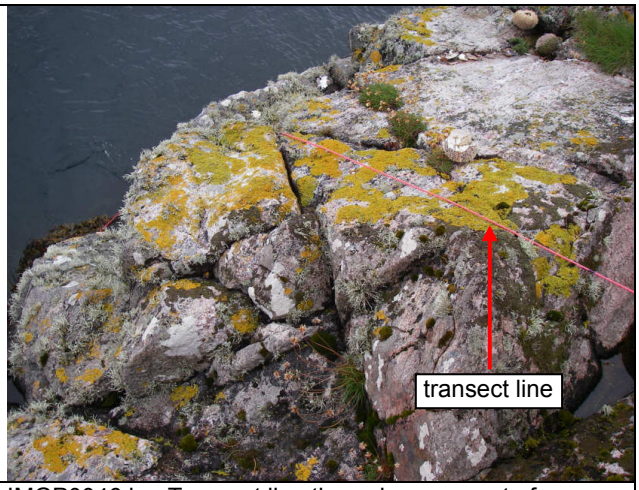
IMGP0044.jpg Down transect from 58.40505°N 5.10497°W, 40°M



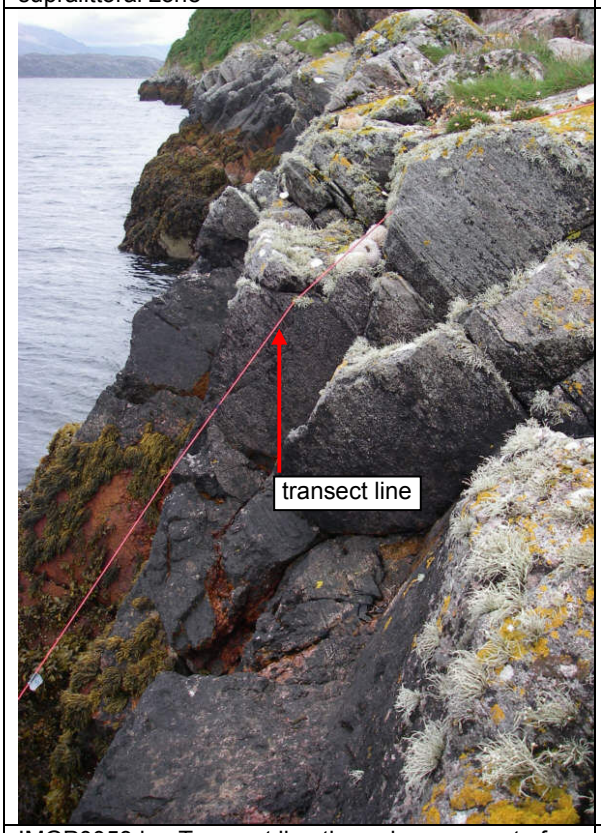
IMGP0043.jpg Towards marker peg from 58.40510°N 5.10497°W, 176°M



IMGP0046.jpg Transect line through lower part of supralittoral zone



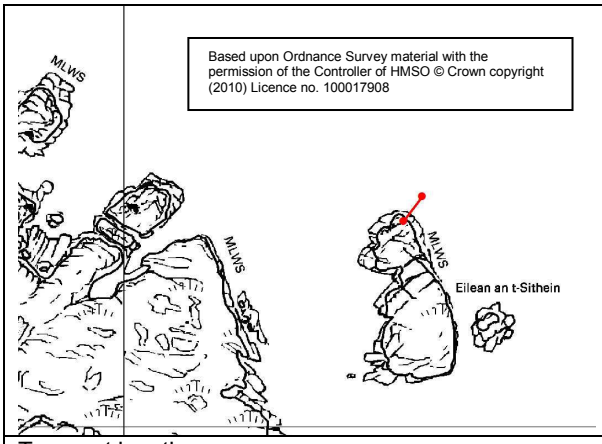
IMGP0046.jpg Transect line through upper part of supralittoral zone



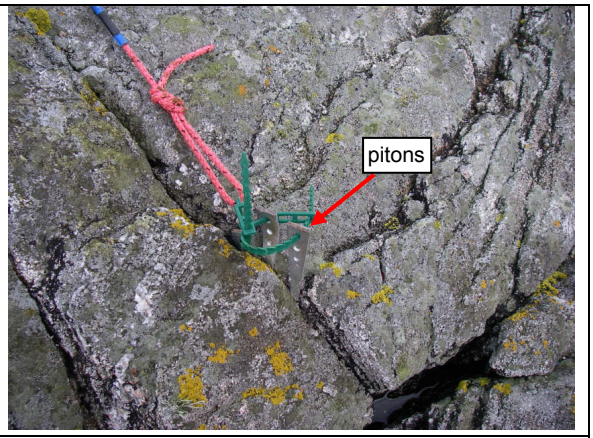
IMGP0053.jpg Transect line through upper part of transect

IMGP0066.jpg Transect line through *Fucus serratus* zone (I6)

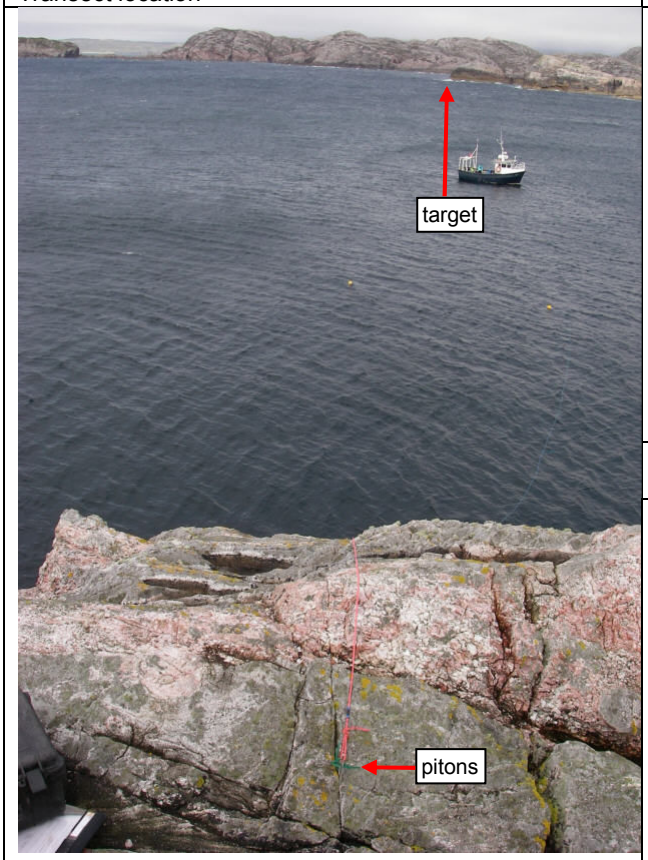
Transect name	Eilean an t-Sithein N
Site code	LL09IR07, LL09SR07
Position of marker	58.41210°N 5.12663°W
Type of marker	3 pitons in crevice
Additional marker	piton in crevice, 12.4 m on tape, 58.41215°N 5.12655°W
Bearing of transect from top (°M)	41
Position of offshore transect end	58.41247°N 5.12615°W
Access	by boat



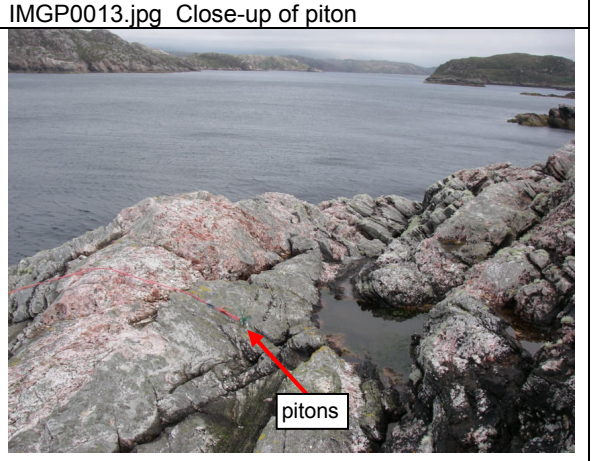
Transect location



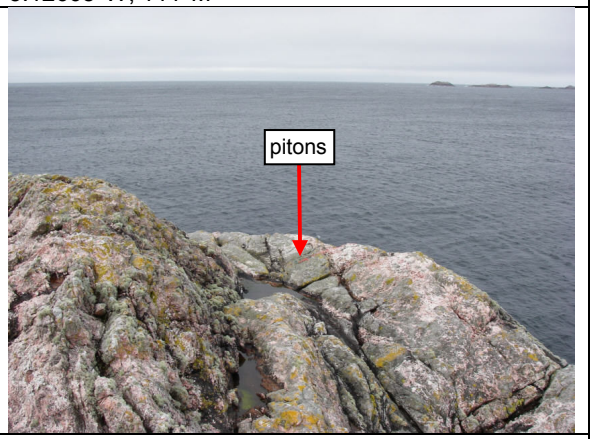
IMGP0013.jpg Close-up of piton



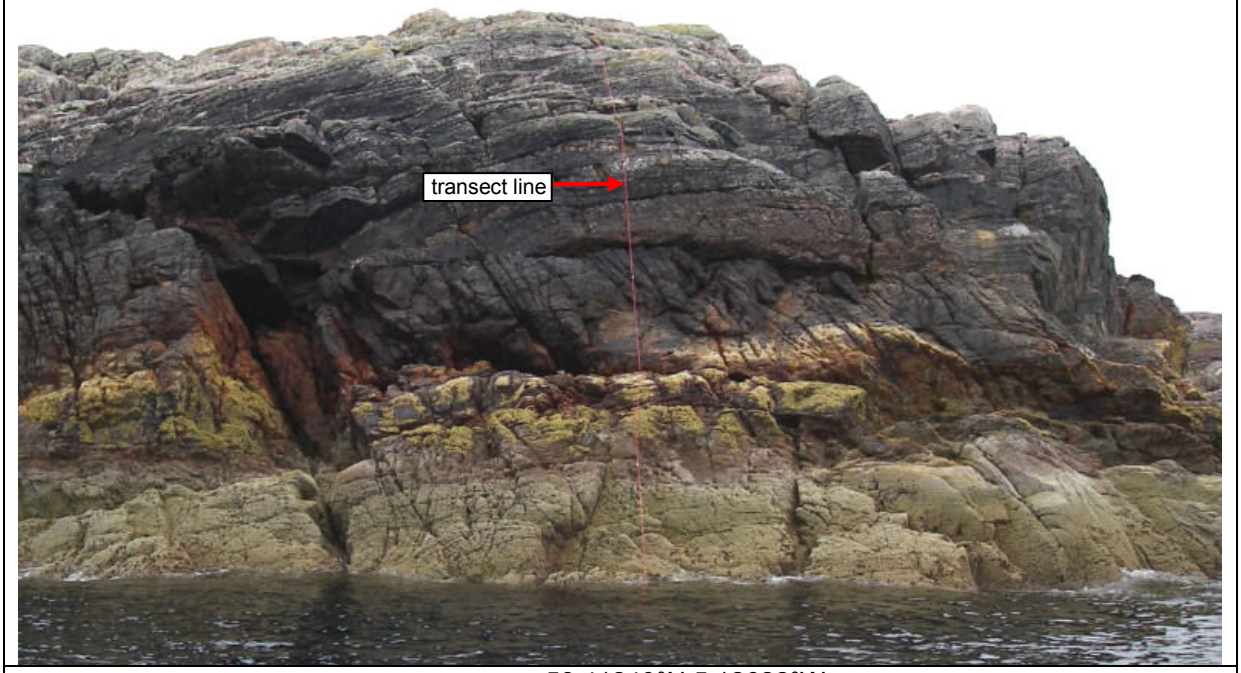
IMGP0014.jpg View down transect line from 58.41210°N 5.12663°W, 41°M. Target is left edge of islands off Ardmore Point



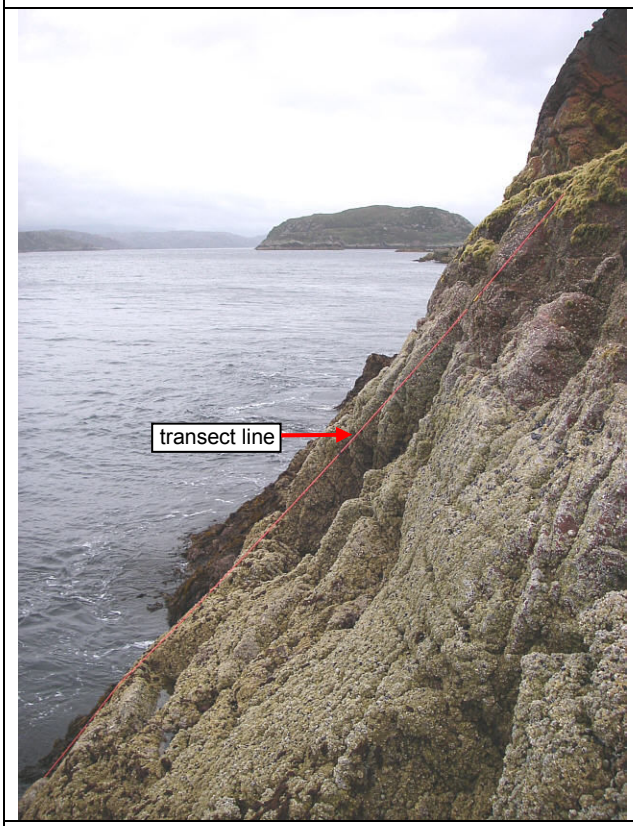
IMGP0015 Towards pitons from 58.41208°N 5.12668°W, 111°M



IMGP0016.jpg Towards pitons from 58.41215°N 5.12653°W, 332°M



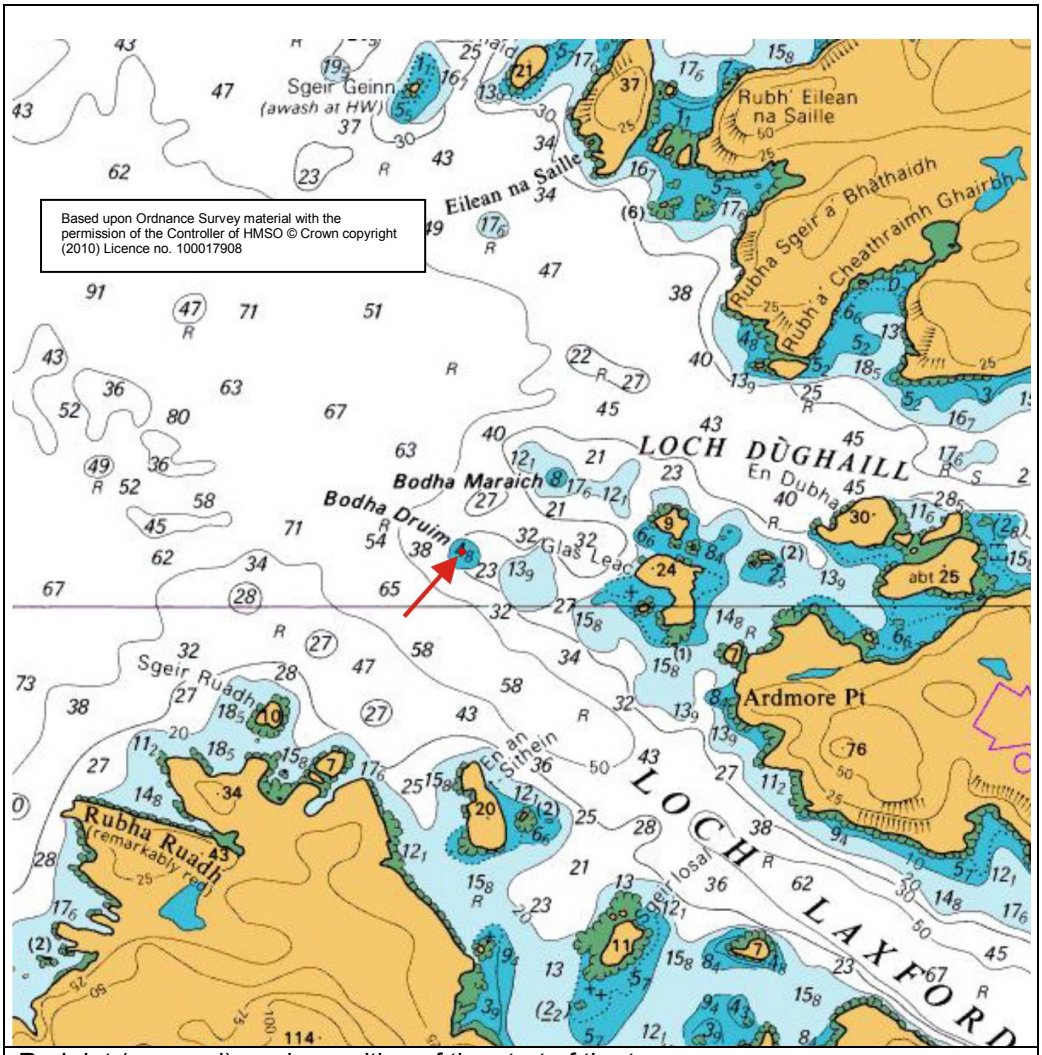
IMGP0012 Transect line seen from offshore from 58.41240°N 5.12622°W



IMGP0038.jpg Transect line through *Semibalanus* zone (I4)

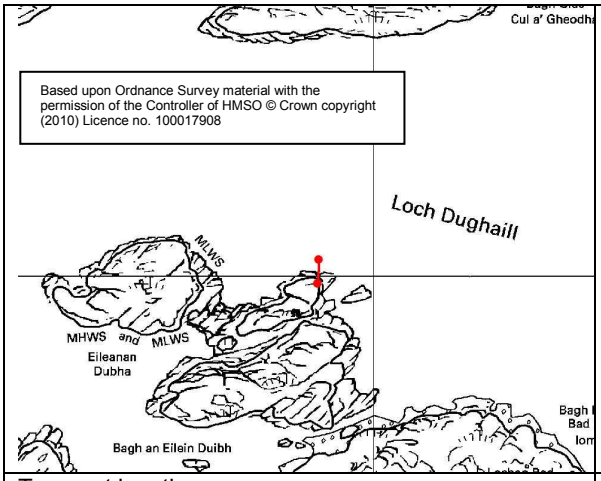
IMGP0033.jpg Transect line through *Alaria* zone (I5)

Transect name	Bodha Druim
Site code	LL09SR08
Position of marker	58.41775°N 5.12747°W
Type of marker	Only a temporary shot line was used in 2009, which marked the 0 m position on the transect tape. This position was at a depth of 8.8 m and c. 2 m from the upper lip of a near-vertical rock wall
Bearing of transect	The transect tape ran on a bearing of 300°M. As the start of the tape was very close to the lower margin of the kelp forest, the transect was continued up the slope on the reciprocal bearing (120°M) for c. 15 m (depth of 4.3 m)
Position of offshore transect end	58.41780°N 5.12769°W
Access	By boat

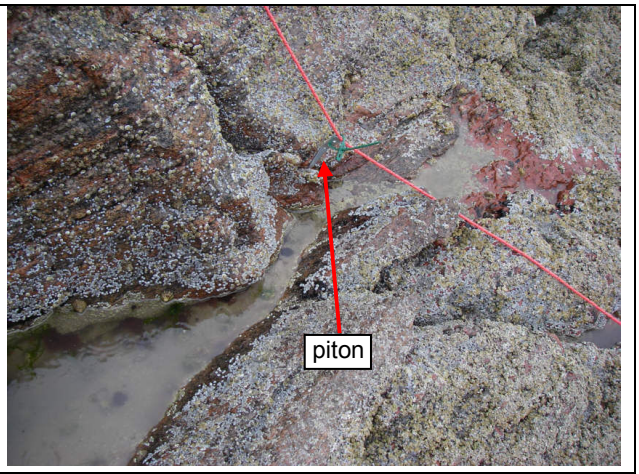


Red dot (arrowed) marks position of the start of the tape

Transect name	Eilean Dubha NE
Site code	LL09IR10, LL09SR10, LL09SS10
Position of marker	58.41860°N 5.10225°W
Type of marker	wooden peg 25 mm square in grass at base of bedrock cliff; 15 cm proud of grass
Additional marker	piton in crevice, 7.3 m on tape, 58.41860°N 5.10225°W (but accuracy uncertain due to poor GPS reception)
Bearing of transect from top (°M)	20
Position of offshore transect end	58.41895°N 5.10225°W
Access	by boat



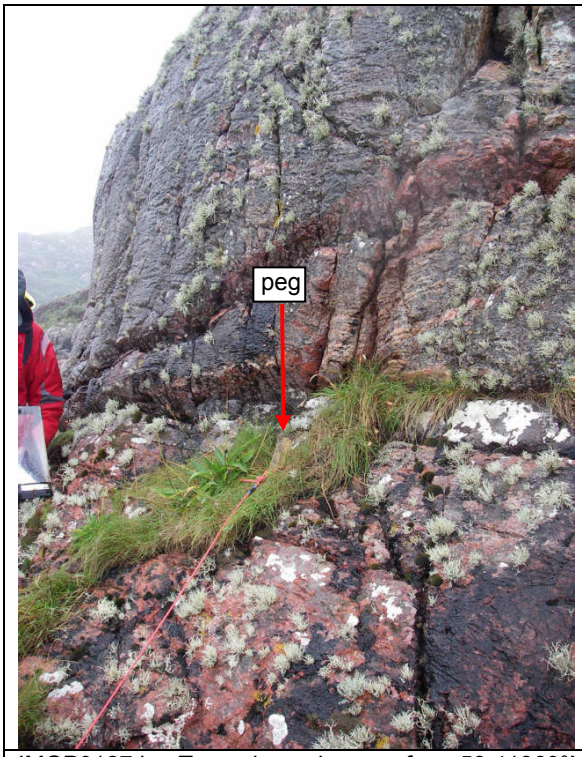
Transect location



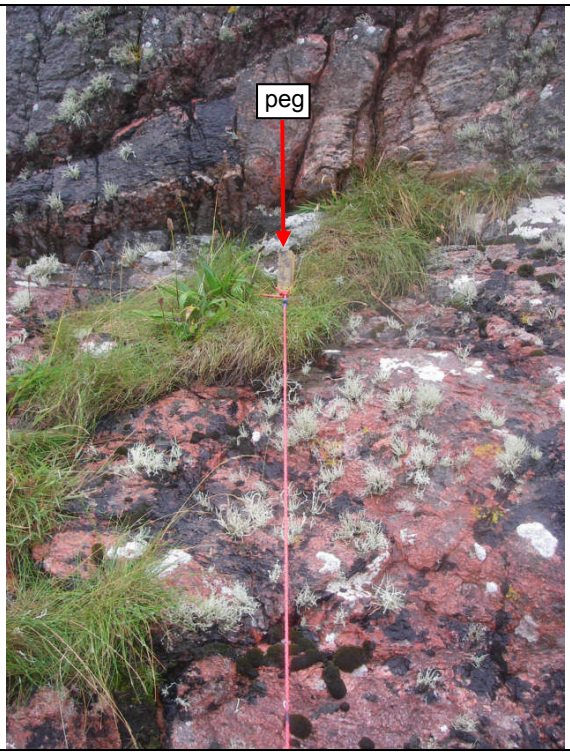
IMGP0125.jpg Transect line through *Semibalanus* zone (I4) showing additional marker piton

IMGP0126.jpg Down transect from 58.41860°N 5.10225°W, 20°M

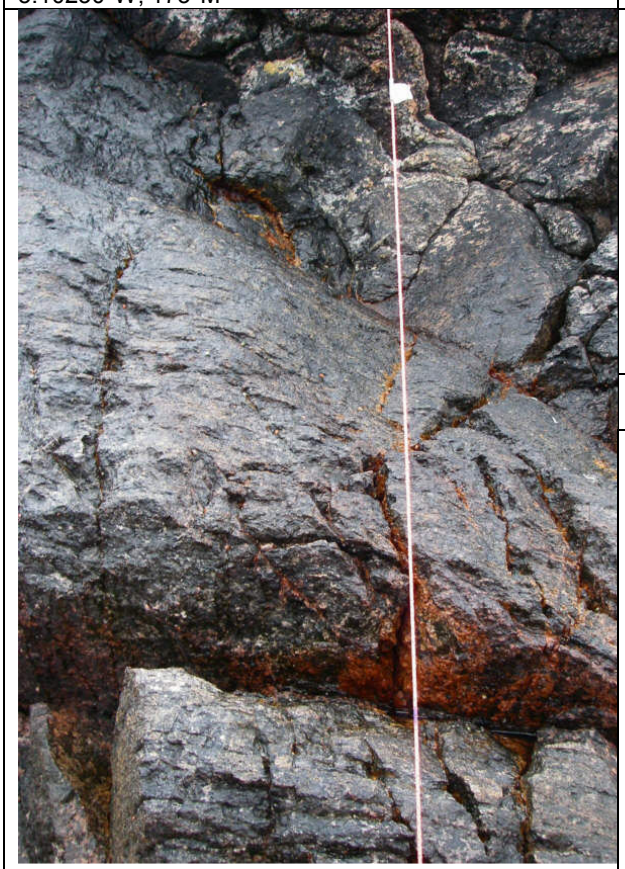
IMGP0129.jpg Down transect from supralittoral zone



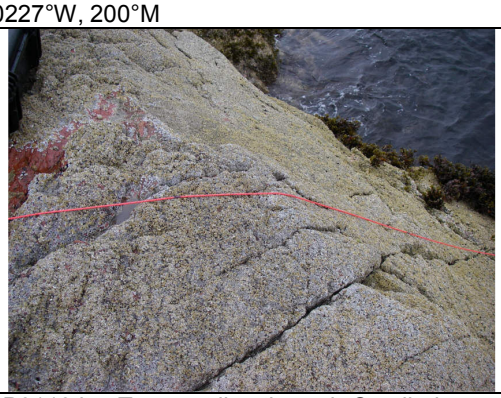
IMGP0127.jpg Towards marker peg from 58.41860°N 5.10230°W, 173°M



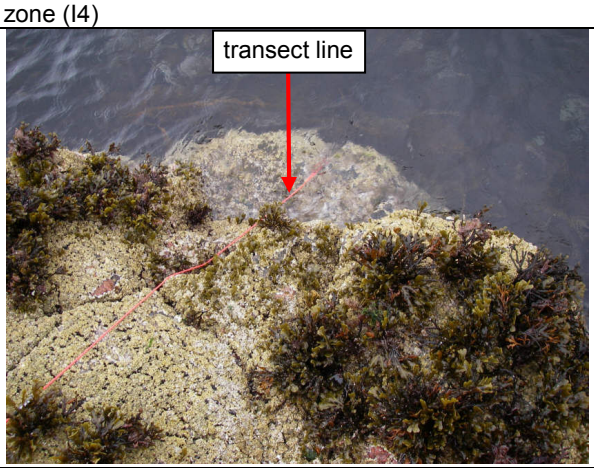
IMGP0128.jpg Towards marker peg from 58.41862°N 5.10227°W, 200°M



IMGP0122.jpg Transect line through *Verrucaria* zone (I2)

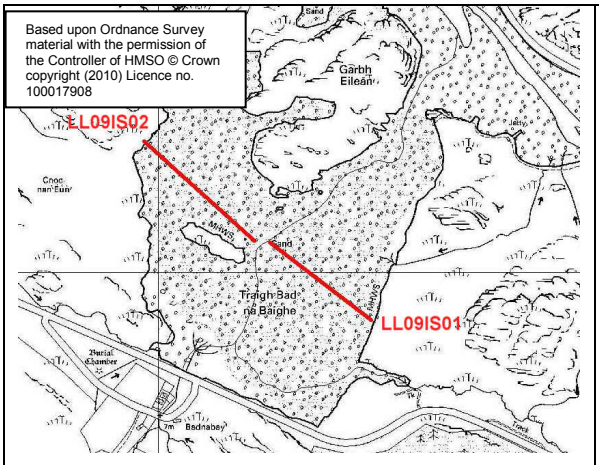


IMGP0113.jpg Transect line through *Semibalanus* zone (I4)

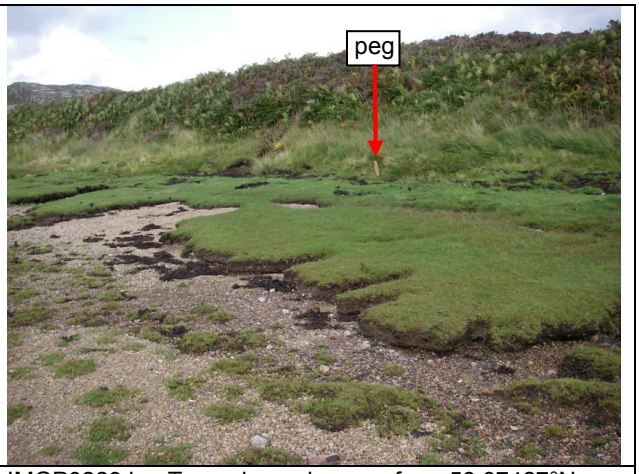


IMGP0108.jpg Transect line through *Semibalanus/Fucus* mosaic zone (I5)

Transect name	Tràigh Bad na Bàighe E
Site code	LL09IS01
Position of marker	58.37433°N 5.03693°W at junction of saltmarsh and bank of grass, bracken and heather
Type of marker	wooden stake 2.5 x 9.0 cm cross-section, 35 cm proud of grass
Bearing of transect from top (°M)	313
Position of lower transect end	58.37587°N 5.04115°W
Access	by road (A894)

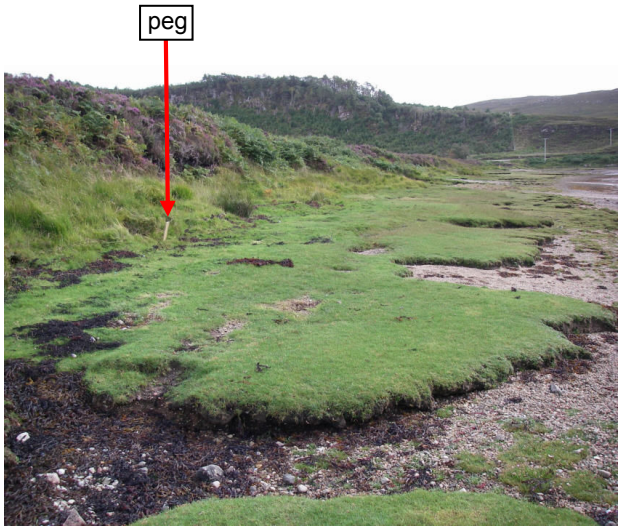


Transect location (on right)



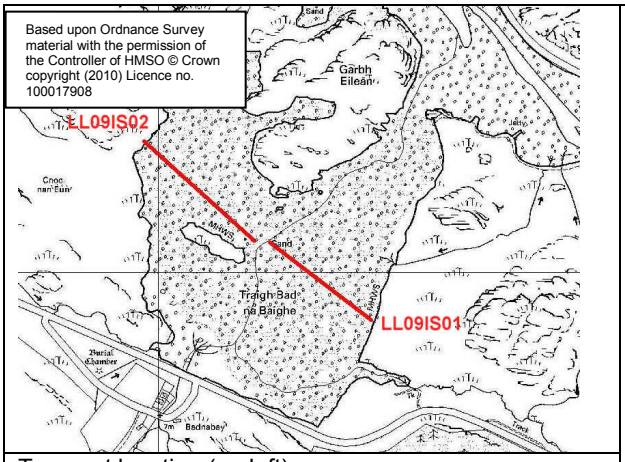
IMGP0229.jpg Towards marker peg from 58.37427°N 5.03715°W, 67°M

IMGP0228.jpg Down transect from 58.37433°N 5.03693°W, 313°M. Aim for slight dip in reef one-third of way from left hand side

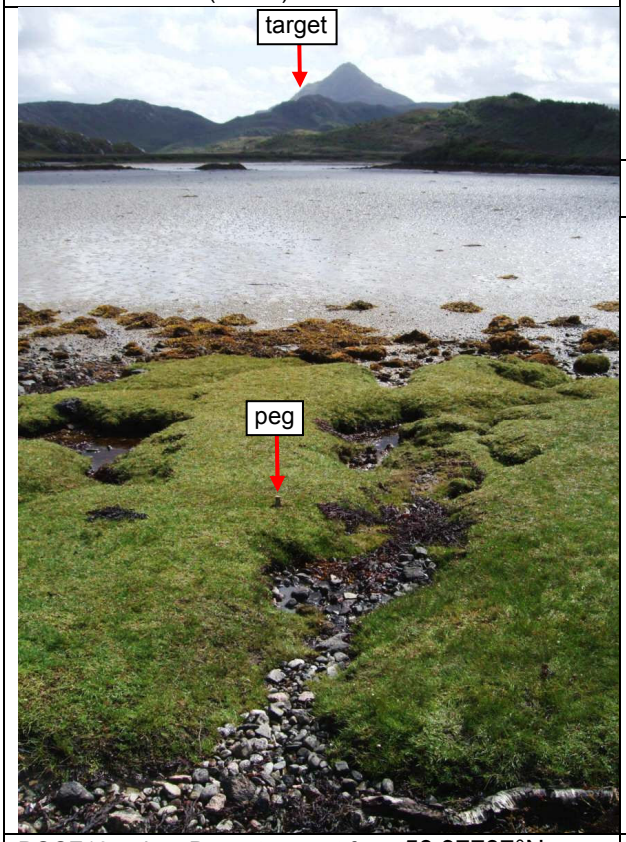


IMGP0230.jpg Towards marker peg from 58.37445°N 5.03693°W, 177°M

Transect name	Tràigh Bad na Bàighe W
Site code	LL09IS02
Position of marker	58.37785°N 5.04628°W in upper saltmarsh
Type of marker	wooden peg c. 10 cm proud of vegetation
Bearing of transect from top (°M)	135
Additional marker	Piton in rock crack at 58.37787°N 5.04635°W
Position of lower transect end	58.37588°N 5.04175°W
Access	by road (A894)

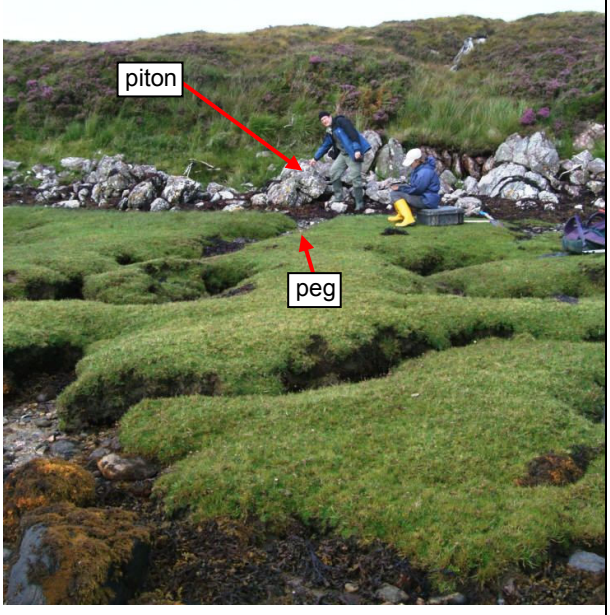


Transect location (on left)



DSCF1957.jpg Down transect from 58.37787°N 5.04635°W, 130°M. Aim just to left of shoulder in Ben Stack

DSCF1958.jpg Towards piton from 58.37785°N 5.04628°W, 310°M



DSCF1960.jpg Towards marker peg and piton from 58.37778°N 5.04613°W, 310°M

Appendix 6 Maerl transect data

Table 6.1 Description of the transects carried out at three maerl bed sites. No transect performed at site ML03

Site	Location	Date	Latitude (transect start)	Longitude (transect start)	Transect bearing (°M)	Depth transect start (m)	Depth transect end (m)	Habitat description	Biotope
ML01	Sruth Mor	14/08/2009	58.39033	-5.07175	45	5.1	4.3	Coarse sand and shell gravel with a surface scatter of dead shells (locally 20%), mostly of *Dosinia*, *Venerupis* and *Lutraria*. Live maerl sparse and mostly *Phymatolithon calcareum*, with some hedgehog stones of *Lithothamnion glaciale*. *Chorda filum* was common and *Saccharina latissima* frequent and the sediment supported a patchy algal turf, reaching 30-40% cover in places, dominated by *Rhodomela confervoides*, *Cystoclonium purpureum*, *Asperococcus bullosus* and green filamentous algae. Amongst the fauna, crabs were particularly common, particularly *Carcinus maenas* and *Cancer pagurus*, as well as *Cerianthus lloydii*.	SS.SMp.Mrl.Pcal.R
ML02	Eilean Ard NW	13/08/2009	58.40583	-5.11247	90	17.8	17.8	Muddy sand with maerl gravel and dead *Mytilus* shells (locally 1-5% cover) and 20-30 % cover by drift kelp. Patchy live *Phymatolithon calcareum* at 20-30% overall cover supporting very sparse algal flora and fairly sparse conspicuous fauna, including *Amphiura* spp. and *Neopentadactyla mixta*.	SS.SMp.Mrl.Pcal
ML03	Glas Leac SE	11/08/2009	58.41567	-5.11467	170	20.3		Waves of shell gravel with extremely sparse *Phymatolithon calcareum*, not constituting a maerl bed.	SS.SCS.CCS

Table 6.1 continued

Site	Location	Date	Latitude (transect start)	Longitude (transect start)	Transect bearing (°M)	Depth transect start (m)	Depth transect end (m)	Habitat description	Biotope
ML04	Sgeir Iosal SW	09/08/2009	58.40623	-5.12348	90	15.2	c.15.2	Substrate of maerl gravel with a scatter of dead shells, mosly *Venerupis*. Abundant live *Phymatolithon calcareum* (60-70% cover) with frequent *Saccharina latissima* and occasional *Desmarestia aculeata* and a light patchy turf of filamentous and foliose red algae, especially *Bonnemaisonia asparagoides*, *Trailliella intricata* and *Porphyropsis coccinea*. Infauna observed by diving included occasional *Neopentadactyla mixta* and large bivalve siphons, whilst epifauna included frequent *Liocarcinus corrugatus*, small galatheids, *Asterias rubens* and *Callionymus lyra*.	SS.SMp.Mrl.Pcal.R

Table 6.2 SACFOR abundance records for species recorded along 25 m transects through three maerl bed sites (LL09ML01, LL09ML02, LL09ML04)

Taxa	ML01	ML02	ML04	Taxa	ML01	ML02	ML04
Leucosolenia sp.		P		*Echinus esculentus*		P	P
Scypha ciliata		P		*Neopentadactyla mixta*		O	O
Suberites pagurorum			P	*Diplosoma listerianum*	P		R[4]
Clione celata	P	P		*Corella parallelogramma*	P		P
Hydractiniidae	P			*Ascidiella aspersa*	P	P[4]	
Cerianthus lloydii	F	P		*Ascidiella scabra*	F		
Chaetopterus variopedatus	P			*Ascidiella scabra?*			P
Eupolymnia nebulosa	P		P	*Ascidia virginea*			P
Lanice conchilega	O	P		*Dendrodoa grossularia*	P		
Sabellidae sp.	P		P	*Taurulus bubalis*	P		
Pomatoceros spp.	P			*Callionymus lyra*	P		F
Protula tubularia		P	P	*Pleuronectiformes* sp.	P		
Balanus crenatus		P		Rhodophyceae (red crusts)	P		
Pagurus bernhardus	P	F		*Porphyropsis coccinea*			P
Galathea sp.		P	F	*Cystoclonium purpureum*	O		
Ebalia sp.		P		*Scinaia turgida*		P	R
Inachus sp.	P	F	P	*Bonnemaisonia asparagoides*			O
Macropodia sp.	P		P	*Dilsea carnosa*	P		
Cancer pagurus	F			*Callophyllis laciniata*			P
Liocarcinus corrugatus		P	F	Corallinaceae (indet. pink crust)	P		
Liocarcinus depurator	F	P	P	*Lithothamnion glaciale*	R		
Carcinus maenas	C(A)			*Phymatolithon calcareum*	R	C	A
Polyplacophora spp.	P			*Chondrus crispus*	R		
Tectura sp.	P		P	*Phyllophora crispa*	P		
Gibbula magus		(O)	P	*Polyides/Furcellaria* sp.	P		
Gibbula tumida			P	*Plocamium cartilagineum*			P
Gibbula cineraria	P	P[4]	O	*Delesseria sanguinea*	P		
Lacuna vincta		P[4]	(A)	*Rhodomela confervoides*	O		
Turritella communis		O		Filamentous red algae		O	
Trivia monacha		P		Foliose red algae		R	
Pecten maximus		P		Phaeophyceae sp.?	P		
Anomiidae spp.			P	Ectocarpaceae sp.	P		P
Lutraria lutraria?	P		O	*Dictyota dichotoma*	P	R	O
Circomphalus casina			P	*Desmarestia aculeata*	P		O
Dosinia exoleta	P			*Asperococcus bullosus*	O		
Scrupocellaria reptans		P[4]	P[4]	*Chorda filum*	C		
Scrupocellaria/Crisia sp.	R			*Laminaria hyperborea*	P		
Antedon bifida		P		*Saccharina latissima*	F		F
Crossaster papposus	P	P		*Halidrys siliquosa*	P		
Henricia sanguinolenta	P			*Ulva lactuca*	P		
Asterias rubens		P	F	*Cladophora* sp.	P		
Marthasterias glacialis	P			*Uronema* sp.?	F		
Amphiura spp.		C		filamentous & foliose algae	A		
Ophiura albida		P					

P[4] = on kelp fronds
() = locally

Table 6.3 Abundance of infauna in each of four replicate 10.3 cm diameter cores taken from three maerl beds, LL09ML01, LL09ML02 and ML09ML04

Taxa	Site	ML01				ML02				ML04			
	Replicate	1	2	3	4	1	2	3	4	1	2	3	4
Astrorhyza limicola									1				
Notoplana atomata				2									
NEMERTEA spp			1		4	1		2			1		
Tubulanus sp										1			
Cerebratulus spp									2				
NEMATODA >1mm		24	1	8	29				1	1	12	4	
Golfingia sp juv													1
Thysanocardia procera						1							
Phascolion strombus							1	2					
Chrysopetalum debile										1	1		
Polynoidae spp juv/indet		2	11	1	1	1				2		3	
Alentia gelatinosa										1			
Gattyana cirrosa				1			1						
Harmothoe fragilis								1					
Harmothoe imbricata		1	1	1	1								
Harmothoe (M) mcintoshi		9		14	18					1		1	1
Pholoe inornata									1	1	2		1
Pholoe baltica							1			1	3		
Eteone longa										1			
Anaitides mucosa		1											
Eumida ockelmanni					1								
Pirakia punctifera					1								
Glycera lapidum											1	1	
Sphaerodorum gracilis		1				1		1					2
Hesionidae sp juv/indet		1											
Gyptis rosea										1	1		
Hesiospina similis		4	4	3	4	3	1	3		4			
Kefersteinia cirrata		2		2									
Nereimyra punctata					1								
Podarke pallida								1					
Trypanosyllis coeliaca											1		
Exogone verugera						1							
Sphaerosyllis taylori											1		
Nephtys kersivalensis						1			1				
Aponuphis bilineata							1						
Nematonereis unicornis							1			1			
Lumbrineris gracilis						1	2		1	1	2		1
Ougia subaequalis								1					
Parougia eliasoni									1				
Protodorvillea kefersteini		3											
Aricidea cerrutii					1								
Paradoneis armata					1					1	1		
Paradoneis lyra								2					
Apistobranchus tullbergi						1							
Aonides oxycephala		6		10	4								

Table 6.3 continued

Taxa	Site	ML01				ML02				ML04			
	Replicate	1	2	3	4	1	2	3	4	1	2	3	4
Aonides paucibranchiata					1								
Minuspio cirrifera								3		1			
Polydora caulleryi		1											
Pseudopolydora cf. *paucibranchiata*						32	8	36	2				
Pseudopolydora pulchra											1		
Spiophanes kroyeri						1		1					
Magelona minuta						1		1					
Chaetozone sp 'D'							2	1					
Cirriformia tentaculata		4	3	7									
Diplocirrus glaucus						1	1	1					
Diplocirrus stopbowitzi												1	
Mediomastus fragilis		12	2	3	14	2		2	3	3	3	4	
Notomastus latericeus						1	1		2	3	5	2	
Peresiella clymenoides						1	1						
Maldanidae spp juv/indet						1		3	1				
Clymenura tricirrata						1		1					
Euclymene oerstedii						2			2				
Scalibregma inflatum							1		1		1		
Myriochele danielsseni									1				
Galathowenia oculata						1		1	1				
Owenia fusiformis							1	2	1				
Terebellides stroemi						1				1			
Pista cristata						2					2		
Amaeana trilobata											1		
Polycirrus sp A											1		
Polycirrus norvegicus		2	1	1	8					3	1		
Chone filicaudata				1						2			
Demonax cambrensis					1								
Euchone rubrocincta										1			
Jasmineira caudata							2	1					
Pseudopotamilla reniformis										2			
Hydroides norvegica						1			1	3	1	1	
Pomatoceros sp juv/indet			1						1				
Pomatoceros lamarcki		1	3	4	1								
Pomatoceros triqueter			1	1						2		1	
Serpula/Hydroides spp indet					1	2		2					
Tubificoides sp		10			1								
Tubificoides amplivasatus					1								
Tubificoides benedii				4									
Grania spp		14			1								
Achelia echinata										1			
Anoplodactylus angulatus						1							
OSTRACODA type 1								1					
OSTRACODA type 2								1					
Nebalia herbstii													1
AMPHIPODA spp indet										1			

Table 6.3 continued

Taxa	Site	ML01				ML02				ML04			
	Replicate	1	2	3	4	1	2	3	4	1	2	3	4
Apherusa bispinosa					1								
Harpinia pectinata						1							
Parametaphoxus fultoni		1			1								
Lysianassa plumosa						3	2	2	2	2	3	1	5
Tryphosella sarsi						1							
Iphimedia minuta								1					
Dexamine spinosa												1	
Dexamine thea		1			1								
Melitidae sp indet											1		
Cheirocratus sp ♀			2		1								
Corophium sp indet ♀			1		2								
Caprella acanthifera					1								
Phtisica marina					1								
Gnathia vorax										1			
Janira maculosa													1
Vauntompsonia cristata								1	2				
CARIDEA spp indet								1					
Anapagurus hyndmanni			2			2		1	1				1
Pagurus sp indet													1
Galathea intermedia		3	1	3	8	1		6	8	18	3	9	3
Pisidia longicornis										3	2	5	2
Leptochiton asellus				1	1	1		1			1		
Leptochiton cancellatus			1			1				3	4	1	
Lepidochitona cinerea		5		3	10	1					1		
Callochiton septemvalvis						1							
GASTROPODA sp 'A'												1	
GASTROPODA sp indet						1							
Emarginula rosea										1			
Tectura sp juv				2	3			4	1	1	1	4	
Gibbula cineraria				1	1			2					
Lacuna vincta					1		1						
Rissoa interrupta									1				
Rissoa parva								1					
Pusillina sarsi								1					
Alvania beanii								3	7	1			3
Onoba semicostata									2				
Polinices pulchellus								1					
Hinia spp juv									1	1		1	
Diaphana minuta							1	1					
NUDIBRANCHIA spp											1		
?Onchidoris sparsa				1									
?Rostanga rubra				1									
Nucula nucleus							3	2	9	4			2
Modiolus modiolus								2	1				
Palliolum tigerinum												1	
Aequipecten opercularis								1					
Heteranomia squamula								1					
Myrtea spinifera						1	2						

Table 6.3 continued

Taxa	Site	ML01				ML02				ML04			
	Replicate	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
Lucinoma borealis							2						
Thyasira flexuosa						5	4	6	6		1		
Thyasira polygona							1						
Mysella bidentata			4		3	1			4		1		
Parvicardium ovale							1						
Parvicardium scabrum						1		1		1			
Gari fervensis										1	1		
Abra alba									2				
Gouldia minima								2		1	6		
Dosinia exoleta					2		1			1			
Tapes rhomboides							1		1	1			
Clausinella fasciata									1	1	3		
Mya truncata (juv)								1	1				
Corbula gibba							1	1					
Hiatella arctica										1			
Thracia phaseolina										1			
Thracia villosiuscula											1		
Phoronis spp						1							
Asterias rubens juv			1										
Ophiocomina nigra										1			
Ophiactis balli										4	1	1	
Amphiuridae spp juv		1		1	2		1					1	
Amphiura filiformis								2					
Amphipholis squamata		10	2	8	7	5	8	11	5		4	1	
ECHINOIDEA spp juv						2		3	1	1	1	1	
Echinocyamus pusillus							1	1			1	1	
HOLOTHURIOIDEA sp juv											1		
Leptopentacta elongata							1						
Leptosynapta bergensis							1						

Appendix 7 Intertidal sediment transect data

Table 7.1 Physical and conspicuous biological characteristics recorded along intertidal sediment transects

Feature	Distance from marker (m)	Height below marker (m)	Height above CD (m)	Latitude	Long'de	Substrate	Biogenic features of zone	Depth anaerobic layer (cm)	Depth water table (cm)	Biotope
TRANSECT: TRAIGH BAD NA BAIGHE E (LL09IS01)										
stake	0	0.00	4.85	58.37433	-5.03693					
zone 1						saltmarsh with gravel patches	saltmarsh			LS.LMp.Sm
zone 1/2 boundary	13.6	1.36	3.49	58.37440	-5.03713					
zone 2						gravel and pebbles	no evident biota			LS.LCS.Sh.BarSh
zone l2/l3 boundary	15	1.50	3.35	58.37440	-5.03715					
zone 3						fine sand with surface cover of gravel and pebbles	abundant *Fucus spiralis*			LR.LLR.F.FspiX
zone l3/l4 boundary	17.2	1.72	3.13	58.37442	-5.03717					
zone 4						fine sand with scattered gravel and pebbles	patchy *Fucus vesiculosus*			LR.LLR.F.FvesX
zone l4/l5 boundary	20.76	1.87	2.98	58.37443	-5.03720					

Table 7.1 continued

Feature	Distance from marker (m)	Height below marker (m)	Height above CD (m)	Latitude	Long'de	Substrate	Biogenic features of zone	Depth anaerobic layer (cm)	Depth water table (cm)	Biotope
station 5	139.6	2.42	2.43	58.37505	-5.03890	slightly muddy, gravelly sand, with scattered pebbles and occasional boulders	abundant *Arenicola marina, Hediste diversicolor and Eteone longa* with *Macoma balthica* and patchy *Rhizoclonium* mat; pebbles with *Fucus vesiculosus*, boulders with sparse *Ascophyllum nodosum* and dense *Semibalanus balanoides*	1.0-3.0	0	LS.LSa.MuSa.HedMacEte
zone I5/I6 boundary	239.6	2.71	2.14	58.37557	-5.04030					
station 6	253.6	2.85	2.00	58.37563	-5.04050	slightly muddy, rippled medium sand and occasional boulders	abundant *Arenicola marina* and *Hediste diversicolor*, with *Eteone longa* with *Macoma balthica;* very scattered *Fucus vesiculosus* and *Ascophyllum nodosum* on boulders	0.1-1.0	0	LS.LSa.MuSa.HedMacEte
end of transect	299.6	3.15	1.70	58.37587	-5.04115					

Table 7.1 continued

Feature	Distance from marker (m)	Height below marker (m)	Height above CD (m)	Latitude	Long'de	Substrate	Biogenic features of zone	Depth anaerobic layer (cm)	Depth water table (cm)	Biotope
TRANSECT: TRAIGH BAD NA BAIGHE W (LL09IS02)										
piton	-4.3	-0.77	5.05	58.37787	-5.04635					
zone A						boulders above narrow band of cobbles and gravel	supralittoral lichens and strandline algae			LR.FLR.Lic.YG, LS.LSa.St.Tal
stake	0	0.00	4.28	58.37785	-5.04628					
zone B						saltmarsh	saltmarsh			LS.LMp.Sm
zone B/1 boundary	6.9	0.72	3.56	58.37780	-5.04618					
station 1	9.22	0.84	3.44	58.37780	-5.04615	boulders, cobbles, gravel and coarse sand	abundant *Fucus vesiculosus* with small patches of *Pelvetia canaliculata* on boulder tops			LR.LLR.F.FvesX
zone 1/2 boundary	11.3	0.96	3.32	58.37778	-5.04613					
station 2	13	1.02	3.26	58.37777	-5.04610	slightly muddy, gravelly fine sand	*superabundant Hediste diversicolor* with *Corophium volutator* and *Eteone longa;* sparse *Fucus vesiculosus* on scattered boulders	2.0	0	LS.LMx.GvMu.HedMx.Cvol
zone 2/3 boundary	15.1	1.07	3.21	58.37777	-5.04608					

Table 7.1 continued

Feature	Distance from marker (m)	Height below marker (m)	Height above CD (m)	Latitude	Long'de	Substrate	Biogenic features of zone	Depth anaerobic layer (cm)	Depth water table (cm)	Biotope
station 3	22	1.12	3.16	58.37772	-5.04595	dimpled fine sand	*abundant Hediste diversicolor* with *Eteone longa* and *Arenicola marina*; on surface, extensive brown diatomaceous film with pink bacterial mat in places	4.0	0	LS.LSa.MuSa.HedMacEte
zone 3/4 boundary	27	1.15	3.13	58.37768	-5.04590					
station 4	156	1.41	2.87	58.37697	-5.04422	*Arenicola*-hummocked, slightly muddy, fine sand	superabundant *Arenicola marina, with Hediste diversicolor*, *Eteone longa* and *Macoma balthica*	0.4	0	LS.LSa.MuSa.HedMacEte
zone 4/5 boundary	265	1.85	2.43	58.37635	-5.04275					
station 5	306	2.18	2.10	58.37612	-5.04222	slightly muddy, medium sand, slightly rippled in places	abundant *Hediste diversicolor*, *Eteone longa* and *Arenicola marina*, with *Macoma balthica*	5.0	c. 0	LS.LSa.MuSa.HedMacEte
end of transect	347	2.28	2.00	58.37588	-5.04175					

Table 7.2 Abundance of infauna at stations along intertidal sediment transects at LL09IS01 and LL09IS02. The number given is for eight pooled cores of total area 0.0667 m^2

Transect	**LL09ISO1**		**LL09ISO2**			
Station	**5**	**6**	**2**	**3**	**4**	**5**
Nemertea spp					1	1
Pisione remota			1			
Eteone longa	9	2	2	1	2	12
Hediste diversicolor	8	8	76	36	4	18
Spionidae spp juv/indet		1				
Malacoceros fuliginosus		1				
Malacoceros tetracerus	5				2	23
Pseudopolydora pulchra	1					
Pygospio elegans	43	12	39	15	24	56
Capitella capitata	10		5		5	26
Arenicola marina	2	2			1	3
Fabricia sabella (stellaris)	110					
Naididae sp	6	1				
Tubificidae spp indet	2					
Heterochaeta costata	5		107	12		
Tubificoides benedii	78		2	6	108	29
Tubificoides pseudogaster agg	28	3				58
Enchytraeidae sp	30	1	34		1	
Gammaridae sp indet		1				
Echinogammarus stoerensis?		17				
Gammarus locusta	2					
Gammarus salinus?						1
Corophium volutator			10	20		1
Jaera albifrons	1					
Crangon crangon	1	1	2	2	2	1
Hydrobia ulvae	17	8	8	11	2	
Cerastoderma edule juvs	60		4		2	1
Macoma balthica	15	2			4	1
Chironomidae	16	1	5		5	

Table 7.3 SACFOR abundance of biota at stations along intertidal sediment transects at LL09IS01 and LL09IS02, based on in situ *observations of the sediment surface and by digging over an area of approximately 1m²*

Transect	**LL09IS01**						**LL09IS02**				
Station/zone	**1**	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**	**4**	**5**
Hediste diversicolor					P	F		C	C	F	
Arenicola marina					A	A			C	S	A
Capitella capitata					P						
Semibalanus balanoides					R(A)						
Carcinus maenas								C			
Macoma balthica										F	F
Cerastoderma edule										F	F
Fucus spiralis			A	O							
Fucus vesiculosus				C	R	R	A	R		R	R
Ascophyllum nodosum					R	R					
Pelvetia canaliculata							F				
Green algal mat					C	R					
**Rhizoclonium riparium*					C	R					
**Cladophora rupestris*					R	R					
**Audouinella floridula*					R	R					
**Pilayella littoralis*						R					
**Sphacelaria* sp.					R						
**Ectocarpus* sp.					R						
**Stictyosiphon tortilis*?					R						
Brown microalgal film						A			P		
Saltmarsh	S										
Pink bacterial mat									P		

* constituent of green algal mat
() locally, on scattered boulders

Table 7.4 SACFOR abundance of biota at stations along intertidal sediment transects at LL09IS01 and LL09IS02, based on combination of the infaunal core data and in situ *observations. See Table 7.3 for explanation of symbols*

Transect	**LL09ISO1**						**LL09ISO2**				
Station	**1**	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**	**4**	**5**
Nemertea spp										F	F
Pisione remota								F			
Eteone longa					A	C		C	C	C	A
Hediste diversicolor					A	A		S	A	C	A
Spionidae spp juv/indet						F					
Malacoceros fuliginosus						F					
Malacoceros tetracerus					F					F	C
Pseudopolydora pulchra					F						
Pygospio elegans					C	C		C	C	C	C
Capitella capitata					C			F		F	C
Arenicola marina					A	A			C	S	A
Fabricia sabella (stellaris)					A						
Naididae sp					F	F					
Tubificidae spp indet					F						
Heterochaeta costata					F			C	C		
Tubificoides benedii					A			F	F	A	C
Tubificoides pseudogaster agg					C	F					C
Enchytraeidae sp					C	F		C		F	
Gammaridae sp indet						F					
Echinogammarus stoerensis?						C					
Gammarus locusta					F						
Gammarus salinus?											F
Corophium volutator								C	C		F
Jaera albifrons					F						
Semibalanus balanoides					R(A)						
Crangon crangon					C	C		C	C	C	C
Carcinus maenas								C			
Hydrobia ulvae					C	C		C	C	F	
Cerastoderma edule juvs					F			F		F	F
Macoma balthica					C	F				F	F
Chironomidae					C	F		F		F	
Fucus spiralis			A	O							
Fucus vesiculosus				C	R	R	A	R		R	R
Ascophyllum nodosum					R	R					
Pelvetia canaliculata							F				
Green algal mat					C	R					
**Rhizoclonium riparium*					C	R					
**Cladophora rupestris*					R	R					
**Audouinella floridula*					R	R					
**Pilayella littoralis*						R					
**Sphacelaria* sp.					R						
**Ectocarpus* sp.					R						
**Stictyosiphon tortilis*?					R						
Brown microalgal film						A			P		
Saltmarsh	S										
Pink bacterial mat									P		

Appendix 8 *Ascophyllum nodosum* ecad *mackayi* bed data

Table 8.1 Location of Ascophyllum nodosum *ecad* mackayi *transects at the head of Loch Laxford, with estimates of maximum percentage coverage of the shore along each of the transects*

Transect	Start position		End position		Maximum cover position		Maximum cover (%)	Photos
	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude		
1	58.37770	-5.02618	58.37787	-5.02615	58.37778	-5.02617	2	
2	58.37770	-5.02685	58.37788	-5.02675	58.37778	-5.02673	40	
3	58.37767	-5.02717	58.37785	-5.02717	58.37780	-5.02717	2	
4	58.37772	-5.02778	58.37785	-5.02768			0	
5	58.37778	-5.02827	58.37790	-5.02808			0	
6	58.37793	-5.02858	58.37802	-5.02848			0	
7	58.37787	-5.02908	58.37815	-5.02917	58.37805	-5.02922	15	
8	58.37780	-5.02950	58.37815	-5.02965	58.37797	-5.02962	95	
9	58.37785	-5.02983	58.37812	-5.03002	58.37788	-5.03007	40	
10	58.37773	-5.03047	58.37817	-5.03052	58.37790	-5.03053	98	
11	58.37785	-5.03113	58.37818	-5.03085	58.37803	-5.03100	75	
12	58.37825	-5.03158	58.37833	-5.03107	58.37830	-5.03120	4	
13	58.37880	-5.03335	58.37910	-5.03307	58.37888	-5.03323	1	
14	58.37858	-5.03297	58.37902	-5.03240	58.37893	-5.03247	15	
15	58.37853	-5.03207	58.37903	-5.03188	58.37880	-5.03207	10	
16	58.37855	-5.03178	58.37883	-5.03152	58.37872	-5.03162	80	DSCF 2029-2032
17	58.37885	-5.03508	58.37895	-5.03525	58.37893	-5.03523	5	
18	58.37863	-5.03523	58.37868	-5.03570	58.37867	-5.03543	1	
19	58.37837	-5.03488	58.37843	-5.03573	58.37838	-5.03542	1	
20	58.37805	-5.03473	58.37794	-5.03582	58.37792	-5.03541	5	
21	58.37905	-5.02670	58.37885	-5.02688	58.37897	-5.02675	20	DSCF 6067
22	58.37917	-5.02715	58.37863	-5.02763	58.37878	-5.02752	90	DSCF 6068-6073
23	58.37920	-5.02780	58.37860	-5.02810	58.37880	-5.02803	100	DSCF 6074-6079
24	58.37928	-5.02817	58.37878	-5.02873	58.37897	-5.02852	95	DSCF 6080-6085

Table 8.2 Track mapping data around boundaries of Ascophyllum nodosum *ecad* mackayi *beds at the head of Loch Laxford*

Latitude	Longitude	Bed
58.379217	-5.028600	A1
58.379283	-5.028517	A1
58.379333	-5.028383	A1
58.379233	-5.027967	A1
58.379217	-5.027850	A1
58.379200	-5.027567	A1
58.379117	-5.027333	A1
58.379117	-5.027167	A1
58.379067	-5.026900	A1
58.379000	-5.026467	A1
58.378933	-5.026317	A1
58.378900	-5.026467	A1
58.378900	-5.026783	A1
58.378850	-5.026950	A1
58.378850	-5.027217	A1
58.378767	-5.027317	A1
58.378667	-5.027050	A1
58.378600	-5.027050	A1
58.378617	-5.027467	A1
58.378633	-5.028233	A1
58.378617	-5.028267	A1
58.378717	-5.028617	A1
58.378783	-5.029000	A1
58.378983	-5.029067	A1
58.379033	-5.028850	A1
58.379200	-5.028667	A1
58.378033	-5.031167	A3
58.377967	-5.031117	A3
58.378000	-5.030983	A3
58.377967	-5.030867	A3
58.377917	-5.030783	A3
58.377850	-5.030800	A3
58.377850	-5.030667	A3
58.377850	-5.030583	A3
58.377850	-5.030483	A3
58.377850	-5.030367	A3
58.377850	-5.030217	A3
58.377900	-5.030117	A3
58.377917	-5.030000	A3
58.377933	-5.029917	A3
58.377933	-5.029767	A3

Latitude	Longitude	Bed
58.377917	-5.029717	A3
58.377900	-5.029633	A3
58.377900	-5.029550	A3
58.377917	-5.029450	A3
58.377917	-5.029383	A3
58.377950	-5.029317	A3
58.377967	-5.029217	A3
58.378033	-5.029250	A3
58.378050	-5.029250	A3
58.378083	-5.029300	A3
58.378067	-5.029383	A3
58.378083	-5.029467	A3
58.378050	-5.029533	A3
58.378000	-5.029650	A3
58.377983	-5.029750	A3
58.377967	-5.029867	A3
58.377900	-5.030017	A3
58.377900	-5.030133	A3
58.377900	-5.030333	A3
58.377933	-5.030467	A3
58.378033	-5.030567	A3
58.378017	-5.030650	A3
58.378017	-5.030717	A3
58.378017	-5.030817	A3
58.378017	-5.030883	A3
58.378033	-5.030950	A3
58.378067	-5.031067	A3
58.373433	-5.043917	A6
58.373417	-5.043833	A6
58.373383	-5.043733	A6
58.373383	-5.043800	A6
58.373333	-5.043817	A6
58.373300	-5.043783	A6
58.373283	-5.043850	A6
58.373283	-5.043883	A6
58.373283	-5.043917	A6
58.373317	-5.043933	A6
58.373350	-5.043933	A6
58.373367	-5.043983	A6
58.373400	-5.044000	A6
58.373417	-5.043967	A6

Appendix 9 Mytilus edulis bed data

Table 9.1 Track mapping data around boundaries of Mytilus edulis *beds at the head of Loch Laxford*

Latitude	Longitude	Nature of fix	Photos
58.37950	-5.03485	start of track mapping around bed M1	
58.37950	-5.03477	boundary bed M1	
58.37957	-5.03467	boundary bed M1	
58.37953	-5.03455	boundary bed M1	
58.37947	-5.03450	boundary bed M1	
58.37942	-5.03457	boundary bed M1	
58.37935	-5.03458	boundary bed M1	
58.37937	-5.03450	boundary bed M1	
58.37935	-5.03437	boundary bed M1	
58.37942	-5.03428	boundary bed M1	
58.37938	-5.03418	boundary bed M1	
58.37935	-5.03420	boundary bed M1	
58.37935	-5.03415	boundary bed M1	
58.37938	-5.03413	boundary bed M1	
58.37950	-5.03403	boundary of rocky outcrop covered in mussels	DSCF2009-2014
58.37953	-5.03400	boundary of rocky outcrop covered in mussels	
58.37952	-5.03387	boundary of rocky outcrop covered in mussels	
58.37948	-5.03373	boundary of rocky outcrop covered in mussels	
58.37945	-5.03363	boundary of rocky outcrop covered in mussels	
58.37942	-5.03365	boundary of rocky outcrop covered in mussels	
58.37942	-5.03377	boundary of rocky outcrop covered in mussels	
58.37938	-5.03380	boundary of rocky outcrop covered in mussels	
58.37942	-5.03402	boundary of rocky outcrop covered in mussels	
58.37945	-5.03400	boundary of rocky outcrop covered in mussels	
58.37950	-5.03405	boundary of rocky outcrop covered in mussels	
58.37953	-5.03398	boundary bed M1 continued	
58.37957	-5.03398	boundary bed M1 continued	
58.37962	-5.03405	boundary bed M1 continued	
58.37962	-5.03412	boundary bed M1 continued	
58.37967	-5.03420	boundary bed M1 continued	
58.37972	-5.03423	boundary bed M1 continued	
58.37975	-5.03420	bed M1 extends into water here	
58.37980	-5.03435	bed M1 extends into water here	
58.37983	-5.03438	boundary bed M1, running along edge of drainage channel	
58.37982	-5.03447	boundary bed M1, running along edge of drainage channel	
58.37980	-5.03453	boundary bed M1, running along edge of drainage channel	
58.37975	-5.03460	boundary bed M1, running along edge of drainage channel	
58.37973	-5.03465	boundary bed M1, running along edge of drainage channel	
58.37972	-5.03470	boundary bed M1, running along edge of drainage channel	
58.37967	-5.03473	boundary bed M1, running along edge of drainage channel	
58.37967	-5.03482	boundary bed M1, running along edge of drainage channel	
58.37965	-5.03488	boundary bed M1, running along edge of drainage channel	
58.37960	-5.03487	boundary bed M1, running along edge of drainage channel	
58.37957	-5.03488	boundary bed M1, running along edge of drainage channel	

Table 9.1 continued

58.37953	-5.03490	end of track mapping around bed M1	DSCF2016-2017
58.37965	-5.03447	density estimate in bed M1 - 25 per 10 cm x 10 cm	DSCF1019
58.37791	-5.03570	density estimate in middle of bed M2 - 15 per 30 cm x 30 cm	DSCF2033
58.37760	-5.03593	start of track mapping around bed M3	
58.37708	-5.03603	boundary bed M3	
58.37675	-5.03627	boundary bed M3	
58.37675	-5.03628	boundary bed M3	
58.37648	-5.03650	boundary bed M3	
58.37663	-5.03710	boundary bed M3	
58.37687	-5.03738	boundary bed M3	
58.37703	-5.03763	boundary bed M3	
58.37715	-5.03760	boundary bed M3	
58.37702	-5.03718	boundary bed M3	
58.37705	-5.03712	boundary bed M3	
58.37712	-5.03735	boundary bed M3	
58.37742	-5.03743	boundary bed M3, beside drainage channel	
58.37760	-5.03700	boundary bed M3	
58.37760	-5.03697	density estimate in bed M3 - 12 per 10cm x 10cm	
58.37762	-5.03688	boundary bed M3	
58.37752	-5.03653	boundary bed M3	
58.37762	-5.03617	boundary bed M3	
58.37738	-5.03613	boundary bed M3	
58.37708	-5.03635	boundary bed M3	
58.37695	-5.03672	end of track mapping around bed M3	

Appendix 10 Biotope inventory

Biotopes recorded during the current survey of Loch Laxford SAC with illustrative photograph or video frame grab. Italicised stations indicate provenance of image

Biotope	Sites	Photograph
LR.HLR.MusB.MytB *Mytilus edulis* and barnacles on very exposed eulittoral rock	*IR07*	
LR.HLR.MusB.Cht.Cht *Chthamalus montagui* and *Chthamalus stellatus* on exposed upper eulittoral rock	*IR07*, IR10	
LR.HLR.MusB.Sem.Sem *Semibalanus balanoides*, *Patella vulgata* and *Littorina* spp. on exposed to moderately exposed or vertical sheltered eulittoral rock	*IR10*	

Appendix 10 continued

Biotope	Sites	Photograph
LR.HLR.FT.FserT *Fucus serratus*, sponges and ascidians on tide-swept lower eulittoral rock	*IR02*	
LR.MLR.MusF.MytFves *Mytilus edulis* and *Fucus vesiculosus* on moderately exposed mid eulittoral rock	*M1*	
LR.MLR.BF.FspiB *Fucus spiralis* on full salinity exposed to moderately exposed upper eulittoral rock	IR05, *IR06*	

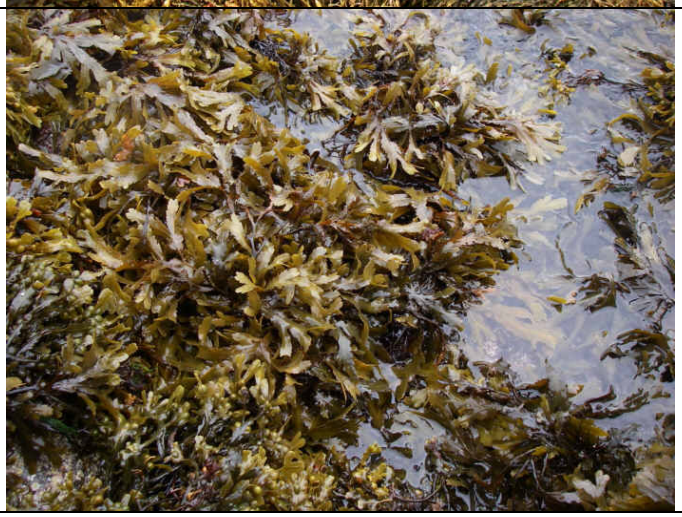
Appendix 10 continued

Biotope	Sites	Photograph
LR.MLR.BF.FvesB *Fucus vesiculosus* and barnacle mosaics on moderately exposed mid eulittoral rock	IR04, *IR10*	
LR.MLR.BF.Fser.R *Fucus serratus* and red seaweeds on moderately exposed lower eulittoral rock	*IR06*	
LR.LLR.F.Pel *Pelvetia canaliculata* on sheltered littoral fringe rock	R01, *IR02*, IR03, IR04, IR05, IR06	

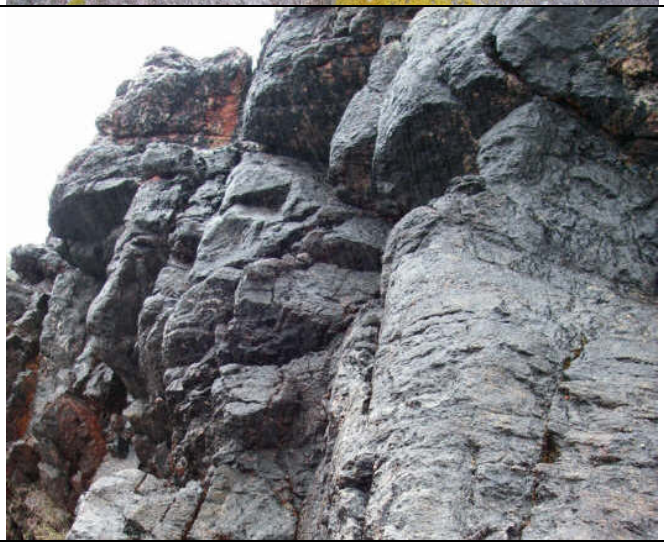
Appendix 10 continued

Biotope	Sites	Photograph
LR.LLR.F.Fspi.FS *Fucus spiralis* on full salinity moderately exposed to very sheltered upper eulittoral rock	*IR02*, IR04	
LR.LLR.F.FspiX *Fucus spiralis* on full salinity upper eulittoral mixed substrata	*IS01*	
LR.LLR.F.Fves.FS *Fucus vesiculosus* on full salinity moderately exposed to sheltered mid eulittoral rock	IR01, *IR02*, IR03, IR05, IR06	

Appendix 10 continued

Biotope	Sites	Photograph
LR.LLR.F.FvesX *Fucus vesiculosus* on mid eulittoral mixed substrata	IS01, *IS02*	
LR.LLR.F.Asc.FS *Ascophyllum nodosum* on full salinity mid eulittoral rock	*IR01*, IR03	
LR.LLR.F.Fserr.FS Dense *Fucus serratus* on moderately exposed to very sheltered full salinity lower eulittoral rock	IR01, IR03, IR04, *IR05*	

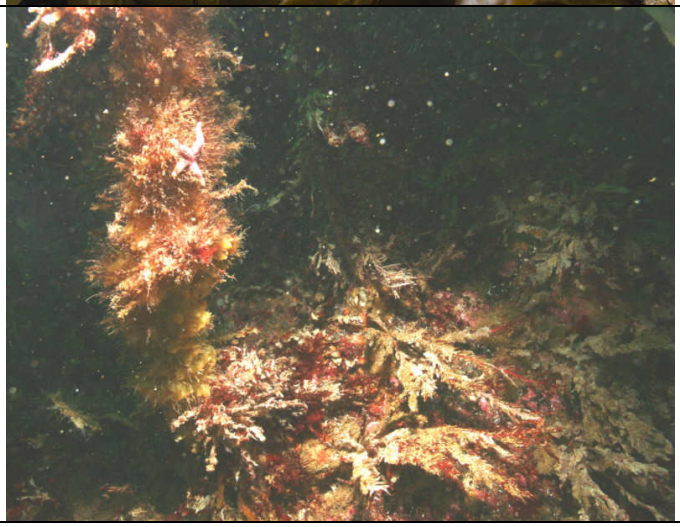
Appendix 10 continued

Biotope	Sites	Photograph
LR.LLR.FVS.Ascmac *Ascophyllum nodosum* ecad *mackayi* beds on extremely sheltered mid eulittoral mixed substrata	A1, A2, A3, A4, A5, *A6*	
LR.FLR.Lic.YG Yellow and grey lichens on supralittoral rock	IR01, IR02, IR03, IR04, *IR05*, IR06, IR07, IR10, IS02	
LR.FLR.Lic.Ver.Ver *Verrucaria maura* on very exposed to very sheltered upper littoral fringe rock	IR01, IR02, IR03, IR04, IR05, IR06, IR07, *IR10*	

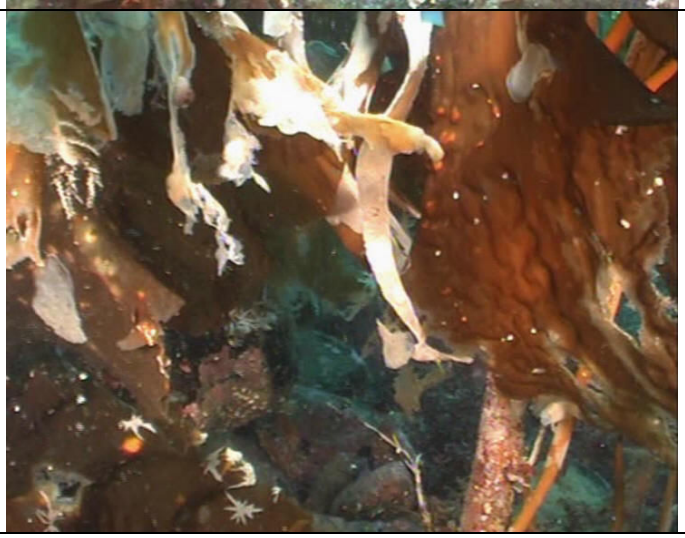
Appendix 10 continued

Biotope	Sites	Photograph
LR.FLR.Rkp Rockpools This biotope assigned to bare-looking pools with no evidence of algal flora	IR02, IR05, IR05, *IR06*	
LR.FLR.Rkp.Cor.Cor Coralline crusts and *Corallina officinalis* in shallow eulittoral rockpools	IR07, *IR10*	
LR.FLR.Rkp.G Green seaweeds (*Enteromorpha* spp. and *Cladophora* spp.) in shallow upper shore rockpools	*IR05*	

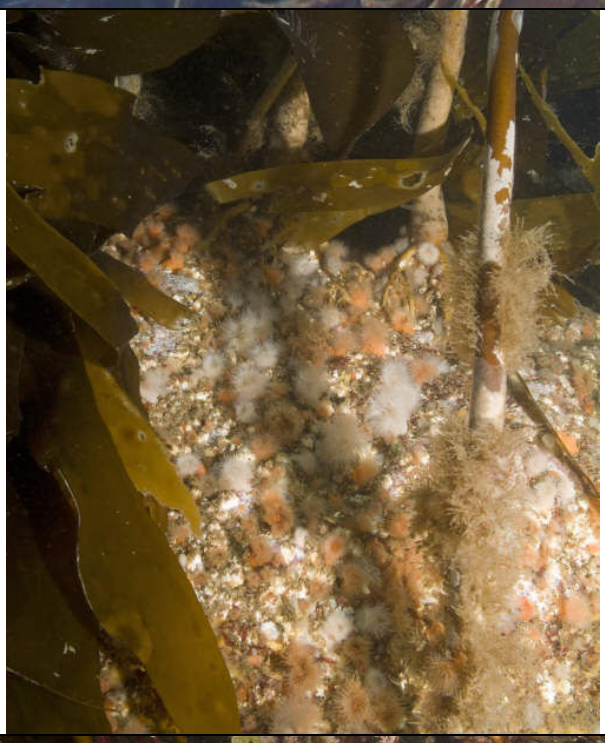
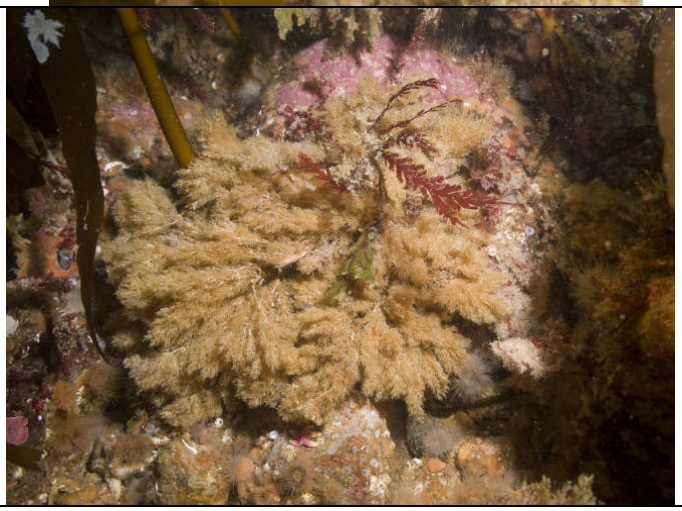
Appendix 10 continued

Biotope	Sites	Photograph
IR.HIR.KFaR.Ala.Myt *Alaria esculenta*, *Mytilus edulis* and coralline crusts on very exposed sublittoral fringe bedrock	*SR07*	
IR.HIR.KFaR.Ala.Ldig *Alaria esculenta* and *Laminaria digitata* on exposed sublittoral fringe bedrock	*SR10*	
IR.HIR.KFaR.LhypR.Ft *Laminaria hyperborea* forest with dense red seaweeds on exposed upper infralittoral rock	SR07, *SR08*	

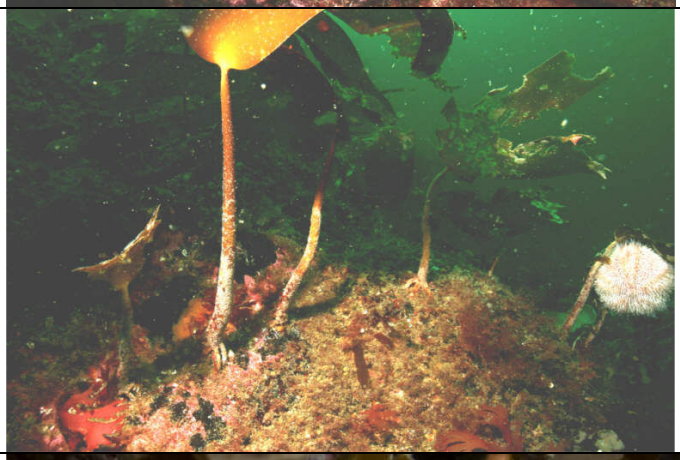
Appendix 10 continued

Biotope	Sites	Photograph
IR.HIR.KFaR.LhypRVt *Laminaria hyperborea* and red seaweeds on exposed vertical rock	*SR08*	
IR.HIR.KSed.LsacSac *Laminaria saccharina* and/or *Saccorhiza polyschides* on exposed infralittoral rock	*D82*	
IR.HIR.KSed.XKScrR Mixed kelps with scour-tolerant and opportunistic foliose red seaweeds on scoured or sand-covered infralittoral rock	*D82*, D90	

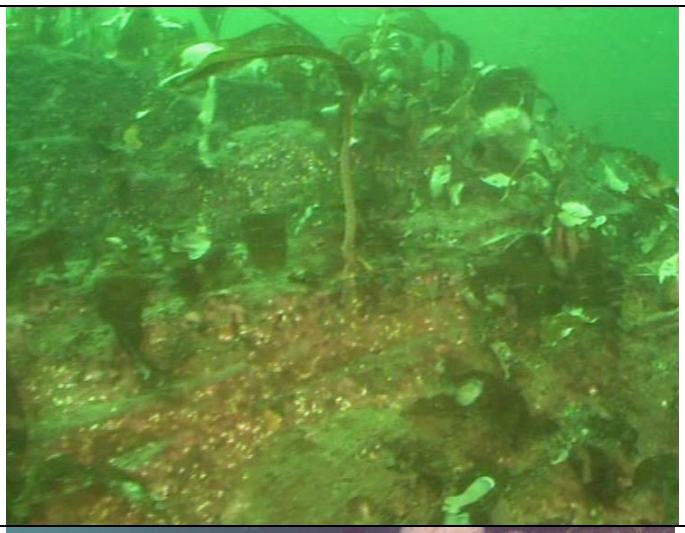
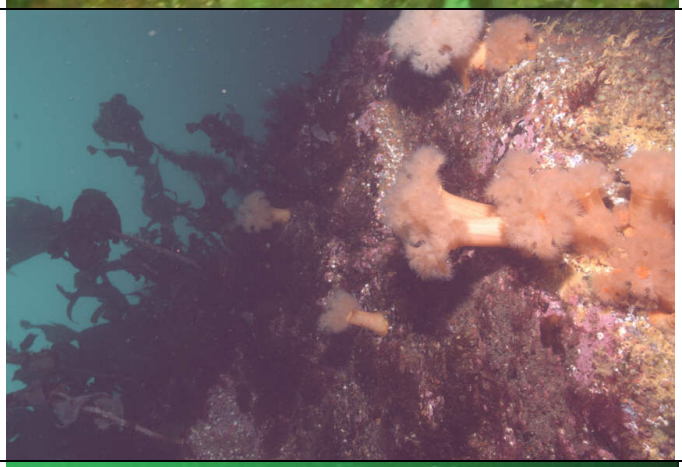
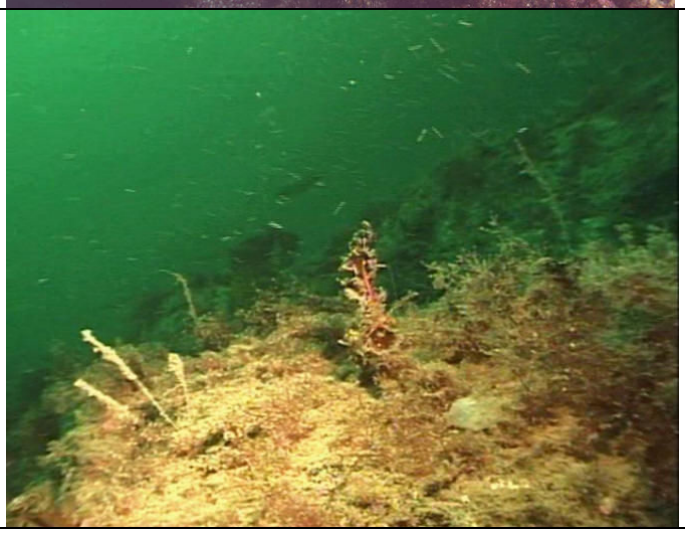
Appendix 10 continued

Biotope	Sites	Photograph
IR.MIR.KR.Ldig.Ldig *Laminaria digitata* on moderately exposed sublittoral fringe rock	SR04, SR06, *SR07*	
IR.MIR.KR.LhypT.Ft *Laminaria hyperborea* forest, foliose red seaweeds and a diverse fauna on tide-swept upper infralittoral rock	*SR02*	
IR.MIR.KR.LhypTX.Ft *Laminaria hyperborea* forest and foliose red seaweeds on tide-swept, upper infralittoral mixed substrata	*SR02*	

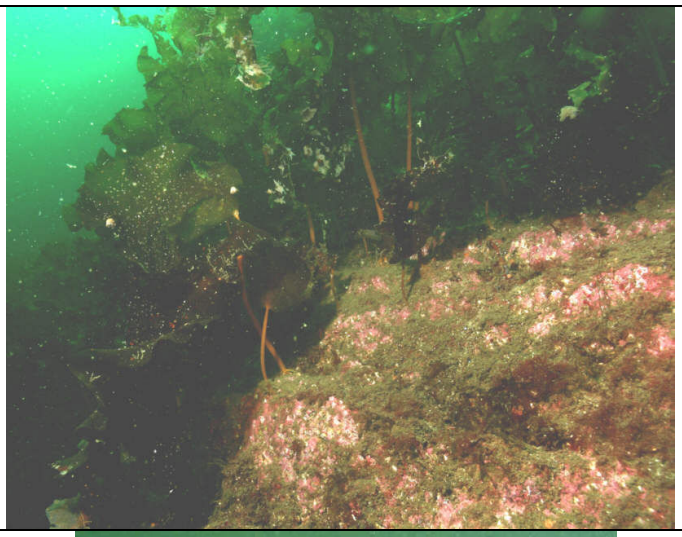
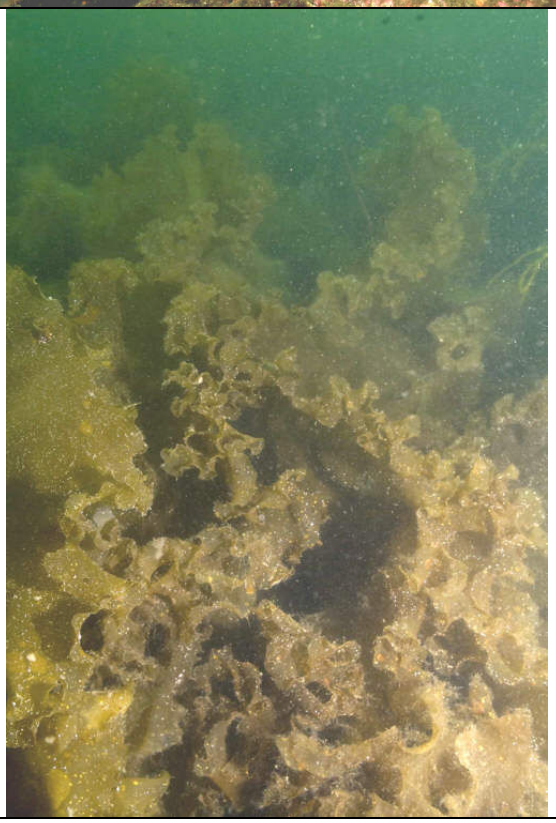
Appendix 10 continued

Biotope	Sites	Photograph
IR.MIR.KR.Lhyp.Ft *Laminaria hyperborea* forest and foliose red seaweeds on moderately exposed upper infralittoral rock	*SR07*, D53, D117	
IR.MIR.KR.Lhyp.Pk *Laminaria hyperborea* park and foliose red seaweeds on moderately exposed lower infralittoral rock	*SR07*	
IR.MIR.KR.Lhyp.GzFt Grazed *Laminaria hyperborea* forest with coralline crusts on upper infralittoral rock	SR06, *SR10*, D91, D108, D109, D113	

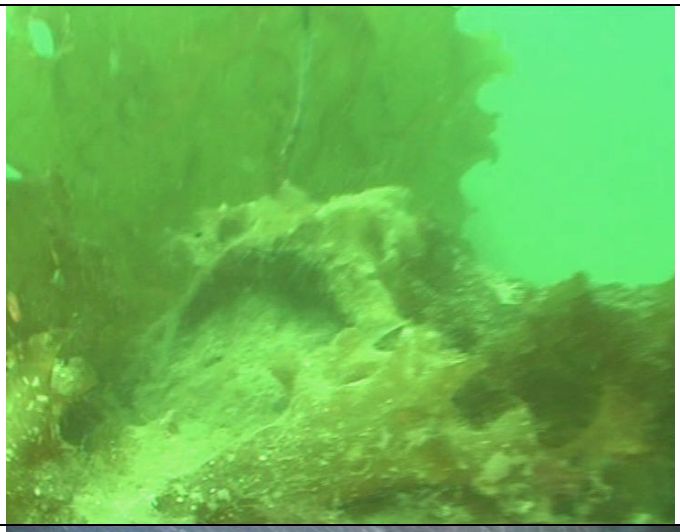
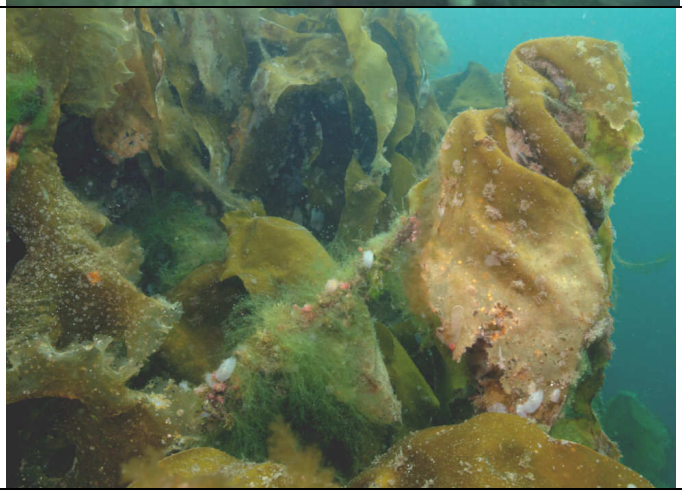
Appendix 10 continued

Biotope	Sites	Photograph
IR.MIR.KR.Lhyp.GzPk Grazed *Laminaria hyperborea* park with coralline crusts on lower infralittoral rock	D92, D97, *D103*, D104, D112	
IR.MIR.KR.LhypVt *Laminaria hyperborea* on moderately exposed vertical rock	*SR10*	
IR.MIR.KR.XFoR Dense foliose red seaweeds on moderately exposed, silted, stable infralittoral rock	*D33*, D71, D124, D131	

Appendix 10 continued

Biotope	Sites	Photograph
IR.LIR.K.LhypLsac.Gz Grazed, mixed *Laminaria hyperborea* and *Laminaria saccharina* on sheltered infralittoral rock	*SR06*	
IR.LIR.K.Lsac.Ft *Laminaria saccharina* forest on very sheltered upper infralittoral rock	SR01, *SR03*, SR04, SR05, D12, D14, D30, D45, D55, D67, D68, D128	

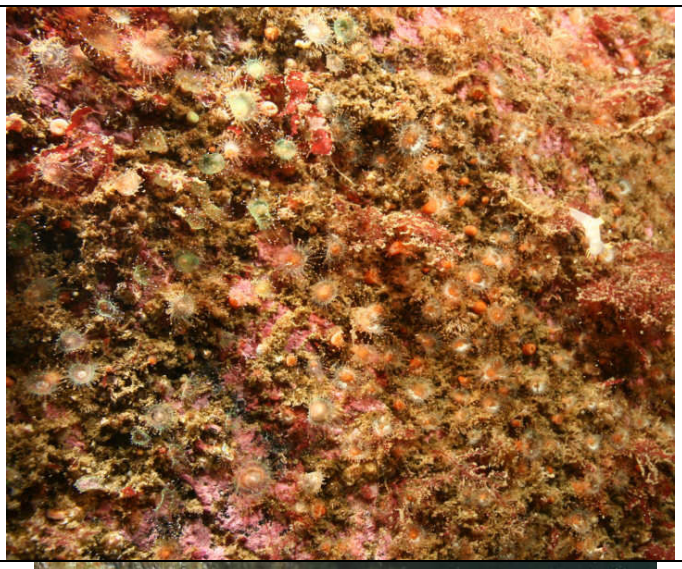
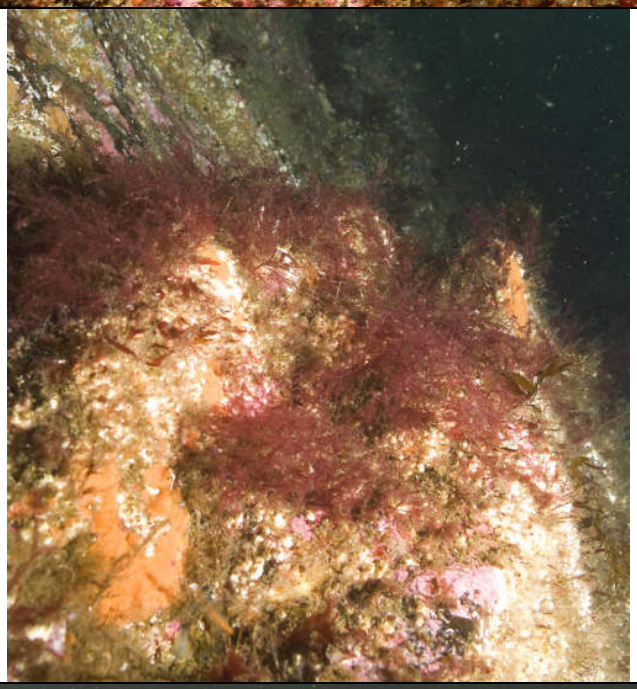
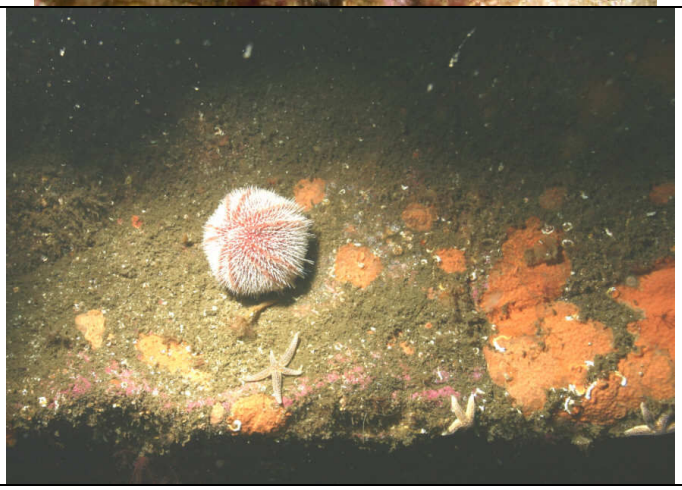
Appendix 10 continued

Biotope	Sites	Photograph
IR.LIR.K.Lsac.Pk *Laminaria saccharina* park on very sheltered lower infralittoral rock	SR03, *D30*, D124	
IR.LIR.K.Lsac.Gz Grazed *Laminaria saccharina* with *Echinus*, brittlestars and coralline crusts on sheltered infralittoral rock	*D129*	
IR.LIR.K.LhypCape Silted, cape-form *Laminaria hyperborea* on very sheltered, infralittoral rock	SR04, *SR05*	

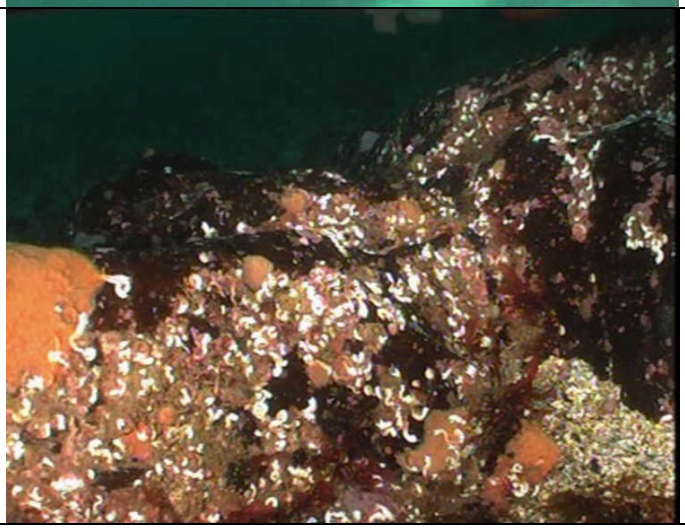
Appendix 10 continued

Biotope	Sites	Photograph
IR.LIR.Lag.ProtFur *Polyides rotundus* and/or *Furcellaria lumbricalis* on reduced salinity infralittoral rock	*SR03*	
IR.FIR.SG.CRSpAsAn Anemones, including *Corynactis viridis*, crustose sponges and colonial ascidians on very exposed or wave surged vertical infralittoral rock	*SR10*	
CR.HCR.XFa Mixed faunal turf communities	*D85*	

Appendix 10 continued

Biotope	Sites	Photograph
CR.HCR.XFa.CvirCri *Corynactis viridis* and a mixed turf of crisiids, *Bugula*, *Scrupocellaria* and *Cellaria* on moderately tide-swept, exposed circalittoral rock	*SR08*	
CR.MCR.EcCr Echinoderms and crustose communities	*SR10*	
CR.MCR.EcCr.FaAlCr Faunal and algal crusts on exposed to moderately wave-exposed circalittoral rock	*SR07*, D72, D79, D94, D106, D110	

Appendix 10 continued

Biotope	Sites	Photograph
CR.MCR.EcCr.FaAlCr.Flu *Flustra foliacea* on slightly scoured circalittoral rock	*D95*	
CR.MCR.EcCr.FaAlCr.Adig *Alcyonium digitatum*, *Pomatoceros triqueter*, algal and bryozoan crusts on wave-exposed circalittoral rock	*D92*	
CR.MCR.EcCr.FaAlCr.Pom Faunal and algal crusts with *Pomatoceros triqueter* and sparse *Alcyonium digitatum* on exposed to moderately wave-exposed circalittoral rock	*D84*, D95, D97, D100, D102, D103	

Appendix 10 continued

Biotope	Sites	Photograph
CR.MCR.EcCr.FaAlCr.Car *Caryophyllia smithii* with faunal and algal crusts on moderately wave-exposed circalittoral rock	*SR10*, D51, D89, D92, D96	
CR.LCR.BrAs.AmenCio Solitary ascidians, including *Ascidia mentula* and *Ciona intestinalis*, on wave-sheltered circalittoral rock	SR03, *SR04*, SR05, D130	
CR.LCR.BrAs.AntAsH *Antedon* spp., solitary ascidians and fine hydroids on sheltered circalittoral rock	*SR06*, D56	

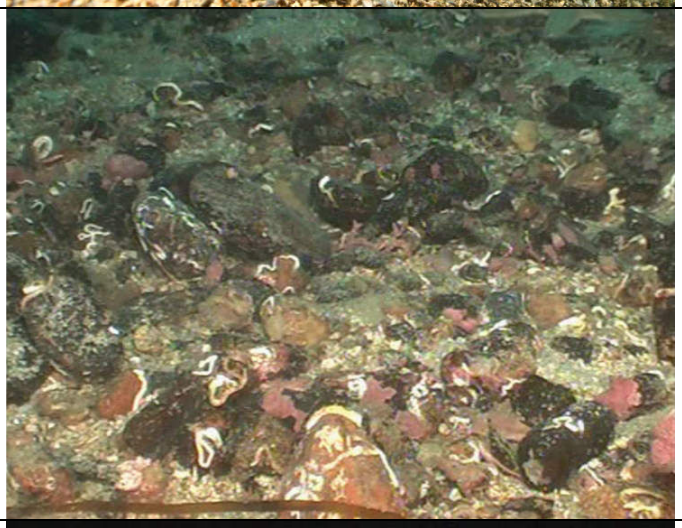
Appendix 10 continued

Biotope	Sites	Photograph
LS.LCS.Sh.BarSh Barren littoral shingle	*IS01*	
LS.LSa.St.Tal Talitrids on the upper shore and strand-line	*IS02*	
LS.LSa.MuSa.HedMacEte *Hediste diversicolor*, *Macoma balthica* and *Eteone longa* in littoral muddy sand	*IS01*, IS02	

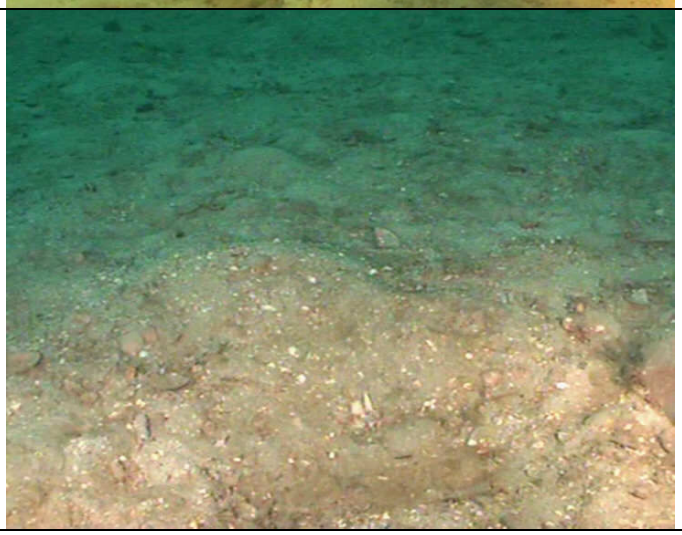
Appendix 10 continued

Biotope	Sites	Photograph
LS.LMx.GvMu.HedMx.Cvol *Hediste diversicolor* and *Corophium volutator* in littoral gravelly sandy mud	*IS02*	
LS.LBR.LMus.Myt.Mx *Mytilus edulis* beds on littoral mixed substrata	M1, M2, *M3*	
LS.LMp.Sm Saltmarsh	*IS01*, IS02	

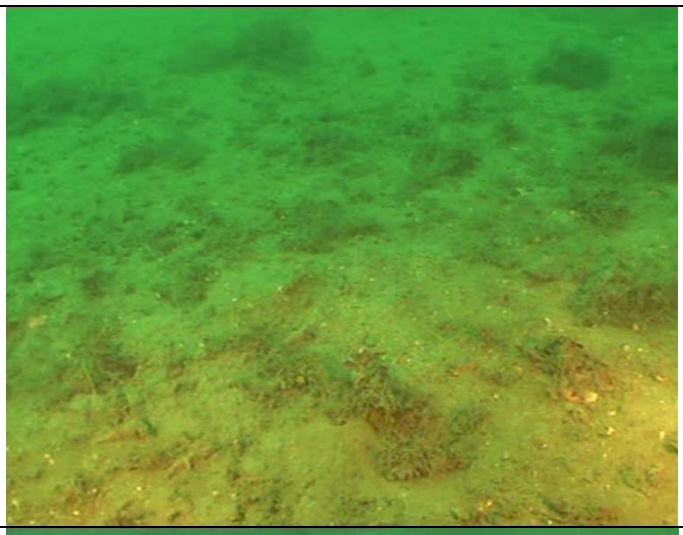
Appendix 10 continued

Biotope	Sites	Photograph
SS.SCS.CCS Circalittoral coarse sediment	*SS06*, D102, D106, D121, D124	
SS.SCS.CCS.PomB *Pomatoceros triqueter* with barnacles and bryozoan crusts on unstable circalittoral cobbles and pebbles	*D80*, D83, D86, D87, D95	
SS.SCS.CCS.MedLumVen *Mediomastus fragilis*, *Lumbrineris* spp. and venerid bivalves in circalittoral coarse sand or gravel	D78, D84, D88, D93, D95, *D98*, D99, D100, D101, D105, D107, D110	

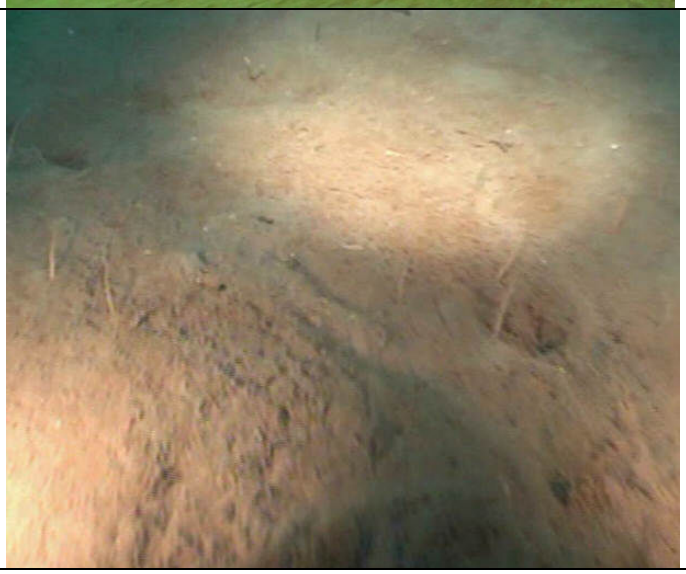
Appendix 10 continued

Biotope	Sites	Photograph
SS.SSa.IMuSa Infralittoral muddy sand	*D54*, D68, D76, D115	
SS.SSa.IMuSa.ArelSa *Arenicola marina* in infralittoral fine sand or muddy sand	D1, *D2*, D3, D6	
SS.SSa.CMuSa Circalittoral muddy sand	SS03, *D114*	

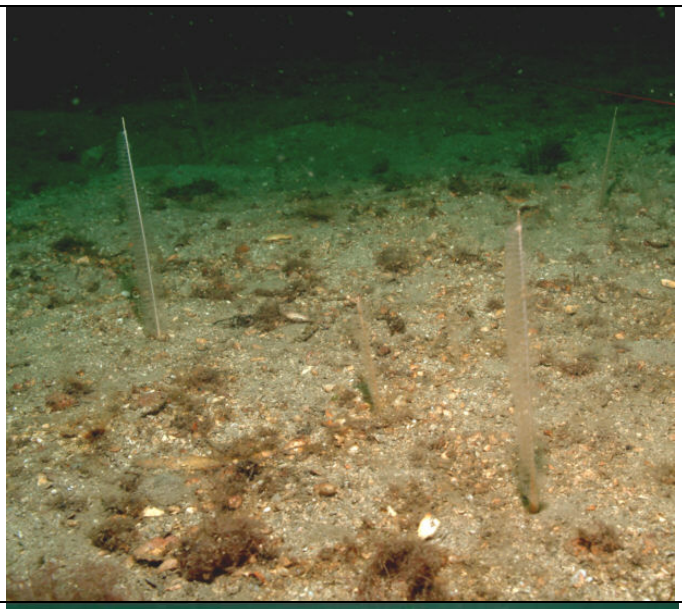
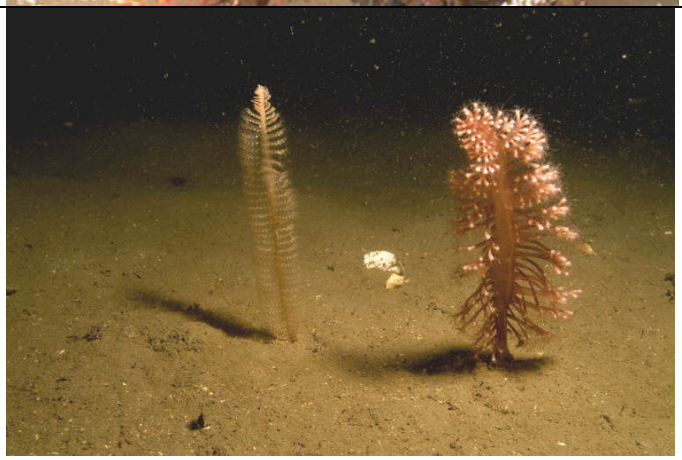
Appendix 10 continued

Biotope	Sites	Photograph
SS.SMu.ISaMu Infralittoral sandy mud	*D24*	
SS.SMu.ISaMu.MysAbr *Mysella bidentata* and *Abra* spp. in infralittoral sandy mud	*D12*	
SS.SMu.IFiMu Infralittoral fine mud	*D120*	

Appendix 10 continued

Biotope	Sites	Photograph
SS.SMu.IFiMu.Are *Arenicola marina* in infralittoral mud	*SD1*, SD2, SD3	
SS.SMu.IFiMu.PhiVir *Philine aperta* and *Virgularia mirabilis* in soft stable infralittoral mud	SS03, *D8*, D22, D29, D30, D32, D34, D37, D38, D42, D59	
SS.SMu.CSaMu Circalittoral sandy mud	*D21*	

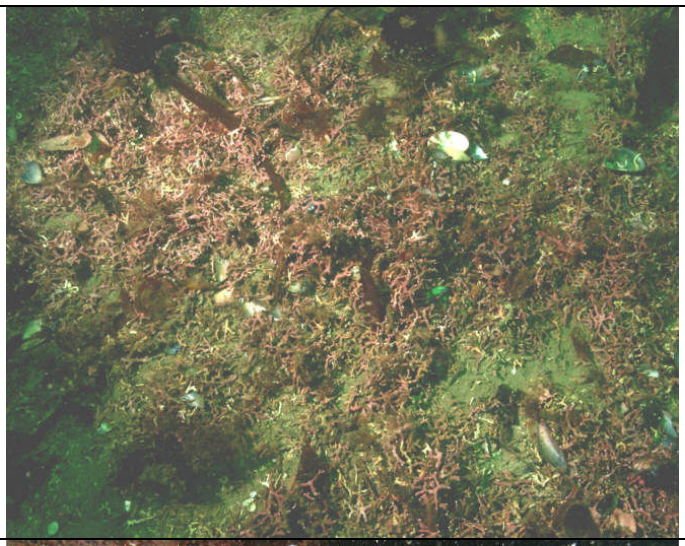
Appendix 10 continued

Biotope	Sites	Photograph
SS.SMu.CSaMu.VirOphPmax *Virgularia mirabilis* and *Ophiura* spp. with *Pecten maximus* on circalittoral sandy or shelly mud	*SS05*, D56, D69, D70, D132	
SS.SMu.CSaMu.VirOphPmax.HAs *Virgularia mirabilis* and *Ophiura* spp. with *Pecten maximus*, hydroids and ascidians on circalittoral sandy or shelly mud with stones	*D40*	
SS.SMu.CFiMu.SpnMeg Seapens and burrowing megafauna in circalittoral fine mud	*SS04*, SS05, D27, D28, D39, D41, D46, D47, D48, D49, D50, D61, D62, D66, D74, D75, D111, D116,	

Appendix 10 continued

Biotope	Sites	Photograph
	D118, D119	
SS.SMu.CFiMu.SpnMeg.Fun Seapens, including *Funiculina quadrangularis*, and burrowing megafauna in undisturbed circalittoral fine mud	*SS04*, D52, D57, D58	
SS.SMx.CMx Circalittoral mixed sediment	*SS10*, D77	
SS.SMx.CMx.CIloMx *Cerianthus lloydii* and other burrowing anemones in circalittoral muddy mixed sediment	*SS05*, D129	

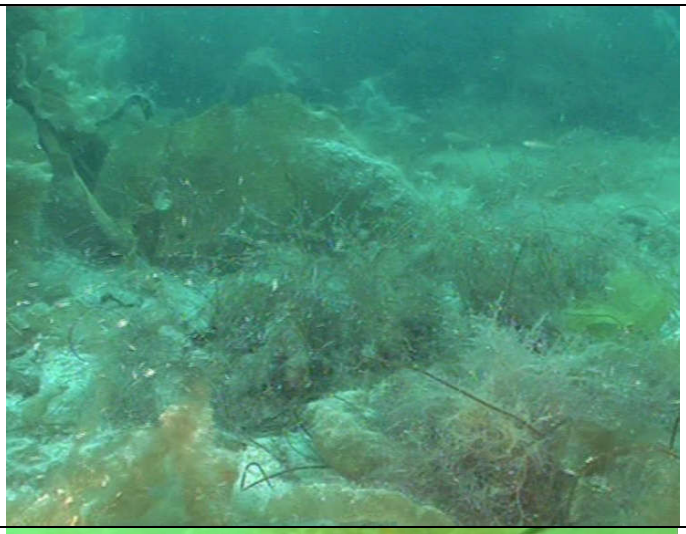
Appendix 10 continued

Biotope	Sites	Photograph
SS.SMp.Mrl.Pcal *Phymatolithon calcareum* maerl beds in infralittoral clean gravel or coarse sand	D71, D125, D126, D127, *ML02*	
SS.SMp.Mrl.Pcal.R *Phymatolithon calcareum* maerl beds with red seaweeds in shallow infralittoral clean gravel or coarse sand	D81, D122, ML01, *ML04*	
SS.SMp.Mrl.Pcal.Nmix *Phymatolithon calcareum* maerl beds with *Neopentadactyla mixta* and other echinoderms in deeper clean gravel or coarse sand	*D73*	

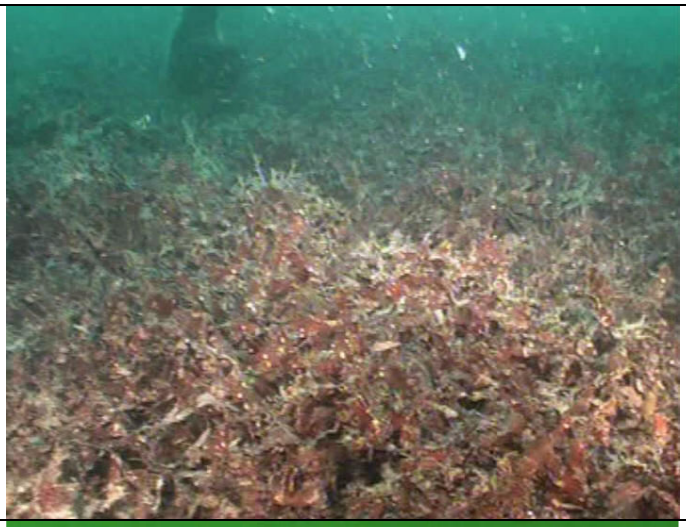
Appendix 10 continued

Biotope	Sites	Photograph
SS.SMp.KSwSS Kelp and seaweed communities on sublittoral sediment	*D4*, D5, D6, D7, D11, D12, D15, D16, D18, D20, D23, D24, D25, D26, D31, D35, D36, D43, D44, D54, D60, D63, D64, D65	
SS.SMp.KSwSS.LsacR *Laminaria saccharina* and red seaweeds on infralittoral sediments	*SS01*, D9	

Appendix 10 continued

Biotope	Sites	Photograph
SS.SMp.KSwSS.LsacR.Sa *Laminaria saccharina* and filamentous red algae on infralittoral sand	*D67*, D131	
SS.SMp.KSwSS.LsacMxVs *Laminaria saccharina* with *Psammechinus miliaris* and/or *Modiolus modiolus* on variable salinity infralittoral mixed sediment	D10, *D13*, D15	
SS.SMp.KSwSS.Tra Mats of *Trailliella* on infralittoral muddy gravel	SS01	

Appendix 10 continued

Biotope	Sites	Photograph
SS.SMp.KSwSS.Pcri Loose-lying mats of *Phyllophora crispa* on infralittoral muddy sediment	*D17*, D19	
SS.SBR.SMus Sublittoral mussel beds (on sublittoral sediment)	*D33*	
SS Sublittoral sediment (dead *Mytilus edulis* shells)	*D123*	

Appendix 11 Photographic log

Details of digital photographs taken during the 2009 survey and lodged with Scottish Natural Heritage. All files are jpegs with the extension 'jpg'. Photographers (Phot) are Carol Hume (CH), Colin Moore (CM), Colin Trigg (CT), Graham Saunders (GS), Joanna Porter (JP), Laura Steel (LS) and Suzanne Henderson (SH)

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMGP0173	20/08/09	LL09IR01	5	58.38603	-5.05897	NC 21270 48249	Littoral habitat - dense *Ascophyllum* blanket on bedrock	CH
IMGP0174	20/08/09	LL09IR01	5	58.38603	-5.05897	NC 21270 48249	Littoral habitat - dense *Ascophyllum* blanket on bedrock	CH
IMGP0175	20/08/09	LL09IR01	5	58.38603	-5.05897	NC 21270 48249	Littoral habitat - dense *Ascophyllum* blanket on bedrock	CH
IMGP0177	20/08/09	LL09IR01	6	58.38603	-5.05897	NC 21270 48249	Littoral habitat - dense *Fucus serratus* zone below *Ascophyllum* zone on bedrock	CH
IMGP0178	20/08/09	LL09IR01	6	58.38603	-5.05897	NC 21270 48249	Littoral habitat - dense *Fucus serratus* zone below *Ascophyllum* zone with vertical rock with dense *Semibalanus* and *Patella vulgata*	CH
IMGP0180	20/08/09	LL09IR01	6	58.38603	-5.05897	NC 21270 48249	Littoral habitat - dense *Fucus serratus* zone on bedrock	CH
IMGP0181	20/08/09	LL09IR01	4	58.38603	-5.05897	NC 21270 48249	Littoral habitat - dense *Fucus vesiculosus* zone and top of *Ascophyllum* band on bedrock	CH
IMGP0182	20/08/09	LL09IR01	4	58.38603	-5.05897	NC 21270 48249	Littoral habitat - *Fucus vesiculosus* and *Ascophyllum* on bedrock	CH
IMGP0183	20/08/09	LL09IR01	4	58.38603	-5.05897	NC 21270 48249	Littoral habitat - upper shore with A*scophyllum*, *Fucus vesiculosus* and lichen zones on bedrock	CH
IMGP0184	20/08/09	LL09IR01	3	58.38603	-5.05897	NC 21270 48249	Littoral habitat - upper shore with *Fucus vesiculosus, Pelvetia* and lichen zones on bedrock	CH
IMGP0185	20/08/09	LL09IR01	3	58.38603	-5.05897	NC 21270 48249	Littoral habitat - *Pelvetia* zone with *Hildenbrandia* spp. on bedrock	CH
IMGP0186	20/08/09	LL09IR01	3	58.38603	-5.05897	NC 21270 48249	Littoral habitat - *Pelvetia* zone with *Fucus spiralis* and *Hildenbrandia* spp. on bedrock	CH
IMGP0187	20/08/09	LL09IR01	2	58.38603	-5.05897	NC 21270 48249	Littoral habitat - *Verrucaria maura* zone with *Pelvetia* on bedrock	CH

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMGP0188	20/08/09	LL09IR01	2	58.38603	-5.05897	NC 21270 48249	Littoral habitat - *Verrucaria maura* zone with *Pelvetia* on bedrock	CH
IMGP0189	20/08/09	LL09IR01	2	58.38603	-5.05897	NC 21270 48249	Littoral habitat - upper shore with *Pelvetia, Verrucaria maura* and supralittoral lichen zones on bedrock	CH
IMGP0190	20/08/09	LL09IR01	1	58.38603	-5.05897	NC 21270 48249	Littoral habitat - *Ramalina*. *Xanthoria*, *Verrucaria maura* and grey lichens on bedrock	CH
IMGP0191	20/08/09	LL09IR01	1	58.38603	-5.05897	NC 21270 48249	Littoral habitat - *Ramalina*. *Xanthoria*, *Verrucaria maura* and grey lichens on bedrock	CH
IMGP0192	20/08/09	LL09IR01	1	58.38603	-5.05897	NC 21270 48249	Littoral habitat - *Ramalina*. *Xanthoria*, *Verrucaria maura* and grey lichens on bedrock	CH
IMGP0193	20/08/09	LL09IR01	1	58.38603	-5.05897	NC 21270 48249	Littoral habitat - supralittoral band containing *Ramalina*. *Xanthoria*, *Verrucaria maura* and grey lichens, with lower band of *V. maura*	CH
IMGP0194	20/08/09	LL09IR01	1	58.38603	-5.05897	NC 21270 48249	Relocation - view down transect	CH
IMGP0196	20/08/09	LL09IR01	1	58.38603	-5.05897	NC 21270 48249	Relocation - view down top of transect	CH
IMGP0197	20/08/09	LL09IR01	1	58.38605	-5.05887	NC 21276 48250	Relocation - view towards marker peg	CH
IMGP0198	20/08/09	LL09IR01	1	58.38603	-5.05910	NC 21262 48249	Relocation - view towards marker peg	CH
IMGP0199	20/08/09	LL09IR01	1	58.38603	-5.05897	NC 21270 48249	Relocation - close-up of marker peg	CH
IMGP0200	20/08/09	LL09IR01	1	58.38603	-5.05897	NC 21270 48249	Close-up - *Armeria maritima*	CH
IMGP0201	20/08/09	LL09IR01	1	58.38603	-5.05897	NC 21270 48249	Close-up - *Armeria maritima*	CH
IMGP0202	20/08/09	LL09IR01	1	58.38603	-5.05897	NC 21270 48249	Close-up - *Solidago virgaurea*	CH
IMGP0203	20/08/09	LL09IR01	1	58.38603	-5.05897	NC 21270 48249	Close-up - *Solidago virgaurea*	CH
IMGP0204	20/08/09	LL09IR01	1	58.38603	-5.05897	NC 21270 48249	Close-up - *Solidago virgaurea*	CH
DSCF1571	20/08/09	LL09SX01	1	58.38603	-5.05897	NC 21270 48249	Sublittoral habitat - rock wall with dense cover of *Trailliella* and *Ascidiella* spp.	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1576	20/08/09	LL09SX01	1	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - rock wall with *Phyllophora crispa* and *Ascidiella aspersa*	GS
DSCF1577	20/08/09	LL09SX01	1	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - rock wall with algal turf and *Ascidiella aspersa*	GS
DSCF1578	20/08/09	LL09SX01	1	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - rock wall with *Phyllophora crispa* and *Ascidiella aspersa*	GS
DSCF1580	20/08/09	LL09SX01	1	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - rock wall with *Carcinus maenas* and *Ascidiella* spp.	GS
DSCF1581	20/08/09	LL09SX01	1	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Saccharina latissima* frond with *Ascidiella* spp.	GS
DSCF1582	20/08/09	LL09SX01	1	58.38603	-5.05897	NC 21270 48249	Sublittoral habitat - rock wall with dense algal turf and *Ascidiella aspersa*	GS
DSCF1584	20/08/09	LL09SX01	1	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - rock wall with algal turf, *Ascidiella aspersa* and *Pholis gunellus*	GS
DSCF1595	20/08/09	LL09SX01	1	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Saccharina latissima* frond with *Macropodia* sp.	GS
DSCF1596	20/08/09	LL09SX01	1	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Saccharina latissima* frond with *Macropodia* sp.	GS
DSCF1597	20/08/09	LL09SX01	1	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Saccharina latissima* frond with *Macropodia* sp.	GS
DSCF1599	20/08/09	LL09SX01	1	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - rock wall with *Phyllophora crispa* and *Ascidiella aspersa*	GS
DSCF1600	20/08/09	LL09SX01	1	58.38603	-5.05897	NC 21270 48249	Sublittoral habitat - rock wall with algal turf and *Ascidiella aspersa*	GS
DSCF1465	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral habitat - view along transect with patchy *Saccharina latissima* and dense *Trailliella*	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1466	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral habitat - view along transect with patchy *Saccharina latissima* and dense *Trailliella*	GS
DSCF1467	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral habitat - patchy *Saccharina latissima, Chorda filum* and dense *Trailliella*	GS
DSCF1468	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral habitat - patchy *Saccharina latissima, Chorda filum* and dense *Trailliella*	GS
DSCF1469	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Aequipecten opercularis* on *Saccharina latissima* frond	GS
DSCF1476	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Aequipecten opercularis* on *Saccharina latissima* frond	GS
DSCF1481	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Macropodia sp.* on *Saccharina latissima* frond	GS
DSCF1483	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Macropodia sp.* on *Saccharina latissima* frond	GS
DSCF1484	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Macropodia sp.* on *Saccharina latissima* frond	GS
DSCF1485	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Macropodia sp.* on *Saccharina latissima* frond	GS
DSCF1487	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral habitat - *Saccharina latissima* forest	GS
DSCF1488	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral habitat - patchy *Saccharina latissima, Chorda filum* and dense *Trailliella*	GS
DSCF1490	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Carcinus maenas* on *Trailliella*	GS
DSCF1491	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Carcinus maenas* on *Trailliella*	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1493	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Chaetopterus* tube	GS
DSCF1499	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Aequipecten opercularis* on *Saccharina latissima* frond	GS
DSCF1504	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Aequipecten opercularis* on *Saccharina latissima* frond	GS
DSCF1506	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Aequipecten opercularis* on *Saccharina latissima* frond	GS
DSCF1507	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Aequipecten opercularis* on *Saccharina latissima* frond	GS
DSCF1509	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Aequipecten opercularis* on *Saccharina latissima* frond	GS
DSCF1524	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Carcinus maenas* on *Saccharina latissima* frond	GS
DSCF1528	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Asterias rubens* on *Trailliella*	GS
DSCF1529	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Gadus morhua* amongst *Saccharina latissima*	GS
DSCF1535	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Syngnathus acus* on *Trailliella*	GS
DSCF1536	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Syngnathus acus* on *Trailliella*	GS
DSCF1539	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Syngnathus acus* on *Trailliella*	GS
DSCF1542	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Syngnathus acus* on *Trailliella*	GS
DSCF1544	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Syngnathus acus* on *Saccharina latissima*	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1545	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Syngnathus acus* on *Saccharina latissima*	GS
DSCF1546	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Syngnathus acus* on *Saccharina latissima*	GS
DSCF1549	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral habitat - *Saccharina latissima* forest	GS
DSCF1550	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral habitat - *Saccharina latissima* forest	GS
DSCF1551	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Ascidiella aspersa* and *Asperococcus turneri*, with *Trailliella* and *Saccharina latissima*	GS
DSCF1552	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Carcinus maenas* on *Trailliella*	GS
DSCF1553	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Carcinus maenas* on *Trailliella*	GS
DSCF1555	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Liocarcinus depurator* on *Saccharina latissima* frond	GS
DSCF1560	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Liocarcinus depurator* on *Saccharina latissima* frond	GS
DSCF1562	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral habitat - *Saccharina latissima* forest	GS
DSCF1563	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral habitat - *Saccharina latissima* forest	GS
DSCF1564	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral habitat - *Saccharina latissima* forest	GS
DSCF1565	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral habitat - *Saccharina latissima* forest with dense *Ascidiella* spp.	GS
DSCF1567	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral habitat - *Saccharina latissima* forest	GS
DSCF1569	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral habitat - *Saccharina latissima* forest	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1574	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Necora puber*	GS
DSCF1585	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Corella parallelogramma*? and bryozoans on *Saccharina latissima* frond	GS
DSCF1590	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - *Ascidiella spp.* on *Saccharina latissima* frond	GS
DSCF1592	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	Sublittoral close-up - mating *Carcinus maenas* on *Saccharina latissima* frond	GS
DSCF1602	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	MNCR phase 2 surveyor on transect (D. Harries)	GS
DSCF1603	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	MNCR phase 2 surveyor on transect (D. Harries)	GS
DSCF1607	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	MNCR phase 2 surveyor on transect (D. Harries)	GS
DSCF1612	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	MNCR phase 2 surveyor on transect (D. Harries)	GS
DSCF1616	20/08/09	LL09SX01	2/3	58.38603	-5.05897	NC 21270 48249	MNCR phase 2 surveyor on transect (D. Harries)	GS
IMGP0130	18/08/09	LL09IR02	6	58.39093	-5.06872	NC 20725 48820	Littoral habitat - *Fucus serratus* zone	CM
IMGP0131	18/08/09	LL09IR02	6	58.39093	-5.06872	NC 20725 48820	Littoral habitat - *Fucus serratus* zone	CM
IMGP0132	18/08/09	LL09IR02	6	58.39093	-5.06872	NC 20725 48820	Littoral close-up - *Fucus serratus*	CM
IMGP0133	18/08/09	LL09IR02	6	58.39093	-5.06872	NC 20725 48820	Littoral close-up - *Fucus serratus*	CM
IMGP0134	18/08/09	LL09IR02	5	58.39093	-5.06872	NC 20725 48820	Littoral habitat - *Fucus vesiculosus* zone	CM
IMGP0135	18/08/09	LL09IR02	5	58.39093	-5.06872	NC 20725 48820	Littoral habitat - *Fucus vesiculosus* zone	CM
IMGP0136	18/08/09	LL09IR02	5	58.39093	-5.06872	NC 20725 48820	Littoral close-up - *Fucus vesiculosus*	CM

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMGP0137	18/08/09	LL09IR02	5	58.39093	-5.06872	NC 20725 48820	Littoral close-up - Extremely large *Ascophyllum nodosum* bladder	CM
IMGP0138	18/08/09	LL09IR02	5	58.39093	-5.06872	NC 20725 48820	Littoral close-up - Extremely large *Ascophyllum nodosum* bladder	CM
IMGP0139	18/08/09	LL09IR02	5	58.39093	-5.06872	NC 20725 48820	Littoral close-up - Extremely large *Ascophyllum nodosum* bladder	CM
IMGP0140	18/08/09	LL09IR02	5	58.39093	-5.06872	NC 20725 48820	Littoral close-up - Extremely large *Ascophyllum nodosum* bladder	CM
IMGP0141	18/08/09	LL09IR02	5	58.39093	-5.06872	NC 20725 48820	Littoral habitat - *Fucus vesiculosus* zone	CM
IMGP0142	18/08/09	LL09IR02	5/6	58.39093	-5.06872	NC 20725 48820	Littoral habitat - *Fucus vesiculosus* and *F. serratus* zones	CM
IMGP0143	18/08/09	LL09IR02	4	58.39093	-5.06872	NC 20725 48820	Littoral habitat - *Fucus spiralis* zone	CM
IMGP0144	18/08/09	LL09IR02	4	58.39093	-5.06872	NC 20725 48820	Littoral habitat - *Fucus spiralis* zone	CM
IMGP0145	18/08/09	LL09IR02	4	58.39093	-5.06872	NC 20725 48820	Littoral habitat - *Fucus spiralis* zone	CM
IMGP0146	18/08/09	LL09IR02	4	58.39093	-5.06872	NC 20725 48820	Littoral habitat - *Fucus spiralis* zone	CM
IMGP0147	18/08/09	LL09IR02	3	58.39093	-5.06872	NC 20725 48820	Littoral habitat - *Pelvetia canaliculata* zone	CM
IMGP0148	18/08/09	LL09IR02	3	58.39093	-5.06872	NC 20725 48820	Littoral habitat - *Pelvetia canaliculata* zone	CM
IMGP0149	18/08/09	LL09IR02	3	58.39093	-5.06872	NC 20725 48820	Littoral habitat - *Pelvetia canaliculata* zone	CM
IMGP0150	18/08/09	LL09IR02	3	58.39093	-5.06872	NC 20725 48820	Littoral habitat - *Pelvetia canaliculata* zone	CM
IMGP0151	18/08/09	LL09IR02	2	58.39093	-5.06872	NC 20725 48820	Littoral habitat - *Verrucaria maura* zone	CM
IMGP0152	18/08/09	LL09IR02	2	58.39093	-5.06872	NC 20725 48820	Littoral habitat - *Verrucaria maura* zone	CM

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMGP0153	18/08/09	LL09IR02	2	58.39093	-5.06872	NC 20725 48820	Littoral habitat - *Verrucaria maura* zone	CM
IMGP0154	18/08/09	LL09IR02	2/3/4	58.39093	-5.06872	NC 20725 48820	Littoral habitat - transect line through *Verrucaria maura*, *Pelvetia* and *Fucus spiralis* zones	CM
IMGP0155	18/08/09	LL09IR02	1	58.39093	-5.06872	NC 20725 48820	Littoral habitat - supralittoral lichen zone, with *Prasiola stipitata*	CM
IMGP0156	18/08/09	LL09IR02	1	58.39093	-5.06872	NC 20725 48820	Patch of *Prasiola*, mostly above start of transect	CM
IMGP0157	18/08/09	LL09IR02		58.39093	-5.06872	NC 20725 48820	Relocation - view down transect from near piton	CM
IMGP0158	18/08/09	LL09IR02	1	58.39093	-5.06872	NC 20725 48820	Transect line through zone 1	CM
IMGP0159	18/08/09	LL09IR02		58.39093	-5.06872	NC 20725 48820	Relocation - view down transect	CM
IMGP0160	18/08/09	LL09IR02					Relocation - view towards piton	CM
IMGP0161	18/08/09	LL09IR02		58.39093	-5.06877	NC 20722 48820	Relocation - view towards piton	CM
IMGP0162	18/08/09	LL09IR02	1	58.39093	-5.06867	NC 20728 48820	Relocation - view towards piton	CM
DSCF1277	18/08/09	LL09IR02	6	58.39093	-5.06872	NC 20725 48820	Littoral habitat - *Fucus serratus* zone seen from underwater	GS
DSCF1278	18/08/09	LL09IR02	6	58.39093	-5.06872	NC 20725 48820	Littoral habitat - *Fucus serratus* zone seen from underwater	GS
DSCF1279	18/08/09	LL09IR02	6	58.39093	-5.06872	NC 20725 48820	Littoral habitat - *Fucus serratus* zone seen from underwater	GS
DSCF1280	18/08/09	LL09SR02		58.39093	-5.06872	NC 20725 48820	MNCR phase 2 surveyor on transect (D. Harries)	GS
DSCF1244	18/08/09	LL09SR02	1	58.39093	-5.06872	NC 20725 48820	Sublittoral habitat - *Metridium senile* and *Alcyonium digitatum* on tideswept bedrock	GS
DSCF1245	18/08/09	LL09SR02	1	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Metridium senile* and *Alcyonium digitatum* on tideswept bedrock	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1246	18/08/09	LL09SR02	1	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Metridium senile* and *Alcyonium digitatum* on tideswept bedrock	GS
DSCF1253	18/08/09	LL09SR02	1	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - dense dwarf *Metridium senile* on tideswept bedrock	GS
DSCF1254	18/08/09	LL09SR02	1	58.39093	-5.06872	NC 20725 48820	Sublittoral habitat - tideswept *Laminaria hyperborea* forest on bedrock	GS
DSCF1255	18/08/09	LL09SR02	1	58.39093	-5.06872	NC 20725 48820	Sublittoral habitat - tideswept *Laminaria hyperborea* forest on bedrock	GS
DSCF1256	18/08/09	LL09SR02	1	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - dense dwarf *Metridium senile* beneath *Laminaria hyperborea*	GS
DSCF1257	18/08/09	LL09SR02	1	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - dwarf *Metridium senile* and *Alcyonium digitatum* on tideswept bedrock	GS
DSCF1258	18/08/09	LL09SR02	1	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - dense dwarf *Metridium senile* on tideswept bedrock	GS
DSCF1259	18/08/09	LL09SR02	1	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - dense dwarf *Metridium senile* on tideswept bedrock	GS
DSCF1261	18/08/09	LL09SR02	1	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - dwarf *Metridium senile* and *Alcyonium digitatum* on tideswept bedrock	GS
DSCF1262	18/08/09	LL09SR02	1	58.39093	-5.06872	NC 20725 48820	Sublittoral habitat - *Metridium senile,* barnacles and *Carcinus maenas* on tideswept bedrock	GS
DSCF1263	18/08/09	LL09SR02	1	58.39093	-5.06872	NC 20725 48820	Sublittoral habitat - dense *Metridium senile,* with erect bryozoans *and cushion sponges* on tideswept bedrock	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1264	18/08/09	LL09SR02	1	58.39093	-5.06872	NC 20725 48820	Sublittoral habitat - dense *Metridium senile,* with erect bryozoans and cushion sponges on tideswept bedrock	GS
DSCF1266	18/08/09	LL09SR02	1	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - dense barnacles with *Carcinus maenas* and *Asterias rubens*	GS
DSCF1271	18/08/09	LL09SR02	1	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Eucratea loricata*, dwarf *Metridium senile* and *Henricia sanguinolenta* on tideswept bedrock	GS
DSCF1300	18/08/09	LL09SR02	1	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - dense dwarf *Metridium senile* on tideswept bedrock	GS
DSCF1301	18/08/09	LL09SR02	1	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - dense dwarf *Metridium senile* on tideswept bedrock	GS
DSCF1317	18/08/09	LL09SR02	1	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - dense barnacles with *Nucella lapillus*	GS
DSCF1238	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Eucratea loricata* on boulders	GS
DSCF1239	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Eucratea loricata* on boulders	GS
DSCF1240	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Eucratea loricata* on boulders	GS
DSCF1243	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Eucratea loricata* on boulders	GS
DSCF1265	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - dense barnacles with *Carcinus maenas* and *Asterias rubens* on boulders	GS
DSCF1267	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - dense barnacles with *Carcinus maenas* and *Asterias rubens* on boulders	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1268	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - dense barnacles with *Carcinus maenas* and *Asterias rubens* on boulders	GS
DSCF1269	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Balanus crenatus*, dwarf *Metridium* and *Alcyonidium hirsutum*	GS
DSCF1270	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Balanus crenatus*, dwarf *Metridium* and *Alcyonidium hirsutum*	GS
DSCF1272	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Laminaria hyperborea* holdfasts with dwarf *Metridium*	GS
DSCF1273	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Laminaria hyperborea* holdfasts with dwarf *Metridium*	GS
DSCF1274	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Laminaria hyperborea* stipe heavily epiphytised with red algae	GS
DSCF1275	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - dwarf *Metridium* on shell gravel	GS
DSCF1283	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Eucratea loricata* and *Cryptopleura ramosa*? on tideswept boulders	GS
DSCF1288	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Eucratea loricata* and *Cryptopleura ramosa*? on tideswept boulders	GS
DSCF1289	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral habitat - *Laminaria hyperborea* forest on tideswept boulders	GS
DSCF1291	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral habitat - pebbles and cobbles on shell gravel with dwarf *Metridium*	GS
DSCF1292	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral habitat - pebbles and cobbles on shell gravel with dwarf *Metridium*	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1293	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Laminaria hyperborea* stipe with *Palmaria palmata*	GS
DSCF1296	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Laminaria hyperborea* stipe with *Halichondria panicea* and dwarf *Metridium*	GS
DSCF1297	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Laminaria hyperborea* stipe with *Halichondria panicea* and dwarf *Metridium*	GS
DSCF1298	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Alcyonidium hirsutum* and dwarf *Metridium* on tideswept boulder	GS
DSCF1299	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Alcyonidium hirsutum* and dwarf *Metridium* on tideswept boulder	GS
DSCF1302	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Necora puber*	GS
DSCF1303	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Necora puber*	GS
DSCF1304	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Dilsea carnosa*	GS
DSCF1305	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Callophyllis laciniata* and dwarf *Metridium* on tideswept boulder	GS
DSCF1306	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Callophyllis laciniata* and dwarf *Metridium* on tideswept boulder	GS
DSCF1307	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Callophyllis laciniata* and dwarf *Metridium* on tideswept boulder	GS
DSCF1308	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Callophyllis laciniata* and dwarf *Metridium* on tideswept boulder	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1309	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Laminaria hyperborea* stipe and holdfast with *Cryptopleura ramosa*? and dwarf *Metridium*	GS
DSCF1310	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral close-up - *Laminaria hyperborea* stipe with *Ptilota gunneri*	GS
DSCF1312	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral habitat - *Laminaria hyperborea* forest on tideswept boulders with *Centrolabrus exoletus*	GS
DSCF1313	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral habitat - *Laminaria hyperborea* stipes on tideswept boulders	GS
DSCF1314	18/08/09	LL09SR02	2	58.39093	-5.06872	NC 20725 48820	Sublittoral habitat - *Laminaria hyperborea* understorey with dense dwarf *Metridium* and *Asterias rubens*	GS
DSCF1934	19/08/09	LL09IR03	4	58.41443	-5.06327	NC 21163 51420	Littoral close-up - dense *Ascophyllum nodosum*	CM
DSCF1935	19/08/09	LL09IR03	4	58.41443	-5.06327	NC 21163 51420	Littoral habitat - *Ascophyllum nodosum zone*	CM
DSCF1936	19/08/09	LL09IR03	4	58.41443	-5.06327	NC 21163 51420	Littoral habitat - *Ascophyllum nodosum zone*	CM
DSCF1937	19/08/09	LL09IR03	4	58.41443	-5.06327	NC 21163 51420	Littoral habitat - *Ascophyllum nodosum zone*	CM
DSCF1938	19/08/09	LL09IR03	4	58.41443	-5.06327	NC 21163 51420	Littoral habitat - *Ascophyllum nodosum zone*	CM
DSCF1939	19/08/09	LL09IR03	3	58.41443	-5.06327	NC 21163 51420	Littoral close-up - narrow band of *Fucus vesiculosus*	CM
DSCF1940	19/08/09	LL09IR03	3	58.41443	-5.06327	NC 21163 51420	Littoral close-up - narrow band of *Fucus vesiculosus*	CM
DSCF1941	19/08/09	LL09IR03	3	58.41443	-5.06327	NC 21163 51420	Littoral close-up - narrow band of *Fucus vesiculosus*	CM
DSCF1942	19/08/09	LL09IR03	3/4	58.41443	-5.06327	NC 21163 51420	Littoral habitat - *Ascophyllum nodosum* and *Pelvetia canaliculata* zones	CM

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1943	19/08/09	LL09IR03		58.41443	-5.06327	NC 21163 51420	Relocation - view down transect from marker	CM
DSCF1944	19/08/09	LL09IR03	3	58.41443	-5.06327	NC 21163 51420	Littoral habitat - *Pelvetia canaliculata* zone	CM
DSCF1945	19/08/09	LL09IR03	3	58.41443	-5.06327	NC 21163 51420	Littoral habitat - *Pelvetia canaliculata* zone	CM
DSCF1946	19/08/09	LL09IR03	3/4	58.41443	-5.06327	NC 21163 51420	Littoral habitat - *Ascophyllum nodosum* and *Pelvetia canaliculata* zones	CM
DSCF1947	19/08/09	LL09IR03	2	58.41443	-5.06327	NC 21163 51420	Littoral habitat - *Pelvetia canaliculata* zone below *Verrucaria maura/Lichina confinis* zone	CM
DSCF1948	19/08/09	LL09IR03	2	58.41443	-5.06327	NC 21163 51420	Littoral habitat - *Verrucaria maura/Lichina confinis* zone	CM
DSCF1949	19/08/09	LL09IR03	2	58.41443	-5.06327	NC 21163 51420	Littoral habitat - *Verrucaria maura/Lichina confinis* zone	CM
DSCF1950	19/08/09	LL09IR03	1	58.41443	-5.06327	NC 21163 51420	Littoral habitat - supralittoral lichen zone with *Ramalina siliquosa*	CM
DSCF1951	19/08/09	LL09IR03	1	58.41443	-5.06327	NC 21163 51420	Littoral habitat - supralittoral lichen zone	CM
DSCF1952	19/08/09	LL09IR03	1	58.41445	-5.06337	NC 21157 51422	Relocation - view towards marker	CM
DSCF1953	19/08/09	LL09IR03	1	58.41442	-5.06313	NC 21171 51418	Relocation - view towards marker	CM
DSCF1954	19/08/09	LL09IR03		58.41443	-5.06327	NC 21163 51420	Relocation - view of transect from the east	CM
DSCF1955	19/08/09	LL09IR03		58.41443	-5.06327	NC 21163 51420	Relocation - close-up of marker peg	CM
DSCF1956	19/08/09	LL09IR03	1	58.41443	-5.06327	NC 21163 51420	Littoral close-up - *Anaptychia fusca*	CM
IMGP0164	19/08/09	LL09IR03	1	58.41443	-5.06327	NC 21163 51420	Littoral close-up - *Anaptychia fusca*	CM
IMGP0165	19/08/09	LL09IR03	1	58.41443	-5.06327	NC 21163 51420	Littoral close-up - *Anaptychia fusca*	CM
IMGP0166	19/08/09	LL09IR03	1	58.41443	-5.06327	NC 21163 51420	Littoral close-up - *Anaptychia fusca*	CM

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMGP0167	19/08/09	LL09IR03	1	58.41443	-5.06327	NC 21163 51420	Littoral close-up - lichens indet.	CM
IMGP0168	19/08/09	LL09IR03		58.41443	-5.06327	NC 21163 51420	Relocation - view of upper part of transect line	CM
IMGP0169	19/08/09	LL09IR03	1	58.41443	-5.06325	NC 21164 51420	Relocation - close-up of additional marker piton	CM
IMGP0170	19/08/09	LL09IR03		58.41443	-5.06327	NC 21163 51420	Relocation - view of upper part of transect line	CM
IMGP0171	19/08/09	LL09IR03	1	58.41443	-5.06327	NC 21163 51420	Relocation - view down transect line	CM
IMGP0172	19/08/09	LL09IR03		58.41443	-5.06327	NC 21163 51420	Relocation - view offshore along line of transect	CM
DSCF1444	19/08/09	LL09SX03	1	58.41443	-5.06327	NC 21163 51420	Sublittoral close-up - *Ascidiella aspersa* on *Halidrys siliquosa*	GS
DSCF1445	19/08/09	LL09SX03	1	58.41443	-5.06327	NC 21163 51420	Sublittoral close-up - *Pagurus bernhardus* with hydractiniids	GS
DSCF1442	19/08/09	LL09SX03	2	58.41443	-5.06327	NC 21163 51420	Sublittoral habitat - *Saccharina latissima* forest	GS
DSCF1443	19/08/09	LL09SX03	2	58.41443	-5.06327	NC 21163 51420	Sublittoral habitat - *Saccharina latissima* forest	GS
DSCF1437	19/08/09	LL09SX03	3	58.41443	-5.06327	NC 21163 51420	Sublittoral close-up - *Ascidiella aspersa* on *Saccharina latissima*	GS
DSCF1439	19/08/09	LL09SX03	3	58.41443	-5.06327	NC 21163 51420	Sublittoral close-up - *Aequipecten opercularis* on *Saccharina latissima*	GS
DSCF1434	19/08/09	LL09SX03	4	58.41443	-5.06327	NC 21163 51420	Sublittoral habitat - silted bedrock slope with *Carcinus maenas* and *Pagurus bernhardus*	GS
DSCF1435	19/08/09	LL09SX03	4	58.41443	-5.06327	NC 21163 51420	Sublittoral close-up - silted bedrock slope with *Suberites carnosus*	GS
DSCF1430	19/08/09	LL09SX03	5	58.41443	-5.06327	NC 21163 51420	Sublittoral habitat - boulders on muddy sand with hydroids including *Nemertesia ramosa*	GS
DSCF1433	19/08/09	LL09SX03	5	58.41443	-5.06327	NC 21163 51420	Sublittoral habitat - boulders on muddy sand with hydroids including *Nemertesia ramosa*	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1422	19/08/09	LL09SX03	6	58.41443	-5.06327	NC 21163 51420	Sublittoral close-up - *Carcinus maenas* and *Sagartiogeton laceratus*	GS
DSCF1424	19/08/09	LL09SX03	6	58.41443	-5.06327	NC 21163 51420	Sublittoral close-up - *Sagartiogeton laceratus*	GS
DSCF1426	19/08/09	LL09SX03	6	58.41443	-5.06327	NC 21163 51420	Sublittoral close-up - *Sagartiogeton laceratus*	GS
DSCF1427	19/08/09	LL09SX03	6	58.41443	-5.06327	NC 21163 51420	Sublittoral close-up - *Sagartiogeton laceratus*	GS
DSCF1428	19/08/09	LL09SX03	6	58.41443	-5.06327	NC 21163 51420	Sublittoral habitat - boulder on muddy sand with *Nemertesia ramosa*	GS
DSCF1896	19/08/09	LL09IR04	5/6	58.40398	-5.07325	NC 20527 50284	Littoral habitat - *Fucus serratus* and *Semibalanus/F. vesiculosus* zones	CH
DSCF1897	19/08/09	LL09IR04	5/6	58.40398	-5.07325	NC 20527 50284	Littoral habitat - *Fucus serratus* and *Semibalanus/F. vesiculosus* zones	CH
DSCF1898	19/08/09	LL09IR04	5/6	58.40398	-5.07325	NC 20527 50284	Littoral habitat - *Fucus serratus* and *Semibalanus/F. vesiculosus* zones	CH
DSCF1899	19/08/09	LL09IR04	5/6	58.40398	-5.07325	NC 20527 50284	Littoral habitat - *Fucus serratus* and *Semibalanus/F. vesiculosus* zones	CH
DSCF1900	19/08/09	LL09IR04	5	58.40398	-5.07325	NC 20527 50284	Littoral habitat - *Semibalanus/Fucus vesiculosus* zone	CH
DSCF1901	19/08/09	LL09IR04	5	58.40398	-5.07325	NC 20527 50284	Littoral habitat - *Semibalanus/Fucus vesiculosus* zone	CH
DSCF1902	19/08/09	LL09IR04	5	58.40398	-5.07325	NC 20527 50284	Littoral habitat - *Semibalanus/Fucus vesiculosus* zone	CH
DSCF1903	19/08/09	LL09IR04	5	58.40398	-5.07325	NC 20527 50284	Littoral habitat - *Semibalanus/Fucus vesiculosus* zone	CH
DSCF1904	19/08/09	LL09IR04	5	58.40398	-5.07325	NC 20527 50284	Littoral close-up - *Semibalanus/Fucus vesiculosus* zone with *Ascophyllum nodosum*	CH
DSCF1905	19/08/09	LL09IR04	5	58.40398	-5.07325	NC 20527 50284	Littoral close-up - *Semibalanus/Fucus vesiculosus* zone with *Ascophyllum nodosum*	CH

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1906	19/08/09	LL09IR04	5	58.40398	-5.07325	NC 20527 50284	Littoral close-up - *Semibalanus/Fucus vesiculosus* zone with *Ascophyllum nodosum*	CH
DSCF1907	19/08/09	LL09IR04	4	58.40398	-5.07325	NC 20527 50284	Littoral habitat - *Fucus spiralis* zone	CH
DSCF1908	19/08/09	LL09IR04	4	58.40398	-5.07325	NC 20527 50284	Littoral habitat - *Fucus spiralis* zone	CH
DSCF1910	19/08/09	LL09IR04	3	58.40398	-5.07325	NC 20527 50284	Littoral habitat - *Pelvetia* zone	CH
DSCF1911	19/08/09	LL09IR04	3	58.40398	-5.07325	NC 20527 50284	Littoral habitat - *Pelvetia* zone	CH
DSCF1912	19/08/09	LL09IR04	3	58.40398	-5.07325	NC 20527 50284	Littoral habitat - *Pelvetia* zone	CH
DSCF1913	19/08/09	LL09IR04	3	58.40398	-5.07325	NC 20527 50284	Littoral habitat - *Pelvetia* zone	CH
DSCF1914	19/08/09	LL09IR04	2	58.40398	-5.07325	NC 20527 50284	Littoral habitat - *Verrucaria maura* zone	CH
DSCF1915	19/08/09	LL09IR04	2	58.40398	-5.07325	NC 20527 50284	Littoral habitat - *Verrucaria maura* zone	CH
DSCF1916	19/08/09	LL09IR04	2	58.40398	-5.07325	NC 20527 50284	Littoral habitat - *Verrucaria maura* zone	CH
DSCF1917	19/08/09	LL09IR04	1	58.40398	-5.07325	NC 20527 50284	Littoral habitat - supralittoral lichen zone with *Ramalina siliquosa*	CH
DSCF1918	19/08/09	LL09IR04	1	58.40398	-5.07325	NC 20527 50284	Littoral habitat - supralittoral lichen zone with *Ramalina siliquosa*	CH
DSCF1919	19/08/09	LL09IR04	1	58.40398	-5.07325	NC 20527 50284	Littoral habitat - supralittoral lichen zone with *Ramalina siliquosa*	CH
DSCF1920	19/08/09	LL09IR04	1	58.40398	-5.07325	NC 20527 50284	Littoral habitat - supralittoral lichen zone with *Ramalina siliquosa*	CH
DSCF1921	19/08/09	LL09IR04	1	58.40398	-5.07325	NC 20527 50284	Littoral habitat - supralittoral lichen zone with heather	CH
DSCF1922	19/08/09	LL09IR04		58.40398	-5.07325	NC 20527 50284	Relocation - view down transect from marker	CH
DSCF1923	19/08/09	LL09IR04		58.40398	-5.07325	NC 20527 50284	Relocation - view down transect from marker	CH

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1924	19/08/09	LL09IR04		58.40398	-5.07325	NC 20527 50284	Relocation - view offshore along line of transect	CH
DSCF1925	19/08/09	LL09IR04		58.40398	-5.07325	NC 20527 50284	General - RV *Serpula* from transect marker	CH
DSCF1926	19/08/09	LL09IR04		58.40398	-5.07325	NC 20527 50284	General - RV *Serpula* from transect marker	CH
DSCF1927	19/08/09	LL09IR04		58.40398	-5.07325	NC 20527 50284	General - RV *Serpula* from transect marker	CH
DSCF1928	19/08/09	LL09IR04		58.40398	-5.07325	NC 20527 50284	General - View towards Ardmore with mussel lines	CH
DSCF1929	19/08/09	LL09IR04		58.40398	-5.07325	NC 20527 50284	Relocation - view to landward from station marker	CH
DSCF1930	19/08/09	LL09IR04		58.40398	-5.07325	NC 20527 50284	Relocation - view to south from station marker	CH
DSCF1931	19/08/09	LL09IR04		58.40395	-5.07322	NC 20529 50280	Relocation - view towards transect marker	CH
DSCF1932	19/08/09	LL09IR04		58.40395	-5.07322	NC 20529 50280	Relocation - view of transect line	CH
DSCF1933	19/08/09	LL09IR04		58.40395	-5.07322	NC 20529 50280	Relocation - additional piton marker	CH
DSCF1395	19/08/09	LL09SX04		58.40398	-5.07325	NC 20527 50284	Pelagic - *Chrysaora hyoscella*	GS
DSC_6807	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Pennatula phosphorea*	CH
DSC_6812	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *hydroid clump*	CH
DSC_6814	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Pennatula phosphorea*	CH
DSC_6815	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Asterias rubens*	CH
DSC_6825	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Metridium senile* - closed	CH
DSC_6827	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Cerianthus lloydii*	CH
DSC_6828	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Cerianthus lloydii*	CH

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSC_6829	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Cerianthus lloydii*	CH
DSC_6830	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Pennatula phosphorea*	CH
DSC_6834	19/08/09	LL09SX04		58.40398	-5.07325	NC 20527 50284	Pelagic - *Chrysaora hyoscella*	CH
DSC_6835	19/08/09	LL09SX04		58.40398	-5.07325	NC 20527 50284	Pelagic - *Chrysaora hyoscella*	CH
DSC_6836	19/08/09	LL09SX04		58.40398	-5.07325	NC 20527 50284	Pelagic - *Chrysaora hyoscella*	CH
DSCF1391	19/08/09	LL09SX04	2	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Desmarestia aculeata* and *Asperococcus* sp.	GS
DSCF1392	19/08/09	LL09SX04	2	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Ascidia mentula*	GS
DSCF1398	19/08/09	LL09SX04	2	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Labrus bimaculatus*	GS
DSCF1399	19/08/09	LL09SX04	2	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Laminaria hyperborea* frond with *Ascidiella aspersa* and *Scrupocellaria reptans*	GS
DSCF1400	19/08/09	LL09SX04	2	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Laminaria hyperborea* frond with dense *Ascidiella aspersa*	GS
DSCF1411	19/08/09	LL09SX04	2	58.40398	-5.07325	NC 20527 50284	Sublittoral habitat - *Chorda filum*	GS
DSCF1412	19/08/09	LL09SX04	2	58.40398	-5.07325	NC 20527 50284	Sublittoral habitat - *Chorda filum*	GS
DSCF1413	19/08/09	LL09SX04	2	58.40398	-5.07325	NC 20527 50284	Sublittoral habitat - *Chorda filum*	GS
DSCF1414	19/08/09	LL09SX04	2	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Hyas* sp. on *Saccharina latissima*	GS
DSCF1418	19/08/09	LL09SX04	2	58.40398	-5.07325	NC 20527 50284	Sublittoral habitat - large boulders with *Desmarestia aculeata*, *Asperococcus* sp. and *Ascidiella* spp.	GS
DSCF1420	19/08/09	LL09SX04	2	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Laminaria* sp frond with *Scrupocellaria reptans*	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1421	19/08/09	LL09SX04	2	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Laminaria hyperborea* frond with *Ascidiella* spp. and *Scrupocellaria reptans*	GS
DSCF1373	19/08/09	LL09SX04	4	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Munida rugosa*	GS
DSCF1374	19/08/09	LL09SX04	4	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Munida rugosa* with *Caryophyllia smithii*	GS
DSCF1375	19/08/09	LL09SX04	4	58.40398	-5.07325	NC 20527 50284	Sublittoral habitat - steep bedrock with dense *Ascidiella aspersa*	GS
DSCF1376	19/08/09	LL09SX04	4	58.40398	-5.07325	NC 20527 50284	Sublittoral habitat - steep bedrock with dense *Ascidiella aspersa*	GS
DSCF1377	19/08/09	LL09SX04	4	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - steep bedrock with *Ascidiella aspersa and Necora puber*	GS
DSCF1378	19/08/09	LL09SX04	4	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - steep bedrock with *Ascidiella aspersa and Necora puber*	GS
DSCF1379	19/08/09	LL09SX04	4	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - steep bedrock with *Ascidiella aspersa* and *Botryllus schlosseri*	GS
DSCF1383	19/08/09	LL09SX04	4	58.40398	-5.07325	NC 20527 50284	Sublittoral habitat - bedrock with dense *Ascidiella aspersa*	GS
DSCF1384	19/08/09	LL09SX04	4	58.40398	-5.07325	NC 20527 50284	Sublittoral habitat - bedrock with dense *Ascidiella aspersa*	GS
DSCF1385	19/08/09	LL09SX04	4	58.40398	-5.07325	NC 20527 50284	Sublittoral habitat - bedrock with dense *Ascidiella aspersa*	GS
DSCF1388	19/08/09	LL09SX04	3/4	58.40398	-5.07325	NC 20527 50284	Sublittoral habitat - dense *Saccharina latissima* with clump of *Ascidiella aspersa*	GS
DSCF1364	19/08/09	LL09SX04	5	58.40398	-5.07325	NC 20527 50284	Sublittoral habitat - silty bedrock with dense *Ascidiella aspersa* and *Liocarcinus depurator*	GS
DSCF1365	19/08/09	LL09SX04	5	58.40398	-5.07325	NC 20527 50284	Sublittoral habitat - silty rock with dense *Ascidiella aspersa*	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1368	19/08/09	LL09SX04	5	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Polyplumaria frutescens*?	GS
DSCF1370	19/08/09	LL09SX04	5	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Polyplumaria frutescens*?	GS
DSCF1371	19/08/09	LL09SX04	5	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - dense patch of *Ascidiella aspersa*	GS
DSCF1372	19/08/09	LL09SX04	5	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - dense patch of *Ascidiella aspersa*	GS
DSCF1322	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral habitat - muddy sand with *Pennatula phosphorea*	GS
DSCF1323	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral habitat - muddy sand with *Pennatula phosphorea*	GS
DSCF1326	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral habitat - muddy sand with *Pennatula phosphorea*	GS
DSCF1330	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Pennatula phosphorea*	GS
DSCF1333	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Pennatula phosphorea*	GS
DSCF1334	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Pennatula phosphorea*	GS
DSCF1336	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral habitat - muddy sand with *Pennatula phosphorea* and burrow	GS
DSCF1345	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Munida rugosa* in burrow mouth	GS
DSCF1346	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Munida rugosa* in burrow mouth	GS
DSCF1353	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Pennatula phosphorea* and *Virgularia mirabilis*	GS
DSCF1355	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Pennatula phosphorea* and *Virgularia mirabilis*	GS
DSCF1356	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Pennatula phosphorea* and *Asterias rubens*	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1357	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Pennatula phosphorea* and *Asterias rubens*	GS
DSCF1359	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral habitat - muddy sand with *Pennatula phosphorea*	GS
DSCF1361	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral habitat - muddy sand with *Pennatula phosphorea*	GS
DSCF1362	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Pennatula phosphorea*	GS
DSCF1363	19/08/09	LL09SX04	6	58.40398	-5.07325	NC 20527 50284	Sublittoral close-up - *Pennatula phosphorea*	GS
IMGP0070	16/08/09	LL09IR05	6	58.40182	-5.10462	NC 18684 50127	Littoral habitat - *Fucus serratus* zone	CM
IMGP0071	16/08/09	LL09IR05	6	58.40182	-5.10462	NC 18684 50127	Littoral habitat - *Fucus serratus* zone	CM
IMGP0072	16/08/09	LL09IR05	6	58.40182	-5.10462	NC 18684 50127	Littoral close-up - *Fucus serratus*	CM
IMGP0073	16/08/09	LL09IR05	6	58.40182	-5.10462	NC 18684 50127	Littoral close-up - *Fucus serratus*	CM
IMGP0074	16/08/09	LL09IR05	5/6	58.40182	-5.10462	NC 18684 50127	Littoral habitat - *Fucus serratus* and *F. vesiculosus* zones	CM
IMGP0075	16/08/09	LL09IR05	5	58.40182	-5.10462	NC 18684 50127	Littoral habitat - *Fucus vesiculosus* zone	CM
IMGP0076	16/08/09	LL09IR05	5	58.40182	-5.10462	NC 18684 50127	Littoral habitat - *Fucus vesiculosus* zone	CM
IMGP0077	16/08/09	LL09IR05	4/5	58.40182	-5.10462	NC 18684 50127	Littoral habitat - *Fucus vesiculosus* and *F. spiralis* zones	CM
IMGP0078	16/08/09	LL09IR05	5	58.40182	-5.10462	NC 18684 50127	Littoral habitat - *Fucus vesiculosus* zone	CM
IMGP0079	16/08/09	LL09IR05	5	58.40182	-5.10462	NC 18684 50127	Littoral habitat - *Fucus vesiculosus* zone	CM
IMGP0080	16/08/09	LL09IR05	4	58.40182	-5.10462	NC 18684 50127	Littoral habitat - *Fucus spiralis* zone	CM
IMGP0081	16/08/09	LL09IR05	4	58.40182	-5.10462	NC 18684 50127	Littoral habitat - *Fucus spiralis* zone	CM
IMGP0082	16/08/09	LL09IR05	4	58.40182	-5.10462	NC 18684 50127	Littoral habitat - *Fucus spiralis* zone	CM

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMGP0083	16/08/09	LL09IR05	4	58.40182	-5.10462	NC 18684 50127	Littoral habitat - *Fucus spiralis* zone	CM
IMGP0084	16/08/09	LL09IR05	4	58.40182	-5.10462	NC 18684 50127	Littoral habitat - *Fucus spiralis* zone	CM
IMGP0085	16/08/09	LL09IR05	3	58.40182	-5.10462	NC 18684 50127	Littoral habitat - *Pelvetia canaliculata* zone	CM
IMGP0086	16/08/09	LL09IR05	3	58.40182	-5.10462	NC 18684 50127	Littoral habitat - *Pelvetia canaliculata* zone	CM
IMGP0087	16/08/09	LL09IR05	3	58.40182	-5.10462	NC 18684 50127	Littoral habitat - *Pelvetia canaliculata* zone	CM
IMGP0088	16/08/09	LL09IR05	3	58.40182	-5.10462	NC 18684 50127	Littoral habitat - *Pelvetia canaliculata* zone	CM
IMGP0089	16/08/09	LL09IR05	2	58.40182	-5.10462	NC 18684 50127	Littoral habitat - *Verrucaria maura* zone	CM
IMGP0090	16/08/09	LL09IR05	2	58.40182	-5.10462	NC 18684 50127	Littoral habitat - *Verrucaria maura* zone	CM
IMGP0091	16/08/09	LL09IR05	2	58.40182	-5.10462	NC 18684 50127	Littoral habitat - *Verrucaria maura* zone	CM
IMGP0092	16/08/09	LL09IR05	2	58.40182	-5.10462	NC 18684 50127	Littoral habitat - *Verrucaria maura* zone	CM
IMGP0093	16/08/09	LL09IR05	1	58.40182	-5.10462	NC 18684 50127	Littoral habitat - Supralittoral lichen zone with *Xanthoria parietina*	CM
IMGP0094	16/08/09	LL09IR05	1	58.40182	-5.10462	NC 18684 50127	Littoral habitat - Supralittoral lichen zone with *Xanthoria parietina*	CM
IMGP0095	16/08/09	LL09IR05	1	58.40182	-5.10462	NC 18684 50127	Littoral habitat - Supralittoral lichen zone with grey and green lichens	CM
IMGP0096	16/08/09	LL09IR05	1	58.40182	-5.10462	NC 18684 50127	Littoral habitat - Supralittoral lichen zone with *Xanthoria parietina* and *Ramalina siliquosa*	CM
IMGP0097	16/08/09	LL09IR05		58.40182	-5.10462	NC 18684 50127	Relocation - view down transect from marker	CM
IMGP0098	16/08/09	LL09IR05	1	58.40180	-5.10462	NC 18684 50125	Relocation - view towards transect marker	CM
IMGP0099	16/08/09	LL09IR05	1	58.40182	-5.10458	NC 18686 50127	Relocation - view towards transect marker	CM

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMGP0100	16/08/09	LL09IR05					Relocation - view down transect	CM
IMGP0101	16/08/09	LL09IR05	1				Relocation - line of transect through zone 1	CM
IMGP0102	16/08/09	LL09IR05					Relocation - line through lower part of transect	CM
IMGP0103	16/08/09	LL09IR05					Relocation - line through lower part of transect	CM
IMGP0104	16/08/09	LL09IR05	1				View up transect in zone 1	CM
IMGP0105	16/08/09	LL09IR05					Transect line from offshore	CM
IMGP0106	16/08/09	LL09IR05					Transect line from offshore	CM
DSCF1037	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - cape-form *Laminaria hyperborea* forest	GS
DSCF1038	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - cape-form *Laminaria hyperborea* forest	GS
DSCF1043	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - cape-form *Laminaria hyperborea* forest with *Saccorhiza polyschides*	GS
DSCF1044	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - cape-form *Laminaria hyperborea* forest with *Saccorhiza polyschides*	GS
DSCF1103	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Saccorhiza polyschides*	GS
DSCF1104	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	General - photographer above kelp forest	GS
DSCF1105	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	General - photographer above kelp forest	GS
DSCF1106	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	General - photographer above kelp forest	GS
DSCF1107	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - cape-form *Laminaria hyperborea* forest	GS
DSCF1108	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	General - photographer above kelp forest	GS
DSCF1109	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	General - photographer above kelp forest	GS
DSCF1110	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	General - photographer above kelp forest	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1111	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	General - photographer above kelp forest	GS
DSCF1112	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - cape-form *Laminaria hyperborea* forest	GS
DSCF1113	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	General - photographer above kelp forest	GS
DSCF1114	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	General - photographer above kelp forest	GS
DSCF1115	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - cape-form *Laminaria hyperborea* with *Ascidiella* spp. and *Scrupocellaria reptans*	GS
DSCF1116	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Laminaria hyperborea* stipe with *Ascidiella* spp. and *Ectocarpus* sp.?	GS
DSCF1117	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Laminaria hyperborea* stipe with *Ascidiella* spp. and *Ectocarpus* sp.?	GS
DSCF1118	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Laminaria hyperborea* stipe with *Ascidiella* spp. and *Ectocarpus* sp.?	GS
DSCF1119	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Laminaria hyperborea* frond with *Scrupocellaria reptans*	GS
DSCF1120	16/08/09	LL09SX05	1	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Laminaria hyperborea* frond with *Scrupocellaria reptans* and *Membranipora membranacea*	GS
DSCF1039	16/08/09	LL09SX05	2	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Hyas* sp. on *Saccharina latissima* frond	GS
DSCF1040	16/08/09	LL09SX05	2	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Hyas* sp. on *Saccharina latissima* frond	GS
DSCF1041	16/08/09	LL09SX05	2	58.40182	-5.10462	NC 18684 50127	General - photographer	GS
DSCF1042	16/08/09	LL09SX05	3	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - cape-form *Laminaria hyperborea?* on rock wall	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1045	16/08/09	LL09SX05	3	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Pawsonia saxicola*	GS
DSCF1046	16/08/09	LL09SX05	3	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Pawsonia saxicola*	GS
DSCF1047	16/08/09	LL09SX05	3	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Pawsonia saxicola*	GS
DSCF1048	16/08/09	LL09SX05	3	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - rock wall with calcareous algal crusts, *Echinus* and *Alcyonium digitatum*	GS
DSCF1049	16/08/09	LL09SX05	3	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - rock wall with calcareous algal crusts, *Echinus, Caryophyllia smithii* and *Ascidiella aspersa*	GS
DSCF1050	16/08/09	LL09SX05	3	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - rock wall with calcareous algal crusts, *Saccharina latissima*?, *Ascidiella aspersa* and *Asterias rubens*	GS
DSCF1051	16/08/09	LL09SX05	3	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - rock wall with calcareous algal crusts, *Saccharina latissima*?, *Ascidiella aspersa* and *Asterias rubens*	GS
DSCF1052	16/08/09	LL09SX05	3	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - rock wall with calcareous algal crusts and *Alcyonium digitatum*	GS
DSCF1053	16/08/09	LL09SX05	3	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - rock wall with calcareous algal crusts and *Alcyonium digitatum*	GS
DSCF1054	16/08/09	LL09SX05	3	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - vertical rock face with calcareous algal crusts and dense *Ascidiella aspersa*	GS
DSCF1055	16/08/09	LL09SX05	3	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - rock slope with *Saccharina latissima*? and algal/hydroid turf	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1099	16/08/09	LL09SX05	3	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - rock wall with calcareous algal crusts, *Marthasterias glacialis* and *Necora puber*	GS
DSCF1100	16/08/09	LL09SX05	3	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - rock wall with calcareous algal crusts, *Marthasterias glacialis* and *Necora puber*	GS
DSCF1101	16/08/09	LL09SX05	3	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - rock wall with calcareous algal crusts, *Marthasterias glacialis* and *Necora puber*	GS
DSCF1102	16/08/09	LL09SX05	3	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - calcareous algal crusts, *Marthasterias glacialis* and *Necora puber*	GS
DSCF1056	16/08/09	LL09SX05	4	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - muddy shell gravel with clumps of *Ascidiella aspersa*	GS
DSCF1057	16/08/09	LL09SX05	4	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - muddy shell gravel with *Cerianthus lloydii*	GS
DSCF1058	16/08/09	LL09SX05	4	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - muddy shell gravel with clump of *Ascidiella aspersa*	GS
DSCF1059	16/08/09	LL09SX05	5	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - bedrock slope with dense *Trailliella*	GS
DSCF1060	16/08/09	LL09SX05	5	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Necora puber* on dense *Trailliella*, with *Heterosiphonia japonica*?	GS
DSCF1061	16/08/09	LL09SX05	5	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Necora puber* on dense *Trailliella*, with *Heterosiphonia japonica*?	GS
DSCF1062	16/08/09	LL09SX05	5	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Echinus esculentus* with dense *Trailliella*	GS
DSCF1063	16/08/09	LL09SX05	5	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Echinus esculentus* with dense *Trailliella*	GS
DSCF1098	16/08/09	LL09SX05	5	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Necora puber*	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1064	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - muddy sand with shell gravel, with *Cerianthus lloydii* and *Heterosiphonia japonica*	GS
DSCF1065	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - muddy gravelly sand, with *Cerianthus lloydii*, *Heterosiphonia japonica*? and *Dictyota dichotoma*?	GS
DSCF1066	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - muddy gravelly sand with *Cerianthus lloydii*	GS
DSCF1067	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - muddy gravelly sand with *Cerianthus lloydii*	GS
DSCF1068	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - muddy gravelly sand with *Cerianthus lloydii*	GS
DSCF1069	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - muddy gravelly sand with *Crossaster papposus*	GS
DSCF1070	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - muddy gravelly sand with *Crossaster papposus*	GS
DSCF1071	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - muddy gravelly sand with *Crossaster papposus*	GS
DSCF1072	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - muddy gravelly sand with *Crossaster papposus*	GS
DSCF1073	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - muddy gravelly sand with *Astropecten irregularis*	GS
DSCF1074	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - muddy gravelly sand with *Astropecten irregularis*	GS
DSCF1075	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Inachus* sp.	GS
DSCF1076	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - muddy gravelly sand with *Virgularia mirabilis*	GS
DSCF1077	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - muddy gravelly sand with *Virgularia mirabilis*	GS
DSCF1078	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Inachus* sp.	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1079	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Inachus* sp.	GS
DSCF1080	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Inachus* sp.	GS
DSCF1081	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - muddy gravelly sand with *Virgularia mirabilis*	GS
DSCF1082	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - muddy gravelly sand with *Virgularia mirabilis*	GS
DSCF1083	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Cerianthus lloydii*	GS
DSCF1084	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Cerianthus lloydii*	GS
DSCF1085	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Cerianthus lloydii*	GS
DSCF1086	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Cerianthus lloydii*	GS
DSCF1087	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - muddy sand	GS
DSCF1088	16/08/09	LL09SX05	6	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - *Cerianthus lloydii*	GS
DSCF1089	16/08/09	LL09SX05	7	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - sandy mud with *Pecten maximus*	GS
DSCF1090	16/08/09	LL09SX05	7	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - sandy mud with *Pecten maximus*	GS
DSCF1091	16/08/09	LL09SX05	7	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - sandy mud with *Pecten maximus*	GS
DSCF1092	16/08/09	LL09SX05	7	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - sandy mud with *Liocarcinus depurator*	GS
DSCF1093	16/08/09	LL09SX05	7	58.40182	-5.10462	NC 18684 50127	Sublittoral habitat - sandy mud with *Liocarcinus depurator*	GS
DSCF1094	16/08/09	LL09SX05	7	58.40182	-5.10462	NC 18684 50127	Sublittoral close-up - megafaunal burrow	GS
IMGP0042	12/08/09	LL09IR06	1	58.40507	-5.10492	NC 18683 50490	Relocation - view towards transect marker	CM

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMGP0043	12/08/09	LL09IR06	1	58.40510	-5.10497	NC 18680 50494	Relocation - view towards transect marker	CM
IMGP0044	12/08/09	LL09IR06	1	58.40505	-5.10497	NC 18680 50488	Relocation - view down transect from marker	CM
IMGP0045	12/08/09	LL09IR06	1	58.40505	-5.10497	NC 18680 50488	Relocation - close-up of marker	CM
IMGP0046	12/08/09	LL09IR06	1	58.40505	-5.10497	NC 18680 50488	Littoral habitat - supralittoral zone with yellow and grey lichens	CM
IMGP0047	12/08/09	LL09IR06	1	58.40505	-5.10497	NC 18680 50488	Littoral habitat - supralittoral zone with yellow and grey lichens	CM
IMGP0048	12/08/09	LL09IR06	1	58.40505	-5.10497	NC 18680 50488	Littoral habitat - supralittoral zone with yellow and grey lichens and *Ramalina siliquosa*	CM
IMGP0049	12/08/09	LL09IR06	1	58.40505	-5.10497	NC 18680 50488	Littoral close-up - green lichen indet.	CM
IMGP0050	12/08/09	LL09IR06	2	58.40505	-5.10497	NC 18680 50488	Littoral habitat - *Verrucaria maura* zone	CM
IMGP0051	12/08/09	LL09IR06	2	58.40505	-5.10497	NC 18680 50488	Littoral habitat - *Verrucaria maura* zone	CM
IMGP0052	12/08/09	LL09IR06	2	58.40505	-5.10497	NC 18680 50488	Littoral habitat - *Verrucaria maura* zone	CM
IMGP0053	12/08/09	LL09IR06	2	58.40505	-5.10497	NC 18680 50488	Littoral habitat - *Verrucaria maura* zone	CM
IMGP0054	12/08/09	LL09IR06	3	58.40505	-5.10497	NC 18680 50488	Littoral habitat - *Pelvetia canaliculata* zone with *Hildenbrandia* spp.	CM
IMGP0055	12/08/09	LL09IR06	3	58.40505	-5.10497	NC 18680 50488	Littoral habitat - *Pelvetia canaliculata* zone with *Hildenbrandia* spp.	CM
IMGP0056	12/08/09	LL09IR06	3	58.40505	-5.10497	NC 18680 50488	Littoral habitat - *Pelvetia canaliculata* zone with *Hildenbrandia* spp.	CM
IMGP0057	12/08/09	LL09IR06	3	58.40505	-5.10497	NC 18680 50488	Littoral habitat - *Pelvetia canaliculata* zone with *Hildenbrandia* spp.	CM
IMGP0058	12/08/09	LL09IR06	4	58.40505	-5.10497	NC 18680 50488	Littoral habitat - *Fucus spiralis* zone with *Hildenbrandia* spp.	CM
IMGP0059	12/08/09	LL09IR06	4	58.40505	-5.10497	NC 18680 50488	Littoral habitat - *Fucus spiralis* zone with *Hildenbrandia* spp.	CM

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMGP0060	12/08/09	LL09IR06	4	58.40505	-5.10497	NC 18680 50488	Littoral habitat - *Fucus spiralis* zone with *Hildenbrandia* spp.	CM
IMGP0061	12/08/09	LL09IR06	4	58.40505	-5.10497	NC 18680 50488	Littoral habitat - *Fucus spiralis* zone with *Hildenbrandia* spp.	CM
IMGP0062	12/08/09	LL09IR06	5	58.40505	-5.10497	NC 18680 50488	Littoral habitat - *Fucus vesiculosus* zone	CM
IMGP0063	12/08/09	LL09IR06	5	58.40505	-5.10497	NC 18680 50488	Littoral habitat - *Fucus vesiculosus* zone	CM
IMGP0064	12/08/09	LL09IR06	5	58.40505	-5.10497	NC 18680 50488	Littoral habitat - *Fucus vesiculosus* zone	CM
IMGP0065	12/08/09	LL09IR06	5	58.40505	-5.10497	NC 18680 50488	Littoral habitat - *Fucus vesiculosus* zone	CM
IMGP0066	12/08/09	LL09IR06	6	58.40505	-5.10497	NC 18680 50488	Littoral habitat - *Fucus serratus* zone with *Palmaria palmata*	CM
IMGP0067	12/08/09	LL09IR06	6	58.40505	-5.10497	NC 18680 50488	Littoral close-up - *Fucus serratus*, *F. vesiculosus* and *Palmaria palmata*	CM
IMGP0068	12/08/09	LL09IR06	6	58.40505	-5.10497	NC 18680 50488	Littoral habitat - *Fucus serratus* zone	CM
IMGP0069	12/08/09	LL09IR06	6	58.40505	-5.10497	NC 18680 50488	Littoral habitat - *Fucus serratus* zone	CM
IMG_2813	12/08/09	LL09SX06	8	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - line reel on silty shell gravel	JP
IMG_2814	12/08/09	LL09SX06	8	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - *Cerianthis lloydii* in silty shell gravel	JP
IMG_2815	12/08/09	LL09SX06	8	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - slope of silty shell gravel	JP
IMG_2816	12/08/09	LL09SX06	8	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - *Antedon bifida o*n silty shell gravel	JP
IMG_2817	12/08/09	LL09SX06	8	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - silty shell gravel	JP
IMG_2818	12/08/09	LL09SX06	8	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - *Pagurus prideauxi* with *Adamsia carciniopados* on silty shell gravel	JP
IMG_2819	12/08/09	LL09SX06	8	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - *Pagurus prideauxi* with *Adamsia carciniopados* on silty shell gravel	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2821	12/08/09	LL09SX06	8	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - boulder with spirorbids and serpulids on silty shell gravel	JP
IMG_2822	12/08/09	LL09SX06	7	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - *Ascidia mentula* on rock wall	JP
IMG_2823	12/08/09	LL09SX06	7	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - *Ascidia mentula, Ciona intestinalis, Balanus crenatus, Porella compressa* and *Antedon bifida* on algal-encrusted rock wall	JP
IMG_2824	12/08/09	LL09SX06	7	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - rock wall with *Ascidia virginea, Ciona intestinalis, Balanus crenatus, Caryophyllia smithii, Pomatoceros* and *Gibbula cineraria* on algal-encrusted rock wall	JP
IMG_2825	12/08/09	LL09SX06	7	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - rock wall with ascidians - dark	JP
IMG_2826	12/08/09	LL09SX06	7	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - rock wall with hydroids and *Echinus* - dark	JP
IMG_2827	12/08/09	LL09SX06	8	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - silty shell gravel	JP
IMG_2828	12/08/09	LL09SX06	7	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - base of rock wall with *Pagurus bernhardus*, *Balanus crenatus*, *Ascidia mentula*, *Ciona intestinalis*, *Pomatoceros*, *Caryophyllia smithii* and pink coralline crusts	JP
IMG_2829	12/08/09	LL09SX06	7	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - rock with *Balanus crenatus*, *Ascidia mentula*, *Pomatoceros* and pink coralline crusts	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2830	12/08/09	LL09SX06	7	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - base of rock wall with *Munida rugosa*, *Balanus crenatus*, *Ascidia mentula*, *Pomatoceros, Caryophyllia smithii* and pink and red coralline crusts	JP
IMG_2831	12/08/09	LL09SX06	7	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - rock wall with *Balanus crenatus*, *Ciona intestinalis*, *Pomatoceros, Caryophyllia smithii, Echinus esculentus, Porania pulvillus, Parasmittina trispinosa* and pink and red coralline crusts	JP
IMG_2832	12/08/09	LL09SX06	7	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - rock wall with *Ascidia mentula*, *Ciona intestinalis*, *Echinus esculentus* and algal coralline crusts	JP
IMG_2833	12/08/09	LL09SX06	7	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - rock wall with *Porania pulvillus*	JP
IMG_2834	12/08/09	LL09SX06	7	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - rock wall with crusts of calcareous algae and *Parasmittina trispinosa* and *Balanus crenatus, Ciona intestinalis, Pomatoceros* and *Clavelina lepadiformis*	JP
IMG_2835	12/08/09	LL09SX06	7	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - rock wall with *Ascidia virginea*	JP
IMG_2836	12/08/09	LL09SX06	7	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - rock wall with *Ciona intestinalis*, *Echinus esculentus, Pomatoceros, Balanus crenatus, Antedon bifida* and algal coralline crusts	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2837	12/08/09	LL09SX06	7	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - rock slope with *Ascidia virginea*, *Echinus esculentus, Pomatoceros, Balanus crenatus, Antedon bifida, Caryophyllia smithii* and algal coralline crusts	JP
IMG_2838	12/08/09	LL09SX06	6	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - slope of shell gravel on rock ledge	JP
IMG_2839	12/08/09	LL09SX06	6	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - bedrock outcrop with *Balanus crenatus*, *Pomatoceros*, *Caryophyllia smithii*, *Antedon bifida*, *Echinus esculentus*, bryozoan and algal coralline crusts	JP
IMG_2840	12/08/09	LL09SX06	6	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - *Ascidia mentula* with epibiotic red foliose algae	JP
IMG_2894	12/08/09	LL09SX06	6	58.40505	-5.10497	NC 18680 50488	Pelagic - *Cyanea capillata*	JP
IMG_2895	12/08/09	LL09SX06	6	58.40505	-5.10497	NC 18680 50488	Pelagic - *Cyanea capillata*	JP
IMG_2896	12/08/09	LL09SX06	6	58.40505	-5.10497	NC 18680 50488	Pelagic - *Cyanea capillata*	JP
IMG_2897	12/08/09	LL09SX06	6	58.40505	-5.10497	NC 18680 50488	Pelagic - *Cyanea capillata*	JP
IMG_2898	12/08/09	LL09SX06	6	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - bedrock encrusted with pink coralline algae, red algae and *Parasmittina trispinosa*, and with *Balanus crenatus*, *Pomatoceros* and *Caryophyllia smithii*	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2899	12/08/09	LL09SX06	6	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - shell gravel and bedrock encrusted with pink coralline algae, red algae and *Parasmittina trispinosa*, and with *Balanus crenatus*, *Pomatoceros, Caryophyllia smithii, Ciona intestinalis, Corella parallelogramma* and *Ascidia mentula* with cover of foliose red algae, including *Callophyllis laciniata*	JP
IMG_2900	12/08/09	LL09SX06	6	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - bedrock with extensive cover of *Clione celata*	JP
IMG_2901	12/08/09	LL09SX06	6	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - steep bedrock slope encrusted with pink coralline algae and with Echinus esculentus, *Balanus crenatus*, *Pomatoceros, Ascidia mentula, Antedon bifida* and *Marthasterias glacialis*	JP
IMG_2902	12/08/09	LL09SX06	6	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - bedrock slope encrusted with pink coralline algae and with *Pomatoceros, Ascidia virginea* and *Marthasterias glacialis*	JP
IMG_2903	12/08/09	LL09SX06	6	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - bedrock extensively encrusted with *Parasmittina trispinosa* and *Pomatoceros*	JP
IMG_2904	12/08/09	LL09SX06	6	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - *Necora puber*	JP
IMG_2905	12/08/09	LL09SX06	6	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - bedrock extensively encrusted with *Parasmittina trispinosa* and *Pomatoceros* and with *Echinus esculentus* and pink coralline crusts	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2906	12/08/09	LL09SX06	6	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - outcropping bedrock encrusted with pink coralline algae, *Parasmittina trispinosa* and *Pomatoceros*	JP
IMG_2907	12/08/09	LL09SX06	6	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - outcropping bedrock and boulders encrusted with pink coralline algae, red algae, *Caryophyllia smithii* and with retracted *Metridium senile*	JP
IMG_2908	12/08/09	LL09SX06	6	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - shell gravel and bedrock and boulders encrusted with *Ascidia mentula* and *Antedon bifida*	JP
IMG_2909	12/08/09	LL09SX06	6	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - bedrock encrusted with pink coralline algae, red algae, *Parasmittina trispinosa* and *Pomatoceros*	JP
IMG_2910	12/08/09	LL09SX06	6	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - shell gravel and rock with turf of *Dictyota dichotoma*	JP
IMG_2911	12/08/09	LL09SX06	5	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - bedrock slope with *Dictyota dichotoma, Bonnemaisonia asparagoides* and *Caryophyllia smithii*	JP
IMG_2912	12/08/09	LL09SX06	5	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - bedrock slope with pink and red algal crusts and with many *Antedon bifida*; also *Asterias rubens* and *Caryophyllia smithii*	JP
IMG_2913	12/08/09	LL09SX06	5	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - bedrock slope with dense patch of *Antedon bifida*	JP
IMG_2914	12/08/09	LL09SX06	5	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - bedrock slope encrusted with pink coralline algae and *Pomatoceros* and with *Antedon bifida* and *Clione celata*	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2915	12/08/09	LL09SX06	5	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - bedrock slope encrusted with pink coralline algae and *Pomatoceros* and with *Antedon bifida* and *Clione celata*	JP
IMG_2916	12/08/09	LL09SX06	5	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - bedrock slope encrusted with pink coralline algae and *Pomatoceros* and with *Antedon bifida* and *Clione celata*	JP
IMG_2917	12/08/09	LL09SX06	5	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - bedrock slope encrusted with pink coralline algae and *Pomatoceros* and with *Antedon bifida* and *Clione celata*	JP
IMG_2918	12/08/09	LL09SX06	5	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - bedrock ledge encrusted with pink and red algae, *Caryophyllia smithii* and with patch of *Saccharina latissima*	JP
IMG_2919	12/08/09	LL09SX06	5	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - bedrock slope with algal turf of *Dictyota dichotoma* and *Bonnemaisonia asparagoides*	JP
IMG_2920	12/08/09	LL09SX06	5	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - bedrock slope with algal turf of *Dictyota dichotoma* and *Bonnemaisonia asparagoides*	JP
IMG_2921	12/08/09	LL09SX06	5	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - bedrock slope with light turf of B*onnemaisonia asparagoides*	JP
IMG_2922	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - bedrock slope with *Saccharina latissima* - dark	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2923	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - bedrock slope encrusted with pink and red algae and *Parasmittina trispinosa* and with *Ascidia virginea*? and *Dictyota dichotoma*	JP
IMG_2924	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - bedrock slope with *Saccharina latissima* and diver	JP
IMG_2925	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - bedrock slope with grazed *Saccharina latissima* forest	JP
IMG_2926	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - uneven bedrock encrusted with pink and red algae and *Parasmittina trispinosa* and with *Saccharina latissima* and patchy red algal turf in the distance	JP
IMG_2927	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - uneven bedrock with dense *Echinus esculentus* and *Saccharina latissima*	JP
IMG_2928	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - vertical bedrock with dense *Saccharina latissima*	JP
IMG_2929	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - vertical bedrock with dense *Saccharina latissima*	JP
IMG_2930	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - vertical bedrock with dense *Saccharina latissima*	JP
IMG_2931	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - uneven bedrock and boulders encrusted with pink and red algae and *Parasmittina trispinosa* and with sparse *Laminaria hyperborea*?	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2932	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - boulders encrusted with pink and red algae and *Parasmittina trispinosa* and with sparse *Alcyonium digitatum*	JP
IMG_2933	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - uneven grazed bedrock with *Saccharina latissima* and *Echinus esculentus*	JP
IMG_2934	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - uneven grazed bedrock with *Saccharina latissima* and *Echinus esculentus*	JP
IMG_2935	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - uneven grazed bedrock with *Saccharina latissima* and *Echinus esculentus*	JP
IMG_2936	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - *Saccharina latissima* forest - dark	JP
IMG_2937	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - *Saccharina latissima* forest - dark	JP
IMG_2938	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - grazed bedrock with *Saccharina latissima* and *Echinus esculentus*	JP
IMG_2939	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - mixed *Saccharina latissima* and *Laminaria hyperborea*	JP
IMG_2940	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - grazed *Saccharina latissima* forest on boulders encrusted with pink and red algae and *Parasmittina trispinosa* and with *Desmarestia aculeata*	JP
IMG_2941	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - boulders encrusted with pink and red algae and *Parasmittina trispinosa* and with *Desmarestia aculeata* and scattered small kelp plants	JP
IMG_2942	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - steep bedrock encrusted with pink and red algae, *Parasmittina trispinosa, Balanus crenatus* and *Pomatoceros*	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2943	12/08/09	LL09SX06	3	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - mixed *Saccharina latissima* and *Laminaria hyperborea*, with heavily-epiphytised *L. hyperborea* stipe, including *Desmarestia aculeata*	JP
IMG_2944	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - *Laminaria hyperborea* forest	JP
IMG_2945	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - *Laminaria hyperborea* forest with diver	JP
IMG_2946	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - *Laminaria hyperborea* forest with diver	JP
IMG_2947	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - *Laminaria hyperborea* forest	JP
IMG_2948	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - *Laminaria hyperborea* forest	JP
IMG_2949	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - *Laminaria hyperborea* forest	JP
IMG_2950	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - *Laminaria hyperborea* forest	JP
IMG_2951	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - *Laminaria hyperborea* forest	JP
IMG_2952	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - *Laminaria hyperborea* forest	JP
IMG_2953	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - *Laminaria hyperborea* forest	JP
IMG_2954	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - dense epiphytes on *Laminaria hyperborea* stipe	JP
IMG_2955	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - dense epiphytes on *Laminaria hyperborea* stipe	JP
IMG_2956	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - *Desmarestia aculeata*	JP
IMG_2957	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - *Desmarestia aculeata*	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2958	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - *Laminaria hyperborea* stipes	JP
IMG_2959	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - encrusting red algae beneath *Laminaria hyperborea* forest	JP
IMG_2960	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - encrusting red algae beneath *Laminaria hyperborea* forest	JP
IMG_2961	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - grazed rock with encrusting red algae beneath *Laminaria hyperborea* forest	JP
IMG_2962	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - grazed rock with encrusting red algae and *Echinus esculentus* beneath *Laminaria hyperborea* forest	JP
IMG_2963	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - grazed rock with encrusting red algae and *Echinus esculentus* beneath *Laminaria hyperborea* forest	JP
IMG_2964	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - filamentous red alga on *Laminaria hyperborea* stipe	JP
IMG_2965	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - filamentous red alga on *Laminaria hyperborea* stipe	JP
IMG_2966	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - vertical rock face with calcareous pink algal crust, *Balanus crenatus, Calliostoma zizyphinum, Echinus esculentus, Alcyonium digitatum* and *Urticina felina*	JP
IMG_2967	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral close-up - vertical rock face with calcareous pink and red algal crusts, *Balanus crenatus* and *Echinus esculentus*	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2968	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - *Laminaria hyperborea* forest showing sparse understorey	JP
IMG_2969	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - *Laminaria hyperborea* forest showing stipes epiphytised with red algae	JP
IMG_2970	12/08/09	LL09SX06	2	58.40505	-5.10497	NC 18680 50488	Sublittoral habitat - *Laminaria hyperborea* forest understorey of sparse erect red algae, pink and red crustose algae, *Botryllus schlosseri* and *Halichondria panicea*?	JP
IMGP0010	11/08/09	LL09IR07		58.41270	-5.12603	NC 17489 51396	Relocation - view of transect line from offshore	CT
IMGP0011	11/08/09	LL09IR07		58.41270	-5.12603	NC 17489 51396	Relocation - view of transect line from offshore	CT
IMGP0012	11/08/09	LL09IR07		58.41240	-5.12622	NC 17477 51363	Relocation - view of transect line from offshore	CT
IMGP0013	11/08/09	LL09IR07		58.41210	-5.12663	NC 17451 51331	Relocation - close-up of marker pitons	CT
IMGP0014	11/08/09	LL09IR07	1	58.41210	-5.12663	NC 17451 51331	Relocation - view down transect	CT
IMGP0015	11/08/09	LL09IR07	1	58.41208	-5.12668	NC 17448 51329	Relocation - view towards marker pitons	CT
IMGP0016	11/08/09	LL09IR07	1	58.41215	-5.12653	NC 17457 51336	Relocation - view towards marker pitons	CT
IMGP0017	11/08/09	LL09IR07	1	58.41210	-5.12663	NC 17451 51331	Littoral habitat - supralittoral lichen zone with *Ramalina siliquosa*. Rockpool just outwith transect band	CT
IMGP0018	11/08/09	LL09IR07	1	58.41210	-5.12663	NC 17451 51331	Littoral habitat - supralittoral lichen zone with *Ramalina siliquosa*, *Xanthoria parietina* and *Verrucaria maura*	CT

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMGP0019	11/08/09	LL09IR07	1	58.41210	-5.12663	NC 17451 51331	Littoral habitat - supralittoral lichen zone with *Ramalina siliquosa*, *Xanthoria parietina* and *Verrucaria maura*	CT
IMGP0020	11/08/09	LL09IR07	2	58.41210	-5.12663	NC 17451 51331	Littoral habitat - *Verrucaria maura* zone	CT
IMGP0021	11/08/09	LL09IR07	2	58.41210	-5.12663	NC 17451 51331	Littoral habitat - *Verrucaria maura* zone	CT
IMGP0022	11/08/09	LL09IR07	2	58.41210	-5.12663	NC 17451 51331	Littoral habitat - *Verrucaria maura* zone	CT
IMGP0023	11/08/09	LL09IR07	2	58.41210	-5.12663	NC 17451 51331	Littoral close-up - *Verrucaria maura* zone with *Littorina saxatilis*	CT
IMGP0024	11/08/09	LL09IR07	3	58.41210	-5.12663	NC 17451 51331	Littoral close-up - *Porphyra umbilicalis*	CT
IMGP0025	11/08/09	LL09IR07	3	58.41210	-5.12663	NC 17451 51331	Littoral habitat - *Chthamalus montagui* zone with dense *Porphyra umbilicalis*	CT
IMGP0026	11/08/09	LL09IR07	3	58.41210	-5.12663	NC 17451 51331	Littoral close-up - *Chthamalus* spp. and *Porphyra umbilicalis*	CT
IMGP0027	11/08/09	LL09IR07	3	58.41210	-5.12663	NC 17451 51331	Littoral close-up - *Chthamalus* spp., *Verrucaria maura* and *Hildenbrandia* spp.	CT
IMGP0028	11/08/09	LL09IR07	4	58.41210	-5.12663	NC 17451 51331	Littoral habitat - *Semibalanus balanoides* zone	CT
IMGP0029	11/08/09	LL09IR07	4	58.41210	-5.12663	NC 17451 51331	Littoral habitat - *Semibalanus balanoides* zone	CT
IMGP0030	11/08/09	LL09IR07	4	58.41210	-5.12663	NC 17451 51331	Littoral habitat - *Semibalanus balanoides* zone	CT
IMGP0031	11/08/09	LL09IR07	4	58.41210	-5.12663	NC 17451 51331	Littoral close-up - dense *Semibalanus balanoides* with *Mytilus edulis* and *Aglaothamnion sepositum*	CT
IMGP0032	11/08/09	LL09IR07	5	58.41210	-5.12663	NC 17451 51331	Littoral habitat - *Alaria esculenta* zone	CT
IMGP0033	11/08/09	LL09IR07	5	58.41210	-5.12663	NC 17451 51331	Littoral habitat - *Alaria esculenta* zone	CT

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMGP0034	11/08/09	LL09IR07	5	58.41210	-5.12663	NC 17451 51331	Littoral habitat - *Alaria esculenta* zone	CT
IMGP0035	11/08/09	LL09IR07	5	58.41210	-5.12663	NC 17451 51331	Littoral habitat - *Alaria esculenta* zone	CT
IMGP0036	11/08/09	LL09IR07		58.41210	-5.12663	NC 17451 51331	General - view of *RV Serpula* from transect	CT
IMGP0037	11/08/09	LL09IR07	4/5	58.41210	-5.12663	NC 17451 51331	Relocation - view of transect line through lower part of shore	CT
IMGP0038	11/08/09	LL09IR07	3/4	58.41210	-5.12663	NC 17451 51331	Relocation - view of transect line through middle part of shore	CT
IMGP0039	11/08/09	LL09IR07	2/3/4	58.41210	-5.12663	NC 17451 51331	Relocation - view of transect line through mid - upper part of shore	CT
IMGP0040	11/08/09	LL09IR07	2/3	58.41210	-5.12663	NC 17451 51331	Relocation - view of transect line through upper part of shore	CT
IMGP0041	11/08/09	LL09IR07	2/3	58.41210	-5.12663	NC 17451 51331	Relocation - view of transect line through upper part of shore	CT
IMG_2736	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - vertical and overhanging bedrock with much *Parasmittina trispinosa*, as well as *Asterias rubens, Pomatoceros* and *Echinus esculentus*	JP
IMG_2737	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - vertical and overhanging bedrock with *Parasmittina trispinosa*, short bryozoan turf, *Antedon bifida* and *Corynactis viridis*	JP
IMG_2738	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - vertical bedrock with *Parasmittina trispinosa*, short bryozoan turf and *Corynactis viridis*	JP
IMG_2739	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - vertical bedrock with *Parasmittina trispinosa*, short bryozoan turf, *Porania pulvillus* and *Echinus esculentus*	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2740	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - uneven bedrock with *Parasmittina trispinosa*, short bryozoan turf, *Asterias rubens* and *Echinus esculentus*	JP
IMG_2741	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - vertical bedrock with *Parasmittina trispinosa*, short bryozoan turf, *Porania pulvillus* and *Echinus esculentus*	JP
IMG_2742	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - steep bedrock with short bryozoan turf, *Asterias rubens, Antedon bifida, Bugula flabellata* and *Polycera faeroensis*	JP
IMG_2743	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - steep bedrock with short bryozoan turf, *Antedon bifida, Bugula flabellata* and *Caryophyllia smithii*	JP
IMG_2744	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - steep bedrock with short bryozoan turf, *Parasmittina trispinosa, Bugula flabellata* and *Asterias rubens*	JP
IMG_2745	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - vertical bedrock with short bryozoan turf, *Porania pulvillus* and *Echinus esculentus*	JP
IMG_2746	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - vertical bedrock with short bryozoan turf, *Porania pulvillus* and *Echinus esculentus*	JP
IMG_2748	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - steep bedrock with short bryozoan turf, *Alcyonidium diaphanum* and *Parasmittina trispinosa*	JP
IMG_2749	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - bedrock with short bryozoan/hydroid turf, *Alcyonidium diaphanum* and pink algal crust	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2750	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - bedrock with short bryozoan/hydroid turf, with sparse erect algae, *Alcyonidium diaphanum, Alcyonium digitatum* and pink and red algal crusts	JP
IMG_2751	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - bedrock with short bryozoan/hydroid/algal turf, with *Securiflustra securifrons*	JP
IMG_2752	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - uneven bedrock with short bryozoan turf, including *Bugula flabellata*, pink coralline algae, *Asterias rubens* and *Urticina felina*	JP
IMG_2753	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - vertical bedrock with short bryozoan/hydroid/algal turf, including *Bugula flabellata*, pink coralline algae, *Asterias rubens* and *Caryophyllia smithii*	JP
IMG_2754	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - *Janolus cristatus* on *Bugula flabellata*	JP
IMG_2756	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - short bryozoan/algal turf including *Phycodrys rubens*; also *Asterias rubens* and *Corynactis viridis*	JP
IMG_2758	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - *Echinus esculentus* on short bryozoan/hydroid/algal turf, including *Phycodrys rubens*, *Bonnemaisonia asparagoides* and *Dictyota dichotoma*	JP
IMG_2760	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - short bryozoan turf with *Bonnemaisonia asparagoides* and *Dictyota dichotoma*	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2761	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - short bryozoan turf with *Bonnemaisonia asparagoides* and *Dictyota dichotoma*	JP
IMG_2762	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - short bryozoan turf with *Bonnemaisonia asparagoides* and *Dictyota dichotoma*	JP
IMG_2763	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - short bryozoan turf with *Bugula flabellata*, *Bonnemaisonia asparagoides* and pink coralline crusts	JP
IMG_2764	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - *Bugula flabellata* and *Nemertesia antennina*	JP
IMG_2765	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - bryozoan/hydroid/algal turf including *Bonnemaisonia asparagoides* and *Abietinaria abietina*	JP
IMG_2766	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - rock wall with crusts of pink coralline algae and *Parasmittina trispinosa*, as well as *Pomatoceros*, *Asterias rubens*, *Dictyota dichotoma* and *Balanus crenatus*	JP
IMG_2768	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - *Marthasterias glacialis*	JP
IMG_2769	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - Antedon bifida	JP
IMG_2772	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - short bryozoan turf with *Bugula flabellata*	JP
IMG_2773	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - *Crossaster papposus*	JP
IMG_2775	11/08/09	LL09SR07	5	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - *Echinus esculentus*	JP
IMG_2776	11/08/09	LL09SR07	4	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - sparse *Laminaria hyperborea* understorey	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2777	11/08/09	LL09SR07	4	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - *Laminaria hyperborea* park understorey of short bryozoan turf with *Callophyllis laciniata* and *Bonnemaisonia asparagoides*	JP
IMG_2778	11/08/09	LL09SR07	4	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - *Laminaria hyperborea* park	JP
IMG_2779	11/08/09	LL09SR07	4	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - *Cancer pagurus*	JP
IMG_2780	11/08/09	LL09SR07	4	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - *Laminaria hyperborea* stipe with epiphytic red algae	JP
IMG_2781	11/08/09	LL09SR07	4	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - *Laminaria hyperborea* stipe with epiphytic red algae and *Calliostoma zizyphinum*	JP
IMG_2782	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - *Laminaria hyperborea* forest understorey with *Scrupocellaria* turf and *Callophyllis laciniata*	JP
IMG_2783	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - *Laminaria hyperborea* forest understorey with *Scrupocellaria* turf and *Callophyllis laciniata*	JP
IMG_2784	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - vertical rock with dense *Corynactis viridis* and orange cushion sponge, with *Scrupocellaria*	JP
IMG_2785	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - vertical rock with dense *Corynactis viridis,* yellow sponge and *Alcyonium digitatum*	JP
IMG_2786	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - vertical rock with dense *Corynactis viridis,* yellow sponge and *Alcyonium digitatum*	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2787	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - *Laminaria hyperborea* forest understorey of sparse erect red algae, including *Callophyllis laciniata*, and pink and red crustose algae	JP
IMG_2788	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - *Laminaria hyperborea* forest understorey with *Scrupocellaria* turf and *Callophyllis laciniata*	JP
IMG_2789	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - *Laminaria hyperborea* forest understorey with *Scrupocellaria* turf and *Callophyllis laciniata*	JP
IMG_2790	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - sink of decaying algae	JP
IMG_2791	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - *Laminaria hyperborea* forest understorey with *Scrupocellaria* turf and *Callophyllis laciniata*	JP
IMG_2792	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - *Laminaria hyperborea* forest showing epiphytised stipe	JP
IMG_2793	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - *Laminaria hyperborea* forest understorey with fairly rich red algal turf, *Botryllus schlosseri* and *Asterias rubens*	JP
IMG_2795	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - *Laminaria hyperborea* forest understorey with fairly rich red algal turf, including *Callophyllis laciniata* and *Janolus cristatus*	JP
IMG_2796	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - *Laminaria hyperborea* forest understorey with fairly rich red algal turf, including *Callophyllis laciniata* and *Janolus cristatus*	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2797	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - *Laminaria hyperborea* forest understorey with rich red algal and bryozoan turf	JP
IMG_2798	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - *Laminaria hyperborea* forest understorey with rich red algal turf, including *Odonthalia dentata* and *Callophyllis laciniata*; also *Alcyonium digitatum*	JP
IMG_2799	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - *Laminaria hyperborea* stipes with rich epiphytic community	JP
IMG_2800	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - *Laminaria hyperborea* stipes with rich epiphytic community	JP
IMG_2801	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - *Laminaria hyperborea* stipes with rich epiphytic community	JP
IMG_2802	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - *Laminaria hyperborea* forest understorey with fairly rich red algal turf, including *Callophyllis laciniata*	JP
IMG_2803	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - *Laminaria hyperborea* forest	JP
IMG_2804	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - *Laminaria hyperborea* forest	JP
IMG_2805	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - *Laminaria hyperborea* forest, with *Callithamnion tetragonum* on frond	JP
IMG_2806	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - *Laminaria hyperborea* frond with *Membranipora membranacea* and *Obelia geniculata*	JP
IMG_2807	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - *Laminaria hyperborea* stipe with filamentous red alga	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2808	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - dense *Odonthalia dentata* below *Laminaria hyperborea* forest	JP
IMG_2809	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral close-up - *Odonthalia dentata* and *Botryllus schlosseri* below *Laminaria hyperborea* forest	JP
IMG_2811	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - uneven bedrock with turf of epiphytised red algae, *Alcyonium digitatum*, *Scrupocellaria*/crisiids, *Botryllus schlosseri* and *Lissoclinum perforatum*	JP
IMG_2812	11/08/09	LL09SR07	3	58.41210	-5.12663	NC 17451 51331	Sublittoral habitat - *Laminaria hyperborea* forest	JP
IMG_2676	10/08/09	LL09SR08		58.41775	-5.12747	NC 17432 51962	General - *RV Serpula* deck with surveyors	JP
IMG_2677	10/08/09	LL09SR08	4	58.41775	-5.12747	NC 17432 51962	Sublittoral habitat - dense bryozoan turf on vertical rock	JP
IMG_2678	10/08/09	LL09SR08	4	58.41775	-5.12747	NC 17432 51962	Sublittoral habitat - dense bryozoan turf on vertical rock	JP
IMG_2679	10/08/09	LL09SR08	4	58.41775	-5.12747	NC 17432 51962	Sublittoral habitat - dense bryozoan turf with *Asterias rubens* on vertical rock	JP
IMG_2680	10/08/09	LL09SR08	4	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - dense bryozoan turf with *Urticina felina* and *Corynactis viridis* on vertical rock	JP
IMG_2681	10/08/09	LL09SR08	4	58.41775	-5.12747	NC 17432 51962	Sublittoral habitat - *Flustra foliacea* on vertical rock	JP
IMG_2682	10/08/09	LL09SR08	4	58.41775	-5.12747	NC 17432 51962	Sublittoral habitat - *Flustra foliacea* on vertical rock	JP
IMG_2683	10/08/09	LL09SR08	4	58.41775	-5.12747	NC 17432 51962	Sublittoral habitat - *Flustra foliacea* on vertical rock	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2684	10/08/09	LL09SR08	4	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - dense bryozoan turf with *Flustra foliacea* and *Corynactis viridis* on vertical rock	JP
IMG_2685	10/08/09	LL09SR08	4	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Echinus esculentus* grazing dense bryozoan turf on vertical rock	JP
IMG_2686	10/08/09	LL09SR08	4	58.41775	-5.12747	NC 17432 51962	Sublittoral habitat - dense *Corynactis viridis*, with *Alcyonium digitatum* on vertical rock	JP
IMG_2688	10/08/09	LL09SR08	4	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - dense bryozoan turf and *Corynactis viridis* on vertical rock	JP
IMG_2689	10/08/09	LL09SR08	4	58.41775	-5.12747	NC 17432 51962	Sublittoral habitat - vertical rock encrusted with pink coralline algae and *Parasmittina trispinosa* and with *Balanus crenatus* and *Corynactis viridis*	JP
IMG_2690	10/08/09	LL09SR08	4	58.41775	-5.12747	NC 17432 51962	Sublittoral habitat - vertical rock encrusted with pink coralline algae and *Parasmittina trispinosa* and with *Balanus crenatus* and *Corynactis viridis*	JP
IMG_2691	10/08/09	LL09SR08	4	58.41775	-5.12747	NC 17432 51962	Sublittoral habitat - vertical rock encrusted with pink coralline algae and dense *Corynactis viridis*	JP
IMG_2692	10/08/09	LL09SR08	4	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Porania pulvillus*	JP
IMG_2693	10/08/09	LL09SR08	4	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Porania pulvillus*	JP
IMG_2694	10/08/09	LL09SR08	4	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Porania pulvillus*	JP
IMG_2695	10/08/09	LL09SR08	4	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Porania pulvillus*	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2696	10/08/09	LL09SR08	4	58.41775	-5.12747	NC 17432 51962	Sublittoral habitat - steep rock encrusted with pink coralline algae and with *Corynactis viridis* and *Echinus esculentus*	JP
IMG_2697	10/08/09	LL09SR08	4	58.41775	-5.12747	NC 17432 51962	Sublittoral habitat - steep rock encrusted with pink coralline algae and with *Corynactis viridis* and *Echinus esculentus*	JP
IMG_2698	10/08/09	LL09SR08	4	58.41775	-5.12747	NC 17432 51962	Sublittoral habitat - steep rock encrusted with pink coralline algae and with *Corynactis viridis* and *Marthasterias glacialis*	JP
IMG_2699	10/08/09	LL09SR08	3	58.41775	-5.12747	NC 17432 51962	Sublittoral habitat - steep rock encrusted with pink coralline algae and with dense *Corynactis viridis* and a turf of bryozoans and red algae, including *Bonnemaisonia asparagoides*	JP
IMG_2700	10/08/09	LL09SR08	3	58.41775	-5.12747	NC 17432 51962	Sublittoral habitat - steep rock encrusted with pink coralline algae and with dense *Corynactis viridis* and a turf of bryozoans and red algae, including *Bonnemaisonia asparagoides*	JP
IMG_2701	10/08/09	LL09SR08	3	58.41775	-5.12747	NC 17432 51962	Sublittoral habitat - steep rock encrusted with pink and red algae and with *Corynactis viridis, Asterias rubens, Balanus crenatus* and *Bonnemaisonia asparagoides*	JP
IMG_2702	10/08/09	LL09SR08	3	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - steep rock with dense *Corynactis viridis, Bugula* sp.*, Dictyota dichotoma* and *Bonnemaisonia asparagoides*	JP
IMG_2703	10/08/09	LL09SR08	3	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - steep rock with dense *Corynactis viridis* and *Aplysia punctata*	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2704	10/08/09	LL09SR08	2	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - dense patch of *Alcyonium didgitatum*	JP
IMG_2705	10/08/09	LL09SR08	2	58.41775	-5.12747	NC 17432 51962	Sublittoral habitat - steep rock wall with dense *Alcyonium digitatum*	JP
IMG_2706	10/08/09	LL09SR08	2	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - steep rock slope with dense *Corynactis viridis* and patches of *Alcyonium didgitatum*	JP
IMG_2707	10/08/09	LL09SR08	2	58.41775	-5.12747	NC 17432 51962	Sublittoral habitat - steep rock slope with dense *Corynactis viridis, Alcyonium didgitatum, Laminaria hyperborea* and yellow sponge	JP
IMG_2708	10/08/09	LL09SR08	2	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Callophyllis laciniata*	JP
IMG_2709	10/08/09	LL09SR08	2	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Callophyllis laciniata*	JP
IMG_2710	10/08/09	LL09SR08	2	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Laminaria hyperborea* understorey with dense *Trailliella*, *Abietinaria abietina* and *Corynactis viridis*	JP
IMG_2711	10/08/09	LL09SR08	2	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Laminaria hyperborea* understorey with dense *Trailliella*, *Abietinaria abietina* and *Corynactis viridis*	JP
IMG_2712	10/08/09	LL09SR08	2	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Laminaria hyperborea* understorey with light red algal turf, *Porania pulvillus* and *Henricia sanguinolenta*	JP
IMG_2714	10/08/09	LL09SR08	2	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Laminaria hyperborea* understorey with light red algal turf, *Corynactis viridis*, *Porania pulvillus* and *Henricia sanguinolenta*	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2715	10/08/09	LL09SR08	2	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Laminaria hyperborea* understorey with red algal/bryozoan turf, *Asterias rubens* and *Alcyonium digitatum*	JP
IMG_2716	10/08/09	LL09SR08	2	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Laminaria hyperborea* understorey with red algal/bryozoan turf, *Alcyonium digitatum, Botryllus schlosseri* and *Salmacina/Filograna*	JP
IMG_2717	10/08/09	LL09SR08	1	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Laminaria hyperborea* forest understorey with red bryozoan turf and *Callophyllis laciniata*	JP
IMG_2718	10/08/09	LL09SR08	1	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Laminaria hyperborea* forest understorey with bryozoan turf, *Alcyonium digitatum* and *Callophyllis laciniata*	JP
IMG_2719	10/08/09	LL09SR08	1	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Laminaria hyperborea* forest understorey with bryozoan turf, *Alcyonium digitatum* and *Callophyllis laciniata*	JP
IMG_2720	10/08/09	LL09SR08	1	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Laminaria hyperborea* forest understorey with bryozoan turf and *Alcyonium digitatum*; stipe covered in *Botryllus schlosseri*	JP
IMG_2721	10/08/09	LL09SR08	1	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Laminaria hyperborea* stipes with dense red algal epiphytes	JP
IMG_2722	10/08/09	LL09SR08	1	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Laminaria hyperborea* stipe with dense red algal epiphytes and *Calliostoma zizyphinum*	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2723	10/08/09	LL09SR08	1	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - rock with *Alcyonium digitatum, Callophyllis laciniata* and *Salmacina/Filograna*	JP
IMG_2724	10/08/09	LL09SR08	1	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Alcyonium digitatum*	JP
IMG_2725	10/08/09	LL09SR08	1	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Alcyonium digitatum*	JP
IMG_2726	10/08/09	LL09SR08	1	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Laminaria hyperborea* forest understorey with red algal turf, including *Callophyllis laciniata*, *Alcyonium digitatum* and *Botryllus schlosseri*	JP
IMG_2728	10/08/09	LL09SR08	1	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Laminaria hyperborea* frond with dense *Obelia geniculata*	JP
IMG_2729	10/08/09	LL09SR08	1	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Laminaria hyperborea* stipe with dense red algal epiphytes, including *Phycodrys rubens*	JP
IMG_2730	10/08/09	LL09SR08	1	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Laminaria hyperborea* frond with *Obelia geniculata*	JP
IMG_2731	10/08/09	LL09SR08	1	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Laminaria hyperborea* forest understorey with dense red algal turf, including *Phycodrys rubens*, and stipe with community of profuse red algae and *Halichondria panicea*	JP
IMG_2732	10/08/09	LL09SR08	1	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Laminaria hyperborea* forest understorey with dense red algal turf, including *Phycodrys rubens*, and stipe with *Halichondria panicea* and *Henricia sanguinolenta*	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2734	10/08/09	LL09SR08	1	58.41775	-5.12747	NC 17432 51962	Sublittoral close-up - *Laminaria hyperborea* stipe with dense red algal epiphytes and *Halichondria panicea*	JP
IMGP0107	17/08/09	LL09IR10	5	58.41860	-5.10225	NC 18908 51988	Littoral habitat - *Semibalanus balanoides/Fucus vesiculosus* mosaic	CM
IMGP0108	17/08/09	LL09IR10	5	58.41860	-5.10225	NC 18908 51988	Littoral habitat - *Semibalanus balanoides/Fucus vesiculosus* mosaic	CM
IMGP0109	17/08/09	LL09IR10	5	58.41860	-5.10225	NC 18908 51988	Littoral habitat - *Semibalanus balanoides/Fucus vesiculosus* mosaic	CM
IMGP0110	17/08/09	LL09IR10	5	58.41860	-5.10225	NC 18908 51988	Littoral habitat - *Semibalanus balanoides/Fucus vesiculosus* mosaic	CM
IMGP0111	17/08/09	LL09IR10	4	58.41860	-5.10225	NC 18908 51988	Littoral habitat - dense *Semibalanus balanoides* zone	CM
IMGP0112	17/08/09	LL09IR10	4/5	58.41860	-5.10225	NC 18908 51988	Littoral habitat - dense *Semibalanus balanoides* and *S. balanoides/Fucus vesiculosus* mosaic zones	CM
IMGP0113	17/08/09	LL09IR10	4	58.41860	-5.10225	NC 18908 51988	Littoral habitat - dense *Semibalanus balanoides* zone	CM
IMGP0114	17/08/09	LL09IR10	4	58.41860	-5.10225	NC 18908 51988	Littoral habitat - dense *Semibalanus balanoides* zone	CM
IMGP0115	17/08/09	LL09IR10	4	58.41860	-5.10225	NC 18908 51988	Littoral habitat - rockpool lined with pink coralline algae and with *Patella vulgata* and *Actinia equina*	CM
IMGP0116	17/08/09	LL09IR10	3	58.41860	-5.10225	NC 18908 51988	Littoral habitat - *Chthamalus montagui* zone	CM
IMGP0117	17/08/09	LL09IR10	3	58.41860	-5.10225	NC 18908 51988	Littoral habitat - *Chthamalus montagui* zone	CM
IMGP0118	17/08/09	LL09IR10	3	58.41860	-5.10225	NC 18908 51988	Littoral close-up - *Chthamalus montagui*	CM

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMGP0119	17/08/09	LL09IR10	2/3/4	58.41860	-5.10225	NC 18908 51988	Littoral habitat - *Verrucaria maura*, *Chthamalus montagui* and *Semibalanus balanoides* zones	CM
IMGP0120	17/08/09	LL09IR10	3	58.41860	-5.10225	NC 18908 51988	Littoral close-up - *Chthamalus montagui*	CM
IMGP0121	17/08/09	LL09IR10	2	58.41860	-5.10225	NC 18908 51988	Littoral habitat - *Verrucaria maura* zone	CM
IMGP0122	17/08/09	LL09IR10	2	58.41860	-5.10225	NC 18908 51988	Littoral habitat - *Verrucaria maura* zone	CM
IMGP0123	17/08/09	LL09IR10	2	58.41860	-5.10225	NC 18908 51988	Littoral habitat - *Verrucaria maura* zone	CM
IMGP0124	17/08/09	LL09IR10	2	58.41860	-5.10225	NC 18908 51988	Littoral habitat - *Verrucaria maura* zone	CM
IMGP0125	17/08/09	LL09IR10	4	58.41860	-5.10225	NC 18908 51988	Littoral habitat - rockpool lined with pink coralline algae and with *Patella vulgata* and *Actinia equina*	CM
IMGP0126	17/08/09	LL09IR10	1	58.41860	-5.10225	NC 18908 51988	Relocation - view down transect through zone 1 from marker stake	CM
IMGP0127	17/08/09	LL09IR10	1	58.41860	-5.10230	NC 18905 51989	Relocation - view towards marker	CM
IMGP0128	17/08/09	LL09IR10	1	58.41862	-5.10227	NC 18907 51990	Relocation - view towards marker	CM
IMGP0129	17/08/09	LL09IR10					Relocation - view down transect	CM
DSCF1214	17/08/09	LL09SX10		58.41860	-5.10225	NC 18908 51988	Pelagic - Cyanea capillata	GS
DSCF1233	17/08/09	LL09SX10	1	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - *Alaria esculenta*	GS
DSCF1234	17/08/09	LL09SX10	1	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - *Alaria esculenta* and *Laminaria digitata*	GS
DSCF1235	17/08/09	LL09SX10	1	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - *Alaria esculenta* and *Laminaria digitata*	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1201	17/08/09	LL09SX10	2	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - grazed rock beneath *Laminaria hyperborea* forest, with pink coralline crusts and *Porania pulvillus*	GS
DSCF1203	17/08/09	LL09SX10	2	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - grazed rock beneath *Laminaria hyperborea* forest, with pink coralline crusts, *Balanus crenatus* and *Porania pulvillus*	GS
DSCF1205	17/08/09	LL09SX10	2	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - *Porania pulvillus*	GS
DSCF1207	17/08/09	LL09SX10	2	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - *Laminaria hyperborea* stipe with *Alcyonium digitatum*	GS
DSCF1208	17/08/09	LL09SX10	2	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - *Laminaria hyperborea* stipe with *Alcyonium digitatum*	GS
DSCF1209	17/08/09	LL09SX10	2	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - *Laminaria hyperborea* forest	GS
DSCF1220	17/08/09	LL09SX10	2	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - grazed rock beneath *Laminaria hyperborea* forest, with pink coralline crusts, dense *Pomatoceros*, *Tectura virginea* and *Marthasterias glacialis*	GS
DSCF1221	17/08/09	LL09SX10	2	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - *Laminaria hyperborea* frond with *Calliostoma zizyphinum*	GS
DSCF1224	17/08/09	LL09SX10	2	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - *Laminaria hyperborea* forest	GS
DSCF1225	17/08/09	LL09SX10	2	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - *Laminaria hyperborea* forest	GS
DSCF1226	17/08/09	LL09SX10	2	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - *Laminaria hyperborea* forest	GS
DSCF1227	17/08/09	LL09SX10	2	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - *Laminaria hyperborea* forest	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1228	17/08/09	LL09SX10	2	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - *Laminaria hyperborea* forest	GS
DSCF1232	17/08/09	LL09SX10	2	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - *Laminaria hyperborea* forest; *Callithamnion tetragonum* on frond	GS
DSCF1190	17/08/09	LL09SX10	3	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - vertical rock with *Alcyonium digitatum* and *Balanus crenatus* in foreground and *Echinus esculentus* and *Laminaria hyperborea* in background	GS
DSCF1191	17/08/09	LL09SX10	3	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - vertical rock with *Alcyonium digitatum* and *Balanus crenatus* in foreground and *Echinus esculentus* and *Laminaria hyperborea* in background	GS
DSCF1192	17/08/09	LL09SX10	3	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - vertical rock with *Alcyonium digitatum* and *Balanus crenatus* in foreground and *Echinus esculentus* and *Laminaria hyperborea* in background	GS
DSCF1193	17/08/09	LL09SX10	3	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - vertical rock with *Metridium senile* and *Esperiopsis fucorum?* in foreground and *Laminaria hyperborea* in background	GS
DSCF1194	17/08/09	LL09SX10	3	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - *Laminaria hyperborea* forest from below	GS
DSCF1195	17/08/09	LL09SX10	3	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - steep rock with *Metridium senile*, *Dictyota dichotoma* and *Laminaria hyperborea*	GS
DSCF1198	17/08/09	LL09SX10	3	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - vertical rock with *Laminaria hyperborea*	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1186	17/08/09	LL09SX10	4	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - near vertical rock encrusted with pink coralline algae, *Parasmittina trispinosa* and *Balanus crenatus*, with patchy turf of *Bonnemaisonia asparagoides* and sparse *Alcyonium digitatum*	GS
DSCF1187	17/08/09	LL09SX10	4	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - near vertical rock encrusted with pink coralline algae, *Parasmittina trispinosa* and *Balanus crenatus*, with patchy turf of *Bonnemaisonia asparagoides* and sparse *Alcyonium digitatum*	GS
DSCF1188	17/08/09	LL09SX10	4	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - near vertical rock encrusted with pink coralline algae, *Parasmittina trispinosa* and *Balanus crenatus*, with patchy turf of *Bonnemaisonia asparagoides* and sparse *Alcyonium digitatum*	GS
DSCF1189	17/08/09	LL09SX10	4	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - near vertical rock encrusted with pink coralline algae and *Balanus crenatus*, with patchy turf of *Bonnemaisonia asparagoides* and sparse *Alcyonium digitatum*; *Laminaria hyperborea* in background	GS
DSCF1126	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - base of rock wall with *Antedon bifida*, *Alcyonium digitatum* and *Pomatoceros*	GS
DSCF1127	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - base of rock wall with *Antedon bifida*, *Alcyonium digitatum, Pomatoceros* and *Caryophyllia smithii*	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1128	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - base of rock wall with *Antedon bifida*, *Pomatoceros* and pink coralline algal crust	GS
DSCF1129	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - base of rock wall with *Munida rugosa*	GS
DSCF1130	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - base of rock wall with *Munida rugosa* and *Cancer pagurus*	GS
DSCF1131	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - base of rock wall with *Munida rugosa, Pomatoceros* and pink coralline algae	GS
DSCF1132	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - rock wall with *Munida rugosa, Pomatoceros, Antedon bifida, Balanus crenatus, Corynactis viridis* and *Ascidia mentula*	GS
DSCF1133	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - rock wall with *Munida rugosa, Pomatoceros, Antedon bifida, Balanus crenatus, Corynactis viridis, Ascidia mentula* and *Ascidia virginea*	GS
DSCF1134	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - rock wall with *Munida rugosa, Pomatoceros, Antedon bifida, Balanus crenatus* and *Ascidia mentula*	GS
DSCF1135	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - base of rock wall with *Munida rugosa, Cancer pagurus,* Caridea sp., pink coralline algae, *Pomatoceros, Balanus crenatus* and *Caryophyllia smithii*	GS
DSCF1136	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - base of rock wall with *Munida rugosa, Cancer pagurus,* pink coralline algae, *Pomatoceros, Balanus crenatus, Caryophyllia smithii* and *Neocrania anomala*	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1137	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - base of rock wall with *Munida rugosa, Cancer pagurus,* pink coralline algae, *Pomatoceros, Balanus crenatus* and *Caryophyllia smithii*	GS
DSCF1138	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - rock wall with dense *Corynactis viridis, Pomatoceros, Antedon bifida* and *Inachus* sp.	GS
DSCF1139	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - rock wall with *Corynactis viridis*, *Pomatoceros*, *Balanus crenatus*, *Caryophyllia smithii*, *Parasmittina trispinosa* and pink coralline crusts	GS
DSCF1140	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - rock wall with *Pomatoceros, Echinus esculentus, Parasmittina trispinosa* and pink coralline algal crusts	GS
DSCF1141	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - rock wall with *Pomatoceros, Echinus esculentus, Parasmittina trispinosa* and pink coralline algal crusts	GS
DSCF1143	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - rock wall with *Pomatoceros, Echinus esculentus* and *Ascidia mentula*	GS
DSCF1144	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - *Pomatoceros, Echinus esculentus* and *Parasmittina trispinosa* on rock	GS
DSCF1145	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - mating *Necora puber*	GS
DSCF1146	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - *Caryophyllia smithii* and *Antedon bifida* on rock	GS
DSCF1147	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - *Caryophyllia smithii, Alcyonium digitatum* and *Antedon bifida* on rock	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1148	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - *Cancer pagurus*, *Caryophyllia smithii*, *Parasmittina trispinosa* and *Balanus crenatus* on rock	GS
DSCF1149	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - *Cancer pagurus*, *Caryophyllia smithii*, *Parasmittina trispinosa*, *Balanus crenatus*, *Antedon bifida* and *Ascidia mentula* on steep rock face	GS
DSCF1150	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - *Cancer pagurus*, *Balanus crenatus* and *Ascidia mentula* on steep rock face	GS
DSCF1151	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - *Polycera faeroensis* on *Halecium halecinum*	GS
DSCF1152	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - *Polycera faeroensis* on *Halecium halecinum*	GS
DSCF1153	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - *Necora puber* and *Ascidia mentula*	GS
DSCF1154	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - rock underhang with dense patch of *Metridium senile* and with *Balanus crenatus* and *Corynactis viridis*	GS
DSCF1155	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - rock underhang with dense patch of *Metridium senile* and with *Balanus crenatus* and *Corynactis viridis*	GS
DSCF1156	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - rock underhang with dense patch of *Metridium senile* and with *Balanus crenatus* and *Corynactis viridis*	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1157	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - rock underhang with dense patch of *Metridium senile* and with *Balanus crenatus* and *Corynactis viridis*	GS
DSCF1158	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - rock underhang with *Metridium senile* and *Echinus esculentus*	GS
DSCF1159	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - rock underhang with *Metridium senile, Alcyonium digitatum* and *Echinus esculentus*	GS
DSCF1160	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - rock cliff with *Metridium senile*, *Echinus esculentus*, *Halecium halecinum* and *Parasmittina trispinosa*	GS
DSCF1161	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - rock cliff with *Halecium halecinum*, *Parasmittina trispinosa* and patches of erect bryozoans and red algae	GS
DSCF1162	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - rock with *Halecium halecinum*, *Parasmittina trispinosa*, *Corynactis viridis*, *Balanus crenatus* and patches of erect bryozoans and red algae	GS
DSCF1163	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - rock with *Metridium senile*, *Parasmittina trispinosa*, *Mathasterias glacialis*, *Porania pulvillus*, *Echinus esculentus* and *Balanus crenatus*	GS
DSCF1164	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - rock with *Metridium senile*, *Parasmittina trispinosa*, *Mathasterias glacialis*, *Echinus esculentus* and *Balanus crenatus*	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1165	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - rock with *Metridium senile*, *Parasmittina trispinosa*, *Mathasterias glacialis*, *Echinus esculentus* and *Balanus crenatus*	GS
DSCF1166	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - rock with *Metridium senile*, *Parasmittina trispinosa*, *Mathasterias glacialis*, *Echinus esculentus* and *Balanus crenatus*	GS
DSCF1167	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - rock with *Metridium senile*, *Parasmittina trispinosa*, *Mathasterias glacialis*, *Echinus esculentus* and *Balanus crenatus*	GS
DSCF1168	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - rock with *Metridium senile*, *Parasmittina trispinosa*, *Mathasterias glacialis*, *Echinus esculentus* and *Balanus crenatus*	GS
DSCF1169	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - rock with *Halecium halecinum, Sagartia elegans*?, *Caryophyllia smithii, Corynactis viridis, Balanus crenatus* and pink coralline crusts	GS
DSCF1170	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - rock with *Halecium halecinum, Sagartia elegans*?, *Corynactis viridis, Balanus crenatus* and pink coralline crusts	GS
DSCF1171	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - rock with *Halecium halecinum, Sagartia elegans*?, *Corynactis viridis, Balanus crenatus* and pink coralline crusts	GS
DSCF1172	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - *Sagartia elegans*?	GS
DSCF1173	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - dense *Corynactis viridis*	GS
DSCF1174	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - dense *Corynactis viridis*	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1175	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - dense *Corynactis viridis*	GS
DSCF1176	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - vertical rock with *Parasmittina trispinosa*, bryozoan tufts, *Plocamium cartilagineum*, *Halecium halecinum*, *Corynactis viridis*, *Balanus crenatus* and pink coralline crusts	GS
DSCF1177	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - underhang with dense *Corynactis viridis* and *Esperiopsis fucorum*? and with *Echinus esculentus* and *Metridium senile*	GS
DSCF1178	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - dense *Corynactis viridis* and *Esperiopsis fucorum*?	GS
DSCF1179	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - vertical rock face with dense *Corynactis viridis, Esperiopsis fucorum*?, *Echinus esculentus* and *Metridium senile*	GS
DSCF1180	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - vertical rock face with dense *Corynactis viridis, Echinus esculentus* and *Metridium senile*	GS
DSCF1181	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - vertical rock face with dense *Corynactis viridis, Esperiopsis fucorum*?, *Echinus esculentus* and *Metridium senile*	GS
DSCF1182	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - view up vertical rock face towards kelp forest; rock with dense *Corynactis viridis,* patches of *Halecium halecinum* and *Echinus esculentus*	GS
DSCF1183	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - *Halecium halecinum*	GS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1184	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - *Halecium halecinum* and *Corynactis viridis*	GS
DSCF1185	17/08/09	LL09SX10	5	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - dense *Corynactis viridis*	GS
DSCF1121	17/08/09	LL09SX10	6	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - shelly sand with *Cerianthus lloydii* and drift weed	GS
DSCF1122	17/08/09	LL09SX10	6	58.41860	-5.10225	NC 18908 51988	Sublittoral habitat - shelly sand with drift weed	GS
DSCF1123	17/08/09	LL09SX10	6	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - shelly sand with *Cerianthus lloydii* and drift weed	GS
DSCF1124	17/08/09	LL09SX10	6	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - shelly sand with *Cerianthus lloydii* and drift weed	GS
DSCF1125	17/08/09	LL09SX10	6	58.41860	-5.10225	NC 18908 51988	Sublittoral close-up - *Liocarcinus depurator* on shelly sand	GS
IMGP0205	21/08/09	LL09IS01	5	58.37505	-5.03890	NC 22388 46973	Littoral habitat - fine sand with *Arenicola* casts	CM
IMGP0206	21/08/09	LL09IS01	5	58.37505	-5.03890	NC 22388 46973	Littoral habitat - fine sand with *Arenicola* casts and *Rhizoclonium* patches	CM
IMGP0207	21/08/09	LL09IS01	5	58.37505	-5.03890	NC 22388 46973	Littoral habitat - fine sand with *Arenicola* casts and *Rhizoclonium* patches	CM
IMGP0208	21/08/09	LL09IS01	5	58.37505	-5.03890	NC 22388 46973	Littoral habitat - fine sand with *Arenicola* casts and *Rhizoclonium* patches	CM
IMGP0209	21/08/09	LL09IS01	5	58.37505	-5.03890	NC 22388 46973	Littoral habitat - fine sand with *Arenicola* casts and *Rhizoclonium* patches	CM
IMGP0210	21/08/09	LL09IS01	5	58.37505	-5.03890	NC 22388 46973	Littoral habitat - fine sand with *Rhizoclonium* patches	CM
IMGP0211	21/08/09	LL09IS01	5	58.37505	-5.03890	NC 22388 46973	Littoral habitat - fine sand with *Arenicola* casts, *Rhizoclonium* patches and scattered *Fucus vesiculosus*	CM
IMGP0212	21/08/09	LL09IS01	5	58.37505	-5.03890	NC 22388 46973	0.25m^2 quadrat in zone 5	CM

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMGP0213	21/08/09	LL09IS01	5	58.37505	-5.03890	NC 22388 46973	0.25m^2 quadrat in zone 5	CM
IMGP0214	21/08/09	LL09IS01	5	58.37505	-5.03890	NC 22388 46973	0.25m^2 quadrat in zone 5	CM
IMGP0215	21/08/09	LL09IS01	5	58.37505	-5.03890	NC 22388 46973	0.25m^2 quadrat in zone 5	CM
IMGP0216	21/08/09	LL09IS01	5	58.37505	-5.03890	NC 22388 46973	0.25m^2 quadrat in zone 5	CM
IMGP0217	21/08/09	LL09IS01	6	58.37563	-5.04050	NC 22297 47043	0.25m^2 quadrat in zone 6	CM
IMGP0218	21/08/09	LL09IS01	6	58.37563	-5.04050	NC 22297 47043	0.25m^2 quadrat in zone 6	CM
IMGP0219	21/08/09	LL09IS01	6	58.37563	-5.04050	NC 22297 47043	0.25m^2 quadrat in zone 6	CM
IMGP0220	21/08/09	LL09IS01	6	58.37563	-5.04050	NC 22297 47043	0.25m^2 quadrat in zone 6	CM
IMGP0221	21/08/09	LL09IS01	6	58.37563	-5.04050	NC 22297 47043	0.25m^2 quadrat in zone 6	CM
IMGP0222	21/08/09	LL09IS01	6	58.37563	-5.04050	NC 22297 47043	Littoral habitat - rippled medium sand	CM
IMGP0223	21/08/09	LL09IS01	6	58.37563	-5.04050	NC 22297 47043	Littoral habitat - rippled medium sand with *Fucus vesiculosus* patch	CM
IMGP0224	21/08/09	LL09IS01	6	58.37563	-5.04050	NC 22297 47043	Littoral habitat - rippled medium sand with *Arenicola* casts	CM
IMGP0225	21/08/09	LL09IS01	6	58.37563	-5.04050	NC 22297 47043	Littoral habitat - rippled medium sand with *Arenicola* casts	CM
IMGP0226	21/08/09	LL09IS01	6	58.37563	-5.04050	NC 22297 47043	Littoral habitat - rippled medium sand with *Arenicola* casts	CM
IMGP0227	21/08/09	LL09IS01	6	58.37563	-5.04050	NC 22297 47043	Littoral habitat - drainage channel at bottom of transect	CM
IMGP0228	21/08/09	LL09IS01		58.37433	-5.03693	NC 22499 46889	Relocation - view down transect from marker	CM
IMGP0229	21/08/09	LL09IS01	1	58.37427	-5.03715	NC 22486 46882	Relocation - view towards marker	CM
IMGP0230	21/08/09	LL09IS01	1	58.37445	-5.03693	NC 22500 46901	Relocation - view towards marker	CM

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMGP0231	21/08/09	LL09IS01		58.37433	-5.03693	NC 22499 46889	Relocation - close-up of marker	CM
DSCF1957	21/08/09	LL09IS02		58.37787	-5.04635	NC 21966 47307	Relocation - view down transect from piton marker	LS
DSCF1958	21/08/09	LL09IS02		58.37785	-5.04628	NC 21970 47305	Relocation - view towards piton marker	LS
DSCF1960	21/08/09	LL09IS02		58.37778	-5.04613	NC 21979 47297	Relocation - view towards piton marker	LS
DSCF1961	21/08/09	LL09IS02	1	58.37780	-5.04615	NC 21978 47299	Littoral habitat - mixed substrata with *Fucus vesiculosus* and *Pelvetia canaliculata*	LS
DSCF1962	21/08/09	LL09IS02	1	58.37780	-5.04615	NC 21978 47299	Littoral habitat - mixed substrata with *Fucus vesiculosus* and *Pelvetia canaliculata*	LS
DSCF1963	21/08/09	LL09IS02	1	58.37780	-5.04615	NC 21978 47299	Littoral habitat - mixed substrata with *Fucus vesiculosus* and *Pelvetia canaliculata*	LS
DSCF1964	21/08/09	LL09IS02	2	58.37777	-5.04610	NC 21980 47295	Littoral habitat - slightly muddy gravelly sand	LS
DSCF1965	21/08/09	LL09IS02	2	58.37777	-5.04610	NC 21980 47295	Littoral habitat - slightly muddy gravelly sand	LS
DSCF1966	21/08/09	LL09IS02	2	58.37777	-5.04610	NC 21980 47295	Littoral habitat - slightly muddy gravelly sand with scattered *Fucus vesiculosus*	LS
DSCF1967	21/08/09	LL09IS02	2	58.37777	-5.04610	NC 21980 47295	0.25m^2 quadrat in zone 2	LS
DSCF1968	21/08/09	LL09IS02	2	58.37777	-5.04610	NC 21980 47295	0.25m^2 quadrat in zone 2	LS
DSCF1969	21/08/09	LL09IS02	2	58.37777	-5.04610	NC 21980 47295	0.25m^2 quadrat in zone 2	LS
DSCF1970	21/08/09	LL09IS02	2	58.37777	-5.04610	NC 21980 47295	0.25m^2 quadrat in zone 2	LS
DSCF1971	21/08/09	LL09IS02	2	58.37777	-5.04610	NC 21980 47295	0.25m^2 quadrat in zone 2	LS
DSCF1972	21/08/09	LL09IS02	3	58.37772	-5.04595	NC 21989 47289	Littoral habitat - dimpled fine sand with *Arenicola* casts	LS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1973	21/08/09	LL09IS02	3	58.37772	-5.04595	NC 21989 47289	Littoral habitat - dimpled fine sand with *Arenicola* casts	LS
DSCF1974	21/08/09	LL09IS02	3	58.37772	-5.04595	NC 21989 47289	Littoral habitat - dimpled fine sand with *Arenicola* casts	LS
DSCF1975	21/08/09	LL09IS02	3	58.37772	-5.04595	NC 21989 47289	0.25m^2 quadrat in zone 3	LS
DSCF1976	21/08/09	LL09IS02	3	58.37772	-5.04595	NC 21989 47289	0.25m^2 quadrat in zone 3	LS
DSCF1977	21/08/09	LL09IS02	3	58.37772	-5.04595	NC 21989 47289	0.25m^2 quadrat in zone 3	LS
DSCF1978	21/08/09	LL09IS02	3	58.37772	-5.04595	NC 21989 47289	0.25m^2 quadrat in zone 3	LS
DSCF1979	21/08/09	LL09IS02	3	58.37772	-5.04595	NC 21989 47289	0.25m^2 quadrat in zone 3	LS
DSCF1980	21/08/09	LL09IS02	5	58.37612	-5.04222	NC 22199 47101	Littoral habitat - slightly muddy medium sand with *Arenicola* casts	LS
DSCF1981	21/08/09	LL09IS02	5	58.37612	-5.04222	NC 22199 47101	Littoral habitat - slightly muddy medium sand with *Arenicola* casts	LS
DSCF1982	21/08/09	LL09IS02	5	58.37612	-5.04222	NC 22199 47101	Littoral habitat - slightly muddy medium sand with *Arenicola* casts	LS
DSCF1983	21/08/09	LL09IS02	5	58.37612	-5.04222	NC 22199 47101	0.25m^2 quadrat in zone 5	LS
DSCF1984	21/08/09	LL09IS02	5	58.37612	-5.04222	NC 22199 47101	0.25m^2 quadrat in zone 5	LS
DSCF1985	21/08/09	LL09IS02	5	58.37612	-5.04222	NC 22199 47101	0.25m^2 quadrat in zone 5	LS
DSCF1986	21/08/09	LL09IS02	5	58.37612	-5.04222	NC 22199 47101	0.25m^2 quadrat in zone 5	LS
DSCF1987	21/08/09	LL09IS02	5	58.37612	-5.04222	NC 22199 47101	0.25m^2 quadrat in zone 5	LS
DSCF1988	21/08/09	LL09IS02					General - sieving at bottom of transect	LS
DSCF1989	21/08/09	LL09IS02					General - view of upper Traigh Bad na Baighe	LS
DSCF1992	21/08/09	LL09IS02	4	58.37697	-5.04422	NC 22086 47201	Littoral habitat - slightly muddy fine sand with *Arenicola* casts	LS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF1993	21/08/09	LL09IS02	4	58.37697	-5.04422	NC 22086 47201	Littoral habitat - slightly muddy fine sand with *Arenicola* casts	LS
DSCF1994	21/08/09	LL09IS02	4	58.37697	-5.04422	NC 22086 47201	Littoral habitat - slightly muddy fine sand with *Arenicola* casts	LS
DSCF1995	21/08/09	LL09IS02	4	58.37697	-5.04422	NC 22086 47201	0.25m^2 quadrat in zone 4	LS
DSCF1996	21/08/09	LL09IS02	4	58.37697	-5.04422	NC 22086 47201	0.25m^2 quadrat in zone 4	LS
DSCF1997	21/08/09	LL09IS02	4	58.37697	-5.04422	NC 22086 47201	0.25m^2 quadrat in zone 4	LS
DSCF1998	21/08/09	LL09IS02	4	58.37697	-5.04422	NC 22086 47201	0.25m^2 quadrat in zone 4	LS
DSCF1999	21/08/09	LL09IS02	4	58.37697	-5.04422	NC 22086 47201	0.25m^2 quadrat in zone 4	LS
IMG_2972	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - shot line at start of maerl transect	JP
IMG_2973	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - shot line at start of maerl transect	JP
IMG_2974	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - transect line through maerl bed with *Marthasterias glacialis*	JP
IMG_2975	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - transect line through maerl bed with *Marthasterias glacialis*	JP
IMG_2976	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - transect line through maerl bed with *Marthasterias glacialis*	JP
IMG_2977	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - transect line through maerl bed with *Marthasterias glacialis*	JP
IMG_2978	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - transect line through maerl bed with *Marthasterias glacialis*	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2979	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - scattered maerl with patchy algal turf of *Trailliella*, *Chorda filum*, *Asperococcus* sp., *Polyides rotundus* and filamentous green algae	JP
IMG_2980	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - patchy algal turf of *Trailliella*, *Asperococcus* sp., *Cordylecladia erecta, Ulva lactuca* and filamentous green algae	JP
IMG_2981	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - shell gravel and dead maerl with *Pagurus bernhardus*? supporting shell with hydractiniid, and sparse algae	JP
IMG_2982	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - transect line through maerl bed	JP
IMG_2983	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - transect line through maerl bed	JP
IMG_2984	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral close-up - small hermit crab on shell gravel	JP
IMG_2985	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - scattered live maerl with filamentous algal turf, with *Asperococcus*, *Laminaria hyperborea*, *Chorda filum*, *Halidrys siliquosa* and *Cancer pagurus*	JP
IMG_2986	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - scattered live maerl with filamentous algal turf, with *Laminaria hyperborea*, *Chorda filum* and *Halidrys siliquosa*	JP
IMG_2987	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - shell gravel with sparse live maerl and filamentous algal turf; also *Chorda filum, Taurulus bubalis* and *Pagurus bernhardus?*	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2988	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - shell gravel with sparse live maerl and filamentous algal turf; also *Pagurus bernhardus*?, *Chorda filum, Taurulus bubalis*, *Asperococcus* sp., *Ulva lactuca* and *Phyllophora crispa*	JP
IMG_2989	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - shell gravel with *Carcinus maenas*, *Cancer pagurus*, *Chorda filum* and filamentous algae	JP
IMG_2990	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - shell and maerl gravel with sparse live maerl, *Pomatoschistus pictus* and *Saccharina latissima*	JP
IMG_2991	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - shell and maerl gravel with sparse live maerl and turf of filamentous algae; also *Carcinus maenas* and *Chorda filum*	JP
IMG_2992	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - shell and maerl gravel with sparse live maerl and turf of filamentous algae; also *Asperococcus* sp.	JP
IMG_2993	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - transect line through shell and maerl gravel with sparse live maerl and turf of filamentous algae	JP
IMG_2994	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - transect line through shell and maerl gravel with sparse live maerl and turf of filamentous algae and *Chorda filum*	JP
IMG_2995	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - transect line through shell and maerl gravel with sparse live maerl and turf of filamentous algae and *Chorda filum*	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2996	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - fairly bare shell gravel with sparse live maerl and *Carcinus maenas*	JP
IMG_2998	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - fairly bare shell gravel with *Cancer pagurus* in pit and *Carcinus maenas*	JP
IMG_2999	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - fairly bare shell gravel with *Cancer pagurus* in pit and *Carcinus maenas*	JP
IMG_3000	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - fairly bare shell gravel with *clump of Halidrys siliquosa, Laminaria hyperborea* and *Saccharina latissima*	JP
IMG_3001	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - fairly bare shell gravel with sparse filamentous algae and *Chorda filum*	JP
IMG_3002	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - end of transect line, with *Laminaria hyperborea*	JP
IMG_3003	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - fairly bare shell gravel with *Carcinus maenas* and *Laminaria hyperborea*	JP
IMG_3004	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - fairly bare shell gravel with *Cancer pagurus*, *Carcinus maenas, Laminaria hyperborea, Saccharina latissima* and *Chorda filum*	JP
IMG_3005	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - fairly bare shell gravel with *Laminaria hyperborea*	JP
IMG_3006	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - shell gravel with filamentous algal turf, *Laminaria hyperborea* and *Chorda filum*	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_3007	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - boulder at edge of transect with *Dictyota dichotoma*, *Laminaria hyperborea*, *Halidrys siliquosa*, filamentous red algae, *Diplosoma listerianum* and *Ascidia mentula*	JP
IMG_3008	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - shell gravel with sparse live maerl, patchy filamentous algal turf, *Chorda filum*, *Saccharina latissima* and *Cancer pagurus*	JP
IMG_3009	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - fairly bare shell gravel with *Asperoccus* sp. and patch of *Cystoclonium purpureum/Rhodomela confervoides*	JP
IMG_3010	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - shell gravel with live maerl, *Chorda filum* and much *Cystoclonium purpureum/Rhodomela confervoides*	JP
IMG_3011	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - shell gravel with live maerl and patchy algal turf	JP
IMG_3012	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - shell gravel with *sparse* live maerl and patchy algal turf of filamentous greens, *Asperococcus* sp. and *Chorda filum*	JP
IMG_3013	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - transect line through maerl bed with *Chorda filum*	JP
IMG_3014	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - transect line through maerl bed with *Chorda filum*	JP
IMG_3015	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - transect line through maerl bed with *Chorda filum*	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_3016	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - transect line through maerl bed with *Chorda filum* and patchy algal turf	JP
IMG_3017	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - transect line through maerl bed with *Chorda filum, Asperococcus* sp. and patchy algal turf	JP
IMG_3018	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - transect line through maerl bed with *Chorda filum, Asperococcus* sp. and patchy algal turf	JP
IMG_3019	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - *Halidrys siliquosa* on shell gravel	JP
IMG_3020	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - shell gravel and live maerl with filamentous algal turf, *Chorda filum* and *Halidrys siliquosa*	JP
IMG_3021	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Pelagic - *Chysaora hyoscella*	JP
IMG_3022	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Pelagic - *Chysaora hyoscella*	JP
IMG_3023	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Pelagic - *Chysaora hyoscella*	JP
IMG_3024	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Pelagic - *Chysaora hyoscella*	JP
IMG_3025	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Pelagic - *Chysaora hyoscella*	JP
IMG_3026	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Pelagic - *Chysaora hyoscella*	JP
IMG_3027	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Pelagic - *Chysaora hyoscella*	JP
IMG_3028	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Pelagic - *Chysaora hyoscella*	JP
IMG_3029	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - transect line through maerl bed with *Marthasterias glacialis*	JP
IMG_3030	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral close-up - *Marthasterias glacialis*	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_3031	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral close-up - *Chysaora hyoscella* on seabed	JP
IMG_3032	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral close-up - *Halidrys siliquosa* with *Ascidiella aspersa*	JP
IMG_3033	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral close-up - *Pagurus bernhardus* supporting shell with hydractiniid	JP
IMG_3034	14/08/09	LL09ML01		58.39033	-5.07175	NC 20545 48761	Sublittoral habitat - shell gravel with scattered shells, with *Halidrys siliquosa, Chorda filum, Laminaria hyperborea* and turf of filamentous algae	JP
IMG_2846	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral habitat - shot line at start of maerl bed transect wirth much drift kelp	JP
IMG_2847	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral habitat - shot line at start of maerl bed transect wirth much drift kelp	JP
IMG_2848	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral habitat - much drift kelp on maerl bed	JP
IMG_2849	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral habitat - transect line through maerl bed	JP
IMG_2850	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - live maerl	JP
IMG_2851	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - live maerl and drift kelp	JP
IMG_2852	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - live maerl	JP
IMG_2853	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - live maerl	JP
IMG_2854	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - live maerl	JP
IMG_2855	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - live maerl at 5 m mark along transect	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2856	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - live maerl and much drift kelp with *Liocarcinus corrugatus*	JP
IMG_2857	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - drift kelp with *Liocarcinus corrugatus*	JP
IMG_2858	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - live maerl	JP
IMG_2859	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - live maerl with drift weed	JP
IMG_2860	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - *Crossaster papossus* on drift weed	JP
IMG_2861	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - live maerl at 10 m mark along transect	JP
IMG_2862	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral habitat - much drift kelp on maerl bed	JP
IMG_2863	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral habitat - much drift kelp on maerl bed	JP
IMG_2864	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - live maerl with drift weed and sparse foliose and filamentous algae, *Gibbula cineraria* and many dead *Mytilus* shells	JP
IMG_2865	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral habitat - live maerl with drift weed and many dead *Mytilus* shells	JP
IMG_2866	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral habitat - much drift weed on maerl bed	JP
IMG_2867	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral habitat - much drift weed on maerl bed, with *Ascidiella aspersa*	JP
IMG_2868	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - live maerl at 15 m mark along transect	JP
IMG_2869	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - live maerl with drift weed	JP
IMG_2870	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - live maerl with drift weed	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2872	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - *Neopentadactyla mixta* in maerl bed	JP
IMG_2873	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - *Neopentadactyla mixta* in maerl bed	JP
IMG_2874	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - live maerl and drift weed at 20 m mark along transect	JP
IMG_2875	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - live maerl and drift weed at 20 m mark along transect	JP
IMG_2876	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral habitat - transect line through maerl bed	JP
IMG_2877	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral habitat - maerl bed with much drift kelp	JP
IMG_2878	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - live maerl	JP
IMG_2879	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - live maerl	JP
IMG_2880	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - live maerl with *Saccharina latissima*	JP
IMG_2881	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - *Neopentadactyla mixta* in maerl bed	JP
IMG_2882	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - *shell with Dictyota dichotoma,* foliose red alga and *Pomatoceros* on maerl bed	JP
IMG_2883	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral habitat - 25 m mark along maerl bed transect line	JP
IMG_2884	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - 25 m mark along maerl bed transect line	JP
IMG_2885	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - maerl bed with sparse filamentous red algae	JP
IMG_2886	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - *Neopentadactyla mixta* in maerl bed	JP

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2887	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral habitat - *Neopentadactyla mixta* in maerl bed	JP
IMG_2888	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - live maerl with sparse filamentous and foliose red algae	JP
IMG_2889	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - small megafaunal mound in maerl bed	JP
IMG_2890	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral habitat - maerl bed with drift kelp and many dead *Mytilus* shells	JP
IMG_2891	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral habitat - maerl bed with drift kelp and many dead *Mytilus* shells	JP
DSC_6630	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - *Neopentadactyla mixta* in maerl bed	SH
DSC_6631	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - *Neopentadactyla mixta* in maerl bed	SH
DSC_6641	13/08/09	LL09ML02		58.40583	-5.11247	NC 18246 50595	Sublittoral close-up - *Sycon ciliatum* on maerl bed	SH
110809a.	11/08/09	LL09ML03		58.41567	-5.11467	NC 18168 51696	Sublittoral close-up - shell gravel with scatter of shells and *Phymatolithon calcareum*	JD
110809b.	11/08/09	LL09ML03		58.41567	-5.11467	NC 18168 51696	Sublittoral close-up - shell gravel with scatter of shells and small tufts of filamentous algae, possibly drift	JD
110809c.	11/08/09	LL09ML03		58.41567	-5.11467	NC 18168 51696	Sublittoral close-up - squid eggs on shell gravel	JD
IMG_2621	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral habitat - dense live maerl with patchy turf of foliose and filamentous algae, including *Trailliella*, *Dictyota dichotoma* and *Phycodrys rubens*	CM

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2622	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - dense live maerl with patchy turf of foliose and filamentous algae, including *Trailliella*, *Dictyota dichotoma* and *Bonnemaisonia asparagoides*	CM
IMG_2623	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - dense live maerl with Caridea sp and Galatheidae sp.	CM
IMG_2624	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - dense live maerl with *Bonnemaisonia asparagoides*	CM
IMG_2625	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - dense live maerl	CM
IMG_2626	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - dense live maerl	CM
IMG_2627	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - dense live maerl with *Dictyota dichotoma* and *Bonnemaisonia asparagoides*	CM
IMG_2628	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - dense live maerl with *Dictyota dichotoma, Trailliella, Saccharina latissima, Desmarestia aculeata* and *Pandalus montagui*	CM
IMG_2629	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral habitat - dense maerl bed	CM
IMG_2630	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral habitat - dense live maerl with *Dictyota dichotoma, Saccharina latissima, Laminaria hyperborea* (drift?), *Desmarestia aculeata* and sparse foliose red algae	CM
IMG_2632	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral habitat - dense live maerl with drift kelp	CM
IMG_2633	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral habitat - dense live maerl with drift kelp	CM

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2635	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral habitat - dense live maerl with patchy turf of filamentous and foliose red algae, *Dictyota dichotoma*, and scattered kelp	CM
IMG_2636	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral habitat - dense live maerl with patchy turf of filamentous and foliose red algae, including *Plocamium cartilagineum*, *Dictyota dichotoma*, *Galathea intermedia* and *Pandalus montagui*	CM
IMG_2637	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral habitat - dense live maerl with patchy turf of foliose and filamentous algae, including *Trailliella*, *Dictyota dichotoma* and *Bonnemaisonia asparagoides*	CM
IMG_2638	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral habitat - dense live maerl with sparse red algae	CM
IMG_2640	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral habitat - overview of maerl bed with fairly dense macroalgal cover	CM
IMG_2641	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral habitat - dense live maerl with patchy turf of foliose and filamentous red algae, *Dictyota dichotoma, Desmarestia aculeata* and kelp	CM
IMG_2643	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Porphyropsis coccinea* on *Desmarestia aculeata,* with kelp on maerl bed	CM
IMG_2644	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Porphyropsis coccinea* on *Desmarestia aculeata* on maerl bed	CM
IMG_2646	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Trailliella* and *Porphyropsis coccinea* on *Desmarestia aculeata* on maerl bed	CM
IMG_2647	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Porphyropsis coccinea* on *Desmarestia aculeata* and *Saccharina latissima* on maerl bed	CM

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2648	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Bonnemaisonia asparagoides*? and *Desmarestia aculeata* with *Porphyropsis coccinea* on maerl bed	CM
IMG_2649	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Bonnemaisonia asparagoides*, *Dictyota dichotoma* and *Asterias rubens* on maerl bed	CM
IMG_2650	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Bonnemaisonia asparagoides*, red foliose algae, *Desmarestia aculeata* and *Dictyota dichotoma* on maerl bed	CM
IMG_2651	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Porphyropsis coccinea* on *Desmarestia aculeata* on maerl bed	CM
IMG_2652	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Porphyropsis coccinea* on *Desmarestia aculeata* on maerl bed	CM
IMG_2653	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - kelp frond and scattered algae on maerl bed, including *Bonnemaisonia asparagoides*, *Dictyota dichotoma, Trailliella* and *Plocamium cartilagineum*	CM
IMG_2654	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - algal turf on maerl bed, including *Bonnemaisonia asparagoides*, *Dictyota dichotoma, Trailliella, Porphyropsis coccinea, Desmarestia aculeata* and *Scinaia turgida*	CM
IMG_2655	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Bonnemaisonia asparagoides?* on maerl bed	CM
IMG_2657	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Bonnemaisonia asparagoides*?, *Dictyota dichotoma, Desmarestia aculeata* and *Scinaia turgida* on maerl bed	CM

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2658	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - dense patch of *Bonnemaisonia asparagoides* on maerl bed	CM
IMG_2659	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - dense patch of *Bonnemaisonia asparagoides* on maerl bed	CM
IMG_2660	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - dense patch of *Bonnemaisonia asparagoides* on maerl bed	CM
IMG_2661	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Porphyropsis coccinea* on *Desmarestia aculeata* on maerl bed	CM
IMG_2662	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Asterias rubens* and *Porphyropsis coccinea* on *Desmarestia aculeata* on maerl bed	CM
IMG_2663	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Inachus* sp. on *Desmarestia aculeata*	CM
IMG_2664	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Galathea intermedia* and scattered foliose and filamentous algae, including *Dictyota dichotoma* and *Rhodophyllis divaricata*?, on maerl bed	CM
IMG_2665	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Galathea intermedia* and scattered foliose algae, including *Dictyota dichotoma* and *Rhodophyllis divaricata*?, on maerl bed	CM
IMG_2666	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - patchy algal turf on maerl bed, including *Dictyota dichotoma, Trailliella* and *Rhodophyllis divaricata*?	CM

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMG_2667	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Neopentadactyla mixta* and *Desmarestia aculeata* on maerl bed	CM
IMG_2668	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Neopentadactyla mixta* and *Desmarestia aculeata* on maerl bed	CM
IMG_2669	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Neopentadactyla mixta* and *Desmarestia aculeata* on maerl bed	CM
IMG_2670	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Neopentadactyla mixta* on maerl bed	CM
IMG_2671	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Neopentadactyla mixta* on maerl bed	CM
IMG_2672	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - patchy algal turf on maerl bed, including *Trailliella, Desmarestia aculeata* and *Rhodophyllis divaricata*?	CM
IMG_2673	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - algal patches on maerl bed, including *Acrosorium venulosum, Dictyota dichotoma, Plocamium cartilagineum, Desmarestia aculeata* and *Trailliella*; also *Galathea intermedia*	CM
IMG_2674	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Diplososma listerianum* and *Porphyropsis coccinea* on *Desmarestia aculeata* on maerl bed	CM
IMG_2675	09/08/09	LL09ML04		58.40623	-5.12348	NC 17605 50670	Sublittoral close-up - *Spatangus purpureus* test with *Pomatocero*s on maerl bed	CM
DSCF6067	03/09/09	A1		58.37897	-5.02675	NC 23117 47378	*Ascophyllum nodosum mackayi* bed	CH
DSCF6068	03/09/09	A1		58.37878	-5.02752	NC 23071 47358	*Ascophyllum nodosum mackayi* bed	CH
DSCF6069	03/09/09	A1		58.37878	-5.02752	NC 23071 47358	*Ascophyllum nodosum mackayi* bed	CH

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF6070	03/09/09	A1		58.37878	-5.02752	NC 23071 47358	*Ascophyllum nodosum mackayi* bed	CH
DSCF6071	03/09/09	A1		58.37878	-5.02752	NC 23071 47358	*Ascophyllum nodosum mackayi* bed	CH
DSCF6072	03/09/09	A1		58.37878	-5.02752	NC 23071 47358	*Ascophyllum nodosum mackayi* bed	CH
DSCF6073	03/09/09	A1		58.37878	-5.02752	NC 23071 47358	*Ascophyllum nodosum mackayi* bed	CH
DSCF6074	03/09/09	A1		58.37880	-5.02803	NC 23042 47362	*Ascophyllum nodosum mackayi* bed	CH
DSCF6075	03/09/09	A1		58.37880	-5.02803	NC 23042 47362	*Ascophyllum nodosum mackayi* bed	CH
DSCF6076	03/09/09	A1		58.37880	-5.02803	NC 23042 47362	*Ascophyllum nodosum mackayi* bed	CH
DSCF6077	03/09/09	A1		58.37880	-5.02803	NC 23042 47362	*Ascophyllum nodosum mackayi* bed	CH
DSCF6078	03/09/09	A1		58.37880	-5.02803	NC 23042 47362	*Ascophyllum nodosum mackayi* bed	CH
DSCF6079	03/09/09	A1		58.37880	-5.02803	NC 23042 47362	*Ascophyllum nodosum mackayi* bed	CH
DSCF6080	03/09/09	A1		58.37897	-5.02852	NC 23014 47382	*Ascophyllum nodosum mackayi* bed	CH
DSCF6081	03/09/09	A1		58.37897	-5.02852	NC 23014 47382	*Ascophyllum nodosum mackayi* bed	CH
DSCF6082	03/09/09	A1		58.37897	-5.02852	NC 23014 47382	*Ascophyllum nodosum mackayi* bed	CH
DSCF6083	03/09/09	A1		58.37897	-5.02852	NC 23014 47382	*Ascophyllum nodosum mackayi* bed	CH
DSCF6084	03/09/09	A1		58.37897	-5.02852	NC 23014 47382	*Ascophyllum nodosum mackayi* bed	CH
DSCF6085	03/09/09	A1		58.37897	-5.02852	NC 23014 47382	*Ascophyllum nodosum mackayi* bed	CH
DSCF6095	03/09/09	A1		58.37880	-5.02803	NC 23042 47362	*Ascophyllum nodosum mackayi* bed	CH
DSCF6097	03/09/09	A1		58.37880	-5.02803	NC 23042 47362	*Ascophyllum nodosum mackayi* bed	CH

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF6108	03/09/09	A1		58.37880	-5.02803	NC 23042 47362	*Ascophyllum nodosum mackayi* bed	CH
DSCF2001	03/09/09	A3		58.37803	-5.03117	NC 22855 47285	*Ascophyllum nodosum mackayi* bed	LS
DSCF2002	03/09/09	A3		58.37803	-5.03117	NC 22855 47285	*Ascophyllum nodosum mackayi* bed	LS
DSCF2003	03/09/09	A3		58.37803	-5.03117	NC 22855 47285	*Ascophyllum nodosum mackayi* bed	LS
DSCF2004	03/09/09	A3		58.37803	-5.03117	NC 22855 47285	*Ascophyllum nodosum mackayi* bed	LS
DSCF2005	03/09/09	A3		58.37803	-5.03117	NC 22855 47285	*Ascophyllum nodosum mackayi* bed	LS
DSCF2006	03/09/09	A3		58.37803	-5.03117	NC 22855 47285	*Ascophyllum nodosum mackayi* bed	LS
DSCF2007	03/09/09	A3		58.37803	-5.03117	NC 22855 47285	*Ascophyllum nodosum mackayi* bed	LS
DSCF2008	03/09/09			58.37950	-5.03403	NC 22695 47456	dead mussel shells	LS
DSCF2009	03/09/09	M1		58.37950	-5.03403	NC 22695 47456	rock outcrops with *Mytilus edulis*	LS
DSCF2010	03/09/09	M1		58.37950	-5.03403	NC 22695 47456	rock outcrops with *Mytilus edulis*	LS
DSCF2011	03/09/09	M1		58.37950	-5.03403	NC 22695 47456	rock outcrops with *Mytilus edulis*	LS
DSCF2012	03/09/09	M1		58.37950	-5.03403	NC 22695 47456	rock outcrops with *Mytilus edulis*	LS
DSCF2013	03/09/09	M1		58.37950	-5.03403	NC 22695 47456	rock outcrops with *Mytilus edulis*	LS
DSCF2014	03/09/09	M1		58.37950	-5.03403	NC 22695 47456	rock outcrops with *Mytilus edulis*	LS
DSCF2015	03/09/09	M1		58.37953	-5.03490	NC 22644 47461	*Mytilus edulis* bed	LS
DSCF2016	03/09/09	M1		58.37953	-5.03490	NC 22644 47461	*Mytilus edulis* bed	LS
DSCF2017	03/09/09	M1		58.37953	-5.03490	NC 22644 47461	*Mytilus edulis* bed	LS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF2018	03/09/09	M1		58.37953	-5.03490	NC 22644 47461	*Mytilus edulis* bed	LS
DSCF2019	03/09/09	M1		58.37965	-5.03447	NC 22670 47474	*Mytilus edulis* bed	LS
DSCF2029	03/09/09	A4		58.37872	-5.03162	NC 22832 47363	*Ascophyllum nodosum mackayi* bed	LS
DSCF2030	03/09/09	A4		58.37872	-5.03162	NC 22832 47363	*Ascophyllum nodosum mackayi* bed	LS
DSCF2031	03/09/09	A4		58.37872	-5.03162	NC 22832 47363	*Ascophyllum nodosum mackayi* bed	LS
DSCF2032	03/09/09	A4		58.37872	-5.03162	NC 22832 47363	*Ascophyllum nodosum mackayi* bed	LS
DSCF2033	03/09/09	M2		58.37791	-5.03570	NC 22589 47283	*Mytilus edulis* bed	LS
DSCF2034	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2035	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2036	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2037	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2038	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2039	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2040	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2041	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2042	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2043	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2044	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF2045	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2046	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2047	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2048	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2049	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2050	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2051	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2052	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2053	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2054	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2055	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2056	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2057	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2058	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2059	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2060	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2061	03/09/09	M3		58.37760	-5.03697	NC 22513 47252	*Mytilus edulis* bed	LS
DSCF2073	03/09/09						Close-up of dead mussel shells	LS
DSCF2074	03/09/09						Close-up of dead mussel shells	LS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSCF2075	03/09/09						Close-up of dead mussel shells	LS
DSCF2076	03/09/09						Close-up of dead mussel shells	LS
DSCF2077	03/09/09	A3		58.37803	-5.03117	NC 22855 47285	*Ascophyllum nodosum mackayi* bed	LS
DSCF2078	03/09/09	A3		58.37803	-5.03117	NC 22855 47285	*Ascophyllum nodosum mackayi* bed	LS
DSCF2079	03/09/09	A3		58.37803	-5.03117	NC 22855 47285	*Ascophyllum nodosum mackayi* bed	LS
DSCF2080	03/09/09	A3		58.37803	-5.03117	NC 22855 47285	*Ascophyllum nodosum mackayi* bed	LS
DSCF2081	03/09/09	A3		58.37803	-5.03117	NC 22855 47285	*Ascophyllum nodosum mackayi* bed	LS
DSCF2082	03/09/09	A3		58.37803	-5.03117	NC 22855 47285	*Ascophyllum nodosum mackayi* bed	LS
DSCF2083	03/09/09	A3		58.37803	-5.03117	NC 22855 47285	*Ascophyllum nodosum mackayi* bed	LS
DSCF2084	03/09/09	A3		58.37803	-5.03117	NC 22855 47285	*Ascophyllum nodosum mackayi* bed	LS
DSCF2085	03/09/09	A3		58.37803	-5.03117	NC 22855 47285	*Ascophyllum nodosum mackayi* bed	LS
DSCF2086	03/09/09	A3		58.37803	-5.03117	NC 22855 47285	*Ascophyllum nodosum mackayi* bed	LS
DSCF2087	03/09/09	A3		58.37803	-5.03117	NC 22855 47285	*Ascophyllum nodosum mackayi* bed	LS
DSCF2088	03/09/09	A3		58.37803	-5.03117	NC 22855 47285	*Ascophyllum nodosum mackayi* bed	LS
IMGP0232	21/08/09	A6		58.37343	-5.04392	NC 22086 46807	Littoral habitat - *Ascophyllum nodosum* ecad *mackayi* bed	CM
IMGP0233	21/08/09	A6		58.37343	-5.04392	NC 22086 46807	Littoral habitat - *Ascophyllum nodosum* ecad *mackayi* bed	CM
IMGP0234	21/08/09	A6		58.37343	-5.04392	NC 22086 46807	Littoral close-up - *Ascophyllum nodosum* ecad *mackayi*	CM
IMGP0235	21/08/09	A6		58.37343	-5.04392	NC 22086 46807	Littoral close-up - *Ascophyllum nodosum* ecad *mackayi*	CM

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
IMGP0236	21/08/09	A6		58.37343	-5.04392	NC 22086 46807	Littoral habitat - *Ascophyllum nodosum* ecad *mackayi* bed	CM
DSC_1260	10/08/09	General					View of Loch Laxford	LS
DSC_1261	10/08/09	General					Black-backed gull	LS
DSC_1263	10/08/09	General					Dolphin	LS
DSC_1265	10/08/09	General					Dolphins	LS
DSC_1270	10/08/09	General					Dolphins	LS
DSC_1273	10/08/09	General					Dolphins	LS
DSC_1274	10/08/09	General					Dolphin	LS
DSC_1277	10/08/09	General					Dolphin	LS
DSC_1278	10/08/09	General					Dolphins	LS
DSC_1282	10/08/09	General					Dolphin - breaching	LS
DSC_1283	10/08/09	General					Surveyors - Colin Moore and Jo Porter	LS
DSC_1284	10/08/09	General					Surveyors - Laura Steel and Jane Dodd	LS
DSC_1285	10/08/09	General					Surveyors - Laura Steel, Jane Dodd, Colin Trigg and Colin Moore	LS
DSC_1286	10/08/09	General					Surveyors - Laura Steel and Jane Dodd	LS
DSC_1287	10/08/09	General					View of Loch Laxford	LS
DSC_1288	10/08/09	General					View of Loch Laxford	LS
DSC_1289	10/08/09	General					Surveyors in inflatable - Dan Harries and Colin Trigg	LS
DSC_1290	10/08/09	General					View of Loch Laxford	LS
DSC_1292	10/08/09	General					Surveyors in inflatable - Dan Harries and Colin Trigg	LS
DSC_1293	10/08/09	General					Surveyors in inflatable - Dan Harries and Colin Trigg	LS
DSC_1294	10/08/09	General					View of Loch Laxford	LS
DSC_1295	10/08/09	General					View of Loch Laxford	LS
DSC_1296	10/08/09	General					View of Loch Laxford	LS
DSC_1297	10/08/09	General					View of Loch Laxford	LS
DSC_1298	10/08/09	General					View of Loch Laxford	LS
DSC_1299	10/08/09	General					View of Loch Laxford	LS
DSC_1300	10/08/09	General					View of Loch Laxford	LS
DSC_1301	10/08/09	General					View of Loch Laxford	LS
DSC_1302	10/08/09	General					View of Loch Laxford	LS
DSC_1303	10/08/09	General					Surveyor - Laura Clark	LS
DSC_1304	10/08/09	General					View of Loch Laxford	LS
DSC_1305	10/08/09	General					Surveyor - Laura Clark	LS
DSC_1306	11/08/09	General					Setting up transect line	LS
DSC_1307	11/08/09	General					Setting up transect line	LS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSC_1308	11/08/09	General					Surveyors - Laura Clark and Jane Dodd	LS
DSC_1312	13/08/09	General					View of Loch Laxford with mussel farm	LS
DSC_1313	13/08/09	General					View of Loch Laxford with mussel farm	LS
DSC_1314	13/08/09	General					View of Loch Laxford with mussel farm	LS
DSC_1315	13/08/09	General					View of Loch Laxford with mussel farm	LS
DSC_1316	13/08/09	General					RV Serpula wheelhouse	LS
DSC_1317	13/08/09	General					View of Loch Laxford with mussel farm	LS
DSC_1318	13/08/09	General					View of Loch Laxford with mussel farm	LS
DSC_1319	13/08/09	General					Surveyors - Laura Steel, Colin Trigg, Jo Porter and Colin Moore	LS
DSC_1320	13/08/09	General					Surveyors - Laura Steel, Colin Trigg, Jo Porter and Colin Moore	LS
DSC_1321	13/08/09	General					Surveyors - Colin Trigg, Jo Porter, Dan Harries and Colin Moore	LS
DSC_1322	13/08/09	General					Surveyors - Colin Trigg, Jo Porter, Dan Harries and Colin Moore	LS
DSC_1323	13/08/09	General					Surveyors - Laura Steel, Colin Trigg, Jo Porter and Colin Moore	LS
DSC_1324	13/08/09	General					View of Loch Laxford	LS
DSC_1325	13/08/09	General					Surveyors - Colin Trigg and Su Henderson	LS
DSC_1326	13/08/09	General					View of Loch Laxford	LS
DSC_1327	13/08/09	General					Surveyors - Laura Steel, Jo Porter, Colin Trigg, and Dan Harries	LS
DSC_1328	13/08/09	General					Surveyors - Jo Porter, Colin Trigg, Laura Steel and Dan Harries in inflatable	LS
DSC_1329	13/08/09	General					Surveyors - Jo Porter, Colin Trigg, Laura Steel and Dan Harries in inflatable	LS
DSC_1330	13/08/09	General					Surveyors - Jo Porter, Colin Trigg, Laura Steel and Dan Harries in inflatable	LS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSC_1331	13/08/09	General					Surveyors - Jo Porter, Colin Trigg, Laura Steel and Dan Harries in inflatable	LS
DSC_1332	13/08/09	General					Surveyors - Jo Porter, Colin Trigg, Laura Steel and Dan Harries in inflatable	LS
DSC_1333	13/08/09	General					Surveyors - Jo Porter, Colin Trigg, Laura Steel and Dan Harries in inflatable	LS
DSC_1334	13/08/09	General					Surveyors - Jo Porter, Colin Trigg, Laura Steel and Dan Harries in inflatable	LS
DSC_1335	13/08/09	General					Surveyors - Jo Porter, Colin Trigg, Laura Steel and Dan Harries in inflatable	LS
DSC_1336	13/08/09	General					Surveyors - Jo Porter, Colin Trigg, Laura Steel and Dan Harries in inflatable	LS
DSC_1337	13/08/09	General					Kayakers	LS
DSC_1338	13/08/09	General					Kayakers	LS
DSC_1343	14/08/09	General					View of Loch Laxford - Sruth Mor rapids	LS
DSC_1344	14/08/09	General					View of Loch Laxford - Sruth Mor rapids	LS
DSC_1345	14/08/09	General					View of Loch Laxford - Sruth Mor rapids	LS
DSC_1346	14/08/09	General					View of Loch Laxford - Sruth Mor rapids	LS
DSC_1347	14/08/09	General					View of Loch Laxford - Sruth Mor rapids	LS
DSC_1348	14/08/09	General					View of Loch Laxford - inflatable in Sruth Mor rapids	LS
DSC_1349	14/08/09	General					View of Loch Laxford - inflatable in Sruth Mor rapids	LS
DSC_1350	14/08/09	General					View of Loch Laxford - inflatable in Sruth Mor rapids	LS
DSC_1351	16/08/09	General					SNH RIB at Fanagmore	LS
DSC_1352	19/08/09	General					RV Serpula wheelhouse with Colin Moore, Dan Harries, Carol Hume and Graham Saunders	LS

Appendix 11 continued

Filename	Date	Site	Zone	Latitude	Long'de	OS Grid	Description	Phot
DSC_1353	19/08/09	General					View of Loch Laxford	LS
DSC_1354	19/08/09	General					View of Loch Laxford	LS
DSC_1355	19/08/09	General					View of Loch Laxford	LS
DSC_1356	19/08/09	General					View of Loch Laxford	LS
DSC_1357	19/08/09	General					View of Loch Laxford	LS
DSC_1358	19/08/09	General					View of Loch Laxford	LS
DSC_1359	19/08/09	General					View of Loch Laxford	LS
DSC_1360	19/08/09	General					View of Loch Laxford	LS
DSC_1361	19/08/09	General					View of Loch Laxford	LS
DSC_1362	19/08/09	General					View of Loch Laxford	LS
DSC_1363	19/08/09	General					Surveyor - Carol Hume	LS
DSC_1364	19/08/09	General					View of Loch Laxford	LS
DSC_1365	19/08/09	General					Loch Inchard	LS
DSC_1366	19/08/09	General					Loch Inchard	LS
DSC_1367	19/08/09	General					Loch Inchard	LS
DSC_1368	19/08/09	General					Loch Inchard	LS
DSC_1369	19/08/09	General					Loch Inchard	LS
DSC_1370	19/08/09	General					Loch Inchard	LS
DSC_1371	19/08/09	General					Loch Inchard	LS
DSC_1372	20/08/09	General					View of Loch Laxford	LS
DSC_1373	20/08/09	General					Transect profiling	LS
DSC_1374	20/08/09	General					Transect profiling	LS
DSC_1375	20/08/09	General					View of Loch Laxford	LS
DSC_1376	20/08/09	General					View of Loch Laxford	LS
DSCF2062	03/09/09	General					Stranded *Chrysaora hyoscella*	LS
DSCF2063	03/09/09	General					Stranded *Chrysaora hyoscella*	LS
DSCF2064	03/09/09	General					Stranded *Chrysaora hyoscella*	LS
DSCF2065	03/09/09	General					Stranded *Chrysaora hyoscella*	LS
DSCF2066	03/09/09	General					Stranded *Chrysaora hyoscella*	LS
DSCF2067	03/09/09	General					Stranded *Chrysaora hyoscella*	LS
DSCF2068	03/09/09	General					Stranded *Chrysaora hyoscella*	LS
DSCF2069	03/09/09	General					Stranded *Chrysaora hyoscella*	LS
DSCF2070	03/09/09	General					Stranded *Chrysaora hyoscella*	LS
DSCF2071	03/09/09	General					Stranded *Chrysaora hyoscella*	LS
DSCF2072	03/09/09	General					Stranded *Chrysaora hyoscella*	LS

Appendix 12 Video log

Details of video recorded during the drop-down, spot dive and transect surveys. Location of the footage from each site on the miniDV tapes is given in Appendix 2. Surveyors are CH (Carol Hume), CM (Colin Moore), CT (Colin Trigg), GS (Graham Saunders), JD (Jane Dodd), LS (Laura Steel), SH (Suzanne Henderson), SNH (Scottish Natural Heritage)

Video tape code	Date	Survey	Sites	Surveyor
D-LAXFORD-0809-1	02/08/2009	Drop-down	D83-D78, D84-D100	CM
D-LAXFORD-0809-2	03/08/2009	Drop-down	D101-D120, D72-D63	CM
D-LAXFORD-0809-3	03/08/2009	Drop-down	D62-D58, D56	CM
D-LAXFORD-0809-4	04/08/2009	Drop-down	D38-D16	CM
D-LAXFORD-0809-5	04/08/2009	Drop-down	D15-D1	CM
D-LAXFORD-0809-6	06/08/2009	Drop-down	D77-D73, D57, D55-D46	CM
D-LAXFORD-0809-7	06/08/2009	Drop-down	D45-D39	CM
D-LAX-0909-1	03/09/2009	Drop-down	D121-D132	SNH
S-LAXFORD-0809-8	09/08/2009	Transect	LL09ML04	CT
S-LAXFORD-0809-9	10/08/2009	Transect	LL09SR08	LS
S-LAXFORD-0809-10	11/08/2009	Transect	LL09IR07	CT
S-LAXFORD-0809-11	11/08/2009	Transect	LL09SR07	CT
L-LAXFORD-0809-12	12/08/2009	Transect	LL09IR06	CM
S-LAXFORD-0809-13	12/08/2009	Transect	LL09SR06	JD
S-LAXFORD-0809-14	13/08/2009	Transect	LL09ML02	LS
S-LAXFORD-0809-15	14/08/2009	Transect	LL09ML01	SH
L-LAXFORD-0809-16	16/08/2009	Transect	LL09IR05	CM
S-LAXFORD-0809-17	16/08/2009	Transect	LL09SR05	LS
L-LAXFORD-0809-18	17/08/2009	Transect	LL09IR10	CM
S-LAXFORD-0809-19	17/08/2009	Transect	LL09SR10	LS
L-LAXFORD-0809-20	18/08/2009	Transect	LL09IR02	CM
S-LAXFORD-0809-21	18/08/2009	Transect, spot dive	LL09SR02, SD1, SD2, SD3	LS,CH
L-LAXFORD-0809-22	19/08/2009	Transect	LL09IR04	CM
S-LAXFORD-0809-23	19/08/2009	Transect	LL09SR04	LS
L-LAXFORD-0809-24	19/08/2009	Transect	LL09IR03	CH
S-LAXFORD-0809-25	19/08/2009	Transect	LL09SR03	CH
L-LAXFORD-0809-26	20/08/2009	Transect	LL09IR01	CH
S-LAXFORD-0809-27	20/08/2009	Transect	LL09SR01	LS
L-LAXFORD-0809-28	21/08/2009	Transect	LL09IS01	GS
L-LAXFORD-0809-29	21/08/2009	Transect	LL09IS02	LS

Appendix 13 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*	ML02	SH	NMS
D10750	*Cerianthus lloydii*	S116	SH	NMS
D13410	*Edwardsia claparedii*	S115	SH	NMS
F01340	*Notoplana atomata*	ML01	SH	NMS
F01710	*Oligocladus sanguinolentus*	S78	SH	NMS
G00380	*Tubulanus sp*	ML04	SH	NMS
G00460	*Tubulanus polymorphus*	S29	SH	NMS
G00620	*Cerebratulus spp*	ML02	SH	NMS
G01480	*Oerstedia dorsalis*	S29	SH	NMS
HD0001	NEMATODA >1cm	ML01	SH	NMS
J00080	*Priapulus caudatus*	S77	SH	NMS
L00001	CHAETOGNATHA	S6	SH	NMS
N00090	*Golfingia elongata*	S71	SH	NMS
N00105	*Golfingia margaritacea*	S6	SH	NMS
N00109	*Golfingia vulgaris*	S71	SH	NMS
N00190	*Thysanocardia procera*	ML02	SH	NMS
N00279	*Phascolion strombus*	ML02	SH	NMS
P00130	*Chrysopetalum debile*	ML04	SH	NMS
P00130	*Chrysopetalum debile*	ML04	SH	NMS
P00200	*Pisione remota*	S98	SH	NMS
P00600	*Alentia gelatinosa*	ML04	SH	NMS
P00930	*Gattyana cirrosa*	ML01	SH	NMS
P00971	*Harmothoe sp A*	S6	SH	NMS
P01030	*Harmothoe fragilis*	ML02	SH	NMS
P01060	*Harmothoe imbricata*	ML01	SH	NMS
P01100	*Harmothoe (M) mcintoshi*	ML01	SH	NMS
P01180	*Harmothoe (M) furcosetosa*	S17	SH	NMS
P01230	*Harmothoe (M) arenicolae*	S115	SH	NMS
P01690	*Pholoe inornata*	ML02	SH	NMS
P01730	*Pholoe baltica*	ML02	SH	NMS
P01731	*Pholoe assimilis*	S29	SH	NMS
P01890	*Sthenelais limicola*	S71	SH	NMS
P02050	*Eteone longa*	ML04	SH	NMS
P02130	*Hesionura elongata*	S105	SH	NMS
P02300	*Pseudomystides limbata*	S49	SH	NMS
P02530	*Anaitides groenlandica*	S71	SH	NMS
P02570	*Anaitides mucosa*	ML01	SH	NMS
P02580	*Anaitides rosea*	S115	SH	NMS

Appendix 13 continued

MCS code	*Taxon*	Site	Identifier	Location
P02710	*Eulalia expusilla*	S78	SH	NMS
P02790	*Eulalia mustela*	S78	SH	NMS
P02830	*Eumida bahusiensis*	S115	SH	NMS
P02835	*Eumida ockelmanni*	ML01	SH	NMS
P03060	*Paranaitis kosteriensis*	S115	SH	NMS
P03210	*Pirakia punctifera*	ML01	SH	NMS
P03540	*Lacydonia miranda*	S78	SH	NMS
P04720	*Glycera alba*	S115	SH	NMS
P04750	*Glycera fallax*	S98	SH	NMS
P04760	*Glycera lapidum*	ML04	SH	NMS
P04790	*Glycera rouxii*	S46	SH	NMS
P04930	*Goniada maculata*	S115	SH	NMS
P05130	*Sphaerodoridium claparedii*	S29	SH	NMS
P05270	*Sphaerodorum gracilis*	ML01	SH	NMS
P05410	*Podarkeopsis capensis*	S115	SH	NMS
P05420	*Gyptis rosea*	ML04	SH	NMS
P05470	*Hesiospina similis*	ML01	SH	NMS
P05520	*Kefersteinia cirrata*	ML01	SH	NMS
P05630	*Nereimyra punctata*	ML01	SH	NMS
P05680	*Ophiodromus flexuosus*	S29	SH	NMS
P05780	*Podarke pallida*	ML02	SH	NMS
P05780	*Podarke pallida*	S115	SH	NMS
P06270	*Glyphohesione klatti*	S116	SH	NMS
P06380	*Eurysyllis tuberculata*	S78	SH	NMS
P06480	*Ehlersia cornuta*	S57	SH	NMS
P06540	*Syllis vittata*	S96	SH	NMS
P06541	*Syllis sp G*	S96	SH	NMS
P06542	*Syllis sp H*	S96	SH	NMS
P06610	*Trypanosyllis coeliaca*	ML04	SH	NMS
P07000	*Odontosyllis gibba*	S6	SH	NMS
P07230	*Streptosyllis websteri*	S115	SH	NMS
P07280	*Syllides benedicti*	S115	SH	NMS
P07291	*Syllides japonica*	S115	SH	NMS
P07380	*Brania swedmarki*	S96	SH	NMS
P07440	*Exogone hebes*	S29	SH	NMS
P07450	*Exogone naidina*	S57	SH	NMS
P07460	*Exogone verugera*	ML02	SH	NMS
P07510	*Sphaerosyllis bulbosa*	S98	SH	NMS
P07555	*Sphaerosyllis taylori*	ML04	SH	NMS
P07560	*Sphaerosyllis tetralix*	S29	SH	NMS
P07600	*Autolytinae sp (sacconereis)*	S78	SH	NMS
P08100	*Hediste diversicolor*	IS02	SH	NMS
P08260	*Neanthes irrorata*	S12	SH	NMS

Appendix 13 continued

MCS code	*Taxon*	Site	Identifier	Location
P08340	*Nereis longissima*	S71	SH	NMS
P08490	*Platynereis dumerilii*	S6	SH	NMS
P08630	*Aglaophamus rubella*	S98	SH	NMS
P08710	*Nephtys hombergii*	S115	SH	NMS
P08720	*Nephtys kersivalensis*	ML02	SH	NMS
P08740	*Nephtys incisa*	S29	SH	NMS
P09360	*Aponuphis bilineata*	ML02	SH	NMS
P09840	*Marphysa bellii*	S50	SH	NMS
P09910	*Nematonereis unicornis*	ML02	SH	NMS
P10080	*Lumbrineris gracilis*	ML02	SH	NMS
P10090	*Lumbrineris (A) hibernica*	S61	SH	NMS
P10120	*Lumbrineris (S) magnidentata*	S96	SH	NMS
P10810	*Ougia macilenta*	S115	SH	NMS
P10820	*Ougia subaequalis*	ML02	SH	NMS
P10820	*Ougia subaequalis*	S28	SH	NMS
P10970	*Parougia caeca*	S115	SH	NMS
P10980	*Parougia eliasoni*	ML02	SH	NMS
P11040	*Protodorvillea kefersteini*	ML01	SH	NMS
P11430	*Orbinia sertulata*	S71	SH	NMS
P11520	*Scoloplos armiger*	S71	SH	NMS
P11580	*Aricidea minuta*	S115	SH	NMS
P11650	*Aricidea catherinae*	S115	SH	NMS
P11660	*Aricidea cerrutii*	ML01	SH	NMS
P11660	*Aricidea cerrutii*	S71	SH	NMS
P11730	*Cirrophorus branchiatus*	S88	SH	NMS
P11790	*Levinsenia gracilis*	S115	SH	NMS
P11830	*Paradoneis sp A*	S115	SH	NMS
P11840	*Paradoneis armata*	ML01	SH	NMS
P11850	*Paradoneis lyra*	ML02	SH	NMS
P12100	*Apistobranchus tullbergi*	ML02	SH	NMS
P12210	*Poecilochaetus serpens*	S6	SH	NMS
P12250	*Spionidae spp juv/indet*	S6	SH	NMS
P12270	*Aonides oxycephala*	ML01	SH	NMS
P12280	*Aonides paucibranchiata*	ML01	SH	NMS
P12500	*Laonice bahusiensis*	S78	SH	NMS
P12520	*Laonice sarsi*	S77	SH	NMS
P12570	*Malacoceros fuliginosus*	S115	SH	NMS
P12580	*Malacoceros tetracerus*	IS02	SH	NMS
P12590	*Malacoceros vulgaris*	S115	SH	NMS
P12690	*Minuspio cirrifera*	ML02	SH	NMS
P12690	*Minuspio cirrifera*	S115	SH	NMS
P12700	*Minuspio multibranchiata*	S61	SH	NMS
P12760	*Polydora caeca*	S24	SH	NMS
P12770	*Polydora caulleryi*	ML01	SH	NMS

Appendix 13 continued

MCS code	*Taxon*	Site	Identifier	Location
P12790	*Polydora flava*	S71	SH	NMS
P13020	*Prionospio fallax*	S29	SH	NMS
P13030	*Prionospio banyulensis*	S78	SH	NMS
P13110	*Pseudopolydora cf. paucibranchiata*	ML02	SH	NMS
P13120	*Pseudopolydora pulchra*	ML04	SH	NMS
P13170	*Pygospio elegans*	IS02	SH	NMS
P13360	*Spio filicornis*	S115	SH	NMS
P13380	*Microspio mecznikowianus*	S115	SH	NMS
P13380	*Microspio mecznikowianus*	S6	SH	NMS
P13430	*Spiophanes bombyx*	S71	SH	NMS
P13440	*Spiophanes kroyeri*	ML02	SH	NMS
P13620	*Magelona alleni*	S115	SH	NMS
P13630	*Magelona filiformis*	S6	SH	NMS
P13640	*Magelona minuta*	ML02	SH	NMS
P13940	*Caulleriella alata*	S115	SH	NMS
P13970	*Tharyx killariensis*	S29	SH	NMS
P13980	*Caulleriella zetlandica*	S69	SH	NMS
P14020	*Chaetozone sp 'D'*	ML02	SH	NMS
P14030	*Chaetozone setosa*	S29	SH	NMS
P14080	*Cirratulus cirratus*	S24	SH	NMS
P14140	*Cirriformia tentaculata*	ML01	SH	NMS
P14140	*Cirriformia tentaculata*	ML01	SH	NMS
P14240	*Aphelochaeta marioni*	S24	SH	NMS
P14280	*Aphelochaeta sp A*	S71	SH	NMS
P14300	*Monticellina sp*	S78	SH	NMS
P14790	*Diplocirrus glaucus*	ML02	SH	NMS
P14800	*Diplocirrus stopbowitzi*	ML04	SH	NMS
P14840	*Flabelligera affinis*	S78	SH	NMS
P14910	*Pherusa plumosa*	S88	SH	NMS
P15010	*Macrochaeta sp*	S96	SH	NMS
P15030	*Macrochaeta clavicornis*	S6	SH	NMS
P15310	*Capitella capitata*	S116	SH	NMS
P15470	*Dasybranchus caducus*	S57	SH	NMS
P15580	*Mediomastus fragilis*	ML01	SH	NMS
P15630	*Notomastus latericeus*	ML02	SH	NMS
P15690	*Peresiella clymenoides*	ML02	SH	NMS
P15760	*Arenicola marina*	IS01	SH	NMS
P15760	*Arenicola marina*	IS02	SH	NMS
P16000	*Praxillura longissima*	S6	SH	NMS
P16230	*Clymenura tricirrata*	ML02	SH	NMS
P16260	*Clymenura johnstoni*	S78	SH	NMS
P16320	*Euclymene lumbricoides*	S6	SH	NMS
P16330	*Euclymene oerstedii*	ML02	SH	NMS
P16340	*Euclymene sp. A*	S24	SH	NMS

Appendix 13 continued

MCS code	*Taxon*	Site	Identifier	Location
P16480	*Praxillella affinis*	S115	SH	NMS
P16490	*Praxillella gracilis*	S32	SH	NMS
P16800	*Rhodine gracilior*	S77	SH	NMS
P16880	*Ophelia sp juv*	S96	SH	NMS
P17190	*Ophelina acuminata*	S115	SH	NMS
P17425	*Scalibregma celticum*	S115	SH	NMS
P17430	*Scalibregma inflatum*	ML02	SH	NMS
P17990	*Polygordius appendiculatus*	S98	SH	NMS
P18010	*Polygordius lacteus*	S78	SH	NMS
P18265	*Myriochele danielsseni*	ML02	SH	NMS
P18280	*Galathowenia oculata*	ML02	SH	NMS
P18360	*Owenia fusiformis*	ML02	SH	NMS
P18360	*Owenia fusiformis*	S115	SH	NMS
P18430	*Amphictene auricoma*	S71	SH	NMS
P18540	*Lagis koreni*	S29	SH	NMS
P18860	*Melinna palmata*	S115	SH	NMS
P19050	*Ampharete baltica*	S88	SH	NMS
P19060	*Ampharete falcata*	S57	SH	NMS
P19100	*Ampharete lindstroemi*	S115	SH	NMS
P19160	*Amphicteis gunneri*	S49	SH	NMS
P19270	*Anobothrus gracilis*	S71	SH	NMS
P19740	*Sosane sulcata*	S71	SH	NMS
P19900	*Terebellides stroemi*	ML02	SH	NMS
P19960	*Trichobranchus roseus*	S29	SH	NMS
P20090	*Amphitritides gracilis*	S78	SH	NMS
P20260	*Lanassa venusta*	S78	SH	NMS
P20310	*Lanice conchilega*	S61	SH	NMS
P20500	*Neoamphitrite sp indet*	S47	SH	NMS
P20700	*Phisidia aurea*	S77	SH	NMS
P20760	*Pista cristata*	ML02	SH	NMS
P21030	*Amaeana trilobata*	ML04	SH	NMS
P21170	*Polycirrus sp 'A'*	ML04	SH	NMS
P21240	*Polycirrus medusa*	S71	SH	NMS
P21250	*Polycirrus norvegicus*	ML01	SH	NMS
P21260	*Polycirrus plumosus*	S29	SH	NMS
P21310	*Thelepodinae sp?*	S78	SH	NMS
P21330	*Parathelepus collaris*	S98	SH	NMS
P21390	*Streblosoma intestinalis*	S61	SH	NMS
P21690	*Chone duneri*	S115	SH	NMS
P21710	*Chone filicaudata*	ML01	SH	NMS
P21780	*Demonax cambrensis*	ML01	SH	NMS
P21870	*Euchone rubrocincta*	ML04	SH	NMS
P21880	*Euchone southerni*	S78	SH	NMS
P21930	*Fabricia sabella (stellaris)*	ISO1	SH	NMS

Appendix 13 continued

MCS code	*Taxon*	Site	Identifier	Location
P22040	*Jasmineira caudata*	ML02	SH	NMS
P22550	*Pseudopotamilla reniformis*	ML04	SH	NMS
P22880	*Hydroides norvegica*	ML02	SH	NMS
P23030	*Pomatoceros lamarcki*	ML01	SH	NMS
P23040	*Pomatoceros triqueter*	ML01	SH	NMS
P24200	*Naididae sp*	IS01	SH	NMS
P24770	*Heterochaeta costata*	IS02	SH	NMS
P24840	*Tubificoides sp*	ML01	SH	NMS
P24860	*Tubificoides amplivasatus*	ML01	SH	NMS
P24870	*Tubificoides benedii*	ML01	SH	NMS
P24890	*Tubificoides pseudogaster agg*	S115	SH	NMS
P25000	*Limnodriloides sp*	SR10	SH	NMS
P25760	*Enchytraeidae sp*	IS01	SH	NMS
P26110	*Grania spp*	ML01	SH	NMS
Q00170	*Achelia echinata*	ML04	SH	NMS
Q00610	*Anoplodactylus angulatus*	ML02	SH	NMS
Q00620	*Anoplodactylus petiolatus*	S6	SH	NMS
R00640	*Verruca stroemia*	S77	SH	NMS
R01090	*Balanus balanus*	S88	SH	NMS
R26852	*Rhodinicola rugosum*	S24	SH	NMS
R31560	*Herpyllobius polynoes*	SR10	SH	NMS
R35180	OSTRACODA type 1	ML02	SH	NMS
R35180	OSTRACODA type 2	ML02	SH	NMS
R35180	OSTRACODA type 3	S47	SH	NMS
S00070	*Nebalia borealis*	S115	SH	NMS
S00080	*Nebalia herbstii*	ML04	SH	NMS
S01550	*Heteromysis formosa*	S17	SH	NMS
S01710	*Apherusa bispinosa*	ML01	SH	NMS
S02190	*Monoculodes carinatus*	S98	SH	NMS
S02280	*Perioculodes longimanus*	S115	SH	NMS
S02390	*Synchelidium haplocheles*	S6	SH	NMS
S03000	*Paramphilochoides odontonyx*	S6	SH	NMS
S03130	*Leucothoe incisa*	S96	SH	NMS
S03140	*Leucothoe lilljeborgi*	S115	SH	NMS
S03660	*Stenothoe sp*	S96	SH	NMS
S04290	*Urothoe elegans*	S115	SH	NMS
S04300	*Urothoe marina*	S105	SH	NMS
S04380	*Harpinia antennaria*	S6	SH	NMS
S04410	*Harpinia pectinata*	ML02	SH	NMS
S04410	*Harpinia pectinata*	S115	SH	NMS
S04470	*Parametaphoxus fultoni*	ML01	SH	NMS
S04470	*Parametaphoxus fultoni*	S115	SH	NMS
S04680	*Acidostoma nodiferum*	S74	SH	NMS
S05110	*Lysianassa plumosa*	ML02	SH	NMS

Appendix 13 continued

MCS code	*Taxon*	Site	Identifier	Location
S05560	*Socarnes erythrophthalmus*	S77	SH	NMS
S05740	*Tryphosella sarsi*	ML02	SH	NMS
S06260	*Iphimedia minuta*	ML02	SH	NMS
S06840	*Atylus vedlomensis*	S77	SH	NMS
S06900	*Dexamine spinosa*	ML04	SH	NMS
S06910	*Dexamine thea*	ML01	SH	NMS
S07100	*Ampelisca brevicornis*	S115	SH	NMS
S07110	*Ampelisca diadema*	S71	SH	NMS
S07180	*Ampelisca spinipes*	S88	SH	NMS
S07200	*Ampelisca tenuicornis*	S115	SH	NMS
S07220	*Ampelisca typica*	S24	SH	NMS
S07640	*?Echinogammarus stoerensis*	IS01	SH	NMS
S07740	*Gammarus locusta*	IS01	SH	NMS
S07760	*Gammarus ?salinus*	IS02	SH	NMS
S08050	*Melitidae sp indet*	ML04	SH	NMS
S08180	*Ceradocus semiserratus*	S78	SH	NMS
S08220	*Cheirocratus sp* ♀	ML01	SH	NMS
S08250	*Cheirocratus sundevallii*	S115	SH	NMS
S09120	*Gammaropsis cornuta*	S115	SH	NMS
S09180	*Microprotopus maculatus*	S115	SH	NMS
S09180	*Microprotopus maculatus* ♂	S115	SH	NMS
S09230	*Photis longicaudata*	S115	SH	NMS
S09560	*Jassa marmorata*	S61	SH	NMS
S09740	*Aora gracilis*	S115	SH	NMS
S09890	*Leptocheirus pectinatus*	S115	SH	NMS
S10220	*Corophium bonnellii*	S115	SH	NMS
S10270	*Corophium volutator*	IS02	SH	NMS
S10320	*Siphonoecetes kroyeranus*	S115	SH	NMS
S10720	*Caprella acanthifera*	ML01	SH	NMS
S10760	*Caprella linearis*	S17	SH	NMS
S10840	*Pariambus typicus*	S115	SH	NMS
S10890	*Parvipalpus capillaceus*	S78	SH	NMS
S10960	*Phtisica marina*	ML01	SH	NMS
S10960	*Phtisica marina*	S115	SH	NMS
S13230	*Gnathia vorax*	ML04	SH	NMS
S14740	*Jaera albifrons*	IS01	SH	NMS
S14840	*Janira maculosa*	ML04	SH	NMS
S15850	*Arcturella dilatata*	S115	SH	NMS
S18960	*Araphura brevimana*	SR10	SH	NMS
S19310	*Tanaopsis graciloides*	S115	SH	NMS
S19940	*Vauntompsonia cristata*	ML02	SH	NMS
S20130	*Iphinoe serrata*	S49	SH	NMS
S20220	*Eudorella truncatula*	S29	SH	NMS
S20720	*Pseudocuma longicornis*	S115	SH	NMS

Appendix 13 continued

MCS code	*Taxon*	Site	Identifier	Location
S21010	*Diastylis rugosa*	S115	SH	NMS
S22630	*Eualus pusiolus*	S17	SH	NMS
S23310	*Crangon crangon*	IS02	SH	NMS
S23405	*Philoceras sp juv*	S3	SH	NMS
S23420	*Philoceras echinulatus*	S6	SH	NMS
S24470	*Anapagurus hyndmanni*	ML01	SH	NMS
S24530	*Cestopagurus timidus*	S24	SH	NMS
S24680	*Pagurus cuanensis*	ML01	SH	NMS
S24680	*Pagurus cuanensis*	S71	SH	NMS
S24860	*Galathea intermedia*	ML01	SH	NMS
S24950	*Munida rugosa*	S78	SH	NMS
S25020	*Pisidia longicornis*	ML04	SH	NMS
S26260	*Atelecyclus rotundatus*	S71	SH	NMS
S26730	*Liocarcinus pusillus*	S115	SH	NMS
W00100	*Chaetoderma nitidulum*	S116	SH	NMS
W00140	*Falcidens crossotus*	S116	SH	NMS
W00170	SOLENOGASTRES spp	S96	SH	NMS
W00550	*Leptochiton asellus*	ML01	SH	NMS
W00560	*Leptochiton cancellatus*	ML01	SH	NMS
W00740	*Lepidochitona cinerea*	ML01	SH	NMS
W00830	*Callochiton septemvalvis*	ML02	SH	NMS
W00920	GASTROPODA sp 'A'	ML04	SH	NMS
W01090	*Emarginula rosea*	ML04	SH	NMS
W01240	*Tectura sp juv*	ML01	SH	NMS
W01930	*Gibbula cineraria*	ML01	SH	NMS
W02440	*Lacuna vincta*	ML01	SH	NMS
W02720	*Hydrobia ulvae*	IS02	SH	NMS
W02840	*Rissoa interrupta*	ML02	SH	NMS
W02850	*Rissoa parva*	ML02	SH	NMS
W02960	*Pusillina sarsi*	ML02	SH	NMS
W03070	*Alvania beanii*	ML02	SH	NMS
W03400	*Onoba semicostata*	ML02	SH	NMS
W03600	*Hyala vitrea*	S98	SH	NMS
W04420	*Turritella communis*	S116	SH	NMS
W07000	*Aporrhais pespelecani*	S24	SH	NMS
W07770	*Polinices pulchellus*	ML02	SH	NMS
W08880	*Hinia sp juv*	ML02	SH	NMS
W08880	*Hinia sp juv*	ML04	SH	NMS
W09690	*Cylichna cylindracea*	S116	SH	NMS
W09790	*Philine aperta*	S37	SH	NMS
W09940	*Diaphana minuta*	ML02	SH	NMS
W10200	*Retusa umbilicata*	S6	SH	NMS
W10250	*Rhizorus acuminatus*	S116	SH	NMS
W12370	NUDIBRANCHIA spp	ML04	SH	NMS

Appendix 13 continued

MCS code	*Taxon*	Site	Identifier	Location
W13170	*Onchidorididae spp*	S17	SH	NMS
W13380	*?Onchidoris sparsa*	ML01	SH	NMS
W13920	*?Rostanga rubra*	ML01	SH	NMS
W14030	*Archidoris pseudoargus*	S78	SH	NMS
W16180	*Nucula nitidosa*	S115	SH	NMS
W16190	*Nucula nucleus*	ML02	SH	NMS
W16550	*Crenella decussata*	S115	SH	NMS
W16750	*Modiolus modiolus*	ML02	SH	NMS
W17170	*Glycymeris glycymeris*	S78	SH	NMS
W17410	*Limaria loscombi*	S78	SH	NMS
W17520	*Limatula sulcata*	S98	SH	NMS
W17780	*Palliolum tigerinum*	ML04	SH	NMS
W17820	*Similipecten similis*	S88	SH	NMS
W18050	*Aequipecten opercularis*	ML02	SH	NMS
W18220	*Heteranomia squamula*	ML02	SH	NMS
W18380	*Myrtea spinifera*	ML02	SH	NMS
W18420	*Lucinoma borealis*	ML02	SH	NMS
W18650	*Thyasira polygona*	ML02	SH	NMS
W19050	*Mysella bidentata*	ML01	SH	NMS
W19110	*Tellimya ferruginosa*	S115	SH	NMS
W19690	*Acanthocardia echinata*	S115	SH	NMS
W19750	*Parvicardium exiguum*	S6	SH	NMS
W19770	*Parvicardium ovale*	ML02	SH	NMS
W19780	*Parvicardium scabrum*	ML02	SH	NMS
W19910	*Cerastoderma edule juvs*	IS02	SH	NMS
W20230	*Ensis arcuatus*	S69	SH	NMS
W20250	*Ensis ensis*	S115	SH	NMS
W20320	*Phaxas pellucidus*	S115	SH	NMS
W20510	*Arcopagia crassa*	S78	SH	NMS
W20570	*Fabulina fabula*	S6	SH	NMS
W20630	*Moerella pygmaea*	S69	SH	NMS
W20670	*Macoma balthica*	IS01	SH	NMS
W20870	*Gari fervensis*	ML04	SH	NMS
W20900	*Gari tellinella*	S46	SH	NMS
W21020	*Abra alba*	ML02	SH	NMS
W21040	*Abra nitida*	S29	SH	NMS
W21550	*Gouldia minima*	ML02	SH	NMS
W21550	*Gouldia minima*	S88	SH	NMS
W21660	*Dosinia exoleta*	ML01	SH	NMS
W21810	*Tapes rhomboides*	ML02	SH	NMS
W21890	*Chamelea gallina*	S6	SH	NMS
W21930	*Clausinella fasciata*	ML02	SH	NMS
W22010	*Timoclea ovata*	S115	SH	NMS
W22130	*Mysia undata*	S115	SH	NMS

Appendix 13 continued

MCS code	***Taxon***	Site	Identifier	Location
W22270	*Mya truncata (juv)*	ML02	SH	NMS
W22390	*Corbula gibba*	ML02	SH	NMS
W22510	*Hiatella arctica*	ML04	SH	NMS
W23510	*Thracia phaseolina*	ML04	SH	NMS
W23530	*Thracia villosiuscula*	ML04	SH	NMS
W23530	*Thracia villosiuscula*	S78	SH	NMS
W23610	*Cochlodesma praetenue*	S71	SH	NMS
W23610	*Cochlodesma praetenue*	S69	SH	NMS
ZA0030	*Phoronis spp*	ML02	SH	NMS
ZB1900	*Asterias rubens juv*	ML01	SH	NMS
ZB2350	*Ophiothrix fragilis*	S78	SH	NMS
ZB2420	*Ophiocomina nigra*	ML04	SH	NMS
ZB2680	*Ophiactis balli*	ML04	SH	NMS
ZB2860	*Amphiura chiajei*	S29	SH	NMS
ZB2880	*Amphiura filiformis*	ML02	SH	NMS
ZB3000	*Amphipholis squamata*	ML01	SH	NMS
ZB3120	*Ophiura affinis*	S71	SH	NMS
ZB3130	*Ophiura albida*	S77	SH	NMS
ZB3880	*Echinocyamus pusillus*	ML02	SH	NMS
ZB4080	*Echinocardium flavescens*	S116	SH	NMS
ZB4180	HOLOTHURIOIDEA sp juv	ML04	SH	NMS
ZB4640	*Leptopentacta elongata*	ML02	SH	NMS
ZB5240	*Leptosynapta bergensis*	ML02	SH	NMS
ZB5253	*Leptosynapta decaria*	S50	SH	NMS
ZC0130	*Saccoglossus spp*	S69	SH	NMS
ZE0000	*Branchistoma lanceolatum*	S98	SH	NMS
ZZZZZ	Chironomidae	S3	SH	NMS
ZM560	*Erythrotrichia carnea*	SR06	CM	HWU
ZM1420	*Audouinella secundata*?	SR06	CM	HWU
ZM3170	*Callocolax neglectus*	SR10	CM	HWU
ZM3230	*Callophyllis laciniata*	SR10	CM	HWU
ZM5860	*Phyllophora pseudoceranoides*	ML01	CM	HWU
ZM6110	*Chondrus crispus*	ML01	CM	HWU
ZM6430	*Furcellaria lumbricalis*	ML01	CM	HWU
ZM6480	*Halarachnion ligulatum*	ML04	CM	HWU
ZM6930	*Rhodophyllis divaricata*	SR10	CM	HWU
ZM7190	*Cordylecladia erecta*	ML01	CM	HWU
ZM7400	*Chylocladia verticillata*	ML01	CM	HWU
ZM7580	Ceramiaceae sp.	SR05	CM	HWU
ZM7670	*Antithamnion densum*	SR06	CM	HWU
ZM7850	*Aglaothamnion bipinnatum*	SR05	CM	HWU
ZM7860	*Aglaothamnion byssoides*	ML04	CM	HWU
ZM8875	*Pterothamnion crispum*?	SR10	CM	HWU
ZM8880	*Pterothamnion plumula*	ML04	CM	HWU

Appendix 13 continued

MCS code	***Taxon***	Site	Identifier	Location
ZM8930	*Ptilota gunneri*	SR10	CM	HWU
ZM9230	*Sphondylothamnion multifidum*	SR10	CM	HWU
ZM9500	*Cryptopleura ramosa*	SR10	CM	HWU
ZM9950	*Haraldiophyllum bonnemaisonii*	SR08	CM	HWU
ZM10180	*Erythroglossum laciniatum*	SR10	CM	HWU
ZM10391	*Heterosiphonia japonica*	SR05	CM	HWU
ZM10391	*Heterosiphonia japonica*	ML01	CM	HWU
ZM11030	*Polysiphonia brodiei*?	SR10	CM	HWU
ZM11060	*Polysiphonia elongella*	SR05	CM	HWU
ZM11060	*Polysiphonia elongella*?	SR06	CM	HWU
ZM11370	*Pterosiphonia parasitica*	SR08	CM	HWU
ZM11450	*Rhodomela confervoides*	ML01	CM	HWU
ZR11	Phaeophyceae sp.	ML01	CM	HWU
ZR310	*Ectocarpus fasciculatus*	SR05	CM	HWU
ZR310	*Ectocarpus fasciculatus*?	SR05	CM	HWU
ZR320	*Ectocarpus siliculosus*	ML01	CM	HWU
ZR1070	*Pilayella littoralis*	ML01	CM	HWU
ZR3130	*Stilophora?* sp.	ML01	CM	HWU
ZR3890	*Cutleria multifida*	ML01	CM	HWU
ZR4150	*Sphacelaria cirrosa*	SR05	CM	HWU
ZR4210	*Sphacelaria plumula*	SR05	CM	HWU
ZR4230	*Sphacelaria radicans*?	ML01	CM	HWU
ZR5500	*Asperococcus fistulosus*	ML01	CM	HWU
ZR5520	*Asperococcus bullosus*	ML01	CM	HWU
ZS3380	*Cladophora* sp.	ML01	CM	HWU
ZS3960	Filamentous green alga	SR05	CM	HWU

Appendix 14 Loch Laxford SAC Site Attribute Tables

Table 14.1 Site attribute table for inlet and bay feature

Attribute	Target	Prescription
1 Extent of entire feature	*No change in extent of whole feature* ***Note** – Feature extent & the implications of activities should be assessed against indicative baseline maps given in Posford Haskoning, 2001 (SNH comm. report F01AA401D) and Bates et al., 2004 (SNH comm. report F01AA401A)*	*At 6-yearly intervals (in addition to individual case assessments) review activities that have had the potential to reduce the extent of the feature such as land reclamation, shoreline redevelopment and dredging operations (in consultation with SNH Area Office, relevant authorities and site management groups where applicable).* *At 18-year intervals confirm that there has been no change in overall extent with aerial photography/satellite imagery.*
2 Diversity of component habitats	*Maintain the variety of habitats identified for the site, allowing for natural succession/known cyclical change.* *The following biotopes (or equivalents) must be found on the fixed transects:* *<u>Intertidal sediment:</u>* *LS.LCS.Sh.BarSh* *LS.LSa.St.Tal* *LS.LSa.MuSa.HedMacEte* *LS.LMx.GvMu.HedMx.Cvol* *LS.LMp.Sm* *<u>Intertidal reef:</u>* *LR.HLR.MusB.MytB* *LR.HLR.MusB.Cht.Cht* *LR.HLR.MusB.Sem.Sem* *LR.HLR.FT.FserT* *LR.MLR.BF.FspiB* *LR.MLR.BF.FvesB* *LR.MLR.BF.Fser.R* *LR.LLR.F.Pel* *LR.LLR.F.Fspi.FS* *LR.LLR.F.FspiX* *LR.LLR.F.Fves.FS* *LR.LLR.F.FvesX* *LR.LLR.F.Asc.FS* *LR.LLR.F.Fserr.FS* *LR.FLR.Lic.YG* *LR.FLR.Lic.Ver.Ver* *LR.FLR.Rkp*	*At 6-yearly intervals confirm the diversity of biotopes recorded by the first SCM event (Moore et al., 2010) through a programme of remote video sampling, quantitative benthic sampling and MNCR phase 2 level surveys along the fixed transects established by Moore et al. (2010).* *Transects comprise the following habitat types:* • *two transects across intertidal sediments* • *nine transects across a combination of intertidal reef, subtidal reef and subtidal sediments*

Attribute	Target	Prescription
	LR.FLR.Rkp.Cor.Cor *LR.FLR.Rkp.G* *The following subtidal biotopes (or equivalents) must be found within the SAC (recorded during the remote video sampling and/or on the fixed transects):* *Subtidal sediment:* SS.SCS.CCS SS.SCS.CCS.PomB SS.SCS.CCS.MedLumVen SS.SSa.IMuSa SS.SSa.IMuSa.AreISa SS.SSa.CMuSa SS.SMu.ISaMu SS.SMu.ISaMu.MysAbr SS.SMu.CSaMu SS.SMu.CSaMu.VirOphPmax SS.SMu.C.VirOphPmax.HAs SS.SMu.IFiMu SS.SMu.IFiMu.Are SS.SMu.IFiMu.PhiVir SS.SMu.CFiMu.SpnMeg SS.SMu.CFiMu.SpnMeg.Fun SS.SMX.CMx SS.SMx.CMx.CIloMx SS.SMp.Mrl.Pcal SS.SMp.Mrl.Pcal.R SS.SMp.Mrl.Pcal.Nmix SS.SMp.KSwSS SS.SMp.KSwSS.LsacR SS.SMp.KSwSS.LsacR.Sa SS.SMp.KSwSS.LsacMxVs SS.SMp.KSwSS.Tra SS.SMp.KSwSS.Pcri SS.SBR.SMus *Subtidal reef:* *IR.HIR.KFaR.Ala.Myt* *IR.HIR.KFaR.Ala.Ldig* *IR.HIR.KFaR.LhypR.Ft* *IR.HIR.KFaR.LhypRVt* *IR.HIR.KSed.LsacSac* *IR.HIR.KSed.XKScrR* *IR.MIR.KR.Ldig.Ldig* *IR.MIR.KR.LhypT.Ft* *IR.MIR.KR.LhypTX.Ft* *IR.MIR.KR.Lhyp.Ft* *IR.MIR.KR.Lhyp.Pk* *IR.MIR.KR.Lhyp.GzFt*	

Attribute	Target	Prescription
	IR.MIR.KR.Lhyp.GzPk *IR.MIR.KR.LhypVt* *IR.MIR.KR.XFoR* *IR.LIR.K.LhypLsac.Gz* *IR.LIR.K.Lsac.Ft* *IR.LIR.K.Lsac.Pk* *IR.LIR.K.Lsac.Gz* *IR.LIR.K.LhypCape* *IR.LIR.Lag.ProtFur* *IR.FIR.SG.CrSpAsAn* *CR.HCR.XFa* *CR.HCR.XFa.CvirCri* *CR.MCR.EcCr* *CR.MCR.EcCr.FaAlCr* *CR.MCR.EcCr.FaAlCr.Adig* *CR.MCR.EcCr.FaAlCr.Car* *CR.MCR.EcCr.FaAlCr.Flu* *CR.LCR.BrAs.AmenCio* *CR.LCR.BrAs.AntAsH*	
3 Distribution/ spatial pattern of habitats	*Maintain the pattern of distribution and/or spatial arrangement of biotopes, allowing for natural succession/known cyclical change.* *The following biotopes should be found in the given sequence down the shore on the specified transects:* *Tràigh Bad na Bàighe E* *LS.LMp.Sm* *LS.LCS.Sh.BarSh* *LR.LLR.F.FspiX* *LR.LLR.F.FvesX* *LS.LSa.MuSa.HedMacEte* *Tràigh Bad na Bàighe W* *LR.FLR.Lic.YG, LS.LSa.St.Tal* *LS.LMp.Sm* *LR.LLR.F.FvesX* *LS.LMx.GvMu.HedMx.Cvol* *LS.LSa.MuSa.HedMacEte* *Eilean Port a' Choit W* *LR.FLR.Lic.YG* *LR.FLR.Lic.Ver.Ver* *LR.LLR.F.Pel* *LR.LLR.F.Fves.FS* *LR.LLR.F.Asc.FS* *LR.LLR.F.Fserr.FS* *IR.LIR.K.Lsac.Ft* *SS.SMp.KSwSS.LsacR, SS.SMp.KSwSS.Tra* *SS.SMp.KSwSS.Tra, SS.SMp.KSwSS.LsacR*	*At 6-yearly intervals confirm the geographic distribution of biotopes recorded by the first SCM event (Moore et al., 2010) through a programme of remote video sampling, quantitative benthic sampling and MNCR phase 2 level surveys along the eleven fixed transects established by Moore et al. (2010).* *At six-yearly intervals confirm the distribution of* Ascophyllum nodosum *ecad* mackayi *recorded by the first SCM event (Moore et al., 2010) at the head of Loch Laxford and in Tràigh Bad na Bàighe by recording the abundance of the alga along transects and by mapping the periphery of discrete beds, using the methodology given in Moore et al. (2010).* *At six-yearly intervals confirm the distribution of* Mytilus edulis *beds recorded by the first SCM event (Moore et al., 2010) in the entrance channel to Tràigh Bad na Bàighe by mapping the periphery of the beds, using the methodology given in Moore et al. (2010).*

Attribute	Target	Prescription
	Sruth Mor *LR.FLR.Lic.YG, LR.FLR.Rkp* *LR.FLR.Lic.Ver.Ver* *LR.LLR.F.Pel* *LR.LLR.F.Fspi.FS* *LR.LLR.F.Fves.FS* *LR.HLR.FT.FserT* *IR.MIR.KR.LhypT.Ft* *IR.MIR.KR.LhypTX.Ft* *Ardmore* *LR.FLR.Lic.YG* *LR.FLR.Lic.Ver.Ver* *LR.LLR.F.Pel* *LR.LLR.F.Fves.FS* *LR.LLR.F.Asc.FS* *LR.LLR.F.Fserr.FS* *IR.LIR.Lag.ProtFur* *IR.LIR.K.Lsac.Ft* *IR.LIR.K.Lsac.Pk* *CR.LCR.BrAs.AmenCio* *CR.LCR.BrAs.AmenCio, SS.SSA.CMuSa* *SS.SMu.IFiMu.PhiVir* *Eilean an Eireannaich E* *LR.FLR.Lic.YG* *LR.FLR.Lic.Ver.Ver* *LR.LLR.F.Pel* *LR.LLR.F.Fspi.FS* *LR.MLR.BF.FvesB* *LR.LLR.F.Fserr.FS* *IR.MIR.KR.Ldig.Ldig* *IR.LIR.K.LhypCape* *IR.LIR.K.Lsac.Ft* *CR.LCR.BrAs.AmenCio* *SS.SMu.CFiMu.SpnMeg* *SS.SMu.CFiMu.SpnMeg.Fun* *Eilean Ard S* *LR.FLR.Lic.YG, LR.FLR.Rkp* *LR.FLR.Lic.Ver.Ver, LR.FLR.Rkp.G* *LR.LLR.F.Pel, LR.FLR.Rkp* *LR.MLR.BF.FspiB* *LR.LLR.F.Fves.FS* *LR.LLR.F.Fserr.FS* *IR.LIR.K.LhypCape* *IR.LIR.K.Lsac.Ft* *CR.LCR.BrAs.AmenCio* *CR.LCR.BrAs.AmenCio, SS.SMX.CMx.CIloMx* *CR.LCR.BrAs.AmenCio* *SS.SMu.CSaMu.VirOphPmax* *SS.SMu.CFiMu.SpnMeg* *Eilean Ard NE* *LR.FLR.Lic.YG, LR.FLR.Rkp*	

Attribute	Target	Prescription
	LR.FLR.Lic.Ver.Ver *LR.LLR.F.Pel* *LR.MLR.BF.FspiB* *LR.LLR.F.Fves.FS* *LR.MLR.BF.Fser.R* *IR.MIR.KR.Ldig.Ldig* *IR.MIR.KR.Lhyp.GzFt* *IR.LIR.K.LhypLsac.Gz* *CR.LCR.BrAs.AntAsH* *SS.SCS.CCS, CR.LCR.BrAs.AntAsH* *CR.LCR.BrAs.AntAsH* *SS.SCS.CCS* *Eilean an Sithein N* *LR.FLR.Lic.YG* *LR.FLR.Lic.Ver.Ver* *LR.HLR.MusB.Cht.Cht* *LR.HLR.MusB.MytB, LR.FLR.Rkp.Cor.Cor* *IR.HIR.KFaR.Ala.Myt* *IR.MIR.KR.Ldig.Ldig* *IR.HIR.KFaR.LhypR.Ft* *IR.MIR.KR.Lhyp.Ft* *IR.MIR.KR.Lhyp.Pk* *CR.MCR.EcCr.FaAlCr* *Bodha Druim* *IR.HIR.KFaR.LhypR.Ft* *IR.HIR.KFaR.LhypRVt* *CR.HCR.XFa.CvirCri* *Eilean Dubha NE* *LR.FLR.Lic.YG* *LR.FLR.Lic.Ver.Ver* *LR.HLR.MusB.Cht.Cht* *LR.HLR.MusB.Sem.Sem, LR.FLR.Rkp.Cor.Cor* *LR.MLR.BF.FvesB* *IR.HIR.KFaR.Ala.Ldig* *IR.MIR.KR.Lhyp.GzFt* *IR.MIR.KR.LhypVt* *CR.MCR.EcCr* *IR.FIR.SG.CrSpAsAn* *CR.MCR.EcCr.FaAlCr.Car* *SS.SMx.CMx* *The geographical distribution of the following subtidal biotopes (or equivalents) recorded during the remote video sampling should correspond to that given in Moore et al. (2010):* *Sediment biotopes* *SS.SCS.CCS* *SS.SCS.CCS.PomB* *SS.SCS.CCS.MedLumVen* *SS.SSa.IMuSa* *SS.SSa.IMuSa.AreISa*	

Attribute	Target	Prescription
	SS.SSa.CMuSa *SS.SMu.ISaMu* *SS.SMu.ISaMu.MysAbr* *SS.SMu.CSaMu* *SS.SMu.CSaMu.VirOphPmax* *SS.SMu.CSaMu.VirOphPmax.HAs* *SS.SMu.IFiMu.PhiVir* *SS.SMu.CFiMu.SpnMeg* *SS.SMu.CFiMu.SpnMeg.Fun* *SS.SMX.CMx* *SS.SMx.CMx.ClloMx* *SS.SMp.Mrl.Pcal* *SS.SMp.Mrl.Pcal.R* *SS.SMp.Mrl.Pcal.Nmix* *SS.SMp.KSwSS* *SS.SMp.KSwSS.LsacR* *SS.SMp.KSwSS.LsacR.Sa* *SS.SMp.KSwSS.LsacMxVs* *SS.SMp.KSwSS.Pcri* *SS.SBR.SMus* *Reef biotopes* *IR.HIR.KSed.LsacSac* *IR.HIR.KSed.XKScrR* *IR.MIR.KR.Lhyp.Ft* *IR.MIR.KR.Lhyp.GzFt* *IR.MIR.KR.Lhyp.GzPk* *IR.MIR.KR.XFoR* *IR.LIR.K.Lsac.Ft* *IR.LIR.K.Lsac.Pk* *IR.LIR.K.Lsac.Gz* *CR.HCR.XFa* *CR.MCR.EcCr.FaAlCr* *CR.MCR.EcCr.FaAlCr.Adig* *CR.MCR.EcCr.FaAlCr.Car* *CR.MCR.EcCr.FaAlCr.Flu* *CR.MCR.EcCr.FaAlCr.Pom* *CR.LCR.BrAs.AmenCio* *CR.LCR.BrAs.AntAsH*	
4 Water Quality	*Target values should default to appropriate national or international standards where appropriate. If sufficient local data are available to establish the baseline condition, site-specific targets can be set.*	*Every 6th year undertake monthly (for 12 months) water quality sampling from a series of relocatable stations to determine nutrient levels, water chemistry and water clarity.*

Attribute	Target	Prescription
*5 *Species composition of representative or notable biotopes*	*No decline in maerl biotope quality on the monitoring transects due to changes in species composition or reduction in species richness allowing for natural succession/ known cyclical change.* *The following sites and biotopes are to be monitored:* *LL09ML01 (SS.SMp.Mrl.Pcal.R)* *LL09ML02 (SS.SMp.Mrl.Pcal)* *LL09ML04 (SS.SMp.Mrl.Pcal.R)*	*At 6-yearly intervals undertake MNCR phase 2 level surveys (including the collection of four replicate infaunal core samples and a comprehensive algal inventory) of the three transects across maerl beds established by Moore et al. (2010) and compare the species composition with that recorded by Moore et al. (2010).*
*6 *Presence or abundance of specified species*	*Maintain abundance of Phymatolithon calcareum along the three transects listed in section 5 (Moore et al., 2010).* *No increase in the abundance of Heterosiphonia japonica along the three transects listed in section 5 (Moore et al., 2010).*	*At 6-yearly intervals the abundance of the specified species is to be determined semi-quantitatively as part of the MNCR phase 2 level surveys carried out along the three maerl bed transects established by Moore et al. (2010).*

* Non-mandatory target

Table 14.2 Site attribute table for reef feature

Attribute	Target	Prescription
1 Extent	*No change in extent of littoral rock and inshore sublittoral rock* ***Note** - Reef extent & the implications of activities should be assessed against indicative baseline maps given in Posford Haskoning, 2001 (SNH comm. report F01AA401D) and Bates et al., 2004 (SNH comm. report F01AA401A)*	*At six-yearly intervals review activities and events with the potential to reduce extent of feature such as land reclamation and shoreline development.* *At 18-yearly intervals perform acoustic bathymetric survey.*
2 Biotope composition of the littoral rock and inshore sublittoral rock	*Maintain the variety of biotopes identified for the site, allowing for natural succession/ known cyclical change.* *The intertidal reef biotopes (or equivalents) given in section 2 of Table 14.1 must be found on the fixed transects:* *The subtidal reef biotopes (or equivalents) given in section 2 of Table 14.1 must be found within the SAC (recorded during the remote video sampling and/or on the fixed transects):*	*At 6-yearly intervals confirm the diversity of biotopes recorded by the first SCM event (Moore et al., 2010) through a programme of remote video sampling and MNCR phase 2 level surveys along the nine fixed transects across littoral and sublittoral reef habitats established by Moore et al. (2010).*
3 Distribution of biotopes *Spatial arrangement of biotopes at specified locations*	*Maintain the distribution and/or spatial arrangement of littoral and sublittoral biotopes, allowing for natural succession/known cyclical change.* *The reef biotopes given in section 3 of Table 14.1 should be found in the given sequence down the shore on the specified transects. The reef biotopes are those preceded by LR, IR or CR.* *The geographical distribution of the subtidal reef biotopes (or equivalents) recorded during the remote video sampling should correspond to that given in Moore et al. (2010). See section 3 of Table 14.1 for a list of the biotopes.*	*At 6-yearly intervals confirm the geographic distribution of biotopes recorded by the first SCM event (Moore et al., 2010) through a programme of remote video sampling and MNCR phase 2 level surveys along the nine fixed transects across littoral and sublittoral reef habitats established by Moore et al. (2010).*
*4 *Species composition of representative or notable biotopes*	*No decline in intertidal and/or subtidal biotope/sub-biotope quality on the monitoring transects due to changes in species composition or loss of notable species allowing for natural succession/ known cyclical change.* *Biotopes for phase 2 survey are listed in section 3 of Table 14.1.* *Transect zones and their biotopes for algal census are as follows:* *Eilean Ard S, zone S2 (IR.LIR.K.Lsac.Ft)* *Eilean Ard NE, zone S5*	*At 6-yearly intervals undertake MNCR phase 2 level surveys of the nine fixed transects across littoral and sublittoral reef habitats established by Moore et al. (2010) and compare the species composition with that recorded by Moore et al. (2010).* *At 6-yearly intervals determine the species composition and richness of representative/notable biotopes by a census of the algal flora within specified zones of the fixed transects established by Moore et al. (2010)*

Attribute	Target	Prescription
	(CR.LCR.BrAs.AntAsH) *Bodha Druim, zone S1 (IR.HIR.KFaR.LhypR.Ft)* *Eilean Dubha NE, zone S4 (CR.MCR.EcCr)*	*using the methods given in Moore et al (2010).*

***** Non-mandatory target

Appendix 15 Overview of GIS product

The project was compiled using ArcGIS Map 9.1 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: **Laxford_2009_GIS** - All GIS files
Subdirectory: **figures** - all outputted maps (and other figures) for report
Subdirectory: **spreadsheets** - GIS data in Excel spreadsheet form

Table 15.1 Project, shape and symbology files

File	Content
Laxford_2009.mxd	ArcGIS Map file
Bates04biotopes2.shp	sample sites from Bates et al. (2004)
Bates04biotopes2.lyr	symbology file for corresponding shape file
Bates_2001_biotopes.shp	biotopes recorded during 2001 survey by Bates et al. (2004) for similar locations and depths as 2009 survey
Bates_2001_biotopes.lyr	symbology file for corresponding shape file
biotope.lyr	symbology file for corresponding shape file
biotope.shp	littoral biotope map from Posford Haskoning (2001)
ddvideo_results_09_HWU.shp	2009 video sites by HWU showing first biotope
ddvideo_results_09_HWU.lyr	symbology file for corresponding shape file
ddvideo_results_09_SNH.shp	2009 video sites by SNH showing first biotope
ddvideo_results_09_SNH.lyr	symbology file for corresponding shape file
farms.shp	location of fish farms
laxfordclass_04biotopes.shp	sublittoral biotope map from Bates et al. (2004) (updated to 2004 biotope classification scheme)
laxfordclass_04biotopes.lyr	symbology file for corresponding shape file
mackayi_beds.shp	mapped *Ascophyllum nodosum* ecad *mackayi* beds
mackayi_boundaries.shp	peripheral waypoints for mackayi beds
mackayi_transect_end.shp	end position of mackayi transect
mackayi_transect_start.shp	start position of mackayi transect
mackayi_transects.shp	*Ascophyllum nodosum* ecad *mackayi* transects
mhws.shp	vector map of land (above MHWS)
mlws.shp	vector map of shore (to MLWS)
mytilus_beds.shp	mapped *Mytilus edulis* beds
mytilus_boundaries.shp	peripheral waypoints for *Mytilus* beds
recorderextract_smithholtpowell.shp	site data extracted from Marine Recorder for Laxford surveys by Smith (1985), Holt (1991) and Powell et al. (1980)
recorderextract_smithholtpowell.lyr	symbology file for corresponding shape file
SAC_boundary.shp	seaward limit of SAC
transects.shp	location of reef, maerl and intertidal sediment transects
transects.lyr	symbology file for corresponding shape file

Table 15.1 continued

File	Content
videosites09.shp	2009 video sites by HWU with reef/non-reef/mixed classification
videosites09.lyr	symbology file for corresponding shape file
videositesSNH.shp	2009 video sites by SNH with reef/non-reef/mixed classification
videositesSNH.lyr	symbology file for corresponding shape file
zostera_tracks2.shp	vessel track during *Zostera marina* surveys

Table 15.2 List of affiliated index and projection files

Bates04biotopes2.dbf	mackayi_beds.prj	mytilus_beds.shx
Bates04biotopes2.prj	mackayi_beds.sbn	mytilus_boundaries.dbf
Bates04biotopes2.sbn	mackayi_beds.sbx	mytilus_boundaries.prj
Bates04biotopes2.sbx	mackayi_beds.shx	mytilus_boundaries.sbn
Bates04biotopes2.shx	mackayi_boundaries.dbf	mytilus_boundaries.sbx
Bates_2001_biotopes.dbf	mackayi_boundaries.prj	mytilus_boundaries.shx
Bates_2001_biotopes.prj	mackayi_boundaries.sbn	recorderextract_smithholtpowell.dbf
Bates_2001_biotopes.sbn	mackayi_boundaries.sbx	recorderextract_smithholtpowell.prj
Bates_2001_biotopes.sbx	mackayi_boundaries.shx	recorderextract_smithholtpowell.sbn
Bates_2001_biotopes.shx	mackayi_transect_end.dbf	recorderextract_smithholtpowell.sbx
biotope.dbf	mackayi_transect_end.prj	recorderextract_smithholtpowell.shx
biotope.prj	mackayi_transect_end.sbn	SAC_boundary.dbf
biotope.sbn	mackayi_transect_end.sbx	SAC_boundary.prj
biotope.sbx	mackayi_transect_end.shx	SAC_boundary.sbn
biotope.shx	mackayi_transect_start.dbf	SAC_boundary.sbx
ddvideo_results_09_HWU.dbf	mackayi_transect_start.prj	SAC_boundary.shx
ddvideo_results_09_HWU.prj	mackayi_transect_start.sbn	transects.dbf
ddvideo_results_09_HWU.sbn	mackayi_transect_start.sbx	transects.prj
ddvideo_results_09_HWU.sbx	mackayi_transect_start.shx	transects.sbn
ddvideo_results_09_HWU.shx	mackayi_transects.dbf	transects.sbx
ddvideo_results_09_SNH.dbf	mackayi_transects.prj	transects.shx
ddvideo_results_09_SNH.prj	mackayi_transects.sbn	videosites09.dbf
ddvideo_results_09_SNH.sbn	mackayi_transects.sbx	videosites09.prj
ddvideo_results_09_SNH.sbx	mackayi_transects.shx	videosites09.sbn
ddvideo_results_09_SNH.shx	mhws.dbf	videosites09.sbx
farms.dbf	mhws.prj	videosites09.shx
farms.prj	mhws.sbn	videositesSNH.dbf
farms.sbn	mhws.sbx	videositesSNH.prj
farms.sbx	mhws.shx	videositesSNH.sbn
farms.shp.xml	mlws.dbf	videositesSNH.sbx
farms.shx	mlws.prj	videositesSNH.shx
laxfordclass_04biotopes.dbf	mlws.sbn	zostera_tracks2.dbf
laxfordclass_04biotopes.prj	mlws.sbx	zostera_tracks2.prj
laxfordclass_04biotopes.sbn	mlws.shx	zostera_tracks2.sbn
laxfordclass_04biotopes.sbx	mytilus_beds.dbf	zostera_tracks2.sbx
laxfordclass_04biotopes.shp.xml	mytilus_beds.prj	zostera_tracks2.shx
laxfordclass_04biotopes.shx	mytilus_beds.sbn	

mackayi_beds.dbf	mytilus_beds.sbx	

Table 15.3 Fields for shape files with data attributes

File name and field	Content
Bates04biotopes2.shp	
STATION	Site code
LAT	WGS84 latitude
LONG	WGS84 longitude
EASTING	BNG easting
NORTHING	BNG northing
BIOTOPE97	1997 biotope code
BIOTOPE04	2004 biotope code
DEPTH	Chart datum depth (m)
SUBSTRATE	Substrate type
SUBSTRATE_	Substrate notes
NOTES	Biological notes
METHOD	Sampling method
TIDAL_RISE	Tidal rise (m)
Bates_2001_biotopes.shp	
STATION	Site code
LAT	ignore
LONG	ignore
EASTING	BNG easting
NORTHING	BNG northing
BIOTOP_REV	2004 biotope code (revised where necessary)
DEPTH_CD	Chart datum depth (m)
SUBSTRATE	Substrate type
SUBS_NOTES	Substrate notes
BIOL_NOTES	Biological notes
METHOD	Sampling method
ddvideo_results_09_HWU.shp	
SITE	Site code
DATE	Sample date
LATIN	WGS84 latitude start
LONGIN	WGS84 longitude start
EAST_IN	BNG easting start
NORTH_IN	BNG northing start
DEPTHIN_BS	Depth below sea level at start (m)
DEPTHIN_CD	Depth below chart datum at start (m)
TIME_IN	Time at start - data corrupt
LATOUT	WGS84 latitude end
LONGOUT	WGS84 longitude end
EAST_OUT	BNG easting end
NORTH_OUT	BNG northing end
DEPTHOUT_B	Depth below sea level at end (m)
DEPTHOUT_C	Depth below chart datum at end (m)
TIME_OUT	Time at end - data corrupt
DURATION	Duration - data corrupt
SUBSTRATE	Substrate description

Table 15.3 continued

File name and field	Content
BIOTA	Description of biota
BIO09_1	First biotope (2004 classification)
BIO09_2	Second biotope (2004 classification)
BIO09_3	Third biotope (2004 classification)
BIO09_4	Fourth biotope (2004 classification)
BATES_SITE	Bates et al. (2004) site code
BIOTOPE_01	Bates et al. (2004) biotope code for site
01_REVISED	Revised Bates et al. (2004) biotope code for site
COMMENT	Comments on biotope allocation
ddvideo_results_09_SNH.shp	
SITE	Site code
DATE	Sample date
LATIN	WGS84 latitude start
LONGIN	WGS84 longitude start
EAST_IN	BNG easting start
NORTH_IN	BNG northing start
DEPTHIN_BS	Depth below sea level at start (m)
DEPTHIN_CD	Depth below chart datum at start (m)
TIME_IN	Time at start - data corrupt
LATOUT	WGS84 latitude end
LONGOUT	WGS84 longitude end
EAST_OUT	BNG easting end
NORTH_OUT	BNG northing end
DEPTHOUT_B	Depth below sea level at end (m)
DEPTHOUT_C	Depth below chart datum at end (m)
TIME_OUT	Time at end - data corrupt
DURATION	Duration - data corrupt
RISE	Tidal rise (m)
SUBSTRATE	Substrate description
BIOTA	Description of biota
BIO09_1	First biotope (2004 classification)
BIO09_2	Second biotope (2004 classification)
BIO09_3	Third biotope (2004 classification)
BATES_SITE	not used
BIOTOPE_01	not used
01_REVISED	not used
COMMENT	not used
NOTES	notes on picture quality and biotope fit
mackayi_boundaries.shp	
WPT	Waypoint number
LATITUDE	WGS84 latitude
LONGITUDE	WGS84 longitude
EASTING	BNG easting
NORTHING	BNG northing
mytilus_boundaries.shp	

Table 15.3 continued

File name and field	Content
EASTING	BNG easting
NORTHING	BNG northing
LATITUDE	WGS84 latitude
LONGITUDE	WGS84 longitude
WPT	Waypoint number
WPT_DETAIL	What waypoint is marking
PHOTO	Photo numbers
COMMENT	Comments
mackayi_transect_start.shp	
TRANSECT	Transect number
START_WPT	Waypoint number at transect start
START_LAT	WGS84 latitude start
START_LONG	WGS84 longitude start
START_EAST	BNG easting start
START_NORT	BNG northing start
MAX_WPT	Waypoint number when cover at maximum
MAX_LAT	WGS84 latitude for maximum cover
MAX_LONG	WGS84 longitude for maximum cover
MAX_EAST	BNG easting for maximum cover
MAX_NORTH	BNG northing for maximum cover
MAX_COVER	Estimate of maximum cover (%)
PHOTOS	Photo numbers
END_WPT	Waypoint number at transect end
END_LAT	WGS84 latitude end
END_LONG	WGS84 longitude end
END_EAST	BNG easting end
END_NORTH	BNG northing end
COMMENTS	Comments
mackayi_transect_end.shp	
TRANSECT	Transect number
START_WPT	Waypoint number at transect start
START_LAT	WGS84 latitude start
START_LONG	WGS84 longitude start
START_EAST	BNG easting start
START_NORT	BNG northing start
MAX_WPT	Waypoint number when cover at maximum
MAX_LAT	WGS84 latitude for maximum cover
MAX_LONG	WGS84 longitude for maximum cover
MAX_EAST	BNG easting for maximum cover
MAX_NORTH	BNG northing for maximum cover
MAX_COVER	Estimate of maximum cover (%)
PHOTOS	Photo numbers
END_WPT	Waypoint number at transect end
END_LAT	WGS84 latitude end
END_LONG	WGS84 longitude end
END_EAST	BNG easting end
END_NORTH	BNG northing end

Table 15.3 continued

File name and field	Content
COMMENTS	Comments
recorderextract_smithholtpowell.shp	
OBJECTID	
SURVEY	Survey number
SAMPLE_REF	Sample reference number
SURVEY_EVE	Survey event
SAMPLE_KEY	Sample key
USERSAMPLE	User sample number
DATE_	Date of sample
SURVEYORS	Names of surveyors
EASTING	BNG easting
NORTHING	BNG northing
LATWGS84	WGS84 latitude
LONGWGS84	WGS84 longitude
HABITAT	Habitat type
DESCRIPTIO	Description of site
BIOTOPECOD	2004 biotope code
BIOTOPEDES	Biotope description
QUALIFIER	Biotope fit
DETERMINAT	Date of biotope determination
ASSESSEDBY	Record assessor
videosites09.shp	
SITE	Site code
DATE	Sample date
LATIN	WGS84 latitude start
LONGIN	WGS84 longitude start
EAST_IN	BNG easting start
NORTH_IN	BNG northing start
DEPTHIN_CD	Chart datum depth start (m)
LATOUT	WGS84 latitude end
LONGOUT	WGS84 longitude end
EAST_OUT	BNG easting end
NORTH_OUT	BNG northing end
DEPTHOUT_C	Chart datum depth end (m)
SUBSTRATE	Substrate type
BIO09_1	First biotope (2004 classification)
BIO09_2	Second biotope (2004 classification)
BIO09_3	Third biotope (2004 classification)
BIO09_4	Fourth biotope (2004 classification)
REEF	Reef/non-reef/mixed
BATES_SITE	Bates et al. (2004) code for site
videositesSNH.shp	
SITE	Site code
LATIN	WGS84 latitude start
LONGIN	WGS84 longitude start
EAST_IN	BNG easting start

Table 15.3 continued

File name and field	Content
NORTH_IN	BNG northing start
SUBSTRATE	Substrate description
BIOTOPE_09	Biotopes (2004 classification)
REEF	Reef/non-reef/mixed

Appendix 16 Survey log

Outline of daily activities during the SCM field survey (1st – 22nd August, 2009)

Org.	Personnel
SNH	Laura Clark (LC1)
HWU	Lewis Cowie (LC2)
SNH	Jane Dodd (JD)
HWU	Dan Harries (DH)
SNH	Suz Henderson (SH)
SNH	Carol Hume (CH)
HWU	Lionel Jouvet (LJ)
HWU	Josie Kirk (JK)
HWU	Alastair Lyndon (AL)
HWU	Colin Moore (CM)
HWU	Joanne Porter (JP)
HWU	Graham Saunders (GS)
SNH	Laura Steel (LS)
HWU	Colin Trigg (CT)
HWU	Bev Wood (BW)

Sat	**1st Aug**	BW, LJ & LC2 depart Edinburgh and drive to Fanagmore; meet CM who was already on site with *Serpula*. Load dropdown video equipment on *Serpula*.
Sun	**2nd Aug**	Set up dropdown video. Depart Fanagmore to start video survey. Completed **23 video sites**. Return to Fanagmore and fit new battery and VHF antenna to *Serpula*.
Mon	**3rd Aug**	Depart Fanagmore for dropdown survey. Strong SE winds (4-5) causing high drift but completed **36 video sites** including completion of outer exposed sites and all of Loch Dughaill.
Tue	**4th Aug**	Depart Fanagmore for dropdown survey of Loch a Chad-Fi and inner Laxford. Completed **38 video sites**. F4-5 SE causing high drift.
Wed	**5th Aug**	Load grab gear. Depart Fanagmore for grab survey. Did **15 grab sites** including all outer sites and Loch Dughaill. Returned Fanagmore, preserved samples.
Thu	**6th Aug**	Depart Fanagmore and completed remaining dropdown video sites (**23 video sites**). Sampled at **7 grab sites**. Returned Fanagmore and moved *Serpula* to new mooring (fish farm moorings all occupied). Preserved grab samples.
Fri	**7th Aug**	Completed grab survey (**8 grab sites**). Steamed to Kinlochbervie to refuel *Serpula*. Returned Fanagmore and preserved samples.
Sat	**8th Aug**	CM, BW, LJ & LC2 **recce** *Ascophyllum nodosum mackayi* beds around Laxford Bay and sediment shores and mussel bed in Traigh Bad na Baighe. BW, LJ, LC2 depart for Edinburgh. DH, JP & CT depart from Edinburgh & drive to Laxford, prolonged delays. Meet CM, LS, JD and LC1 at Fanagmore. Assist with breakdown of SNH vehicle, travel to accomodation and unpack.
Sun	**9th Aug**	Load equipment onto *Serpula*. Survey of maerl site **ML04.** Investigate reported *Modiolus* reef **MM01** in inner part of Laxford (no reef found). Investigate potential maerl site **ML02** (suitable for survey).
Mon	**10th Aug**	Survey of transect site **SR08.** Collection of infauna core samples from maerl site **ML04.**
Tue	**11th Aug**	Investigate potential maerl site **ML03** (maerl very sparse). Survey of transect site **IR07/SR07.**
Wed	**12th Aug**	Collection of infauna core samples from maerl site **ML02.** Survey of transect site **IR06/SR06.**

Thu	**13th Aug**	LC1 departs, SH arrives. Survey of maerl site **ML02.** Algae survey and additional photography at transect site **SR06.** Recce of reported *Zostera* sites **ZM02** & **ZM03.** No *Zostera* found.
Fri	**14th Aug**	Survey of maerl site **ML01.** Search for *Zostera* **ZM01** within Lochan na Fionndalach Bige (none found).
Sat	**15th Aug**	Rest day. CM **recce** potential shore sites. LS, SH, DH & CT launch SNH RIB and attach to mooring at Fanagmore. Arrival of GS.
Sun	**16th Aug**	Survey of transect site **IR05/SR05.** Departure of CT.
Mon	**17th Aug**	Survey of transect site **IR10/SR10.** Loss of oar from tender. Departure SH, arrival CH.
Tue	**18th Aug**	Survey of transect site **IR02/SR02.** Survey of three subtidal sites within Lochan na Fionndalach Bige.
Wed	**19th Aug**	Survey of transect sites **IR04/SR04** & **IR03/SR03.** Departure JP, arrival of AL & JK.
Thu	**20th Aug**	Collection of infauna core samples from subtidal site (**SD1**) within Lochan na Fionndalach Bige. Survey of transect site **IR01/SR01.** Departure of DH.
Fri	**21st Aug**	Survey of intertidal sediment sites **IS01** & **IS02.**
Sat	**22nd Aug**	Demobilisation. Packing and return from Laxford.

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ISBN: 978-1-85397-637-7

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