APPENDIX 6
INTERTIDAL AND UNDERWATER FLORA AND FAUNA, FISHERIES AND MARINE MAMMALS

APPENDIX 6.1 DETAILED RESULTS OF INTERTIDAL TRANSECT SURVEYS

TRANSECT 1

Overview: Exposed Rock – Short steep shore

Transect 1 - Quadrat Results

Positions on transect	Q1	Q2	Q3	Q4
	0.3m	8.9m	15.4m	23.9m
Xanthoria	1%	5%		
Caloplaca			+	
Lecanora atra	2%	10%		
Ramalina sp.	2%	1%		
Grey lichens indet	14%	8%		
Verrucaria maura			100%	60%
Pelvetia canaliculata				40%
Fucus spiralis				2%
Melarhaphe neritoides			C	C
Littorina saxatilis/rudis			F	F

TRANSECT 2

Overview: Exposed Rock – Short steep shore

Transect 2 Quadrat Results

Positions on transect	Q1	Q2	*Q3	Q4	Q5
	0.6m	5.8m	9.8m	8.9m	25.8m
Xanthoria	1%				
Caloplaca	10%				
Lecanora atra	5%				
Ramalina sp.	+				
Verrucaria maura	28%	4%		90%	90%
Pelvetia canaliculata					6%
Fucus spiralis		34%			
Fucus vesiculosus			4%		
Enteromorpha/Ulva		4%			
Cladophora rupestris		36%			
Encrusting coralline red alga		2%	40%		
Corralina sp.			2%		
Melarhaphe neritoides	R				A
Littorina saxatilis/rudis					F
Chthamalus montagui				C	
Patella vulgata		F	C	C	

Q3 = rock pool just off the transect

TRANSECT 3

Overview: Exposed Rock – Short steep shore

Transect 3 – Quadrat Results

Positions on transect	Q1	Q2	Q3
	0m ?	3.5m	11.1m
Xanthoria			
Caloplacasp.	16%		
Lecanora atra			
Ramalina sp.	8%		
Verrucaria maura	56%	100%	
Pelvetia canaliculata		12%	
Enteromorpha/Ulva			
Ascophyllum nodosum			44%
Polysiphonia lanosa			12%
Encrusting coralline red alga			
Corallina sp.			
Melarhaphe neritoides	F	C	
Littorina saxatilis/rudis	F	F	
Semibalanus balanoides			C
Patella vulgata			C
Lomentaria articulata			+
Filamentous red indet			+

TRANSECT 4

Overview: Exposed Rock – Short steep shore

Transect 4 – Quadrat Results

Positions on transect	Q1	Q2	**Q3	Q4
	0m	5.8m	7.8m	10m
Xanthoria				
Caloplaca	1%			
Grey lichen(s) indet.	40%			
Verrucaria maura	8%	*100%		
Lichina sp.		5%		
Enteromorpha/Ulva			+	
Cladophora rupestris				1%
Encrusting coralline red alga			92%	
Corallina sp.			20%	20%
Osmundea pinnatifida				38%
Mastocarpus stellata				+
Melarhaphe neritoides				
Littorina saxatilis/rudis		F	C	
Barnacles				C
Patella vulgata			A	C

*V. maura in Q2 is very diffuse cover ** Q3 is a shallow rock pool

TRANSECT 5

Overview: Sheltered – Mixed Sediment (small cobbles, pebble and gravel – scattered boulders)

Transect 5 – Quadrat Results

Positions on transect	Q1	Q2	Q3	Q4	Q5	Q6
	1.3m	3.6m	7.2m	10.1m	17.1m	21.8
Scurvy Grass	+					
Saltmarsh vegetation indet.	64%					
Enteromorpha/Ulva	8%					
Xanthoria		4%				
Caloplaca		8%				
Lecanora atra		30%				
Ramalina sp.						
Grey lichens indet						
Verrucaria maura		16%				
Pelvetia canaliculata			2%			
Fucus spiralis			6%			
Fucus vesiculosus				70%	76%	56%
Ascophyllum nodosum						
Fucus serratus						
Littorina saxatilis/rudis			A	F	C	
L. obtusata/mariae				F		C
L. littorea					C	C
Patella vulgata				F	C	C
Amphipods				O	F	
Carcinus maenas				C		
Elminius modestus					F	
Semibalanus balanoides			O	*O	C	A
Gibbula umbilicalis					F	C
Mytilus edulis						

* *Semibalanus balanoides* (common to abundant on some boulders nearby)

TRANSECT 6

Overview: Sheltered – Mixed Sediment (small cobbles, pebble and gravel – scattered boulders)

Transect 6 – Quadrat Results

Positions on transect	Q1	Q2	Q3	Q4	Q5	Q6
	3.8m	8.1m	12.6m	16.7m	22m	27m
Enteromorpha/Ulva						
Pelvetia canaliculata		12%				
Fucus spiralis	2%	40%	20%			
Fucus vesiculosus			56%	50%	60%	92%
Ascophyllum nodosum		*8%				8%
Fucus serratus					4%	
Encrusting calcareous red						+
Littorina saxatilis/rudis	A	C	C	C		
L. obtusata/mariae		C	C		C	
L. littorea			F	C	C	C
Nucella lapillus			F			
Gibbula umbilicalis				F		
Patella vulgata				C	C	F
Amphipods	C	C		C		
Ligiasp.	F					
Carcinus maenas					F	
Elminius modestus		O	F	F	C	
Semibalanus balanoides			C	F	C	
Actinia equina					C	
Acanthtochitona sp.(?)						+
Hymeniacidon perleve						+
Spirorbis sp.						C

* Probably drift

TRANSECT 7

Overview: Sheltered – Mixed Sediment (mainly pebble and gravel – scattered cobble)

Transect 7 – Quadrat Results

Positions on transect	*Q1	Q2	Q3	Q4
	5.8m	10.4m	13.6m	18.8m
Enteromorpha/Ulva		4%		
Fucus spiralis		44%		
Fucus vesiculosus			28%	
Ascophyllum nodosum				
Fucus serratus				26%
Porphyra sp.		1%	+	
Encrusting calcareous red				
Littorina saxatilis/rudis			C	
L. obtusata/mariae		C	C	C
L. littorea			C	C
Nucella lapillus			F	
Gibbula umbilicalis			F	A
G. cineraria				F
***Rissoa sp.*		F		
Patella vulgata			F	C
Amphipods				
Carcinus maenas				
Elminius modestus				F
Semibalanus balanoides		F		
Actinia equina				F
***Nemertean indet*		C		
Hymeniacidon perleve				
Lanice sp.				C
Spirorbis sp.			F	O

* Barren pebbles, ** under stoned in sand

[1]TRANSECT 8

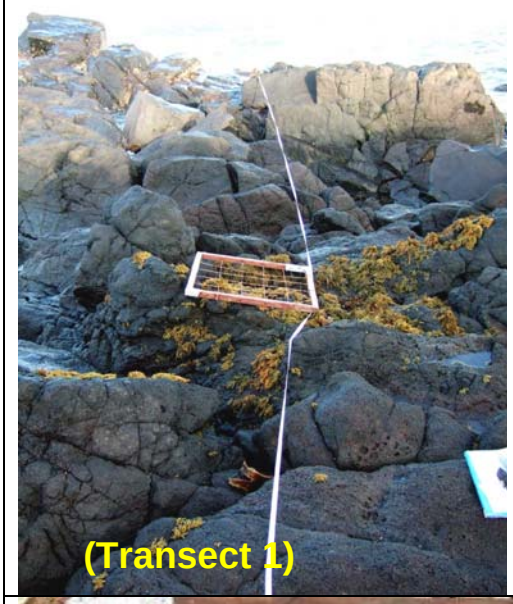
Overview: Sheltered – Mixed Sediment (mainly pebble and gravel and cobble)

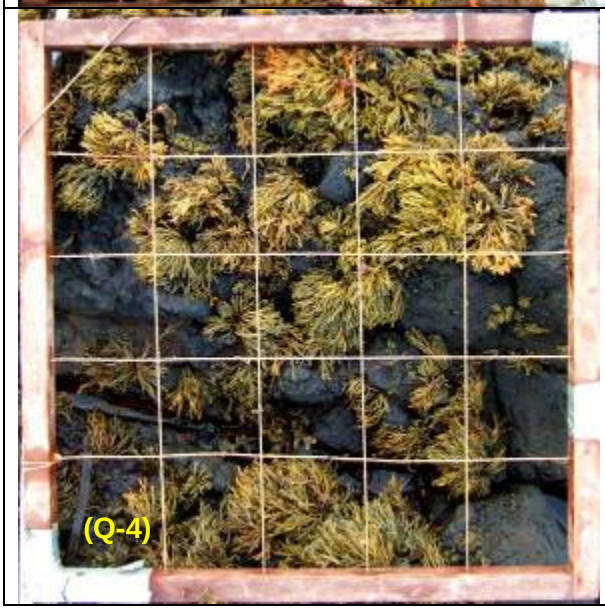
Transect 8 – Quadrat Results

Positions on transect	*Q1	Q2	Q3
	5.1m	10.5m	14.7m
Fucus spiralis	18%		
Fucus vesiculosus		4%	20%
Littorina saxatilis/rudis	C	A	
L. obtusata/mariae			F
L. littorea	F	F	
Gibbula umbilicalis		C	C
aG. cineraria			+
Carcinus maenas	F		
Elminius modestus	O	F	
Semibalanus balanoides	F	A	
Actinia equina		C	

* Barren pebbles, ** under stoned in sand

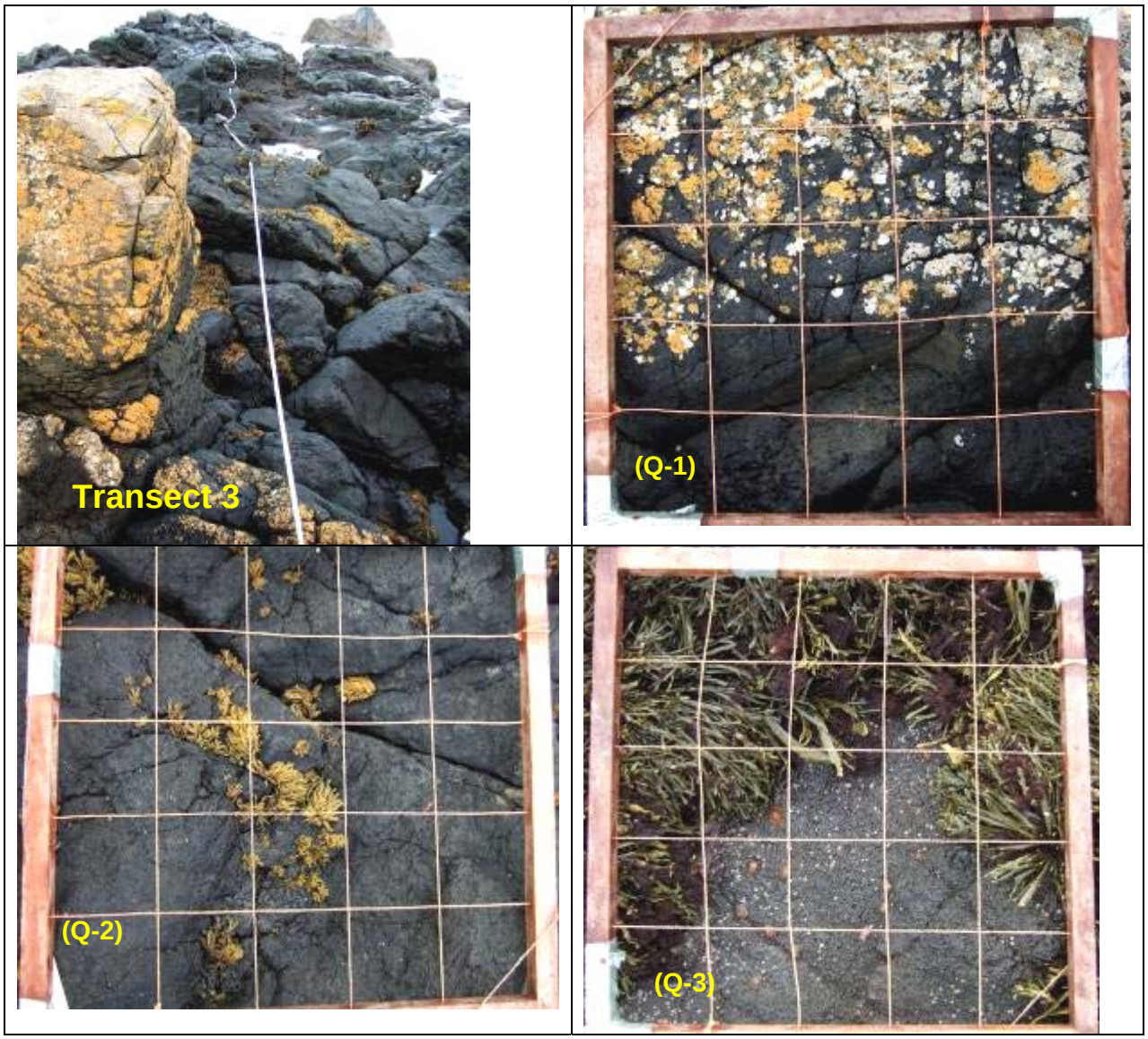
[1] This shore was truncated by reinforcing at the top of the shore, it was also slightly steeper than Transects 5-7



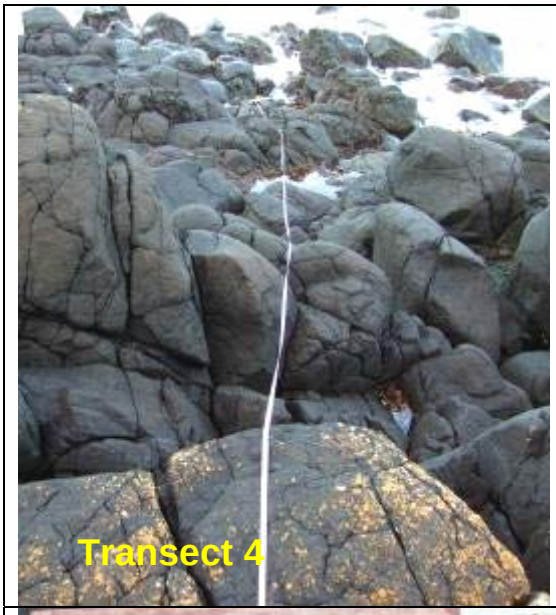


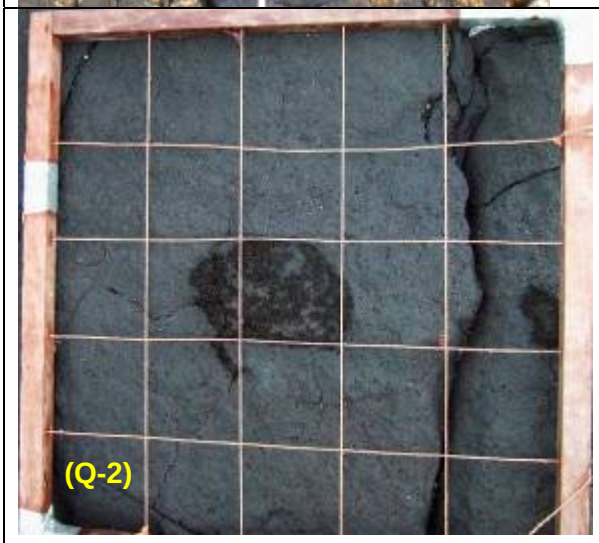
Transect 1 showing overview and quadrats

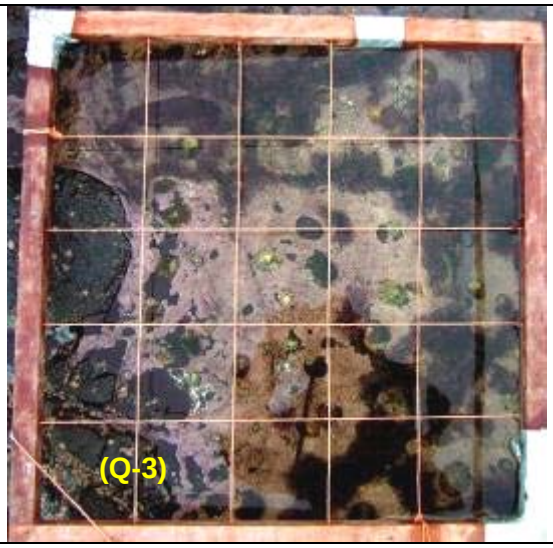
Transect 2 showing overview and quadrats

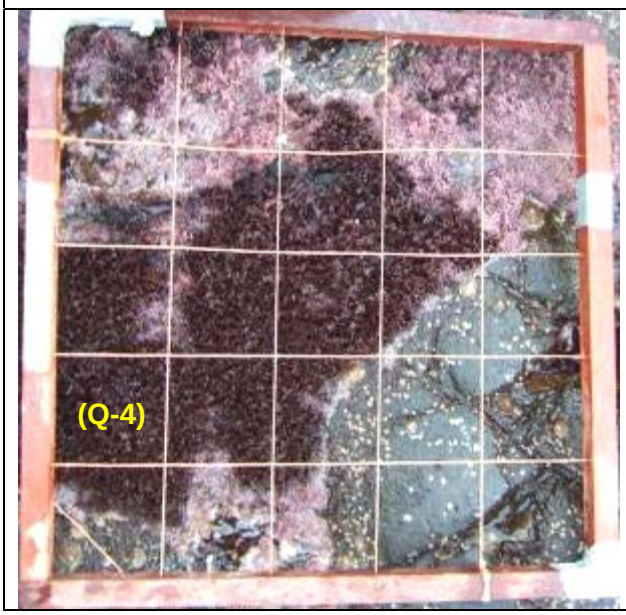


Transect 3 showing overview and quadrats

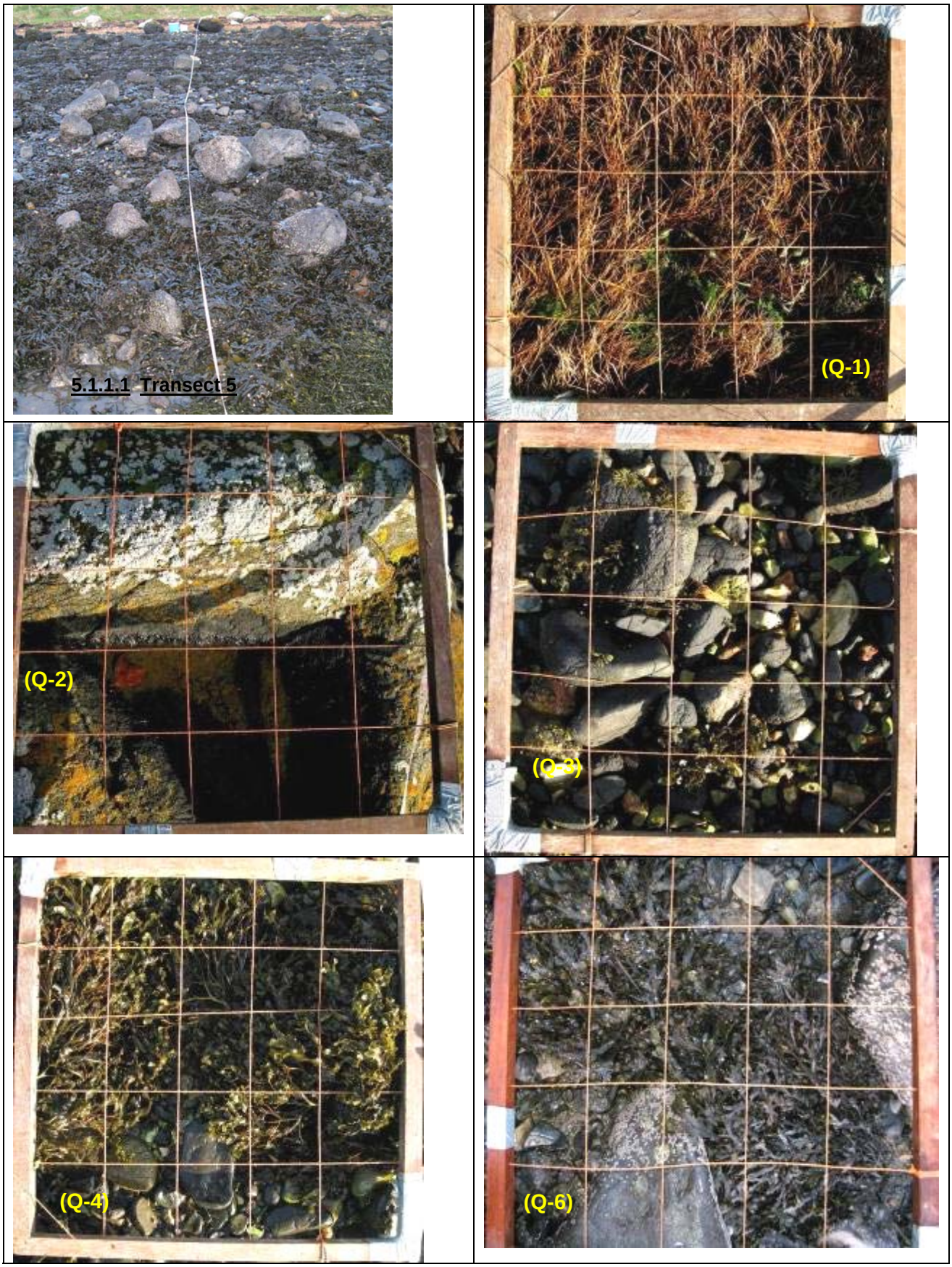








Transect 4 showing overview and quadrats



Transect 5 showing overview and quadrats

Transect 6 showing overview and quadrats

Transect 7 showing overview and quadrats

Transect 8 showing overview and quadrats

APPENDIX 6.2 - Detailed Biotope Descriptions (from O'Conor et. al, 2004)

ISLANDMAGEE - EAST SHORE

LR.FLR.Lic.YG
Yellow and grey lichens on supralittoral rock

Biotope description

Vertical to gently sloping bedrock and stable boulders in the supralittoral (or splash zone) of the majority of rocky shores are typically characterised by a diverse maritime community of yellow and grey lichens, such as *Xanthoria parietina, Caloplaca marina, Lecanora atra* and *Ramalina* spp. The black lichen *Verrucaria maura i*s also present, but usually in lower abundance than in the littoral fringe zone. In wave exposed conditions, where the effects of sea-spray extend further up the shore, the lichens generally form a wide and distinct band. This band then becomes less distinct as wave exposure decreases, and in sheltered locations, cobbles and pebbles may also support the biotope. Pools, damp pits and crevices in the rock are occasionally occupied by winkles such as *Littorina saxatilis* and *halacarid mites* may also be present.

Situation

This biotope is usually found at the top of the shore, immediately above a zone of the black lichen V. maura (Ver.Ver; Ver.B). Above the band of YG, and occasionally in crevices in the rock alongside the lichens, terrestrial plants such as the thrift Armeria maritima and other angiosperms often occur. In sheltered areas the transition from YG to Ver.Ver is often indistinct and a mixed zone of YG and Ver.Ver may occur. In estuaries, this biotope is often restricted to artificial substrata such as sea

LR.FLR.Lic.Ver.Ver
Verrucaria maura on very exposed to very sheltered upper littoral fringe rock

Biotope description

Upper littoral fringe bedrock, boulders and stable cobbles on very exposed to very sheltered shores which have a blanket covering of the black lichen *Verrucaria maura.* The winkle *Littorina saxatilis* is often present. Due to the nature of this biotope it is species poor, but occasionally a range of species may be present in low abundance. These species include the yellow lichen *Caloplaca m*arina and the winkle *Melarhaphe neritoides,* the barnacles *Chthamalus montagui* and *Semibalanus balanoides* or the ephemeral seaweeds *Porphyra umbilicalis* and *Enteromorpha spp.* can be present in low abundance (see Ver.B). If one or more of these species is present compare with Ver.B. On northern shores *Littorina saxatilis* var. *rudis* can dominate along with the occasional presence of the lichens *Verrucaria mucosa* and *Xanthoria parietina*. *V. maura* can be found overlying stable mud in N. Ireland sea loughs.

Situation

The black lichen zone is normally found below the yellow and grey lichen zone (YG). In very sheltered areas there is not always a clear transition from one zone to the next and a mixed zone of YG and Ver.Ver is common. The wrack *Pelvetia canaliculata* can occur on these more sheltered shores. With increasing wave exposure the two lichen zones become wider and more distinct, and the Ver.Ver gives way to a lichen and barnacle dominated community (Ver.B) in the lower littoral fringe.

LR.FLR.Rkp.Cor.Cor

Coralline crusts and *Corallina officinalis* in shallow eulittoral rockpools

Biotope description

Shallow and smaller rockpools throughout the eulittoral zone in a wide range of wave exposures characterised by a covering of encrusting coralline algae on which *Corallina officinalis* often forms a dense turf. The bottom of these pools can be covered in coarse gravel and cobbles. These 'coralline' pools have a striking appearance as they are dominated by red seaweeds. Foliose red seaweeds found in these pools include Mastocarpus stellatus, *Chondrus crispus* and the filamentous *Ceramium nodulosum.* The ephemeral green seaweeds *Cladophora rupestris, Ulva lactuca* and *Enteromorpha spp*. can also occur in high abundance. The pools may hold large numbers of grazing molluscs, particularly the winkle *Littorina littorea* (which often occurs in exceptionally high densities in upper shore pools), the limpet *Patella vulgata a*nd top shell *Gibbula cineraria*. Gastropods may graze these pools to such an extent that they is devoid of any foliose red seaweeds, and the flora are reduced to encrusting coralline algae and large numbers of gastropods. Large brown seaweeds are generally absent. Within the pools, pits and crevices are often occupied by the anemone *Actinia equina* and small individuals of the mussel *Mytilus edulis,* while the barnacle *Semibalanus balanoides c*an be found on the rock surface. The whelk *Nucella lapillus* can be found on the rock surface preying on the barnacles and mussels.

Situation

Rockpools throughout the eulittoral and lower littoral fringe rocky shores.

LR.HLR.FR.Coff.Coff

***Corallina officinalis* and *Mastocarpus stellatus* on exposed to moderately exposed lower eulittoral rock**

Biotope description

Exposed lower eulittoral rock or moderately exposed lower eulittoral vertical rock that supports a dense turf of the red seaweed *Corallina officinalis*, often on wave surged rocky slopes. There is usually a low abundance of other turf-forming red seaweeds such as *Lomentaria articulata*, *Mastocarpus stellatus, Palmaria palmata* and *Osmundea pinnatifida.* Other seaweeds that occur in low abundance includes the wrack *Himanthalia elongata* and the kelp *Laminaria digitata,* while the brown seaweed *Leathesia difformis* can be found growing on and around the other seaweeds. Green seaweeds such as *Enteromorpha*

intestinalis, Ulva lactuca and *Cladophora rupestris* are also present. The coralline turf creates a micro-habitat for small animals such as the colonial tube building polychaete *Pomatoceros sp*. and the barnacle *Semibalanus balanoides.* The mussel *Mytilus edulis* is often found in small cracks and crevices while the sponges *Halichondria panicea* and *Hymeniacidon perleve* can be found in shaded areas or on overhangs. The limpets *Patella ulyssiponensis* and *Patella vulgata* can be found on the bedrock underneath the turf. The brown seaweed *Bifurcaria bifurcata* and the barnacle *Balanus perforatus* may occur in the extreme south-west.

Situation
This community usually forms a distinct band just above the kelp zone (Ala, Ala.Ldig or Ldig). It can be found below the barnacle and *P. vulgata* dominated biotopes (Cht; Sem.Sem; Sem.FvesR).

LR.HLR.MusB.Sem.Sem
Semibalanus balanoides, Patella vulgata and Littorina spp. on exposed to moderately exposed or vertical sheltered eulittoral rock

(this community was only present on off shore rock at the very lower shore)

Biotope description
Very exposed to sheltered mid to upper eulittoral bedrock and large boulders characterised by dense barnacles *Semibalanus balanoides a*nd the limpet *Patella vulgata.* The community has a relatively low diversity of species though occasional cracks and crevices in the rock can provide a refuge for small individuals of the mussel *Mytilus edulis*, the winkle L*ittorina spp.* and the whelk *Nucella lapillus.* Seaweeds are usually not found in high numbers though fissures and crevices in the bedrock can hold a sparse algae community, though patches of the red seaweed *Osmundea pinnatifida* can be present throughout the zone. On some shores the olive green lichen *Verrucaria mucosa* can be present in some abundance (Frequent). Records should not be assigned to this species impoverished biotope if there is a significant number or abundance of seaweeds.

Situation
On very exposed to exposed shores *Chthamalus spp*. (see Cht.Cht for geographical variation) often forms a distinct white band above a darker band of *S. balanoides* in the mid eulittoral zone. Alternatively, found above Sem are the black lichen *Verrucaria maura* dominated biotopes (Ver.Ver or Ver.B). In the lower eulittoral and the sublittoral fringe is a community dominated by the wrack Himanthalia elongata and various red seaweeds including Corallina officinalis, Mastocarpus stellatus and *Osmundea pinnatifida* (Him; Coff; Osm) or the mussel and barnacle dominated biotope MytB. Sem.Sem may occur on steep and vertical faces on more sheltered shores, while fucoids dominate the flatter areas (Sem.FvesR; FvesB).

Temporal variation

Periods with little scour or less severe storms can allow a seaweed community to develop creating a more diverse biotope (i.e. Fves). This is a dynamic process, which will change individual sites over time. More information is required to validate this hypothesis.

LR.FLR.Lic.YG

ISLANDMAGEE WEST (LARNE LOUGH) SHORE

LR.FLR.Lic.YG
Yellow and grey lichens on supralittoral rock

Biotope description
Vertical to gently sloping bedrock and stable boulders in the supralittoral (or splash zone) of the majority of rocky shores are typically characterised by a diverse maritime community of yellow and grey lichens, such as *Xanthoria parietina*, *Caloplaca marina*, *Lecanora atra* and *Ramalina spp.* The black lichen *Verrucaria maura i*s also present, but usually in lower abundance than in the littoral fringe zone. In wave exposed conditions, where the effects of sea-spray extend further up the shore, the lichens generally form a wide and distinct band. This band then becomes less distinct as wave exposure decreases, and in sheltered locations, cobbles and pebbles may also support the biotope. Pools, damp pits and crevices in the rock are occasionally occupied by winkles such as *Littorina saxatilis* and *halacarid mites* may also be present.

Situation
This biotope is usually found at the top of the shore, immediately above a zone of the black lichen *V. maura* (Ver.Ver; Ver.B). Above the band of YG, and occasionally in crevices in the rock alongside the lichens, terrestrial plants such as the thrift *Armeria maritima* and other angiosperms often occur. In sheltered areas the transition from YG to Ver.Ver is often indistinct and a mixed zone of YG and Ver.Ver may occur. In estuaries, this biotope is often restricted to artificial substrata such as sea defences.

LR.LLR.F.Pel
Pelvetia canaliculata on sheltered littoral fringe rock

(of very limited extent within the study area)

Biotope description
Lower littoral fringe bedrock or stable boulders and mixed substrata in sheltered to extremely sheltered conditions characterised by a dense cover of the wrack *Pelvetia canaliculata*. The biotope may be present in localised sheltered patches on moderately exposed shores. *P. canaliculata* overgrows a crust of black lichens *Verrucaria maura* or the non-calcified red algae *Hildenbrandia rubra* on very sheltered shores. Individuals of the wrack *Fucus spiralis* can usually be found among the *P. canaliculata* and/or in lower part of the biotope. This biotope lacks the density of barnacles found amongst the *P. canaliculata* on more exposed

shores. The winkle *Littorina saxatilis* occurs, as do a variety of amphipods. The red alga *Catenella caespitosa* can be present especially in more shaded areas while the green seaweed Enteromorpha spp. can be present in moist areas.

Situation

This biotope is found in the lower littoral fringe on sheltered shores below biotopes dominated by *V. maura* (Ver.Ver) and above biotopes dominated by *F. spiralis* (Fspi). Though not typical, this biotope may occur on moderately exposed shores where local topography provides shelter.

LR.LLR.F.Fspi.X

***Fucus spiralis* on full salinity upper eulittoral mixed substrata**

Biotope description

Moderately exposed to sheltered full salinity upper eulittoral mixed substrata characterised by a band of the wrack *Fucus spiralis*. Occasional clumps of the wrack *Pelvetia canaliculata* can be overgrowing the black lichen *Verrucaria maura* and the olive green lichen *Verrucaria mucosa*. On the more stable boulders underneath the fronds the red crust *Hildenbrandia rubra* can be found along with the barnacle *Semibalanus balanoides* and the limpet *Patella vulgata*. The winkles *Littorina littorea* and *Littorina saxatilis* can be found on and among the boulders and cobbles, while amphipods and the crab *Carcinus maenas* can be present either underneath the boulders or among the brown seaweeds. The green seaweed *Enteromorpha intestinalis* can occur in some abundance especially during the summer.

Situation

This zone usually lies below a zone dominated by the wrack *P. canaliculata* (PelB; Pel). Vertical surfaces in this zone, especially on moderately exposed shores, often lack the fucoids and are characterised by a barnacle-limpet dominated community (Sem).In areas of extreme shelter, such as in Scottish sea lochs, the *P. canaliculata* and *F. spiralis* zones often merge together forming a very narrow band. Fspi.X occur above the wracks *Ascophyllum nodosum* (Asc.X) and/or *Fucus vesiculosus* (Fves.X) zones. These two fucoids may also occur among the *F. spiralis*, although *F. spiralis* always dominates. Fspi.X can also be found above a barnacle *S. balanoides* and winkle *L. littorea* dominated biotope (BLitX).

LR.LLR.F.Fves.X

Fucus vesiculosus on mid eulittoral mixed substrata

Biotope description

Sheltered and very sheltered mid eulittoral pebbles and cobbles lying on sediment in fully marine conditions typically characterised by the wrack *Fucus vesiculosus*. The wrack *Ascophyllum nodosum* can occasionally be found on larger boulders while the barnacle *Semibalanus balanoides* and the limpet *Patella vulgata* also can be present on the cobbles with the whelk *Nucella lapillus* preying on the barnacles and on the mussel *Mytilus edulis*. Winkles, particularly *Littorina littorea* and *Littorina obtusata*, commonly graze the biofilm on

the seaweeds, while *Littorina saxatilis* can be found in crevices. Ephemeral seaweeds such as *Enteromorpha intestinalis* may be present in this biotope. The sediment between patches of hard substrata often contains the polychaete *Arenicola marina* or the polychaete *Lanice conchilega*, while a variety of gastropods and the crab *Carcinus maenas* occur on and under cobbles.

Situation

Fves.X can be found below the biotope dominated by the wrack Fucus spiralis (Fspi.X) or a community dominated by S. balanoides, P. vulgata and L. littorea (BLitX). It is found above a community dominated by M. edulis beds (Myt.Myt) or the wrack Fucus serratus (Fserr.X).

Species	S 2	S 7-8 gravel	S 7-8 boulder field	S 8-9 boulder field/gravel/sand lower	S 8-9 Rock ledge	S 8-9 boulder field/gravel/sand upper	S 17	S 19	250m SE	250m NW	S 20-21	S 22-23 Lower	S 22-23 Upper	S 31-32	S 32-33 Bryozoan	S 32-33 Kelp	S 41
Seaweeds																	
Delesseria sanguinea	R		F	F		F	R					C	F		F	F	
Phycodrys rubens			O														
Calliblepharis ciliata			O			R							O			O	
Cryptopleura ramosa			O	R													
Heterosiphonia plumosa	R		O	O		O			R	R		R			R		
Callophyllis laciniata			O	O		R					R				R		
Laminaria hyperborea			O	R		O							F			F	
Palmaria palmata						R										R	
Mastocarpus stellatus						R										R	
Lithophyllum incrustans	A			F	C	F						R	O			C	
Laminaria saccharina																R	
Desmarestia aculeata	R		O												O	F	
Ahnfeltia plicata																	F
Odonthalia dentata						R						R			R	O	
Ceramium sp.				R		R											
Dilsea carnosa														R			
Alaria esculenta			R										O				
Sponges																	
Halichondria panicea			R		R			R		R		R		R			
Myxilla			R		R						R						
Haliclona viscosa			R			R											

Species	S 2	S 7-8 gravel	S 7-8 boulder field	S 8-9 boulder field/gravel/sand lower	S 8-9 Rock ledge	S 8-9 boulder field/gravel/sand upper	S 17	S 19	250m SE	250m NW	S 20-21	S 22-23 Lower	S 22-23 Upper	S 31-32	S 32-33 Bryozoan	S 32-33 Kelp	S 41
Cliona celata		R															R
Polymastia penicillus															R		
Suberites ficus											R	R		R	R		R
Stelligera stuposa							R										
Cnidarians																	
Anemone								R									
Actinothoe sphyrodeta	R							R						R			
Thuiaria thuja	O												R				
Alcyonium digitatum	R	R						R									
Sertularella gayi		R				R	R			R							
Abietinaria abietina		R					R			R							
Nemertesia antennina		R	R			R	R	O		R		R			R		
Caryophyllia smithii			R	R								F	O		O	F	
Hydrallmania falcata	F					R			R								
Nemertesia ramosa							R										
Sagartiogeton laceratus																	C
Urticina felina	R										R						
Sertularia polyzonias								O									
Polychaetes																	
Chaetopterus variopedatus	O	R		R			R	O		R	R			R		R	
Pomatoceros sp.	C	O	O	O	O	O	R	F	R	R	O		R			F	
Hydroides norvegica		R	O			R							R				
Bispira volutacornis		R	R				R	R		R				R	R		

Species	S 2	S 7-8 gravel	S 7-8 boulder field	S 8-9 boulder field/gravel/sand lower	S 8-9 Rock ledge	S 8-9 boulder field/gravel/sand upper	S 17	S 19	250m SE	250m NW	S 20-21	S 22-23 Lower	S 22-23 Upper	S 31-32	S 32-33 Bryozoan	S 32-33 Kelp	S 41
Crustaceans																	
Cancer pagurus	R							R			R	R					
Balanus spp.	F					O	R	C	R	R	F	R		O	O	O	
Liocarcinus sp.	R										R						R
Necora puber	R		O												R	R	
Galathea squamifera															R		
Macropodia sp.							R	R									R
Carcinus maenas																	R
Eupagurus bernhardus				R			R							R			R
Balanus crenatus					R					R							
Xantho incisus														R			
Homarus gammarus												R					
Palaemon sp.						R			R								
Crangon sp.										R							
Ebalia tuberosa														R			
Munida rugosa	O																
Liocarcinus depurator						R			R								
Mollusca																	
Pecten maximus	O	R		R		R		R	R	R	R			R	R	R	
Eledone cirrhosa	R																
Anomia ephippium			O			R											
Calliostoma zizyphinum						R				R							
Ostrea edulis																	R
Sepiola atlantica								R									

Species	S 2	S 7-8 gravel	S 7-8 boulder field	S 8-9 boulder field/gravel/sand lower	S 8-9 Rock ledge	S 8-9 boulder field/gravel/sand upper	S 17	S 19	250m SE	250m NW	S 20-21	S 22-23 Lower	S 22-23 Upper	S 31-32	S 32-33 Bryozoan	S 32-33 Kelp	S 41
Glycymeris (exposed)								R									
Bryozoans																	
Flustra foliacea	F	R	O	O		O	R	O	R	O	F	O		R	F		
Electra pilosa	R		O			R		R	R		R	R	O				
Crisia	C			F	O	F	R	F	R	O	F		F	O	O	F	
Cellepora pumicosa	A			R		R				R					R		
Parasmittina trispinosa	C	R	O		F	R				R	R	R	O		R		
Membranoptera membranacea			O										O			O	
Cellaria sinuosa	F	O		R		R		F	R	O	R			R			
Bugula plumosa			R							R							
Schizomavella sp.			R														
Eucratea loricata	O	F	O	R			R	F	O	R	R			O	O		
Alcyonidium diaphanum		R	R				R	R	F	R	R			O	R		
Securiflustra securifrons							R			R	O			R	O		
Celleporina sp.			O		F			R									
Echinoderms																	
Echinus esculentus	O		O	R	R	O		R		R	R	R	R		R		
Marthasterias glacialis	R					R				R	R						
Henricia oculata	R		R					R			R					R	
Ophiocomina nigra	C																
Ophiothrix fragilis	F			R				R		R						R	
Crossaster papposus	R	R	R	R			R	R	R					R	R	R	
Asterina gibbosa	R							R									

Species	S 2	S 7-8 gravel	S 7-8 boulder field	S 8-9 boulder field/gravel/sand lower	S 8-9 Rock ledge	S 8-9 boulder field/gravel/sand upper	S 17	S 19	250m SE	250m NW	S 20-21	S 22-23 Lower	S 22-23 Upper	S 31-32	S 32-33 Bryozoan	S 32-33 Kelp	S 41
Asterias rubens	R	R				R	R	R	R		O	R		R		R	
Leptasterias muelleri						R										R	
Ophiura sp.		O	R			R	R	R	R		C			O		R	
Stichastrella rosea		R	O					R		R	R						
Luidia ciliaris									R								
Solaster endeca???																	
Antedon bifida	R																
Anseropoda placenta								R									
Tunicates																	
Colonial encrusting rock												R					
Botryllus schlosseri																R	
Synoicum pulmonaria				O		R											
Dendrodoa grossularia					R		R										
Ascidia conchilega								R		R							
Fish																	
Labrus bergylta	R																
WRASSE	R																
Callionymus lyra		R					R	R						R			
Pomatoschistus							R										O
Scyliorhinus canicula	O			R									R				
Scyliorhinus (egg case)			R														
Trisopterus minutus										R					R	R	
Pomatoschistus minutus		R		R		R				R							

Species	S 2	S 7-8 gravel	S 7-8 boulder field	S 8-9 boulder field/gravel/sand lower	S 8-9 Rock ledge	S 8-9 boulder field/gravel/sand upper	S 17	S 19	250m SE	250m NW	S 20-21	S 22-23 Lower	S 22-23 Upper	S 31-32	S 32-33 Bryozoan	S 32-33 Kelp	S 41
Labrus mixtus (female)						R											
Agonus cataphractus											R			R			

APPENDIX 6.3 – DROP-DOWN VIDEO DESCRIPTIONS

Islandmagee Dropdown Video Clips – (13-10-2009 & 14-10-2009). Colour codes signify broad station groups (see text). Multiples e.g. 7a and 7b refers to replicate drops at the same point.

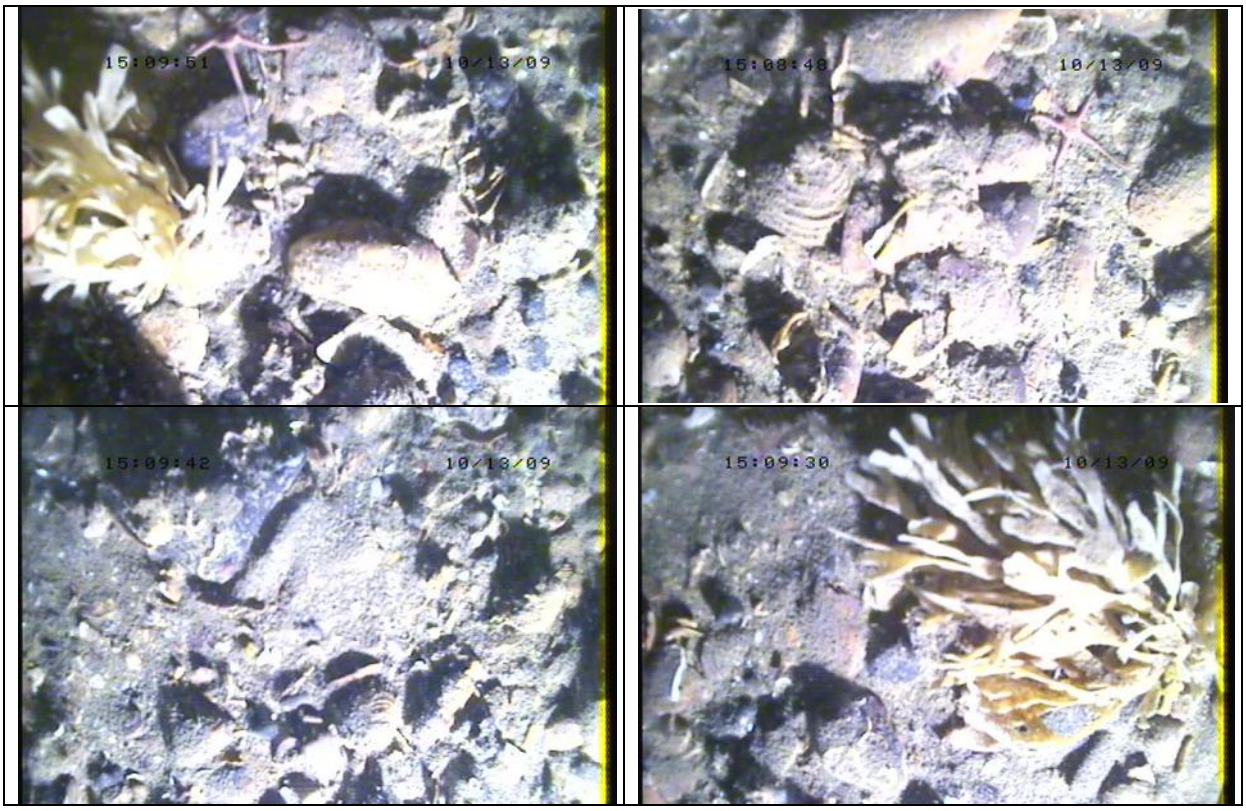
Station Code	Depth (m)	Description
1	23	Mainly, sandy gravel with large pebbles heavily encrusted with bryozoans and witch scattered patches of calcareous encrusting reds. Noted: (starfish), *Asterias*, *Solaster* and other indet, (sea urchins) *Echinus*, scattered solitary tubes of sedentary polychaetes.
2	17.5	Gravely sand with frequent large pebbles, some with encrusting fauna. Large concentrations of brittle stars (two species) heavy cover of bryozoans (and hydroids?) also and scattered red algae. Scattered solitary tubes sedentary polychaetes. Very similar to Site 4
4	25.6	Sandy gravel with shell and scattered large pebbles. Large concentration of brittle stars (*Ophiocomina nigra* and *Ophiothrix fragilis*), – diverse bryozoa; scattered solitary tubes of sedentary polychaetes.
16	31	Gravel, shell and pebble with an overlay of fine sand or silt – occasional bryozoans and brittle stars
17	31	Silted shell gravel with *Alcyonidium* and very scattered occasional *Flustra*, very occasional reds brittle stars. Same as 16 but with heavier silt or fine sand.
10	30.7	Shell gravel with silt/fine sand overlay. Scattered brittle stars and *Flustra*. *Pomatoceros* visible on shells. Same as 16
19	27	Silted sand/stony gravel with occasional to frequent *Flustra* in higher or lower density patches and several other bryozoans. Fish, urchin (*Echinus* 1) and shrimp also visible. Scattered cobbles with encrusting fauna (incl. *Balanus crenatus*). Similar to 10, 16 and 17 but with finer gravel / sand, heavily silted. Greater diversity of bryozoans/hydroids
27	25	Sandy gravel with several bryozoa species and fewer scattered brittle stars. Similar to 16, 17 and 10 but with finer gravel
31	26	Gravel and sandy gravel with shell. Scattered red algae, and frequent *Alcyonidium.* Similar to 27 but with a little more red algae and a little less silt/fine sand.
34	20.2	Sandy gravel, with frequent brittle stars, a shoal of small fish, and very scattered bryozoans (incl. *Alcyonidium, Flustra*). Noted: starfish (*Asterias*) and occasional encrusting calcareous reds and *Balanus crenatus* on larger pebbles. Similar to 27 and 31 but more sand, possibly fewer bryozoans
21	19	Gravely/sand – sandy/gravel – Very frequent brittle stars, occasional fish and starfish, scattered bryozoans, very occasional reds; occasional small cobbles / large pebble with encrusting *Balanus* and (keel worm) *Pomatoceros*; similar to 34
28	23.3	Sandy gravel. Fairly uniform, with very occasional brittle stars and frequent *Alcyonidium*. Noted: starfish (*Crassoster* and *Asterias*), *Balanus crenatus* and *Pomatoceros* on larger pebbles.

13	22	Sandy gravel. Scattered brittle stars and bryozoans (*Alcyonidium*). Balanus crenatus and *Pomatoceros* on large pebbles. Noted: starfish (*Crassoster*), crab (*Liocarcinus*?)
7a	23	Heavily silted gravel (sandy gravel) with bryozoans and brittle stars, scattered red algae, shrimp.
7b	23	As above & small flatfish
7c	23	Sandy gravel with large pebbles. Scattered small cobble. *B. crenatus* scars and occasional encrusting tube worms and encrusting calcareous red algae on larger pebbles. Noted: starfish (*Crassoster*)
3	12	Cobbles / boulders with fine red algae. Urchins (*Echinus*), occasional cup-corals or anemones on boulders. Unidentified small fish (occasional).
8a	13.7	Sand with some gravel and scattered large pebble. Red algae very common with occasional to frequent kelp (*Laminaria hyperborea*).
8c	13.7	Same generally as 8a with more frequent bryozoans including one resembling fine brown seaweed (*Vesicularia* sp.?). Many small encrusting organisms [thought to be small erect bryozoa, mainly] growing on the fronds of the red algae (*Delesseria sanguinea*)
14	11.7	Wide range of substrates: gravely sand, pebble cobble, boulder and broken rock. Red algae dominant (especially, *D. sanguinea*), often with encrusting organisms on them; scattered kelp (*L. hyperborea*). Fine layer of silt/sand on boulders, patchy calcareous red algae occasionally visible on boulders
22	14.6	Boulders. Urchins (*Echinus*), starfish (*Asterias*), red algae, patches of calcareous encrusting reds, anemones / cup corals (frequent). Very occasional kelp (*L. hyperborea*). Scattered sand patches (occasionally with gravel) between boulders, with burrowing anemones in finer sand. Small, yellow/orange sponge patches on some boulders
29	17	Rock overlain with fine sand and interspersed with sand patches – occasional boulders. Frequent scattered clumps of red algae and bryozoans; small anemones / cup corals on boulders, also encrusting patches of sponge. Surface of boulders with silted low epilithic growth like 'fuzz'. Noted: velvet swimming crab (*Necora puber*) in boulders and several sea urchins (*Echinus*), and small fish
32	17	Gravely sand and large expanses of sand (with burrows) interrupted by scattered clumps of pebble and occasional cobble or broken shallow bedrock. *Flustra* and foliose red alga on boulder / bedrock. Noted: (a burrowing anemone), starfish (*Solaster*), occasional kelp (*S. latissima*)
35	14.4	Very mixed substrate. Extensive areas of sand and gravely sand interspersed with scattered and more substantial areas of cobble and boulder. Red algae and bryozoans dominate on coarser gravel and large pebble clumps, while scattered anemones / cup corals and patches of sponge are visible on boulders. Noted: goldsinny wrasse, unidentified pink-red starfish (*Henricia*?).
38	8.5	Scattered to frequent kelp (*L. hyperborea*) on gravely sand (but possibly overlying harder substrate) – much foliose reds especially around base of kelp; small patches of bryozoa (*Flustra*-like). Noted: scattered urchins (*Echinus*) at bases of kelp.

5	13	Coarse / medium sand
37	14	Mainly fine – medium sand with very scattered patches of coarser substrate, which are colonised by red algae with epizoically growing colonial sea squirts. Note: *Echinus* on prostrate kelp lamina.
39	4.5	Medium to coarse sand – rippled in places
6	6	Frequent *L. hypoborea* on sand-covered rock, the latter also with heavy cover of red algae, which had much epiphytic growth (mainly bryozoans?) on both reds and kelp. Occasional, large patches of gravely sand.
9	6	Loose – scattered kelp (*L. hyperborea*) and red algae (*D. sanguinea*, *Odonthalia*, *Dilsea carnosa*), with occasional *Desmarestia* aculeate, on gravel / pebble and scattered clumps of cobble
15 a	8.5	Kelp and red algae on rock and or large boulders with patches of pebble and a dusting of sand occasionally interspersed (in small gullies between rock outcrops?).
15	8.5	Scattered kelp (*L. hyperborea*) and abundant foliose red algae (incl. *D. sanguinea* and *Odonthalia*); embedded boulders with patches of pebble and a dusting of sand occasionally interspersed (in small gullies between rock outcrops?). More or less the same as 15 (a). Large starfish (*Marthasterias glacialis*), also patches of yellow sponge – possibly *Cliona*); unidentified fish. Some *Delesseri,* quite tattered in places.
23	7.5	Large boulders with large pebble patches (some sand), scattered kelp (*L. hyperborea*) with foliose reds on kelp stipes. Several urchins (*Echinus*). More or less the same as 15 and 15a but with larger inter-rock patches of gravel-pebble-sand
30	6.7	Scattered to very frequent kelp (*L. hyperborea*) with much foliose reds over boulders or rock (*D. sanguinea* and *Odonthalia*) and on kelp stipes. Boulders and rock with coating of sand.
33	7.3	Kelp: loose to moderate cover. Mainly *L. hyperborea* with dense foliose reds on stipes. *Saccharina latissima* and *Desmarestia aculeata* also present. Substrate of pebble with sand. Mix of Stations 23 and 30. In terms of substrate much more sand in the gravel in places
36	7.7	Foliose reds and scattered kelp mainly over boulder and rock. Patches of pebble, some with encrusting tube worms interspersed. Calcareous encrusting red algal patches on boulders. Note small anemones/cup-corals on boulder/rock.
24	**3.6**	Kelp forest – dense - with *L. hyperborea* dominant but frequent *Saccorhiza polyschides*, occasional *Laminaria saccharina* now (*Saccharina latissima*) and scattered *D. aculeata,* also present. Folisose reds very common. Mixed cobble substrate
40	6.7	Extensive soft sediment (muddy sand-sandy mud with a fine shell fraction). Burrowing anemones very common, also many small burrows. Scattered loose clumps of red algae, scattered *Ulva* and *S. latissima.* Several unidentified crab (*Carcinus* / *Liocarcinus*)
41 a	4.1	Substrate as in 40 but with much more extensive patches of red, green and brown seaweed. Greens are mainly sea lettuce (*Ulva*), while browns are dominated by the kelp (*S. latissima*). Several crabs visible. Burrowing

		anemones also frequent in places

APPENDIX 6.4 VIDEO FRAME GRABS



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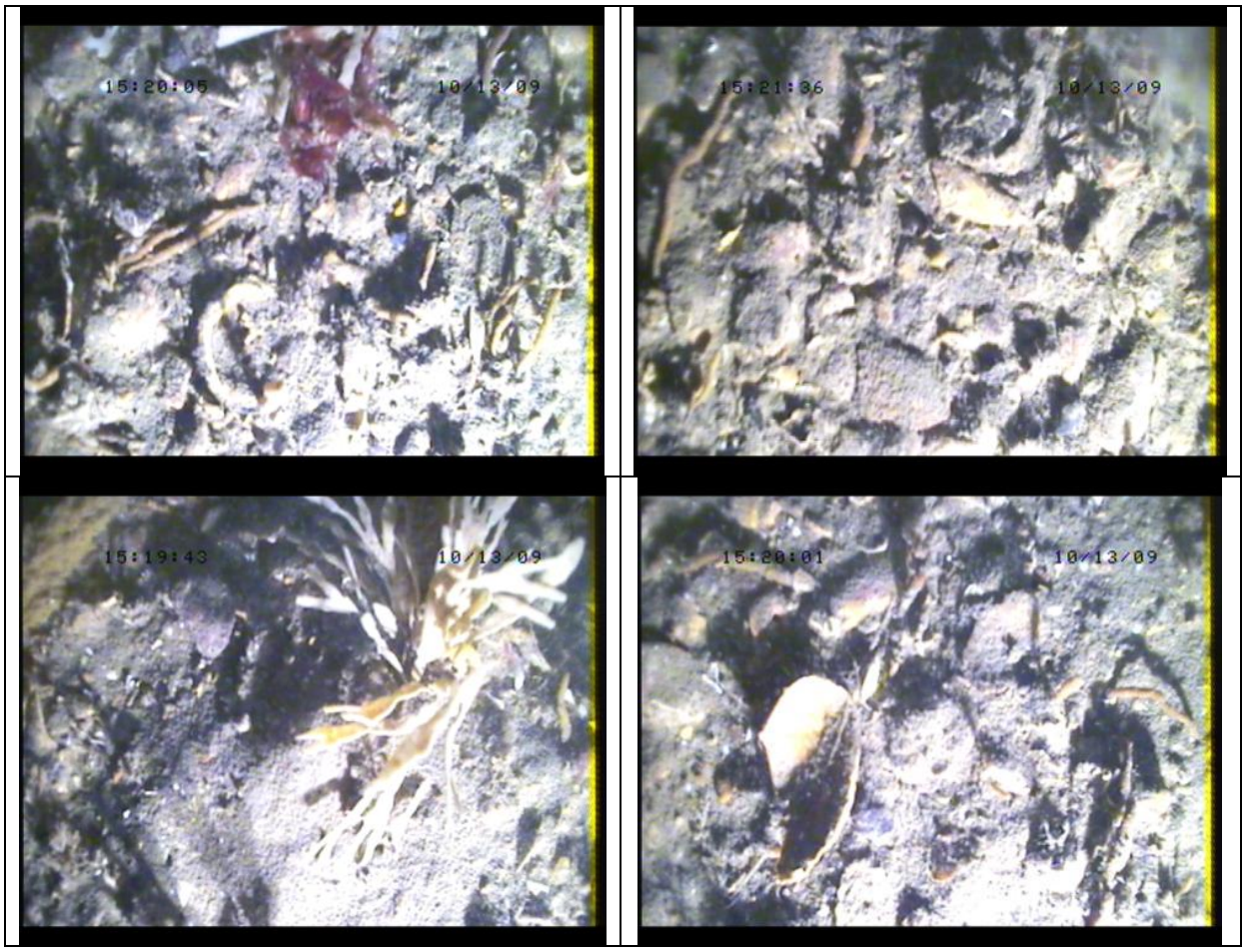

Site 17


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10/13/09
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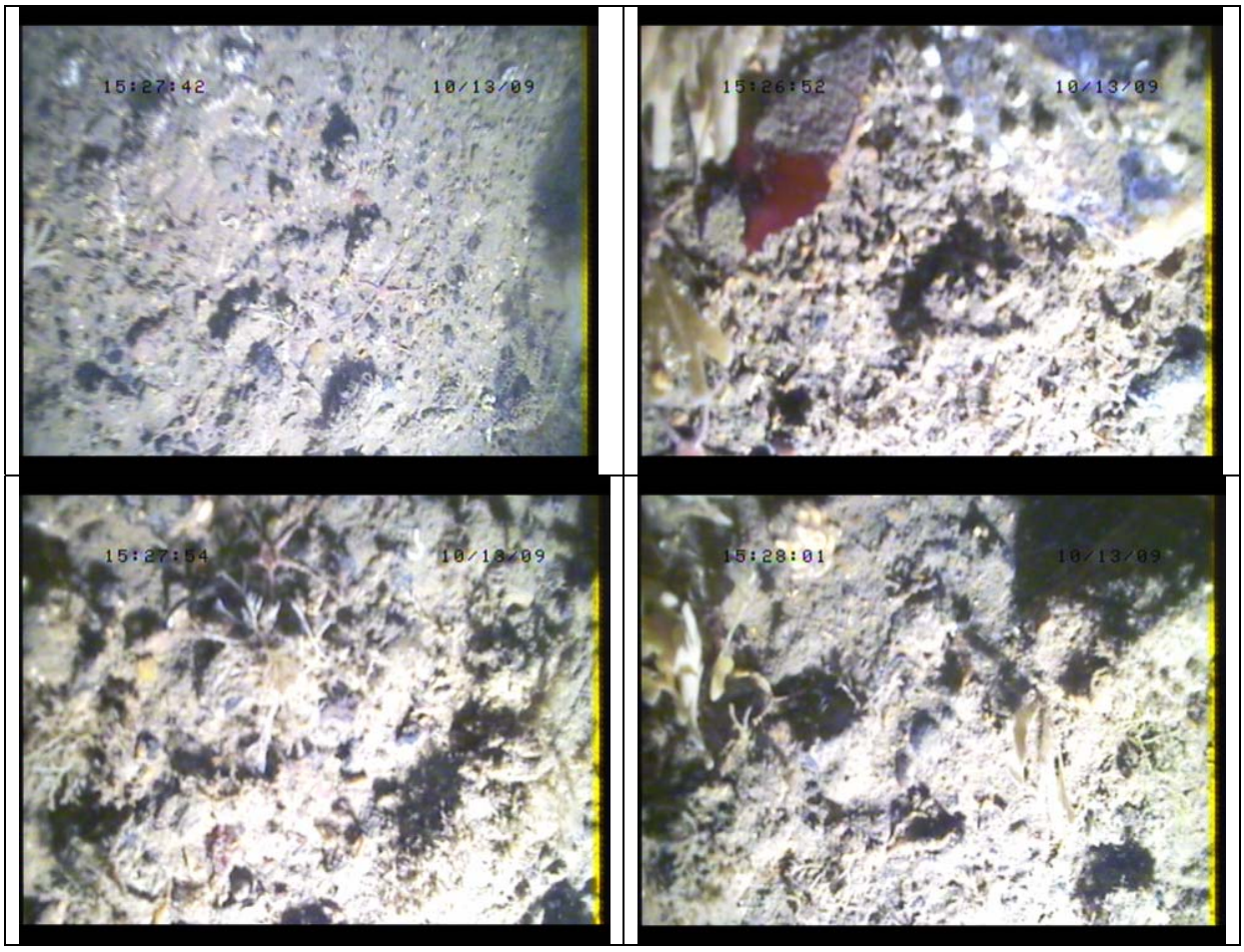
10/13/09
15:51:08
10/13/09

Site 10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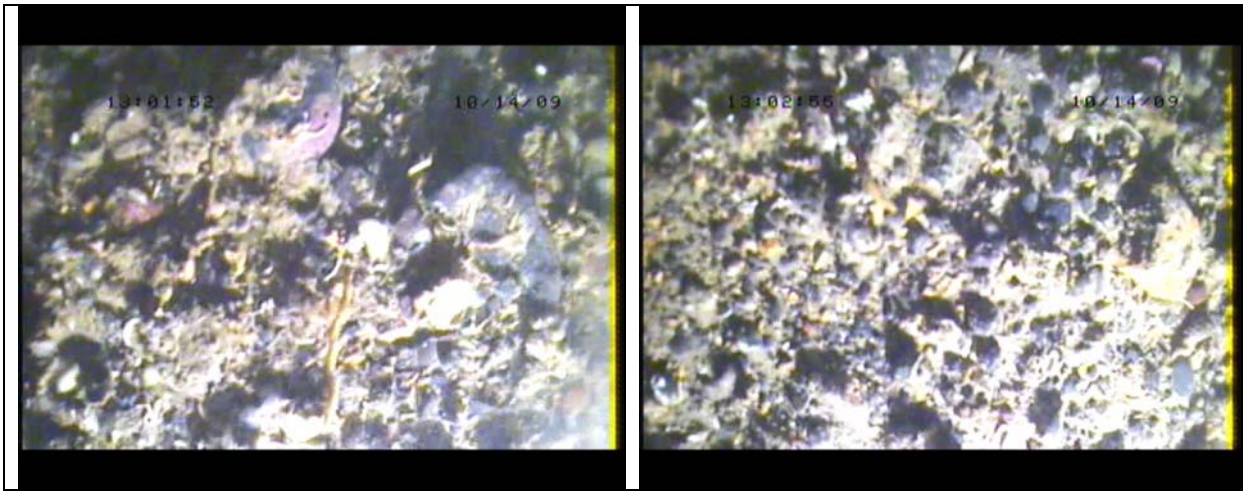
10/13/09

Site 19

Site 7



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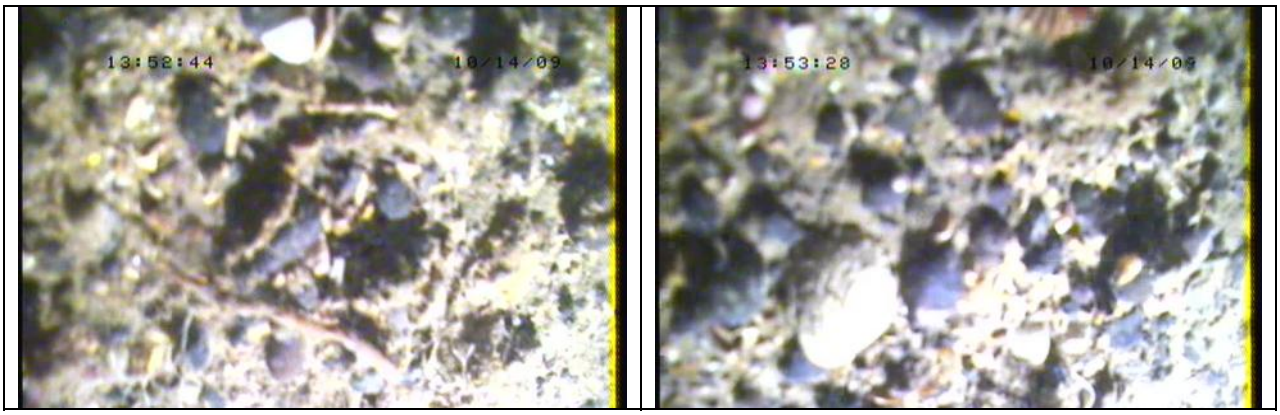

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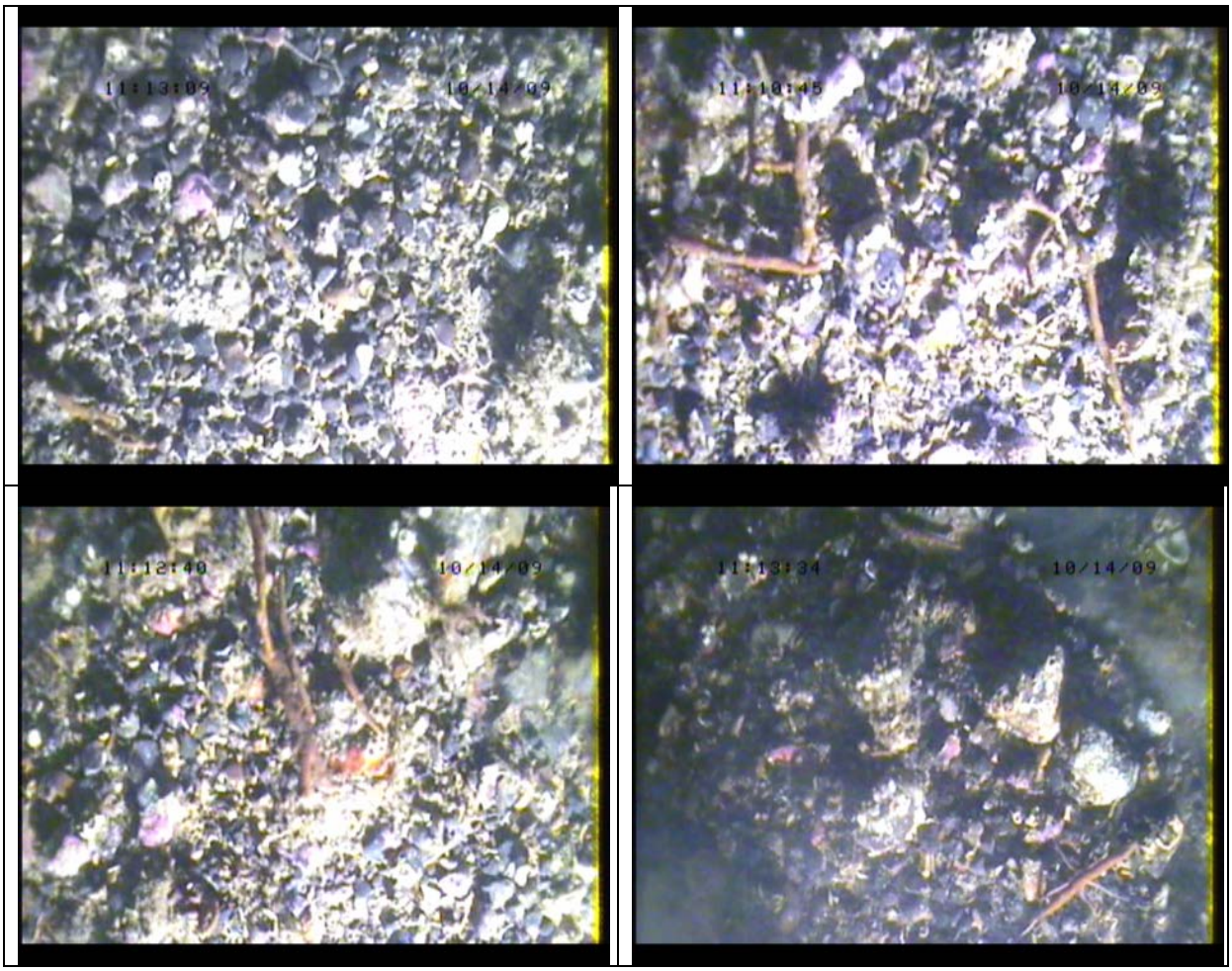

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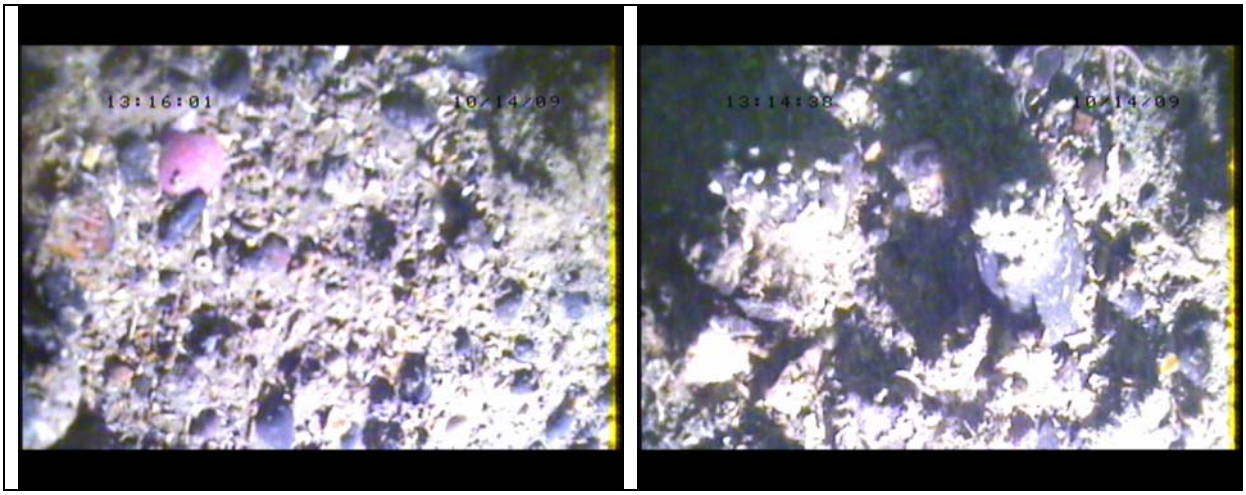

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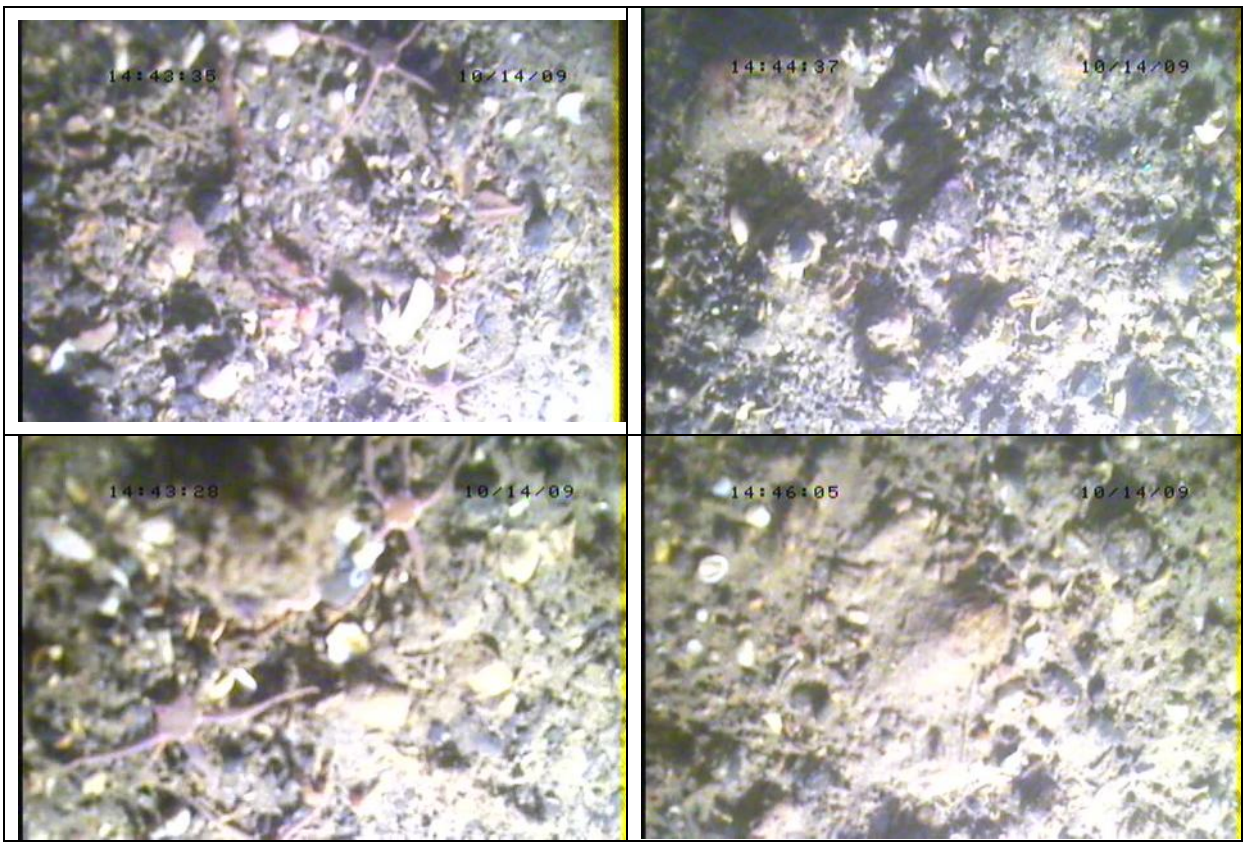

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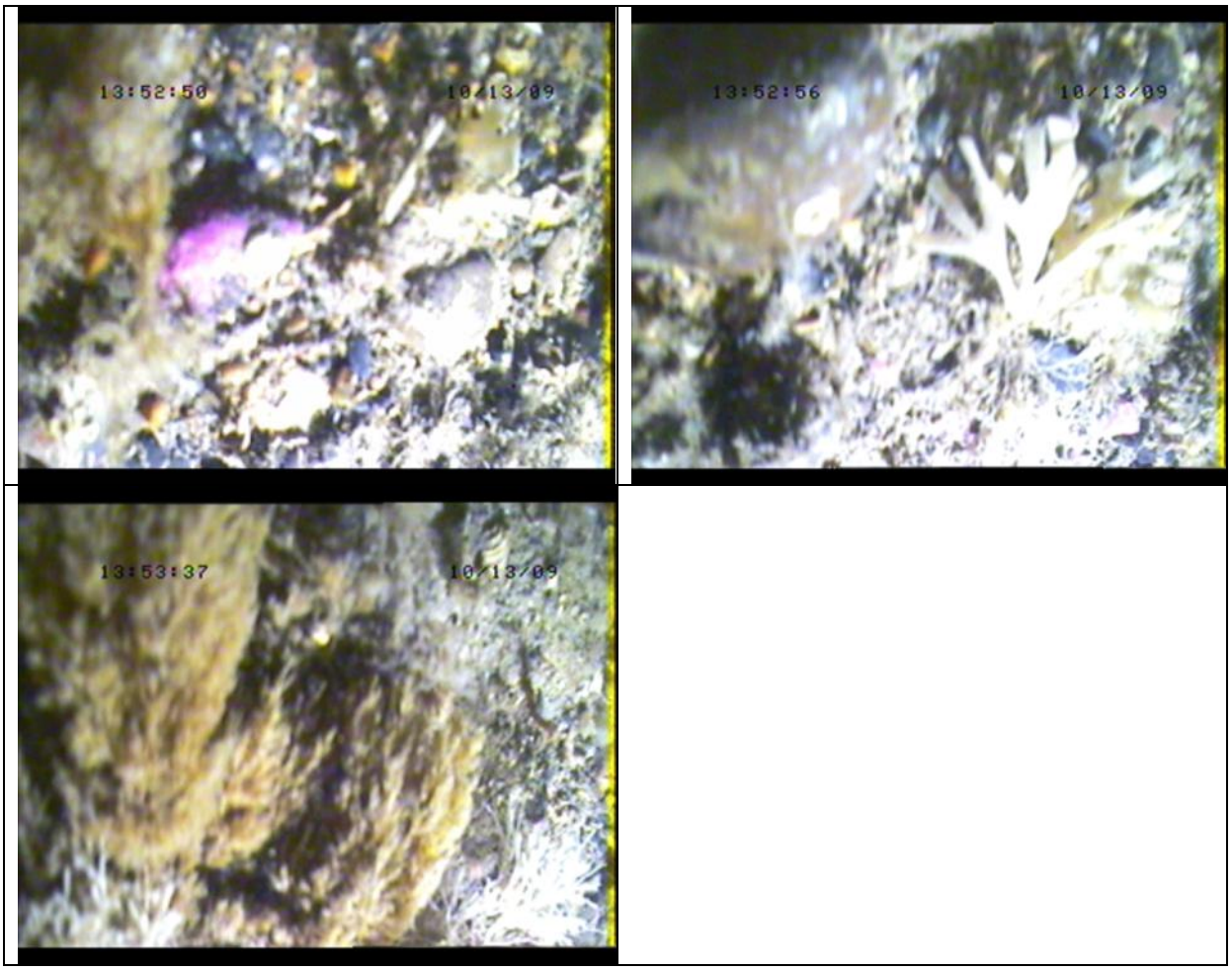

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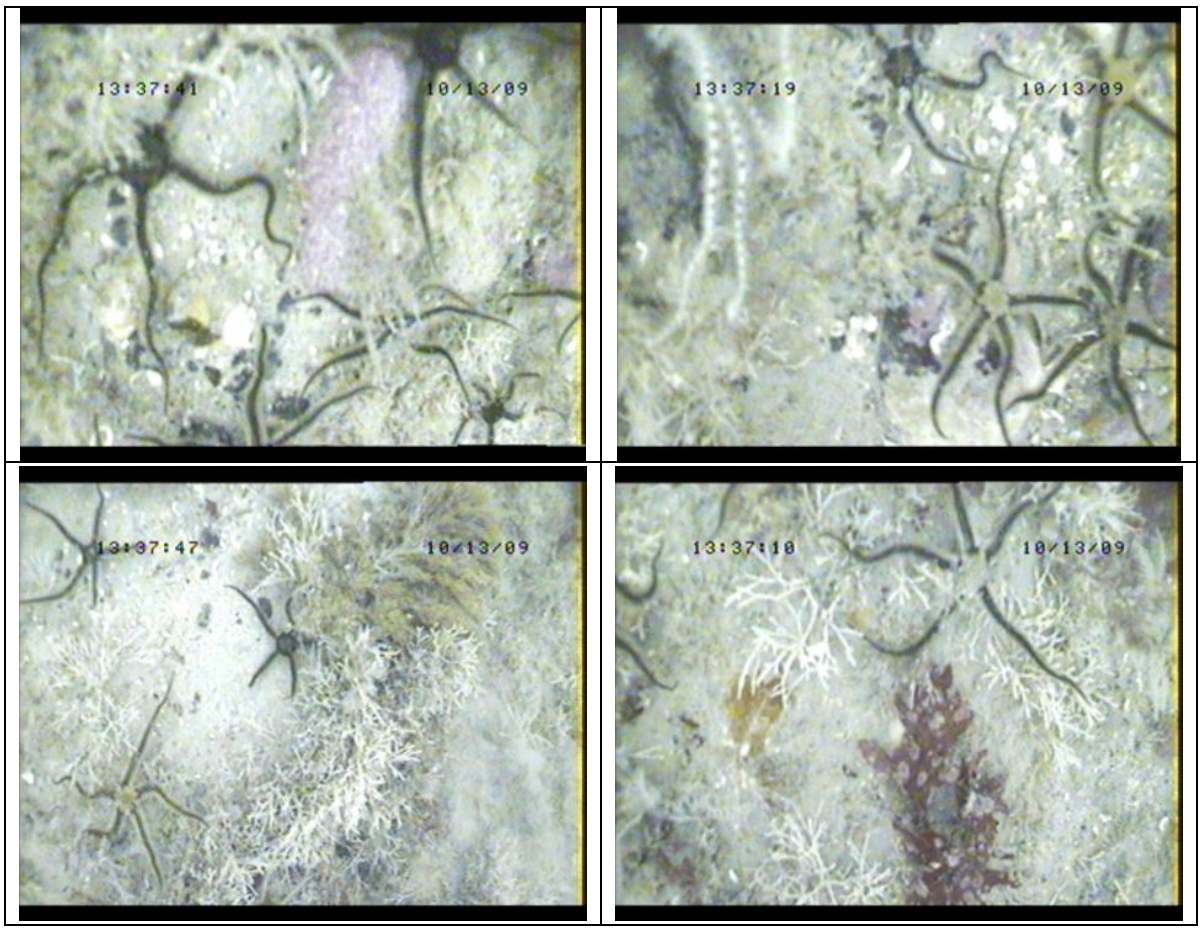
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10/13/09

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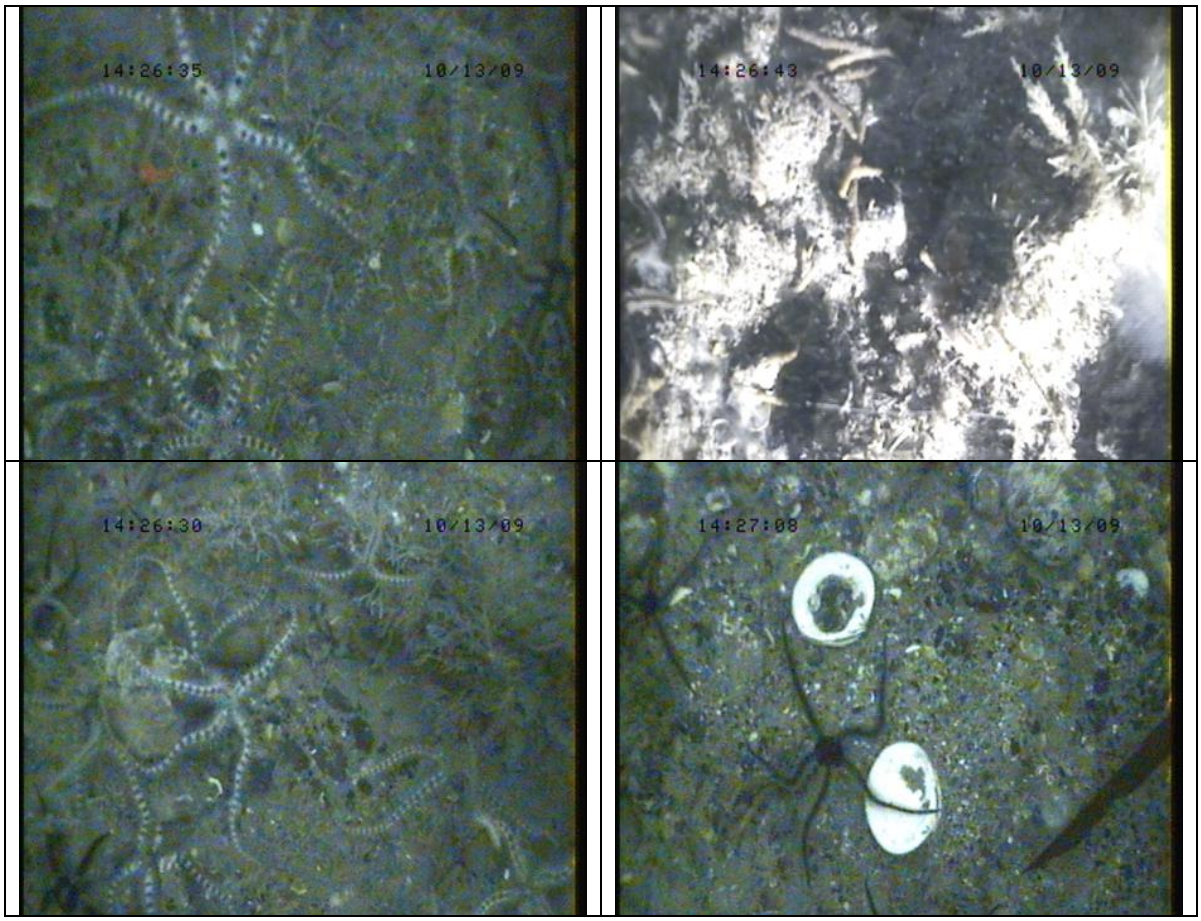
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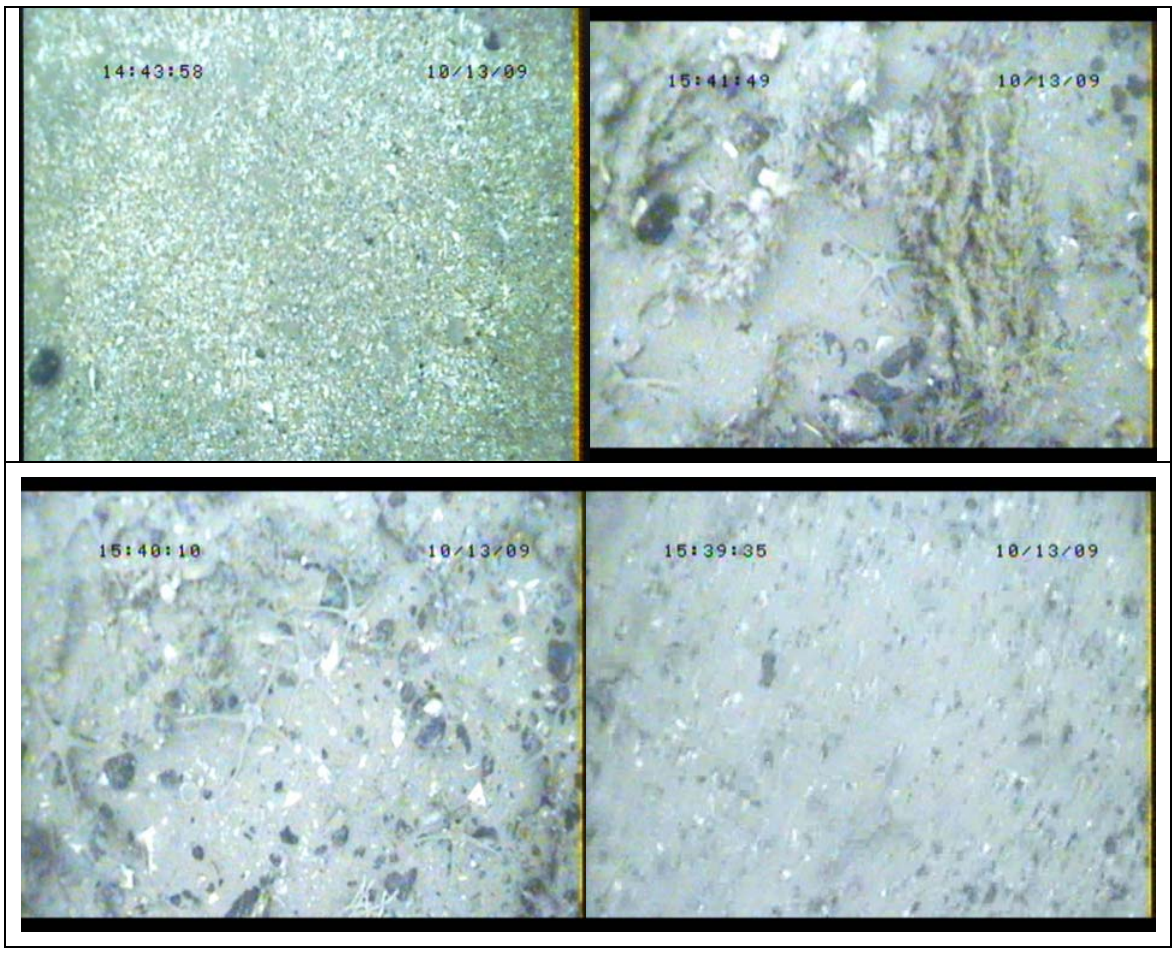
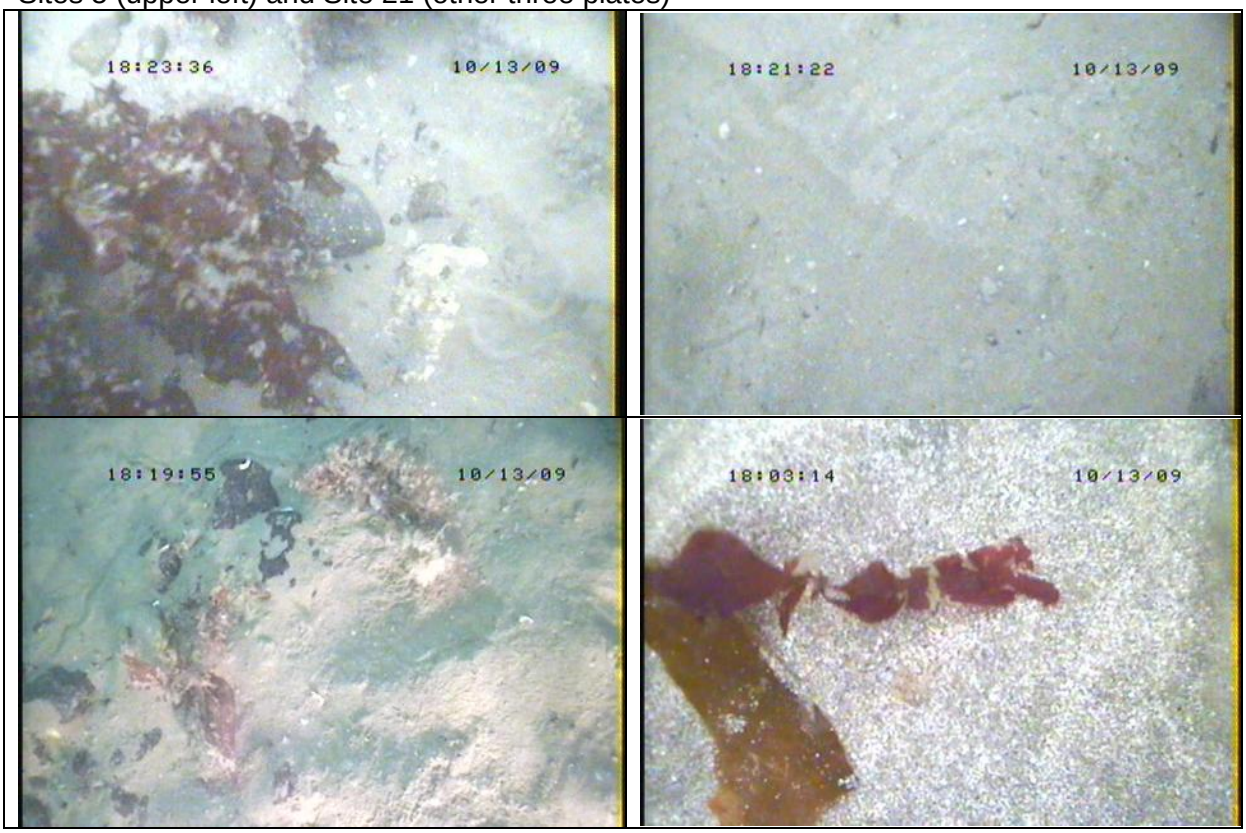
10/13/09

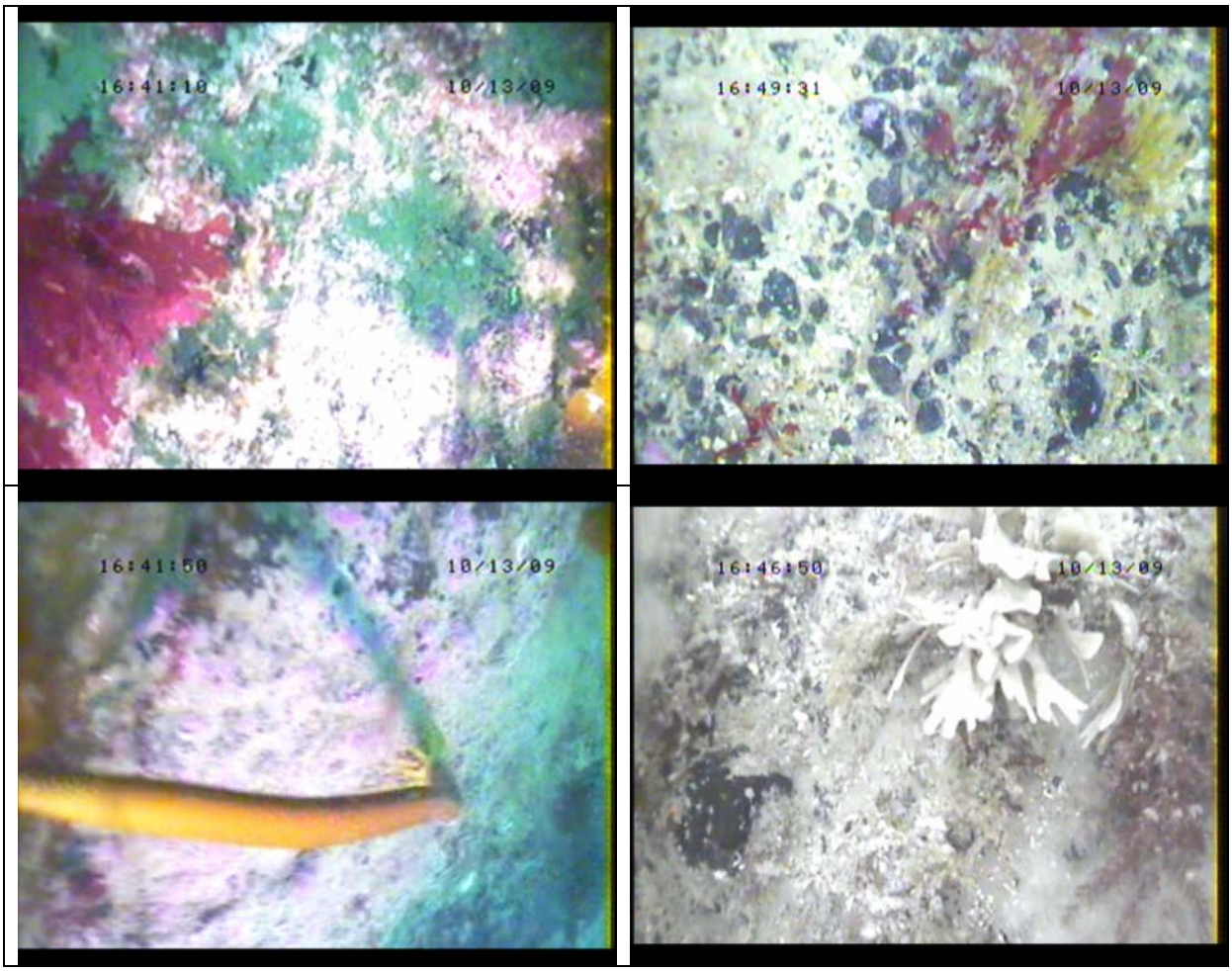
Site 4



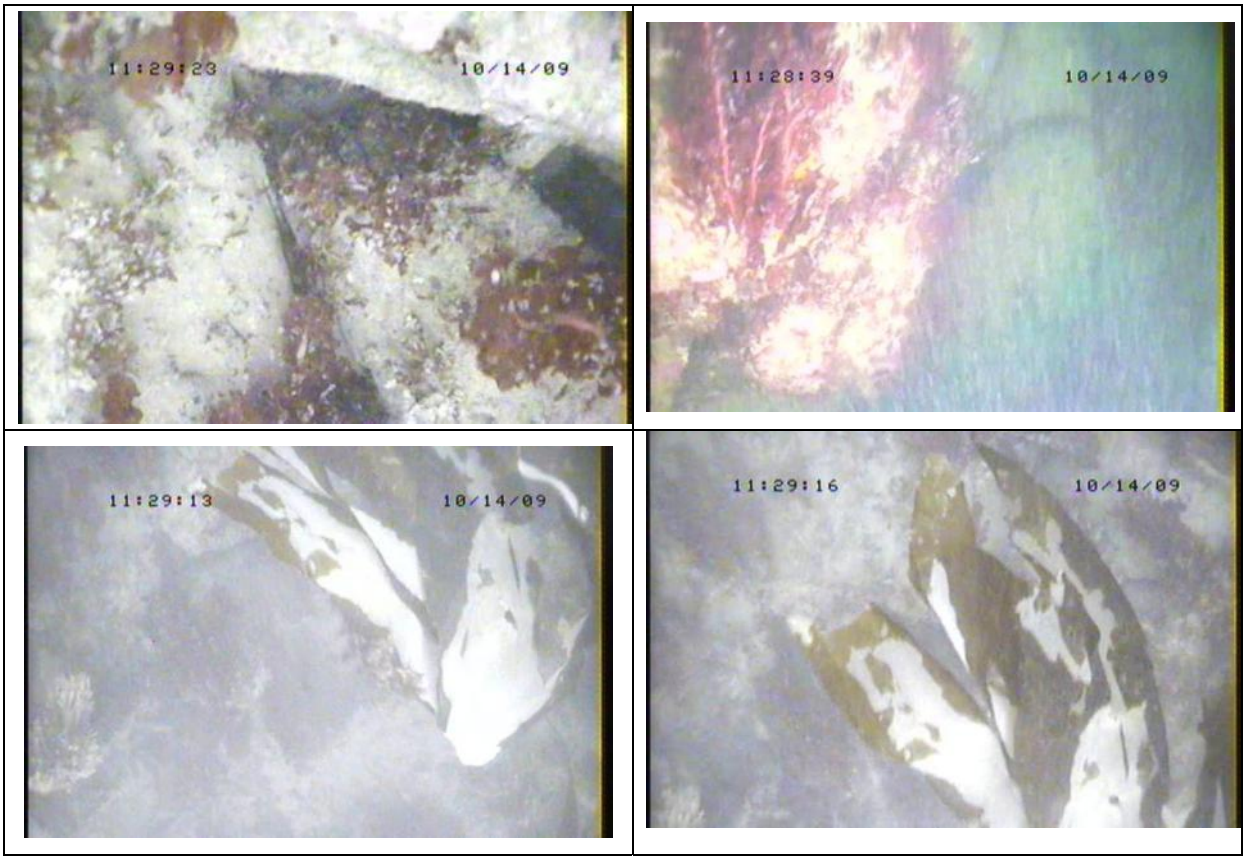
Sites 5 (upper left) and Site 21 (other three plates)



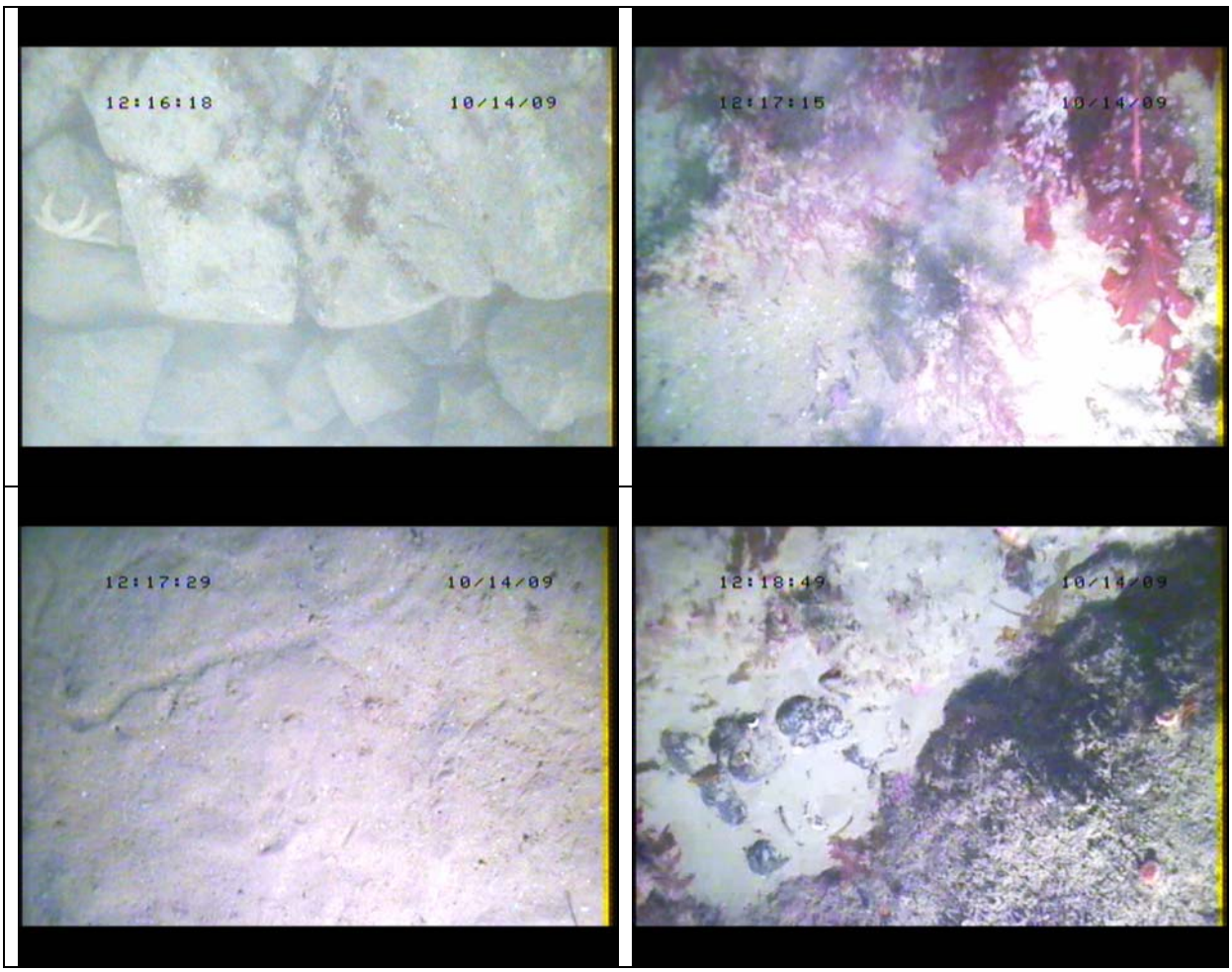
Site 37 (top two and bottom right) Site 39 (bottom right)



Site 8



Site 14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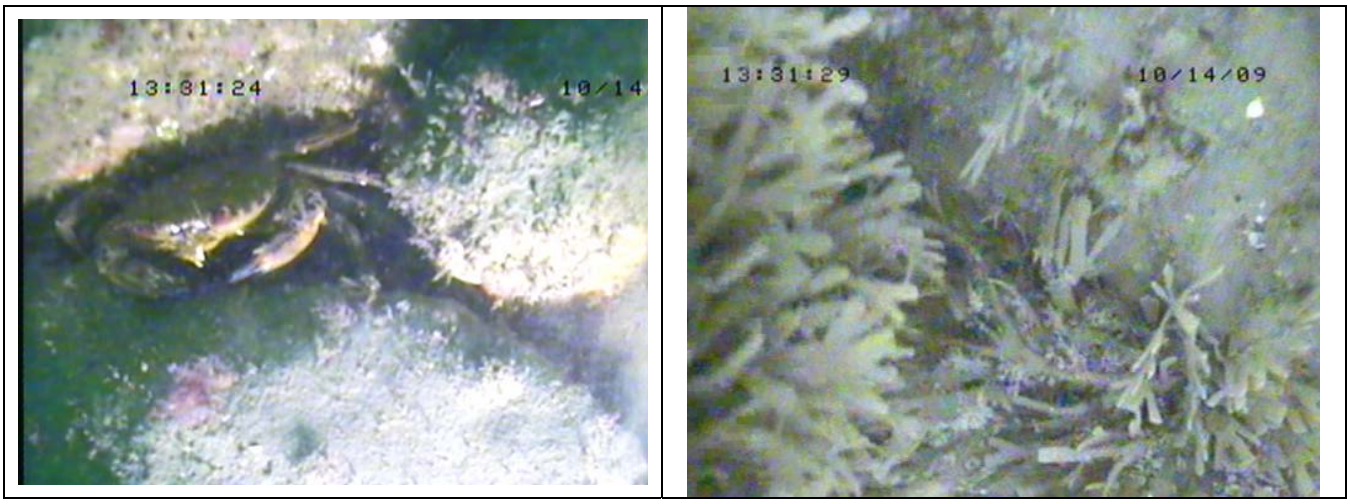
10/14/09

Site 22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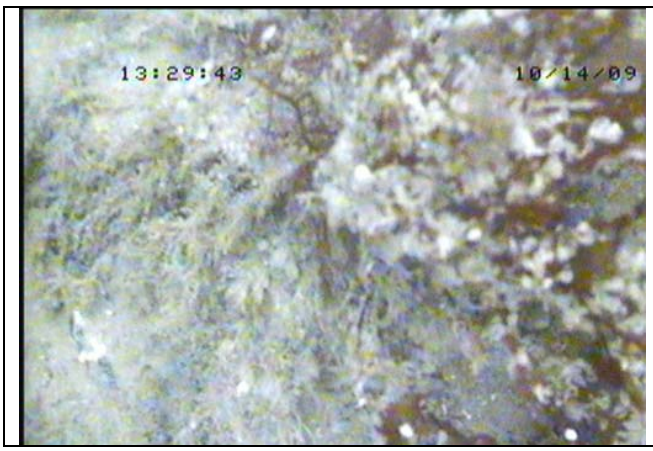
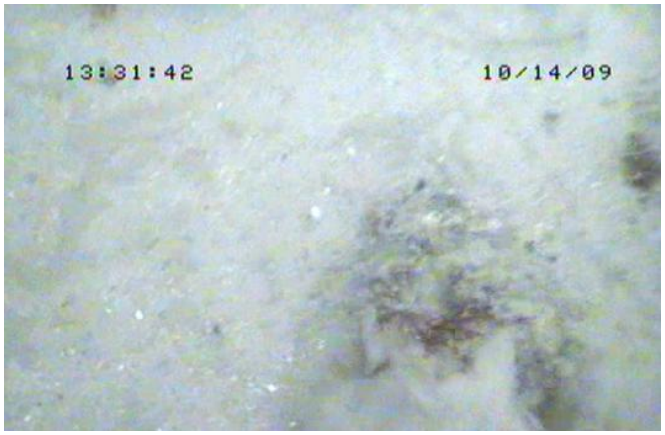
10/14/09

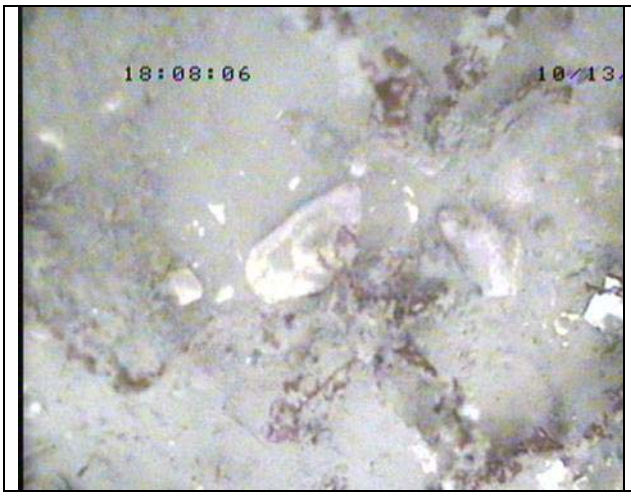


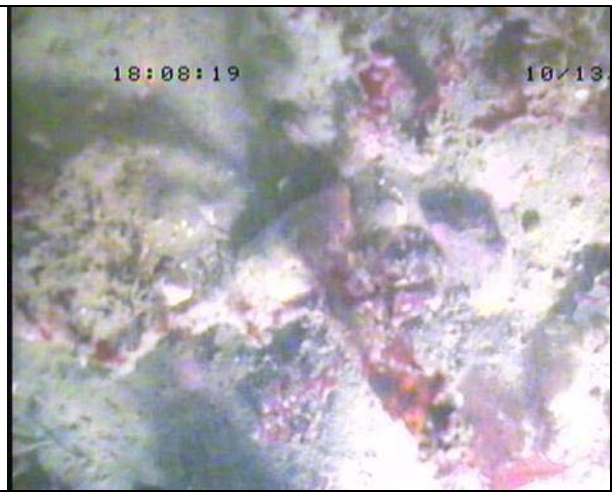


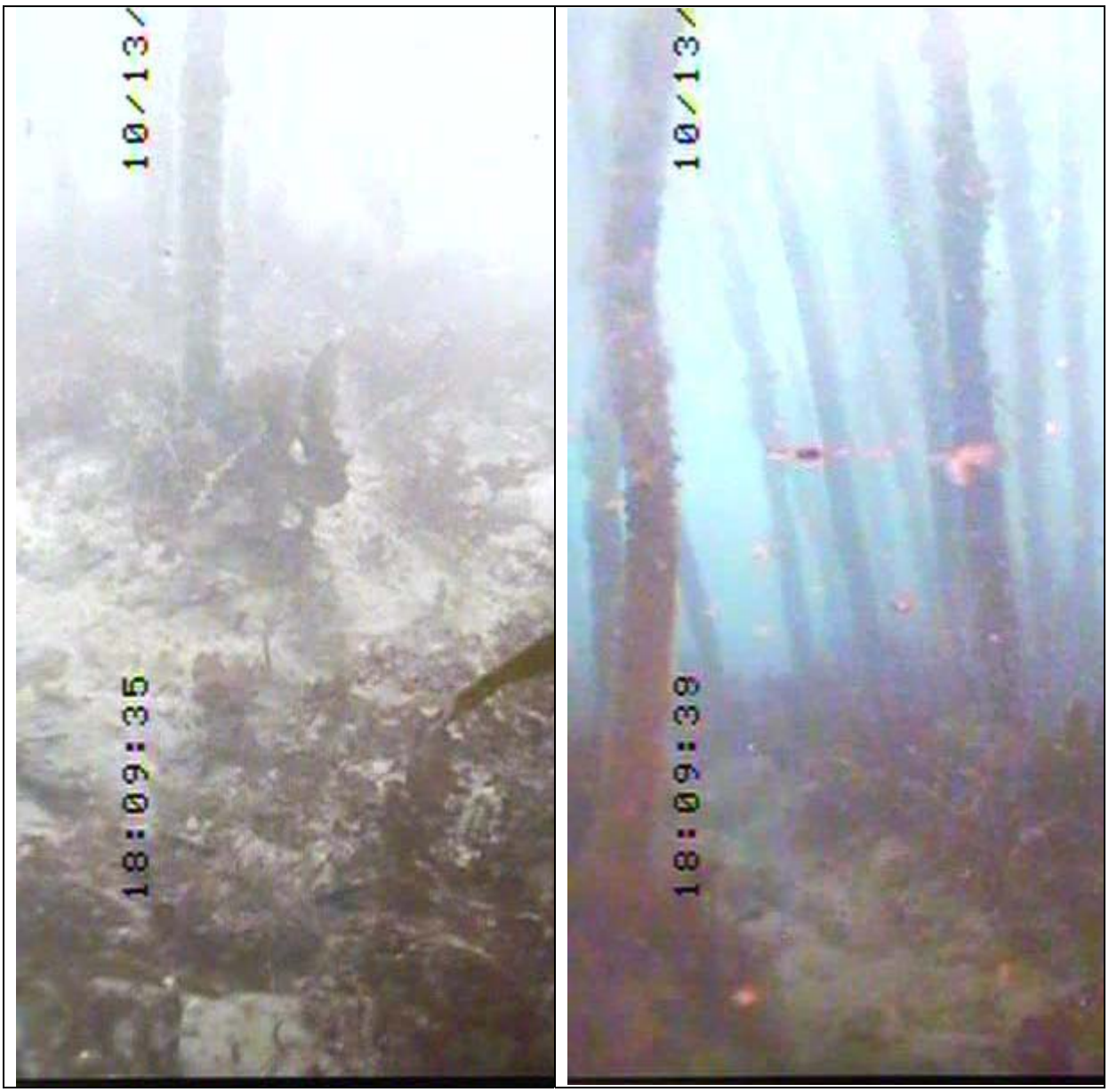
Site 29

Site 32

Site 35







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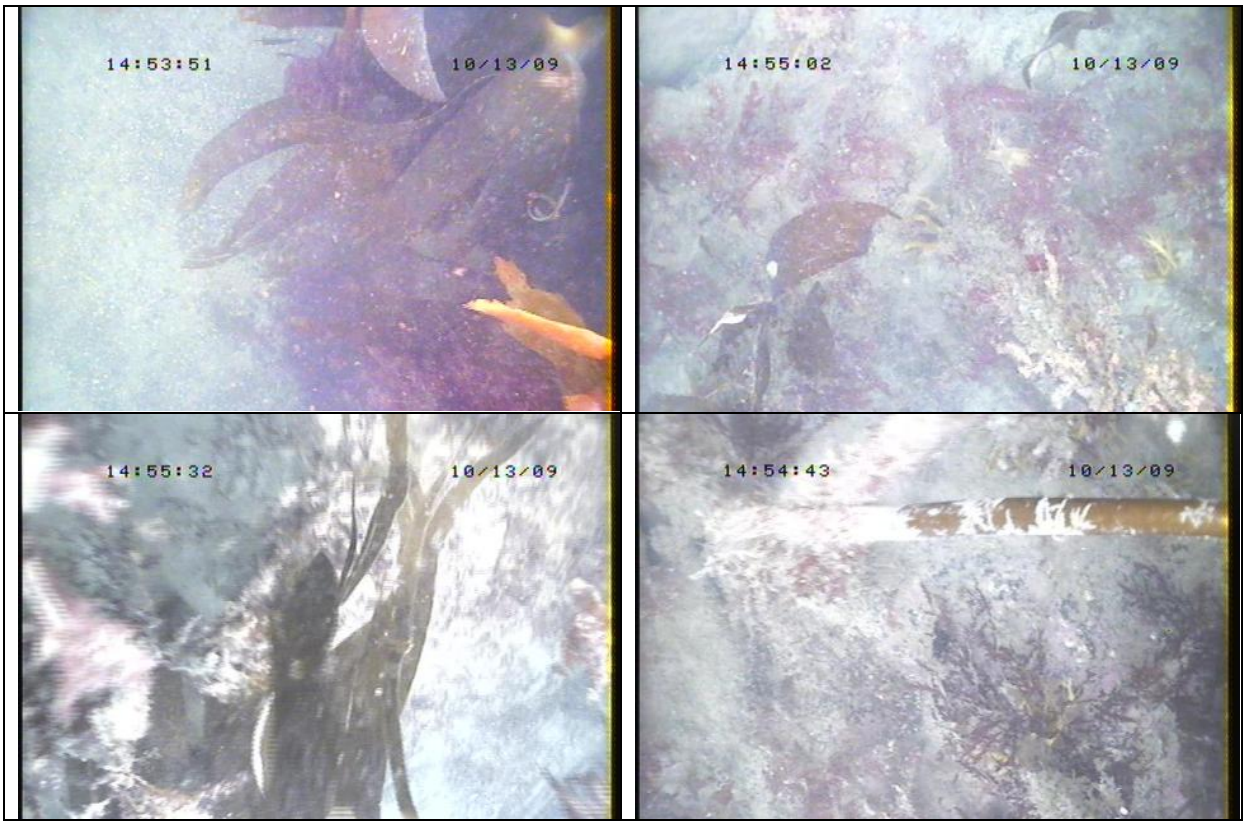
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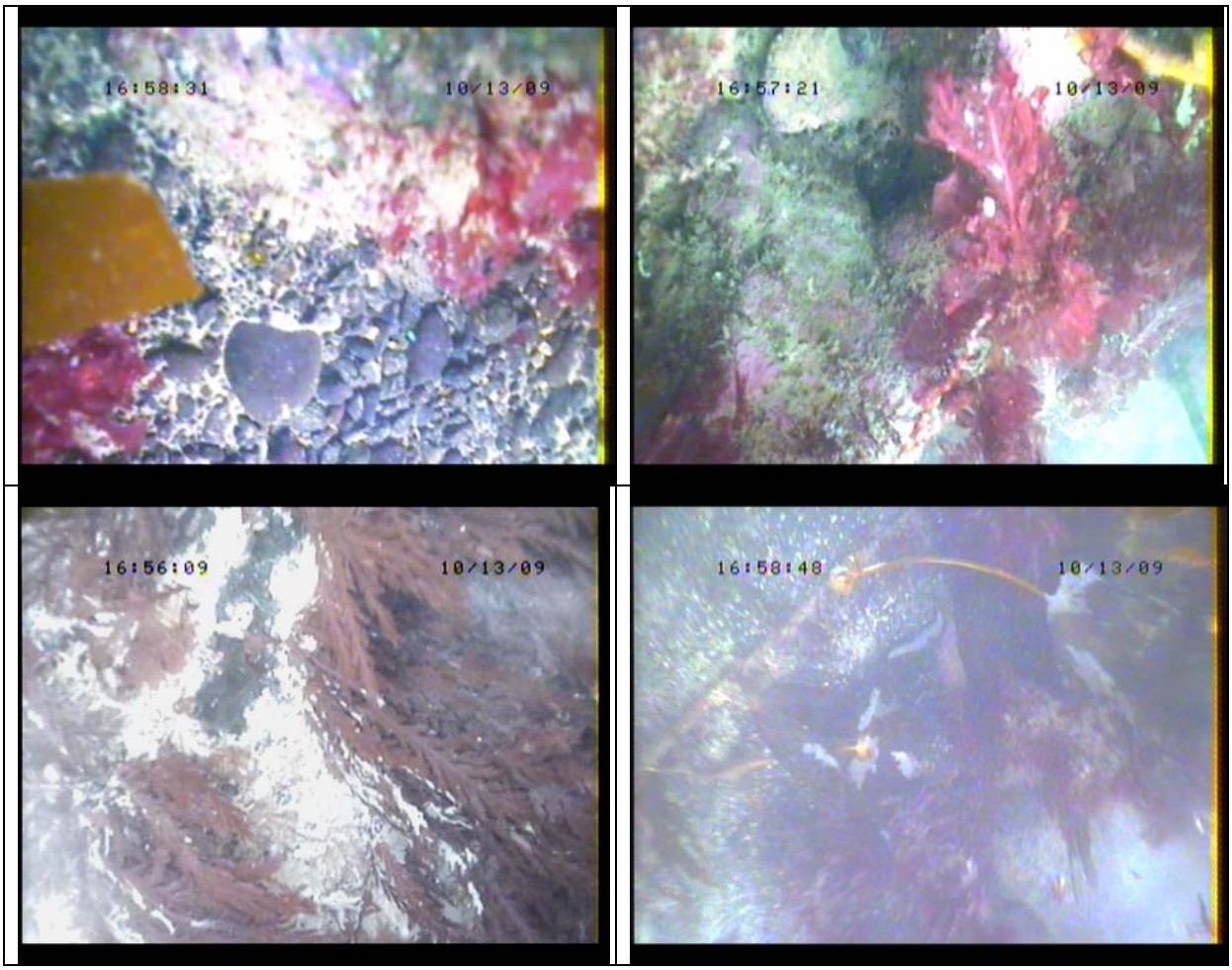
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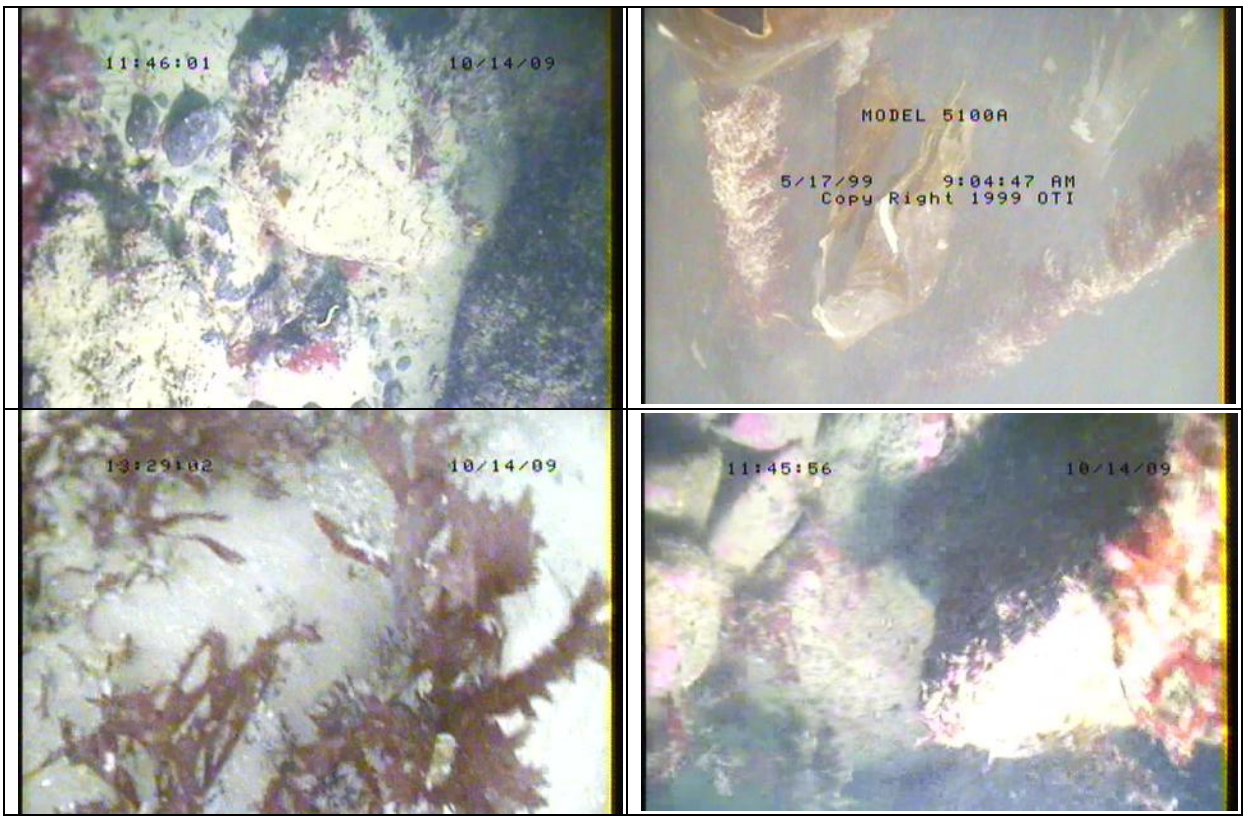

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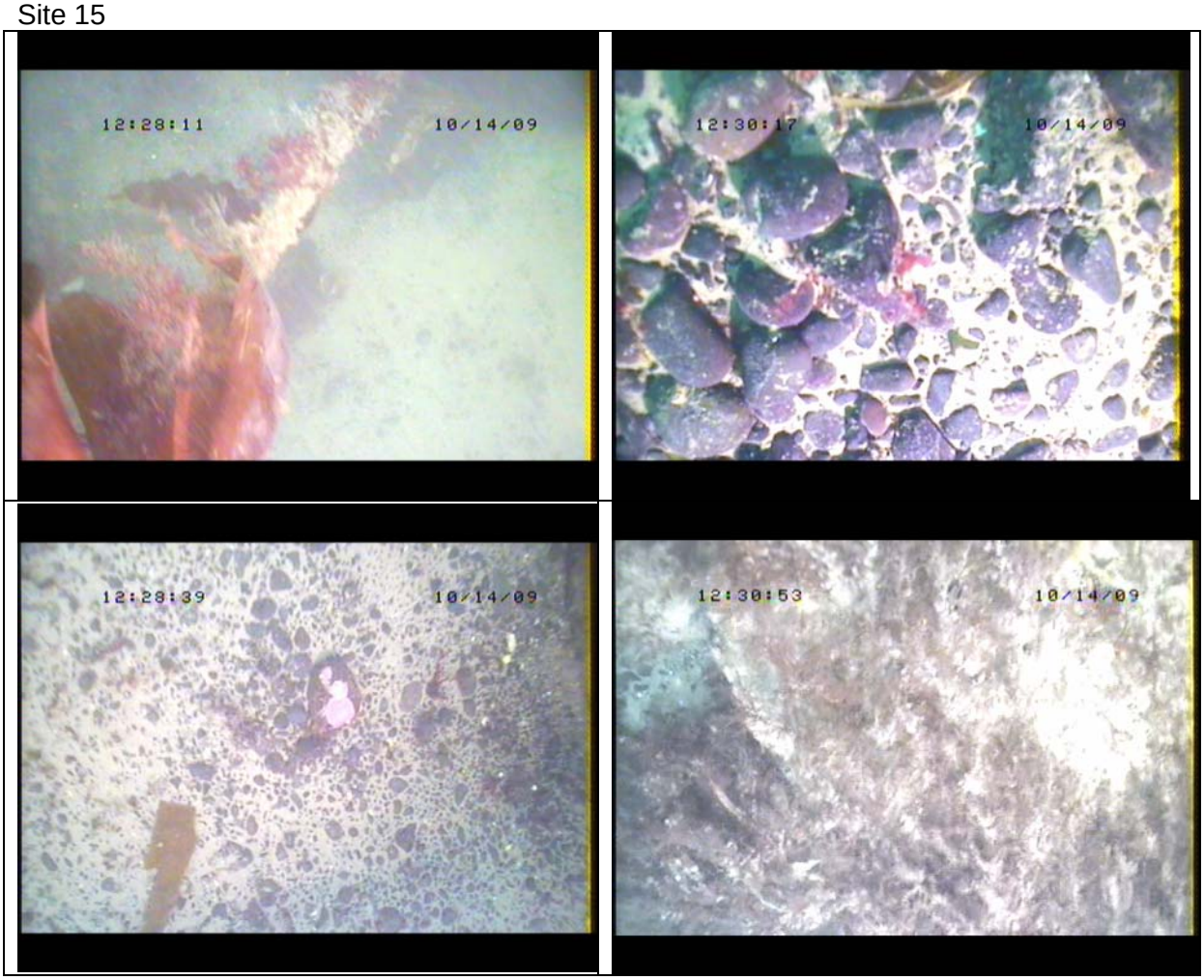

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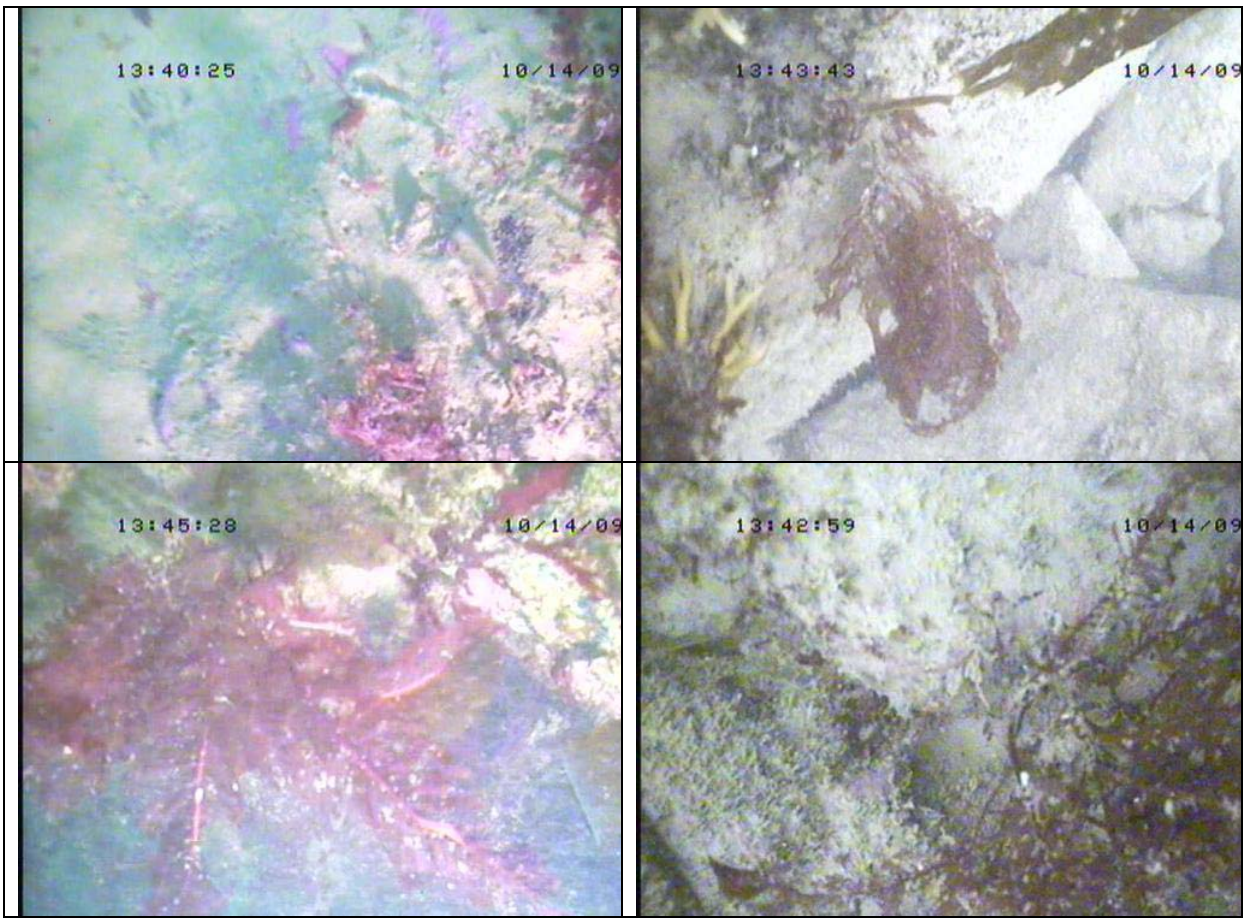

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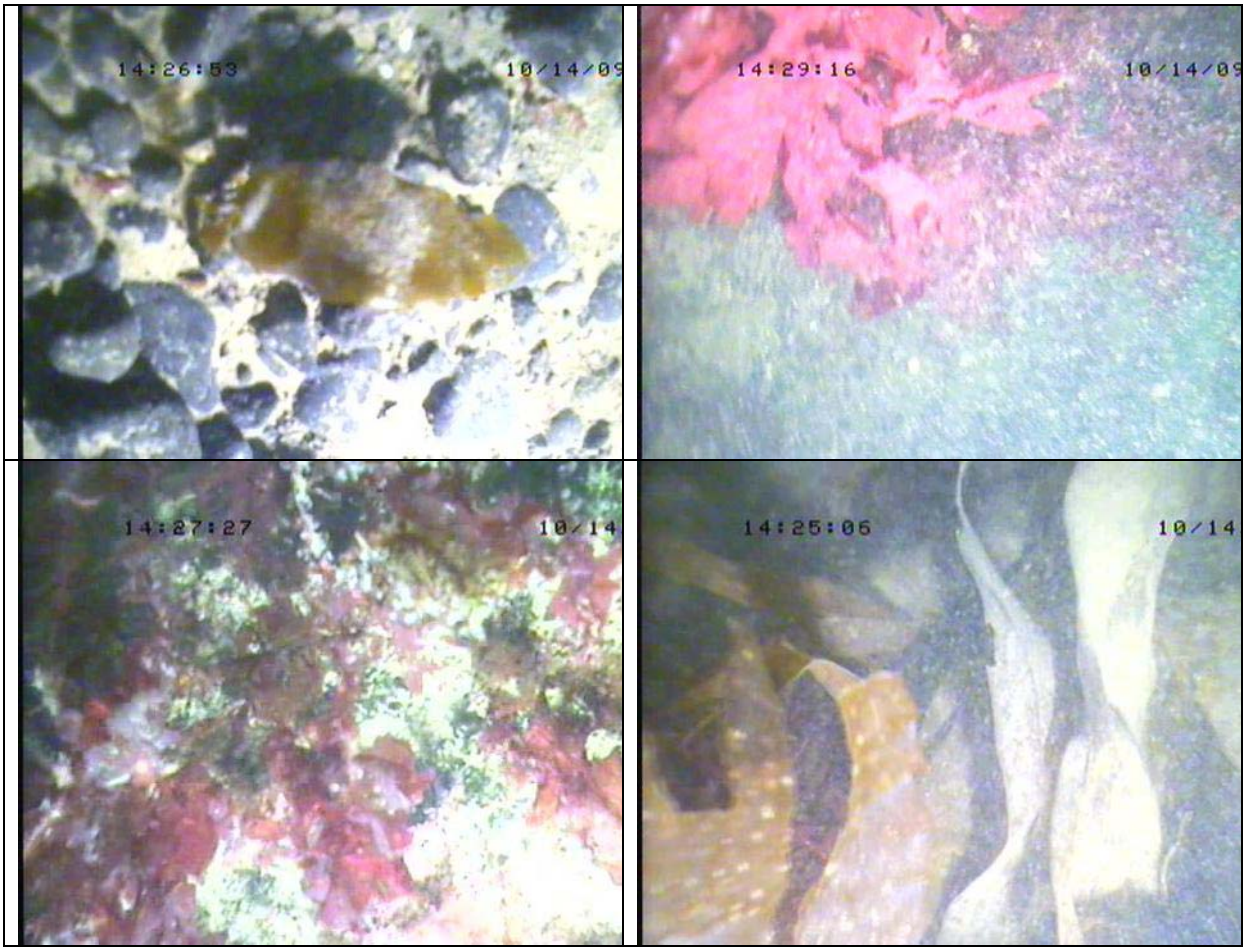

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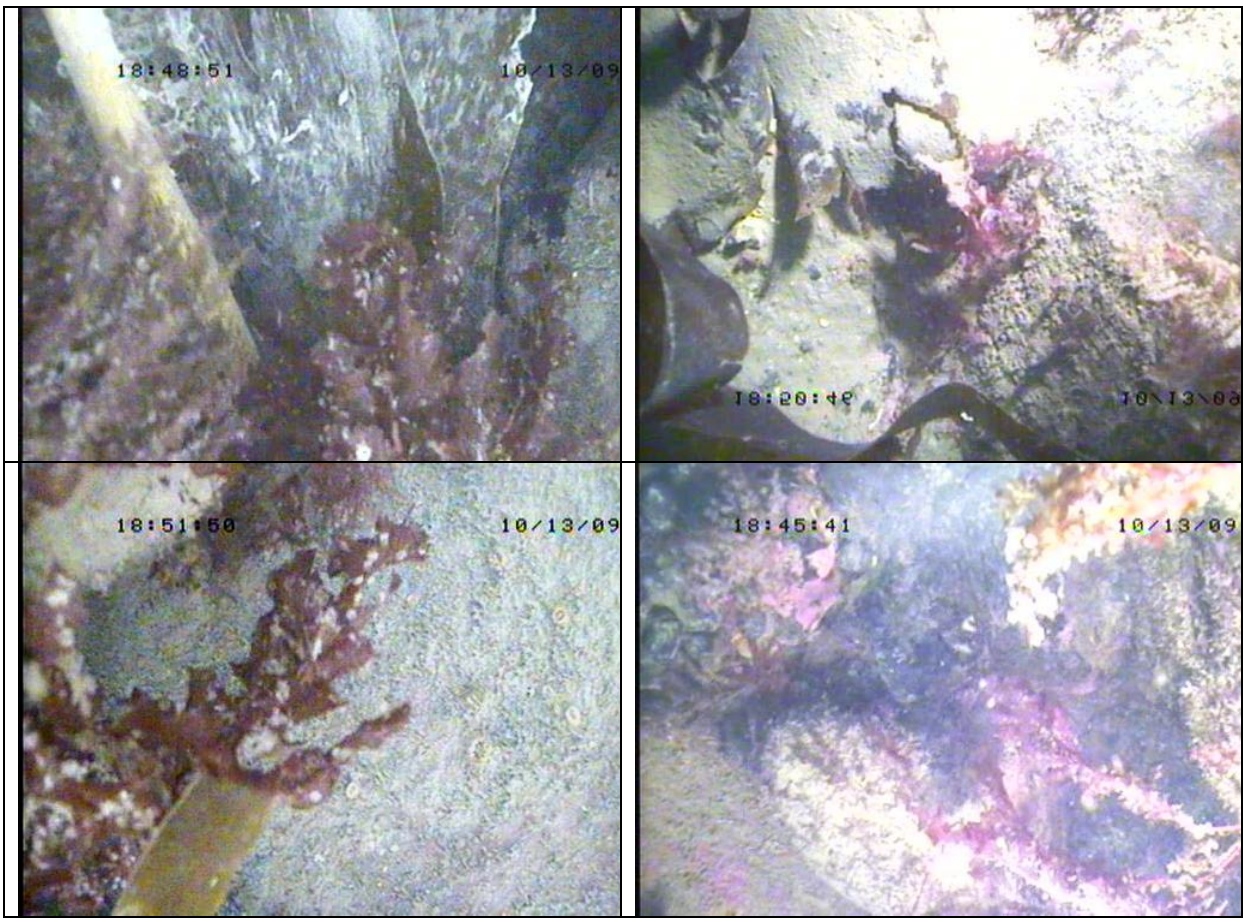

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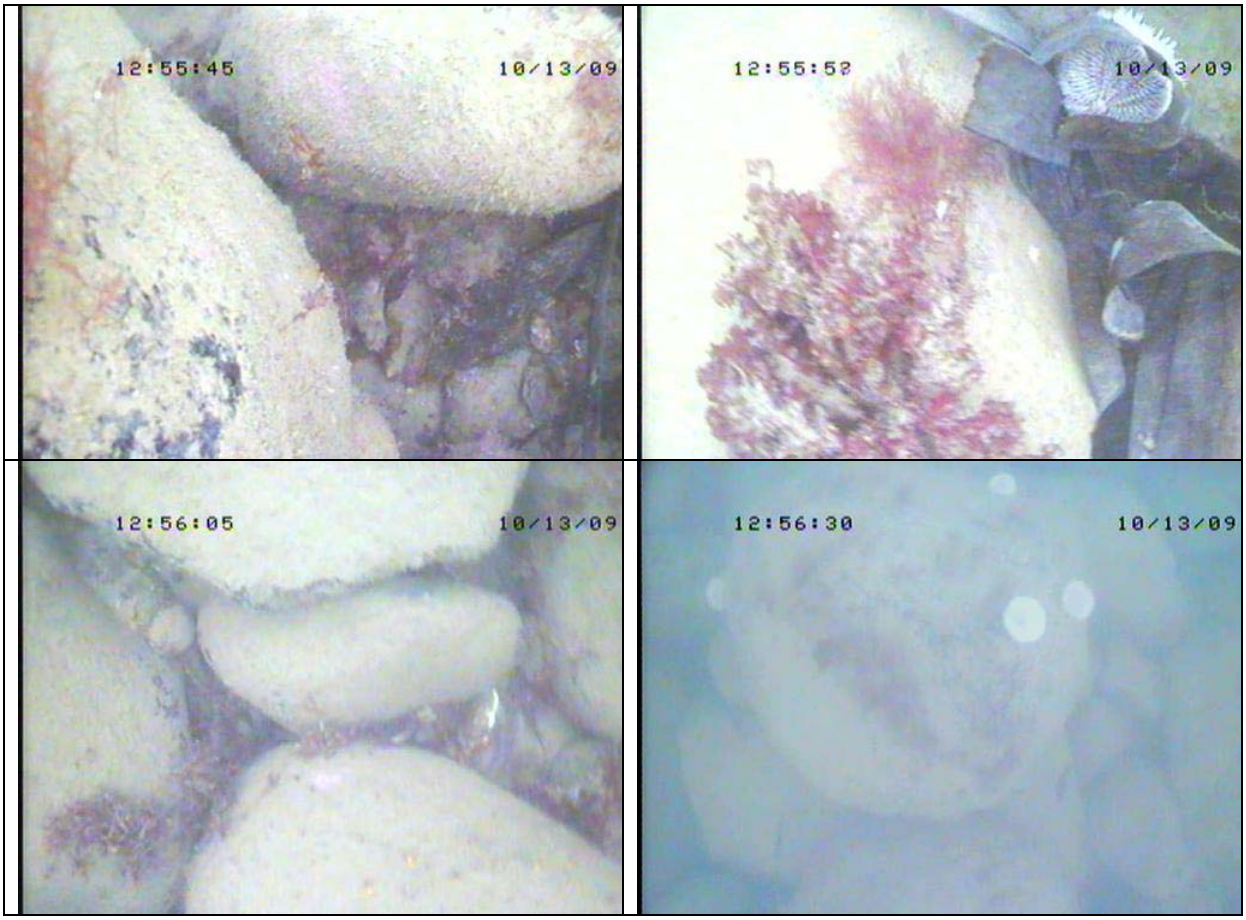

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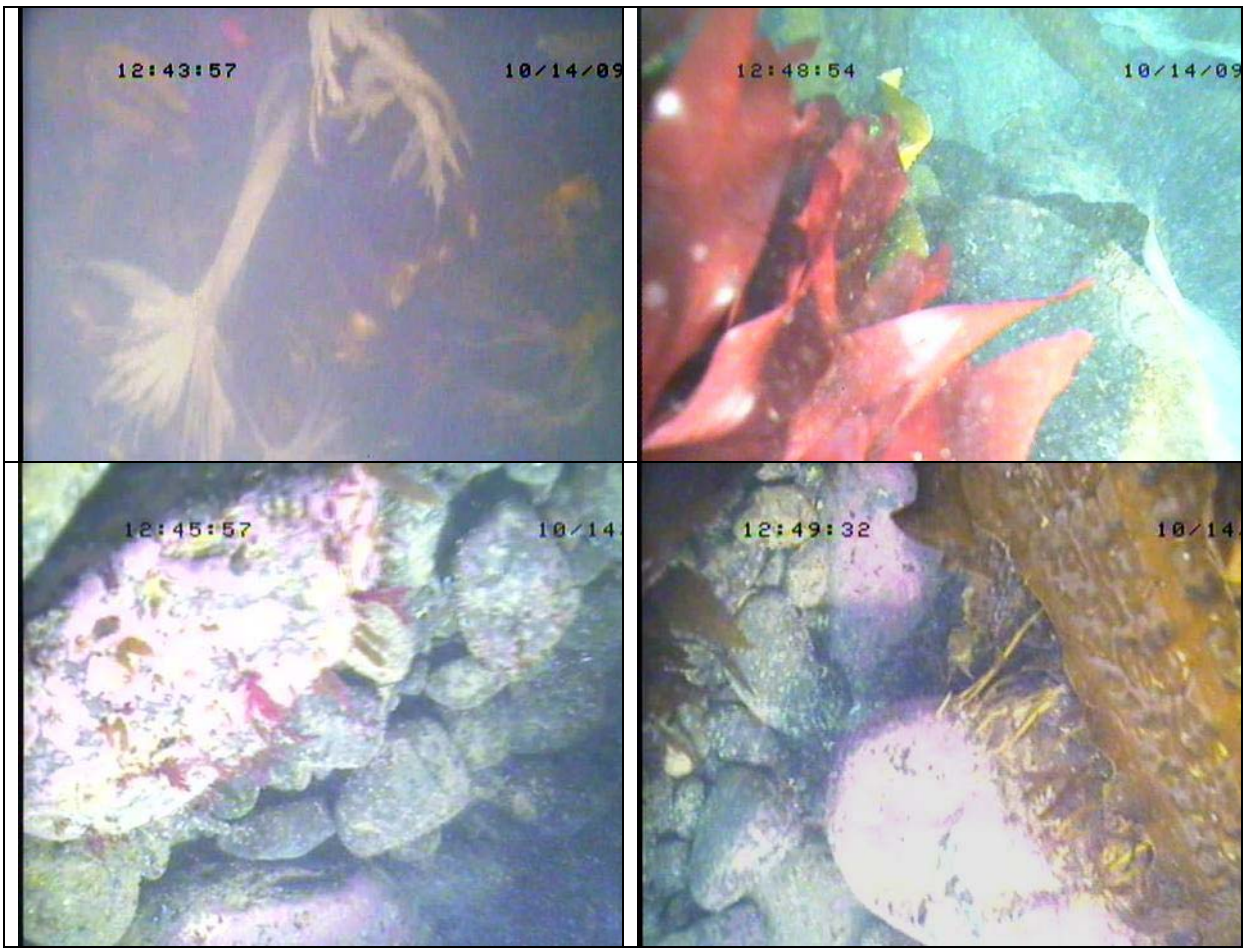

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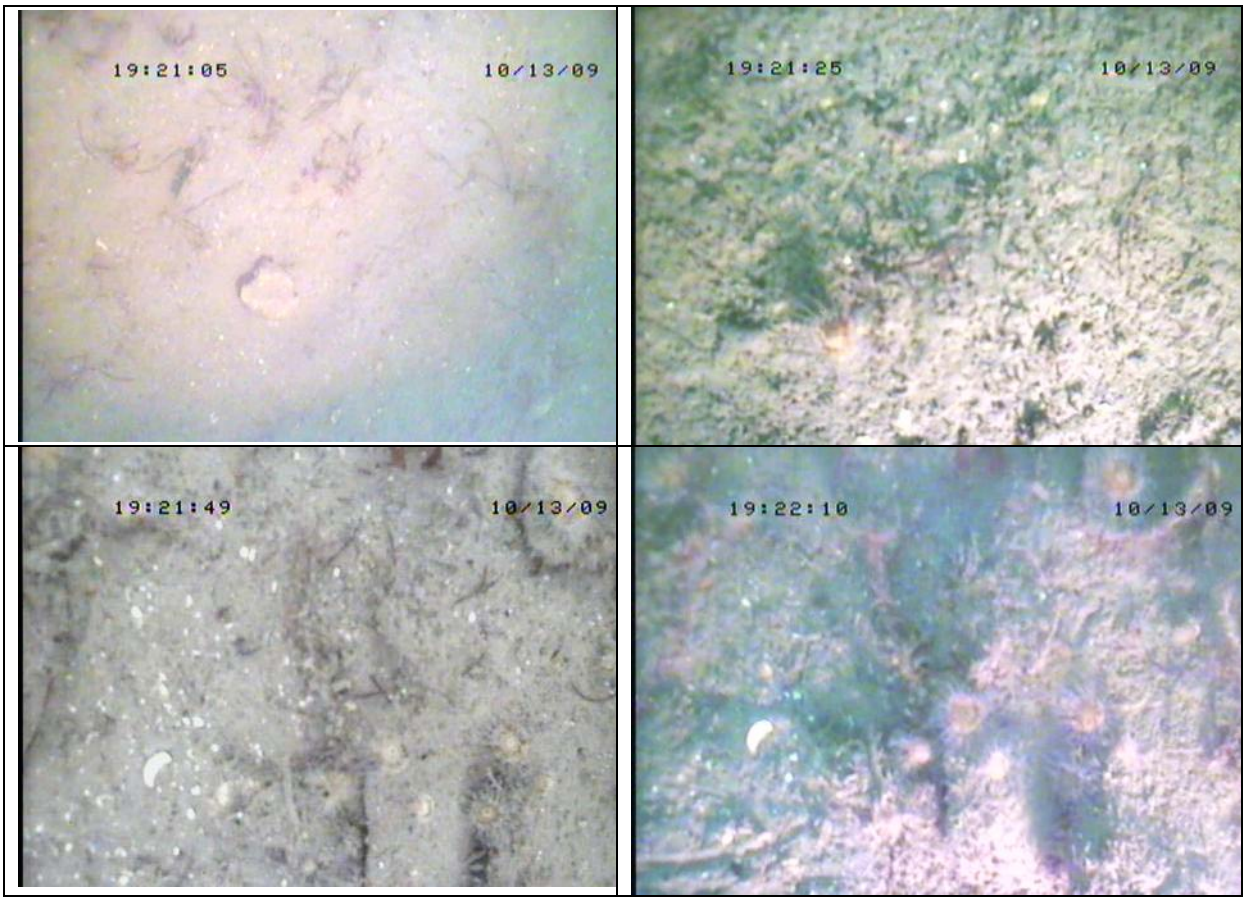

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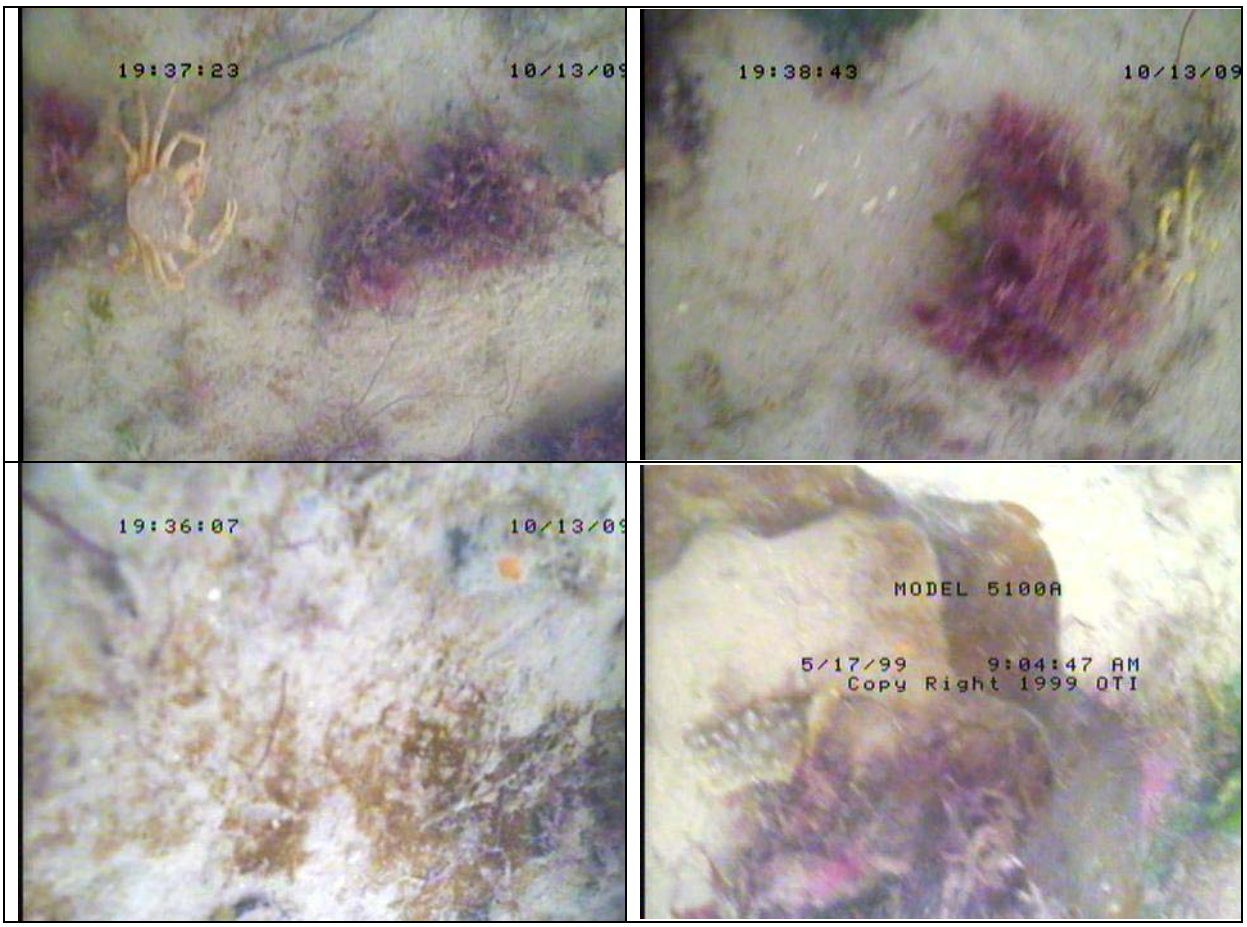
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Site 41

APPENDIX 6.5 Species List from Dive Stations

Species	S 2	S 7-8 gravel	S 7-8 boulder field	S 8-9 boulder field/gravel/sand lower	S 8-9 Rock ledge	S 8-9 boulder field/gravel/sand upper	S 17	S 19	250m SE	250m NW	S 20-21	S 22-23 Lower	S 22-23 Upper	S 31-32	S 32-33 Bryozoan	S 32-33 Kelp	S 41
Seaweeds																	
Delesseria sanguinea	R		F	F		F	R					C	F		F	F	
Phycodrys rubens			O														
Calliblepharis ciliata			O			R							O			O	
Cryptopleura ramosa			O	R													
Heterosiphonia plumosa	R		O	O		O			R	R		R			R		
Callophyllis laciniata			O	O		R					R				R		
Laminaria hyperborea			O	R		O							F			F	
Palmaria palmata						R										R	
Mastocarpus stellatus						R										R	
Lithophyllum incrustans	A			F	C	F						R	O			C	
Laminaria saccharina																R	
Desmarestia aculeata	R		O												O	F	
Ahnfeltia plicata																	F
Odonthalia dentata						R						R			R	O	
Ceramium sp.				R		R											
Dilsea carnosa														R			
Alaria esculenta			R										O				
Sponges																	
Halichondria panicea			R		R			R		R		R		R			
Myxilla			R		R						R						

Species	S 2	S 7-8 gravel	S 7-8 boulder field	S 8-9 boulder field / gravel / sand lower	S 8-9 Rock ledge	S 8-9 boulder field / gravel / sand upper	S 17	S 19	250 m SE	250 m NW	S 20-21	S 22-23 Lower	S 22-23 Upper	S 31-32	S 32-33 Bryozoan	S 32-33 Kelp	S 41
Haliclona viscosa			R			R											
Cliona celata		R															R
Polymastia penicillus															R		
Suberites ficus											R	R		R	R		R
Stelligera stuposa							R										
Cnidarians																	
Anemone								R									
Actinothoe sphyrodeta	R							R						R			
Thuiaria thuja	O												R				
Alcyonium digitatum	R	R						R									
Sertularella gayi		R				R	R			R							
Abietinaria abietina		R					R			R							
Nemertesia antennina		R	R			R	R	O		R		R			R		
Caryophyllia smithii			R	R								F	O		O	F	
Hydrallmania falcata	F					R			R								
Nemertesia ramosa							R										
Sagartiogeton laceratus																	C
Urticina felina	R										R						
Sertularia polyzonias								O									
Polychaetes																	
Chaetopterus variopedatus	O	R		R			R	O		R	R			R		R	
Pomatoceros sp.	C	O	O	O	O	O	R	F	R	R	O		R			F	
Hydroides norvegica		R	O			R							R				

Species	S 2	S 7-8 gravel	S 7-8 boulder field	S 8-9 boulder field / gravel / sand lower	S 8-9 Rock ledge	S 8-9 boulder field / gravel / sand upper	S 17	S 19	250m SE	250m NW	S 20-21	S 22-23 Lower	S 22-23 Upper	S 31-32	S 32-33 Bryozoan	S 32-33 Kelp	S 41
Bispira volutacornis		R	R				R	R		R				R	R		
Crustaceans																	
Cancer pagurus	R							R			R	R					
Balanus spp.	F					O	R	C	R	R	F	R		O	O	O	
Liocarcinus sp.	R										R						R
Necora puber	R		O												R	R	
Galathea squamifera															R		
Macropodia sp.							R	R									R
Carcinus maenas																	R
Eupagurus bernhardus				R			R							R			R
Balanus crenatus					R					R							
Xantho incisus														R			
Homarus gammarus												R					
Palaemon sp.						R			R								
Crangon sp.										R							
Ebalia tuberosa														R			
Munida rugosa	O																
Liocarcinus depurator						R			R								
Mollusca																	
Pecten maximus	O	R		R		R		R	R	R	R			R	R	R	
Eledone cirrhosa	R																
Anomia ephippium			O			R											
Calliostoma zizyphinum						R				R							
Ostrea edulis																	R

Species	S 2	S 7-8 gravel	S 7-8 boulder field	S 8-9 boulder field / gravel / sand lower	S 8-9 Rock ledge	S 8-9 boulder field / gravel / sand upper	S 17	S 19	250m SE	250m NW	S 20-21	S 22-23 Lower	S 22-23 Upper	S 31-32	S 32-33 Bryozoan	S 32-33 Kelp	S 41
Sepiola atlantica								R									
Glycymeris (exposed)								R									
Bryozoans																	
Flustra foliacea	F	R	O	O		O	R	O	R	O	F	O		R	F		
Electra pilosa	R		O			R		R	R		R	R	O				
Crisia	C			F	O	F	R	F	R	O	F		F	O	O	F	
Cellepora pumicosa	A			R		R				R					R		
Parasmittina trispinosa	C	R	O		F	R				R	R	R	O		R		
Membranopteria membranacea			O										O			O	
Cellaria sinuosa	F	O		R		R		F	R	O	R			R			
Bugula plumosa			R							R							
Schizomavella sp.			R														
Eucratea loricata	O	F	O	R			R	F	O	R	R			O	O		
Alcyonidium diaphanum		R	R				R	R	F	R	R			O	R		
Securiflustra securifrons							R			R	O			R	O		
Celleporina sp.			O		F			R									
Echinoderms																	
Echinus esculentus	O		O	R	R	O		R		R	R	R	R		R		
Marthasterias glacialis	R					R				R	R						
Henricia oculata	R		R					R			R					R	
Ophiocomina nigra	C																
Ophiothrix	F			R				R		R						R	

Species	S 2	S 7-8 gravel	S 7-8 boulder field	S 8-9 boulder field / gravel / sand lower	S 8-9 Rock ledge	S 8-9 boulder field / gravel / sand upper	S 17	S 19	250m SE	250m NW	S 20-21	S 22-23 Lower	S 22-23 Upper	S 31-32	S 32-33 Bryozoan	S 32-33 Kelp	S 41
fragilis																	
Crossaster papposus	R	R	R	R			R	R	R					R	R	R	
Asterina gibbosa	R							R									
Asterias rubens	R	R				R	R	R	R		O	R		R		R	
Leptasterias muelleri						R										R	
Ophiura sp.		O	R			R	R	R	R		C			O		R	
Stichastrella rosea		R	O					R		R	R						
Luidia ciliaris									R								
Solaster endeca???																	
Antedon bifida	R																
Anseropoda placenta								R									
Tunicates																	
Colonial encrusting rock												R					
Botryllus schlosseri																R	
Synoicum pulmonaria				O		R											
Dendrodoa grossularia					R		R										
Ascidia conchilega								R		R							
Fish																	
Labrus bergylta	R																
WRASSE	R																
Callionymus lyra		R					R	R						R			
Pomatoschistus							R										O

Species	S 2	S 7-8 gravel	S 7-8 boulder field	S 8-9 boulder field / gravel / sand lower	S 8-9 Rock ledge	S 8-9 boulder field / gravel / sand upper	S 17	S 19	250m SE	250m NW	S 20-21	S 22-23 Lower	S 22-23 Upper	S 31-32	S 32-33 Bryozoan	S 32-33 Kelp	S 41
Scyliorhinus canicula	O			R									R				
Scyliorhinus (egg case)			R														
Trisopterus minutus										R					R	R	
Pomatoschistus minutus		R		R		R				R							
Labrus mixtus (female)						R											
Agonus cataphractus											R			R			

APPENDIX 6.6 EUNIS habitat classifications identified at Islandmagee, November 2009

A3.11 Kelp with cushion fauna and/or foliose red seaweeds

A3.1152 *Laminaria hyperborea* park with dense foliose red seaweeds on exposed lower infralittoral rock

A3.12 Sediment-affected or disturbed kelp and seaweed communities

A3.125 Mixed kelps with scour-tolerant and opportunistic foliose red seaweeds on scoured or sand-covered infralittoral rock

A3.14 Encrusting algal communities (crust)

A4.21 Echinoderms and crustose communities on circalittoral rock

A4.212 *Caryophyllia smithii*, sponges and crustose communities on wave-exposed circalittoral rock

A4.214 Faunal and algal crusts on exposed to moderately wave-exposed circalittoral rock

A4.2141 *Flustra foliacea* on slightly scoured silty circalittoral rock

A4.2145 Faunal and algal crusts with *Pomatoceros triqueter* and sparse *Alcyonium digitatum* on exposed to moderately wave-exposed circalittoral rock

A5.2 Sublittoral sand

A5.43 Infralittoral mixed sediments

A5.44 Circalittoral mixed sediments

A5.445 *Ophiothrix fragilis* &/or *Ophiocomina nigra* brittlestar beds on sublittoral mixed sediment

A5.444 *Flustra foliacea* and *Hydrallmania falcata* on tide-swept circalittoral mixed sediment

A5.446 Sandy mixed sediment with *Alcyonidium diaphanum*

A3.11 – Kelp with cushion fauna and/or foliose red seaweeds

EUNIS A3.11 Rocky habitats in the infralittoral zone subject to exposed to extremely exposed wave action or strong tidal streams. Typically the rock supports a community of kelp *Laminaria hyperborea* with foliose seaweeds and animals, the latter tending to become more prominent in areas of strongest water movement (A3.113, A3.115 and A3.1152). The depth to which the kelp extends varies according to water clarity, exceptionally (e.g. St. Kilda) reaching 45 m. In some areas, there may be a band of dense foliose seaweeds (reds or browns) below the main kelp zone (A3.116). The sublitttoral fringe is characterised by dabberlocks *Alaria esculenta* (A3.111). In very strong wave action the sublittoral fringe *A. esculenta* zone extends to 5 to 10 m depth, whilst at Rockall *A. esculenta* replaces *L. hyperborea* as the dominant kelp in the infralittoral zone (A3.112). Situation: Very exposed rocky coasts, from low water to depths up to 45m. Temporal variation: Winter storms may remove patches of kelp, and fast-growing annuals may form a temporary forest (A3.122).

A3.1152 – [Laminaria hyperborea] park with dense foliose red seaweeds on exposed lower infralittoral rock

Very exposed to exposed lower infralittoral bedrock or large boulders characterised by a kelp park of [*Laminaria hyperborea*] with a dense turf of foliose red seaweeds and encrusting coralline algae. These red seaweeds dominate kelp stipes and bedrock in a similar abundance and composition to the upper infralittoral kelp forest, the most commonly occurring species being [*Callophyllis laciniata*], [*Cryptopleura ramosa*], [*Plocamium cartilagineum*], [*Kallymenia reniformis*], [*Delesseria sanguinea*], [*Phycodrys rubens*], [*Hypoglossum hypoglossoides*], [*Heterosiphonia plumosa*] and [*Bonnemaisonia asparagoides*]. In addition, moderate to high abundance of foliose brown seaweeds, such as

[*Dictyota dichotoma*] are more common than in the kelp forest above. More upper circalittoral fauna occur in the park than in the kelp forest, such as the cup-coral [*Caryophyllia smithii*]. Some species more often present in the kelp park than the forest include the anthozoan [*Alcyonium digitatum*] and the featherstar [*Antedon bifida*]. The urchin [*Echinus esculentus*], the gastropods [*Gibbula cineraria*] and [*Calliostoma zizyphinum*] and the starfish [*Asterias rubens*] are normally present underneath the canopy along with the anthozoans [*Urticina felina*] and [*Corynactis viridis*]. The sponge [*Cliona celata*] is also present often found boring into shells or soft rock where available. The bryozoan [*Membranipora membranacea*] can be found on the [*L. hyperborea*] fronds along with the hydroid [*Obelia geniculata*] and the ascidian [*Botryllus schlosseri*]. The polychaete [*Pomatoceros*] sp. is present on the rock surface. Situation: This biotope usually occurs below the exposed kelp forests (LhypFa and LhypR.Ft). At some sites, a dense band of [*D. dichotoma*] may form a separate zone below (FoR). Where seasonally unstable cobbles and/or boulders are present adjacent to and/or below the bedrock supporting the [*L. hyperborea*] LsacSac may occur. Temporal variation: In the late summer both the kelp and the foliose seaweeds can become heavily encrusted with the bryozoan crusts [*Electra pilosa*] and [*Membranipora membranacea*]. Temporal variation within the community structure is unknown.

A3.12 – Sediment-affected or disturbed kelp and seaweed communities

Infralittoral rock habitats, subject to disturbance through mobility of the substratum (boulders or cobbles) or abrasion/covering by nearby coarse sediments or suspended particulate matter (sand). The associated communities can be quite variable in character, depending on the particular conditions, which prevail. The typical *Laminaria hyperborea* and red seaweed communities of stable open coast rocky habitats (A3.21) are replaced by those, which include more ephemeral species or those tolerant of sand and gravel abrasion. As such *Laminaria saccharina*, *Saccorhiza polyschides* or *Halidrys siliquosa* may be prominent components of the community.

***A3.125* – Mixed kelps with scour-tolerant and opportunistic foliose red seaweeds on scoured or sand-covered infralittoral rock**

Bedrock and boulders, often in tide-swept areas, that are subject to scouring or periodic burial by sand, characterised by a canopy of mixed kelps such as *Laminaria saccharina*, *Laminaria hyperborea* and *Saccorhiza polyschide*s and the brown seaweed *Desmarestia aculeata*; there may also be an understorey of foliose seaweeds that can withstand scour such as *Plocamium cartilagineum*, *Chondrus crispus*, *Dilsea carnosa*, *Callophyllis laciniata* as well as the filamentous *Heterosiphonia plumosa* and the foliose brown seaweed *Dictyota dichotoma*. The perennial red seaweed *Brongniartella byssoides* re-grows in the summer months. The *L. hyperborea* stipes often support a growth of epiphytes, such as *Delesseria sanguinea*, *Phycodrys rubens* and *Cryptopleura ramosa*. The scour can reduce the rock surface to bare coralline crusts at times; sponge crusts and the colonial ascidian *Botryllus schlosseri* can also grow on the stipes and holdfasts. The faunal diversity on the rock is usually low and restricted to robust, low-profile animals such as the tube-building polychaete *Pomatoceros triqueter*, the barnacle *Balanus crenatus*, encrusting bryozoans such as *Membranipora membranacea*, the anthozoan *Urticina felina*, the starfish *Asterias rubens* and the urchin *Echinus esculentus*. Deeper sites support more hydroids and bryozoans, particularly *Bugula* spp. Where this biotope occurs in very shallow water *Laminaria digitata*

may be found in combination with the other kelp species. Other species present only in shallow water include the red algae *Corallina officinalis* and the sand-binding alga *Rhodothamniella floridula*. Situation: This biotope often occurs below a *L. hyperborea* forest (LhypR.Ft, Lhyp.Ft or LhypT.Ft), close to a rock-sediment boundary. It is also found on low-lying rock outcrops surrounded by sand or mixed sediment and nearby biotopes on mixed substrata may include EphR, ProtAhn or in very shallow water LsacChoR. A *Flustra foliacea* community (FluCoAs) often dominates deeper sand-scoured circalittoral rock. Temporal variation: During late autumn and winter seaweeds are sparse, leaving predominantly kelp and encrusting coralline algae. This is due in part to periods of intense scouring during stormy months, which may strip off all but the most tenacious seaweeds. In addition there will be the natural die back of many of the seaweeds such as *B. byssoides* and *C. ciliata* during the winter months which become conspicuous again during the summer months.

A3.14 – Encrusting algal communities (crust) – EUNIS (proposed new unit)

A4.21 – Echinoderms and crustose communities on circalittoral rock

This habitat type occurs on wave-exposed, moderately strong to weakly tide-swept, circalittoral bedrock and boulders. Echinoderms, faunal *Parasmittina trispinosa* and algal crusts (red encrusting algae) dominate this biotope, giving a sparse appearance. Typical echinoderms present are the starfish *Asterias rubens*, the brittlestar *Ophiothrix fragilis* and the sea urchin *Echinus esculentus*. There may be isolated clumps of the hydroids *Nemertesia antennina* and *Abietinaria abietina*, *Alcyonium digitatum*, the anemone *Urticina felina* and the cup coral *Caryophyllia smithii*. Other species present may include the polychaete *Pomatoceros triqueter* and the top shell *Calliostoma zizphinum*.

A4.212 – Caryophyllia smithii, sponges and crustose communities on wave-exposed circalittoral rock

This biotope typically occurs on the upper and vertical faces of wave-exposed, moderately strong to weakly tide-swept, circalittoral bedrock or boulders, with a water depth range of 20-30m. This often silty biotope has a typically sparse fauna, appearing grazed, and is characterised by common cup corals *Caryophyllia smithii*, frequent *Alcyonium digitatum* and occasional urchins *Echinus esculentus*. There may be occasional large growths of the sponge *Cliona celata*, *Haliclona viscosa*, *Pachymatisma johnstonia* and the axinellid sponge *Stelligera stuposa*. Echinoderms form a prominent feature of the fauna within this biotope, with species such as *Marthasterias glacialis*, *Asterias rubens*, *Luidia ciliaris*, *Henricia oculata*, *Holothuria forskali*, *Antedon bifida* and *Aslia lefevrei* present. Bryozoan crusts such as *Parasmittina trispinosa* and encrusting red algae cover the rock/boulder surface. The bryozoan *Porella compressa* may also be recorded occasionally. Isolated clumps of hydroids feature species such as *Nemertesia antennina*, *Nemertesia ramosa*, *Abietinaria abietina*, *Halecium halecinum* and *Sertularella gayi*. Other species observed include the anemone *Corynactis viridis*, *Urticina felina*, *Sagartia elegans*, *Calliostoma zizyphinum*, *Balanus crenatus* and *Pomatoceros triqueter*. Two variants within this biotope have been distinguished: CarSp.PenPcom and CarSp.Bri. While CarSp.PenPcom tends to have the bryozoans *Pentapora foliacea* and *P. compressa*, while CarSp.Bri features a dynamic community of brittlestars covering the seabed in a dense mat. *Ophiothrix fragilis* is usually the dominant species in shallow water but tends to be replaced by *Ophiocomina nigra* in deeper water.

A4.214 – Faunal and algal crusts on exposed to moderately wave-exposed circalittoral rock

This biotope typically occurs on the vertical and upper faces of wave-exposed and moderately wave-exposed circalittoral bedrock or boulders subject to mostly moderate to weak tidal streams (a variant of this biotope containing brittlestar is found on bedrock, boulders and cobbles). The biotope is dominated by faunal (e.g. *Parasmittina trispinosa* and algal (Corallinaceae) crusts, and tends to have a grazed appearance; this may be partially attributable to the abundance of *Echinus esculentus* found in this biotope. Occasionally, the rock may appear pink from a distance, due to the expanses of encrusting red algae on the rock surface. *Alcyonium digitatum* is one of the few species to stand erect from the encrusted rock surface and are frequently encountered, on the tops of rocky outcrops and boulders. Hydroids do not form a prominent feature of this biotope, with only robust species such as *Abietinaria abietina* frequently recorded. Sponges and *Caryophyllia smithii* are rarely present while erect bryozoans and ascidians are scarce (although there are exceptions, see variants). The *E. esculentus* grazed substratum may be interspersed with other encrusting species such as the polychaete *Pomatoceros triqueter* and the saddle oyster *Pododesmus patelliformis*. Other species present include *Asterias rubens*, *Ophiothrix fragilis*, *Urticina felina*, *Ophiocomina nigra*, *Pagurus bernhardus*, *Flustra foliacea*, *Gibbula cineraria*, *Calliostoma zizyphinum*, *Ophiura albida*, *Ciona intestinalis* and *Antedon bifida*. Six variants of this biotope have been recorded. FaAlCr.Flu is dominated by the silt and scour tolerant bryozoan *F. foliacea*. FaAlCr.Adig is dominated by *A. digitatum*. FaAlCr.Sec is dominated by [Securiflustra securifrons]. FaAlCr.Pom looks extremely impoverished (even for a grazed community). FaAlCr.Bri has a dense covering of brittlestars while FaAlCr.Car is only found under weak/very weak tides and is dominated by *C. smithii*.

A4.2141 [Flustra foliacea] on slightly scoured silty circalittoral rock

This variant is typically found on the upper faces of moderately wave-exposed circalittoral bedrock or boulders subjected to moderately strong tidal streams. These rocky patches may be interspersed with gravelly sand patches, causing a scouring effect. From afar, the variant appears dominated by the bryozoan *Flustra foliacea*. *Alcyonium digitatum* may also be seen attached to the rocky substratum. Under closer inspection, the white tubes of the polychaete *Pomatoceros triqueter* may be observed on the rock and boulders, especially on vertical faces. There may be sandy/gravelly patches in between the boulders colonised by the anemone *Urticina felina*. The regular occurrence of large numbers of the sea urchin *Echinus esculentus* in this biotope may be responsible for grazing the faunal and algal turf, thus keeping species richness relatively low. Other echinoderms that may be seen include the ubiquitous starfish *Asterias rubens* and the common brittlestar *Ophiothrix fragilis*. Sparse clumps of the hydroids *Thuiaria thuja*, *Abietinaria abietina*, *Nemertesia antennina* and *Tubularia indivisa* are occasionally seen attached to the rocky substratum. The hermit crab *Pagurus bernhardus*, the polychaete *Sabella pavonina* and sparse bryozoan crusts may also be present. This biotope is characteristic of the bedrock terraces along the Northumberland coast that are generally species impoverished compared to similar *F. foliacea* biotopes on the west coasts of the UK, which have a more diverse range of sponges, hydroids and bryozoans. As the turbidity levels increase in this fairly silty biotope, so the species diversity is reduced. Situation: This biotope typically occurs around coasts subject to sand scour and siltation. Associated biotopes common around the north-east coast of England include

circalittoral gravel and coarse sands. Typical species present include *Echinocardium*, *Lanice conchilega*, *Ensis* spp., *Mya truncata* and *Myxicola*. Where suitable substratum is available, exposed kelp forests occur in the infralittoral (the latter normally occupies a narrow band due to the high silt loading in the water column). Where this biotope occurs along with chalk or limestone bedrock and boulders, piddock dominated biotopes (Pid) may also be found.

A4.2145 – Faunal and algal crusts with Pomatoceros triqueter and sparse Alcyonium digitatum on exposed to moderately wave-exposed circalittoral rock –

This variant is typically found on the upper faces of exposed and moderately exposed circalittoral bedrock or boulders subjected to moderately strong to weak tidal streams. From afar, the seabed has a rather sparse, grazed appearance, reminiscent of a brittlestar bed after the brittlestars have moved elsewhere. The rocky substratum is generally covered with encrusting red algae and the white, calcareous tubes of the polychaete *Pomatoceros triqueter*, dotted with the abundant urchin *Echinus esculentus*. Under closer inspection, *Alcyonium digitatum* are usually seen attached to the rocky surface underneath rock overhangs and large boulders. Although they may be recorded as abundant or common in some areas, their relatively small size means that their biomass is generally lower than in other biotopes. Sparse clumps of robust hydroids such as *Abietinaria abietina* are frequently observed, and bryozoan crusts such as *Parasmittina trispinosa* are occasionally seen. Echinoderms such as the brittlestars *Ophiothrix fragilis* and *Ophiocomina nigra*, and the crab *Cancer pagurus* may be seen within crevices in the boulders/rock whilst the starfish *Asterias rubens* may be seen on the rock surface. Muddy-gravel patches between boulders (especially within Scottish sealochs) provide a suitable habitat for the anemone *Urticina felina*. The top shell *Gibbula cineraria* is occasionally seen grazing on the rock surface. Within this biotope, there is some regional variation. The robust hydroid *A. abietina* is typically found in higher abundances in northern (Scottish) regions, especially around the Isle of May. Situation: Above the FaAlCr.Pom variant in the infralittoral zone, species such as *Alaria esculent*a and *Laminaria hyperborea* are found in more wave exposed sites (KFaR.Ala/KFaR.Lhyp) while species such as *Laminaria saccharina* may be found above FaAlCr.Pom in the more sheltered examples. Due to moderately tide-swept conditions this variant is found in, clean, coarse sediment biotopes are generally found below FaAlCr.Pom. Typical species found in these coarse sand/gravelly biotopes include *Neopentadactyla mixta* and *Lanice conchilega* (SS.SMx.CMx). Where wave exposure increases, this variant tends to change to CarSp.PenPcom,, dominated by *Caryophyllia smithii*, *Corynactis viridis*, encrusting red algae and bryozoan crusts. Where tidal stream and wave-exposure decreases, this variant develops into a similar biotope dominated by encrusting red algae, *Echinus esculentus* and *C.smithii* (FaAlCr.Car).

A5.2 – Sublittoral sand

Clean medium to fine sands or non-cohesive slightly muddy sands on open coasts, offshore or in estuaries and marine inlets. Such habitats are often subject to a degree of wave action or tidal currents which restrict the silt and clay content to less than 15%. This habitat is characterised by a range of taxa including polychaetes, bivalve molluscs and amphipod crustacea.

A5.43 – Infralittoral mixed sediments

Shallow mixed (heterogeneous) sediments in fully marine or near fully marine conditions, supporting various animal-dominated communities, with relatively low proportions of seaweeds. This habitat may include well mixed muddy gravelly sands or very poorly sorted mosaics of shell, cobbles and pebbles embedded in mud, sand or gravel. Due to the quite variable nature of the sediment type, a widely variable array of communities may be found, including those characterised by bivalves (A5.433, A5.431, and A5.435), polychaetes (A5.432) and file shells (A5.434). This has resulted in many species being described as characteristic of this habitat type all contributing only a small percentage to the overall similarity. This habitat type may also include a newly proposed [Chaetopterus] biotope (Rees pers com.) recently found in the eastern English Channel. This biotope is characterised by an undescribed [*Chaetopterus*] sp. and small [*Lanice conchilega*]. Further sampling is needed in order to assess and fully characterise this potential biotope.

A5.44 – Circalittoral mixed sediments

Mixed (heterogeneous) sediment habitats in the circalittoral zone (generally below 15-20 m) including well mixed muddy gravelly sands or very poorly sorted mosaics of shell, cobbles and pebbles embedded in or lying upon mud, sand or gravel. Due to the variable nature of the seabed a variety of communities can develop which are often very diverse. A wide range of infaunal polychaetes, bivalves, echinoderms and burrowing anemones such as *Cerianthus lloydii* are often present in such habitat and the presence of hard substrata (shells and stones) on the surface enables epifaunal species to become established, particularly hydroids such as *Nemertesia* spp. and *Hydrallmania falcata*. The combination of epifauna and infauna can lead to species-rich communities.

***A5.444* – Flustra foliacea and Hydrallmania falcata on tide-swept circalittoral mixed sediment**

This biotope represents part of a transition between sand-scoured circalittoral rock where the epifauna is conspicuous enough to be considered as a biotope and a sediment biotope where an infaunal sample is required to characterise it and is possibly best considered an epibiotic overlay. *Flustra foliacea* and the hydroid *Hydrallmania falcata* characterise this biotope; lesser amounts of other hydroids such as *Sertularia argentea*, *Nemertesia antennina* and occasionally *Nemertesia ramosa,* occur where suitably stable hard substrata is found. The anemone *Urticina felina* and the soft coral *Alcyonium digitatum* may also characterise this biotope. Barnacles *Balanus crenatus* and tube worms *Pomatoceros triqueter* may be present and the robust bryozoans *Alcyonidium diaphanum* and *Vesicularia spinosa* appear amongst the hydroids at a few sites. *Sabella pavonina* and *Lanice conchilega* may be occasionally found in the coarse sediment around the stones.

A5.445 – Ophiothrix fragilis *&/or* Ophiocomina nigra brittlestar beds on sublittoral mixed sediment

Circalittoral sediment dominated by brittlestars (hundreds or thousands m^{-2}) forming dense beds, living epifaunally on boulder, gravel or sedimentary substrata. *Ophiothrix fragilis* and *Ophiocomina nigra* are the main bed-forming species, with rare examples formed by *Ophiopholis aculeata*. Brittlestar beds vary in size, with the largest extending over hundreds of square metres of sea floor and containing millions of individuals. They usually have a patchy internal structure, with localized concentrations of higher animal density. *Ophiothrix fragilis* or *Ophiocomina nigra* may dominate separately or there may be mixed populations of the two species. *Ophiothrix* beds may consist of large adults and tiny, newly-settled juveniles, with animals of intermediate size living in nearby rock habitats or among sessile epifauna. Unlike brittlestar beds on rock, the sediment based beds may contain a rich associated epifauna. Large suspension feeders such as the octocoral *Alcyonium digitatum*, the anemone *Metridium senile* and the hydroid *Nemertesia antennina* are present mainly on rock outcrops or boulders protruding above the brittlestar-covered substratum. The large anemone *Urticina felina* may be quite common. This species lives half-buried in the substratum but is not smothered by the brittlestars, usually being surrounded by a 'halo ' of clear space. Large mobile animals commonly found on *Ophiothrix* beds include the starfish *Asterias rubens*, *Crossaster papposus* and *Luidia ciliaris*, the urchins *Echinus esculentus* and *Psammechinus miliaris*, edible crabs *Cancer pagurus*, swimming crabs *Necora puber*, *Liocarcinus* spp., and hermit crabs *Pagurus bernhardus*. The underlying sediments also contain a diverse infauna including the bivalve *Abra alba*. Found that numbers and biomass of sediment dwelling animals were not significantly reduced under dense brittlestar patches.

In shallower (i.e. upper circalittoral) examples of this biotope scour-tolerant robust red algae such as *Polysiphonia nigrescens*, *Calliblepharis* spp. and *Gracilaria gracilis* are found. Situation: This biotope is found around most coasts, although regional differences are seen where one or two similarly scour-tolerant species such as *Styela clava* and *Crepidula fornicata* (Solent) occupy the hard substrata.

A5.446 – Sandy mixed sediment with [*Alcyonidium diaphanum*]

UNIS A5.446 is a proposed new unit of the EUNIS classification (Southampton Workshop).

APPENDIX 6.7 Species Abundance Matrix Used in Statistical Analysis – Anchor Dredge Samples

	10AD	17AD	19AD	42AD	43AD	45AD	47AD	52AD	53AD	54AD
RHODOPHYTA	-	-	-	P	-	-	-	-	-	-
Corallinaceae	-	-	-	-	P	-	-	P	P	-
Plocamium cartilagineum	-	-	-	-	P	-	-	-	-	-
Ceramium	-	-	-	-	-	-	-	-	-	P
Plumaria plumosa	-	-	P	-	-	-	-	-	-	-
Phycodrys rubens	-	-	-	-	P	-	-	-	-	-
Odonthalia dentata	-	-	-	-	P	-	-	-	-	-
Heterosiphonia plumosa	-	-	-	P	-	-	P	-	P	-
PHAEOPHYCEAE	-	-	-	P	P	P	-	-	-	-
Fucus vesiculosus	-	-	-	-	P	-	-	-	-	-
Enteromorpha	-	-	-	-	-	-	-	-	P	-
Cladophora	P	-	-	-	-	-	-	P	-	-
ANIMALIA (eggs)	-	-	-	P	P	-	-	P	P	-
Lagotia viridis	-	P	-	-	P	P	P	-	P	-
PORIFERA	P	P	P	-	-	P	P	P	P	P
Scypha ciliata	-	-	-	P	-	P	-	-	P	P
Suberites	-	-	-	-	-	-	-	P	-	-
Stelligera	-	-	-	-	-	P	-	-	-	-
Cliona	-	P	P	P	-	P	P	P	P	P
Raspailia	-	P	-	-	-	-	-	-	-	P
Tubulariidae	-	P	-	-	-	-	-	-	-	P
FILIFERA	-	-	-	-	P	-	-	-	-	-
Bougainvilliidae	-	-	-	-	P	-	-	-	-	-
Lovenella clausa	-	P	-	-	-	-	-	-	-	-
Abietinaria abietina	P	-	-	-	P	-	-	-	-	P
Hydrallmania falcata	P	-	P	P	-	-	-	-	-	P

	10AD	17AD	19AD	42AD	43AD	45AD	47AD	52AD	53AD	54AD
Sertularella	P	-	-	P	P	-	P	-	-	-
Sertularia	-	-	-	-	P	-	-	-	-	-
Plumularia setacea	-	P	-	-	-	-	-	-	-	-
Campanulariidae	-	P	-	-	-	-	-	-	-	-
Rhizocaulus verticillatus	-	-	P	-	-	-	-	-	-	-
Clytia hemisphaerica	-	-	-	-	1	-	-	-	-	1
Alcyonium digitatum	-	-	-	-	P	-	-	-	P	-
ACTINIARIA	1	-	-	-	-	-	-	-	1	1
Adamsia carciniopados	-	-	1	-	-	-	-	-	-	-
Caryophyllia smithii	-	1	-	-	-	-	-	-	-	-
NEMERTEA	7	4	4	7	3	8	4	11	11	4
NEMATODA	-	-	2	2	-	-	-	4	3	-
Pedicellina	-	-	-	-	P	-	-	-	-	-
Spadella cephaloptera	-	-	-	-	-	-	1	-	-	-
Golfingia elongata	12	3	10	4	-	1	1	1	5	11
Golfingia margaritacea	-	-	-	2	-	-	-	-	-	-
Golfingia vulgaris	-	-	-	-	-	-	-	1	-	7
Nephasoma sp.	-	-	6	-	-	-	-	-	3	-
Nephasoma minutum	4	1	1	-	-	1	1	2	3	4
Phascolion strombus	-	2	4	2	-	3	1	4	1	2
Pisione remota	-	-	-	-	-	1	-	-	-	-
Aphrodita aculeata	-	-	1	-	-	-	-	-	-	-
Subadyte pellucida	-	-	-	1	-	-	-	-	-	-
Alentia gelatinosa	-	-	-	-	-	-	-	-	-	1
Gattyana cirrhosa	-	-	-	-	-	-	-	-	1	-
Harmothoe extenuata	-	-	-	3	1	1	-	1	-	-
Harmothoe impar	2	12	1	1	1	9	-	1	1	7
Harmothoe pagenstecheri	-	-	1	1	-	-	-	-	-	-

	10AD	17AD	19AD	42AD	43AD	45AD	47AD	52AD	53AD	54AD
Malmgreniella glabra	-	-	-	-	-	-	1	-	-	-
Malmgreniella ljungmani	-	-	-	-	-	-	1	-	-	-
Malmgreniella mcintoshi	-	-	-	-	-	2	1	-	-	-
Lepidonotus squamatus	2	2	11	5	3	2	-	2	5	11
Pholoe baltica (sensu petersen)	-	-	1	-	-	-	-	-	-	-
Pholoe inornata (sensu petersen)	-	-	-	2	-	-	-	-	1	-
Fimbriosthenelais zetlandica	1	-	-	-	-	-	-	-	-	-
Hypereteone foliosa	-	-	1	-	-	-	-	-	-	-
Anaitides mucosa	-	-	-	-	-	-	-	-	-	1
Eulalia aurea	-	-	-	-	1	-	-	1	-	-
Eulalia bilineata	-	-	1	-	-	-	-	1	-	2
Eulalia expusilla	-	2	-	-	-	1	-	-	1	1
Eulalia mustela	-	-	-	11	-	3	1	1	-	-
Eulalia viridis	1	-	-	-	1	-	-	2	-	-
Eumida bahusiensis	-	-	-	-	3	-	-	-	-	-
Eumida sanguinea	-	-	-	2	-	-	3	1	-	-
Nereiphylla lutea	-	3	1	2	-	-	-	2	-	2
Notophyllum foliosum	1	-	-	-	-	-	-	-	-	-
Phyllodoce laminosa	-	-	1	-	-	-	-	-	-	-
Glycera lapidum (agg)	2	12	5	4	3	15	12	4	11	11
Glycinde nordmanni	-	-	-	-	-	-	-	-	-	1
Goniadella gracilis	-	-	-	-	-	-	-	-	1	-
Sphaerodorum gracilis	-	-	-	2	-	-	1	-	-	2
Gyptis	-	-	-	-	-	3	13	-	-	-
Nereimyra punctata	-	1	3	2	-	-	-	1	-	-
Syllidia armata	-	-	-	-	-	-	-	-	-	1

	10AD	17AD	19AD	42AD	43AD	45AD	47AD	52AD	53AD	54AD
Ehlersia ferrugina	1	-	-	-	-	-	-	-	-	-
Eurysyllis tuberculata	-	-	1	-	-	-	-	-	-	-
Syllis "species D"	-	-	-	1	-	-	-	-	-	35
Syllis armillaris	6	6	7	8	5	3	1	3	8	1
Syllis cornuta (agg)	-	-	-	-	-	-	-	-	1	-
Syllis parapari	-	-	-	-	-	-	1	-	-	-
Syllis variegata	-	-	1	-	-	-	-	2	5	4
Trypanosyllis coeliaca	-	1	-	-	1	-	-	-	-	-
Amblyosyllis formosa	-	-	-	-	-	-	1	-	-	-
Dioplosyllis cirrosa	-	-	-	-	-	1	-	-	-	-
Eusyllis blomstrandi	2	1	1	2	1	-	-	1	1	4
Odontosyllis fulgurans	-	-	-	-	-	-	1	-	1	-
Odontosyllis gibba	-	-	-	-	-	-	3	-	-	-
Exogone naidina	-	-	2	1	-	-	-	-	2	-
Sphaerosyllis bulbosa	-	-	-	-	-	2	-	-	-	-
Sphaerosyllis erinaceus	-	-	1	-	-	-	-	-	-	-
Sphaerosyllis pirifera	-	1	-	-	-	-	-	-	-	-
Sphaerosyllis taylori	-	-	1	-	-	1	-	-	-	-
Autolytus	-	-	2	2	-	-	-	1	1	-
Nereididae (juv)	-	1	-	-	-	-	-	1	-	-
Eunereis (Type A)	-	-	-	-	-	-	-	-	1	-
Nereis zonata	-	-	1	2	1	-	-	-	-	3
Aglaophamus malmgreni	-	-	-	-	-	-	-	-	-	2
Aglaophamus rubella	-	-	-	-	-	-	-	-	1	-
Nephtys kersivalensis	-	-	-	2	-	-	-	-	-	-
Euphrosine borealis	-	1	-	-	-	-	-	-	-	2
Euphrosine foliosa	-	1	2	1	-	-	-	1	-	2
Nematonereis unicornis	-	3	-	-	2	1	-	1	2	2

	10AD	17AD	19AD	42AD	43AD	45AD	47AD	52AD	53AD	54AD
Lumbrineris gracilis	1	1	6	9	1	-	-	1	1	-
Notocirrus scoticus	-	-	-	1	-	-	-	-	-	-
Ophryotrocha	-	-	-	-	-	-	-	-	1	-
Schistomeringos rudolphi	1	-	-	1	-	-	-	-	-	-
Aonides paucibranchiata	-	1	1	1	-	1	1	4	4	4
Laonice bahusiensis	2	5	-	1	-	3	7	5	6	5
Polydora caeca (agg)	6	1	6	7	5	3	2	1	8	5
Polydora caulleryi	-	-	-	-	-	-	-	3	2	-
Polydora ciliata (agg)	-	-	-	-	-	1	-	-	-	-
Spio armata (agg)	-	-	-	-	1	-	-	-	-	-
Chaetozone zetlandica	-	1	1	-	-	-	-	1	3	-
Cirratulus cirratus	-	1	-	-	-	-	-	-	-	-
Dodecaceria	-	-	-	-	-	-	-	-	-	1
Flabelligera affinis	-	-	-	-	1	-	-	-	-	-
Pherusa falcata	-	-	1	-	-	-	-	-	-	-
Mediomastus fragilis	-	-	-	2	-	-	-	-	-	-
Notomastus	-	6	-	2	-	-	-	-	-	-
Notoproctus	-	-	-	-	-	-	-	1	3	2
Ophelina acuminata	2	3	1	3	-	-	-	-	-	1
Asclerocheilus intermedius	-	-	-	-	-	-	-	1	-	-
Protodrilus	-	-	-	-	-	-	1	-	-	-
Owenia fusiformis	-	-	3	-	-	-	-	-	-	-
Sabellaria spinulosa	31	27	69	99	14	5	3	126	36	88
Melinna elisabethae	-	-	1	8	-	-	-	-	-	-
Melinna palmata	-	1	-	-	-	-	-	-	-	-
Ampharete lindstroemi	-	4	9	1	-	-	-	-	-	1
Amphicteis midas	-	-	-	1	-	-	-	-	-	-
Anobothrus gracilis	-	-	1	1	-	-	-	-	-	-

	10AD	17AD	19AD	42AD	43AD	45AD	47AD	52AD	53AD	54AD
Terebellides stroemi	-	-	3	3	-	-	-	-	-	1
Trichobranchus glacialis	-	-	-	1	-	-	-	-	-	-
Terebellidae (juv)	-	-	2	3	1	-	-	-	5	-
Eupolymnia nesidensis	1	4	1	2	3	5	4	3	-	10
Lanassa venusta	2	-	6	-	-	-	-	1	1	-
Phisidia aurea	1	-	3	-	-	-	-	-	1	4
Polycirrus	-	-	-	-	-	-	-	-	-	1
Thelepus cincinnatus	-	-	-	-	1	-	-	-	1	-
Sabellidae (juv)	1	-	-	-	-	1	-	1	-	-
Branchiomma bombyx	-	-	-	1	-	-	-	-	-	-
Chone filicaudata	-	-	-	-	-	-	1	-	-	-
Demonax	-	-	-	2	-	-	-	-	-	-
Euchone	-	-	-	-	-	-	-	1	1	-
Fabricia stellaris	-	-	-	1	-	1	-	-	-	-
Jasmineira elegans	-	-	-	-	-	-	-	1	1	-
Pseudopotamilla reniformis	1	1	-	2	3	4	4	1	10	3
Serpulidae	13	8	10	30	5	8	10	8	7	5
Hydroides norvegica	6	10	9	16	15	7	5	5	11	17
Pomatoceros lamarcki	5	-	-	11	7	2	2	4	7	2
Pomatoceros triqueter	4	7	-	12	6	18	4	5	5	1
Serpula vermicularis	-	-	-	-	-	2	-	-	-	1
Apomatus similis	1	-	-	-	-	1	-	-	-	-
Metavermilia multicristata	-	-	-	-	-	1	1	-	-	-
Salmacina dysteri	-	-	-	-	-	-	P	-	-	-
Circeis spirillum	P	-	-	-	P	-	-	-	-	P
Spirorbis spirorbis	-	-	-	P	P	-	-	-	-	-
Achelia echinata (agg)	-	-	-	-	2	-	-	-	-	1
Endeis charybdaea	-	-	-	-	1	-	-	-	-	1

	10AD	17AD	19AD	42AD	43AD	45AD	47AD	52AD	53AD	54AD
Callipallene	-	1	-	1	-	-	1	-	-	-
Verruca stroemia	-	-	-	1	-	-	15	2	3	5
Balanidae (juv)	-	-	-	-	-	-	-	1	3	-
Elminius modestus	-	-	1	-	-	-	-	-	-	-
Balanus balanus	-	1	2	3	7	-	3	2	2	149
Balanus crenatus	6	9	147	6	1	5	55	8	5	29
Triangulus galatheae	-	-	-	-	2	-	-	-	-	-
Drepanorchis neglecta	-	-	-	-	1	-	-	-	-	-
Akessonia occulta (?)	-	-	-	-	-	-	1	1	-	-
Doropygus	-	-	-	-	-	-	-	1	1	-
Herpyllobius	-	-	-	-	1	1	-	-	-	-
MYODOCOPIDA	-	-	1	-	-	-	-	-	-	-
Eusirus longipes	-	2	-	-	-	-	-	-	-	-
Monoculodes carinatus	-	-	-	-	-	-	1	-	-	-
Parapleustes bicuspis	-	-	-	-	-	-	1	-	-	-
Lysianassa ceratina	-	-	1	4	-	-	-	-	-	-
Lysianassa plumosa	-	2	2	3	-	-	-	-	1	6
Tmetonyx similis	-	-	-	-	-	-	-	-	1	-
Atylus vedlomensis	-	-	1	-	-	-	1	-	-	-
Ampelisca diadema	-	-	3	6	-	-	-	1	-	-
Ampelisca spinipes	-	2	1	-	-	-	1	-	1	-
Ampelisca typica	-	-	2	-	-	-	-	-	-	-
Abludomelita obtusata	-	-	-	-	-	-	-	-	-	3
Cheirocratus (female)	-	-	-	-	-	-	-	-	-	2
Cheirocratus assimilis	-	-	-	-	-	1	-	-	-	-
Maera othonis	3	3	2	-	1	1	1	1	4	11
Gammaropsis cornuta	1	2	-	-	-	-	-	-	-	-
Gammaropsis lobata	2	1	-	-	-	6	-	-	-	-

	10AD	17AD	19AD	42AD	43AD	45AD	47AD	52AD	53AD	54AD
Gammaropsis maculata	1	-	-	-	1	1	1	-	1	3
Photis longicaudata	-	-	6	-	-	-	-	-	-	-
Photis reinhardi	-	1	-	-	-	-	-	-	-	-
Ericthonius punctatus	-	-	-	1	1	-	-	-	-	-
Aoridae (female)	-	1	1	-	-	-	-	-	2	1
Crassicorophium bonnellii	-	-	1	-	-	-	-	-	-	-
Caprella linearis	-	1	-	-	-	-	-	-	-	-
Gnathiidae (female)	-	-	-	-	-	1	-	-	-	-
Gnathia (Type A)	-	1	-	-	-	2	-	1	-	-
Gnathia oxyuraea	-	-	-	-	-	2	-	-	-	-
Conilera cylindracea	-	-	-	-	-	-	-	-	-	1
Astacilla	1	-	-	-	-	-	-	-	-	-
Arcturella damnoniensis	-	-	-	P	-	-	-	-	-	-
Hemiarthrus abdominalis	-	-	-	-	-	-	-	-	2	-
Eualus pusiolus	3	1	2	1	3	2	-	2	4	1
Pandalina brevirostris	2	1	2	3	-	-	-	-	-	1
Crangonidae (?)	-	-	-	-	-	-	1	-	-	-
Paguridae	-	1	-	-	2	-	1	-	-	-
Cestopagurus timidus	-	-	4	27	3	-	-	3	-	-
Pagurus bernhardus	-	-	-	-	-	-	-	-	-	1
Pagurus prideaux	-	-	2	-	-	-	-	-	-	-
Galathea (juv)	-	-	-	-	-	P	-	-	-	-
Galathea intermedia	-	6	-	1	-	-	-	-	2	-
Galathea nexa	-	-	-	-	4	-	-	-	-	-
Ebalia tuberosa	2	4	1	1	1	-	-	-	-	1
Hyas coarctatus	4	1	3	10	5	1	1	5	2	1
Inachus (juv)	-	-	-	2	-	-	-	-	-	-
Macropodia (juv)	-	-	-	1	-	-	-	-	-	-

	10AD	17AD	19AD	42AD	43AD	45AD	47AD	52AD	53AD	54AD
Macropodia tenuirostris	-	-	-	-	1	-	-	-	-	-
Eurynome (juv)	-	-	-	-	1	-	-	-	-	-
Eurynome spinosa	-	-	-	-	1	-	-	-	-	-
Liocarcinus marmoreus	-	-	-	-	-	1	-	-	-	-
COLLEMBOLA	-	-	-	-	-	1	-	-	-	-
Eleutheromenia sierra	-	1	-	-	-	-	-	-	-	-
Leptochiton asellus	10	24	8	6	3	42	7	9	10	9
Leptochiton cancellatus	-	-	-	-	-	1	1	-	-	-
Emarginula fissura	-	-	-	-	1	-	-	-	1	-
Jujubinus miliaris	-	-	3	1	-	-	-	-	-	-
Gibbula tumida	-	-	-	2	1	6	2	2	-	2
Calliostoma zizyphinum	-	-	-	2	-	-	-	-	1	-
Lacuna crassior	-	-	-	2	-	-	-	-	-	-
Velutina velutina	-	-	-	1	-	-	-	-	-	-
Boreotrophon truncatus	-	-	2	3	-	-	-	-	-	1
Hinia (eggs)	-	-	P	-	-	-	-	-	-	-
Hinia incrassata	-	-	1	1	2	-	-	-	-	-
Goniodoris nodosa	-	-	-	1	-	-	-	-	-	-
Glycymeris glycymeris	-	-	-	1	-	3	1	-	-	-
Mytilidae (juv)	-	-	-	-	1	-	-	-	-	-
Mytilus edulis (juv)	-	-	2	-	-	-	-	-	-	-
Musculus discors	-	-	1	4	-	-	-	3	-	-
Modiolarca tumida	1	-	3	2	1	-	-	-	-	2
Modiolus (juv)	-	-	-	6	5	-	1	1	-	5
Modiolus adriaticus	-	-	-	-	-	1	-	-	-	-
Modiolus modiolus	1	-	6	8	4	3	1	4	-	-
Pectinidae (juv)	-	-	-	-	-	-	-	1	-	-
Chlamys varia	-	-	1	-	-	-	-	-	-	-

	10AD	17AD	19AD	42AD	43AD	45AD	47AD	52AD	53AD	54AD
Aequipecten opercularis	-	1	2	1	1	1	1	-	1	-
Anomiidae (juv)	-	-	3	5	5	2	3	-	-	-
Anomia ephippium	1	-	-	1	-	-	-	-	-	-
Pododesmus patelliformis	-	2	2	-	4	-	4	-	-	-
Astartidae (juv)	-	-	-	1	-	1	1	-	1	-
Astarte sulcata	6	1	19	11	2	1	-	1	-	2
Goodallia triangularis	-	-	-	-	-	-	1	-	-	-
Parvicardium ovale	-	-	8	3	-	-	-	-	-	2
Laevicardium crassum (juv)	-	-	1	-	-	-	-	-	-	-
Spisula solida	-	-	2	-	-	1	3	2	-	1
Gari tellinella	-	-	-	-	1	-	1	-	-	1
Abra alba	-	-	-	1	-	-	-	-	-	-
Circomphalus casina	1	2	2	-	-	-	-	-	-	-
Gouldia minima	2	-	1	-	-	-	-	-	-	-
Tapes rhomboides	2	-	-	1	-	-	-	-	-	1
Clausinella fasciata	-	1	-	3	2	4	-	1	-	1
Timoclea ovata	16	3	6	2	1	5	-	-	2	-
Sphenia binghami	9	-	7	2	2	1	-	-	5	19
Hiatella arctica	1	-	13	7	3	2	1	1	2	5
Lyonsia norwegica	-	-	1	-	-	-	-	-	-	-
Pandora pinna	1	-	2	-	-	-	-	-	-	-
Neocrania anomala	-	-	-	-	-	10	1	1	2	-
Terebratulina (dead)	-	-	-	-	-	-	-	-	1	-
Gwynia capsula (?)	-	-	-	-	-	-	6	-	-	-
Crisidia cornuta	P	-	P	P	P	-	P	P	P	P
Crisia	P	P	P	P	P	P	P	P	P	P
Tubulipora	P	P	-	P	-	P	P	P	-	-
Eurystrotos compacta	-	-	-	P	P	-	P	-	P	-

	10AD	17AD	19AD	42AD	43AD	45AD	47AD	52AD	53AD	54AD
Plagioecia patina	-	P	P	P	P	P	P	-	-	-
Entalophoroecia deflexa	P	P	-	-	P	P	-	P	-	-
Disporella hispida	P	P	-	P	-	P	P	-	P	P
Alcyonidium diaphanum	P	P	P	P	-	-	P	P	-	P
Alcyonidium mytili	-	-	-	P	-	-	P	-	P	-
Penetrantia concharum	-	P	-	-	-	-	-	-	-	-
Vesicularia spinosa	-	-	P	P	P	-	-	-	P	P
Bowerbankia	-	-	P	P	P	-	-	-	P	-
Aetea	-	-	P	P	P	P	P	-	P	-
Scruparia	-	-	-	P	P	-	P	-	-	-
Eucratea loricata	-	-	P	P	P	-	P	-	P	P
Electra pilosa	-	-	P	P	P	P	P	P	-	-
Pyripora catenularia	-	-	-	-	P	-	-	-	P	-
Flustra foliacea	P	P	P	P	P	P	P	P	P	P
Callopora lineata	-	-	-	P	-	-	-	-	-	-
Alderina imbellis	-	P	P	-	-	-	-	-	-	-
Cauloramphus spiniferum	P	-	-	-	-	-	-	-	-	-
Amphiblestrum auritum	-	-	P	P	-	-	-	-	-	-
Amphiblestrum flemingii	-	P	-	-	-	-	P	-	-	-
Beania mirabilis	-	P	P	P	P	-	-	P	-	-
Scrupocellaria scrupea	P	-	P	P	P	-	P	P	P	-
Scrupocellaria scruposa	-	P	-	P	-	P	P	-	-	-
Cellaria	-	P	P	P	P	P	P	P	P	P
Hippothoa divaricata	P	P	P	P	P	-	P	-	P	-
Hippothoa flagellum	-	P	-	-	-	-	P	-	P	-
Celleporella hyalina	-	-	-	-	P	-	-	-	-	-
Chorizopora brongniarti	-	-	-	-	-	-	P	-	-	-
Escharoides coccinea	-	-	-	P	-	-	-	-	-	-

	10AD	17AD	19AD	42AD	43AD	45AD	47AD	52AD	53AD	54AD
Escharella immersa	P	-	P	P	P	P	P	P	P	P
Escharella ventricosa	P	P	P	P	P	P	P	P	P	P
Neolagenipora collaris	P	-	-	P	-	-	-	-	-	-
Porella concinna	P	-	P	-	P	-	-	-	-	-
Hippoporina pertusa	-	-	P	-	-	-	-	-	-	-
Escharina johnstoni	P	P	-	-	-	-	-	-	-	-
Parasmittina trispinosa	-	-	-	P	-	-	P	P	P	-
Schizomavella auriculata	P	P	P	P	P	-	-	-	-	-
Schizomavella discoidea	-	-	-	-	-	-	P	-	-	-
Schizomavella linearis	-	P	-	P	-	-	-	-	-	P
Microporella ciliata	-	P	-	P	-	-	-	-	-	-
Fenestrulina malusii	P	P	P	P	-	P	-	P	P	P
Haplopoma	-	-	-	P	P	-	-	-	-	-
Cellepora pumicosa	-	-	-	-	-	P	-	-	-	P
Lagenipora lepralioides	-	P	-	-	-	-	-	-	-	-
Turbicellepora avicularis	-	P	-	-	-	-	P	P	-	P
Schizotheca fissa	-	-	-	-	-	-	P	-	-	-
Phoronis ovalis	-	P	-	-	-	-	-	-	-	-
Anseropoda placenta	-	-	-	-	-	-	-	1	-	1
Crossaster papposus	1	1	-	1	-	1	-	-	1	1
Henricia	-	-	-	1	-	-	-	-	-	-
Asterias rubens	1	-	1	2	2	-	-	-	-	-
Ophiothrix fragilis	-	-	2	5	8	1	1	6	1	1
Ophiocomina nigra	-	-	-	4	13	-	-	7	-	-
Amphipholis squamata	-	-	-	-	-	-	-	-	2	-
Ophiuridae (juv)	2	-	2	1	-	-	-	-	-	-
Ophiura albida	4	12	3	1	-	1	-	1	2	-
Psammechinus miliaris (juv)	-	1	-	-	-	-	-	-	-	-

	10AD	17AD	19AD	42AD	43AD	45AD	47AD	52AD	53AD	54AD
Echinus esculentus	1	-	-	1	-	-	-	-	-	-
Echinocyamus pusillus	7	7	9	4	1	6	-	4	2	6
Cucumariidae (juv)	-	-	1	1	-	-	-	-	-	-
Thyone fusus	-	-	4	-	-	-	-	1	-	-
Labidoplax buskii	-	-	-	-	-	-	-	-	-	1
Labidoplax media	-	-	1	-	-	-	-	-	-	-
ASCIDIACEA	-	-	11	1	4	-	-	2	6	-
Sidnyum	-	P	-	-	-	-	-	-	-	P
Didemnidae	-	-	P	-	P	-	-	-	-	P
Ascidiella aspersa	-	-	-	-	-	-	-	-	1	-
Ascidiella scabra	-	-	2	-	-	-	-	-	-	-
Polycarpa fibrosa	-	-	-	5	-	-	-	5	2	-
Polycarpa pomaria	1	3	1	6	1	-	-	-	-	-
Dendrodoa grossularia	24	14	25	17	3	1	2	-	2	188
Pyura squamulosa	-	-	-	-	-	-	-	-	-	4
Pyura tessellata	1	1	-	-	1	1	-	-	-	-
Molgula (juv)	-	-	-	-	-	-	-	-	-	1

APPENDIX 6.8 Species Abundance Matrix Used in Statistical Analysis – Grab Samples

	S39	S40	S41
BACILLARIOPHYTA	-	P	-
RHODOPHYTA	-	P	P
Audouinella	-	P	-
Polyides rotundus	-	P	P
Ceramium	-	P	-
Halurus flosculosus	-	P	P
Pterothamnion plumula	-	P	-
Spermothamnion	-	P	-
Phycodrys rubens	-	P	-
Polysiphonia	-	P	-
PHAEOPHYCEAE	-	P	-
Dictyota dichotoma	-	P	-
CHLOROPHYTA	-	P	P
BRYOPHYTA	-	-	P
Lagotia viridis	-	P	-
Plumularia setacea	-	-	P
ACTINIARIA	-	24	6
TURBELLARIA	-	1	-
NEMERTEA	4	4	-
Thysanocardia procera	-	-	1
Phascolion strombus	-	1	-
Anaitides longipes	-	1	-
Anaitides mucosa	-	1	2
Eumida bahusiensis	-	3	-
Exogone naidina	-	2	-
Exogone verugera	-	-	1
Sphaerosyllis taylori	-	1	-
Nephtys (juv)	-	-	1
Nephtys cirrosa	5	-	-
Nephtys hombergii	-	1	2
Nephtys kersivalensis	-	1	-
Lumbrineris gracilis	-	1	P
Scoloplos armiger	-	1	2
Paraonis fulgens	1	-	-
Aonides oxycephala	-	-	1
Polydora quadrilobata	-	-	1
Prionospio fallax	-	1	-
Spiophanes bombyx	1	-	-
Aphelochaeta marioni	-	1	-
Chaetozone zetlandica	-	-	1
Diplocirrus glaucus	-	P	-

Notomastus	-	1	2
	S39	**S40**	**S41**
Clymenura (Type A)	-	7	-
Euclymene oerstedii	-	3	11
Praxillella affinis	P	13	7
Scalibregma inflatum	-	1	-
Galathowenia oculata	-	51	25
Melinna palmata	-	10	21
Terebellides stroemi	-	1	-
Spirorbidae	-	-	P
Tubificoides amplivasatus	-	6	3
COPEPODA	-	2	-
MYODOCOPIDA	-	3	-
Perioculodes longimanus	-	-	1
Leucothoe lilljeborgi	-	-	3
Harpinia antennaria	-	4	3
Harpinia crenulata	-	1	7
Harpinia pectinata	-	2	4
Ampelisca brevicornis	-	-	1
Ampelisca tenuicornis	-	70	17
Bathyporeia gracilis	2	-	-
Bathyporeia nana	1	-	-
Photis longicaudata	-	25	3
Crassicorophium crassicorne	-	65	18
Pariambus typicus	-	27	5
Phtisica marina	-	1	2
Eudorella truncatula	-	1	3
Diastylis rugosa	-	3	-
DECAPODA	P	-	P
Nucula nitidosa	-	1	-
Musculus discors	-	4	-
Myrtea spinifera	-	2	-
Abra alba	-	4	7
Abra nitida	-	1	1
Corbula gibba	-	1	-
Vesicularia spinosa	-	-	P
Scruparia	-	P	-
Electra pilosa	-	P	-
Amphiura chiajei	-	-	2
Amphiura filiformis	-	1	-

APPENDIX 6.9 Ship's Log for Benthic sampling

Station ID	Sampler Type	Date	Time	Depth	Description
10	AD	10:30	26/01/2010	34.0m	Shell Gravel with Bryozoans: 60 – 80 litres
42	AD	10:53	26/01/2010	29.4m	Boulders and shell gravel: 40 litres
17	AD	11:20	26/01/2010	34.0m	Sandy Gravel with Bryozoans: 60 – 80 litres
19	AD	11:34	26/01/2010	29.0m	Stony shell gravel: 20 litres
45	AD	11:47	26/01/2010	38.9m	Coarse sandy gravel: 20 litres
47	AD	12:05	26/01/2010	42.8m	Shell Gravel: 60 – 80 litres
52	AD	12:28	26/01/2010	27.2m	Shell Gravel: 40 – 50 litres
39	VV	12:53	26/01/2010	5.4m	Clean Coarse Sand: 5-7 litres
53	AD	13:07	26/01/2010	31.2m	Shell Gravel with *Flustra*: 30 litres
54	AD	13:26	26/01/2010	31.5m	Shell Gravel with *Flustra*: 30 litres
43	AD	13:56	26/01/2010	23.7m	Large Boulder, little shell gravel
40	VV	14:35	26/01/2010	6.0m	Muddy Sand; 5-7 litres
41	VV	14:40	26/01/2010	4.6m	Muddy Sand; 5-7 litres

APPENDIX6.10 ANCHOR DREDGE IDENTIFICATIONS RAW DATA

ASUANT10 - Antrim Coast 2010

SDC	Taxon Name	S10 AD 46830	S17 AD 46831	S19 AD 46832	S39 Grab 46883	S40 Grab 46884	S41 Grab 46885	S42 AD 46880	S43 AD 46876	S45 AD 46881	S47 AD 46882	S52 AD 46877	S53 AD 46878	S54 AD 46879
	BACILLARIOPHYTA	-	-	-	-	P	-	-	-	-	-	-	-	-
ZM0001	RHODOPHYTA	-	-	-	-	P	P	P	-	-	-	-	-	-
ZM0069	Audouinella	-	-	-	-	P	-	-	-	-	-	-	-	-
ZM0194	Corallinaceae	-	-	-	-	-	-	-	P	-	-	P	P	-
ZM0417	Polyides rotundus	-	-	-	-	P	P	-	-	-	-	-	-	-
ZM0443	Plocamium cartilagineum	-	-	-	-	-	-	-	P	-	-	-	-	-
ZM0507	Ceramium	-	-	-	-	P	-	-	-	-	-	-	-	P
ZM0539	Halurus flosculosus	-	-	-	-	P	P	-	-	-	-	-	-	-
ZM0551	Plumaria plumosa	-	-	P	-	-	-	-	-	-	-	-	-	-
ZM0554	Pterothamnion plumula	-	-	-	-	P	-	-	-	-	-	-	-	-
ZM0566	Spermothamnion (?)	-	-	-	-	P	-	-	-	-	-	-	-	-
ZM0616	Phycodrys rubens	-	-	-	-	P	-	-	P	-	-	-	-	-
ZM0649	Odonthalia dentata	-	-	-	-	-	-	-	P	-	-	-	-	-
ZM0655	Polysiphonia	-	-	-	-	P	-	-	-	-	-	-	-	-
ZM0581	Heterosiphonia plumosa	-	-	-	-	-	-	P	-	-	P	-	P	-
ZR0002	PHAEOPHYCEAE	-	-	-	-	-	-	P	P	P	-	-	-	-
ZR0002	PHAEOPHYCEAE (?)	-	-	-	-	P	-	-	-	-	-	-	-	-
ZR0313	Dictyota dichotoma	-	-	-	-	P	-	-	-	-	-	-	-	-
ZR0384	Fucus vesiculosus	-	-	-	-	-	-	-	P	-	-	-	-	-
ZS0001	CHLOROPHYTA (?)	-	-	-	-	P	P	-	-	-	-	-	-	-
ZS0149	Enteromorpha	-	-	-	-	-	-	-	-	-	-	-	P	-
ZS0195	Cladophora	P	-	-	-	-	-	-	-	-	-	P	-	-
	BRYOPHYTA	-	-	-	-	-	P	-	-	-	-	-	-	-
	ANIMALIA (eggs)	-	-	-	-	-	-	P	P	-	-	P	P	-
	Lagotia viridis	-	P	-	-	P	-	-	P	P	P	-	P	-
C0001	PORIFERA	P	P	P	-	-	-	-	-	P	P	P	P	P
C0133	Scypha ciliata	-	-	-	-	-	-	P	-	P	-	-	P	P
C0414	Suberites	-	-	-	-	-	-	-	-	-	-	P	-	-
C0455	Stelligera (?)	-	-	-	-	-	-	-	-	P	-	-	-	-
C0475	Cliona	-	P	P	-	-	-	P	-	P	P	P	P	P
C1315	Raspailia	-	P	-	-	-	-	-	-	-	-	-	-	P

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D0158	Tubulariidae	-	P	-	-	-	-	-	-	-	-	-	-	P
D0216	FILIFERA	-	-	-	-	-	-	-	P	-	-	-	-	-
D0246	Bougainvilliidae	-	-	-	-	-	-	-	P	-	-	-	-	-
D0336	Lovenella clausa	-	P	-	-	-	-	-	-	-	-	-	-	-
D0409	Abietinaria abietina	P	-	-	-	-	-	-	P	-	-	-	-	P
D0424	Hydrallmania falcata	P	-	P	-	-	-	P	-	-	-	-	-	P
D0427	Sertularella	P	-	-	-	-	-	P	P	-	P	-	-	-
D0433	Sertularia	-	-	-	-	-	-	-	P	-	-	-	-	-
D0469	Plumularia setacea	-	P	-	-	-	P	-	-	-	-	-	-	-
D0491	Campanulariidae	-	P	-	-	-	-	-	-	-	-	-	-	-
D0499	Rhizocaulus verticillatus	-	-	P	-	-	-	-	-	-	-	-	-	-
D0503	Clytia hemisphaerica	-	-	-	-	-	-	-	1	-	-	-	-	P
D0597	Alcyonium digitatum	-	-	-	-	-	-	-	P	-	-	-	P	-
D0662	ACTINIARIA	1	-	-	-	24	6	-	-	-	-	-	1	1
D0743	Adamsia carciniopados	-	-	1	-	-	-	-	-	-	-	-	-	-
D0783	Caryophyllia smithii	-	1	-	-	-	-	-	-	-	-	-	-	-
F0002	TURBELLARIA	-	-	-	-	1	-	-	-	-	-	-	-	-
G0001	NEMERTEA	7	4	4	4	4	-	7	3	8	4	11	11	4
HD0001	NEMATODA	-	-	2	-	-	-	2	-	-	-	4	3	-
K0045	Pedicellina	-	-	-	-	-	-	-	P	-	-	-	-	-
L0029	Spadella cephaloptera	-	-	-	-	-	-	-	-	-	1	-	-	-
N0014	Golfingia elongata	12	3	10	-	-	-	4	-	1	1	1	5	11
N0016	Golfingia margaritacea	-	-	-	-	-	-	2	-	-	-	-	-	-
N0017	Golfingia vulgaris	-	-	-	-	-	-	-	-	-	-	1	-	-
N0017	Golfingia vulgaris (?)	-	-	-	-	-	-	-	-	-	-	-	-	7
N0020	Nephasoma (?)	-	-	6	-	-	-	-	-	-	-	-	3	-
N0025	Nephasoma minutum	4	1	1	-	-	-	-	-	1	1	2	3	4
N0028	Thysanocardia procera	-	-	-	-	-	1	-	-	-	-	-	-	-
N0034	Phascolion strombus	-	2	4	-	1	-	2	-	3	1	4	1	2
P0015	Pisione remota	-	-	-	-	-	-	-	-	1	-	-	-	-
P0019	Aphrodita aculeata	-	-	1	-	-	-	-	-	-	-	-	-	-
P0032	Subadyte pellucida	-	-	-	-	-	-	1	-	-	-	-	-	-
P0034	Alentia gelatinosa	-	-	-	-	-	-	-	-	-	-	-	-	1
P0049	Gattyana cirrhosa	-	-	-	-	-	-	-	-	-	-	-	1	-
P0058	Harmothoe extenuata	-	-	-	-	-	-	3	1	1	-	1	-	-
P0065	Harmothoe impar	2	12	1	-	-	-	1	1	9	-	1	1	7
	Harmothoe pagenstecheri	-	-	1	-	-	-	1	-	-	-	-	-	-
P0062	Malmgreniella glabra	-	-	-	-	-	-	-	-	-	1	-	-	-
P0066	Malmgreniella ljungmani	-	-	-	-	-	-	-	-	-	1	-	-	-
P0070	Malmgreniella mcintoshi	-	-	-	-	-	-	-	-	2	1	-	-	-
P0082	Lepidonotus squamatus	2	2	11	-	-	-	5	3	2	-	2	5	11
P0092	Pholoe baltica (sensu petersen)	-	-	1	-	-	-	-	-	-	-	-	-	-
P0094	Pholoe inornata (sensu	-	-	-	-	-	-	2	-	-	-	-	1	-

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	petersen)													
P0111	Fimbriosthenelais zetlandica	1	-	-	-	-	-	-	-	-	-	-	-	-
P0124	Hypereteone foliosa	-	-	1	-	-	-	-	-	-	-	-	-	-
P0143	Anaitides longipes	-	-	-	-	1	-	-	-	-	-	-	-	-
P0145	Anaitides mucosa	-	-	-	-	1	2	-	-	-	-	-	-	1
P0151	Eulalia aurea	-	-	-	-	-	-	-	1	-	-	1	-	-
P0152	Eulalia bilineata	-	-	P	-	-	-	-	-	-	-	1	-	2
P0153	Eulalia expusilla	-	2	-	-	-	-	-	-	1	-	-	1	1
P0155	Eulalia mustela	-	-	-	-	-	-	11	-	3	1	1	-	-
P0161	Eulalia viridis	1	-	-	-	-	-	-	1	-	-	2	-	-
P0164	Eumida bahusiensis	-	-	-	-	3	-	-	3	-	-	-	-	-
P0167	Eumida sanguinea	-	-	-	-	-	-	2	-	-	3	1	-	-
P0169	Nereiphylla lutea	-	3	1	-	-	-	2	-	-	-	2	-	2
P0174	Notophyllum foliosum	1	-	-	-	-	-	-	-	-	-	-	-	-
P0180	Phyllodoce laminosa	-	-	1	-	-	-	-	-	-	-	-	-	-
P0260	Glycera lapidum (agg)	2	12	5	-	-	-	4	3	15	12	4	11	11
P0268	Glycinde nordmanni	-	-	-	-	-	-	-	-	-	-	-	-	1
P0276	Goniadella gracilis	-	-	-	-	-	-	-	-	-	-	-	1	-
P0291	Sphaerodorum gracilis	-	-	-	-	-	-	2	-	-	1	-	-	2
P0297	Gyptis	-	-	-	-	-	-	-	-	3	13	-	-	-
P0311	Nereimyra punctata	-	1	3	-	-	-	2	-	-	-	1	-	-
P0321	Syllidia armata	-	-	-	-	-	-	-	-	-	-	-	-	1
P0350	Ehlersia ferrugina	1	-	-	-	-	-	-	-	-	-	-	-	-
P0355	Eurysyllis tuberculata	-	-	1	-	-	-	-	-	-	-	-	-	-
	Syllis "species D"	-	-	-	-	-	-	1	-	-	-	-	-	35
P0365	Syllis armillaris	6	6	7	-	-	-	8	5	3	1	3	8	1
P0349	Syllis cornuta (agg)	-	-	-	-	-	-	-	-	-	-	-	1	-
	Syllis parapari	-	-	-	-	-	-	-	-	-	1	-	-	-
P0371	Syllis variegata	-	-	1	-	-	-	-	-	-	-	2	5	4
P0362	Trypanosyllis coeliaca	-	1	-	-	-	-	-	1	-	-	-	-	-
P0375	Amblyosyllis formosa	-	-	-	-	-	-	-	-	-	1	-	-	-
P0377	Dioplosyllis cirrosa	-	-	-	-	-	-	-	-	1	-	-	-	-
P0380	Eusyllis blomstrandi	2	1	1	-	-	-	2	1	-	-	1	1	4
P0387	Odontosyllis fulgurans	-	-	-	-	-	-	-	-	-	1	-	1	-
P0388	Odontosyllis gibba	-	-	-	-	-	-	-	-	-	3	-	-	-
P0422	Exogone naidina	-	-	2	-	2	-	1	-	-	-	-	2	-
P0423	Exogone verugera	-	-	-	-	-	1	-	-	-	-	-	-	-
P0425	Sphaerosyllis bulbosa	-	-	-	-	-	-	-	-	2	-	-	-	-
P0426	Sphaerosyllis erinaceus	-	-	1	-	-	-	-	-	-	-	-	-	-
P0429	Sphaerosyllis pirifera	-	1	-	-	-	-	-	-	-	-	-	-	-
P0430	Sphaerosyllis taylori	-	-	1	-	1	-	-	-	1	-	-	-	-
P0434	Autolytus	-	-	2	-	-	-	2	-	-	-	1	1	-
P0458	Nereididae (juv)	-	1	-	-	-	-	-	-	-	-	1	-	-
	Eunereis (Type A)	-	-	-	-	-	-	-	-	-	-	-	1	-
P0478	Nereis zonata	-	-	1	-	-	-	2	1	-	-	-	-	3

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P0492	Aglaophamus malmgreni	-	-	-	-	-	-	-	-	-	-	-	-	2
P0493	Aglaophamus rubella	-	-	-	-	-	-	-	-	-	-	-	1	-
P0494	Nephtys (juv)	-	-	-	-	-	1	-	-	-	-	-	-	-
P0498	Nephtys cirrosa	-	-	-	5	-	-	-	-	-	-	-	-	-
P0499	Nephtys hombergii	-	-	-	-	1	2	-	-	-	-	-	-	-
P0502	Nephtys kersivalensis	-	-	-	-	1	-	2	-	-	-	-	-	-
P0526	Euphrosine borealis	-	1	-	-	-	-	-	-	-	-	-	-	2
P0528	Euphrosine foliosa	-	1	2	-	-	-	1	-	-	-	1	-	2
P0568	Nematonereis unicornis	-	3	-	-	-	-	-	2	1	-	1	2	2
P0579	Lumbrineris gracilis	P	1	6	-	1	P	9	1	-	-	1	1	-
P0597	Notocirrus scoticus	-	-	-	-	-	-	1	-	-	-	-	-	-
P0613	Ophryotrocha	-	-	-	-	-	-	-	-	-	-	-	1	-
P0643	Schistomeringos rudolphi	P	-	-	-	-	-	1	-	-	-	-	-	-
P0672	Scoloplos armiger	-	-	-	-	1	2	-	-	-	-	-	-	-
P0704	Paraonis fulgens	-	-	-	1	-	-	-	-	-	-	-	-	-
P0722	Aonides oxycephala	-	-	-	-	-	1	-	-	-	-	-	-	-
P0723	Aonides paucibranchiata	-	1	1	-	-	-	1	-	1	1	4	4	4
P0733	Laonice bahusiensis	2	5	-	-	-	-	1	-	3	7	5	6	5
P0750	Polydora caeca (agg)	6	1	6	-	-	-	7	5	3	2	1	8	5
P0751	Polydora caulleryi	-	-	-	-	-	-	-	-	-	-	3	2	-
P0752	Polydora ciliata (agg)	-	-	-	-	-	-	-	-	1	-	-	-	-
P0760	Polydora quadrilobata	-	-	-	-	-	1	-	-	-	-	-	-	-
P0765	Prionospio fallax	-	-	-	-	1	-	-	-	-	-	-	-	-
P0788	Spio armata (agg)	-	-	-	-	-	-	-	1	-	-	-	-	-
P0794	Spiophanes bombyx	-	-	-	1	-	-	-	-	-	-	-	-	-
P0824	Aphelochaeta marioni	-	-	-	-	1	-	-	-	-	-	-	-	-
P0831	Chaetozone zetlandica	-	1	1	-	-	1	-	-	-	-	1	3	-
P0836	Cirratulus cirratus	-	1	-	-	-	-	-	-	-	-	-	-	-
P0840	Dodecaceria	-	-	-	-	-	-	-	-	-	-	-	-	1
P0878	Diplocirrus glaucus	-	-	-	-	P	-	-	-	-	-	-	-	-
P0881	Flabelligera affinis	-	-	-	-	-	-	-	1	-	-	-	-	-
	Pherusa falcata	-	-	1	-	-	-	-	-	-	-	-	-	-
P0919	Mediomastus fragilis	-	-	-	-	-	-	2	-	-	-	-	-	-
P0920	Notomastus	-	6	-	-	1	2	2	-	-	-	-	-	-
P0955	Clymenura (Type A)	-	-	-	-	7	-	-	-	-	-	-	-	-
P0964	Euclymene oerstedii	-	-	-	-	3	1 1	-	-	-	-	-	-	-
P0971	Praxillella affinis	-	-	-	P	1 3	7	-	-	-	-	-	-	-
P0983	Notoproctus	-	-	-	-	-	-	-	-	-	-	1	3	2
P1014	Ophelina acuminata	2	3	1	-	-	-	3	-	-	-	-	-	1
P1022	Asclerocheilus intermedius	-	-	-	-	-	-	-	-	-	-	1	-	-
P1027	Scalibregma inflatum	-	-	-	-	1	-	-	-	-	-	-	-	-
P1069	Protodrilus	-	-	-	-	-	-	-	-	-	1	-	-	-
P1093	Galathowenia oculata	-	-	-	-	5 1	2 5	-	-	-	-	-	-	-
P1098	Owenia fusiformis	-	-	3	-	-	-	-	-	-	-	-	-	-

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P1117	Sabellaria spinulosa	31	27	69	-	-	-	99	14	5	3	126	36	88
P1122	Melinna elisabethae	-	-	1	-	-	-	8	-	-	-	-	-	-
P1124	Melinna palmata	-	1	-	-	10	21	-	-	-	-	-	-	-
P1139	Ampharete lindstroemi	-	4	9	-	-	-	1	-	-	-	-	-	1
P1143	Amphicteis midas	-	-	-	-	-	-	1	-	-	-	-	-	-
P1147	Anobothrus gracilis	-	-	1	-	-	-	1	-	-	-	-	-	-
P1175	Terebellides stroemi	-	-	3	-	1	-	3	-	-	-	-	-	1
P1177	Trichobranchus glacialis	-	-	-	-	-	-	1	-	-	-	-	-	-
P1179	Terebellidae (juv)	-	-	2	-	-	-	3	1	-	-	-	5	-
P1190	Eupolymnia nesidensis	1	4	1	-	-	-	2	3	5	4	3	-	10
P1193	Lanassa venusta	2	-	6	-	-	-	-	-	-	-	1	1	-
P1215	Phisidia aurea	1	-	3	-	-	-	-	-	-	-	-	1	4
P1235	Polycirrus	-	-	-	-	-	-	-	-	-	-	-	-	1
P1254	Thelepus cincinnatus	-	-	-	-	-	-	-	1	-	-	-	1	-
P1257	Sabellidae (juv)	1	-	-	-	-	-	-	-	1	-	1	-	-
P1263	Branchiomma bombyx	-	-	-	-	-	-	1	-	-	-	-	-	-
P1269	Chone filicaudata	-	-	-	-	-	-	-	-	-	1	-	-	-
P1271	Demonax	-	-	-	-	-	-	2	-	-	-	-	-	-
P1277	Euchone	-	-	-	-	-	-	-	-	-	-	1	1	-
P1283	Fabricia stellaris	-	-	-	-	-	-	1	-	1	-	-	-	-
P1290	Jasmineira elegans	-	-	-	-	-	-	-	-	-	-	1	1	-
P1316	Pseudopotamilla reniformis	1	1	-	-	-	-	2	3	4	4	1	10	3
P1324	Serpulidae	13	8	10	-	-	-	30	5	8	10	8	7	5
P1334	Hydroides norvegica	6	10	9	-	-	-	16	15	7	5	5	11	17
P1340	Pomatoceros lamarcki	5	-	-	-	-	-	11	7	2	2	4	7	2
P1341	Pomatoceros triqueter	4	7	-	-	-	-	12	6	18	4	5	5	1
P1343	Serpula vermicularis	-	-	-	-	-	-	-	-	2	-	-	-	1
P1348	Apomatus similis	1	-	-	-	-	-	-	-	1	-	-	-	-
P1357	Metavermilia multicristata	-	-	-	-	-	-	-	-	P	1	-	-	-
P1361	Salmacina dysteri	-	-	-	-	-	-	-	-	-	P	-	-	-
P1362	Spirorbidae	-	-	-	-	-	P	-	-	-	-	-	-	-
P1369	Circeis spirillum	P	-	-	-	-	-	-	P	-	-	-	-	P
P1396	Spirorbis spirorbis	-	-	-	-	-	-	P	P	-	-	-	-	-
P1489	Tubificoides amplivasatus	-	-	-	-	6	3	-	-	-	-	-	-	-
Q0015	Achelia echinata (agg)	-	-	-	-	-	-	-	2	-	-	-	-	1
Q0029	Endeis charybdaea	-	-	-	-	-	-	-	1	-	-	-	-	1
Q0032	Callipallene	-	1	-	-	-	-	1	-	-	1	-	-	-
R0041	Verruca stroemia	-	-	-	-	-	-	1	-	-	15	2	3	5
R0073	Balanidae (juv)	-	-	-	-	-	-	-	-	-	-	1	3	-
R0068	Elminius modestus	-	-	1	-	-	-	-	-	-	-	-	-	-
R0076	Balanus balanus	-	1	2	-	-	-	3	7	-	3	2	2	14

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R0077	Balanus crenatus	6	9	147	-	-	-	6	1	5	55	8	5	29
R0114	Triangulus galatheae	-	-	-	-	-	-	-	2	-	-	-	-	-
R0119	Drepanorchis neglecta	-	-	-	-	-	-	-	1	-	-	-	-	-
R0142	COPEPODA	-	-	-	-	2	-	-	-	-	-	-	-	-
R2406	Akessonia occulta (?)	-	-	-	-	-	-	-	-	-	1	1	-	-
R0700	Doropygus	-	-	-	-	-	-	-	-	-	-	1	1	-
R2186	Herpyllobius	-	-	-	-	-	-	-	1	1	-	-	-	-
R2413	MYODOCOPIDA	-	-	1	-	3	-	-	-	-	-	-	-	-
S0109	Eusirus longipes	-	2	-	-	-	-	-	-	-	-	-	-	-
S0125	Monoculodes carinatus	-	-	-	-	-	-	-	-	-	1	-	-	-
S0131	Perioculodes longimanus	-	-	-	-	-	1	-	-	-	-	-	-	-
S0146	Parapleustes bicuspis	-	-	-	-	-	-	-	-	-	1	-	-	-
S0178	Leucothoe lilljeborgi	-	-	-	-	-	3	-	-	-	-	-	-	-
S0254	Harpinia antennaria	-	-	-	-	4	3	-	-	-	-	-	-	-
S0255	Harpinia crenulata	-	-	-	-	1	7	-	-	-	-	-	-	-
S0257	Harpinia pectinata	-	-	-	-	2	4	-	-	-	-	-	-	-
S0303	Lysianassa ceratina	-	-	1	-	-	-	4	-	-	-	-	-	-
S0305	Lysianassa plumosa	-	2	2	-	-	-	3	-	-	-	-	1	6
S0337	Tmetonyx similis	-	-	-	-	-	-	-	-	-	-	-	1	-
S0413	Atylus vedlomensis	-	-	1	-	-	-	-	-	-	1	-	-	-
S0427	Ampelisca brevicornis	-	-	-	-	-	1	-	-	-	-	-	-	-
S0429	Ampelisca diadema	-	-	3	-	-	-	6	-	-	-	1	-	-
S0438	Ampelisca spinipes	-	2	1	-	-	-	-	-	-	1	-	1	-
S0440	Ampelisca tenuicornis	-	-	-	-	70	17	-	-	-	-	-	-	-
S0442	Ampelisca typica	-	-	2	-	-	-	-	-	-	-	-	-	-
S0453	Bathyporeia gracilis	-	-	-	2	-	-	-	-	-	-	-	-	-
S0455	Bathyporeia nana	-	-	-	1	-	-	-	-	-	-	-	-	-
S0498	Abludomelita obtusata	-	-	-	-	-	-	-	-	-	-	-	-	3
S0503	Cheirocratus (female)	-	-	-	-	-	-	-	-	-	-	-	-	2
S0504	Cheirocratus assimilis	-	-	-	-	-	-	-	-	1	-	-	-	-
S0519	Maera othonis	3	3	2	-	-	-	-	1	1	1	1	4	11
S0539	Gammaropsis cornuta	1	2	-	-	-	-	-	-	-	-	-	-	-
S0540	Gammaropsis lobata	2	1	-	-	-	-	-	-	6	-	-	-	-
S0541	Gammaropsis maculata	1	-	-	-	-	-	-	1	1	1	-	1	3
S0552	Photis longicaudata	-	-	6	-	25	3	-	-	-	-	-	-	-
S0554	Photis reinhardi	-	1	-	-	-	-	-	-	-	-	-	-	-
S0564	Ericthonius punctatus	-	-	-	-	-	-	1	1	-	-	-	-	-
S0577	Aoridae (female)	-	1	1	-	-	-	-	-	-	-	-	2	1
S0610	Crassicorophium bonnellii	-	-	1	-	-	-	-	-	-	-	-	-	-
S0611	Crassicorophium crassicorne	-	-	-	-	65	18	-	-	-	-	-	-	-
S0646	Caprella linearis	-	1	-	-	-	-	-	-	-	-	-	-	-
S0651	Pariambus typicus	-	-	-	-	2	5	-	-	-	-	-	-	-

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S0657	Phtisica marina	-	-	-	-	17	2	-	-	-	-	-	-	-
S0792	Gnathiidae (female)	-	-	-	-	-	-	-	-	1	-	-	-	-
S0793	Gnathia (Type A)	-	1	-	-	-	-	-	-	2	-	1	-	-
S0796	Gnathia oxyuraea	-	-	-	-	-	-	-	-	2	-	-	-	-
S0849	Conilera cylindracea	-	-	-	-	-	-	-	-	-	-	-	-	1
S0952	Astacilla	1	-	-	-	-	-	-	-	-	-	-	-	-
S0950	Arcturella damnoniensis	-	-	-	-	-	-	P	-	-	-	-	-	-
S0992	Hemiarthrus abdominalis (?)	-	-	-	-	-	-	-	-	-	-	-	2	-
S1208	Eudorella truncatula	-	-	-	-	1	3	-	-	-	-	-	-	-
S1254	Diastylis rugosa	-	-	-	-	3	-	-	-	-	-	-	-	-
S1276	DECAPODA	-	-	-	P	-	P	-	-	-	-	-	-	-
S1345	Eualus pusiolus	3	1	2	-	-	-	1	3	2	-	2	4	1
S1374	Pandalina brevirostris	2	1	2	-	-	-	3	-	-	-	-	-	1
S1380	Crangonidae (?)	-	-	-	-	-	-	-	-	-	1	-	-	-
S1445	Paguridae	-	-	-	-	-	-	-	-	-	P	-	-	-
S1445	Paguridae (juv)	-	1	-	-	-	-	-	2	-	-	-	-	-
	Cestopagurus timidus	-	-	4	-	-	-	27	3	-	-	3	-	-
S1457	Pagurus bernhardus	-	-	-	-	-	-	-	-	-	-	-	-	1
S1462	Pagurus prideaux	-	-	2	-	-	-	-	-	-	-	-	-	-
S1470	Galathea (juv)	-	-	-	-	-	-	-	-	P	-	-	-	-
S1472	Galathea intermedia	-	-	-	-	-	-	1	-	-	-	-	2	-
S1472	Galathea intermedia (juv)	-	6	-	-	-	-	-	-	-	-	-	-	-
S1474	Galathea nexa	-	-	-	-	-	-	-	4	-	-	-	-	-
S1508	Ebalia tuberosa	2	4	1	-	-	-	1	1	-	-	-	-	1
S1519	Hyas coarctatus	4	1	3	-	-	-	3	3	1	1	5	1	1
S1519	Hyas coarctatus (juv)	-	-	-	-	-	-	7	2	-	-	-	1	-
S1525	Inachus (juv)	-	-	-	-	-	-	2	-	-	-	-	-	-
S1529	Macropodia (juv)	-	-	-	-	-	-	1	-	-	-	-	-	-
S1533	Macropodia tenuirostris	-	-	-	-	-	-	-	1	-	-	-	-	-
S1535	Eurynome (juv)	-	-	-	-	-	-	-	1	-	-	-	-	-
S1537	Eurynome spinosa	-	-	-	-	-	-	-	1	-	-	-	-	-
S1582	Liocarcinus marmoreus	-	-	-	-	-	-	-	-	1	-	-	-	-
	COLLEMBOLA	-	-	-	-	-	-	-	-	1	-	-	-	-
W0035	Eleutheromenia sierra	-	1	-	-	-	-	-	-	-	-	-	-	-
W0053	Leptochiton asellus	10	24	8	-	-	-	6	3	42	7	9	10	9
W0054	Leptochiton cancellatus	-	-	-	-	-	-	-	-	1	1	-	-	-
W0106	Emarginula fissura	-	-	-	-	-	-	-	1	-	-	-	1	-
W0172	Jujubinus miliaris	-	-	3	-	-	-	1	-	-	-	-	-	-
W0161	Gibbula tumida	-	-	-	-	-	-	2	1	6	2	2	-	2
W0182	Calliostoma zizyphinum	-	-	-	-	-	-	2	-	-	-	-	1	-
W0287	Lacuna crassior	-	-	-	-	-	-	2	-	-	-	-	-	-
W0480	Velutina velutina	-	-	-	-	-	-	1	-	-	-	-	-	-
	Boreotrophon truncatus	-	-	2	-	-	-	3	-	-	-	-	-	1
W0743	Hinia (eggs)	-	-	P	-	-	-	-	-	-	-	-	-	-

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W0747	Hinia incrassata	-	-	1	-	-	-	1	2	-	-	-	-	-
W1302	Goniodoris nodosa	-	-	-	-	-	-	1	-	-	-	-	-	-
W1569	Nucula nitidosa	-	-	-	-	1	-	-	-	-	-	-	-	-
W1688	Glycymeris glycymeris	-	-	-	-	-	-	1	-	2	-	-	-	-
W1688	Glycymeris glycymeris (juv)	-	-	-	-	-	-	-	-	1	1	-	-	-
W1691	Mytilidae (juv)	-	-	-	-	-	-	-	1	-	-	-	-	-
W1695	Mytilus edulis (juv)	-	-	2	-	-	-	-	-	-	-	-	-	-
W1721	Musculus discors	-	-	1	-	4	-	4	-	-	-	3	-	-
W1718	Modiolarca tumida	1	-	3	-	-	-	2	1	-	-	-	-	2
W1698	Modiolus (juv)	-	-	-	-	-	-	6	5	-	1	1	-	5
W1700	Modiolus adriaticus	-	-	-	-	-	-	-	-	1	-	-	-	-
W1702	Modiolus modiolus	-	-	-	-	-	-	3	1	-	-	2	-	-
W1702	Modiolus modiolus (juv)	1	-	6	-	-	-	5	3	3	1	2	-	-
W1768	Pectinidae (juv)	-	-	-	-	-	-	-	-	-	-	1	-	-
W1779	Chlamys varia	-	-	1	-	-	-	-	-	-	-	-	-	-
W1773	Aequipecten opercularis	-	-	2	-	-	-	-	-	1	1	-	1	-
W1773	Aequipecten opercularis (juv)	-	1	-	-	-	-	1	1	-	-	-	-	-
W1805	Anomiidae (juv)	-	-	3	-	-	-	5	5	2	3	-	-	-
W1807	Anomia ephippium	1	-	-	-	-	-	1	-	-	-	-	-	-
W1814	Pododesmus patelliformis	-	2	2	-	-	-	-	4	-	4	-	-	-
W1827	Myrtea spinifera	-	-	-	-	2	-	-	-	-	-	-	-	-
W1921	Astartidae (juv)	-	-	-	-	-	-	1	-	1	1	-	1	-
W1925	Astarte sulcata	6	1	19	-	-	-	11	2	1	-	1	-	2
W1929	Goodallia triangularis	-	-	-	-	-	-	-	-	-	1	-	-	-
W1951	Parvicardium ovale	-	-	8	-	-	-	3	-	-	-	-	-	2
W1959	Laevicardium crassum (juv)	-	-	1	-	-	-	-	-	-	-	-	-	-
W1977	Spisula solida	-	-	2	-	-	-	-	-	1	-	2	-	1
W1977	Spisula solida (juv)	-	-	-	-	-	-	-	-	-	3	-	-	-
W2049	Gari tellinella	-	-	-	-	-	-	-	1	-	1	-	-	1
W2059	Abra alba	-	-	-	-	4	7	1	-	-	-	-	-	-
W2061	Abra nitida	-	-	-	-	1	1	-	-	-	-	-	-	-
W2091	Circomphalus casina	-	2	2	-	-	-	-	-	-	-	-	-	-
W2091	Circomphalus casina (juv)	1	-	-	-	-	-	-	-	-	-	-	-	-
W2095	Gouldia minima	2	-	1	-	-	-	-	-	-	-	-	-	-
W2113	Tapes rhomboides	2	-	-	-	-	-	-	-	-	-	-	-	1
W2113	Tapes rhomboides (juv)	-	-	-	-	-	-	1	-	-	-	-	-	-
W2100	Clausinella fasciata	-	1	-	-	-	-	3	2	4	-	1	-	1
W2104	Timoclea ovata	16	3	6	-	-	-	2	1	5	-	-	2	-
W2152	Sphenia binghami	9	-	7	-	-	-	2	2	1	-	-	5	19
W2157	Corbula gibba	-	-	-	-	1	-	-	-	-	-	-	-	-
W2166	Hiatella arctica	1	-	13	-	-	-	7	3	2	1	1	2	5
W2247	Lyonsia norwegica	-	-	1	-	-	-	-	-	-	-	-	-	-
W2252	Pandora pinna	1	-	2	-	-	-	-	-	-	-	-	-	-

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X0008	Neocrania anomala	-	-	-	-	-	-	-	-	10	1	1	2	-
X0028	Terebratulina (dead)	-	-	-	-	-	-	-	-	-	-	-	1	-
X0038	Gwynia capsula (?)	-	-	-	-	-	-	-	-	-	6	-	-	-
Y0008	Crisidia cornuta	P	-	P	-	-	-	P	P	-	P	P	P	P
Y0013	Crisia	P	P	P	-	-	-	P	P	P	P	P	P	P
Y0027	Tubulipora	P	P	-	-	-	-	P	-	P	P	P	-	-
Y0039	Eurystrotos compacta	-	-	-	-	-	-	P	P	-	P	-	P	-
Y0041	Plagioecia patina	-	P	P	-	-	-	P	P	P	P	-	-	-
Y0054	Entalophoroecia deflexa	P	P	-	-	-	-	-	P	P	-	P	-	-
Y0066	Disporella hispida	P	P	-	-	-	-	P	-	P	P	-	P	P
Y0076	Alcyonidium diaphanum	P	P	P	-	-	-	P	-	-	P	P	-	P
Y0080	Alcyonidium mytili	-	-	-	-	-	-	P	-	-	P	-	P	-
Y0128	Penetrantia concharum	-	P	-	-	-	-	-	-	-	-	-	-	-
Y0131	Vesicularia spinosa	-	-	P	-	-	P	P	P	-	-	-	P	P
Y0137	Bowerbankia	-	-	P	-	-	-	P	P	-	-	-	P	-
Y0153	Aetea	-	-	P	-	-	-	P	P	P	P	-	P	-
Y0160	Scruparia	-	-	-	-	P	-	P	P	-	P	-	-	-
Y0165	Eucratea loricata	-	-	P	-	-	-	P	P	-	P	-	P	P
Y0178	Electra pilosa	-	-	P	-	P	-	P	P	P	P	P	-	-
Y0180	Pyripora catenularia	-	-	-	-	-	-	-	P	-	-	-	P	-
Y0187	Flustra foliacea	P	P	P	-	-	-	P	P	P	P	P	P	P
Y0205	Callopora lineata	-	-	-	-	-	-	P	-	-	-	-	-	-
Y0208	Alderina imbellis	-	P	P	-	-	-	-	-	-	-	-	-	-
Y0212	Cauloramphus spiniferum	P	-	-	-	-	-	-	-	-	-	-	-	-
Y0222	Amphiblestrum auritum	-	-	P	-	-	-	P	-	-	-	-	-	-
Y0223	Amphiblestrum flemingii	-	P	-	-	-	-	-	-	-	P	-	-	-
Y0261	Beania mirabilis	-	P	P	-	-	-	P	P	-	-	P	-	-
Y0278	Scrupocellaria scrupea	P	-	P	-	-	-	P	P	-	P	P	P	-
Y0279	Scrupocellaria scruposa	-	P	-	-	-	-	P	-	P	P	-	-	-
Y0299	Cellaria	-	P	P	-	-	-	P	P	P	P	P	P	P
Y0332	Hippothoa divaricata	P	P	P	-	-	-	P	P	-	P	-	P	-
Y0333	Hippothoa flagellum	-	P	-	-	-	-	-	-	-	P	-	P	-
Y0337	Celleporella hyalina	-	-	-	-	-	-	-	P	-	-	-	-	-
Y0344	Chorizopora brongniarti	-	-	-	-	-	-	-	-	-	P	-	-	-
Y0358	Escharoides coccinea	-	-	-	-	-	-	P	-	-	-	-	-	-
Y0364	Escharella immersa	P	-	P	-	-	-	P	P	P	P	P	P	P
Y0370	Escharella ventricosa	P	P	P	-	-	-	P	P	P	P	P	P	P
Y0376	Neolagenipora collaris	P	-	-	-	-	-	P	-	-	-	-	-	-
Y0385	Porella concinna	P	-	P	-	-	-	-	P	-	-	-	-	-
Y0414	Hippoporina pertusa	-	-	P	-	-	-	-	-	-	-	-	-	-
Y0440	Escharina johnstoni	P	P	-	-	-	-	-	-	-	-	-	-	-
Y0465	Parasmittina trispinosa	-	-	-	-	-	-	P	-	-	P	P	P	-
Y0468	Schizomavella auriculata	P	P	P	-	-	-	P	P	-	-	-	-	-
Y0471	Schizomavella discoidea	-	-	-	-	-	-	-	-	-	P	-	-	-
Y0474	Schizomavella linearis	-	P	-	-	-	-	P	-	-	-	-	-	P
Y0480	Microporella ciliata	-	P	-	-	-	-	P	-	-	-	-	-	-
Y0483	Fenestrulina malusii	P	P	P	-	-	-	P	-	P	-	P	P	P

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Y0486	Haplopoma	-	-	-	-	-	-	P	P	-	-	-	-	-
Y0495	Cellepora pumicosa	-	-	-	-	-	-	-	-	P	-	-	-	P
Y0502	Lagenipora lepralioides	-	P	-	-	-	-	-	-	-	-	-	-	-
Y0504	Turbicellepora avicularis	-	P	-	-	-	-	-	-	-	P	P	-	P
Y0530	Schizotheca fissa	-	-	-	-	-	-	-	-	-	P	-	-	-
ZA0006	Phoronis ovalis	-	P	-	-	-	-	-	-	-	-	-	-	-
ZB0062	Anseropoda placenta	-	-	-	-	-	-	-	-	-	-	1	-	1
ZB0075	Crossaster papposus	1	-	-	-	-	-	-	-	-	-	-	-	-
ZB0075	Crossaster papposus (juv)	-	1	-	-	-	-	1	-	1	-	-	1	1
ZB0082	Henricia	-	-	-	-	-	-	1	-	-	-	-	-	-
ZB0100	Asterias rubens	1	-	1	-	-	-	2	2	-	-	-	-	-
ZB0124	Ophiothrix fragilis	-	-	2	-	-	-	5	8	P	1	6	1	-
ZB0124	Ophiothrix fragilis (juv)	-	-	-	-	-	-	-	-	-	-	-	-	1
ZB0128	Ophiocomina nigra	-	-	-	-	-	-	4	13	-	-	7	-	-
ZB0152	Amphiura chiajei	-	-	-	-	-	2	-	-	-	-	-	-	-
ZB0154	Amphiura filiformis	-	-	-	-	1	-	-	-	-	-	-	-	-
ZB0161	Amphipholis squamata	-	-	-	-	-	-	-	-	-	-	-	2	-
ZB0165	Ophiuridae (juv)	2	-	2	-	-	-	1	-	-	-	-	-	-
ZB0168	Ophiura albida	4	12	3	-	-	-	1	-	1	-	1	2	-
ZB0193	Psammechinus miliaris (juv)	-	1	-	-	-	-	-	-	-	-	-	-	-
ZB0198	Echinus esculentus	1	-	-	-	-	-	P	-	-	-	-	-	-
ZB0212	Echinocyamus pusillus	7	7	9	-	-	-	4	1	6	-	4	2	6
ZB0266	Cucumariidae (juv)	-	-	1	-	-	-	1	-	-	-	-	-	-
ZB0262	Thyone fusus	-	-	4	-	-	-	-	-	-	-	1	-	-
ZB0299	Labidoplax buskii	-	-	-	-	-	-	-	-	-	-	-	-	1
ZB0301	Labidoplax media	-	-	1	-	-	-	-	-	-	-	-	-	-
ZD0002	ASCIDIACEA	-	-	-	-	-	-	P	P	-	-	-	P	-
ZD0002	ASCIDIACEA (juv)	-	-	11	-	-	-	-	3	-	-	2	5	-
ZD0029	Sidnyum	-	P	-	-	-	-	-	-	-	-	-	-	P
ZD0041	Didemnidae	-	-	P	-	-	-	-	P	-	-	-	-	P

SDC	Taxon Name	S10 AD 46830	S17 AD 46831	S19 AD 46832	S39 Grab 46883	S40 Grab 46884	S41 Grab 46885	S42 AD 46880	S43 AD 46876	S45 AD 46881	S47 AD 46882	S52 AD 46877	S53 AD 46878	S54 AD 46879
ZD0084	Ascidiella aspersa	-	-	-	-	-	-	-	-	-	-	-	1	-
ZD0085	Ascidiella scabra	-	-	2	-	-	-	-	-	-	-	-	-	-
ZD0112	Polycarpa fibrosa	-	-	-	-	-	-	5	-	-	-	5	2	-
ZD0115	Polycarpa pomaria	1	3	1	-	-	-	6	1	-	-	-	-	-
ZD0120	Dendrodoa grossularia	24	14	25	-	-	-	17	3	1	2	-	2	188
ZD0140	Pyura squamulosa	-	-	-	-	-	-	-	-	-	-	-	-	4
ZD0141	Pyura tessellata	1	1	-	-	-	-	-	1	1	-	-	-	-
ZD0146	Molgula (juv)	-	-	-	-	-	-	-	-	-	-	-	-	1