The Marine Habitat Classification for Britain and Ireland. Version 04.05

Sublittoral Sediment Section

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SS Sublittoral sediment

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt), Reduced/low (0.5-30ppt)
Wave exposure:	Very exposed, Exposed, Moderately exposed, Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Strong, Moderately strong, Weak, Very weak
Substratum:	Boulders, cobbles and pebbles, gravels, sands, muds, mixed sediments.
Zone:	Infralittoral, Circalittoral
Depth band:	0-5 m, 5-10 m, 10-20 m, 20-30 m, 30-50 m, 50-100 m

Previous code

SS	97.06

Biotope description

Sediment habitats in the sublittoral near shore zone (i.e. covering the infralittoral and circalittoral zones), typically extending from the extreme lower shore down to the edge of the bathyal zone (200m). Sediment ranges from boulders and cobbles, through pebbles and shingle, coarse sands, sands, fine sands, muds, and mixed sediments. Those communities found in or on sediment are described within this broad habitat type.

Situation

No situation data available.

Temporal variation

No temporal data available.

SS.SCS Sublittoral coarse sediment (unstable cobbles and pebbles, gravels and coarse sands)

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Exposed, Moderately exposed, Sheltered
Tidal streams:	Strong, Moderately strong, Weak, Very weak
Substratum:	Cobbles and pebbles, gravels and coarse sands.
Zone:	Infralittoral, Circalittoral
Depth band:	0-5 m, 5-10 m, 10-20 m, 20-30 m

Previous code

IGS in part	97.06
CGS in part	97.06

Biotope description

Coarse sediments including coarse sand, gravel, pebbles, shingle and cobbles which are often unstable due to tidal currents and/or wave action. These habitats are generally found on the open coast or in tide-swept channels of marine inlets. They typically have a low silt content and a lack of a significant seaweed component. They are characterised by a robust fauna including venerid bivalves.

Situation

No situation data available.

Temporal variation

No temporal data available.

SS.SCS.SCSVS Sublittoral coarse sediment in variable salinity (estuaries)

Habitat classification

Salinity:	Variable (18-35ppt), Reduced (18-30ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Strong, Moderately strong, Weak, Very weak
Substratum:	Pebbles and gravel with a minor sand fraction
Zone:	Infralittoral, Circalittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

part of IGS.EstGS	97.06

Biotope description

Clean gravels that occur in the upper reaches of marine inlets, especially estuaries, where water movement is sufficiently strong to remove the silt content of the sediment. The habitat typically lacks a significant seaweed component and is characterised by a sparse but very robust brackish-water tolerant fauna.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m^2)*
Carcinus maenas	●●●	Rare	33	
Pomatoschistus	●●●	Occasional	67	

SS.SCS.ICS Infralittoral coarse sediment

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed, Sheltered
Tidal streams:	Strong, Moderately strong, Weak, Very weak
Substratum:	Sand with gravel, pebbles and/or shingle
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

part IGS.FaG	97.06

Biotope description

Moderately exposed habitats with coarse sand, gravelly sand, shingle and gravel in the infralittoral, are subject to disturbance by tidal steams and wave action. Such habitats found on the open coast or in tide-swept marine inlets are characterised by a robust fauna of infaunal polychaetes such as *Chaetozone setosa* and *Lanice conchilega*, cumacean crustacea such as *Iphinoe trispinosa* and *Diastylis bradyi*, and venerid bivalves.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
NEMERTEA	••	Common	3	17
NEMATODA	••	Present	1	22
Eteone longa	••	Present	3	10
Anaitides maculata	••	Present	4	12
Glycera lapidum	••	Common	6	25
Nephtys cirrosa	••	Present	6	16
Nephtys hombergii	••	Present	2	10
Scoloplos armiger	••	Abundant	4	19
Spio martinensis	••	Frequent	5	19
Spiophanes bombyx	••	Frequent	3	66
Magelona mirabilis	•	Frequent	1	19
Chaetozone setosa	•••	Abundant	10	144
Mediomastus fragilis	••	Present	1	21
Lanice conchilega	•••••	Abundant	54	
Lanice conchilega	•••	Common	8	62
Iphinoe trispinosa	••	Frequent	5	18
Diastylis bradyi	••	Common	11	54
Pagurus bernhardus	•••	Occasional	8	
Liocarcinus depurator	••	Occasional	3	
Carcinus maenas	••	Occasional	3	
Nucula nitidosa	••	Frequent	2	19
Ensis ensis	••	Abundant	2	14
Abra alba	••	Present	1	68
Asterias rubens	••	Occasional	5	
Echinocardium cordatum	••	Occasional	1	
Pomatoschistus minutus	••	Frequent	4	
Chorda filum	••	Occasional	1	

SS.SCS.ICS.SSh Sparse fauna on highly mobile sublittoral shingle (cobbles and pebbles)

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Extremely exposed, Exposed
Tidal streams:	Moderately strong, Weak
Substratum:	Shingle and/or pebbles
Zone:	Infralittoral
Depth band:	5-10 m, 10-20 m, 20-30 m, 30-50 m

Previous code

None

Biotope description

Sublittoral clean shingle and pebble habitats with a lack of conspicuous fauna. Unstable, rounded pebbles and stones (as opposed to sub-angular cobbles, which are often found lying on or embedded in other sediment) that are strongly affected by tidal steams and/or wave action can support few animals and are consequently faunally impoverished. The species composition of this biotope may be highly variable seasonally and is likely to comprise of low numbers of robust polychaetes or bivalves with occasional epibiota including echinoderms and crustacea such as *Liocarcinus* spp. and *Pagurus* spp. In more settled periods there may be colonisation by anemones such as *Urticina felina* and small populations of hydroids and Bryozoa.

Situation

This biotope is found in marine inlets with very strong tidal currents as well as in very wave exposed open coast environments.

Temporal variation

The faunal composition of this biotope is likely to be highly variable as a result of seasonal changes in wave and tidal energy.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m^2)*
Chaetopterus variopedatus	●●●●●	Rare	100	
Spisula elliptica	●●●●●	Present	100	4

SS.SCS.ICS.HchrEdw *Halcampa chrysanthellum* and *Edwardsia timida* on sublittoral clean stone gravel

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Extremely sheltered
Tidal streams:	Strong, Moderately strong, Weak
Substratum:	Clean stone gravel with pebbles
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

IGS.HalEdw	97.06

Biotope description

Periodically (seasonally?) disturbed sublittoral stone gravel with small pebbles characterised by the presence of the anemones *Halcampa chrysanthellum* and *Edwardsia timida*. Associated species are often typical of a hydroid/bryozoan turf with polychaetes such as *Pomatoceros* spp. encrusting larger pebbles and low numbers of syllid and phyllodocid polychaetes living interstitially. In some areas this biotope may also contain opportunistic red seaweeds and infauna such as *Sabella pavonina*. It should be noted that this habitat may show considerable variation in community composition and it is possible that it is a sub-biotope of other gravel biotopes.

Situation

This biotope tends to occur at the entrance to marine inlets where tidal currents are moderately strong.

Temporal variation

The faunal composition and species richness of this biotope may vary seasonally as a result of disturbance from increased wave or tidal action.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Eudendrium	••	Rare	1	
Nemertesia antennina	••	Rare	1	
Obelia	••	Occasional	2	
Obelia geniculata	••	Present	2	
Alcyonium digitatum	••	Occasional	1	
Cerianthus lloydii	••	Occasional	2	
Urticina felina	••	Occasional	2	
Sagartia elegans	•••	Occasional	6	
Halcampa chrysanthellum	••••	Rare	11	
Edwardsia claparedii	••	Present	2	
Edwardsia timida	••••	Frequent	18	
Eupolymnia nebulosa	••	Present	1	
Lanice conchilega	•••	Occasional	4	
Sabella pavonina	••	Rare	1	
Pomatoceros triqueter	•••	Frequent	6	
Pagurus bernhardus	•••	Rare	4	
Carcinus maenas	••	Occasional	2	
Gibbula cineraria	••	Present	1	
Pecten maximus	••	Rare	1	
BRYOZOA	••	Occasional	2	
Alcyonidium diaphanum	•••	Occasional	5	
Crossaster papposus	••	Present	1	
Asterias rubens	•••	Occasional	6	
Amphipholis squamata	••	Present	1	
Clavelina lepadiformis	••	Rare	1	
Pholis gunnellus	••	Frequent	3	
Dilsea carnosa	••	Present	1	
Chondrus crispus	••	Present	1	
Cryptopleura ramosa	••	Present	1	
Nitophyllum punctatum	••	Present	1	
Polysiphonia stricta	••	Present	1	
Desmarestia aculeata	••	Present	1	
Chorda filum	••	Present	1	
Laminaria saccharina	••	Present	1	

SS.SCS.ICS.MoeVen *Moerella* spp. with venerid bivalves in infralittoral gravelly sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed, Sheltered
Tidal streams:	Moderately strong, Weak
Substratum:	Medium to coarse sand and gravelly sand
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

part of IGS.Sell	97.06

Biotope description

Infralittoral medium to coarse sand and gravelly sand which is subject to moderately strong water movement from tidal streams may be characterised by *Moerella* spp. with the polychaete *Glycera lapidum* (agg.) and venerid bivalves. Typical species include *Moerella pygmaea* or *M. donacina* with other robust bivalves such as *Dosinia lupinus*, *Timoclea ovata*, *Goodallia triangularis* and *Chamelea gallina*. Other infauna include nephtyd and spionid polychaetes and amphipod crustacea. Another important component of this biotope in some areas is the bivalve *Spisula solida* (see K hne & Rachnor 1996) which may be common or abundant. In conjunction with FfabMag this biotope may form part of the 'Shallow *Venus* Community', the 'Boreal Off-shore Sand Association' and the '*Goniadella-Spisula* association' of previous workers (see Petersen 1918; Jones 1951; Thorson 1957; Salzwedel, Rachor & Gerdes 1985). Epifaunal communities may be reduced in this biotope when compared to FfabMag; both types may have surface sand waves which may be indicative of the presence of venerid bivalves (Warwick & Davies 1977). This hypothesis, however, requires testing. Remote grab sampling is likely to under-estimate venerid bivalves and other deep-burrowing and more dispersed species such as *Paphia*, *Ensis* and *Spatangus*. In southern areas of the UK and the North Sea, in slightly siltier sand and shelly sand, SCS.MoeVen may give way to the other *Spisula* biotope SSA.SsubNhom. Together these two biotopes replace the old biotope IGS.Sell.

Situation

This biotope is found on the exposed open coast and in estuaries with moderately strong tidal currents.

Temporal variation

No temporal data available.

Similar biotopes

SCS.MedLumVen	Similar biotope found in deeper water than MoeVen (generally greater than 15-20m), with increased importance of *Mediomastus fragilis* and *Lumbrineris* spp.
SSA.FfabMag	More stable than MoeVen, where reduced exposure and/or tidal currents result in a muddy sandy bottom. The community is dominated by *Fabulina fabula* and *Magelona mirabilis*.
SCS.Glap	In areas where the sediment is subject to continual disturbance by wave action MoeVen grades into Glap, which is more impoverished and lacks the venerid bivalve communities.
LSA.Po.Ang	On exposed lower shore sand MoeVen may give way to Po.Ang

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Anemonia viridis	••	Occasional	1	
NEMERTEA	••••	Common	5	39
NEMATODA	•••	Frequent	5	64
Pisione remota	••	Common	9	147
Glycera lapidum	••••	Common	7	84
Streptosyllis websteri	••	Present	1	30
Nephtys cirrosa	•••	Present	3	23
Aonides paucibranchiata	••	Frequent	1	42
Spio filicornis	•••	Present	4	39
Spiophanes bombyx	••	Present	1	8
Lanice conchilega	•••	Occasional	10	
Bathyporeia pelagica	••	Frequent	1	21
Apseudes latreillii	••	Common	6	708
Pagurus bernhardus	•••	Occasional	16	
Liocarcinus depurator	••	Occasional	6	
Carcinus maenas	••	Occasional	2	
Goodallia triangularis	••	Frequent	1	33
Spisula solida	••	Common	1	31
Moerella donacina	•••	Abundant	11	108
Moerella pygmaea	•••	Frequent	8	55
Dosinia lupinus	••	Present	2	18
Chamelea gallina	••	Present	1	10
Timoclea ovata	••	Common	2	23
Echinocyamus pusillus	•••	Present	5	60
Callionymus lyra	••	Occasional	1	
Pomatoschistus minutus	••••	Frequent	32	
Gracilaria gracilis	•••	Frequent	9	
Chondrus crispus	••	Occasional	1	
Polyides rotundus	••	Occasional	1	
Laminaria saccharina	••	Occasional	1	
Ulva	••	Frequent	4	

SS.SCS.ICS.HeloMsim

Hesionura elongata and *Microphthalmus similis* with other interstitial polychaetes in infralittoral mobile coarse sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed, Sheltered
Tidal streams:	Strong, Moderately strong, Weak
Substratum:	Medium to very coarse sand
Zone:	Infralittoral
Depth band:	5-10 m, 10-20 m

Previous code

None

Biotope description

On infralittoral sandbanks and sandwaves and other areas of mobile medium-coarse sand, populations of interstitial polychaetes may be found. These habitats consist of loosely packed grains of sand forming waves up to several metres high often with gravel, or occasionally silt, in the troughs of the waves. This biotope is commonly found both inshore along the east coast of the UK e.g. around the Race Bank, Docking Shoal and Inner Dowsing banks (IECS, 1995; IECS, 1999), and in the Southern Bight of the North Sea and off the Belgian coast (Degraer *et al*. 1999; Vanosmael *et al*. 1982). These habitats support interstitial communities living in the spaces between the grains of sand, in particular hesionurid polychaetes such as *Hesionura elongata* and *Microphthalmus similis*, along with protodrilid polychaetes such as *Protodrilus* spp. and *Protodriloides* spp. Other important species may include Turbellaria spp. and larger deposit feeding polychaetes such as *Travisia forbesii*. An important feature of this biotope which is not reflected in much of the available data is the importance of the meiofaunal population which may exceed the macrofaunal population both in terms of abundance and biomass (Willems *et al*. 1982).

Situation

This biotope is commonly found both in shore adjacent to the coast, and further away from the coast.

Temporal variation

No temporal data available.

Similar biotopes

SSA.IMoSa	More mobile and found on finer sediments than HeloMsim. More faunally impoverished as a result of this mobility.
SSA.NcirBat	NcirBat is found in finer sediments with a higher proportion of amphipod and isopod crustaceans
SCS.Glap	Glap has a gravel fraction and is more faunally impoverished
SCS.Pkef	Pkef has a more varied sediment composition with a higher fine sand or silt fraction and high prevalence of *Protodorvillea kefersteini*

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
TURBELLARIA	●●●	Common	59	140
NEMERTEA	●	Common	4	11
Hesionura elongata	●●	Common	4	115
Glycera lapidum	●●	Present	3	6
Microphthalmus	●	Frequent	2	34
Microphthalmus similis	●●	Frequent	6	73
Nephtys cirrosa	●●	Present	3	3
Travisia forbesii	●	Common	5	18
Protodrilus	●●	Frequent	4	19
Protodriloidae	●	Common	2	6
Spisula elliptica	●	Present	1	2

SS.SCS.ICS.Glap *Glycera lapidum* in impoverished infralittoral mobile gravel and sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Very exposed, Exposed, Moderately exposed
Tidal streams:	Strong, Moderately strong
Substratum:	Medium to coarse sand with some gravel
Zone:	Infralittoral
Depth band:	5-10 m, 10-20 m

Previous code

part of IMS.SpiSpi	97.06

Biotope description

In infralittoral mixed slightly gravelly sands on exposed open coasts impoverished communities characterised by the polychaete *Glycera lapidum* (agg.) may be found. *Glycera lapidum* is a species complex and as such some variability in identification may be found in the literature. It is also quite widespread and may occur in a variety of coarser sediments and is often present in other SCS biotopes. However, it is rarely considered a characteristic species and where this is the case it is normally due to the exclusion of other species. Consequently it is considered that habitats containing this biotope may be subject to continual or periodic sediment disturbance from wave action, which prevents the establishment of a more stable community. Other taxa include spionid polychaetes such as *Spio martinensis* and *Spiophanes bombyx, Nephtys* spp. and in some areas the bivalve *Spisula elliptica*. It is possible that SCS.Glap it is not a true biotope, rather an impoverished, transitional community, which in more settled conditions develops into other more stable communities.

Situation

In many cases e.g. along the East Yorkshire coast this biotope is found in shallow inshore areas facing directly into the prevailing wind and subject to considerable wave action.

Temporal variation

Due to the variability in sediment regime at these habitats there may be high seasonal or spatial variability within this community.

Similar biotopes

SSA.IMoSa	Glap may a coarser extension of the mobile sand biotope IMoSa
SCS.MoeVen	The current biotope may be an impoverished/sub-climactic version of MoeVen
SCS.GlapThyAmy	The offshore biotope (GlapThyAmy) is also characterised by *Glycera lapidum* but it is not known at this stage whether Glap is a shallow extension of this much deeper biotope.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
NEMERTEA	●●●	Present	8	21
Glycera lapidum	●●●●●	Present	51	36
Nephtys cirrosa	●●●	Present	7	7
Nephtys longosetosa	●●	Present	1	2
Spio martinensis	●●●●	Present	21	11
Spiophanes bombyx	●●	Present	3	12
Ophelia	●●	Present	2	3
Gastrosaccus spinifer	●	Present	1	2

SS.SCS.ICS.CumCset — Cumaceans and *Chaetozone setosa* in infralittoral gravelly sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed
Tidal streams:	Moderately strong
Substratum:	Medium to very fine sand with gravel and pebbles
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m

Previous code

None

Biotope description

In shallow medium-fine sands with gravel, on moderately exposed open coasts, communities dominated by cumacean crustaceans such as *Iphinoe trispinosa* and *Diastylis bradyi* along with the cirratulid polychaete *Chaetozone setosa* (agg.) may occur. *Chaetozone setosa* is a species complex so it is likely that some variability in nomenclature will be found in the literature. Other important taxa may include the polychaetes *Anaitides* spp., *Lanice conchilega*, *Eteone longa* and *Scoloplos armiger*. This community may be subject to periodical sedimentary disturbance, such that a sub-climactic community may develop with opportunistic taxa such as *C. setosa* and *S. armiger* often dominating the community (Allen 2000).

Situation

This biotope may be found in areas with moderate currents and wave action often facing into the prevailing wind and along the Holderness coast of the North Sea. It is possible that this biotope has developed due to chronic sedimentary disturbance in areas where the biotopes AalbNuc or FfabMag would normally develop as these biotopes are often found in more sheltered areas adjacent to CumCset.

Temporal variation

The importance of the cumacean crustaceans in this biotope is unusual, and their numbers are likely to fluctuate over time; at times of increased disturbance it is likely that C. setosa will become more dominant.

Similar biotopes

SCS.Glap	In more exposed areas CumCset may grade into Glap as fewer species are able to tolerate the more frequent sediment disturbance
SSA.AalbNuc	In areas of weaker current and/or wave action the sediment becomes more stable and CumCset may grade into AalbNuc
SSA.FfabMag	In areas of weaker current and / or wave action as sediment stability increases CumCset may grade into FfabMag.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Eteone longa	••••	Present	3	17
Anaitides maculata	••••	Common	4	25
Nephtys hombergii	•••	Common	2	18
Scoloplos armiger	••••	Abundant	3	32
Spio martinensis	•••	Frequent	3	33
Chaetozone setosa	•••••	Abundant	22	324
Lanice conchilega	••••	Common	4	22
Iphinoe trispinosa	•••••	Frequent	35	151
Diastylis bradyi	••••	Common	8	39
Nucula nitidosa	•••	Frequent	2	37
Ensis ensis	••••	Present	3	23
Mya arenaria	••	Present	1	22

SS.SCS.ICS.SLan

Dense *Lanice conchilega* and other polychaetes in tide-swept infralittoral sand and mixed gravelly sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed, Sheltered
Tidal streams:	Strong, Moderately strong, Weak, Very weak
Substratum:	Medium to very fine gravelly sand
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

IGS.FaS.Lcon	97.06

Biotope description

Dense beds of *Lanice conchilega* occur in coarse to medium fine gravelly sand in the shallow sublittoral, where there are strong tidal streams or wave action. Several other species of polychaete also occur as infauna e.g. *Spiophanes bombyx*, *Scoloplos armiger*, *Chaetozone setosa* and *Magelona mirabilis*. Lanice beds are found in a wide range of habitats including muddier mixed sediment. The dense *Lanice* biotope (LGS.Lan) on certain lower shores may be a littoral extension of the current biotope. The presence of *L. conchilega* in high numbersmay, over time, stabilise the sediment to the extent where a more diverse community may develop (Wood, 1987). Possibly as a result of this, there is a high level of variation with regard the infauna found in SCS.SLan. It is likely that a number of sub-biotopes may subsequently be identified for this biotope. Offshore from the Wash and the North Norfolk coast *Lanice* beds are often found intermixed with *Sabellaria spinulosa* beds in muddier mixed sediment, particularly in the channels between the shallow sandbanks, which are so prevalent in this area (IECS, 1995; NRA, 1995). It is possible that the presence of *Lanice* has stabilised the habitat sufficiently to allow the deposition of finer material, which has subsequently assisted the development of *S. spinulosa*. It may be more accurate to define SLan as an epibiotic biotope which overlays a variety of infaunal biotopes (e.g. NcirBat in finer sands and AalbNuc or FfabMag in slightly muddier areas).

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Eteone longa	●●●	Present	1	22
Anaitides maculata	●●	Present	1	17
Eumida bahusiensis	●●	Common	1	33
Nephtys	●●	Abundant	1	46
Nephtys cirrosa	●●	Common	3	33
Scoloplos armiger	●●●●	Abundant	4	35
Spiophanes bombyx	●●●●	Common	20	301
Magelona mirabilis	●●●	Frequent	3	81
Chaetozone setosa	●●●	Abundant	7	176
Arenicola marina	●●	Frequent	1	
Lanice conchilega	●●●●●	Abundant	34	261
Lanice conchilega	●●●●●	Abundant	63	
Bathyporeia pelagica	●●	Frequent	1	30
Diastylis bradyi	●●	Frequent	1	
Pagurus bernhardus	●●●	Occasional	2	318
Liocarcinus depurator	●●	Occasional	1	71
Carcinus maenas	●●	Occasional	6	
Ensis	●	Frequent	3	
Abra alba	●●●	Common	3	
Asterias rubens	●●●	Occasional	5	
Echinocardium cordatum	●●	Occasional	2	
Pomatoschistus minutus	●●	Frequent	1	
Chorda filum	●●	Frequent	1	

SS.SCS.CCS Circalittoral coarse sediment

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Coarse sand and gravel with a minor finer sand fraction
Zone:	Infralittoral - lower, Circalittoral
Depth band:	10-20 m, 20-30 m, 30-50 m

Previous code

part of CGS	97.06

Biotope description

Tide-swept circalittoral coarse sands, gravel and shingle generally in depths of over 15-20m. This habitat may be found in tidal channels of marine inlets, along exposed coasts and offshore. This habitat, as with shallower coarse sediments, may be characterised by robust infaunal polychaetes, mobile crustacea and bivalves. Certain species of sea cucumber (e.g. *Neopentadactyla*) may also be prevalent in these areas along with the lancelet *Branchiostoma lanceolatum*.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Nemertesia antennina	••	Occasional	2	
Cerianthus lloydii	••	Occasional	2	
NEMERTEA	••••	Common	11	36
NEMATODA	••	Present	3	14
Pholoe synophthalmica	••	Present	3	8
Hesionura elongata	••	Present	1	9
Glycera lapidum	•••	Frequent	9	30
Nereis longissima	••	Present	2	6
Lumbrineris gracilis	••	Common	2	44
Protodorvillea kefersteini	••••	Present	12	36
Scoloplos armiger	••	Present	2	7
Minuspio cirrifera	••	Present	4	8
Spiophanes bombyx	••	Frequent	2	15
Chaetopterus variopedatus	••	Occasional	2	
Caulleriella zetlandica	••	Present	5	15
Mediomastus fragilis	•••	Present	4	61
Notomastus latericeus	••	Present	1	7
Owenia fusiformis	••	Present	1	9
Sabellaria spinulosa	••	Present	2	5
Terebellidae	••	Present	1	6
Lanice conchilega	••	Present	1	9
Lanice conchilega	••	Occasional	6	
Pomatoceros triqueter	••	Frequent	10	
Ampelisca spinipes	•••	Frequent	5	28
Pagurus bernhardus	••	Occasional	4	
Pecten maximus	••	Occasional	4	
Abra alba	••	Frequent	1	28
Asterias rubens	•••	Occasional	10	
Ophiura albida	••	Frequent	5	
Echinus esculentus	••	Occasional	3	
Echinocyamus pusillus	••	Common	3	37
Neopentadactyla mixta	•••	Frequent	29	

SS.SCS.CCS.PomB *Pomatoceros triqueter* with barnacles and bryozoan crusts on unstable circalittoral cobbles and pebbles

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Very exposed, Exposed, Moderately exposed
Tidal streams:	Strong, Moderately strong
Substratum:	Cobbles and pebbles with sand
Zone:	Circalittoral
Depth band:	5-10 m, 10-20 m, 20-30 m, 30-50 m
Other features:	Mobile substrata

Previous code

ECR.PomByC	97.06

Biotope description

This biotope is characterised by a few ubiquitous robust and/or fast growing ephemeral species which are able to colonise pebbles and unstable cobbles and slates which are regularly moved by wave and tidal action. The main cover organisms tend to be restricted to calcareous tube worms such as *Pomatoceros triqueter (*or *P. lamarcki),* small barnacles including *Balanus crenatus* and *Balanus balanus*, and a few bryozoan and coralline algal crusts. Scour action from the mobile substratum prevents colonisation by more delicate species. Occasionally in tide-swept conditions tufts of hydroids such as *Sertularia argentea* and *Hydrallmania falcata* are present. This biotope often grades into SMX.FluHyd which is characterised by large amounts of the above hydroids on stones also covered in *Pomatoceros* and barnacles. The main difference here is that SMX.FluHyd, seems to develop on more stable, consolidated cobbles and pebbles or larger stones set in sediment in moderate tides. These stones may be disturbed in the winter and therefore long-lived and fragile species are not found.

Situation

This biotope is found on exposed open coasts as well as at the entrance to marine inlets.

Temporal variation

No temporal data available.

Similar biotopes

FIR.CC.Mo	A similar shallow water biotope occurring on cobbles at the base of surge gullies
SMX.FluHyd	As substratum stability increases (larger rocks and less turbulent wave action) more species are able to colonise the sea bed. FluHyd, FluCoAs.SmAs and ByErSp.DysAct in that order, represent the progression from PomB to more stable mixed substrata although still with a high proportion of scour- and sand-tolerant species.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Lanice conchilega	••	Occasional	1	
Pomatoceros	•	Common	4	
Pomatoceros triqueter	••••	Frequent	61	
Balanus balanus	••	Occasional	2	
Balanus crenatus	••	Frequent	3	
Bryozoa indet crusts	••	Frequent	5	
Asterias rubens	•••	Occasional	6	
Echinus esculentus	•••	Occasional	7	

SS.SCS.CCS.MedLumVen *Mediomastus fragilis, Lumbrineris* spp. and venerid bivalves in circalittoral coarse sand or gravel

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed
Tidal streams:	Moderately strong, Weak
Substratum:	Gravel with coarse to medium sand
Zone:	Circalittoral
Depth band:	10-20 m, 20-30 m, 30-50 m, 50-100 m

Previous code

part of CGS.Ven	97.06

Biotope description

Circalittoral gravels, coarse to medium sands, and shell gravels, sometimes with a small amount of silt and generally in relatively deep water (generally over 15-20m), may be characterised by polychaetes such as *Mediomastus fragilis*, *Lumbrineris* spp., *Glycera lapidum* with the pea urchin *Echinocyamus pusillus*. Other taxa may include Nemertea spp., *Protodorvillea kefersteini, Owenia fusiformis, Spiophanes bombyx* and *Amphipholis squamata* along with amphipods such as *Ampelisca spinipes*. This biotope may also be characterised by the presence of conspicuous venerid bivalves, particularly *Timoclea ovata*. Other robust bivalve species such as *Moerella* spp., *Glycymeris glycymeris* and *Astarte sulcata* may also be found in this biotope. *Spatangus purpureus* may be present especially where the interstices of the gravel are filled by finer particles, in which case, *Gari tellinella* may also be prevalent (Glemarec 1973). Venerid bivalves are often under-sampled in benthic grab surveys and as such may not be conspicuous in many infaunal datasets. Such communities in gravelly sediments may be relatively species-rich and they may also contain epifauna such as *Hydroides norvegicus* and *Pomatoceros lamarcki*. In sand wave areas this biotope may also contain elements of the FfabMag biotope, particularly *Magelona* species. This biotope has previously been described as the 'Deep *Venus* Community' and the 'Boreal Off-Shore Gravel Association' by other workers (Ford 1923; Jones 1950) and may also be part of the Venus community described by Thorson (1957) and in the infralittoral etage described by Glemarec (1973). SCS.MedLumVen may be quite variable over time and in fact may be closer to a biotope complex in which a number of biotopes or sub-biotopes may yet be defined. For example, Ford (1923) describes a 'Series A' and a 'Series B' characterised by *Echinocardium cordatum-Chamelea gallina* and *Spatangus purpurea-Clausinella fasciata*. Furthermore, mosaics of cobble and lag gravel often contain ridges of coarse gravelly sand and these localised patches are also characterised by robust veneriid and similar bivalves including *Arcopagia crassa, Laevicardium crassum* and others including *Glycymeris glycymeris* (E.I.S. Rees pers. comm.. 2002). This high porosity fine gravel or coarse sand may be a separate biotope.

Situation

This biotope and variants of it make up a significant proportion of the offshore Irish Sea benthos (Mackie, Oliver & Rees 1995).

Temporal variation

MedLumVen may be quite variable over time.

Similar biotopes

SCS.MoeVen	MoeVen is the shallow water variant of the current biotope
SCS.Pkef	Pkef is more impoverished and less diverse than MedLumVen. It is possible that Pkef is a disturbed or transitional variant of MedLumVen resulting from dredging activities or storm events.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
ACTINIARIA	••	Common	2	182
NEMERTEA	••••	Common	5	55
Glycera lapidum	••••	Common	5	47
Sphaerosyllis	••	Present	1	21
Lumbrineris gracilis	••••	Common	10	98
Protodorvillea kefersteini	••••	Present	3	42
Poecilochaetus serpens	•••	Present	1	18
Spiophanes bombyx	•••	Frequent	4	27
Mediomastus fragilis	••••	Frequent	11	130
Owenia fusiformis	••••	Present	4	21
Lanice conchilega	••••	Occasional	29	
Pista cristata	••	Abundant	1	25
Ampelisca spinipes	•••	Frequent	2	21
Pagurus bernhardus	••••	Frequent	35	
Pecten maximus	•••	Occasional	7	
Abra alba	••	Common	2	54
Timoclea ovata	•••	Common	2	30
Corbula gibba	•••	Frequent	2	27
Cochlodesma praetenue	••	Common	2	21
Asterias rubens	••••	Occasional	29	
Amphipholis squamata	•••	Abundant	3	67
Echinocyamus pusillus	••••	Common	13	63

SS.SCS.CCS.Pkef *Protodorvillea kefersteini* and other polychaetes in impoverished circalittoral mixed gravelly sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed
Tidal streams:	Not known
Substratum:	Medium to coarse sand with some gravel or shell, and a fine sand or mud fraction
Zone:	Infralittoral
Depth band:	10-20 m, 20-30 m

Previous code

None

Biotope description

In coarse gravelly or shelly sand sometimes with a slight mud content, along open coasts in depths of 10 to 30m, and in shallower offshore areas, an impoverished community characterised by *Protodorvillea kefersteini* may be found. This biotope has a number of other species associated with it including Nemertea spp., *Caulleriella zetlandica*, *Minuspio cirrifera*, *Glycera lapidum*, *Ampelisca spinipes* and numerous other polychaete species all occurring at low abundances. The polychaete *Sabellaria spinulosa* is also found in low numbers in this biotope

Situation

This biotope has been reported in the North Sea along the Norfolk/Lincolnshire coast located in and around marine aggregate dredging areas (IECS, 1999).

Temporal variation

This biotope may be quite variable both spatially and temporally in terms community structure and also sediment type which is often borderline between the SCS complex and the SMX complex.

Similar biotopes

SCS.MedLumVen	MedLumVen is more diverse than the current biotope and it is possible that Pkef is a disturbed or transitional variant of the MedLumVen due to dredging activities or storm events.
SBR.SspiMx	As for MedLumVen.
SCS.HeloPkef	A deep water variant of Pkef
SMX.PoVen	PoVen is an offshore version of Pkef.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
NEMERTEA	••••	Common	14	23
NEMATODA	••	Present	2	11
Pholoe synophthalmica	•••	Present	5	12
Hesionura elongata	••	Present	2	8
Glycera lapidum	•••	Present	6	11
Exogone verugera	••	Frequent	6	17
Nereis longissima	•••	Present	3	9
Protodorvillea kefersteini	••••	Present	17	33
Scoloplos armiger	••	Present	2	10
Minuspio cirrifera	•••	Present	7	15
Caulleriella zetlandica	••••	Present	12	26
Notomastus latericeus	••	Frequent	1	7
Sabellaria spinulosa	•••	Present	3	6
Terebellidae	••	Present	2	7
Ampelisca spinifer	•••	Present	7	37
BRACHYURA	••	Present	2	6

SS.SCS.CCS.Nmix *Neopentadactyla mixta* in circalittoral shell gravel or coarse sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Clean shell and stone gravel; very coarse sand with a finer sand fraction
Zone:	Infralittoral - lower, Circalittoral
Depth band:	10-20 m, 20-30 m, 30-50 m

Previous code

CGS.NeoBv	96.7
CGS.Ven.Neo	97.06

Biotope description

Sublittoral plains of clean, shell, maerl and / or stone gravels or sometimes coarse sands, with frequent *Neopentadactyla mixta*. *Pecten maximus* may occur occasionally along with *Lanice conchilega*. Other epifaunal species may include *Ophiura albida*, *Pagurus* spp. and *Callionymus* spp. These sediments may be thrown into dunes by wave action or tidal streams. Widespread species such as *Cerianthus lloydii* and *Chaetopterus variopedatus* are present in many examples of this biotope. Scarcely recorded species such as *Molgula oculata*, *Ophiopsila annulosa* and *Amphiura securigera* may also be found. *O. annulosa* only occurs in records from the south-west of the British Isles. It should be noted that *Neopentadactyla* may exhibit periodicity in its projection out of, and retraction into, the sediment (Picton 1993).This biotope may be an epibiotic overlay of the biotope MedLumVen.

Situation

This biotope may occur adjacent to maerl beds and to some extent in the lower infralittoral where some seaweeds may occur in low abundances.

Temporal variation

No temporal data available.

Similar biotopes

SMP.Pcal	Nmix may occur in circalittoral dead maerl plains, often adjacent to maerl beds

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Nemertesia antennina	••	Occasional	2	
Cerianthus lloydii	••	Occasional	2	
Adamsia carciniopados	••	Rare	1	
Chaetopterus variopedatus	••	Occasional	2	
Lanice conchilega	••	Occasional	5	
Pagurus bernhardus	••	Occasional	3	
Pecten maximus	•••	Occasional	5	
Asterias rubens	•••	Occasional	5	
Ophiura albida	••	Frequent	8	
Echinus esculentus	••	Occasional	1	
Neopentadactyla mixta	•••••	Frequent	50	
Callionymus lyra	••	Occasional	3	
Callionymus reticulatus	•	Occasional	1	

SS.SCS.CCS.Blan *Branchiostoma lanceolatum* in circalittoral coarse sand with shell gravel

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered
Tidal streams:	Not known
Substratum:	Medium to coarse sand with some gravel or shell gravel
Zone:	Circalittoral
Depth band:	20-30 m, 30-50 m, 50-100 m

Previous code

CGS.Ven.Bra	97.06

Biotope description

Gravel and coarse sand with shell gravel often contains communities of robust venerid bivalves (SCS.MedLumVen). Shallower examples, such as the biotope presented here, may support a significant population of *Branchiostoma lanceolatum*. Other conspicuous infauna may include *Echinocyamus pusillus, Glycera lapidum, Polygordius, Pisione remota* and *Arcopagia crassa* (in the south of UK). Sessile epifauna are typically a minor component of this community. This biotope has been described from a limited number of records and as such may need revising when further data become available. This biotope is related to the 'Boreal Offshore Gravel Association' and 'Deep *Venus* Community' described by other workers (Ford 1923; Jones 1951), and may also be closely allied (the same?) as the '*Venus fasciata*' community of Cabioch (Glemarec 1973). This biotope may be an epibiotic overlay of the biotope SCS.MoeVen or SCS.MedLumVen.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
NEMATODA	••••	Present	1	7
Pisione remota	•••••	Frequent	18	60
Hesionura elongata	••••	Present	3	20
Glycera lapidum	•••••	Common	20	70
Aglaophamus malmgreni	•••••	Present	5	17
Paradoneis lyra	••••	Present	1	7
Aonides paucibranchiata	••••	Present	1	7
Laonice bahusiensis	••••	Present	1	10
Polygordius	•••••	Frequent	13	53
Echinocyamus pusillus	•••••	Abundant	25	170
Branchiostoma lanceolatum	•••••	Abundant	10	37

SS.SCS.OCS Offshore circalittoral coarse sediment

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Gravel and coarse sand.
Zone:	Circalittoral
Depth band:	20-30 m, 30-50 m, 50-100 m

Previous code

part of COS	97.06

Biotope description

Offshore (deep) circalittoral habitats with coarse sands and gravel or shell. This habitat may cover large areas of the offshore continental shelf although there is relatively little quantitative data available. Such habitats are quite diverse compared to shallower versions of this habitat and generally characterised by robust infaunal polychaete and bivalve species. Animal communities in this habitat are closely related to offshore mixed sediments and in some areas settlement of *Modiolus modiolus* larvae may occur and consequently these habitats may occasionally have large numbers of juvenile *M. Modiolus*. In areas where the mussels reach maturity their byssus threads bind the sediment together, increasing stability and allowing an increased deposition of silt leading to the development of the biotope SBR.ModMx.

Situation

No situation data available.

Temporal variation

No temporal data available.

SS.SCS.OCS.GlapThyAmy *Glycera lapidum, Thyasira* spp. and *Amythasides macroglossus* in offshore gravelly sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Not known
Tidal streams:	Not known
Substratum:	Coarse sands and gravel, stone or shell, and occasionally silt.
Zone:	Circalittoral

Previous code

None

Biotope description

Offshore (deep) circalittoral habitats with coarse sands and gravel, stone or shell and occasionally a little silt (<5%) may be characterised by the polychaetes *Glycera lapidum* and *Amythasides macroglossus* with the bivalve *Thyasira* spp. (particularly *Thyasira succisa*). Other taxa include polychaetes such as *Exogone verugera*, *Notomastus latericeus*, *Spiophanes kroyeri*,*Aphelochaeta marioni* (*Tharyx marioni*) and *Lumbrineris gracilis* and occasional numbers of the bivalve *Timoclea ovata*. This biotope bears some resemblance to the shallow SCS.Glap and also to the circalittoral and offshore venerid biotopes (SCS.MedLumVen and SMX.PoVen) but differs by the range of polychaete and bivalve fauna present. This biotope is notable for the presence of the rarely recorded ampharetid polychaete *Amythasides macroglossus* and also for the small ear file clam *Limatula subauriculata* which is common in some examples of this biotope.

Situation

No situation data available.

Temporal variation

No temporal data available.

SS.SCS.OCS.HeloPkef *Hesionura elongata* and *Protodorvillea kefersteini* in offshore coarse sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Not known
Tidal streams:	Not known
Substratum:	Coarse sand.
Zone:	Circalittoral

Previous code

None

Biotope description

Offshore (deep) circalittoral habitats with coarse sand may support populations of the interstitial polychaete *Hesionura elongata* with *Protodorvillea kefersteini*. Other notable species include the phyllodocid polychaete *Protomystides limbata* and the bivalve *Moerella pygmaea*. This biotope was reported in the offshore northern North Sea by Eleftheriou and Basford (1989). Relatively little data exists for this biotope.

Situation

No situation data available.

Temporal variation

No situation data available.

Similar biotopes

SCS.HeloMsim	HeloPkef occurs at greater depths than the shallow sandbank biotope and can be distinguished by the relative importance of the polychaete *Microphthalmus similis* in HeloMsim
SCS.Pkef	HeloPkef is possibly a deep water variant of this biotope and can be distinguished through the increased importance of the polychaete *Hesionura elongata*.
SCS.MoeVen	HeloPkef is possibly a deep water variant of this biotope where the dominance of *Moerella pygmaea* is reduced and replaced by and increase in importance of the polychaetes *Hesionura elongata* and *Protodorvillea kefersteini*.

SS.SSA Sublittoral sands and muddy sands

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt), Reduced (18-30ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Medium to fine sands and muddy sands.
Zone:	Infralittoral, Circalittoral
Depth band:	0-5 m, 5-10 m, 10-20 m, 20-30 m, 30-50 m

Previous code

Part of IGS	97.06
IMS in part	97.06
CMS in part	97.06

Biotope description

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.

Situation

No situation data available.

Temporal variation

No temporal data available.

SS.SSA.SSaLS Sublittoral sand in low or reduced salinity (lagoons)

Habitat classification

Salinity:	Reduced (18-30ppt), Low (<18ppt)
Wave exposure:	Ultra sheltered
Tidal streams:	Very weak
Substratum:	Medium to fine sand with a minor silt fraction
Zone:	Infralittoral
Depth band:	0-5 m

Previous code

None

Biotope description

Shallow sand and muddy sand in areas of low or reduced, although relatively stable salinity (may vary annually), with largely ephemeral faunal communities. The species are often similar to that found in SMuLS and are characterised by *Arenicola marina* with other species, including mysids, tubificoid and enchytraeid oligochaetes, *Corophium volutator*, *Hediste diversicolor*, *Pygospio elegans*, *Hydrobia ulvae* and *Cerastoderma glaucum*, which commonly occur in lagoons. Filamentous green algae such as *Chaetomorpha linum* may also be present. In some examples of this biotope the polychaete *Fabricia sabella* may be super-abundant and the isopod *Sphaeroma hookeri* common.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Capitella capitata	••••	Abundant	70	20104
Arenicola marina	•••	Abundant	42	
Tubificoides benedii	••••	Present	20	938
Mysidae	•••	Frequent	30	
Corophium volutator	••	Rare	2	
Chironomida	••••	Present	10	258
Gasterosteus aculeatus	••	Rare	5	
Pomatoschistus	••	Rare	5	
Fucus vesiculosus	••	Occasional	7	
Chaetomorpha linum	••	Frequent	7	

SS.SSA.SSaVS Sublittoral sand in variable salinity (estuaries)

Habitat classification

Salinity:	Variable (18-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Strong, Moderately strong, Weak
Substratum:	Medium to very fine sand
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

IGS.EstGS	97.06

Biotope description

Clean sands that occur in the upper reaches of marine inlets, especially estuaries, where water movement is moderately strong, allowing the sedimentation of sand but not the finer silt fraction. The habitat typically lacks a significant seaweed component and is characterised by brackish-water tolerant fauna, particularly amphipods, polychaetes and mysid shrimps.

Situation

No situation data available.

Temporal variation

No temporal data avaialble.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m^2)*
Nephtys cirrosa	••	Common	17	9
Capitella capitata	••	Frequent	13	8
Neomysis integer	••	Frequent	13	6
Gammarus salinus	•	Present	5	3
Eurydice pulchra	••	Present	27	4

SS.SSA.SSaVS.MoSaVS Infralittoral mobile sand in variable salinity (estuaries)

Habitat classification

Salinity:	Variable (18-35ppt), Reduced (18-30ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Strong, Moderately strong, Weak
Substratum:	Medium to fine sand
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

IGS.MobRS	97.06

Biotope description

Very mobile sand in areas of strong tidal currents and variable salinity. No stable community is able to develop within this extremely mobile and abrasive habitat. The fauna encountered in this habitat consists of epifaunal crustaceans or relatively low numbers of robust species, such as the isopod *Eurydice pulchra* or *Mesopodopsis slabberi*. The polychaete *Capitella capitata* may occur frequently in some areas. Other taxa such as the polychaetes *Eteone* spp. and *Arenicola marina*, the mysid *Neomysis integer* and the amphipods *Bathyporeia* spp. and *Haustorius arenarius* may also be washed in from adjacent communities. This biotope is found in tidal channels of estuaries and areas where water movement keeps silt and mud in suspension, and excludes even the more robust infauna. If oligochaetes, polychaetes and bivalves are present in any numbers within this habitat type then care must be taken to avoid the inclusion of juvenile or spat recruitment counts which may mask the presence of this biotope. This is particularly relevant as sampling usually occurs at slack water periods when settlement takes place

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SSA.NintGam	MoSaVS bears some similarity with NintGam although the latter is found further up the estuary at the transition between brackish and fresh water. The freshwater community present in NintGam will not be present here.
SSA.IMoSa	A similar biotope that occurs in fully saline conditions, it can be distinguished from MoSaVS by the absence of species tolerant to reduced salinities.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m^2)*
Capitella capitata	••	Frequent	24	15
Mesopodopsis slabberi	••	Present	11	3
Haustorius arenarius	•	Present	2	1
Eurydice pulchra	•••	Present	59	8

SS.SSA.SSaVS.NcirMac *Nephtys cirrosa* and *Macoma balthica* in variable salinity infralittoral mobile sand

Habitat classification

Salinity:	Variable (18-35ppt)
Wave exposure:	Moderately exposed, Sheltered
Tidal streams:	Moderately strong, Weak
Substratum:	Medium to very fine sand
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m
Other features:	Surface veneer of mud may be present at slack water

Previous code

Ncir	97.06

Biotope description

Mobile sand in variable salinity conditions where tidal currents create an unstable shifting habitat. Characteristic species include the polychaetes *Nephtys cirrosa* and *Scoloplos armiger* along with amphipods of the genus *Bathyporeia* and *Haustorius arenarius*. The bivalve *Macoma balthica* may occur in more stable examples of this biotope, although not in the abundances found in the NhomMac. The biotope contains relatively few species, each typically in low to moderate abundance. It is found in tidal channels with moderate tidal streams. Care should be taken in identification of this biotope due to the presence juveniles and species washed in during slack water.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SSA.MoSaVS	As wave exposure and /or current strength decreases and the finer sand and silt fractions begin to sediment out of the water column, the sediment habitat is less mobile and MoSaVS grades into NcirMac
SSA.NcirBat	The current biotope is a reduced salinity version of NcirBat, distinguished from this by the absence of species not tolerant of reduced salinities, in particular the polychaete *Chaetozone setosa*.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m^2)*
Nephtys cirrosa	••••	Common	59	22
Scoloplos armiger	••	Abundant	6	5
Capitella capitata	••	Present	2	4
Bathyporeia pelagica	•	Frequent	2	9
Bathyporeia pilosa	••	Frequent	13	90
Haustorius arenarius	••	Frequent	4	14
Macoma balthica	••	Frequent	5	7

SS.SSA.SSaVS.NintGam *Neomysis integer* and *Gammarus* spp. in fluctuating low salinity infralittoral mobile sand

Habitat classification

Salinity:	Reduced (18-30ppt), Low (<18ppt)
Wave exposure:	Very sheltered
Tidal streams:	Strong
Substratum:	Fine to very fine muddy sand
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m
Other features:	Surface veneer of mud may be present at slack water

Previous code

IGS.NeoGam	97.06

Biotope description

Upper estuary mobile fine muddy sands with very low fluctuating salinity characterised by the mysid shrimp *Neomysis integer* (see Arndt 1991) and amphipods of the genus *Gammarus* spp. This habitat has a rather sparse infauna and species such as *N. integer* will most likely be found on the sediment surface or just above it whilst *Gammarus* may be under loose weed, stones or other detritus on the sediment surface. The harsh physicochemical regime imposed by such environmental conditions in the upper estuary leads to a relatively impoverished community but high densities of the mobile, salinity-tolerant, crustaceans can occur. The biotope is found in the transitional zone between freshwater and brackish environments, relying on the decreased freshwater input during the summer for penetration of the brackish species up-stream. As such this biotope may also contain elements of freshwater communities.

Situation

It may be found in conjunction with SMuVS.LhofTtub, although it lacks appreciable numbers of oligochaetes.

Temporal variation

Numbers of *Neomysis* may to fluctuate on a seasonal basis due high over wintering mortality (Gameson 1982) and the location of this biotope within the estuary may also shift upstream or downstream on a seasonal or yearly basis related in part to the freshwater flow into the estuary as has been noted in the Humber (Allen *et al*. 2003).

Similar biotopes

SSA.MoSaVS	NintGam bears some similarity with MoSaVS, although the latter is found further down the estuary in higher salinities. The freshwater community present in NintGam is not present in MoSaVS.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m^2)*
Neomysis integer	●●●●●	Frequent	82	33
Gammarus salinus	●●●●	Present	17	14

SS.SSA.IFiSa Infralittoral fine sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed, Sheltered
Tidal streams:	Strong, Moderately strong, Weak, Very weak
Substratum:	Medium to very fine sand
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

IGS.FaS	97.06

Biotope description

Clean sands which occur in shallow water, either on the open coast or in tide-swept channels of marine inlets. The habitat typically lacks a significant seaweed component and is characterised by robust fauna, particularly amphipods (*Bathyporeia*) and robust polychaetes including *Nephtys cirrosa* and *Lanice conchilega*.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Hydrallmania falcata	●●●	Occasional	10	
Sertularia cupressina	●●	Present	4	
Urticina felina	●●	Rare	4	
Nephtys cirrosa	●●●	Common	31	20
Scoloplos armiger	●●	Present	2	24
Spio filicornis	●●	Frequent	2	41
Spiophanes bombyx	●●	Present	4	51
Magelona mirabilis	●●	Frequent	9	17
Chaetozone setosa	●●	Common	4	20
Lanice conchilega	●●●	Occasional	13	
Balanus crenatus	●●	Occasional	2	
Bathyporeia elegans	●●	Frequent	11	154
Bathyporeia guilliamsoniana	●●	Frequent	4	112
Pagurus bernhardus	●●●●	Rare	23	
Cancer pagurus	●●	Present	1	
Liocarcinus depurator	●●	Rare	4	
Carcinus maenas	●●	Rare	3	
Alcyonidium diaphanum	●●	Occasional	4	
Asterias rubens	●●	Occasional	5	
Laminaria saccharina	●●	Rare	1	

SS.SSA.IFiSa.IMoSa Infralittoral mobile clean sand with sparse fauna

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed, Sheltered
Tidal streams:	Strong, Moderately strong, Very weak
Substratum:	Medium to fine sand
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

IGS.Mob	97.06

Biotope description

Medium to fine sandy sediment in shallow water, often formed into dunes, on exposed or tide-swept coasts often contains very little infauna due to the mobility of the substratum. Some opportunistic populations of infaunal amphipods may occur, particularly in less mobile examples in conjunction with low numbers of mysids such as *Gastrosaccus spinifer*, the polychaete *Nephtys cirrosa* and the isopod *Eurydice pulchra*. Sand eels *Ammodytes* sp. may occasionally be observed in association with this biotope (and others). This biotope is more mobile than SSA.NcirBat and may be closely related to LSa.BarSa on the shore. Common epifaunal species such as *Pagurus bernhardus*, *Liocarcinus depurator*, *Carcinus maenas* and *Asterias rubens* may be encountered and are the most conspicuous species present.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SSA.MoSaVS	MoSaVS occurs in reduced salinities but differs in that the sparse fauna of IMoSa are not tolerant of reduced salinities.
SSA.NcirBat	Where sediment disturbance decreases in less exposed or weaker tidal currents, IMoSa may grade into NcirBat with an increase in species richness as the environment becomes more stable.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Nephtys	•	Present	4	3
Nephtys cirrosa	•	Present	11	2
Gastrosaccus spinifer	•	Present	13	2
Pontocrates arenarius	•	Present	17	4
Urothoe brevicornis	•	Present	15	2
Bathyporeia elegans	•	Present	1	1
Eurydice pulchra	•	Present	6	2
Pagurus bernhardus	•••••	Present	41	
Liocarcinus depurator	••	Rare	4	
Ammodytes	••	Frequent	3	
Ammodytes tobianus	••••	Present	46	
Pleuronectes platessa	••	Present	6	

SS.SSA.IFiSa.ScupHyd *Sertularia cupressina* and *Hydrallmania falcata* on tide-swept sublittoral sand with cobbles or pebbles.

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered
Tidal streams:	Strong, Moderately strong, Weak
Substratum:	Medium to fine sand with pebbles and cobbles
Zone:	Infralittoral, Circalittoral
Depth band:	0-5 m, 5-10 m, 10-20 m
Other features:	Sand scour

Previous code

IGS.Scup	96.7
IGS.ScupHyd	97.06

Biotope description

Shallow sands with cobbles and pebbles, exposed to strong tidal streams, with conspicuous colonies of hydroids, particularly *Hydrallmania falcata* and to a lesser extent *Sertularia cupressina* and *S. argentea*. These hydroids are tolerant to periodic submergence and scour by sand. Both diving and dredge surveys will easily record this biotope. *Flustra foliacea*, *Balanus crenatus* and *Alcyonidium diaphanum* may also occur on the more stable cobbles and pebbles, with *Urticina felina* and occasional *Lanice conchilega* present in the sand. Infaunal components of the other biotopes in the SSA or SCS complex may occur in this biotope as may elements of the 'Venus' associations; indeed, this biotope may be at one extreme of the spectrum of such associations (E.I.S. Rees pers. comm. 1997) and this biotope may be best considered an epibiotic overlay.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMX.FluHyd	The less scoured biotope FluHyd occurs in deeper water where there is less sand and a higher proportion of stones and cobbles.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Hydrallmania falcata	••••	Occasional	18	
Sertularia argentea	••	Occasional	3	
Sertularia cupressina	•••	Present	12	
Urticina felina	•••	Rare	8	
Lanice conchilega	••••	Occasional	11	
Sabella pavonina	••	Rare	1	
Balanus crenatus	•••	Rare	4	
Pagurus bernhardus	••••	Rare	12	
Liocarcinus depurator	••	Rare	1	
Carcinus maenas	•••	Present	5	
Mytilus edulis	••	Present	1	
Alcyonidium diaphanum	•••	Occasional	6	
Flustra foliacea	••	Rare	2	
Asterias rubens	•••	Occasional	5	

SS.SSA.IFiSa.NcirBat *Nephtys cirrosa* and *Bathyporeia* spp. in infralittoral sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed
Tidal streams:	Weak, Very weak
Substratum:	Medium to very fine sand
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m

Previous code

IGS.NcirBat	97.06

Biotope description

Well-sorted medium and fine sands characterised by *Nephtys cirrosa* and *Bathyporeia* spp. (and sometimes *Pontocrates* spp.) which occur in the shallow sublittoral to at least 30 m depth. This biotope occurs in sediments subject to physical disturbance, as a result of wave action (and occasionally strong tidal streams). The magelonid polychaete *Magelona mirabilis* may be frequent in this biotope in more sheltered, less tideswept areas whilst in coarser sediments the opportunistic polychaete *Chaetozone setosa* may be commonly found. The faunal diversity of this biotope is considerably reduced compared to less disturbed biotopes (such as FfabMag) and for the most part consists of the more actively-swimming amphipods. Sand eels *Ammodytes* sp. may occasionally be observed in association with this biotope (and others) and spionid polychaetes such as *Spio filicornis* and *S. martinensis* may also be present. Occasional *Lanice conchilega* may be visible at the sediment surface.

Situation

No situation data available.

Temporal variation

Stochastic recruitment events in the *Nephtys cirrosa* populations may be very important to the population size of other polychaetes present and may therefore create a degree of variation in community composition (Bamber 1994).

Similar biotopes

SSA.NcirMac	The current biotope is very similar to NcirMac, which occurs in reduced/variable salinities with additional reduced salinity fauna.
LSA.AmSco.Pon	AmSco.Pon is closely allied to NcirBat but occurs in the intertidal zone
LSA.Po	Po is closely allied to NcirBat but occurs in the intertidal zone
SSA.IMoSa	As sediment disturbance increases NcirBat may grade into IMoSa with only the most robust species able to tolerate the mobile sand environment
SSA.FfabMag	As sediment disturbance decreases and the finer silt fraction can begin to sediment out of the water column NcirBat may grade into the muddy sand biotope FfabMag.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
POLYCHAETA	••	Present	4	
Nephtys cirrosa	•••••	Common	43	40
Nephtys hombergii	••	Present	1	4
Scoloplos armiger	••	Present	1	4
Spio filicornis	••	Frequent	1	14
Spio martinensis	••	Present	1	23
Spiophanes bombyx	••	Present	2	7
Magelona mirabilis	••••	Frequent	15	38
Chaetozone setosa	•••	Common	5	16
Lanice conchilega	•••	Occasional	57	
Pontocrates arenarius	••	Frequent	2	16
Bathyporeia elegans	•••	Frequent	14	140
Bathyporeia guilliamsoniana	••	Frequent	5	18
Crangon crangon	••	Rare	5	
Pagurus bernhardus	••	Occasional	8	
Liocarcinus depurator	••	Occasional	8	
Fabulina fabula	••	Present	1	5
Echinocardium cordatum	••	Present	4	
Ammodytes tobianus	••	Rare	8	
Pomatoschistus	••	Occasional	8	

SS.SSA.IFiSa.TbAmPo Semi-permanent tube-building amphipods and polychaetes in sublittoral sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered
Tidal streams:	Weak, Very weak
Substratum:	Medium to very fine muddy sand
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

Part of IMU.TubeAP 97.06

Biotope description

Sublittoral marine sand in moderately exposed or sheltered inlets and voes in shallow water may support large populations of semi-permanent tube-building amphipods and polychaetes. Typically dominated by *Corophium crassicorne* with other tube building amphipods such as *Ampelisca* spp. also common. Other taxa include typical shallow sand fauna such as *Spiophanes bombyx*, *Urothoe elegans*, *Bathyporeia* spp. along with various polychaetes including *Exogone hebes* and *Lanice conchilega*. *Polydora ciliata* may also be abundant in some areas. At the sediment surface, Arenicola marina worm casts may be visible and occasional seaweeds such as *Laminaria saccharina* may be present. As many of the sites featuring this biotope are situated near to fish farms it is possible that it may have developed as the result of moderate nutrient enrichment. The distribution of this biotope is poorly known and like the muddier SMU.AmpPlon, to which it is related, appears to have a patchy distribution.

Situation

No situation data available.

Temporal variation

It is possible that this biotope is a temporal or spatial variant of other more stable biotopes resulting from localised changes to sediment stability and organic status.

Similar biotopes

SMU.AmpPlon	AmpPlon occurs on muddier sediment than TbAmPo and can be distinguished by the importance of *Photis longicaudata* in the muddier biotope.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
NEMERTEA	••••	Common	2	82
POLYCHAETA	•••	Common	15	
Anaitides mucosa	•••	Present	1	142
Exogone hebes	•••	Common	4	487
Scoloplos armiger	•••	Present	1	118
Polydora ciliata	••	Abundant	3	318
Pygospio elegans	•••	Frequent	2	238
Spio filicornis	•••	Frequent	3	188
Spiophanes bombyx	•••••	Present	5	253
Capitomastus minimus	•••	Present	2	307
Arenicola marina	•••••	Occasional	19	
Lanice conchilega	•••	Frequent	6	
Urothoe elegans	••••	Present	3	286
Urothoe marina	•••	Common	3	293
Phoxocephalus holbolli	•••	Frequent	2	242
Ampelisca brevicornis	•••	Common	2	291
Bathyporeia elegans	••	Common	1	475
Bathyporeia guilliamsoniana	••	Common	2	558
Corophium crassicorne	•••••	Common	48	3469
Pagurus bernhardus	•••	Occasional	6	
Liocarcinus depurator	•••	Rare	3	
Ensis	••	Present	3	
Ensis arcuatus	••	Common	2	
Cochlodesma praetenue	••••	Present	3	256
Asterias rubens	••	Occasional	1	
Echinocardium cordatum	••	Occasional	1	
Pleuronectidae	••	Occasional	4	
Nitophyllum punctatum	••	Occasional	1	
Polysiphonia	••	Rare	1	
Polysiphonia elongata	••	Occasional	1	
Eudesme virescens	••	Occasional	2	
Desmarestia aculeata	••	Occasional	1	
Desmarestia viridis	•••	Occasional	4	
Chorda filum	•••	Frequent	9	
Laminaria saccharina	••••	Occasional	12	
Ulva	••	Occasional	1	

SS.SSA.IMuSa Infralittoral muddy sand

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Moderately exposed, Sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Fine to very fine sand with a silt fraction
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

Part of IMS.FaMS 97.06

Biotope description

Non-cohesive muddy sand (with 5% to 20% silt/clay) in the infralittoral zone, extending from the extreme lower shore down to more stable circalittoral zone at about 15-20 m. The habitat supports a variety of animal-dominated communities, particularly polychaetes (*Magelona mirabilis*, *Spiophanes bombyx* and *Chaetozone setosa*), bivalves (*Fabulina fibula* and *Chamelea gallina*) and the urchin *Echinocardium cordatum*.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Nephtys	••••	Common	7	32
Nephtys cirrosa	••	Common	2	15
Nephtys hombergii	•••	Present	2	12
Scoloplos armiger	••	Present	1	13
Spio	••	Frequent	1	16
Spiophanes bombyx	••••	Common	13	152
Magelona mirabilis	•••••	Common	16	223
Cirratulidae	••	Common	2	33
Chaetozone setosa	•••••	Common	11	97
Arenicola marina	•••	Frequent	12	
Lanice conchilega	•••	Occasional	14	
Bathyporeia	••	Frequent	2	63
Diastylis bradyi	••	Present	1	6
Pagurus bernhardus	•••	Occasional	11	
Liocarcinus depurator	••	Occasional	4	
Nucula nitidosa	•••	Frequent	3	63
Ensis	•••	Frequent	8	
Phaxas pellucidus	••	Common	2	29
Fabulina fabula	•••••	Common	14	138
Abra alba	••	Present	1	16
Abra prismatica	••	Present	1	9
Chamelea gallina	•••	Common	5	39
Asterias rubens	•••	Occasional	5	
Echinocardium cordatum	••••	Frequent	22	
Pomatoschistus	••	Occasional	1	
Pleuronectidae	••	Frequent	2	
Diatoms - film	••	Common	3	

SS.SSA.IMuSa.EcorEns *Echinocardium cordatum* and *Ensis* spp. in lower shore and shallow sublittoral slightly muddy fine sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed, Sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Medium to fine sand; slightly muddy sand
Zone:	Infralittoral
Height band:	Lower shore
Depth band:	5-10 m, 10-20 m, 20-30 m

Previous code

IGS.EcorEsil	96.7
IMS.EcorEns	97.06

Biotope description

Sheltered lower shore and shallow sublittoral sediments of sand or muddy fine sand in fully marine conditions, support populations of the urchin *Echinocardium cordatum* and the razor shell *Ensis siliqua* or *Ensis ensis*. Other notable taxa within this biotope include occasional *Lanice conchilega*, *Pagurus* and *Liocarcinus* spp. and *Asterias rubens*. This biotope has primarily been recorded by epifaunal dive, video or trawl surveys where the presence of relatively conspicuous taxa such as E. cordatum and Ensis spp. have been recorded as characteristic of the community. However, these species, particularly *E. cordatum* have a wide distribution and are not necessarily the best choice for a characteristic taxa (Thorson, 1957). Furthermore, detailed quantitative infaunal data for this biotope is often rather scarce, possibly as a result of survey method as remote grab sampling is likely to under-estimate deep-burrowing species such as *Ensis* sp. (Warwick & Davis 1977). Consequently, it may be better to treat this biotope as an epibiotic overlay which is likely to overlap a number of other biotopes such as FfabMag, NcirBat and AalbNuc with infaunal components of these biotopes occurring within EcorEns. The precise nature of this infaunal community will be related to the nature of the substratum, in particular the quantity of silt/clay present. Infaunal species may include the polychaetes *Spiophanes bombyx*, *Magelona mirabilis*, *Nephtys cirrosa* and *Chaetozone setosa* and the amphipod *Bathyporeia* spp. This biotope is currently broadly defined and needs further consideration as to whether it should be placed at biotope or biotope complex level. AreISa is another biotope based primarily on epibiotic data. It is likely that this biotope and EcorEns form a wider epibiotic sand /muddy sand community with EcorEns biased towards sandier areas and SSA.AreISa towards slightly muddier areas.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMP.Zmar	In some areas the seagrass *Zostera marina* may occur in low densites in this biotope but does not form distinct beds as in Zmar.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Eteone longa	••	Abundant	1	42
Glycera tridactyla	••	Present	2	16
Nephtys cirrosa	•••	Common	8	52
Spiophanes bombyx	••••	Common	37	228
Magelona filiformis	••	Present	2	63
Magelona mirabilis	•••	Common	10	425
Chaetozone setosa	•••	Present	6	63
Arenicola marina	••	Occasional	2	
Lanice conchilega	••••	Occasional	14	
Bathyporeia elegans	••	Common	3	62
Bathyporeia pelagica	••	Common	5	114
Siphonoecetes kroyeranus	••	Present	1	21
Iphinoe trispinosa	•••	Frequent	3	24
Pagurus bernhardus	••••	Occasional	9	
Corystes cassivelaunus	••	Rare	2	
Liocarcinus depurator	••	Occasional	2	
Polinices pulchellus	••	Rare	1	
Hinia reticulata	••	Frequent	2	
Tellimya ferruginosa	••	Present	1	20
Ensis	•••	Frequent	10	
Ensis ensis	•	Super-abundant	2	38
Ensis siliqua	••	Frequent	2	
Angulus tenuis	••	Present	1	45
Chamelea gallina	••	Present	2	13
Astropecten irregularis	••	Occasional	1	
Asterias rubens	•••	Occasional	7	
Echinocardium cordatum	•••••	Frequent	34	
Echinocardium cordatum	•••	Present	1	19
Pomatoschistus	••	Occasional	2	
Pleuronectidae	••	Frequent	2	

SS.SSA.IMuSa.FfabMag *Fabulina fabula* and *Magelona mirabilis* with venerid bivalves and amphipods in infralittoral compacted fine muddy sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Medium to very fine sand with some silt
Zone:	Infralittoral
Depth band:	5-10 m, 10-20 m, 20-30 m

Previous code

IGS.FabMag	97.06

Biotope description

In stable, fine, compacted sands and slightly muddy sands in the infralittoral and littoral fringe, communities occur that are dominated by venerid bivalves such as *Chamelea gallina*. This biotope may be characterised by a prevalence of *Fabulina fabula* and *Magelona mirabilis* or other species of *Magelona (*e.g. *M. filiformis)*. Other taxa, including the amphipod *Bathyporeia* spp. and polychaetes such as *Chaetozone setosa*, *Spiophanes bombyx* and *Nephtys* spp. are also commonly recorded. In some areas the bivalve *Spisula elliptica* may also occur in this biotope in low numbers. The community is relatively stable in its species composition, however, numbers of *Magelona* and *F. Fabulina* tend to fluctuate. Around the Scilly Isles numbers of *F. fabulina* in this biotope are uncommonly low whilst these taxa are often found in higher abundances in muddier communities (presumably due to the higher organic content). Consequently it may be better to revise this biotope on the basis of less ubiquitous taxa such as key amphipod species (E.I.S. Rees pers. comm. 2002) although more data is required to test this. FfabMag and MoeVen are collectively considered to be the 'shallow *Venus* community' or 'boreal off-shore sand association' of previous workers (see Petersen 1918; Jones 1950; Thorson 1957). These communities have been shown to correlate well with particular levels of current induced 'bed-stress' (Warwick & Uncles 1980). The 'Arctic *Venus* Community' and 'Mediterranean *Venus* Community' described to the north and south of the UK (Thorson 1957) probably occur in the same habitat and appears to be the same biotope described as the *Ophelia borealis* community in northern France and the central North Sea (K nitzer *et al.* 1992). Sites with this biotope may undergo transitions in community composition. The epibiotic biotopes EcorEns and AreISa may also overlay this biotope in some areas.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SSA.AalbNuc	FfabMag forms part of a continuum of communities found along the depth and sand/silt gradients with an increase in silt/clay leading to the development of AalbNuc in deeper water.
SSA.NcirBat	As sediment disturbance increases and the finer silt fraction is unable to sediment out of the water column FfabMag may grade into the sandy biotope NcirBat.
SCS.MoeVen	MoeVen is found in slightly coarser sediments. FfabMag differs from MoeVen because of the prevalence of the brittle-shelled *F. fabula* over the more robust *Moerella* and *Spisula*, and because it occurs in generally finer, more compact sands.
SMU.NhomMac	In very shallow water with a greater mud fraction this biotope may give way to the sandy mud biotope NhomMac.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
POLYCHAETA	••	Occasional	8	
Nephtys	••••	Common	6	34
Nephtys cirrosa	••	Common	1	12
Nephtys hombergii	•••	Present	1	14
Spio	•••	Frequent	1	18
Spiophanes bombyx	•••••	Common	15	148
Magelona mirabilis	•••••	Common	22	211
Cirratulidae	•••	Common	2	37
Chaetozone setosa	•••••	Common	13	102
Lanice conchilega	•••	Frequent	19	
Bathyporeia	••	Frequent	2	70
Pagurus bernhardus	••	Occasional	4	
Liocarcinus depurator	•••	Rare	13	
Nucula nitidosa	•••	Frequent	3	70
Ensis	••	Frequent	8	
Phaxas pellucidus	•••	Common	2	33
Fabulina fabula	•••••	Common	17	141
Abra alba	••	Present	1	17
Chamelea gallina	•••	Common	3	41
Asterias rubens	••	Rare	3	
Echinocardium cordatum	••••	Frequent	34	
Pomatoschistus minutus	••	Frequent	4	
Pleuronectidae	•		2	

SS.SSA.IMuSa.AreISa *Arenicola marina* in infralittoral fine sand or muddy sand

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Fine to very fine sand and muddy sand
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

None

Biotope description

In shallow fine sand or non-cohesive muddy sand in fully marine conditions (or occasionally in variable salinity) a community characterised by the polychaete *Arenicola marina* may occur. This biotope appears quite faunally sparse. Those other taxa present however, include scavenging crustacea such as *Pagurus bernhardus* and *Liocarcinus depurator,* terebellid polychaetes such as *Lanice conchilega* and the burrowing anemone *Cerianthus lloydii*. Occasional *Sabella pavonina* and frequent *Ensis* spp. may also be observed in some areas. The majority of records for this biotope are derived from epifaunal surveys and consequently there is little information available for the associated infaunal species. It is possible that this biotope, like EcorEns (to which it is broadly similar) is an epibiotic overlay on other biotopes from the SSA complex.

Situation

No situation data available.

Temporal variation

At certain times of the year a diatom film may be present on the sediment surface.

Similar biotopes

LSA.MacAre	AreISa is likely to be a shallow water extension of the littoral *Arenicola* biotope MacAre

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*	
Hydractinia echinata	••	Occasional	1		
Cerianthus lloydii	••	Frequent	2		
Capitella capitata	••••	Common	91		112
Arenicola marina	••••	Abundant	9		9
Arenicola marina	•••••	Common	55		
Terebellidae	••	Occasional	1		
Lanice conchilega	•••	Occasional	5		
Sabella pavonina	••	Occasional	1		
Pagurus bernhardus	••••	Occasional	10		
Liocarcinus depurator	••	Occasional	2		
Carcinus maenas	••	Occasional	2		
Ensis	••	Frequent	1		
Diatoms - film	••	Common	9		

SS.SSA.IMuSa.SsubNhom *Spisula subtruncata* and *Nephtys hombergii* in shallow muddy sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered
Tidal streams:	Moderately strong, Weak
Substratum:	Muddy sand occasionally with surface shell fragments.
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m, 20-30 m

Previous code

part of IGS.Sell	97.6

Biotope description

In shallow non-cohesive muddy sands, in fully marine conditions, a community characterised by the bivalve *Spisula subtruncata* and the polychaete *Nephtys hombergii* may occur. The sediments in which this community is found may vary with regard silt content but they generally have less than 20% silt/clay and in some areas may contain a degree of shell debris. This biotope falls somewhere between SSA.FfabMag and SSA.AalbNuc with regard sediment type (i.e. somewhat muddier than SSA.FfabMag and less muddy than SSA.AalbNuc) and may have species in common with both. As a result, other important species in this community include *Abra alba*, *Fabulina fabula* spp. and *Mysella bidentata* spp. In addition, *Diastylis rathkei/typical*, *Philine aperta* (in muddier sediments), *Ampelisca* spp., *Ophiura albida*, *Phaxas pellucidus* and occasionally *Bathyporeia* spp, may also be important, although this is not clear from the data available. In areas of slightly coarser, less muddy sediment *S. solida* or *S. elliptica* may appear occasionally in this biotope. Abundances of *Spisula subtruncata* in this biotope are often very high and distinguish it from other closely related biotopes. Extensive areas of this community to the north east of the Dogger Bank were recorded in the 1950s, but these seem to have declined since then (Kroncke 1990). More information is required with regard the status of this biotope.

Situation

No situation data available.

Temporal variation

In some areas this biotope may be a temporal variant or sub-biotope of SSA.FfabMag and SSA.AalbNuc rather than an established biotope in itself. For example SSA.SsubNhom has been recorded in Red Wharf Bay and Conwy Bay where it appears to be short term variant of other more established biotopes (e.g. SSA.AalbNuc) and appears to have only intermittent occurrence in single age cohort patches possibly due to predation in some areas (e.g. Red Wharf Bay) by the common Scoter *Melanitta nigra* (E.I.S. Rees pers. comm. 2002).

Similar biotopes

SCS.MoeVen	SsubNhom is found on slightly siltier and/or shelly sand and can be distinguished by the dominance of *S. subtruncata*.
SSA.FfabMag	SsubNhom is muddier than FfabMag and can be distinguished by the dominance of *Spisula*
SSA.AalbNuc	SsubNhom is less muddy than AalbNuc and can be distinguished by the dominance of *Spisula*.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Harmothoe lunulata	●●●●	Common	1	31
Pholoe inornata	●●●●	Common	2	43
Sthenelais limicola	●●●●●	Abundant	4	31
Eteone longa	●●●●	Present	2	6
Glycera tridactyla	●●●●●	Common	4	24
Nephtys hombergii	●●●●●	Common	7	69
Spiophanes bombyx	●●●●●	Frequent	5	60
Magelona alleni	●●●●	Frequent	4	20
Cirratulidae	●●●●	Present	1	6
Chaetozone setosa	●●●●	Common	6	44
Owenia fusiformis	●●●●	Common	2	23
Lagis koreni	●●●	Common	2	645
Pariambus typicus	●●●	Frequent	1	33
Nucula nitidosa	●●●	Common	2	82
Mysella bidentata	●●●●●	Frequent	5	184
Mactra stultorum	●●●●	Common	2	31
Spisula subtruncata	●●●●●	Common	9	189
Fabulina fabula	●●●●●	Common	6	31
Abra alba	●●●●●	Common	13	1629
Dosinia lupinus	●●●●	Common	1	10
Chamelea gallina	●●●●	Present	2	9
Amphiura brachiata	●●●●●	Abundant	4	141
Ophiura ophiura	●●●	Abundant	1	11

SS.SSA.CFiSa Circalittoral fine sand

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Weak, Very weak
Substratum:	Clean fine sands
Zone:	Circalittoral
Depth band:	10-20 m, 20-30 m, 30-50 m

Previous code

part of CGS	97.06

Biotope description

Clean fine sands with less than 5% silt/clay in deeper water, either on the open coast or in tide-swept channels of marine inlets in depths of over 15-20m. The habitat may also extend offshore and is characterised by a wide range of echinoderms (in some areas including the pea urchin *Echinocyamus pusillus*), polychaetes and bivalves. This habitat is generally more stable than shallower, infralittoral sands and consequently supports a more diverse community.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Virgularia mirabilis	••	Occasional		
Cerianthus lloydii	•••	Frequent		
Nephtys	••	Common		
Spiophanes bombyx	••	Frequent		
Chaetozone setosa	••	Common		
Lanice conchilega	•••	Occasional		
Pagurus bernhardus	•••	Occasional		
Nucula nitidosa	••	Frequent		
Pecten maximus	••	Occasional		
Abra alba	••	Common		
Asterias rubens	•••	Occasional		
Amphiura filiformis	•••	Abundant		
Ophiura albida	•••	Frequent		
Ophiura ophiura	••	Frequent		

SS.SSA.CFiSa.EpusOborApri *Echinocyamus pusillus, Ophelia borealis* and *Abra prismatica* in circalittoral fine sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Not known
Tidal streams:	Not known
Substratum:	Medium to fine sand.
Zone:	Circalittoral

Previous code

None

Biotope description

Circalittoral and offshore medium to fine sand (from 40m to 140m) characterised by the pea urchin *Echinocyamus pusillus*, the polychaete *Ophelia borealis* and the bivalve *Abra prismatica*. Other species may include the polychaetes *Spiophanes bombyx*, *Pholoe* sp., *Exogone* spp., *Sphaerosyllis bulbosa*, *Goniada maculata*, *Chaetozone setosa*, *Owenia fusiformis*, *Glycera lapidum*, *Lumbrineris latreilli* and *Aricidea cerrutii* and the bivalves *Thracia phaseolina* and *Moerella pygmaea* and to a lesser extent *Spisula elliptica and Timoclea ovata*. This biotope has been found in the central and northern North Sea.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SCS.MedLumVen	This biotope is similar to MedLumVen but it occurs in finer sediments with a lower proportion of venerid bivalves.

SS.SSA.CFiSa.ApriBatPo *Abra prismatica, Bathyporeia elegans* and polychaetes in circalittoral fine sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Not known
Tidal streams:	Not known
Substratum:	Medium to fine sands.
Zone:	Circalittoral

Previous code

None

Biotope description

In circalittoral and offshore medium to fine sands between 25m and 100m a community characterised by the bivalve *Abra prismatica*, the amphipod *Bathyporeia elegans* and polychaetes such as *Scoloplos armiger*, *Spiophanes bombyx*, *Aonides paucibranchiata*, *Chaetozone setosa*, *Ophelia borealis* and *Nephtys longosetosa* may be found. Crustacea such as the cumacean *Eudorellopsis deformis* and the opheliid polychaetes such as *Ophelia borealis*, *Travisia forbesii* or *Ophelina neglecta* are often present in this biotope and the brittlestar *Amphiura filiformis* may also be common at some sites. This biotope has been reported in the central and northern North Sea (Basford and Eleftheriou, 1989; K nitzer *et al*., 1992).

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SSA.EpusOborApri	EpusOborApri is generally found in somewhat finer sand than ApriBatPo.
SMU.AfilMysAnit	As the mud fraction of the sediment increases ApriBatPo may grade into the sandy mud biotope AfilMysAnit
SMU.AfilNten	As the mud fraction of the sediment increases ApriBatPo may grade into the sandy mud biotope AfilNten

SS.SSA.CMuSa Circalittoral muddy sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Fine to very fine sand with a fine silt fraction
Zone:	Circalittoral
Depth band:	10-20 m, 20-30 m, 30-50 m

Previous code

part of CMS	97.06

Biotope description

Circalittoral non-cohesive muddy sands with the silt content of the substratum typically ranging from 5% to 20%. This habitat is generally found in water depths of over 15-20m and supports animal-dominated communities characterised by a wide variety of polychaetes, bivalves such as *Abra alba* and *Nucula nitidosa*, and echinoderms such as *Amphiura* spp and *Ophiura* spp., and *Astropecten irregularis*. These circalittoral habitats tend to be more stable than their infralittoral counterparts and as such support a richer infaunal community.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Cerianthus lloydii	●●●	Frequent	1	22
Metridium senile	●●	Rare	5	
Sagartiogeton undatus	●●	Occasional	1	
NEMERTEA	●●●	Present	2	
Sthenelais limicola	●●●	Present	1	6
Goniada maculata	●●●	Present	2	9
Nephtys	●●●●	Common	5	54
Nephtys hombergii	●●●	Common	2	14
Scoloplos armiger	●●●●	Present	3	19
Prionospio fallax	●●●	Present	1	6
Spiophanes bombyx	●●●●	Frequent	6	48
Chaetozone setosa	●●●●	Common	6	81
Scalibregma inflatum	●●●	Present	2	30
Owenia fusiformis	●●●	Present	2	13
Terebellidae	●●	Occasional	1	
Lanice conchilega	●●●	Present	2	14
Lanice conchilega	●●●	Occasional	4	
Bathyporeia tenuipes	●●●	Present	1	21
Pagurus bernhardus	●●●●	Occasional	8	
Macropodia rostrata	●●	Rare	2	
Corystes cassivelaunus	●●	Occasional	2	
Corystes cassivelaunus	●●●	Present	1	5
Liocarcinus depurator	●●	Rare	2	
Philine aperta	●●	Occasional	2	
Nucula nitidosa	●●●●●	Frequent	11	118
Solenidae	●●	Super-abundant	2	52
Fabulina fabula	●●●●	Common	7	86
Gari fervensis	●●●	Present	1	7
Abra alba	●●●●●	Abundant	12	495
Abra prismatica	●●●	Frequent	2	22
Chamelea gallina	●●●	Present	1	9
Astropecten irregularis	●●●	Occasional	6	
Asterias rubens	●●●●	Occasional	14	
Amphiura brachiata	●●●●	Common	18	
Ophiura albida	●●●	Abundant	1	40
Ophiura albida	●●	Occasional	2	
Ophiura ophiura	●●●	Occasional	6	
Echinocardium cordatum	●●●	Rare	5	
Labidoplax digitata	●●	Occasional	1	
Pomatoschistus minutus	●●	Occasional	3	

SS.SSA.CMuSa.AalbNuc *Abra alba* and *Nucula nitidosa* in circalittoral muddy sand or slightly mixed sediment

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed
Tidal streams:	Moderately strong, Weak
Substratum:	Fine muddy sands occasionally with small gravel content
Zone:	Circalittoral
Depth band:	10-20 m, 20-30 m, 30-50 m

Previous code

CMS.AbrNucCor	97.06

Biotope description

Non-cohesive muddy sands or slightly shelly/gravelly muddy sand characterised by the bivalves *Abra alba* and *Nucula nitidosa*. Other important taxa include *Nephtys* spp., *Chaetozone setosa* and *Spiophanes bombyx* with *Fabulina fabula* also common in many areas. The echinoderms *Ophiura albida* and *Asterias rubens* may also be present. The epibiotic biotope EcorEns may overlap this biotope. This biotope is part of the *Abra* community defined by Thorson (1957) and the infralittoral etage described by Glemarec (1973).

Situation

No situation data available.

Temporal variation

Numbers of adult *Abra alba* can exceed 1000 m- in favourable conditions (Francesch & Lopez-Jamar 1991) although, as a result of variable recruitment and adult mortality, numbers can vary widely. Consequently the relative density of the characterising species in this biotope is known to vary from year to year (Molander 1962) and *Nucula nitidosa* can, in some cases, be at least if not more prevalent than *Abra alba* (Salzwedel, Rachor & Gerdes 1985). Some areas (e.g. in Liverpool Bay and other areas of the Irish Sea for which long term data is available) are known to display a succession of biotopes with LkorPpel, SsubNhom and AalbNuc becoming the prevalent biotope from one year to the next (Rees et al, 1992; Rees and Walker, 1983). It may be that these biotopes are merely different aspects of the same community with small changes in environmental conditions and/or recruitment, enough to push the community from one form to the next.

Similar biotopes

SMU.AfilMysAnit	In muddier sediments AalbNuc may grade into AfilMysAnit
SMU.BlyrAchi	At greater depths and in muddier sediments AalbNuc may grade into BlyrAchi
SMU.LkorPpel	In muddier sediments AalbNuc may grade into LkorPpel
SSA.FfabMag	The two biotopes may be separated by the relative dominance of *Abra alba* and *Nucula* spp. in AalbNuc and the increased proportion of amphipods such as *Bathyporeia* spp.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Echiurus echiurus		Present		
Goniada maculata	●●●	Present	1	9
Nephtys	●●●●●	Common	5	55
Nephtys hombergii				
Scoloplos armiger	●●●●	Present	2	20
Spiophanes bombyx	●●●●	Frequent	6	47
Chaetozone setosa	●●●●	Common	6	78
Scalibregma inflatum	●●●	Present	1	31
Owenia fusiformis	●●●	Present	1	13
Lanice conchilega	●●●●	Occasional	39	
Lanice conchilega	●●●	Present	1	14
Nucula nitidosa	●●●●●	Frequent	16	122
Solenidae	●●	Super-abundant	3	53
Fabulina fabula	●●●●	Common	10	87
Abra alba	●●●●●	Abundant	21	513
Abra prismatica	●●●	Frequent	2	22
Asterias rubens	●●●●	Occasional	41	
Ophiura albida	●●●●	Rare	20	
Ophiura albida	●●●	Abundant	2	41

SS.SSA.CMuSa.AbraAirr *Amphiura brachiata* with *Astropecten irregularis* and other echinoderms in circalittoral muddy sand

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Exposed, Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Weak, Very weak
Substratum:	fine to very fine muddy sand
Zone:	Circalittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

None

Biotope description

In shallow, circalittoral non-cohesive muddy sand (typically less than 20% silt/clay) abundant populations of the brittlestar *Amphiura brachiata* may occur with other echinoderms such as *Astropecten irregularis*, *Asterias rubens*, *Ophiura ophiura* and *Echinocardium cordatum*. Other infaunal species typically include *Mysella bidentata*, *Lanice conchilega* and *Magelona filiformis*. This biotope is likely to form part of the non-cohesive/cohesive muddy sand communities, which make up the 'off-shore muddy sand association' described by other workers (Jones 1951; Mackie 1990). It is possible that in some areas this biotope forms an epifaunal overlay which may cover a range of biotopes in years of good recruitment but does not develop into a settled or established community.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Corymorpha nutans	••	Occasional	2	13
Cerianthus lloydii	•••	Frequent	1	
Sagartiogeton undatus	••	Occasional	5	
Peachia cylindrica	••	Occasional	2	
NEMERTEA	•••	Present	1	
Pholoe inornata	•••	Present	2	18
Nephtys hombergii	•••	Present	1	11
Magelona alleni	•••	Present	3	25
Magelona filiformis	•••	Frequent	5	403
Arenicola marina	••	Occasional	2	
Owenia fusiformis	•••	Present	3	14
Melinna palmata	•••	Present	2	10
Terebellidae	••	Frequent	1	
Lanice conchilega	•••	Frequent	3	
Myxicola infundibulum	••	Rare	1	
Ampelisca brevicornis	•••	Present	2	10
Pagurus bernhardus	••••	Occasional	9	
Corystes cassivelaunus	••	Occasional	1	
Cancer pagurus	••	Rare	1	
Liocarcinus depurator	••	Rare	1	
Mysella bidentata	•••	Common	30	768
Ensis arcuatus	••	Frequent	1	
Abra nitida	•••	Present	2	28
Cochlodesma praetenue	•••	Present	3	18
Astropecten irregularis	••••	Frequent	6	
Asterias rubens	••••	Frequent	8	
Amphiura brachiata	••••	Super-abundant	36	95
Amphiura brachiata	•••••	Abundant	26	
Amphiura filiformis	•••	Present	1	66
Ophiura ophiura	•••	Occasional	6	
Echinocardium cordatum	•••	Present	4	26
Echinocardium cordatum	•••	Occasional	4	
Labidoplax digitata	•••	Occasional	3	
Pomatoschistus minutus	••	Occasional	3	
Pleuronectidae	••	Occasional	1	

SS.SSA.OSa Offshore circalittoral sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Not known
Tidal streams:	Not known
Substratum:	Fine sands and muddy sands.
Zone:	Circalittoral

Previous code

part of COS	97.06

Biotope description

Offshore (deep) circalittoral habitats with fine sands or non-cohesive muddy sands. Very little data is available on these habitats however they are likely to be more stable than their shallower counterparts and characterised by a diverse range of polychaetes, amphipods, bivalves and echinoderms.

Situation

No situation data available.

Temporal variation

No temporal data available.

SS.SSA.OSa.MalEdef Maldanid polychaetes and *Eudorellopsis deformis* in offshore circalittoral sand or muddy sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Not known
Tidal streams:	Not known
Substratum:	Sand and muddy sand.
Zone:	Circalittoral

Previous code

None

Biotope description

In deep offshore sand or non-cohesive muddy sand dense populations of maldanid polychaetes such as *Maldane sarsi* and the cumacean *Eudorellopsis deformis* may be found. Accompanying these species are abundant ophiuroids including *Amphiura filiformis*, polychaetes such as Terebellidae sp., *Chaetozone setosa*, *Levinsenia gracilis*, *Scoloplos armiger*, the amphipod *Harpinia antennaria* and the bivalves *Nuculoma tenuis* and *Parvicardium minimum*. This biotope is similar to the *Maldane sarsi-Ophiura sarsi* community defined by Glemarec (1973).

Situation

No situation data available.

Temporal variation

No temporal data available.

SS.SSA.OSa.OfusAfil *Owenia fusiformis* and *Amphiura filiformis* in offshore circalittoral sand or muddy sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Not known
Tidal streams:	Not known
Substratum:	Slightly muddy sand.
Zone:	Circalittoral

Previous code

part of CMS.AfilEcor 97.06

Biotope description

Areas of slightly muddy sand (generally <20% mud) in offshore waters may be characterised by high numbers of the tube building polychaete *Owenia fusiformis* often with the brittlestar *Amphiura filiformis*. Whilst *O. fusiformis* is also found in other circalittoral or offshore biotopes it usually occurs in lower abundances than in SSA.OfusAfil. Other species found in this community are the polychaetes *Goniada maculata*, *Pholoe inornata*, *Diplocirrus glaucus*, *Chaetozone setosa* and *Spiophanes kroyeri* with occasional bivalves such as *Timoclea ovata* and *Thyasira equalis*. The sea cucumber *Labidoplax buski* and the cumacean *Eudorella truncatula* are also commonly often found in this biotope.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SSA.MalEdef	Maldanid polychaetes may also occur in the current biotope but never in the same abundance as in MalEdef.

SS.SMU Sublittoral cohesive mud and sandy mud communities

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt), Reduced (18-30ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered, Extremely sheltered, Ultra sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Mud and sandy mud.
Zone:	Infralittoral, Circalittoral
Depth band:	0-5 m, 5-10 m, 10-20 m, 20-30 m

Previous code

IMU in part	97.06
CMU in part	97.06
part of IMS	97.06

Biotope description

Sublittoral mud and cohesive sandy mud extending from the extreme lower shore to offshore, circalittoral habitats. This biotope is predominantly found in sheltered harbours, sealochs, bays, marine inlets and estuaries and stable deeper/offshore areas where the reduced influence of wave action and/or tidal streams allow fine sediments to settle. Such habitats are often by dominated by polychaetes and echinoderms, in particular brittlestars such as Amphiura spp. Seapens such as Virgularia mirabilis and burrowing megafauna including Nephrops norvegicus are common in deeper muds. Estuarine muds tend to be characterised by infaunal polychaetes and oligochaetes.

Situation

No situation data available.

Temporal variation

No temporal data available.

SS.SMU.SMuLS Sublittoral mud in low or reduced salinity (lagoons)

Habitat classification

Salinity:	Reduced (18-30ppt), Low (<18ppt)
Wave exposure:	Extremely sheltered, Ultra sheltered
Tidal streams:	Weak, Very weak
Substratum:	Mud and sandy mud
Zone:	Sublittoral fringe, Infralittoral
Depth band:	0-5 m

Previous code

None

Biotope description

Shallow, typically anoxic, muddy and sandy mud sediments in areas of low or reduced, although stable, salinity (may vary annually) with largely ephemeral faunal communities. Characterised by *Arenicola marina* and blue-green algae with other species, including mysids, *Carcinus maenas* and *Corophium volutator* which commonly occur in lagoons. Important infaunal species may include *Hediste diversicolor*, *Heterochaeta costata* and chironomids; however infaunal records for this biotope are limited.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Hediste diversicolor	••••	Abundant	44	1050
Pygospio elegans	•••	Present	3	13
Arenicola marina	•••	Frequent	45	
Heterochaeta costata	••••	Abundant	34	1767
Mysidae	••	Frequent	13	
Corophium volutator	••	Frequent	8	
Crangon crangon	••	Occasional	8	
Carcinus maenas	••	Occasional	8	
Chironomida	••••	Common	15	1770
Hydrobia ulvae	••	Common	1	297
Hydrobia ulvae	••	Occasional	3	
Ruppia	••	Occasional	4	

SS.SMU.SMuVS Sublittoral mud in variable salinity (estuaries)

Habitat classification

Salinity:	Variable (18-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Strong, Moderately strong, Weak
Substratum:	Mud and sandy mud
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m

Previous code

IMU.EstMu	97.06

Biotope description

Shallow sublittoral muds, extending from the extreme lower shore into the subtidal in variable salinity (estuarine) conditions. Such habitats typically support communities characterised by oligochaetes, and polychaetes such as *Aphelochaeta marioni*. In lowered salinity conditions the sediments may include a proportion of coarser material, where the silt content is sufficient to yield a similar community to that found in purer muds.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m^2)*
POLYCHAETA	••	Present	71	
Nephtys hombergii	•••	Common	18	52
Scoloplos armiger	••	Present	1	17
Polydora ciliata	••	Common	2	434
Pygospio elegans	••	Present	2	22
Streblospio shrubsolii	••	Frequent	4	90
Aphelochaeta marioni	•••	Common	17	2423
Capitella capitata	••	Frequent	9	58
Melinna palmata	••	Common	1	135
Tubificoides benedii	•••	Frequent	6	228
Tubificoides pseudogaster	••	Common	3	301
Tubificoides swirencoides	••	Common	3	392
Corophium volutator	••	Frequent	2	70
Carcinus maenas	••	Rare	7	
Crepidula fornicata	••	Present	7	
Cardiidae	••	Present	18	
Macoma balthica	•	Present	1	3

SS.SMU.SMuVS.PolCvol *Polydora ciliata* and *Corophium volutator* in variable salinity infralittoral firm mud or clay

Habitat classification

Salinity:	Variable (18-35ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Weak
Substratum:	Hard clay, relict peat, mud with fine sand fraction
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m

Previous code

IMU.PolVS	97.06

Biotope description

Variable salinity clay and firm mud characterised by a turf of the polychaete *Polydora ciliata* along with the amphipod *Corophium volutator*. Other important taxa include the polychaetes *Pygospio elegans*, *Hediste diversicolor*, *Streblospio shrubsolii* and the oligochaete *Tubificoides benedii*. *P. ciliata* also occurs in high densities elsewhere (see MCR.Pol) and may be a specific feature of the Humber Estuary in these conditions. This biotope occurs only in very firm mud and clay and possibly submerged relict saltmarsh with a high detrital content. It is characterised, and can be separated from other biotopes, by a combination of the sediment characteristics and the very high density of *Polydora ciliata*. In some areas, such as the Humber estuary, cyclical behaviour with regard its characteristic taxa has been reported with either *P. ciliata* or *C. volutator* increasing in dominance at the expense of the other (Gameson 1982). It is possible that changes in water quality or the sediment regime may be responsible for this.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMU.AphTubi	These two biotopes are similar in characteristics but can be distinguished on the relative abundances of the characterising species *Polydora ciliata*, *Corophium volutator* and *Aphelochaeta marioni*.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Eteone longa	●●●	Common	2	32
Hediste diversicolor	●●●●	Common	5	84
Polydora ciliata	●●●●●	Abundant	43	6407
Tharyx	●●	Common	2	877
Pygospio elegans	●●●●	Frequent	9	152
Streblospio shrubsolii	●●●	Common	6	642
Tubificoides benedii	●●●●	Frequent	4	616
Tubificoides pseudogaster	●●	Abundant	2	2850
Gammarus salinus	●●	Common	1	6
Corophium volutator	●●●●	Common	21	556
Hydrobia ulvae	●●	Common	1	332

SS.SMU.SMuVS.AphTubi *Aphelochaeta marioni* and *Tubificoides* spp. in variable salinity infralittoral mud

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Moderately strong, Weak
Substratum:	Cohesive mud and sandy mud, possibly with shell debris and stones
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m

Previous code

IMU.PhoSco	96.7
IMU.AphTub	97.06

Biotope description

Variable salinity cohesive muddy sediment (sometimes with some coarser material) dominated by the polychaete *Aphelochaeta marioni* (or other *Aphelochaeta* species e.g. *A. amplivasatus*) and the oligochaete *Tubificoides* spp. These taxa are generally accompanied by *Nephtys hombergii* whilst the polychaetes *Capitella capitata* and *Melinna palmata* may also occur in high numbers in some areas. Other members of the cirratulid polychaete group e.g. *Caulleriella zetlandica.* and *Tharyx* spp. may also occur in high numbers, sometimes replacing *A. marioni* as the dominant polychaete. However, there is still inconsistency in the identification of the cirratulid group which is further compounded by fragmentation during sample processing. This biotope is very common in stable muddy environments and may extend from reduced salinity to fully marine conditions.

Situation

This biotope may also be found in conjunction with MacAbr.

Temporal variation

No temporal data available.

Similar biotopes

SMU.NhomTubi	The current biotope may be more diverse version of NhomTubi and can be distinguished by the abundance of *A. marioni*, terebellids and the stability of the sediment in AphTubi, together with the importance of associated species such as *Diastylis rathkei typica* in NhomTubi
SMX.CreMed	It may be separated from CreMed by the relative abundances of the slipper limpet *Crepidula fornicata* in addition to *A. marioni*.
SMX.AphPol	In areas of mixed sediment *A. marioni* may also occur in high numbers. In this case it may be difficult to separate AphTubi from AphPol requiring classification on sediment characteristics and associated species in addition to the abundance of *A. marioni*.
SMU.MelMagThy	Where AphTub occurs in polyhaline waters it may grade into the biotope MelMagThy as the salinity increases e.g. in the Fal estuary (Allen *et al*. 2002).

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
POLYCHAETA	••	Present	71	
Exogone naidina	••	Frequent	2	239
Nephtys	••	Common	1	30
Nephtys hombergii	••••	Common	9	56
Scoloplos armiger	••	Present	1	20
Polydora ciliata	••	Common	1	38
Tharyx	••	Abundant	9	1328
Pygospio elegans	••	Present	1	23
Streblospio shrubsolii	••	Frequent	2	63
Caulleriella zetlandica	••	Common	2	492
Aphelochaeta marioni	••••	Abundant	33	5185
Capitella capitata	•••	Frequent	2	80
Mediomastus fragilis	••	Frequent	1	192
Melinna palmata	••	Common	2	250
Ampharete	••	Common	1	16
Tubificoides benedii	•••	Frequent	4	301
Tubificoides pseudogaster	••	Common	3	186
Tubificoides swirencoides	•••	Common	7	841
Carcinus maenas	•	Rare	4	
Crepidula fornicata	•	Present	7	
Cardiidae	•	Present	18	
Cerastoderma edule	••	Present	1	17
Abra nitida	••	Common	1	19
Phoronis muelleri	••	Frequent	1	267

SS.SMU.SMuVS.NhomTubi *Nephtys hombergii* and *Tubificoides* spp. in variable salinity infralittoral soft mud

Habitat classification

Salinity:	Variable (18-35ppt)
Wave exposure:	Moderately exposed, Sheltered
Tidal streams:	Strong, Moderately strong, Weak
Substratum:	Mud; sandy mud
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m

Previous code

IMU.NhomTub	97.06

Biotope description

Variable salinity soft infralittoral mud and sandy mud characterised by the polychaete *Nephtys hombergii* and oligochaetes of the genus *Tubificoides*. Other characterising species that may be present are the polychaetes *Streblospio shrubsolii* and *Aphelochaeta marioni*, and the cumacean *Diastylis rathkei typica*.

Situation

The biotope is found in areas of silt deposition in soft and sandy muds but may not form a stable habitat. It may be found adjacent to AphTubi, separated by the abundance of *Aphelochaeta marioni* and its more cohesive sediments

Temporal variation

No temporal data available.

Similar biotopes

SMU.AphTubi	This biotope may be an impoverished version of AphTubi and can be distinguished by the abundance of *A. marioni*, terebellids and the stability of the sediment in AphTubi, together with the importance of associated species such as *Diastylis rathkei typica* in NhomTubi and species such as *Caulleriella zetlandica* in AphTubi.
SMU.MoMu	The more mobile muds (MoMu) may contain a reduced element of this biotope in which case only sediment description will distinguish the two biotopes.
SMU.NhomMac	This biotope may also be allied with NhomMac which is found in more marine conditions and can be distinguished by the abundance of *Macoma balthica* and weaker tidal streams.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Nephtys hombergii	●●●●●	Common	44	112
Scoloplos armiger	●●	Abundant	1	35
Streblospio shrubsolii	●●●	Common	8	92
Aphelochaeta marioni	●●●	Frequent	5	65
Tubificoides	●●	Common	7	243
Tubificoides amplivasatus	●●●	Common	20	271
Tubificoides benedii	●●	Frequent	2	74
Diastylis rathkei typica	●●●	Common	8	48
Hydrobia ulvae	●●	Frequent	2	17

SS.SMU.SMuVS.MoMu Infralittoral fluid mobile mud

Habitat classification

Salinity:	Variable (18-35ppt), Reduced/low (0.5-30ppt)
Wave exposure:	Sheltered, Extremely sheltered
Tidal streams:	Moderately strong, Weak
Substratum:	Fluid mud
Zone:	Infralittoral
Depth band:	0-5 m
Other features:	Found only on slack water

Previous code

IMU.MobMud	97.06

Biotope description

Fluid mobile mud suspended and deposited on each tide. In areas with very high quantities of suspended particulate material in the water column it may become deposited around slack water when tidal currents fall. This can form fluid mud layers up to several metres thick (Warwick & Uncles 1980) becoming a transient habitat in its own right. Species present within this biotope will be those washed in from other communities such as *Nephtys hombergii* or *Capitella capitata*. This biotope may be under-recorded due to sampling problems, and also where sediment descriptions are absent from field data.

Situation

It may be found adjacent to; OlVS, NhomTubi and to some extent AphTubi.

Temporal variation

No temporal data available.

Similar biotopes

SMU.OlVS	The more mobile muds (MoMu) may contain a reduced element of OlVS in which case only sediment description will distinguish the two biotopes.
SMU.CapTubi	The more mobile muds (MoMu) may contain a reduced element of CapTubi in which case only sediment description will distinguish the two biotopes.
SMU.NhomTubi	The more mobile muds (MoMu) may contain a reduced element of NhomTubi in which case only sediment description will distinguish the two biotopes.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Capitella capitata	●●●	Present	0	
OLIGOCHAETA	●●●	Present	0	

SS.SMU.SMuVS.CapTubi *Capitella capitata* and *Tubificoides* spp. in reduced salinity infralittoral muddy sediment

Habitat classification

Salinity:	Variable (18-35ppt), Reduced (18-30ppt)
Wave exposure:	Moderately exposed, Sheltered, Extremely sheltered
Tidal streams:	Strong, Moderately strong, Very weak
Substratum:	Cohesive muddy sediment, sandy mud
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m
Other features:	Possible organic enrichment or physical disturbance

Previous code

IMU.CapTub	97.06

Biotope description

Reduced or variable salinity muddy sediment characterised by the *Capitella capitata* species complex with a relatively low species richness. Large numbers of the oligochaetes *Tubificoides* spp. may be found in conjunction with *C. capitata*, along with other species such as *Marenzellaria* sp, *Macoma balthica*, *Arenicola marina* and *Eteone longa*. In some estuaries this biotope may also include high numbers of the polychaete *Ophryotrocha*. This biotope usually has a moderate organic content, and is found away from tidal channels in estuaries. The presence of dense *Capitella* has classically been associated with organically enriched and physically disturbed habitats in the marine environment (Warren 1977; Pearson & Rosenberg 1978) and areas of higher organic loads in estuaries will typically fall into the biotope Cap. Where Capitella is less abundant and accompanied by other typical estuarine species the dominance of Capitella may be associated with other natural factors including the occurrence of a competitive refuge for *C. capitata* in the reduced-salinity environment (Wolff 1973).

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMU.OlVS	OlVS can be separated from CapTubi by a swap in the dominant species from *C. capitata* to *Tubificoides* spp. and OlVS frequently occurs in lower salinity.
SMU.MoMu	MoMu may contain a similar suite of species to CapTubi although in lower abundance. Only a description of the sediment consistency in the field would allow positive classification
SMU.Cap	Cap tends to occur in fully marine conditions or in estuarine areas of high organic enrichment and can be distinguished by the reduced species richness as compared to CapTubi.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
NEMATODA	••	Present	1	2
Eteone longa	••	Common	2	6
Neanthes virens	•		1	5
Marenzelleria	••	Common	7	79
Pygospio elegans	••	Present	1	5
Capitella capitata	•••••	Frequent	60	119
Arenicola marina	••	Present	3	6
OLIGOCHAETA	•••	Frequent	3	129
Tubificoides benedii	••	Frequent	10	84
Corophium volutator	••	Present	1	8
Macoma balthica	•••	Present	4	4

SS.SMU.SMuVS.OlVS Oligochaetes in variable or reduced salinity infralittoral muddy sediment

Habitat classification

Salinity:	Variable (18-35ppt), Reduced (18-30ppt)
Wave exposure:	Very sheltered, Extremely sheltered
Tidal streams:	Moderately strong, Weak
Substratum:	Cohesive muddy sediment, sandy mud
Zone:	Infralittoral
Depth band:	0-5 m
Other features:	Possibly affected by a high biochemical oxygen demand

Previous code

IMU.Tub

Biotope description

Reduced or variable salinity muddy and sandy mud sediments characterised by oligochaetes, particularly of the genus *Tubificoides* or from the group Enchytraeidae. The abundance of the oligochaetes may vary by several orders of magnitude but very few other species will be present. Organic loading and poor water-exchange within the sediment lead to anoxic conditions which may explain the low species richness within this biotope.

Situation

This biotope is found towards the edges of tidal channels in estuaries where current velocities allow deposition of silt and the establishment of an infaunal community. The biotope may occur downstream of SMU.LhofTtub, differentiated by the absence of the freshwater species, and adjacent to more mobile and sandier biotopes in the tidal channels.

Temporal variation

No temporal data available.

Similar biotopes

SMU.LhofTtub	LhofTtub is similar to OlVS however the latter lacks the freshwater element
SMU.CapTubi	CapTubi can be separated from OlVS by the presence of the polychaete *Capitella capitata*.
SMU.MoMu	More mobile muds, which occur in areas with an extremely high suspended particulate component to the water column, MoMu, may contain a very similar suite of species to OlVS and can only positively be separated by a description of the sediment characteristics in the field.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
OLIGOCHAETA	••••	Frequent	84	245
Tubificoides pseudogaster	•	Present	2	40
Diptera larva	••	Abundant	11	61

SS.SMU.SMuVS.LhofTtub *Limnodrilus hoffmeisteri, Tubifex tubifex* and *Gammarus* spp. in low salinity infralittoral muddy sediment

Habitat classification

Salinity:	Low (<18ppt)
Wave exposure:	Very sheltered, Extremely sheltered
Tidal streams:	Weak, Very weak
Substratum:	Cohesive muddy sediment
Zone:	Infralittoral
Depth band:	0-5 m
Other features:	Very low, fluctuating salinity; possibly with a high biochemical oxygen demand

Previous code

IMU.LimTtub	97.06

Biotope description

Upper estuary muddy sediments with very low fluctuating salinity, characterised by the oligochaetes *Limnodrilus hoffmeisteri* and *Tubifex tubifex*. Other taxa may include *Marenzelleria wireni*, *Gammarus zaddachi*, *Paranais litoralis* and *Heterochaeta costata*. The biotope contains elements of both freshwater and brackish communities.

Situation

This biotope is found in the transitional zone between the freshwater and brackish environments where tidal currents are sufficiently reduced to allow the deposition of fine silt and the establishment of an infaunal community. It may be found adjacent to NeoGam away from the stronger tidal streams.

Temporal variation

The position of this biotope in the estuary may vary seasonally depending on freshwater input (Gameson, 1982).

Similar biotopes

SMU.OlVS	LhofTtub is similar to OlVS however the latter lacks the freshwater element.
SSA.NintGam	NintGam may be found in conjunction with LhofTtub, although it lacks appreciable numbers of oligochaetes.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Marenzelleria wireni	••	Present	3	21
Limnodrilus hoffmeisteri	••••	Common	78	1011
Tubifex tubifex	•••	Present	19	91

SS.SMU.ISaMu Infralittoral sandy mud

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Mud with a fine to very fine sand fraction
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

part of IMS.FaMS	97.06

Biotope description

Infralittoral, cohesive sandy mud, typically with over 20% silt/clay, in depths of less than 15-20m. This habitat is generally found in sheltered bays or marine inlets and along sheltered areas of open coast. Typical species include a rich variety of polychaetes including *Melinna palmate*, tube building amphipods (*Ampelisca* spp.) and deposit feeding bivalves such as *Macoma balthica* and *Mysella bidentata*. Sea pens such as *Virgularia mirabilis* and brittlestars such as *Amphiura* spp. may be present but not in the same abundances as found in deeper circalittoral waters.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Hydractinia echinata	••	Occasional	4	
Cerianthus lloydii	••	Occasional	3	
Metridium senile	••	Rare	2	
Sagartiogeton undatus	••••	Occasional	21	
NEMERTEA	••	Common	2	53
NEMATODA	•••	Frequent	4	563
Nephtys hombergii	••••	Common	20	42
Scoloplos armiger	••	Abundant	3	60
Magelona filiformis	••	Common	2	133
Chaetozone gibber	••	Abundant	2	476
Capitella capitata	••	Abundant	5	695
Arenicola marina	•	Occasional	2	
Euclymene oerstedii	••	Abundant	1	64
Melinna palmata	••	Abundant	5	808
Terebellidae	••	Occasional	4	
Myxicola infundibulum	••	Occasional	2	
Ampelisca brevicornis	••	Frequent	1	78
Ampelisca tenuicornis	••	Frequent	1	130
Pagurus bernhardus	•••	Occasional	7	
Liocarcinus depurator	••	Occasional	3	
Carcinus maenas	•••	Occasional	16	
Nucula nitidosa	•••	Frequent	8	48
Thyasira flexuosa	•••	Frequent	2	40
Mysella bidentata	••	Frequent	2	134
Macoma balthica	••	Frequent	7	15
Abra alba	•••	Common	8	74
Asterias rubens	••	Occasional	3	
Ascidiella aspersa	•••	Frequent	6	
Pomatoschistus	••	Occasional	3	

SS.SMU.ISaMu.NhomMac *Nephtys hombergii* and *Macoma balthica* in infralittoral sandy mud

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Extremely sheltered
Tidal streams:	Weak
Substratum:	Sandy mud
Zone:	Infralittoral
Depth band:	5-10 m, 10-20 m
Other features:	Organically enriched

Previous code

IMS.AbrLag	96.7
IMS.MacAbr	97.06

Biotope description

Near-shore shallow sandy muds and muds, and sometimes mixed sediments, may be characterised by the presence of the polychaete *Nephtys hombergii* and the bivalve *Macoma balthica*. *Abra alba*, and *Nucula nitidosa* may also be important although they may not necessarily occur simultaneously or in high numbers. Other taxa include *Spiophanes bombyx*, *Lagis koreni*, and *Echinocardium cordatum.* In some areas *Scoloplos armiger* and *Crangon crangon* may also be present. The community appears to be quite stable (Dewarumez *et al.* 1992) and the substratum is typically rich in organic content. This community has been included in the 'Boreal Offshore Muddy Sand Association' of Jones (1950) and is also described by several other authors (Petersen 1918; Cabioch & Gla‡on 1975). A similar community may occur in deep water in the Baltic (Thorson 1957). This biotope may occur in slightly reduced salinity estuarine conditions where *Mya* sp. may become a significant member of the community (Thorson 1957).

Situation

The community may occur in small patches or swathes in shallow waters parallel to the shore (Jones 1950; Cabioch & Gla‡on 1975) or in shallow nearshore depressions or trenches where finer material collects e.g. off the Suffolk coast (IECS 1991). This biotope is known to occur in patches between Denmark and the western English Channel.

Temporal variation

Sites with SMU.NhomMac may develop into *Amphiura* biotopes with time (E.I.S. Rees pers. comm. 1996)

Similar biotopes

SSA.AalbNuc	In deeper, less muddy areas NhomMac may grade into AalbNuc and it is possible that this biotope is part of the *Abra* dominated muddy sand biotopes.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Nephtys cirrosa				
Nephtys hombergii	●●●●●	Common	37	57
Spiophanes bombyx	●●	Present	3	11
Magelona mirabilis	●	Present	1	4
Lagis koreni	●●	Present	3	9
Nucula nitidosa	●●●	Frequent	18	109
Macoma balthica	●●●●	Frequent	20	41
Abra alba	●●●	Present	6	13
Ophiura ophiura	●●	Present	2	9
Echinocardium cordatum	●●	Present	3	16

SS.SMU.ISaMu.SundAasp *Sagartiogeton undatus* and *Ascidiella aspersa* on infralittoral sandy mud

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	sandy mud
Zone:	Infralittoral, Circalittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

None

Biotope description

Sheltered sublittoral mud or sandy mud in shallow water with relatively few conspicuous species may be characterised by the anemone *Sagartiogeton undatus* in low numbers and the tunicate *Ascidiella aspersa*. Other taxa may include *Carcinus maenas*, *Pagurus bernhardus* and terebellid polychaetes. The burrowing anemones *Cerianthus lloydii* may also be found occasionally. The status of this biotope is uncertain at present as it is not known whether it is an impoverished, disturbed or epifaunal variant of other sheltered, shallow mud biotopes such as PhiVir or if the areas in which it has been recorded have been incompletely surveyed.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Hydractinia echinata	••	Occasional	3	
Cerianthus lloydii	••	Occasional	3	
Metridium senile	••	Rare	2	
Sagartiogeton undatus	••••	Occasional	24	
Terebellidae	•••	Occasional	4	
Myxicola infundibulum	••	Occasional	2	
Pagurus bernhardus	•••	Occasional	6	
Liocarcinus depurator	••	Occasional	3	
Carcinus maenas	••••	Occasional	18	
Buccinum undatum	••	Rare	1	
Asterias rubens	•••	Occasional	3	
Ascidiella aspersa	•••	Frequent	7	
Gobius niger	••	Occasional	1	
Pomatoschistus	••	Occasional	3	
Pomatoschistus minutus	••	Occasional	1	

SS.SMU.ISaMu.MysAbr *Mysella bidentata* and *Abra* spp. in infralittoral sandy mud

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Very sheltered
Tidal streams:	Very weak
Substratum:	Muddy sands and sandy muds
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

None

Biotope description

Cohesive sandy mud, sometimes with a small quantity of shell in shallow water may contain the bivalves *Mysella bidentata* and *Abra* spp. (typically *A. alba* and *A. nitida*). Other characteristic taxa may include *Scoloplos armiger*, *Mya* sp., and *Thyasira flexuosa*. Tube building amphipods are also characteristic of this biotope in particular *Ampelisca* spp. and Aoridae such as *Microprotopus maculatus*.

Situation

This biotope is generally found in sheltered marine inlets or sealochs such as Strangford Lough.

Temporal variation

No temporal data available.

Similar biotopes

SMU.AmpPlon	MysAbr is similar to AmpPlon but differs in the variety and abundance of amphipods and is found in muddier sediments in sheltered sealochs such as Strangford Lough. It is possible that these two biotopes are actually part of a wider biotope which contains more than one entity depending on its geographic location and prevailing environmental conditions

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
NEMATODA	●●●●●	Frequent	15	2246
Nephtys hombergii	●●	Common	2	32
Nephtys kersivalensis	●●	Common	1	8
Scoloplos armiger	●●●●	Super-abundant	10	215
Cirratulidae	●●●	Common	2	73
Capitella capitata	●●	Frequent	1	654
Mediomastus fragilis	●●	Frequent	1	66
Arenicola marina	●●	Present	1	
Melinna palmata	●●	Common	1	5
Dexamine thea	●●●	Frequent	1	21
Ampelisca brevicornis	●●●	Common	6	173
Ampelisca tenuicornis	●●●	Frequent	2	86
Microprotopus maculatus	●●	Frequent	2	31
Aoridae	●●●	Frequent	1	45
Pariambus typicus	●●●	Present	1	88
Thyasira flexuosa	●●●●	Present	2	84
Mysella bidentata	●●●●●	Frequent	9	548
Abra alba	●●●●	Common	11	216
Abra nitida	●●●	Common	2	20
Mya	●●●●	Common	3	15
Zostera marina	●●●●	Present	99	

SS.SMU.ISaMu.MelMagThy *Melinna palmata* with *Magelona* spp. and *Thyasira* spp. in infralittoral sandy mud

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Sheltered, Very sheltered
Tidal streams:	Moderately strong
Substratum:	Sandy mud
Zone:	Infralittoral
Depth band:	5-10 m, 10-20 m

Previous code

part of IMS.SpiSpi	97.06

Biotope description

In infralittoral cohesive sandy mud, in sheltered marine inlets, and occasionally variable salinity environments, dense populations of the polychaete *Melinna palmata* may occur, often with high numbers of *Magelona* spp. and the bivalve *Thyasira flexuosa*. Other important taxa may include *Chaetozone gibber*, *Nephtys hombergii*, *Galathowenia oculata*, *Euclymene oerstedii*, *Ampelisca tenuicornis*, *Ampharete lindstroemi*, *Abra alba*, and *Phoronis* sp. In addition the polychaete *Aphelochaeta* spp. and the gastropod *Turritella communis* may be common or abundant in some areas. At the sediment surface visible taxa may include occasional *Virgularia mirabilis*, and mobile epifauna such as *Pagurus bernhardus*. This biotope is characteristic in many southern UK marine inlets and in some areas e.g. Plymouth Sound during high levels of recruitment when *M. palmata* often occurs in abundances between 500 to 1000 per m2 moderate numbers of the species often 'overspill' into adjacent biotopes (Allen *et al*. 2001).

Situation

In many areas this biotope is found on or near the boundary between euryhaline and polyhaline waters and in such areas moderately high numbers of *Aphelochaeta* spp. are often recorded.

Temporal variation

Numbers of *M. palmata* tend to vary considerably from year to year presumably due to recruitment and/or adult mortality.

Similar biotopes

SSA.AalbNuc	The current biotope displays some similarity to AalbNuc but is found in shallower water, muddier sediments and often in estuarine influenced areas.
SMU.AphTubi	In some areas the current biotope may resemble a more diverse, marine version of AphTubi and it is possible that MelMagThy occupies an intermediate position between AphTubi and AalbNuc.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Hydractinia echinata	●●●	Occasional	8	
Virgularia mirabilis	●●●	Occasional	20	
Cerianthus lloydii	●●●	Occasional	8	
NEMERTEA	●●●●●	Common	4	111
NEMATODA	●●●●	Frequent	1	74
Nephtys hombergii	●●●●	Common	3	44
Spio filicornis	●●●●	Frequent	2	29
Magelona alleni	●●●●	Frequent	2	68
Magelona filiformis	●●●●	Common	7	453
Chaetozone gibber	●●●●	Abundant	10	1615
Tharyx	●●●	Common	1	278
Aphelochaeta marioni	●●●	Common	1	312
Notomastus latericeus	●●●●	Occasional	1	41
Euclymene oerstedii	●●●●	Abundant	3	211
Galathowenia oculata	●●●●	Common	3	215
Melinna palmata	●●●●●	Abundant	19	2739
Ampharete lindstroemi	●●●●	Frequent	3	77
Myxicola infundibulum	●●●	Frequent	12	
Harpinia antennaria	●●●●	Frequent	2	52
Ampelisca tenuicornis	●●●●	Common	2	374
Pagurus bernhardus	●●●●	Occasional	23	
Carcinus maenas	●●●	Rare	4	
Turritella communis	●●●	Common	1	77
Nucula nitidosa	●●●●	Present	2	29
Thyasira flexuosa	●●●●●	Frequent	3	68
Thyasira flexuosa	●●●	Present	5	
Mysella bidentata	●●●	Present	5	
Phaxas pellucidus	●●●●	Present	1	30
Abra alba	●●●●	Common	2	67
Mya truncata	●●●	Present	10	
Corbula gibba	●●●●	Present	1	19
Phoronis	●●●●	Common	2	78
Amphiura filiformis	●●●	Present	5	

SS.SMU.ISaMu.AmpPlon *Ampelisca* spp., *Photis longicaudata* and other tube-building amphipods and polychaetes in infralittoral sandy mud

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Not known
Tidal streams:	Not known
Substratum:	Sandy muds.
Zone:	Infralittoral

Previous code

part of IMU.TubeAP 97.06

Biotope description

Sublittoral stable cohesive sandy muds occurring over a wide depth range may support large populations of semi-permanent tube-building amphipods and polychaetes. In particular large numbers of the amphipods *Ampelisca* spp. and *Photis longicaudata* may be present along with polychaetes such as *Lagis koreni*. Other important taxa may include bivalves such as *Nucula nitidosa, Chamelea gallina, Abra alba* and *Mysella bidentata* and the echinoderms *Echinocardium cordatum* and *Amphiura brachiata*. In some areas polychaetes such as *Spiophanes bombyx* and *Polydora ciliata* may also be conspicuously numerous. This community is poorly known, appearing to occur in restricted patches. In some areas it is possible that AmpPlon may develop as a result of moderate organic enrichment. A similar community in mud has also been reported in the Baltic which is characterised by large populations of amphipods such as *Ampelisca* spp., *Corophium* spp. and *Haploops tubicola* (see Petersen 1918; Thorson 1957) and it is not known if SMU.AmpPlon is a UK variant of this biotope.

Situation

No situation data available.

Temporal variation

In some areas of the Irish Sea this biotope is reported to be a temporal variant of AalbNuc, SsubNhom and LkorPpel. Some researchers consider these biotopes to be part of a wider muddy sand community which varies temporally depending on changes in sediment deposition and recruitment as was reported in areas of Red Wharf Bay off the Welsh coast (E.I.S. Rees pers. comm. 2002)

Similar biotopes

SMU.MysAbr	Similar to AmpPlon but differs in the variety and abundance of amphipods and is found in muddier sediments in sheltered sealochs such as Strangford Lough. It is possible that these two biotopes are actually part of a wider biotope which contains more than one entity depending on its geographic location and prevailing environmental conditions.

SS.SMU.ISaMu.Cap *Capitella capitata* in enriched sublittoral muddy sediments

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt), Low (<18ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Moderately strong, Weak
Substratum:	Muddy sediment
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

IMU.Cap	97.06

Biotope description

The polychaete *Capitella capitata* (agg.) a widely-occurring, opportunist species complex that is particularly associated with organically enriched and polluted sediments (Warren 1977; Pearson & Rosenberg 1978) where it may be superabundant. In very polluted/disturbed areas only *Capitella*, Nematodes and occasional *Malacoceros fuliginosus* may be found whilst in slightly less enriched areas and estuaries species such as *Tubificoides*, *Cirriformia tentaculata*, *Pygospio elegans* and *Polydora ciliata* may also be found. In some areas e.g. the Tees estuary, high numbers of the polychaete *Ophryotrocha* may also be present. Cap may become established as a result of anthropogenic activities such as fish farming and sewerage effluent but may also occur with natural enrichment as a result of, for example, coastal bird roosts. This biotope may also occur to some extent in the intertidal and in estuaries.

Situation

This biotope typically occurs in marine inlets, embayments or estuaries where organic enrichment allows *C. capitata* to out compete other taxa, although the species may also occur in enriched muddy coastal sediments and also offshore where there is a high organic input from adjacent oil drilling platforms (CapThy & CapThy.Odub).

Temporal variation

No temporal data available.

Similar biotopes

SMU.CapTubi	Cap tends to occur in fully marine conditions or in estuarine areas of high organic enrichment and can be distinguished by the reduced species richness as compared to CapTubi.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
NEMATODA	●●●	Frequent	2	201
Malacoceros fuliginosus	●●●●	Common	7	506
Polydora ciliata	●●●	Present	2	329
Capitella capitata	●●●●●	Abundant	83	5155
OLIGOCHAETA	●●●	Common	1	109
Tubificoides benedii	●●	Frequent	3	316

SS.SMU.IFiMu Infralittoral fine mud

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Weak, Very weak
Substratum:	Mud (occasionally with shells or stones)
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

IMU.MarMu	97.06

Biotope description

Shallow sublittoral muds, extending from the extreme lower shore to about 15-20 m depth in fully marine or near marine conditions, predominantly in extremely sheltered areas with very weak tidal currents. Such habitats are found in sealochs and some rias and harbours. Populations of the lugworm *Arenicola marina* may be dense, with anemones, the opisthobranch *Philine aperta* and synaptid holothurians also characteristic in some areas. The extent of the oxidised layer may be shallow with some areas being periodically or permanently anoxic. In these areas bacterial mats may develop on the sediment surface. Infaunal records for this biotope complex are limited encompassing only one biotope. They are therefore not representative of the full suit of infaunal species found in this biotope.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m^2)*
Hydractinia echinata	••	Occasional	2	
Cerianthus lloydii	••	Occasional	2	
Ophiodromus flexuosus	•••	Present	4	3
Hediste diversicolor	••	Frequent	2	49
Polydora ciliata	••	Present	1	2
Caulleriella caputesocis	••••	Frequent	15	20
Aphelochaeta marioni	•••	Present	4	4
Arenicola marina	•••	Frequent	12	
Pagurus bernhardus	•••	Occasional	7	
Liocarcinus depurator	••	Rare	3	
Carcinus maenas	••••	Occasional	25	
Hydrobia ulvae	••••	Frequent	20	29
Philine aperta	••	Frequent	6	
Cerastoderma edule	•••••	Common	33	31
Abra nitida	••••	Common	22	38
Asterias rubens	•••	Occasional	6	
Beggiatoa	••	Present	16	
Diatoms - film	••	Present	4	
Laminaria saccharina	••	Present	2	

SS.SMU.IFiMu.CerAnit *Cerastoderma edule* with *Abra nitida* in infralittoral mud

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Very sheltered
Tidal streams:	Weak
Substratum:	Mud and gravelly mud
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m

Previous code

None

Biotope description

Sheltered shallow sublittoral muds and gravelly muds in marine embayments, inlets or harbours may contain populations of the edible cockle *Cerastoderma edule* with *Abra nitida*. Other taxa may include the gastropod *Hydrobia ulvae*, cirraltulid polychaetes such as *Caulleriella* spp. and other polychaetes including *Hediste diversicolor* and *Aphelochaeta marioni*. Available data for this biotope are limited to parts of Southampton Water, Chichester Harbour and also in the Wash. The species list given here may therefore be far from complete. It is not known at this stage whether this biotope is a sublittoral extension of intertidal cockle beds (e.g. LSA.CerPo) or whether it exists independently of intertidal populations of *C. edule*.

Situation

No situation data available.

Temporal variation

No situation data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Ophiodromus flexuosus	●●●	Present	4	3
Hediste diversicolor	●●	Frequent	2	49
Polydora ciliata	●●	Present	1	2
Caulleriella caputesocis	●●●●	Frequent	15	20
Aphelochaeta marioni	●●●	Present	4	4
Hydrobia ulvae	●●●●	Frequent	20	29
Cerastoderma edule	●●●●●	Common	33	31
Abra nitida	●●●●	Common	22	38

SS.SMU.IFiMu.Are *Arenicola marina* in infralittoral mud

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Very sheltered, Extremely sheltered
Tidal streams:	Weak, Very weak
Substratum:	Mud
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m

Previous code

LMU.Are in part	96.7
IMU.AreSyn	97.06

Biotope description

In very shallow, extremely sheltered, very soft muds *Arenicola marina* may form very conspicuous mounds and casts. This biotope may also contain synaptid holothurians such as *Labidoplax media* and *Leptosynapta bergensis* or *L. inhaerens*. However these species may be under recorded (possibly due to periodicity in feeding) and are not considered characteristic of this biotope. Other conspicuous fauna may include *Carcinus maenas*, *Asterias rubens* and *Pagurus bernhardus* whilst the scallop *Pecten maximus* and the turret shell *Turritella communis* may also be present in some areas.

Situation

This biotope typically occurs in waters shallower than about 5 m in sheltered basins of sealochs and lagoons that may be partially separated from the open sea by tidal narrows or rapids.

Temporal variation

Sediment surfaces may become covered by a diatom film at certain times of the year

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m^2)*
Arenicola marina	●●●●●	Common	34	
Terebellidae	●●	Present	1	
Pagurus bernhardus	●●●	Present	5	
Liocarcinus depurator	●●●	Present	3	
Carcinus maenas	●●●●●	Frequent	27	
Turritella communis	●●	Present	2	
Chlamys	●●	Present	1	
Pecten maximus	●●	Present	2	
Asterias rubens	●●●●	Rare	6	
Gobiidae	●●	Present	2	
Diatoms - film	●●●	Present	5	
Laminaria saccharina	●●●	Present	3	

SS.SMU.IFiMu.PhiVir *Philine aperta* and *Virgularia mirabilis* in soft stable infralittoral mud

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Weak, Very weak
Substratum:	Mud occasionally with small stones
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

IMU.PhiVir	97.06

Biotope description

Physically very stable muds, occasionally with small stones, with a high proportion of fine material (typically greater than 80 %) may contain the opisthobranch *Philine aperta* and the seapen *Virgularia mirabilis*. These muds typically occur in shallow water down to about 12-15 m where significant seasonal variation in temperature is presumed to occur. This habitat is restricted to the most sheltered basins in, for example, sealochs. Although most records suggest full salinity conditions are prevalent, some sites may be subject to variable salinity. *Philine aperta* is the most characteristic species of this habitat, occurring in high densities at many sites, whilst *Virgularia mirabilis*, a species found more widely in muddy sediments, appears to reach its highest densities in this shallow mud but may not be present in all examples of this biotope. Other conspicuous species found in this shallow muddy habitat include *Cerianthus lloydii*, *Pagurus bernhardus*, *Sagartiogeton* spp. and *Hydractinia echinata*. Burrowing crustacean megafauna, characteristic of deeper mud, are rare or absent from this shallow sediment although *Nephrops norvegicus* may sometimes be recorded. This biotope has been primarily recorded on the basis of its epifauna and a few conspicuous infauna. Little data exists on the infaunal component of this biotope but it may include *Nephtys* spp., spionid polychaetes, *Ampelisca* spp. and the bivalves *Nucula* spp., *Thyasira flexuosa*, *Mysella bidentata* and *Abra* spp. In the south of Great Britain, the polychaete *Sternaspis scutata* is also characteristic of this biotope. This polychaete is rare in Great Britain (Sanderson 1996). Indeed, this southern variant of the biotope is very restricted in the UK to Portland Harbour but is known to occur further south in the Gulf of Gascony and the Mediterranean (Glemarec 1973; Dauvin *et al*. 1994).

Situation

No situation data available.

Temporal variation

It is possible that this biotope is a temporal variant of other SMU biotopes. The key species, *Philine aperta*, may be highly variable from year to year The sediment may also be covered by a diatom film at certain times of the year

Similar biotopes

SMU.SpnMeg	SpnMeg is similar to PhiVir, but occurs deeper, is more stable, and is characterised by burrowing megafauna and the sea pen *Pennatula phosphorea*
SMU.BlyrAchi	PhiVir displays some resemblance to BriAchi, but the latter is characterised by a high abundance of ophiuroid species particularly *Amphiura* spp.
SMU.MysAbr	PhiVir may be closely allied to MysAbr, possibly sharing some of the infaunal elements of this biotope. However MysAbr is found on sandier sediments
SMU.SundAasp	SundAasp appears to be an impoverished (disturbed?) version of PhiVir lacking in *P. aperta* and *V. mirabilis*.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Hydractinia echinata	●●●	Occasional	4	
Virgularia mirabilis	●●●	Frequent	8	
Cerianthus lloydii	●●●	Frequent	7	
Sagartiogeton laceratus	●●	Occasional	1	
Sagartiogeton undatus	●●	Frequent	2	
Terebellidae	●●	Occasional	2	
Pagurus bernhardus	●●●●	Frequent	11	
Liocarcinus depurator	●●●	Occasional	3	
Carcinus maenas	●●●	Occasional	5	
Philine aperta	●●●●●	Common	30	
Aequipecten opercularis	●●	Rare	2	
Asterias rubens	●●●	Occasional	5	
Amphiura filiformis	●●	Frequent	1	
Ascidiella aspersa	●●	Occasional	2	
Pomatoschistus	●●	Occasional	2	
Laminaria saccharina	●●	Rare	1	

SS.SMU.IFiMu.Ocn *Ocnus planci* aggregations on sheltered sublittoral muddy sediment

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Weak, Very weak
Substratum:	Stones or shells on muddy sediment
Zone:	Infralittoral, Circalittoral
Depth band:	0-5 m, 5-10 m, 10-20 m, 20-30 m

Previous code

SCR.Ocn	96.7
IMU.Ocn	97.06

Biotope description

Dense aggregations of *Ocnus planci [?brunneus]* on various substrata, typically muddy but occasionally with stones or shells, in sheltered conditions such as sealochs. *Philine aperta* also characterises this biotope but is present in lower abundances than in PhiVir. Other associated species vary but are typical of very sheltered muddy habitats and include the ophiuroids *Ophiura* spp. and *Ophiothrix fragilis*. *Melanella alba*, which parasitises holothurians, has been found in large numbers at one site.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Alcyonium digitatum	••	Rare	1	
Myxicola infundibulum	••	Rare	1	
Liocarcinus depurator	••	Occasional	4	
Buccinum undatum	••	Present	2	
Philine aperta	•••	Frequent	20	
Aequipecten opercularis	••	Rare	1	
Mya truncata	••	Occasional	3	
Asterias rubens	•••	Occasional	7	
Ophiothrix fragilis	••	Frequent	4	
Ophiocomina nigra	••	Occasional	3	
Ophiura albida	••	Rare	1	
Ophiura ophiura	••	Frequent	7	
Ocnus lacteus	••	Frequent	27	
Ocnus planci	•••	Abundant	19	

SS.SMU.IFiMu.Beg *Beggiatoa* spp. on anoxic sublittoral mud

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Weak, Very weak
Substratum:	Mud
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m
Other features:	Anoxic

Previous code

CMU.Beg	97.06

Biotope description

Sublittoral soft anoxic mud, often in areas with poor water exchange with the open sea, can have a conspicuous bacterial mat covering of *Beggiatoa* spp. The anoxia may be a result of natural conditions of poor water exchange in some sealochs (and many Scandinavian fjords) or artificially under fish farm cages from nutrient enrichment. The fauna is normally impoverished at such sites, with few elements of the infaunal communities present in other muddy biotopes. Scavenging species such as *Asterias rubens* and *Carcinus maenas* are typically present where the habitat is not too anoxic along with occasional *Arenicola marina* but in extreme conditions of anoxia little survives other than the *Beggiatoa*. The polychaete *Ophiodromus flexuosus* occurs in high densities at the interface between oxygenated and deoxygenated sediments (in Norwegian fjords).

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
POLYCHAETA	•		2	
Carcinus maenas	•••	Present	18	
Asterias rubens	••	Occasional	1	
Beggiatoa	•••••	Present	75	

SS.SMU.CSaMu Circalittoral sandy mud

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Mud with a significant fine to very fine sand fraction
Zone:	Circalittoral
Depth band:	5-10 m, 10-20 m, 20-30 m, 30-50 m, 50-100 m

Previous code

part of CMS	97.06

Biotope description

Circalittoral, cohesive sandy mud, typically with over 20% silt/clay, generally in water depths of over 10m, with weak or very weak tidal streams. This habitat is generally found in deeper areas of bays and marine inlets or offshore from less wave exposed coasts. Sea pens such as *Virgularia mirabilis* and brittlestars such as *Amphiura* spp. are particularly characteristic of this habitat whilst infaunal species include the tube building polychaetes *Lagis koreni* and *Owenia fusiformis*, and deposit feeding bivalves such as *Mysella bidentata* and *Abra* spp.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Kirchenpaueria pinnata	••	Occasional	1	
Nemertesia ramosa	••	Occasional	1	
Virgularia mirabilis	••••	Occasional	12	
Cerianthus lloydii	•••	Occasional	9	
NEMERTEA	•••	Common	4	71
Thysanocardia procera	••	Common	2	60
Pholoe inornata	••	Frequent	2	82
Nephtys incisa	•••	Present	3	48
Lumbrineris gracilis	••	Common	1	32
Chaetopterus variopedatus	••	Occasional	1	
Cirratulidae	••	Abundant	2	275
Diplocirrus glaucus	•••	Present	2	59
Scalibregma inflatum	••	Common	1	60
Owenia fusiformis	•••	Common	2	48
Lagis koreni	•••	Common	3	192
Melinna palmata	••	Present	2	47
Terebellidae	••	Occasional	1	
Lanice conchilega	••	Occasional	3	
Pomatoceros triqueter	••	Occasional	1	
Pariambus typicus	••	Frequent	2	136
Pagurus bernhardus	•••	Occasional	8	
Pagurus prideaux	••	Rare	2	
Liocarcinus depurator	•••	Occasional	4	
Turritella communis	••	Occasional	2	
Aporrhais pespelecani	••	Rare	1	
Nuculoma tenuis	••	Frequent	1	26
Pecten maximus	•••	Occasional	7	
Mysella bidentata	••••	Common	19	1011
Phaxas pellucidus	••	Common	1	123
Abra alba	••	Common	1	96
Abra nitida	•••	Abundant	6	398
Phoronis	•••	Common	5	139
Asterias rubens	••••	Occasional	8	
OPHIUROIDEA	••	Abundant	2	104
Amphiura filiformis	••	Frequent	2	
Amphiura filiformis	••••	Super-abundant	18	440
Ophiura albida	•••	Frequent	6	
Ophiura ophiura	•••	Frequent	4	
Echinus esculentus	••	Occasional	2	

SS.SMU.CSaMu.AfilMysAnit *Amphiura filiformis*, *Mysella bidentata* and *Abra nitida* in circalittoral sandy mud

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed
Tidal streams:	Weak, Very weak
Substratum:	Sandy mud
Zone:	Circalittoral
Depth band:	10-20 m, 20-30 m

Previous code

part of CMS.AfilEcor	96.7
part of IMS.SpiSpi	97.06
part of CMS.AfilEcor	97.06

Biotope description

Cohesive sandy mud off wave exposed coasts with weak tidal streams can be characterised by super-abundant *Amphiura filiformis* with *Mysella bidentata* and *Abra nitida*. This community occurs in muddy sands in moderately deep water (Hiscock 1984; Picton *et al.* 1994) and may be related to the 'off-shore muddy sand association' described by other workers (Jones 1951; Thorson 1957; Mackie 1990) and is part of the infralittoral etage described by Glemarec. This community is also characterised by the sipunculid *Thysanocardia procera* and the polychaetes *Nephtys incisa*, *Phoronis* sp. and *Pholoe* sp., with cirratulids also common in some areas. Other taxa such as *Nephtys hombergii*, *Echinocardium cordatum*, *Nucula nitidosa*, *Callianassa subterranea* and *Eudorella truncatula* may also occur in offshore examples of this biotope (e.g. K nitzer *et al.* 1992).

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SSA.AalbNuc	In sandier sediments AfilMysAnit may grade into AalbNuc
SSA.FfabMag	In shallower sandy sediments AfilMysAnit may grade into FfabMag
SMU.AfilNten	AfilNten may be distinguished from AfilMysAnit by the abundance of the characterising species *Nuculoma tenuis* in AfilNten and by the importance of other characterising species such as *Thysanocardia procera* and *Nephtys incise* in AfilMysAnit. AfilNten is also generally found in deeper water.
SMU.ThyNten	ThyNten may be distinguished from AfilMysAnit by the abundance of the characterising species *Thyasira flexuosa* and by the decreased abundance of *Amphiura filiformis* in ThyNten. ThyNten is generally found in deeper waters.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Tubularia indivisa	••	Rare	2	
Sagartiogeton undatus	••	Rare	2	
NEMERTEA	•••	Present	1	47
Thysanocardia procera	••••	Present	4	129
Phascolion strombus strombus	••	Rare	2	
POLYCHAETA	•••	Abundant	14	
Aphrodita aculeata	••	Rare	2	
Pholoe inornata	••••	Frequent	3	157
Nephtys hombergii	••	Frequent	1	
Nephtys incisa	••••	Present	5	97
Levinsenia gracilis	•••	Present	2	83
Tharyx	••	Frequent	1	
Tharyx	•••	Common	2	240
Cirratulidae	•••	Super-abundant	4	600
Chaetozone setosa	••	Frequent	1	
Diplocirrus glaucus	•••	Present	2	107
Pectinariidae	•••	Occasional	6	
Lagis koreni	•••	Present	1	62
Melinna palmata	•••	Present	3	85
Lanice conchilega	•••	Rare	5	
Pariambus typicus	•••	Common	2	260
Pagurus bernhardus	••••	Occasional	11	
Turritella communis	•••	Rare	5	
Mysella bidentata	•••••	Abundant	22	1635
Abra nitida	••••	Super-abundant	11	838
Corbula gibba	••	Present	1	49
Phoronis	••••	Abundant	2	121
OPHIUROIDEA	•••	Abundant	7	252
Amphiura chiajei	•••	Common	12	
Amphiura filiformis	•••••	Super-abundant	19	760
Amphiura filiformis	•••	Abundant	12	
Ophiura ophiura	••••	Rare	6	

SS.SMU.CSaMu.ThyNten *Thyasira* spp. and *Nuculoma tenuis* in circalittoral sandy mud

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered
Tidal streams:	Very weak
Substratum:	Mud occasionally with scattered shells or gravel
Zone:	Circalittoral
Depth band:	20-30 m, 30-50 m, 50-100 m

Previous code

None

Biotope description

Circalittoral cohesive sandy muds with small quantities of gravel, off sheltered or moderately exposed coasts may support populations characterised by *Thyasira* spp. and in particular *Thyasira flexuosa*. Other characteristic taxa may include *Nuculoma tenuis*, *Goniada maculate* and in some areas *Rhodine gracilior*. *Mysella bidentata*, *Abra alba*, *Harpinia antennaria* and *Amphiura filiformis* may be abundant in some examples of this biotope. Whilst moderately diverse, animal abundances are often low and it is possible that the biotope is the result of sedimentary disturbance e.g. from trawling and is possibly an impoverished version of AfilNten. Collectively the biotopes ThyNten, AfilMysAnit, AfilNten and OfusAfil, may form the *Amphiura* dominated components of the 'off-shore muddy sand association' described by other workers (Jones 1951; Thorson 1957; Mackie 1990) and the infralittoral etage described by Glemarec (1973).

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMU.AfilNten	The current biotope may be distinguished from AfilNten by the differing abundances of the characterising species *Amphiura filiformis* and *Thyasira flexuosa* in the two biotopes.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Virgularia mirabilis	••	Present	1	5
NEMERTEA	••••	Present	7	30
Pholoe inornata	••	Present	1	24
Glycera rouxii	••	Present	2	6
Goniada maculata	••••	Present	5	10
Nephtys	•••	Present	2	8
Lumbrineris hibernica	••	Present	3	12
Paraonidae	••	Present	2	6
Spiophanes bombyx	••	Present	1	8
Spiophanes kroyeri	••	Present	1	4
Chaetozone setosa	•••	Present	2	8
Diplocirrus glaucus	•••	Present	2	10
Rhodine gracilior	•••	Common	4	20
Scalibregma inflatum	••	Common	1	91
Galathowenia oculata	••	Present	3	11
Owenia fusiformis	••	Common	2	9
Anobothrus gracilis	••	Present	1	5
Terebellides stroemi	••	Present	3	8
Harpinia antennaria	•••	Frequent	3	16
Cylichna cylindracea	•••	Present	2	7
Nuculoma tenuis	•••	Frequent	4	14
Lucinoma borealis	•••	Present	2	4
Thyasira	•	Common	1	80
Thyasira flexuosa	••••	Frequent	12	65
Thyasira flexuosa	•••••	Occasional	50	
Mysella bidentata	•••	Frequent	3	31
Phaxas pellucidus	••	Present	1	6
Abra alba	•••	Present	3	12
Abra alba	•••••	Present	25	
Mya arenaria	•••••	Present	25	
Amphiura filiformis	•••	Abundant	3	15

SS.SMU.CSaMu.AfilNten *Amphiura filiformis* and *Nuculoma tenuis* in circalittoral and offshore sandy mud

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed
Tidal streams:	Very weak
Substratum:	Sandy mud
Zone:	Circalittoral
Depth band:	50-100 m

Previous code

part of AfilEcor	97.06

Biotope description

In cohesive and non-cohesive sandy mud, off moderately exposed coasts in deep water dense populations of *Amphiura filiformis* with the bivalve *Nuculoma tenuis* may occur. This biotope together with AfilMysAnit, ThyNten and OfusAfil may be part of the *Amphiura filiformis* dominated infralittoral etage described by Glemarec (1973) and part of the 'off-shore muddy sand association' described by other workers (Jones 1951; Mackie 1990). Other species characteristic of this biotope may include the echinoderms *Ophiura albida* and *Echinocardium flavescens* and the bivalve *Mysella bidentata*. *Phaxas pellucidus*, *Owenia fusiformis* and *Virgularia mirabilis* may also be present. At the sediment surface the hydroid *Sertularia argentea* may be present although only at very low abundances. Variations of this biotope exist in the northern North Sea (see below) and it is possible that more than one entity exists for this biotope.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMU.AfilMysAnit	AfilNten may be distinguished from AfilMysAnit by the abundance of the characterising species *Nuculoma tenuis* in AfilNten and by the importance of other characterising species such as *Thysanocardia procera* and *Nephtys incise* in AfilMysAnit. AfilNten is also generally found at greater depths and may be a deeper water extension of AfilMysAnit.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Hydrallmania falcata	●●●	Rare	8	
Sertularia argentea	●●●●	Rare	26	
Obelia longissima	●●●●●	Rare	57	
Virgularia mirabilis	●●●	Abundant	3	32
Diplocirrus glaucus	●●●●	Present	2	35
Ophelina acuminata	●●●	Common	2	39
Scalibregma inflatum	●●●	Present	2	54
Owenia fusiformis	●●●	Common	3	162
Lagis koreni	●●●	Common	2	24
Cylichna cylindracea	●●●	Common	2	31
Antalis entalis	●●●	Frequent	2	41
Nuculoma tenuis	●●●●●	Common	15	160
Mysella bidentata	●●●●	Common	9	239
Phaxas pellucidus	●●●●	Frequent	3	33
Abra nitida	●●●	Present	2	64
Cellaria fistulosa	●●●	Rare	8	
Amphiura filiformis	●●●●●	Super-abundant	22	461
Ophiura albida	●●●●●	Super-abundant	12	234
Echinocardium flavescens	●●●●	Abundant	10	118

SS.SMU.CSaMu.VirOphPmax *Virgularia mirabilis* and *Ophiura* spp. with *Pecten maximus* on circalittoral sandy or shelly mud

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Weak, Very weak
Substratum:	Sandy mud; shelly and gravelly mud
Zone:	Circalittoral
Depth band:	5-10 m, 10-20 m, 20-30 m

Previous code

CMS.VirOph	97.06

Biotope description

Circalittoral fine sandy mud may contain *Virgularia mirabilis* and *Ophiura* spp. A variety of species may occur, and species composition at a particular site may relate, to some extent, to the proportions of the major sediment size fractions. Several species are common to most sites including *Virgularia mirabilis* which is present in moderate numbers, *Ophiura albida* and *Ophiura ophiura* which are often quite common, and *Pecten maximus* which is usually only present in low numbers. *Virgularia mirabilis* is usually accompanied by occasional *Cerianthus lloydii*, *Liocarcinus depurator* and *Pagurus bernhardus*. *Amphiura chiajei* and *Amphiura filiformis* may occur in some examples of this biotope. Polychaetes and bivalves are generally the main components of the infauna, although the nemerteans, *Edwardsia claparedii*, *Phoronis muelleri* and *Labidoplax buski* may also be widespread. Of the polychaetes *Goniada maculata*, *Nephtys incisa*, *Minuspio cirrifera*, *Chaetozone setosa*, *Notomastus latericeus* and *Owenia fusiformis* are often the most widespread species whilst *Myrtea spinifera*, *Lucinoma borealis*, *Mysella bidentata*, *Abra alba* and *Corbula gibba* are typical bivalves in this biotope. This biotope is primarily identified on the basis of its epifauna and may be an epibiotic overlay over other closely related biotopes such as SpnMeg, AfilMysAnit and AfilNten.

Situation

Such sediments are very common in sealochs, often occurring shallower than the finest mud or in somewhat more exposed parts of the lochs.

Temporal variation

No temporal data available.

Similar biotopes

SMU.SpnMeg	SpnMeg is found on finer muddier sediment and may be characterised by frequent *Nephrops norvegicus* and other megafaunal species.
SMU.VirOphPmax.HAs	VirOphPmax.HAs Greater quantities of stones and shells on the surface give rise to more sessile epibenthic species and distinguish this sub biotope.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Virgularia mirabilis	●●●●●	Frequent	24	
Cerianthus lloydii	●●●●	Occasional	11	
Chaetopterus variopedatus	●●	Occasional	1	
Arenicola marina	●●	Occasional	2	
Terebellidae	●●	Occasional	1	
Lanice conchilega	●●	Occasional	2	
Pagurus bernhardus	●●●	Occasional	7	
Liocarcinus depurator	●●●●	Occasional	6	
Turritella communis	●●	Occasional	3	
Pecten maximus	●●●●	Occasional	6	
Asterias rubens	●●●●	Occasional	11	
Amphiura chiajei	●●	Common	1	
Amphiura filiformis	●●	Common	2	
Ophiura albida	●●●	Frequent	5	
Ophiura ophiura	●●●	Frequent	4	
Echinus esculentus	●●	Rare	1	

SS.SMU.CSaMu.VirOphPmax.HAs *Virgularia mirabilis* and *Ophiura* spp. with *Pecten maximus*, hydroids and ascidians on circalittoral sandy or shelly mud with stones

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Gravely mud; shelly mud; sandy mud with stones or shells
Zone:	Circalittoral
Depth band:	5-10 m, 10-20 m, 20-30 m, 30-50 m

Previous code

CMS.VirOph.HAs	97.06

Biotope description

Circalittoral fine sandy mud with shell gravel and notable quantities of shells or small stones scattered over the sediment surface. These sediments, like SMU.VirOphPmax, may contain *Virgularia mirabilis, Pecten maximus* and *Ophiura* spp. but shells and small stones scattered over the sediment surface provided sufficient stable substrata for a variety of sessile epifaunal species to occur. Of these the hydroids *Kirchenpaueria pinnata, Nemertesia antennina* and *Nemertesia ramosa* are most common with solitary ascidians such as *Corella parallelogramma* and *Ascidia mentula* also present. The anemone *Cerianthus lloydii* is often found in the sediment together with occasional *Lanice conchilega*. The serpulids *Protula tubularia, Serpula vermicularis* and *Pomatoceros triqueter* and the barnacles *Balanus balanus* and *Balanus crenatus* are also often present on pebbles and shells. *Munida rugosa* are occasionally found under larger stones. All these species are typical of more rocky habitats in such sheltered conditions. As with SMU.VirOphPmax this biotope is primarily identified on the basis of its epifauna and may be an epibiotic overlay over other closely related biotopes such as AfilMysAnit and AfilNten.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMU.SpnMeg	SpnMeg is found on finer muddier sediment and may be characterised by frequent *Nephrops norvegicus* and other megafaunal species.
SMU.PhiVir	VirOphPmax.HAs occurs in more mixed sediments and often slightly deeper water
SMU.VirOphPmax	Greater quantities of stones and shells on the surface give rise to more sessile epibenthic species and distinguish this sub biotope from VirOphPmax.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Halecium halecinum	••	Occasional	1	
Kirchenpaueria pinnata	•••	Occasional	2	
Nemertesia antennina	••	Occasional	2	
Nemertesia ramosa	•••	Occasional	2	
Virgularia mirabilis	••••	Occasional	7	
Cerianthus lloydii	••••	Occasional	7	
Chaetopterus variopedatus	••	Occasional	1	
Lanice conchilega	•••	Occasional	3	
Pomatoceros triqueter	•••	Occasional	3	
Serpula vermicularis	••	Occasional		
Protula tubularia	••	Occasional	1	
Balanus balanus	••	Occasional		
Balanus crenatus	••	Occasional	1	
Pagurus bernhardus	•••	Occasional	6	
Pagurus prideaux	•••	Rare	2	
Munida rugosa	••	Occasional	1	
Inachus dorsettensis	••	Rare	1	
Liocarcinus depurator	•••	Occasional	2	
Turritella communis	••	Occasional	1	
Aporrhais pespelecani	••	Rare	1	
Buccinum undatum	••	Occasional	1	
Pecten maximus	••••	Occasional	8	
Crossaster papposus	••	Rare	1	
Asterias rubens	••••	Occasional	6	
Ophiura albida	•••	Frequent	5	
Ophiura ophiura	••	Occasional	2	
Echinus esculentus	•••	Occasional	4	
Corella parallelogramma	••	Occasional	1	
Ascidia mentula	•••	Occasional		

SS.SMU.CSaMu.LkorPpel *Lagis koreni* and *Phaxas pellucidus* in circalittoral sandy mud

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed
Tidal streams:	Strong, Moderately strong, Weak, Very weak
Substratum:	Sandy mud
Zone:	Circalittoral
Depth band:	10-20 m, 20-30 m, 30-50 m, 50-100 m

Previous code

None

Biotope description

In stable circalittoral sandy mud dense populations of the tube building polychaete *Lagis koreni* may occur. Other species found in this habitat typically include bivalves such as *Phaxas pellucidus*, *Mysella bidentata* and *Abra alba* and polychaetes such as *Mediomastus fragilis*, *Spiophanes bombyx*, *Owenia fusiformis* and *Scalibregma inflatum*. At the sediment surface easily visible fauna include *Lagis koreni* and *Ophiura ophiura*. *Lagis koreni* is an important source of food for commercially important demersal fish, especially dab and plaice (Macer, 1967; Lockwood, 1980 and Basimi & Grove, 1985).

Situation

No situation data available.

Temporal variation

In some areas e.g. Liverpool Bay, AalbNuc and LkorPpel have exhibited cyclical behaviour with the community periodically switching from one biotope to another - possibly in relation to dredge spoil disposal (Rees *et al.* 1992) along with other environmental and biological factors. Both *Lagis koreni* and *Phaxas pellucidus*, are capable of tolerating sudden increases in the deposition of sediment and often dominate such areas following such an event. Indeed it is likely that the two biotopes are merely different aspects of the same community as *Lagis koreni* is often recorded with high densities of *Abra alba* (Eagle 1975; Rees and Walker 1983). Densities of mature populations of *L. koreni* may exceed 1000m-2 (Eagle, 1975) but the abundance of the species often fluctuates considerably from year to year, presumably due to variations in mortality and recruitment.

Similar biotopes

SSA.AalbNuc	The current biotope is closely related to AalbNuc but tends to occur in muddier substratum

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Cerianthus lloydii	••	Rare	2	
NEMERTEA	•••••	Abundant	5	214
Nereiphylla lutea	••••	Abundant	2	86
Lumbrineris gracilis	••••	Common	2	115
Prionospio ehlersi	•••	Common	1	149
Spio	••••	Frequent	2	70
Spiophanes bombyx	•••••	Common	7	636
Chaetopterus variopedatus	••	Rare	1	
Chaetozone	••••	Common	1	52
Mediomastus fragilis	•••••	Frequent	5	312
Scalibregma inflatum	•••••	Common	3	174
Owenia fusiformis	•••••	Common	3	95
Amphictene auricoma	•••	Common	1	323
Lagis koreni	••••	Present	22	
Lagis koreni	•••••	Abundant	8	882
Lanice conchilega	••	Frequent	8	
Pariambus typicus	•••••	Frequent	2	94
Pseudocuma longicornis	•••	Frequent	1	84
Pagurus bernhardus	••	Frequent	4	
Macropodia rostrata	••	Rare	1	
Corystes cassivelaunus	••	Rare	1	
Liocarcinus depurator	••	Rare	1	
Buccinum undatum	••	Occasional	3	
Nucula nitidosa	••••	Frequent	1	44
Mysella bidentata	•••••	Common	6	1225
Phaxas pellucidus	•••••	Abundant	6	639
Abra alba	•••••	Common	4	441
Phoronis	••••	Common	2	114
Asterias rubens	•••	Occasional	6	
OPHIUROIDEA	••••	Abundant	2	175
Amphiura filiformis	•••	Abundant	1	120
Ophiura albida	••	Common	6	
Ophiura ophiura	•••	Common	20	
Psammechinus miliaris	••	Rare	1	
Echinocardium cordatum	••	Frequent	4	
Callionymus lyra	••	Rare	2	
Pomatoschistus	•••	Frequent	13	
Pleuronectidae	••	Rare	3	

SS.SMU.CFiMu Circalittoral fine mud

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Weak, Very weak
Substratum:	Mud
Zone:	Circalittoral
Depth band:	10-20 m, 20-30 m, 30-50 m

Previous code

CMU	97.06

Biotope description

Sublittoral muds, occurring below moderate depths of 15-20 m, either on the open coast or in marine inlets such as sealochs. The seapens *Virgularia mirabilis* and *Pennatula phosphorea* are characteristic of this biotope complex together with the burrowing anemone *Cerianthus lloydii* and the ophiuroid *Amphiura* spp. The relatively stable conditions often lead to the establishment of communities of burrowing megafaunal species, such as *Nephrops norvegicus*.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*	
Funiculina quadrangularis	••	Frequent	2		
Virgularia mirabilis	••••	Frequent	17		
Pennatula phosphorea	•••	Frequent	6		
Cerianthus lloydii	••••	Occasional	10		
Nephtys hystricis	•••	Present	43		95
Chaetozone setosa	•••	Present	21		81
Terebellidae	••	Occasional	2		
Nephrops norvegicus	••••	Frequent	20		
Pagurus bernhardus	•••	Occasional	5		
Munida rugosa	••	Occasional	1		
Liocarcinus depurator	•••	Occasional	6		
Turritella communis	••	Frequent	2		
Mysella bidentata	••	Present	3		45
Abra alba	••	Present	7		57
Asterias rubens	•••	Occasional	7		
Amphiura chiajei	•••	Present	23		51
Amphiura chiajei	••	Common	3		
Amphiura filiformis	••	Common	3		

SS.SMU.CFiMu.SpnMeg Seapens and burrowing megafauna in circalittoral fine mud

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Weak, Very weak
Substratum:	Mud
Zone:	Circalittoral
Depth band:	10-20 m, 20-30 m, 30-50 m

Previous code

CMU.SpNep	96.7
CMU.SpMeg	97.06

Biotope description

Plains of fine mud at depths greater than about 15 m may be heavily bioturbated by burrowing megafauna; burrows and mounds may form a prominent feature of the sediment surface with conspicuous populations of seapens, typically *Virgularia mirabilis* and *Pennatula phosphorea*. The burrowing crustacea present typically include *Nephrops norvegicus*, which is frequently recorded from surface observations although grab sampling may fail to sample this species. Indeed, some forms of sampling may also fail to indicate seapens as characterising species. This biotope also seems to occur in deep offshore waters in the North Sea, where densities of *Nephrops norvegicus* may reach 68 per 10 m-2 (see Dyer *et al.* 1982, 1983), and the Irish Sea. The burrowing anemone *Cerianthus lloydii* and the ubiquitous epibenthic scavengers *Asterias rubens*, *Pagurus bernhardus* and *Liocarcinus depurator* are present in low numbers in this biotope whilst the brittlestars *Ophiura albida* and *Ophiura ophiura* are sometimes present, but are much more common in slightly coarser sediments. Low numbers of the anemone *Pachycerianthus multiplicatus* may also be found, and this species, which is scarce in the UK, appears to be restricted to this habitat (Plaza & Sanderson 1997). The infauna may contain significant populations of the polychaetes *Pholoe* spp., *Glycera* spp., *Nephtys* spp., spionids, *Pectinaria belgica* and *Terebellides stroemi*, the bivalves *Nucula sulcata*, *Corbula gibba* and *Thyasira flexuosa*, and the echinoderm *Brissopsis lyrifera*.

Situation

These soft mud habitats occur extensively throughout the more sheltered basins of sealochs and voes and are present in quite shallow depths (as little as 15 m) in these areas probably because they are very sheltered from wave action.

Temporal variation

No temporal data available.

Similar biotopes

SMU.PhiVir	PhiVir is superficially similar to SpnMeg but is found in shallower, less thermally stable waters and lacks the large burrowing species and the sea pen *Pennatula phosphorea*.
SMU.SpnMeg.Fun	In the deeper fjordic lochs which are protected by an entrance sill, the tall seapen *Funiculina quadrangularis* may also be present and distinguishes SpnMeg.Fun from SpnMeg.
SMU.BlyrAchi	SpnMeg is closely allied to BriAchi and may show strong similarities in infaunal species composition. However, epifaunally they differ in the abundance of characterising species such as *Pennatula phosphorea* and *Amphiura* spp.
SMU.MegMax	MegMax is found in similar habitats but has reduced numbers of seapens and a wider range of megafauna.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Hydractinia echinata	••	Occasional	1	
Virgularia mirabilis	••••	Frequent	20	
Pennatula phosphorea	•••	Frequent	6	
Cerianthus lloydii	••••	Occasional	13	
Chaetopterus variopedatus	••	Occasional	2	
Nephrops norvegicus	••••	Frequent	18	
Pagurus bernhardus	•••	Occasional	5	
Liocarcinus depurator	•••	Occasional	8	
Turritella communis	••	Frequent	3	
Asterias rubens	••••	Occasional	8	
Amphiura chiajei	••	Common	2	

SS.SMU.CFiMu.SpnMeg.Fun Seapens, including *Funiculina quadrangularis*, and burrowing megafauna in undisturbed circalittoral fine mud

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Weak, Very weak
Substratum:	Mud
Zone:	Circalittoral
Depth band:	10-20 m, 20-30 m, 30-50 m
Other features:	Burrows

Previous code

CMU.SpMeg.Fun	97.06

Biotope description

Deep muds, especially in sealochs, support forests of the nationally scarce *Funiculina quadrangularis*, in addition to populations of the seapens *Virgularia mirabilis* and *Pennatula phosphorea*. The sediment is usually extensively burrowed by crustaceans, the most common of which is *Nephrops norvegicus*, but *Calocaris macandreae* and *Callianassa subterranea* may also be present (the latter is likely to be under-recorded by grab sampling because it is deep burrowing). The burrowing anemone *Cerianthus lloydii* is present in low numbers in this biotope and the rare anemone *Pachycerianthus multiplicatus* may also be found occasionally. *Amphiura* spp. are also often present in high densities.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMU.SpnMeg	This biotope is distinguished from SpnMeg by the presence of the nationally scarce seapen *Funiculina quadrangularis*.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Funiculina quadrangularis	●●●●●	Frequent	23	
Virgularia mirabilis	●●●●	Occasional	10	
Pennatula phosphorea	●●●●	Frequent	14	
Cerianthus lloydii	●●●●	Occasional	8	
Terebellidae	●●	Occasional	1	
Nephrops norvegicus	●●●●	Frequent	13	
Pagurus bernhardus	●●●	Occasional	3	
Munida rugosa	●●●	Occasional	2	
Liocarcinus depurator	●●●	Occasional	3	
Turritella communis	●●	Frequent	3	
Aequipecten opercularis	●●	Occasional	1	
Asterias rubens	●●●	Occasional	6	
Amphiura filiformis	●●	Abundant	3	

SS.SMU.CFiMu.MegMax Burrowing megafauna and *Maxmuelleria lankesteri* in circalittoral mud

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Weak, Very weak
Substratum:	Mud
Zone:	Circalittoral
Depth band:	10-20 m, 20-30 m, 30-50 m, 50-100 m

Previous code

None

Biotope description

In circalittoral stable mud distinctive populations of megafauna may be found. These typically include *Nephrops norvegicus*, *Calocaris macandreae* and *Callianassa subterranea*. Large mounds formed by the echiuran *Maxmuelleria lankesteri* are also frequent in this biotope. The seapen *Virgularia mirabilis* may occur occasionally in this biotope but not in the same abundance as SpnMeg to which MegMax is closely allied. Infaunal species may include *Nephtys hystricis*, *Chaetozone setosa*, *Amphiura chiajei* and *Abra alba*.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMU.SpnMeg	MegMax is found in similar habitats but has reduced numbers of seapens and a wider range of megafauna. It is unclear from the data examined which environmental factors separate these two biotopes although MegMax often occurs in slightly deeper water than SpnMeg.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Virgularia mirabilis	●●●	Occasional	6	
Cerianthus lloydii	●●●	Rare	4	
Maxmuelleria lankesteri	●●●	Frequent	13	
Ophiodromus flexuosus	●	Present	1	18
Nephtys hystricis	●●●	Present	43	95
Chaetozone setosa	●●●	Present	21	81
Nephrops norvegicus	●●●●	Frequent	24	
Calocaris macandreae	●●●	Frequent	15	
Jaxea nocturna	●	Present	1	
Callianassa subterranea	●●●	Present	6	
Pagurus bernhardus	●●●	Present	4	
Liocarcinus depurator	●●●	Present	4	
Carcinus maenas	●●	Present	1	
Buccinum undatum	●●	Present	2	
Mysella bidentata	●●	Present	3	45
Abra alba	●●	Present	7	57
Corbula gibba	●	Present	2	11
Asterias rubens	●●	Rare	2	
Amphiura chiajei	●●●	Present	23	51
Amphiura chiajei	●●	Frequent	2	
Lesueurigobius friesii	●●	Present	2	
Pomatoschistus minutus	●●	Present	2	

SS.SMU.CFiMu.BlyrAchi *Brissopsis lyrifera* and *Amphiura chiajei* in circalittoral mud

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Weak, Very weak
Substratum:	Silty mud
Zone:	Circalittoral
Depth band:	20-30 m, 30-50 m, 50-100 m

Previous code

CMU.BriAchi	97.06

Biotope description

Mud in deep offshore, or shallower stable nearshore, waters can be characterised by the urchin *Brissopsis lyrifera* and the brittle star *Amphiura chiajei*. Where intense benthic dredge fishing activity occurs, populations of the indicator species, *Brissopsis lyrifera* may be depressed, although broken tests may still remain (E.I.S. Rees pers. comm. 1997; M. Costello pers. comm. 1997). Low numbers of the seapen *Virgularia mirabilis* may be found in many examples of this biotope. In addition, in certain areas of the UK such as the northern Irish Sea, this community may also contain *Nephrops norvegicus* and can consequently be the focus for fishing activity (Mackie, Oliver & Rees 1995). Infaunal species in this community are similar to those found in SpnMeg and include the polychaetes *Nephtys hystricis*, *Pectinaria belgica*, *Glycera* spp. and *Lagis koreni* and the bivalves *Myrtea spinifera* and *Nucula sulcata*. This community is the 'Boreal Offshore Mud Association' and '*Brissopsis - Chiajei*' communities described by other workers (Petersen 1918; Jones 1950).

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMU.SpnMeg	SpnMeg is closely allied to BriAchi and may show strong similarities in infaunal species composition. However, epifaunally they differ in the abundance of characterising species such as *Pennatula phosphorea* and *Amphiura* spp.
SMU.AfilMysAnit	This community is similar to AfilMysAnit but tends to occur in deeper and siltier muds. Transitional communities between the two may contain large numbers of *Turritella communis*.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Virgularia mirabilis	●●●	Occasional	3	
Nephtys hystricis	●●	Present	1	
Pectinaria belgica	●●●	Present	2	
Amphiura chiajei	●●●●●	Abundant	56	
Amphiura filiformis	●●●●●	Abundant	27	
Ophiura ophiura	●●●	Occasional	3	
Brissopsis lyrifera	●●	Present	2	

SS.SMU.OMu Offshore circalittoral mud

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Not known
Tidal streams:	Weak, Very weak
Substratum:	Mud and sandy mud.
Zone:	Circalittoral
Depth band:	50-100 m

Previous code

part of COS	97.06

Biotope description

In mud and cohesive sandy mud in the offshore circalittoral zone, typically below 50-70 m, a variety of faunal communities may develop, depending upon the level of silt/clay and organic matter in the sediment. Communities are typically dominated by polychaetes but often with high numbers of bivalves such as *Thyasira* spp., echinoderms and foraminifera.

Situation

No situation data available.

Temporal variation

No temporal data available.

SS.SMU.OMu.AfalPova *Ampharete falcata* turf with *Parvicardium ovale* on cohesive muddy sediment near margins of deep stratified seas

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Not known
Tidal streams:	Weak
Substratum:	Cohesive sandy mud
Zone:	Circalittoral
Depth band:	50-100 m

Previous code

COS.AmpPar	97.06

Biotope description

Dense stands of *Ampharete falcata* tubes which protrude from muddy sediments, appearing as a turf or meadow in localised areas. These areas seem to occur on a crucial point on a depositional gradient between areas of tide-swept mobile sands and quiescent stratifying muds. Dense populations of the small bivalve *Parvicardium ovale* occur in the superficial sediment. Other infauna in this diverse biotope includes *Lumbrineris scopa*, *Levinsenia* sp., *Prionospio steenstrupi*, *Diplocirrus glaucus* and *Praxillella affinis* although a wide variety of other infaunal species may also be found. Both the brittlestars *Amphiura filiformis* and *Amphiura chiajei* may be present together with *Nephrops norvegicus* in higher abundance than the BlyrAchi or AfilEcor biotopes. Substantial populations of mobile epifauna such as *Pandalus montagui* and smaller fish also occur, together with those that can cling to the tubes, such as *Macropodia* spp. A similar turf of worm tubes formed by the maldanid polychaete *Melinna cristata* has been recorded from Northumberland (Buchanan 1963). Nephrops trawling may severely damage this biotope and it is possible that such activity has destroyed examples of this biotope in the Irish Sea (E.I.S. Rees pers. comm. 2002).

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMU.AfilNten	This biotope is closely linked to SMU.AfilNten, which also may support *A. falcata* in some areas of the Irish Sea.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Scalibregma inflatum		Abundant		
Amphictene auricoma		Common		
Lagis koreni		Abundant		
Ampharete falcata		Super-abundant		
Pandalus montagui				
Crangon crangon				
Nephrops norvegicus				
Macropodia linaresi				
Goneplax rhomboides		Common		
Nuculoma tenuis		Common		
Mysella bidentata		Common		
Parvicardium ovale		Super-abundant		
Abra nitida		Abundant		
Amphiura chiajei		Super-abundant		
Amphiura filiformis		Abundant		
Brissopsis lyrifera		Abundant		
Agonus cataphractus				
Liparis liparis				

SS.SMU.OMu.ForThy Foraminiferans and *Thyasira* sp. in deep circalittoral fine mud

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Not known
Tidal streams:	Very weak
Substratum:	Soft mud
Zone:	Circalittoral
Depth band:	50-100 m

Previous code

COS.ForThy	97.06

Biotope description

In deep water and soft muds of Boreal and Arctic areas, a community dominated by foraminiferans and the bivalve *Thyasira* sp. (e.g. *T. croulinensis and T. pygmaea*) may occur (Thorson 1957; K nitzer *et al.* 1992). Foraminiferans such as *Saccammina*, *Psammosphaera*, *Haplophragmoides*, *Crithionina* and *Astorhiza* are important components of this community with dead tests numbering thousands per m2 (see Stephen 1923; McIntyre 1961) and sometimes visible from benthic photography (Mackie, Oliver & Rees 1995). It is likely that a community dominated by *Astorhiza* in fine sands in the Irish Sea may be another distinct biotope (E.I.S. Rees pers. comm. 2002). Polychaetes, e.g. *Paraonis gracilis*, *Myriochele heeri*, *Spiophanes kroyeri*, *Tharyx* sp., *Lumbrineris tetraura*, are also important components of this biotope. These communities appear to have no equivalent on the continental plateau further south (Glemarec 1973) but are known from the edge of the Celtic Deep in the Irish Sea (Mackie, Oliver & Rees 1995). The benthos in these offshore areas has been shown to be principally Foraminifera and similar, rich communities may exist in Scottish sealochs (McIntyre 1961). Communities from yet deeper (northern) waters at the extremes of the North Sea may be reminiscent, although dissimilar to ForThy (see Pearson *et al.* 1996) reflecting a higher proportion of silt/clay. A fully Arctic version of this biotope has also been described (Thorson 1934, 1957) although it should be noted that Jones (1950) considered this Boreal foraminiferan community to be part of a 'Boreal Deep Mud Association'.

Situation

This community typically occurs in water deeper than 100 m in the northern North Sea (K nitzer *et al.* 1992) and have been referred to as 'Foraminifera communities' by other workers (e.g. Stephen 1923; Thorson 1957; McIntyre 1961).

Temporal variation

No temporal data available.

Similar biotopes

SMU.BlyrAchi	In shallower water a *Brissopsis*-dominated community (BlyrAchi) may develop
SMU.ThyNten	ThyNten is similar to this biotope in terms of high numbers of *Thyasira* spp. but lacks the foraminiferan component and is generally found at shallower depths.

Characterising species

	% Frequency	Abundance (SACFOR)	%Contribution to similarity	Abundance (nos / m^2)
Foraminifera				
Exogone verugera				
Nephtys				
Aricidea catherinae				
Minuspio cirrifera				
Thyasira				
Thyasira flexuosa				
Amphiura				

SS.SMU.OMu.StyPse *Styela gelatinosa, Pseudamussium septemradiatum* and solitary ascidians on sheltered deep circalittoral muddy sediment

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Very sheltered
Tidal streams:	Weak
Substratum:	Mud with terrigenous debris
Zone:	Circalittoral
Depth band:	50-100 m

Previous code

COS.Sty	97.06

Biotope description

This biotope is known only from deep water in Loch Goil (Clyde sealochs) in fine mud at 65 m with terrigenous debris. Large numbers of solitary ascidians, including *Styela gelatinosa*, *Ascidia conchilega*, *Corella parallelogramma* and *Ascidiella* spp., are characteristic of this biotope together with the bivalve *Pseudamussium septemradiatum*. Terebellid worms, the bivalve *Abra alba* and the polychaete *Glycera tridactyla* may also occur. It is possibly an ice age relict biotope.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Glycera tridactyla	●●●●●	Present		
Terebellidae	●●●●●	Frequent		
Pseudamussium septemradiatum	●●●●●	Common		
Abra alba	●●●●●	Occasional		
Paracucumaria hyndmani	●●●●●	Rare		
Corella parallelogramma	●●●●●	Frequent		
Ascidiella aspersa	●●●●●	Frequent		
Ascidiella scabra	●●●●●	Abundant		
Styela gelatinosa	●●●●●	Frequent		

SS.SMU.OMu.CapThy *Capitella capitata* and *Thyasira* spp. in organically-enriched offshore circalittoral mud and sandy mud

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Not known
Tidal streams:	Not known
Substratum:	Mud and sandy mud.
Zone:	Circalittoral

Previous code

None

Biotope description

In circalittoral and deep offshore mud and sandy mud adjacent to oil or gas platforms, organic enrichment from drill cuttings leads to the development of communities dominated by the *Capitella capitata*, an opportunist especially associated with organically enriched and polluted sediments as described for Cap (Warren 1977; Pearson & Rosenberg 1978). The bivalves *Thyasira flexuosa* or *T. sarsi* may also be found in moderate numbers at some sites. Other taxa may be present in low numbers in areas of less severe enrichment including *Pholoe inornata*, *Lagis koreni*, *Philine scabra*, *Anaitides groenlandica*, *Mediomastus fragilis* and *Paramphinome jeffreysii*.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMU.Cap	CapThy is closely related Cap although the latter is found in shallower depths.
SMU.CapThy.Odub	CapThy.Odub is found in sandier sediment and in slightly less polluted areas but is slightly less diverse

SS.SMU.OMu.CapThy.Odub *Capitella capitata, Thyasira* spp. and *Ophryotrocha dubia* in organically-enriched offshore circalittoral sandy mud

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Not known
Tidal streams:	Not known
Substratum:	Sandy mud.
Zone:	Circalittoral

Previous code

None

Biotope description

In deep offshore sandy mud adjacent to oil or gas platforms, organic enrichment from drill cuttings leads to the development of communities dominated by the pollution tolerant opportunist *Capitella capitata* and the polychaete *Ophryotrocha dubia* (or other species of *Ophryotrocha*). These species are generally found in extremely high abundances and accompanied by *Thyasira* spp., *Raricirrus beryli*, *Paramphinome jeffreysii* and *Chaetozone setosa*. Other taxa including *Exogone verugera*, *Pholoe inornata* and *Idasola simpsoni* may also be present.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMU.CapThy	CapThy is found in muddier sediment, in slightly more polluted areas and is slightly more diverse.

SS.SMU.OMu.LevHet *Levinsenia gracilis* and *Heteromastus filifirmis* in offshore circalittoral mud and sandy mud

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Not known
Tidal streams:	Not known
Substratum:	Mud and sandy mud.
Zone:	Circalittoral

Previous code

None

Biotope description

In deep offshore mud and sandy mud a community characterised by the polychaetes *Levinsenia gracilis* and *Heteromastus filiformis* may occur. Other important taxa may include *Paramphinome jeffreysii*, *Nephtys hystricis* and *N. incisa*, *Spiophanes kroyeri*, *Orbinia norvegica*, *Terebellides stroemi*, *Thyasira gouldi* and *T. equalis*. Burrowing megafauna such as *Calocaris macandreae* may also be found in this biotope. This biotope has been found in the central and northern North Sea. A similar community, dominated by *L. gracilis* but accompanied by *Glycera* spp. (particularly *Glycera rouxii*) and *Monticellina dorsobranchialis*, has also been reported from the Irish Sea. This Irish community also contains *Calocaris macandreae*, *Mediomastus fragilis*, *Tubificoides amplivasatus*, *Nephtys incisa*, *Ancistrosyllis groenlandica*, *Nucula sulcata*, *Litocorsa stremma* and *Minuspio* sp. and it is not known at present whether this represents a separate biotope or whether it is a geographic variant of a wider *Levinsenia* biotope.

Situation

This biotope has been found in the central and northern North Sea and may also occur in the Irish Sea

Temporal variation

No temporal data available.

SS.SMU.OMu.PjefThyAfil *Paramphinome jeffreysii, Thyasira* spp. and *Amphiura filiformis* in offshore circalittoral sandy mud

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Not known
Tidal streams:	Not known
Substratum:	Sandy mud.
Zone:	Circalittoral

Previous code

None

Biotope description

Deep, offshore cohesive sandy mud communities characterised by the polychaete *Paramphinome jeffreysii*, bivalves such as *Thyasira equalis* and *T. gouldi* and the brittlestar *Amphiura filiformis*. Other taxa may include Laonice cirrata, the sea cucumber Labidoplax buski and the polychaetes *Goniada maculata*, *Spiophanes kroyeri* and *Aricidea catherinae*. *Amphiura chiajei* may be occasional in this biotope as may *Philine scabra*, *Levinsenia gracilis* and *Pholoe inornata*. This biotope along with SMU.ThyNten, SMU.AfilMysAnit, SMU.AfilNten and SSA.OfusAfil, may comprise the *Amphiura* dominated components of the 'off-shore muddy sand association' (Jones 1951; Mackie 1990) and the infralittoral etage described by Glemarec (1973).

Situation

No situation data available.

Temporal variation

No temporal data available.

SS.SMU.OMu.MyrPo *Myrtea spinifera* and polychaetes in offshore circalittoral sandy mud

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Not known
Tidal streams:	Not known
Substratum:	Sandy mud.
Zone:	Circalittoral

Previous code

None

Biotope description

Deep, offshore habitats with cohesive sandy mud (>20% mud) may support communities characterised by infaunal polychaetes and the bivalve *Myrtea spinifera*. Polychaetes typically include *Chaetozone setosa*, *Paramphinome jeffreysii*, *Levinsenia gracilis*, *Aricidea catherinae* and *Prionospio malmgreni*. The bivalves *Thyasira* spp. and *Abra nitida* may also be found as may seapens, such as *Pennatula phosphorea*. Some examples of the biotope AfilNten contain *Myrtea spinifera* (Mackie 1990) in lower numbers but these habitats are generally sandier than those in MyrPo.

Situation

This biotope has been recorded in the northern North Sea but may also exist in the Irish Sea.

Temporal variation

No temporal data available.

SS.SMX Sublittoral mixed sediment

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt), Reduced (18-30ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered, Extremely sheltered, Ultra sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Mixed sediments.
Zone:	Infralittoral, Circalittoral
Depth band:	0-5 m, 5-10 m, 10-20 m, 20-30 m, 30-50 m

Previous code

IMX in part	97.06
CMX in part	97.06

Biotope description

Sublittoral mixed (heterogeneous) sediments found from the extreme low water mark to deep offshore circalittoral habitats. These habitats incorporate a range of sediments including heterogeneous muddy gravelly sands and also mosaics of cobbles and pebbles embedded in or lying upon sand, gravel or mud. There is a degree of confusion with regard nomenclature within this complex as many habitats could be defined as containing mixed sediments, in part depending on the scale of the survey and the sampling method employed. The BGS trigon can be used to define truly mixed or heterogeneous sites with surficial sediments which are a mixture of mud, gravel and sand. However, another 'form' of mixed sediment includes mosaic habitats such as superficial waves or ribbons of sand on a gravel bed or areas of lag deposits with cobbles/pebbles embedded in sand or mud and these are less well defined and may overlap into other habitat or biotope complexes. These habitats may support a wide range of infauna and epibiota including polychaetes, bivalves, echinoderms, anemones, hydroids and Bryozoa. Mixed sediments with biogenic reefs or macrophyte dominated communities are classified separately in the SBR and SMP habitat complexes respectively.

Situation

No situation data available.

Temporal variation

No temporal data available.

SS.SMX.SMxLS Sublittoral mixed sediment in low or reduced salinity (lagoons)

Habitat classification

Salinity:	Low (<18ppt)
Wave exposure:	Ultra sheltered
Tidal streams:	Weak
Substratum:	Muddy mixed sediment
Zone:	Sublittoral fringe, Infralittoral
Depth band:	0-5 m

Previous code

None

Biotope description

Shallow, muddy mixed sediments in areas of low or reduced, although stable, salinity (may vary annually) with largely ephemeral faunal communities. Characterised infaunally by oligochaetes, including *Heterochaeta costata* and members of the Enchytraeidae, polychaetes such as *Hediste diversicolor*, *Polydora ciliata* and *Pygospio elegans*,and bivalves such as *Mya arenaria* and the lagoon cockle *Cerastoderma glaucum*. These bivalve species may also form conspicuious members of the epifauna together with more ubiquitous species like the common goby *Pomatoschistus microps*.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Hediste diversicolor	●●●●●	Frequent	31	
Hediste diversicolor	●●●●	Super-abundant	25	1110
Polydora ciliata	●●●	Abundant	3	440
Pygospio elegans	●●●	Common	5	555
Alkmaria romijni	●●	Rare	2	
Heterochaeta costata	●●●●	Frequent	17	
Heterochaeta costata	●●●●	Abundant	20	1730
Enchytraeidae	●●●●	Abundant	34	2075
Neomysis integer	●●	Rare	2	
Corophium volutator	●●●	Present	1	3910
Sphaeroma hookeri	●●	Occasional	2	
Palaemonetes varians	●●	Occasional	3	
Chironomida	●●●●	Occasional	16	
Hydrobia ulvae	●●	Rare	1	
Hydrobia ulvae	●●●	Common	4	255
Cerastoderma glaucum	●●	Common	6	
Cerastoderma glaucum	●●●	Common	3	65
Mya arenaria	●●●	Super-abundant	6	720
Mya arenaria	●●●	Rare	4	
Pomatoschistus microps	●●●	Common	14	
Cladophora	●●	Rare	1	

SS.SMX.SMxVS Sublittoral mixed sediment in variable salinity (estuaries)

Habitat classification

Salinity:	Variable (18-35ppt), Reduced/low (0.5-30ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Muddy gravelly mixed sediment with stones and shells
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m

Previous code

IMX.EstMx	97.06

Biotope description

Shallow sublittoral mixed sediments in estuarine conditions, often with surface shells or stones, enabling the development of diverse epifaunal communities, e.g. *Crepidula fornicata* (IMX.CreAph), as well as infaunal communities. This biotope complex is therefore often quite species rich, compared with purer sediments.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Lepidonotus squamatus	●●●	Present	1	14
Eteone longa	●●●	Present	1	9
Exogone naidina	●●●	Frequent	2	169
Sphaerosyllis	●●	Frequent	2	106
Nephtys hombergii	●●●●	Common	6	34
Scoloplos armiger	●●●	Common	2	19
Polydora ciliata	●●●	Abundant	5	131
Caulleriella zetlandica	●●	Common	3	131
Aphelochaeta marioni	●●●●	Common	22	955
Capitella capitata	●●●	Frequent	1	49
Mediomastus fragilis	●●●●	Frequent	6	220
Melinna palmata	●●●	Common	2	49
Tubificoides	●●	Frequent	1	64
Tubificoides benedii	●●●	Common	3	136
Tubificoides swirencoides	●●	Common	1	358
CIRRIPEDIA	●●	Common	7	
Carcinus maenas	●●	Occasional	7	
Crepidula fornicata	●●●●	Frequent	58	
Crepidula fornicata	●●●●	Abundant	5	136
Cardiidae	●●	Present	20	
Abra alba	●●	Common	1	23
Abra nitida	●●	Common	1	31

SS.SMX.SMxVS.AphPol *Aphelochaeta* spp. and *Polydora* spp. in variable salinity infralittoral mixed sediment

Habitat classification

Salinity:	Variable (18-35ppt), Reduced (18-30ppt), Low (<18ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Moderately strong, Weak
Substratum:	Sandy gravelly muddy mixed sediment
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m

Previous code

IMX.PolMtru	97.06

Biotope description

In sheltered muddy mixed sediments in estuaries or marine inlets with variable or reduced/low salinity communities characterised by *Aphelochaeta marioni* and *Polydora ciliata* may be present. Other important taxa may include the polychaetes *Nephtys hombergii*, *Caulleriella zetlandica* and *Melinna palmata*, tubificid oligochaetes and bivalves such as *Abra nitida*. Conspicuous epifauna may include members of the bivalve family Cardiidae (cockles) and the slipper limpet *Crepidula fornicata*. This biotope is often found in polyhaline waters.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMU.AphTubi	In areas of mixed sediment, where *A. marioni* occurs in high numbers, it may be difficult to separate AphTubi from AphPol, requiring classification on sediment characteristics and associated species in addition to the abundance of *A. marioni*.
SMU.PolCvol	PolCvol is similar to AphPol but occurs in muddier estuarine conditions.
SMX.CreMed	CreMed may be distinguished from AphPol by the abundance of *C. fornicata* and its sediment characteristics. AphPol may also be found in reduced salinity conditions.
SMU.MelMagThy	As salinity increases AphPol may grade into MelMagThy with those species characteristic of the latter increasing in abundance.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
POLYCHAETA	•		4	
Harmothoe	•••	Common	2	15
Eteone longa	•••	Frequent	2	14
Hediste diversicolor	•••	Present	1	19
Nephtys hombergii	••••	Common	8	30
Scoloplos armiger	••	Present	1	8
Polydora ciliata	••••	Abundant	10	238
Pygospio elegans	••	Frequent	1	17
Streblospio shrubsolii	••	Present	2	56
Caulleriella zetlandica	•••	Common	5	180
Aphelochaeta marioni	•••••	Common	33	975
Capitella capitata	•••	Occasional	1	13
Mediomastus fragilis	•••	Present	2	84
Melinna palmata	••	Common	4	43
Ampharete	••	Common	1	19
Lanice conchilega	••	Frequent	1	11
Tubifex	••	Frequent	2	72
Tubificoides	•••	Frequent	3	111
CIRRIPEDIA	••	Common	14	
Carcinus maenas	•	Present	3	
Crepidula fornicata	•••	Present	27	
Cardiidae	•••	Present	50	
Cerastoderma edule	•••	Present	1	26
Abra nitida	•••	Common	3	62

SS.SMX.SMxVS.CreMed *Crepidula fornicata* and *Mediomastus fragilis* in variable salinity infralittoral mixed sediment

Habitat classification

Salinity:	Variable (18-35ppt)
Wave exposure:	Very sheltered, Extremely sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Mixed muddy sediment
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

IMX.CreAph	97.06

Biotope description

Variable salinity mixed sediment characterised by the slipper limpet *Crepidula fornicata* and the polychaetes *Mediomastus fragilis* and *Aphelochaeta marioni*. Other numerically important taxa include the oligochaetes *Tubificoides benedii*, syllids such as *Exogone naidina* and *Sphaerosyllis*, and *Nephtys hombergii*. *Lepidonotus squamatus* and *Scoloplos armiger* may also be common. Shell debris and cobbles are colonised by the ascidians *Ascidiella aspersa*, *Ascidiella scabra*, *Molgula* sp. and *Dendrodoa grossularia* (the ascidians may not be recorded adequately by remote infaunal survey techniques).

Situation

This biotope occurs in the lower estuary where currents allow a stable environment to develop. It is associated with oyster beds and relict oyster beds, (Ost) in southern England and Wales. It may be found adjacent to or in conjunction with AphTubi and AphPol. It may be associated with VsenAsquAps and possibly form a component of SundAasp.

Temporal variation

No temporal data available.

Similar biotopes

SMX.CreAsAn	CreAsAn is found in more exposed marine areas with a lower silt content and in fully marine conditions
SMU.AphTubi	CreMed It may be separated from AphTubi by the relative abundances of the slipper limpet *Crepidula fornicata* in addition to *A. marioni*.
SMX.AphPol	CreMed may be distinguished from AphPol by the abundance of *C. fornicata* and its sediment characteristics

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
HYDROZOA	••	Present	5	
Harmothoe impar	•••	Common	2	18
Lepidonotus squamatus	••••	Common	2	21
Exogone naidina	••••	Frequent	4	288
Sphaerosyllis	••••	Frequent	4	183
Nephtys	•••	Common	2	29
Nephtys hombergii	••••	Common	3	36
Scoloplos armiger	••••	Abundant	2	28
Polydora ciliata	••	Common	2	53
Tharyx killariensis	••	Frequent	1	89
Caulleriella zetlandica	••	Frequent	1	95
Cirriformia tentaculata	••	Common	1	37
Aphelochaeta marioni	••••	Common	11	940
Capitella capitata	•••	Frequent	1	75
Mediomastus fragilis	••••	Common	8	320
Melinna palmata	•••	Common	1	54
Tubificoides benedii	••••	Common	7	219
Tubificoides pseudogaster	••	Frequent	1	91
Tubificoides swirencoides	••	Common	2	588
Carcinus maenas	••	Occasional	7	
Carcinus maenas	•••	Abundant	1	12
Crepidula fornicata	•••••	Common	85	
Crepidula fornicata	•••••	Abundant	11	234
Abra alba	••	Common	1	33

SS.SMX.IMx Infralittoral mixed sediment

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Strong, Moderately strong, Weak
Substratum:	Mixed sediment
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m, 20-30 m

Previous code

IMX.FaMx	97.06

Biotope description

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 (SMX.VsenAsquAps, SMX.CreAsAn, and SMX.Ost), polychaetes (SMX.SpavSpAn) and file shells (SMX.Lim). This has resulted in many species being described as characteristic of this biotope complex all contributing only a small percentage to the overall similarity (see below). This biotope complex 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 need in order to assess and fully characterise this potential biotope. As a result, the *Chaetopterus* biotope has not been included in this revision. Infaunal data for this biotope complex are limited to that described in the biotope SMX.VsenAsquAps and so are not representative of the infaunal component of the whole biotope complex.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Esperiopsis fucorum	••	Occasional	2	
Hydrallmania falcata	••	Occasional	2	
Alcyonium digitatum	••	Occasional	3	
Cerianthus lloydii	••	Occasional	2	
Urticina felina	•••	Occasional	5	
NEMERTEA	•••••	Common	3	288
NEMATODA	••••	Frequent	2	57
Anaitides mucosa	••••	Common	1	78
Syllidia armata	••••	Common	3	731
Sphaerosyllis hystrix	•••	Frequent	1	39
Caulleriella alata	•••	Common	2	120
Chaetozone gibber	•••	Common	3	582
Aphelochaeta marioni	••••	Common	4	2002
Mediomastus fragilis	•••••	Common	5	675
Notomastus latericeus	••••	Frequent	1	85
Melinna palmata	••••	Abundant	3	1210
Amphicteis gunneri	•••	Abundant	2	276
Lanice conchilega	••	Occasional	3	
Sabella pavonina	••	Common	7	
Pomatoceros lamarcki	•••	Common	2	178
Pomatoceros triqueter	••	Occasional	1	
Tubificoides benedii	••••	Common	2	500
Tubificoides swirencoides	•••	Common	2	385
Metaphoxus pectinatus	•••	Common	1	102
Abludomelita gladiosa	•••	Frequent	1	153
Gammarella fucicola	••••	Frequent	2	578
Maera grossimana	••••	Common	3	228
Corophium sextonae	••••	Common	3	961
Janira maculosa	••••	Frequent	1	260
Apseudes latreillii	•••••	Common	7	2520
Paguridae	••	Occasional	3	
Pagurus bernhardus	••	Occasional	3	
Hyas araneus	••	Occasional	1	
Cancer pagurus	••	Rare	1	
Necora puber	••	Occasional	1	
Carcinus maenas	••	Occasional	1	
Calliostoma zizyphinum	••	Rare	1	
Calyptraea chinensis	•••••	Common	5	351
Crepidula fornicata	•••	Common	20	
Buccinum undatum	•••	Occasional	5	
Limaria hians	••	Abundant	2	
Ostrea edulis	•	Occasional	1	
Tellimya ferruginosa	••••	Frequent	2	73
Venerupis senegalensis	•••••	Abundant	2	56
Asterias rubens	••	Occasional	3	
Ophiothrix fragilis	••	Occasional	2	
Ascidiella aspersa	••	Frequent	2	
Styela clava	••	Occasional	3	

SS.SMX.IMx.CreAsAn *Crepidula fornicata* with ascidians and anemones on infralittoral coarse mixed sediment

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed
Tidal streams:	Moderately strong
Substratum:	Medium-coarse sands with gravel, shell, pebbles and cobbles
Zone:	Circalittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

part of CreAph	97.06

Biotope description

Medium-coarse sands with gravel, shells, pebbles and cobbles on moderately exposed coasts may support populations of the slipper limpet *Crepidula fornicata* with ascidians and anemones. *C. fornicata* is common in this biotope though not as abundant as in the muddier estuarine biotope CreMed to which this is related. Anemones such as *Urticina felina* and *Alcyonium digitatum* and ascidians such as *Styela clava* are typically found in this biotope. Bryozoans such as *Flustra foliacea* are also found along with polychaetes such as *Lanice conchilega*. Little information is available with regard the infauna of this biotope but given the nature of the sediment the infaunal communities are liable to resemble those in biotopes from the SCS habitat complex. As with FluHyd this biotope could be considered a superficial or epibiotic overlay but more data is required to support this.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMX.CreMed	CreMed is found in less exposed marine areas, in particular estuaries, with a lower silt content and variable salinity.
SMX.FluHyd	FluHyd is found in deeper water in slightly more exposed areas with a higher proportion of cobbles and pebbles and in slightly stronger currents

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
HYDROZOA	••	Present	1	
Alcyonium digitatum	••	Occasional	3	
Anemonia viridis	••	Occasional	1	
Urticina felina	•••	Occasional	5	
Lanice conchilega	••	Occasional	3	
Pomatoceros	••	Occasional	1	
Paguridae	•••	Frequent	8	
Maja squinado	••	Rare	2	
Calliostoma zizyphinum	••	Occasional	2	
Crepidula fornicata	•••••	Common	47	
Buccinum undatum	••	Occasional	1	
Ostrea edulis	••	Rare	1	
Flustra foliacea	••	Frequent	3	
Styela clava	•••	Occasional	6	
Pomatoschistus	••	Occasional	1	
Foliose red algae	••	Present	1	

SS.SMX.IMx.SpavSpAn *Sabella pavonina* with sponges and anemones on infralittoral mixed sediment

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Strong, Moderately strong
Substratum:	Muddy gravelly sand with pebbles
Zone:	Circalittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

None

Biotope description

Muddy gravelly sand with pebbles off shallow, sheltered or moderately exposed coasts or embayments may support dense populations of the peacock worm *Sabella pavonina*. This community may also support populations of sponges such as *Esperiopsis fucorum*, *Haliclona oculata* and *Halichondria panicea* and anemones such as *Sagartia elegans*, *Cerianthus lloydii* and *Urticina felina*. Hydroids such as *Hydrallmania falcata* and the encrusting polychaete *Pomatoceros triqueter* are also important. This biotope may have an extremely diverse epifaunal community. Less is known about its infaunal component, although it is likely to include polychaetes such as Nephtys spp., *Harmothoe* spp., *Glycera* spp., syllid and cirratulid polychaetes, bivalves such as *Abra* spp., Aoridae amphipods and brittlestars such as *Amphipholis squamata*.

Situation

No sitautaion data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Halichondria panicea	●●●	Common	3	
Esperiopsis fucorum	●●●	Occasional	2	
Haliclona oculata	●●●	Occasional	2	
Hydrallmania falcata	●●●●	Occasional	4	
Cerianthus lloydii	●●●	Occasional	2	
Urticina felina	●●●	Occasional	1	
Sagartia elegans	●●●	Occasional	4	
Lanice conchilega	●●●	Occasional	3	
Sabella pavonina	●●●●●	Abundant	36	
Pomatoceros triqueter	●●●	Occasional	3	
Pagurus bernhardus	●●●	Frequent	5	
Hyas araneus	●●●	Occasional	2	
Liocarcinus depurator	●●●	Occasional	3	
Carcinus maenas	●●●●	Occasional	5	
Buccinum undatum	●●●	Occasional	2	
Alcyonidium diaphanum	●●●	Occasional	2	
Asterias rubens	●●●●	Occasional	6	
Ophiothrix fragilis	●●	Occasional	2	
Diplosoma spongiforme	●●●	Occasional	1	
Ascidiella scabra	●●●	Occasional	2	
Dendrodoa grossularia	●●●	Occasional	1	

SS.SMX.IMx.VsenAsquAps *Venerupis senegalensis, Amphipholis squamata* and *Apseudes latreilli* in infralittoral mixed sediment

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Moderately strong, Weak
Substratum:	Muddy sandy gravel and pebbles
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m, 20-30 m

Previous code

IMX.VsenMtru	97.06

Biotope description

Sheltered muddy sandy gravel and pebbles in marine inlets, estuaries or embayments with variable salinity or fully marine conditions, support large populations of the pullet carpet shell *Venerupis senegalensis* with the brittlestar *Amphipholis squamata* and the tanaid *Apseudes latreilli*. This biotope may be found at a range of depths from 5m to 30m although populations of *V. senegalensis* may also be found on the low shore. Other common species within this biotope include the gastropod *Calyptraea chinensis*, a range of amphipod crustacea such as *Corophium sextonae* and *Maera grossimana* and polychaetes such as *Mediomastus fragilis, Melinna palmata, Aphelochaeta marioni, Syllids* and tubificid oligochaetes. Many of the available records for this biotope are from southern inlets and estuaries such as Plymouth Sound and Milford Haven but *V. senegalensis* has a much wider distribution and it should be noted that northern versions of this biotope may a have a much lower species diversity than reported here.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
NEMERTEA	●●●●●	Common	3	288
NEMATODA	●●●●	Frequent	2	57
Anaitides mucosa	●●●●	Common	1	78
Syllidia armata	●●●●	Common	3	731
Sphaerosyllis hystrix	●●●	Frequent	1	39
Caulleriella alata	●●●	Common	2	120
Chaetozone gibber	●●●	Common	3	582
Aphelochaeta marioni	●●●●	Common	4	2002
Mediomastus fragilis	●●●●●	Common	5	675
Notomastus latericeus	●●●●	Frequent	1	85
Melinna palmata	●●●●	Abundant	3	1210
Amphicteis gunneri	●●●	Abundant	2	276
Pomatoceros lamarcki	●●●	Common	2	178
Tubificoides benedii	●●●●	Common	2	500
Tubificoides swirencoides	●●●	Common	2	385
Metaphoxus pectinatus	●●●	Common	1	102
Abludomelita gladiosa	●●●	Frequent	1	153
Gammarella fucicola	●●●●	Frequent	2	578
Maera grossimana	●●●●	Common	3	228
Corophium sextonae	●●●●	Common	3	961
Janira maculosa	●●●●	Frequent	1	260
Apseudes latreillii	●●●●●	Common	7	2520
Calyptraea chinensis	●●●●●	Common	5	351
Tellimya ferruginosa	●●●●	Frequent	2	73
Venerupis senegalensis	●●●●●	Abundant	2	56
Amphipholis squamata	●●●●●	Super-abundant	4	377

SS.SMX.IMx.Lim *Limaria hians* beds in tide-swept sublittoral muddy mixed sediment

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Strong, Moderately strong, Weak
Substratum:	Mixed muddy sandy gravel
Zone:	Infralittoral - lower, Circalittoral
Depth band:	5-10 m, 10-20 m, 20-30 m
Other features:	Consolidated bed formed from byssus-bound debris

Previous code

IMX.Lim	97.06

Biotope description

Mixed muddy gravel and sand often in tide-swept narrows in the entrances or sills of sealochs with beds or 'nests' of *Limaria hians*. The *Limaria* form woven 'nests' or galleries from byssus and fragments of seaweeds so that the animals themselves cannot be seen from above the seabed. *Modiolus modiolus* sometimes occur at the same sites lying over the top of the *Limaria* bed. Other fauna associated with this biotope include echinoderms (*Ophiothrix fragilis*, *Ophiocomina nigra* and *Asterias rubens*), *Buccinum undatum*, mobile crustaceans (e.g. *Pagurus bernhardus*), *Alcyonium digitatum* and hydroids such as *Plumularia setacea*, *Kirchenpaueria pinnata* and *Nemertesia* spp. Sometimes red seaweeds such as *Phycodrys rubens* occur if the beds are in shallow enough water.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SCS.Nmix	Lim is found in muddier, more sheltered conditions in similar depths
SMP.Lgla	Lim is sometimes found amongst maerl gravels but is deeper than Lgla

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Kirchenpaueria pinnata	●●●	Occasional		
Nemertesia antennina	●●	Frequent		
Nemertesia ramosa	●●	Frequent		
Alcyonium digitatum	●●●●	Rare		5
Pomatoceros triqueter	●●	Occasional		1
Pagurus bernhardus	●●●	Occasional		3
Munida rugosa	●●	Occasional		1
Hyas araneus	●●●	Occasional		2
Cancer pagurus	●●●	Occasional		2
Necora puber	●●	Present		1
Buccinum undatum	●●●●	Occasional		6
Modiolus modiolus	●●●	Occasional		3
Limaria hians	●●●●●	Abundant		24
Aequipecten opercularis	●●	Occasional		1
Pecten maximus	●●●	Rare		2
Asterias rubens	●●●●	Occasional		4
Ophiothrix fragilis	●●●●●	Common		11
Ophiocomina nigra	●●●	Common		5
Psammechinus miliaris	●●	Present		2
Echinus esculentus	●●●	Occasional		2

SS.SMX.IMx.Ost *Ostrea edulis* beds on shallow sublittoral muddy mixed sediment

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Weak, Very weak
Substratum:	Sandy mud with some shells and occasionally gravel
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

IMX.Ost	97.06

Biotope description

Dense beds of the oyster *Ostrea edulis* can occur on muddy fine sand or sandy mud mixed sediments. There may be considerable quantities of dead oyster shell making up a substantial portion of the substratum. The clumps of dead shells and oysters can support large numbers of *Ascidiella aspersa* and *Ascidiella scabra*. Sponges such as *Halichondria bowerbanki* may also be present. Several conspicuously large polychaetes, such as *Chaetopterus variopedatus* and terebellids, as well as additional suspension-feeding polychaetes such as *Myxicola infundibulum* and *Sabella pavonina* may be important in distinguishing this biotope, whilst the Opisthobranch *Philine aperta* may also be frequent in some areas. A turf of seaweeds such as *Plocamium cartilagineum*, *Nitophyllum punctatum* and *Spyridia filamentosa* may also be present. This biotope description may need expansion to account for oyster beds in England.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Cliona celata	●●●	Occasional	1	
Halichondria bowerbanki	●●●●	Occasional	4	
Esperiopsis fucorum	●●●	Occasional	3	
Chaetopterus variopedatus	●●●●●	Occasional	5	
Terebellidae	●●●	Frequent	4	
Myxicola infundibulum	●●●	Frequent	4	
Sabella pavonina	●●●	Common	5	
Pomatoceros triqueter	●●●	Occasional	1	
Balanus crenatus	●●●	Occasional	1	
Pagurus bernhardus	●●●●	Occasional	5	
Philine aperta	●●●	Frequent	2	
Ostrea edulis	●●●●●	Common	16	
Aplidium punctum	●●●●	Occasional	4	
Ascidiella aspersa	●●●●	Frequent	8	
Ascidiella scabra	●●●	Frequent	3	
Corallinaceae	●●●	Frequent	1	
Plocamium cartilagineum	●●●●	Frequent	5	
Lomentaria clavellosa	●●●	Rare	1	
Compsothamnion thuyoides	●●●	Occasional	1	
Spyridia filamentosa	●●●	Frequent	4	
Nitophyllum punctatum	●●●	Occasional	3	
Polysiphonia elongata	●●●	Occasional	1	
Dictyota dichotoma	●●●	Occasional	2	
Laminaria saccharina	●●●	Rare	2	

SS.SMX.CMx Circalittoral mixed sediment

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Mixed sediment (with stones and shells)
Zone:	Circalittoral
Depth band:	5-10 m, 10-20 m, 20-30 m, 30-50 m

Previous code

CMX	97.06

Biotope description

Mixed (heterogeneous) sediment habitats in the circalittoral zone (generally below 15-20m) 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. Coarser mixed sediment communities may show a strong resemblance, in terms of infauna, to biotopes within the SCS complex. However, infaunal data for this biotope complex is limited to that described under the biotope MysThyMx, and so are not representative of the infaunal component of this biotope complex.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Nemertesia antennina	••	Occasional		
Nemertesia ramosa	••	Occasional		
Hydrallmania falcata	•	Occasional		
Alcyonium digitatum	••	Occasional		
Cerianthus lloydii	•••	Frequent		
Urticina felina	••	Occasional		
NEMERTEA	••••	Common	2	31
NEMATODA	••••	Frequent	3	480
Pholoe inornata	••••	Frequent	2	103
Glycera alba	•••	Abundant	1	23
Goniada maculata	••••	Common	2	27
Nephtys	•••	Common	1	38
Nephtys hombergii	••••	Common	2	38
Lumbrineris gracilis	•••••	Common	4	155
Scoloplos armiger	•••••	Abundant	3	90
Levinsenia gracilis	•••	Common	1	67
Prionospio fallax	••••	Abundant	8	492
Spiophanes bombyx	••••	Frequent	2	75
Chaetozone setosa	•••••	Common	4	141
Mediomastus fragilis	•••	Common	2	147
Scalibregma inflatum	••••	Common	2	65
Galathowenia oculata	•••	Frequent	1	74
Owenia fusiformis	••••	Common	2	29
Terebellides stroemi	••••	Abundant	2	32
Terebellidae	••	Occasional		
Lanice conchilega	••	Occasional		
Pomatoceros triqueter	••	Occasional		
Ampelisca tenuicornis	••••	Frequent	2	111
Eudorella truncatula	•••	Abundant	1	37
Pagurus bernhardus	•••	Occasional		
Liocarcinus depurator	••	Occasional		
Buccinum undatum	••	Occasional		
Modiolus modiolus	••	Occasional		
Pecten maximus	••	Occasional		
Thyasira flexuosa	•••••	Common	7	375
Mysella bidentata	•••••	Frequent	5	249
Phaxas pellucidus	•••	Common	1	28
Abra alba	•••	Common	2	191
Chamelea gallina	••••	Common	2	44
Flustra foliacea	•	Occasional		
Phoronis	•••	Common	2	149
Crossaster papposus	••	Rare		
Asterias rubens	••••	Occasional		
Ophiothrix fragilis	••	Common		
Ophiocomina nigra	••	Frequent		
Amphiura filiformis	•••	Abundant	1	86
Ophiura albida	••	Frequent		
Echinus esculentus	••	Occasional		
Thyone fusus	••	Occasional		
Psolus phantapus	••	Occasional		
Corallinaceae	••	Occasional		

SS.SMX.CMx.ClloMx *Cerianthus lloydii* and other burrowing anemones in circalittoral muddy mixed sediment

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Sandy muddy gravel
Zone:	Infralittoral, Circalittoral
Depth band:	5-10 m, 10-20 m, 20-30 m

Previous code

IMX.An	97.06

Biotope description

Circalittoral plains of sandy muddy gravel may be characterised by burrowing anemones such as *Cerianthus lloydii*. Other burrowing anemones such as *Cereus pedunculatus*, *Mesacmaea mitchellii* and *Aureliania heterocera* may be locally abundant. Relatively few conspicuous species are found in any great number in this biotope but typically they include ubiquitous epifauna such as *Asterias rubens*, *Pagurus bernhardus* and *Liocarcinus depurator* with occasional terebellid polychaetes such as *Lanice conchilega* and also the clam *Pecten maximus*. *Ophiura albida* may be frequent in some areas, and where surface shell or stones are present ascidians such as *Ascidiella aspersa* may occur in low numbers.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMX.ClloModHo	The current biotope is closely related to ClloModHo but lacks *Modiolus* and holothurians.
SMX.ClloMx.Nem	In areas of similar sediment but with a higher proportion of surface pebbles, cobbles and shells ClloMx is replaced by SMX.ClloMx.Nem

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Cerianthus lloydii	●●●●●	Frequent	59	
Urticina felina	●	Occasional	1	
Terebellidae	●●	Occasional	1	
Lanice conchilega	●●	Occasional	3	
Pagurus bernhardus	●●●	Occasional	5	
Liocarcinus depurator	●●	Frequent	4	
Pecten maximus	●●	Occasional	2	
Asterias rubens	●●●	Occasional	8	
Ophiura albida	●●	Frequent	1	
Ascidiella aspersa	●●	Occasional	1	
Callionymus lyra	●●	Occasional	1	

SS.SMX.CMx.ClloMx.Nem *Cerianthus lloydii* with *Nemertesia* spp. and other hydroids in circalittoral muddy mixed sediment

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Sandy muddy gravel with surficial cobbles, pebbles and shells
Zone:	Infralittoral - lower, Circalittoral
Depth band:	10-20 m, 20-30 m

Previous code

part of IMX.An	97.06

Biotope description

In sheltered muddy sandy gravel with appreciable quantities of surficial cobbles, pebbles and shells a community similar to ClloMx may develop with frequent *Cerianthus lloydii* and other burrowing anemones. However, the pebbles and cobbles embedded in the sediment are colonised by hydroids and in particular *Nemertesia antennina* and *N. ramosa*. Other hydroids may include *Kirchenpaueria pinnata* and *Halecium halecinum* whilst ascidians such as *Ascidiella aspersa* or *Corella parallelogramma* may also be present locally. *Pecten maximus* and *Pomatoceros triqueter* may also be frequent in certain areas.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMX.ClloMx	In areas of similar sediment but with fewer surface pebbles, cobbles and shells there are fewer sites of attachment for hydroids such as *Nemertesia* and ClloMx.Nem is replaced by SMX.ClloMx

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Halecium halecinum	••	Occasional	1	
Nemertesia antennina	••••	Occasional	8	
Nemertesia ramosa	•••	Occasional	8	
Cerianthus lloydii	•••••	Frequent	21	
Chaetopterus variopedatus	••	Occasional	1	
Terebellidae	••	Occasional	1	
Lanice conchilega	••	Occasional	3	
Pomatoceros triqueter	•••	Frequent	3	
Pagurus bernhardus	•••	Occasional	5	
Liocarcinus depurator	•••	Occasional	4	
Turritella communis	••	Frequent	1	
Aequipecten opercularis	••	Occasional	1	
Pecten maximus	•••	Occasional	5	
Asterias rubens	••••	Occasional	8	
Ophiura albida	••	Occasional	3	
Echinus esculentus	•••	Occasional	3	

SS.SMX.CMx.ClloModHo

Sparse *Modiolus modiolus*, dense *Cerianthus lloydii* and burrowing holothurians on sheltered circalittoral stones and mixed sediment

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Weak, Very weak
Substratum:	Pebbles, boulders and cobbles on mud or muddy gravel
Zone:	Infralittoral - lower, Circalittoral
Depth band:	10-20 m, 20-30 m, 30-50 m

Previous code

SCR.ModHo	96.7
CMX.ModHo	97.06

Biotope description

Pebbles and cobbles on mud or muddy gravel in sealochs with frequent *Cerianthus lloydii* and occasional *Modiolus modiolus*. Large burrowing holothurians may include *Psolus phantapus*, *Paracucumaria hyndmani*, *Thyonidium commune*, *Thyone fusus* and *Leptopentacta elongate*. Many of these species only extend their tentacles above the sediment surface seasonally and are likely to be under recorded by epifaunal surveys. Other more conspicuous characterising taxa include *Pagurus bernhardus*, *Asterias rubens*, and *Buccinum undatum*. This biotope is well developed in the Clyde sealochs, although many examples are rather species-poor. Some examples in south-west Scottish sealochs have greater quantities of boulders and cobbles and therefore have a richer associated biota (compared with other sheltered *Modiolus* bed biotopes such as ModHAs). Examples in Shetland are somewhat different in having the cucumber *Cucumaria frondosa* amongst sparse *Modiolus* beds and a slightly different balance in abundance of other species; for example the brittlestar *Ophiopholis aculeata* is more abundant in these far northern examples in the voes and narrows

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SBR.ModHAs	ModHAs occurs in similar physiographic features, although ClloModHo is in softer sediment in some cases, and with a much lower abundance of *Modiolus*, and a lower diversity in general. There may some overlap in these two biotopes as several of the holothurians extend their tentacles above the surface of the sediment for only a limited amount of time during the year.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Hydractinia echinata	••	Occasional	2	
Alcyonium digitatum	•••	Rare	2	
Cerianthus lloydii	•••••	Frequent	15	
Terebellidae	•••	Occasional	2	
Pomatoceros triqueter	•••	Occasional	4	
Pagurus bernhardus	•••••	Frequent	16	
Munida rugosa	••	Occasional	1	
Hyas araneus	••	Occasional	1	
Liocarcinus depurator	•••	Occasional	3	
Carcinus maenas	•••	Occasional	2	
Buccinum undatum	••••	Occasional	5	
Modiolus modiolus	••••	Occasional	9	
Aequipecten opercularis	•••	Occasional	2	
Asterias rubens	••••	Occasional	8	
Ophiura albida	•••	Frequent	3	
Psammechinus miliaris	•••	Occasional	5	
Echinus esculentus	•••	Occasional	4	
Thyone fusus	••	Occasional	1	
Corallinaceae	••	Occasional	1	

SS.SMX.CMx.MysThyMx *Mysella bidentata* and *Thyasira* spp. in circalittoral muddy mixed sediment

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered
Tidal streams:	Moderately strong, Weak
Substratum:	Muddy sand and gravel
Zone:	Circalittoral
Depth band:	10-20 m, 20-30 m, 30-50 m, 50-100 m

Previous code

None

Biotope description

In moderately exposed or sheltered, circalittoral muddy sands and gravels a community characterised by the bivalves *Thyasira* spp. (often *Thyasira flexuosa*), *Mysella bidentata* and *Prionospio fallax* may develop. Infaunal polychaetes such as *Lumbrineris gracilis*, *Chaetozone setosa* and *Scoloplos armiger* are also common in this community whilst amphipods such as *Ampelisca* spp. and the cumacean *Eudorella truncatula* may also be found in some areas. The brittlestar *Amphiura filiformis* may also be abundant at some sites. Conspicuous epifauna may include encrusting bryozoans *Escharella* spp. particularly *Escharella immersa* and, in shallower waters, maerl (*Phymatolithon calcareum*), although at very low abundances and not forming maerl beds.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMU.AfilMysAnit	The current biotope is closely related to the muddier, less heterogeneous AfilMysAnit
SMU.ForThy	MysThyMx may be a shallower, less heterogeneous variant of the offshore ForThy biotope
SMU.PjefThyAfil	MysThyMx may be a shallower, less heterogeneous variant of the offshore PjefThyAfil biotope

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Scypha ciliata	••	Present	2	
Sertularia cupressina	••	Present	1	
Laomedea flexuosa	•••	Present	2	
ANTHOZOA	•		9	
NEMERTEA	••••	Common	2	31
NEMATODA	••••	Frequent	3	487
Pholoe inornata	••••	Frequent	2	104
Goniada maculata	••••	Common	2	27
Nephtys	•••	Common	1	38
Nephtys hombergii	••••	Common	2	39
Lumbrineris gracilis	•••••	Common	4	156
Scoloplos armiger	•••••	Abundant	3	92
Levinsenia gracilis	•••	Common	1	68
Prionospio fallax	•••••	Abundant	8	499
Spiophanes bombyx	••••	Frequent	2	76
Chaetozone setosa	•••••	Common	4	143
Mediomastus fragilis	•••	Common	2	149
Scalibregma inflatum	••••	Common	2	65
Galathowenia oculata	•••	Frequent	1	75
Owenia fusiformis	••••	Common	2	29
Terebellides stroemi	••••	Abundant	2	32
Ampelisca tenuicornis	••••	Frequent	2	113
Eudorella truncatula	•••	Abundant	1	38
Thyasira flexuosa	•••••	Common	7	377
Mysella bidentata	•••••	Frequent	5	245
Phaxas pellucidus	•••	Common	1	29
Abra alba	•••	Common	2	194
Chamelea gallina	••••	Common	2	44
Crisidia cornuta	••	Present	3	
Crisia	•••	Present	6	
Tubulipora	••	Present	4	
Alcyonidium diaphanum	••	Present	2	
Cribrilina punctata	•••	Present	6	
Escharoides coccinea	••	Present	2	
Escharella immersa	•••	Present	15	
Escharella ventricosa	••	Present	2	
Schizomavella auriculata	••	Present	2	
Microporella ciliata	••	Present	4	
Fenestrulina malusii	•••	Present	6	
Cellepora pumicosa	••	Present	2	
Aetea truncata	••	Present	1	
Electra pilosa	••	Present	4	
Phoronis	•••	Common	2	151
Amphiura filiformis	•••	Abundant	1	88
Hildenbrandia rubra	••	Present	5	
Corallinaceae	••	Present	9	
Phymatolithon calcareum	•••	Present	13	

SS.SMX.CMx.FluHyd *Flustra foliacea* and *Hydrallmania falcata* on tide-swept circalittoral mixed sediment

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed
Tidal streams:	Strong, Moderately strong
Substratum:	Boulders, cobbles or pebbles with gravel and sand
Zone:	Circalittoral
Depth band:	5-10 m, 10-20 m, 20-30 m, 30-50 m

Previous code

MCR.Flu.SerHyd	97.06
part of MCR.SNemAdia	97.06

Biotope description

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 ramose*, occur where suitably stable hard substrata is found. The anemone *Urticina feline* 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. 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

Temporal variation

No temporal data available.

Similar biotopes

SSA.ScupHyd	With increased scouring and more sand *S. cupressina* becomes more common and FluHyd may develop into ScupHyd.
SCS.PomB	On pebble plains, as tidal stream strength increases to a point at which the stones are regularly mobilised, all hydroids are scoured off leaving just *Pomatoceros*, bryozoan crusts, *Balanus crenatus* and coralline algae.
SMX.CreAsAn	CreAsAn is found in shallower water in slightly less exposed areas with a lower proportion of cobbles and pebbles and in slightly weaker currents.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Halecium halecinum	••	Occasional	1	
Nemertesia antennina	•••	Occasional	7	
Nemertesia ramosa	••	Occasional	1	
Hydrallmania falcata	••••	Occasional	11	
Sertularia argentea	•••	Occasional	3	
Alcyonium digitatum	•••	Occasional	5	
Urticina felina	••••	Occasional	8	
Pomatoceros triqueter	•••	Occasional	3	
Balanus crenatus	••	Frequent	1	
Pagurus bernhardus	•••	Occasional	6	
Alcyonidium diaphanum	•••	Occasional	5	
Vesicularia spinosa	••	Frequent	2	
Flustra foliacea	•••••	Frequent	18	
Crossaster papposus	••	Occasional	2	
Asterias rubens	••••	Occasional	10	

SS.SMX.CMx.OphMx *Ophiothrix fragilis* and/or *Ophiocomina nigra* brittlestar beds on sublittoral mixed sediment

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered
Tidal streams:	Strong, Moderately strong, Weak
Substratum:	Mixed sediment, often with cobbles and pebbles
Zone:	Circalittoral
Depth band:	5-10 m, 10-20 m, 20-30 m, 30-50 m

Previous code

Part of MCR.Oph	97.06

Biotope description

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 aculeate*. 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 (Warner, 1971; Allain, 1974; Davoult & Gounin, 1995). 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 feline* 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 (Brun, 1969; Warner, 1971). 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*. Warner (1971) found that numbers and biomass of sediment dwelling animals were not significantly reduced under dense brittlestar patches.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Alcyonium digitatum	●●●	Occasional	7	
Urticina felina	●●●	Occasional	8	
Pomatoceros triqueter	●●	Frequent	3	
Pagurus bernhardus	●●	Occasional	2	
Crossaster papposus	●●	Occasional	2	
Asterias rubens	●●●	Occasional	4	
Ophiothrix fragilis	●●●●●	Abundant	56	
Ophiocomina nigra	●●●	Frequent	8	
Echinus esculentus	●●	Occasional	2	
Corallinaceae	●●	Frequent	1	

SS.SMX.OMx Offshore circalittoral mixed sediment

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered
Tidal streams:	Not known
Substratum:	Mud and sandy muddy mixed sediments
Zone:	Circalittoral - lower
Depth band:	20-30 m, 30-50 m, 50-100 m

Previous code

part of COS	97.06

Biotope description

Offshore (deep) circalittoral habitats with slightly muddy mixed gravelly sand and stones or shell. This habitat may cover large areas of the offshore continental shelf although there is relatively little data available. Such habitats are often highly diverse with a high number of infaunal polychaete and bivalve species. Animal communities in this habitat are closely related to offshore gravels and coarse sands and in some areas populations of the horse mussel Modiolus modiolus may develop in these habitats (see SBR.ModMx). Only one biotope is currently described under this biotope complex.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
NEMERTEA	●●●●●	Abundant	3	91
Harmothoe	●●●●●	Common	2	78
Pseudomystides limbata	●●●●●	Present	1	24
Eumida sanguinea	●●●●●	Abundant	2	17
Nereiphylla lutea	●●●●	Abundant	1	51
Glycera lapidum	●●●●●	Common	2	92
Syllis	●●●●●	Present	1	25
Exogone hebes	●●●●	Frequent	1	23
Sphaerosyllis	●●●●	Frequent	1	79
Sphaerosyllis bulbosa	●●●●	Frequent	1	59
Sphaerosyllis tetralix	●●●●●	Present	1	35
Lumbrineris gracilis	●●●●●	Common	2	86
Aonides paucibranchiata	●●●●●	Common	5	241
Laonice bahusiensis	●●●●●	Common	3	60
Polydora caulleryi	●●●●●	Frequent	2	46
Caulleriella zetlandica	●●●●	Common	1	73
Mediomastus fragilis	●●●●●	Frequent	4	344
Scalibregma inflatum	●●●	Abundant	2	136
Polycirrus	●●●●●	Common	2	56
Hydroides norvegica	●●●●●	Frequent	1	24
Grania	●●●●	Common	1	40
Anoplodactylus petiolatus	●●●●●	Present	1	18
Leptochiton asellus	●●●●●	Common	2	84
Glycymeris glycymeris	●●●●	Abundant	1	30
Timoclea ovata	●●●●●	Common	2	59
Amphipholis squamata	●●●●	Abundant	1	203
Polycarpa fibrosa	●●●	Common	1	120

SS.SMX.OMx.PoVen Polychaete-rich deep *Venus* community in offshore mixed sediments

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered
Tidal streams:	Weak
Substratum:	Gravelly sand and muddy mixed sediment
Zone:	Circalittoral
Depth band:	20-30 m, 30-50 m, 50-100 m

Previous code

part of CGS.Ven	97.06

Biotope description

In offshore circalittoral slightly muddy mixed sediments, a diverse community particularly rich in polychaetes with a significant venerid bivalve component may be found. Typical species include the polychaetes *Glycera lapidum*, *Aonides paucibranchiata*, *Laonice bahusiensis*, *Mediomastus fragilis*, *Lumbrineris gracilis*, *Pseudomystides limbata*, *Protomystides bidentata* and syllid species and bivalves such as *Timoclea ovata*, *Glycymeris glycymeris*, *Spisula elliptica* and *Goodallia triangularis*. This biotope has been recorded on surveys of the Lambay and Codling Deeps and other areas of the Irish Sea and collectively with MedLumVen comprise the 'Deep *Venus* Community' and the 'Boreal Off-Shore Gravel Association' as defined by other workers (Ford 1923; Jones 1950). Some examples of this biotope may have abundant juvenile *Modiolus modiolus*

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
NEMERTEA	●●●●●	Abundant	3	60
Golfingia	●●●●			
Harmothoe	●●●●●	Common	2	78
Pseudomystides limbata	●●●●●	Present	1	24
Protomystides bidentata	●●●●●	Common		
Eumida sanguinea	●●●●●	Abundant	2	17
Nereiphylla lutea	●●●●	Abundant	1	51
Glycera lapidum	●●●●●	Common	2	92
Glycera oxycephala	●●●	Present		
Syllis	●●●●●	Present	1	25
Eusyllis blomstrandi	●●●●●	Frequent		
Streptosyllis bidentata	●●●	Frequent		
Exogone hebes	●●●●	Frequent	1	23
Exogone verugera	●●●●●	Frequent		
Sphaerosyllis	●●●●	Frequent	1	79
Sphaerosyllis bulbosa	●●●●	Frequent	1	59
Sphaerosyllis tetralix	●●●●●	Present	1	35
Lumbrineris gracilis	●●●●●	Common		
Aricidea	●●●●	Common		
Paradoneis lyra	●●●●●	Common	1	18
Aonides paucibranchiata	●●●●●	Common	5	241
Laonice bahusiensis	●●●●●	Common	3	60
Polydora caulleryi	●●●●●	Frequent	2	46
Spiophanes kroyeri	●●●●	Frequent		
Cirratulidae	●●●●			
Caulleriella alata	●●●	Frequent	1	44
Caulleriella zetlandica	●●●●	Common	1	73
Mediomastus fragilis	●●●●●	Frequent	4	344
Notomastus	●●●●●	Present		
Praxillella affinis	●●●●●	Common		
Asclerocheilus	●●●●●	Frequent		
Scalibregma inflatum	●●●	Abundant	2	136
Polycirrus	●●●●●	Common	2	56
Hydroides norvegica	●●●●●	Frequent	1	24
Grania	●●●●	Common	1	40
Anoplodactylus petiolatus	●●●●●	Present	1	18
Ampelisca spinipes	●●●●●	Frequent		
Gammaropsis	●●●●●	Frequent		
Leptochiton asellus	●●●●●	Common	2	84
Modiolus modiolus	●●●●●	Super-abundant		
Glycymeris glycymeris	●●●●	Abundant	1	30
Mysella bidentata	●●●●	Frequent		
Spisula elliptica	●●●●	Common		
Abra alba	●●●●	Common		
Timoclea ovata	●●●●●	Common	2	59
Amphipholis squamata	●●●●	Abundant	1	203
Polycarpa fibrosa	●●●	Common	1	120

SS.SMP Sublittoral macrophyte-dominated communities on sediments

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt), Reduced (18-30ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Sand, mud, gravel and mixed sediments.
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

new habitat complex

Biotope description

This complex includes maerl beds, seaweed dominated mixed sediments (including kelps such as Laminaria saccharina and filamentous/foliose red and green algae), seagrass beds, and lagoonal angiosperm communities. These communities develop in a range of habitats from exposed open coasts to lagoons and are found in a variety of sediment types and salinity regimes.

Situation

No situation data available.

Temporal variation

No temporal data available.

SS.SMP.Mrl Maerl beds

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Gravels, clean sands
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

IGS.Mrl	97.06
IMX.MrlMx	97.06

Biotope description

Beds of maerl in coarse clean sediments of gravels and clean sands, which occur either on the open coast or in tide-swept channels of marine inlets (the latter often stony). In fully marine conditions the dominant maerl is typically *Phymatolithon calcareum* (SMP.Pcal), whilst under variable salinity conditions in some sealochs beds of *Lithothamnion glaciale* (SMP.Lgla) may develop.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	Abundance (SACFOR)	%Contribution to similarity	Abundance (nos / m^2)
Cerianthus lloydii	●●●	Frequent	3	
NEMERTEA	●●●	Present	2	30
NEMATODA	●●●●●	Common	9	1303
Harmothoe impar	●●●●	Common	1	73
Kefersteinia cirrata	●●●●●	Present	4	270
Eurysyllis tuberculata	●●●	Common	1	75
Trypanosyllis coeliaca	●●●	Frequent	1	55
Sphaerosyllis taylori	●●●	Frequent	2	150
Aonides paucibranchiata	●●●●	Present	1	15
Chaetopterus variopedatus	●●	Occasional	2	
Mediomastus fragilis	●●●●●	Frequent	4	325
Lanice conchilega	●●	Occasional	2	
Polycirrus	●●●●	Common	3	53
Chone duneri	●●●●	Common	5	313
Pomatoceros triqueter	●●	Occasional	2	
Grania	●●●	Abundant	6	428
Parametaphoxus fultoni	●●●●	Common	7	595
Socarnes erythrophthalmus	●●●	Abundant	4	1055
Austrosyrrhoe fimbriatus	●●	Common	1	105
Ceradocus semiserratus	●●●	Common	3	280
Gammaropsis cornuta	●●●	Frequent	2	98
Leptocheirus hirsutimanus	●●●	Frequent	2	168
Leptocheirus pectinatus	●●●	Abundant	3	1178
Cymodoce truncata	●●●	Present	2	100
Vauntompsonia cristata	●●●●	Present	2	98
Cumella pygmaea	●●●	Common	3	188
Nannastacus unguiculatus	●●●	Common	2	113
Pagurus bernhardus	●●●●	Occasional	6	
Liocarcinus depurator	●●●	Occasional	2	
Gibbula magus	●●	Occasional	1	
Gibbula cineraria	●●	Occasional	2	
Dikoleps pusilla	●●●	Abundant	2	138
Onoba aculeus	●●●	Super-abundant	3	408
Asterias rubens	●●●●	Occasional	10	
Amphipholis squamata	●●●●	Super-abundant	4	510
Echinus esculentus	●●	Occasional	2	
Neopentadactyla mixta	●●	Occasional	1	
Trailliella intricata	●●	Frequent	1	
Lithothamnion glaciale	●●	Frequent	1	
Phymatolithon calcareum	●●●●	Common	15	
Plocamium cartilagineum	●●●	Occasional	3	
Phycodrys rubens	●●	Occasional	1	
Brongniartella byssoides	●●	Occasional	1	
Dictyota dichotoma	●●●	Occasional	4	
Desmarestia viridis	●●	Occasional	1	
Chorda filum	●●	Frequent	1	
Laminaria saccharina	●●●	Occasional	5	

SS.SMPMrl.Pcal *Phymatolithon calcareum* maerl beds in infralittoral clean gravel or coarse sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Extremely sheltered
Tidal streams:	Moderately strong, Weak
Substratum:	Maerl gravel and sand
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

IGS.Phy	97.06

Biotope description

Maerl beds characterised by *Phymatolithon calcareum* in gravels and sands. Associated epiphytes may include red algae such as *Dictyota dichotoma, Halarachnion ligulatum, Callophyllis laciniata, Cryptopleura ramosa, Brongniartella byssoides* and *Plocamium cartilagineum*. Algal species may be anchored to the maerl or to dead bivalve shells amongst the maerl. Polychaetes, such as *Chaetopterus variopedatus, Lanice conchilega, Kefersteinia cirrata, Mediomastus fragilis, Chone duneri, Parametaphoxus fultoni* and *Grania* may be present. Gastropods such as *Gibbula cineraria, Gibbula magus, Calyptraea chinensis Dikoleps pusilla* and *Onoba aculeus* may also be present. *Liocarcinus depurator* and *Liocarcinus corrugatus* are often present, although they may be under-recorded; it would seem likely that robust infaunal bivalves such as *Circomphalus casina, Mya truncata, Dosinia exoleta* and other venerid bivalves are more widespread than available data currently suggests. It seems likely that stable wave-sheltered maerl beds with low currents may be separable from SMP.Pcal; having a generally thinner layer of maerl overlying a sandy /muddy substratum with a diverse cover of epiphytes (e.g. Bosence 1976; Blunden *et al.* 1977; 1981; Davies & Hall-Spencer 1996) but insufficient data currently exists on a national scale. Wave and current-exposed maerl beds, where thicker depths of maerl accumulate, frequently occur as waves and ridge / furrows arrangements (see Bosence 1976; Blunden *et al.* 1977; 1981; Irvine & Chamberlain 1994; Hall-Spencer 1995). At some sites where Pcal occurs, there may be significant patches of maerl gravel containing the rare burrowing anemone *Halcampoides elongatus*; this may be a separate biotope, but insufficient data exists at present. Northern maerl beds in the UK do not appear to contain *L. corallioides* but in south-west England and Ireland *L. corallioides* may occur to some extent in Pcal as well as Lcor, where it dominates.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMP.Pcal.R	Pcal.R is a shallower subtype with red seaweeds
SMP.Pcal.Nmix	Pcal.Nmix is a deeper subtype with notably less epiphytic seaweeds

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
PORIFERA	••	Present	1	
Porifera indet crusts	••	Frequent	1	
Obelia dichotoma	••	Common	2	
NEMERTEA	•••••	Present	2	30
NEMATODA	•••••	Common	9	1303
Harmothoe impar	••••	Common	1	73
Kefersteinia cirrata	•••••	Super-abundant	4	270
Eurysyllis tuberculata	••••	Common	1	75
Trypanosyllis coeliaca	••••	Frequent	1	55
Sphaerosyllis taylori	••••	Frequent	2	150
Aonides paucibranchiata	••••	Present	1	15
Mediomastus fragilis	•••••	Frequent	4	325
Polycirrus	•••••	Common	3	53
Chone duneri	•••••	Common	5	313
Grania	•••••	Abundant	6	428
Parametaphoxus fultoni	•••••	Common	7	595
Socarnes erythrophthalmus	••••	Abundant	4	1055
Austrosyrrhoe fimbriatus	•••	Common	1	105
Ceradocus semiserratus	••••	Common	3	280
Gammaropsis cornuta	•••••	Frequent	2	98
Leptocheirus hirsutimanus	••••	Frequent	2	168
Leptocheirus pectinatus	••••	Abundant	3	1178
Cymodoce truncata	•••••	Present	2	100
Vauntompsonia cristata	•••••	Present	2	98
Cumella pygmaea	••••	Common	3	188
Nannastacus unguiculatus	••••	Common	2	113
Liocarcinus depurator	••	Occasional	2	
Gibbula cineraria	••	Occasional	3	
Dikoleps pusilla	••••	Abundant	2	138
Onoba aculeus	••••	Super-abundant	3	408
Crisia	••	Present	1	
Alcyonidium diaphanum	••	Occasional	2	
Escharoides coccinea	••	Present	5	
Microporella ciliata	••	Present	1	
Cellepora pumicosa	••	Occasional	2	
Scrupocellaria reptans	••	Present	1	
Asterias rubens	•••	Occasional	7	
Amphipholis squamata	••••	Super-abundant	4	510
Clavelina lepadiformis	••	Occasional	2	
Didemnidae	••	Rare	2	
Callionymus lyra	••	Frequent	4	
Hildenbrandia rubra	••	Present	2	
Corallinaceae	••	Present	5	
Corallina officinalis	••	Present	3	
Lithothamnion glaciale	••	Present	1	
Phymatolithon calcareum	•••••	Present	36	
Laminaria saccharina	••	Occasional	1	

SS.SMPMrl.Pcal.R *Phymatolithon calcareum* maerl beds with red seaweeds in shallow infralittoral clean gravel or coarse sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Maerl gravel; coarse sand
Zone:	Infralittoral, Infralittoral - upper
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

IGS.Phy.R	97.06

Biotope description

Upper infralittoral maerl beds characterised by *Phymatolithon calcareum* in gravels and sand with a wide variety of associated red seaweeds. These algae typically include *Dictyota dichotoma*, *Plocamium cartilagineum*, *Phycodrys rubens*, *Chondrus crispus*, *Halarachnion ligulatum*, *Chylocladia verticillata*, *Hypoglossum hypoglossoides* and *Nitophyllum punctum*. These species are not restricted to maerl beds but their abundance on maerl beds differentiates this biotope from Pcal.Nmix. Anthozoans and echinoderms are much less common in this biotope than in Pcal.Nmix, which typically occurs deeper than Pcal.R.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMP.Pcal.Nmix	Pcal.R is similar but shallower with more red seaweeds

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Cerianthus lloydii	●●●	Frequent	2	
Chaetopterus variopedatus	●●●	Occasional	1	
Lanice conchilega	●●	Occasional	1	
Pomatoceros triqueter	●●●	Occasional	2	
Pagurus bernhardus	●●●●	Frequent	5	
Liocarcinus depurator	●●●	Occasional	2	
Gibbula cineraria	●●●	Occasional	3	
Asterias rubens	●●●●●	Occasional	6	
Echinus esculentus	●●●	Occasional	1	
Bonnemaisonia asparagoides	●●	Occasional	1	
Trailliella intricata	●●	Frequent	1	
Phymatolithon calcareum	●●●●●	Abundant	16	
Plocamium cartilagineum	●●●●	Frequent	3	
Cystoclonium purpureum	●●	Occasional	1	
Lomentaria clavellosa	●●●	Occasional	1	
Nitophyllum punctatum	●●●	Occasional	2	
Phycodrys rubens	●●●	Occasional	2	
Brongniartella byssoides	●●●	Occasional	2	
Dictyota dichotoma	●●●●	Occasional	4	
Desmarestia aculeata	●●●	Occasional	2	
Desmarestia viridis	●●●	Occasional	2	
Chorda filum	●●	Frequent	1	
Laminaria saccharina	●●●●	Frequent	6	
Ulva	●●●	Occasional	2	

SS.SMPMrl.Pcal.Nmix *Phymatolithon calcareum* maerl beds with *Neopentadactyla mixta* and other echinoderms in deeper infralittoral clean gravel or coarse sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed, Sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Maerl gravel; coarse sand
Zone:	Infralittoral - lower, Circalittoral - upper
Depth band:	5-10 m, 10-20 m, 20-30 m

Previous code

IGS.Phy.HEc	97.06

Biotope description

Lower infralittoral maerl beds characterised by *Phymatolithon calcareum* in gravels and sand with a variety of associated echinoderms. The echinoderm *Neopentadactyla mixta* is frequently observed in this biotope. Other echinoderms such as *Echinus esculentus*, *Ophiura albida* and rarely *Luidia ciliaris* may also be present. Red seaweed such as *Plocamium cartilagineum* may be present but at a much lower abundance than in Pcal.R and with fewer species present. Other, more ubiquitous echinoderms such as *Asterias rubens* may also be found in low numbers throughout Pcal biotopes.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMP.Pcal.R	Pcal.R occurs shallower than Pcal.Nmix with a greater abundance and diversity of red seaweeds.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Cerianthus lloydii	●●●	Occasional	3	
Chaetopterus variopedatus	●●●	Occasional	2	
Lanice conchilega	●●●	Occasional	3	
Pomatoceros triqueter	●●●	Occasional	2	
Pagurus bernhardus	●●●●	Occasional	10	
Liocarcinus depurator	●●●	Occasional	3	
Tectura virginea	●●	Occasional	1	
Gibbula magus	●●●	Occasional	2	
Pecten maximus	●●●	Occasional	3	
Ensis	●●	Frequent	2	
Luidia ciliaris	●●	Rare	1	
Asterias rubens	●●●●●	Occasional	8	
Ophiura albida	●●	Occasional	1	
Echinus esculentus	●●●	Occasional	4	
Neopentadactyla mixta	●●●	Frequent	4	
Pomatoschistus	●●	Occasional	1	
Phymatolithon calcareum	●●●●	Common	20	
Plocamium cartilagineum	●●●	Occasional	2	
Desmarestia viridis	●●	Occasional	1	
Laminaria saccharina	●●●	Occasional	3	

SS.SMPMrl.Lgla *Lithothamnion glaciale* maerl beds in tide-swept variable salinity infralittoral gravel

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Strong, Moderately strong, Weak
Substratum:	Maerl; shell gravel; stones and coarse sediment
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m

Previous code

IGS.Lgla	97.06

Biotope description

Upper infralittoral tide-swept channels of coarse sediment in full or variable salinity conditions support distinctive beds of *Lithothamnion glaciale* maerl 'rhodoliths'. *Phymatolithon calcareum* may also be present as a more minor maerl component. Associated fauna and flora may include species found in other types of maerl beds (and elsewhere), e.g. *Pomatoceros triqueter*, *Cerianthus lloydii*, *Sabella pavonina*, *Chaetopterus variopedatus*, *Lanice conchilega*, *Mya truncata*, *Plocamium cartilagineum* and *Phycodrys rubens*. Lgla, however, also has a fauna that reflects the slightly reduced salinity conditions, e.g. *Psammechinus miliaris* is often present in high numbers along with other grazers such as chitons and *Tectura* spp. *Hyas araneus*, *Ophiothrix fragilis*, *Ophiocomina nigra* and the brown seaweed *Dictyota dichotoma* are also typically present at sites. In Scottish lagoons this biotope may show considerable variation but the community falls within the broad description defined here.

Situation

This biotope can often be found at the upper end of Scottish sealochs where the variable salinity of the habitat may not be immediately obvious.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Cerianthus lloydii	••	Frequent	1	
Pomatoceros triqueter	••	Frequent	2	
Pagurus bernhardus	••	Frequent	2	
Carcinus maenas	•••	Occasional	3	
Gibbula cineraria	••	Occasional	1	
Buccinum undatum	••	Occasional	1	
Ostrea edulis	•	Frequent	1	
Asterias rubens	•••••	Occasional	11	
Ophiothrix fragilis	••••	Frequent	12	
Ophiocomina nigra	••••	Abundant	12	
Psammechinus miliaris	••	Frequent	3	
Echinus esculentus	•••	Occasional	1	
Trailliella intricata	••	Frequent	1	
Corallina officinalis	•••	Occasional	3	
Lithothamnion glaciale	••••	Abundant	16	
Phymatolithon calcareum	•	Abundant	2	
Chondrus crispus	•••	Occasional	2	
Dictyota dichotoma	•••	Frequent	6	
Chorda filum	••	Frequent	1	
Laminaria saccharina	••	Occasional	1	

SS.SMPMrl.Lcor *Lithothamnion corallioides* maerl beds on infralittoral muddy gravel

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Sheltered, Very sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Muddy maerl gravel
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

IMX.Lcor	97.06

Biotope description

Live maerl beds in sheltered, silty conditions which are dominated by *Lithothamnion corallioides* with a variety of foliose and filamentous seaweeds. Live maerl is at least common but there may be noticeable amounts of dead maerl gravel and pebbles. Other species of maerl, such as *Phymatolithon calcareum* and *Phymatolithon purpureum*, may also occur as a less abundant component. Species of seaweed such as *Dictyota dichotoma*, *Halarachnion ligulatum.* and *Ulva* spp. are often present, although are not restricted to this biotope, whereas *Dudresnaya verticillata* tends not to occur on other types of maerl beds. The anemones *Anemonia viridis* and *Cerianthus lloydii*, the polychaetes *Notomastus latericeus* and *Caulleriella alata*, the isopod *Janira maculosa* and the bivalve *Hiatella arctica* are typically found in SMP.Lcor where as *Echinus esculentus* tends to occur more in other types of maerl. The seaweeds *Laminaria saccharina* and *Chorda filum* may also be present in some habitats. Lcor has a south-western distribution in Britain and Ireland. Sheltered, stable, fully saline maerl beds in the north of Great Britain (where *L. corallioides* has not been confirmed to occur) may need to be described as an analogous biotope to Lcor (see Pcal).

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMP.Pcal.R	Pcal.R occurs in less stable environments

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Cerianthus lloydii	●●●	Frequent	4	
Anemonia viridis	●●●	Occasional	4	
NEMATODA	●●●●●	Present	11	
Pisione remota	●●	Present	2	
Harmothoe impar	●●●●	Present	2	
Pholoe inornata	●●	Present	2	
Glycera lapidum	●●●●	Present	5	
Kefersteinia cirrata	●●●●	Present	5	
Sphaerosyllis bulbosa	●●●●	Present	5	
Lumbrineris gracilis	●●●●	Present	5	
Protodorvillea kefersteini	●●●●	Present	2	
Aonides paucibranchiata	●●●●	Present	2	
Caulleriella alata	●●●●	Present	6	
Mediomastus fragilis	●●●●●	Present	12	
Notomastus latericeus	●●●●●	Present	6	
Terebellidae	●●●	Occasional	2	
Lanice conchilega	●●●	Occasional	1	
Pista cristata	●●●●	Present	2	
Nannonyx goesii	●●●●	Present	2	
Microdeutopus versiculatus	●●●●	Present	2	
Caprella acanthifera	●●●●	Present	2	
Janira maculosa	●●●●●	Present	6	
Pagurus bernhardus	●●●	Occasional	3	
Liocarcinus corrugatus	●●	Occasional	1	
Liocarcinus depurator	●●●	Occasional	3	
POLYPLACOPHORA	●●●●	Present	5	
Gibbula magus	●●●	Occasional	3	
Pecten maximus	●●	Occasional	1	
Mysella bidentata	●●●●	Present	2	
Parvicardium scabrum	●●●●	Present	2	
Gari tellinella	●●●●	Present	5	
Hiatella arctica	●●●●●	Present	6	
Asterias rubens	●●●●	Frequent	6	
Marthasterias glacialis	●●●	Occasional	3	
Amphipholis squamata	●●●●	Present	3	
Dudresnaya verticillata	●●●	Frequent	3	
Lithothamnion corallioides	●●●●●	Abundant	28	
Phymatolithon calcareum	●●	Common	2	
Halarachnion ligulatum	●●●	Frequent	4	
Dictyota dichotoma	●●●	Common	5	
Chorda filum	●●●	Frequent	3	
Laminaria saccharina	●●	Occasional	2	
Ulva	●●●	Frequent	2	

SS.SMPMrl.Lfas *Lithophyllum fasciculatum* maerl beds on infralittoral mud

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Sheltered
Tidal streams:	Weak, Very weak
Substratum:	Mud and muddy gravel with shell
Zone:	Infralittoral
Depth band:	0-5 m

Previous code

IMX.Lfas	97.06

Biotope description

Shallow, sheltered infralittoral muddy plains with *Lithophyllum fasciculatum* maerl. This rarely recorded maerl species forms flattened masses or balls several centimetres in diameter (Irvine & Chamberlain 1994). Lfas may be found on mud and muddy gravel mixed with shell. Species of anemone typical of sheltered conditions may be found in association, for example, *Anthopleura ballii*, *Cereus pedunculatus* and *Sagartiogeton undatus*. Polychaetes such as *Myxicola infundibulum* and terebellids, also characteristic of sheltered conditions, may be present as may hydroids such as *Kirchenpaueria pinnata*. Occasional *Chlamys varia* and *Thyone fuscus* are present in all records of this biotope and red seaweeds such as *Plocamium cartilagineum*, *Calliblepharis jubata* and *Chylocladia verticillata* are often present.

Similar biotopes

SMP.Lcor	Similar habitat with different dominant maerl species

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Suberites ficus	••••	Rare	2	
Hydractinia echinata	••••	Present	2	
Kirchenpaueria pinnata	••••	Occasional	3	
Anthopleura ballii	••••	Occasional	3	
Cereus pedunculatus	••••	Occasional	3	
Sagartiogeton undatus	••••	Occasional	3	
Terebellidae	•••••	Frequent	8	
Myxicola infundibulum	••••	Frequent	5	
Pagurus bernhardus	••••	Occasional	3	
Macropodia rostrata	••••	Rare	2	
Cancer pagurus	••••	Rare	2	
Liocarcinus depurator	••••	Occasional	3	
Carcinus maenas	•••••	Occasional	9	
Chlamys varia	•••••	Occasional	9	
Asterias rubens	••••	Occasional	3	
Ophiothrix fragilis	••••	Present	2	
Thyone fusus	•••••	Occasional	9	
Pomatoschistus pictus	••••	Occasional	3	
Lithophyllum fasciculatum	•••••	Common	18	
Plocamium cartilagineum	••••	Occasional	3	
Calliblepharis jubata	••••	Present	2	
Chylocladia verticillata	••••	Present	2	
Lomentaria clavellosa	••••	Present	2	
Spyridia filamentosa	••••	Present	2	

SS.SMP.KSwSS Kelp and seaweed communities on sublittoral sediment

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Mixed sediment (with stones and shells)
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

IMX.KSwMx	97.06

Biotope description

Shallow sublittoral sediments which support seaweed communities, typically including the kelp *Laminaria saccharina*, the bootlace weed *Chorda filum* and various red and brown seaweeds, particularly filamentous types. The generally sheltered nature of these habitats enables the seaweeds to grow on shells and small stones which lie on the sediment surface; some communities develop as loose-lying mats on the sediment surface.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Hydractinia echinata	••	Occasional		
Cerianthus lloydii	••	Occasional		
NEMERTEA	••	Abundant	1	45
NEMATODA	••	Frequent	11	8585
Anaitides mucosa	••	Present	2	30
Hediste diversicolor	•	Present	2	52
Nephtys hombergii	•	Present	2	25
Scoloplos armiger	••	Super-abundant	2	239
Pygospio elegans	••	Present	2	28
Chaetopterus variopedatus	••	Occasional		
Chaetozone setosa	••	Abundant	3	64
Capitella capitata	••	Common	5	192
Mediomastus fragilis	•••	Common	9	1154
Notomastus latericeus	••	Present	2	180
Arenicola marina	••	Occasional		
Terebellidae	••	Occasional		
Lanice conchilega	••	Occasional		
Pomatoceros triqueter	••	Occasional		
Heterochaeta costata	•	Abundant	4	52
Tubificoides benedii	••	Abundant	11	1380
Balanus crenatus	••	Occasional		
Urothoe elegans	••	Present	1	25
Ampelisca brevicornis	•••	Present	7	108
Corophium volutator	••	Super-abundant	13	177
Pagurus bernhardus	•••	Occasional		

Cancer pagurus	••	Rare		
Liocarcinus depurator	•••	Occasional		
Carcinus maenas	••	Occasional		
Gibbula magus	••	Occasional		
Gibbula cineraria	••	Occasional		
Buccinum undatum	••	Occasional		
Pecten maximus	••	Occasional		
Lucinoma borealis	••	Present	2	20
Mysella bidentata	••	Abundant	7	587
Abra alba	••	Present	3	46
Mya arenaria	••	Super-abundant	2	74
Asterias rubens	•••	Occasional		
Ophiura albida	•	Occasional		
Echinus esculentus	••	Occasional		
Ascidiella aspersa	••	Occasional		
Pomatoschistus minutus	••	Occasional		
Bonnemaisonia asparagoides	••	Occasional		
Trailliella intricata	••	Frequent		
Corallinaceae	••	Occasional		
Gracilaria gracilis	••	Frequent		
Phyllophora crispa	••	Occasional		
Polyides rotundus	•	Occasional		
Plocamium cartilagineum	••	Occasional		
Halarachnion ligulatum	••	Occasional		
Rhodophyllis divaricata	••	Occasional		
Lomentaria clavellosa	••	Occasional		
Pterothamnion plumula	••	Occasional		
Delesseria sanguinea	•	Occasional		
Phycodrys rubens	••	Occasional		
Brongniartella byssoides	••	Occasional		
Polysiphonia elongata	••	Occasional		
Dictyota dichotoma	••	Occasional		
Desmarestia aculeata	••	Occasional		
Desmarestia viridis	••	Occasional		
Chorda filum	•••	Occasional		
Laminaria saccharina	••••	Frequent		
Ulva	••	Occasional		

SMP.LsacR *Laminaria saccharina* and red seaweeds on infralittoral sediments

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Mixed muddy sand with gravel, pebbles and cobbles
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

Part of IMX.LsacX	97.06
MIR.EphR	97.06

Biotope description

On infralittoral mixed muddy substrata communities characterised by the kelp *Laminaria saccharina* and mixed filamentous and foliose red algae can be found. This biotope contains a number of sub-biotopes distinguished by the degree of either wave or tidal exposure. In moderately strong tidal streams in exposed areas *Laminaria* is sparse and dense stands of red seaweeds are found attached to the boulders and cobbles that make up a large proportion of the sediment (LsacR.CbPb). As the degree of wave and/or tidal exposure decreases there is a change in community structure, with the density of *Laminaria* and the diversity of red algal species increasing (LsacR.Gv). As the environment becomes more stable a number of brown algal species are able to inhabit this environment and a rich infauna develops (LsacR.Sa). In the most sheltered examples of this biotope a diverse muddy sediment infauna can be found and the *'Trailliella'* phase of *Bonnemaisonia hamifera* may develop (LsacR.Mu).

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Cerianthus lloydii	●●●	Occasional	2	
Chaetopterus variopedatus	●●	Occasional	1	
Terebellidae	●●	Occasional	2	
Lanice conchilega	●●	Occasional	2	
Pomatoceros triqueter	●●●	Occasional	2	
Pagurus bernhardus	●●●●	Occasional	6	
Liocarcinus depurator	●●●	Occasional	3	
Gibbula magus	●●	Occasional	1	
Gibbula cineraria	●●●	Occasional	2	
Asterias rubens	●●●●	Occasional	7	
Echinus esculentus	●●●	Occasional	2	
Bonnemaisonia asparagoides	●●	Occasional	2	
Corallinaceae	●●●	Occasional	2	
Plocamium cartilagineum	●●●	Occasional	4	
Halarachnion ligulatum	●●	Occasional	2	
Rhodophyllis divaricata	●●	Occasional	1	
Lomentaria clavellosa	●●	Occasional	1	
Pterothamnion plumula	●●	Occasional	1	
Delesseria sanguinea	●●	Occasional	1	
Phycodrys rubens	●●	Occasional	2	
Brongniartella byssoides	●●●	Occasional	2	
Polysiphonia elongata	●●	Occasional	2	
Dictyota dichotoma	●●	Occasional	2	
Desmarestia aculeata	●●	Occasional	2	
Desmarestia viridis	●●	Occasional	2	
Chorda filum	●●	Occasional	1	
Laminaria saccharina	●●●●	Occasional	7	
Ulva	●●	Occasional	2	

SS.SMP.KSwSS.LsacR.CbPb Red seaweeds and kelps on tide-swept mobile infralittoral cobbles and pebbles

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Extremely exposed, Exposed, Moderately exposed, Sheltered
Tidal streams:	Moderately strong, Weak
Substratum:	Small boulders, cobbles and pebbles with gravel
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m, 20-30 m
Other features:	Seasonally-disturbed substrata

Previous code

part of MIR.EphR	97.06

Biotope description

Shallow mixed substrata of cobbles and pebbles swept by moderately strong tidal streams in exposed areas, and characterised by dense stands of red seaweeds. Tide-swept infralittoral cobbles and pebbles which may be highly mobile, create an environment that is difficult for many algae to survive in. Foliose and filamentous seaweeds with an encrusting phase in their life history, or those that are able to withstand rolling of the substratum and scouring, can form dense turfs of seaweed in the more settled summer months. Characteristic red seaweeds include *Halarachnion ligulatum* which is able to survive attached to the pebbles and cobbles. Ephemeral algae grow rapidly in periods of relative stability. Other characteristic red seaweeds include *Plocamium cartilagineum*, *Hypoglossum hypoglossoides*, *Bonnemaisonia asparagoides* and *Brongniartella byssoides*. Coralline encrusting algae cover many of the cobbles and pebbles; some areas of cobbles may be quite barren, dominated only by encrusting coralline algae and brittlestars. Of the brown seaweeds scattered *Laminaria* spp. and *Desmarestia* spp. may be present on more stable large boulders or bedrock outcrops. *Chorda filum* and *Halidrys siliquosa* may be present in low abundance but where these seaweeds occur in greater abundance (typically >Frequent) refer to MIR.LsacChoR and MIR.HalXK respectively. Although the faunal component of this biotope is usually relatively sparse it can include a wide variety of species. Turfs of hydroids (*Nemertesia* spp., *Aglaophenia tubulifera*) and bryozoans (*Crisia* spp. and *Bugula* spp.) are the major components but sponges and anemones may also occur. Brittlestars, sea-urchins, hydroids and solitary ascidians are more prominent in the Scottish examples of this biotope, which tend to occur in deeper water, due in part to clearer waters.

Situation

Although not common, this biotope is widely distributed from Sussex to the shallow areas of the Sarns in Cardigan Bay, the west coast of Scotland and the north-east coast of Ireland. Despite the wide distribution, the red seaweed composition remains remarkably constant. In areas such as the Sarns, in Wales, where mixed substrata continue into the shallows, dense swathes of HIR.LsacChoR can be found. More stable but highly scoured areas adjacent to LsacR.CbPb can support the *Halidrys* biotope HIR.XKHal. Where bedrock or large boulders occur above the mixed substrata of LsacR.CbPb it may support a kelp forest or park (HIR.LhypR or MIR.Lhyp). At many sites the mixed substrata supporting the dense seaweed turf gives way to sediment of varying composition.

Temporal variation

This biotope will take on a much more depauperate appearance during the winter months, once the ephemeral seaweeds have died back in late summer/autumn. Storms can mobilise the loose pebbles and cobbles, removing all but the most resilient of seaweeds and animals. By summer, under more stable conditions, new growth will flourish and dense stands of seaweeds dominate the seabed.

Similar biotopes

SMP.LsacR.Gv	LsacR.Gv has a more dense covering of *L. saccharina* with less robust and some foliose red algal species present.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Urticina felina	••	Occasional	1	
Pomatoceros triqueter	•••	Occasional	2	
Balanus crenatus	••	Frequent	1	
Pagurus bernhardus	••	Occasional	1	
Gibbula cineraria	•••	Occasional	4	
Asterias rubens	•••	Occasional	4	
Ophiothrix fragilis	••	Occasional	1	
Clavelina lepadiformis	•••	Occasional	2	
Botryllus schlosseri	•••	Occasional	2	
Bonnemaisonia asparagoides	•••	Occasional	3	
Callophyllis laciniata	••	Occasional	2	
Corallinaceae	•••	Frequent	4	
Plocamium cartilagineum	•••	Occasional	4	
Halarachnion ligulatum	••••	Occasional	7	
Calliblepharis ciliata	••	Occasional	1	
Rhodophyllis divaricata	•••	Occasional	2	
Lomentaria orcadensis	••	Occasional	1	
Pterothamnion plumula	••	Occasional	1	
Cryptopleura ramosa	••	Occasional	2	
Delesseria sanguinea	••	Occasional	1	
Hypoglossum hypoglossoides	•••	Occasional	2	
Heterosiphonia plumosa	••	Occasional	1	
Brongniartella byssoides	••••	Occasional	5	
Rhodomela confervoides	••	Occasional	2	
Dictyota dichotoma	•••	Occasional	3	
Desmarestia aculeata	••	Occasional	1	
Laminaria saccharina	••	Occasional	1	

SS.SMP.KSwSS.LsacR.Gv *Laminaria saccharina* and robust red algae on infralittoral gravel and pebbles

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Gravel and coarse sand with some pebbles
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

part of MIR.EphR	97.06

Biotope description

Shallow kelp community found on gravel and gravelly sand in slightly less exposed areas than SMP.LsacR.CbPb but in moderately strong tidal currents, and characterised by occasional *Laminaria saccharina* with an undergrowth of robust red seaweeds. Characteristic red seaweeds, as with LsacR.CbPb, include *Plocamium cartilagineum*, *Halarachnion ligulatum* and *Brongniartella byssoides*; however the greater stability of this biotope allows a slightly more diverse range of red seaweeds to become established including *Polyides rotundus*, *Rhodophyllis divaricata*, *Delesseria sanguinea* and *Nitophyllum punctatum*. Coralline encrusting algae may be found covering the larger pebbles. *Laminaria hyperborea* may also be present within this biotope, although at low densities. Other brown algal species present include *Desmarestia* spp., *Dictyota dichotoma* and *Chorda filum*, all at low abundance. The ubiquitous green seaweed *Ulva* sp. may be found attached to larger pebbles.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMP.LsacR.CbPb	LsacR.CbPb has a less dense covering of *L. saccharina*, with a less diverse, more robust red algal community.
SMP.LsacR.Sa	Similar in species composition but differ in sediment characteristics and consequently infaunal species composition.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Cerianthus lloydii	••	Occasional	1	
Pomatoceros triqueter	••	Occasional	1	
Pagurus bernhardus	•••	Occasional	3	
Gibbula cineraria	••	Occasional	1	
Asterias rubens	•••	Occasional	4	
Bonnemaisonia asparagoides	•••	Occasional	2	
Trailliella intricata	••	Frequent	1	
Dilsea carnosa	•••	Occasional	1	
Callophyllis laciniata	••	Occasional	1	
Corallinaceae	•••	Occasional	3	
Gracilaria gracilis	••	Occasional	2	
Phyllophora crispa	••	Occasional	1	
Polyides rotundus	•••	Occasional	2	
Plocamium cartilagineum	••••	Occasional	5	
Halarachnion ligulatum	•••	Occasional	2	
Cystoclonium purpureum	••	Occasional	1	
Rhodophyllis divaricata	•••	Occasional	2	
Chylocladia verticillata	••	Occasional	1	
Lomentaria clavellosa	•••	Occasional	1	
Pterothamnion plumula	••	Occasional	1	
Cryptopleura ramosa	••	Occasional	1	
Delesseria sanguinea	•••	Occasional	3	
Hypoglossum hypoglossoides	••	Occasional	2	
Nitophyllum punctatum	•••	Occasional	2	
Phycodrys rubens	••	Occasional	1	
Brongniartella byssoides	•••	Occasional	2	
Polysiphonia elongata	••	Occasional	1	
Rhodomela confervoides	••	Occasional	1	
Dictyota dichotoma	•••	Occasional	3	
Desmarestia aculeata	•••	Occasional	2	
Desmarestia viridis	•••	Occasional	2	
Chorda filum	••	Occasional	2	
Laminaria hyperborea	•••	Occasional	2	
Laminaria saccharina	•••••	Occasional	10	
Ulva	••••	Occasional	5	

SS.SMP.KSwSS.LsacR.Sa *Laminaria saccharina* and filamentous red algae on infralittoral sand

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Sand with some gravel
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

part of IMX.LsacX	97.06

Biotope description

Shallow kelp community found on sand and slightly gravelly sand, in moderately exposed and sheltered conditions, with weak tidal currents. The community is characterised by occasional *Laminaria saccharina* with an undergrowth of red algae. Characteristic red seaweeds, as with LsacR.Gv, include *Plocamium cartilagineum*, *Polyides rotundus*, *Polysiphonia elongate* and *Lomentaria clavellosa*. Coralline encrusting algae is much less important in this biotope as a result of a lack of suitable substrate. Brown algal species present, as with other LsacR biotopes, include *Desmarestia* spp., *Dictyota dichotoma* and *Chorda filum*, all at low abundance. The ubiquitous green seaweed *Ulva* sp. may also be present. The sandy substrate is home to a variety of typical sand dwelling infauna including polychaetes (*Scoloplos armiger*, *Exogone hebes*, and *Aricidea minuta*), amphipods (*Ampelisca brevicornis*), and bivalves (*Lucinoma borealis* and *Abra alba*). *Arenicola* worm casts and *Lanice* worm tubes may be visible at the sediment surface.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMP.LsacR.Gv	Similar in species composition, but differ in sediment characteristics and therefore infaunal species composition.
SMP.LsacR.Mu	Similar in species composition, but differ in sediment characteristics and therefore in infaunal species composition.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Cerianthus lloydii	●●●	Occasional	2	
NEMERTEA	●●●●	Present	4	50
Exogone hebes	●●●●	Frequent	7	35
Scoloplos armiger	●●●●	Present	10	129
Aricidea minuta	●●●●	Present	6	40
Spiophanes bombyx	●●●●	Present	4	146
Chaetopterus variopedatus	●●●	Occasional	2	
Arenicola marina	●●●	Frequent	4	
Terebellidae	●●	Occasional	1	
Lanice conchilega	●●●	Occasional	3	
Pomatoceros triqueter	●●●	Occasional	2	
Urothoe elegans	●●●●	Present	4	15
Ampelisca brevicornis	●●●●●	Present	19	27
Pariambus typicus	●●●●	Present	4	10
Pagurus bernhardus	●●●●●	Frequent	8	
Cancer pagurus	●●●	Rare	1	
Liocarcinus depurator	●●●●	Occasional	5	
Gibbula magus	●●●	Occasional	2	
Gibbula cineraria	●●	Occasional	1	
Pecten maximus	●●	Occasional	1	
Lucinoma borealis	●●●●	Present	10	33
Ensis	●●	Frequent	2	
Ensis arcuatus	●●	Common	1	
Abra alba	●●●●	Present	10	18
Thracia villosiuscula	●●●●	Present	4	25
Cochlodesma praetenue	●●●●	Present	4	20
Asterias rubens	●●●●●	Occasional	7	
Echinus esculentus	●●●	Occasional	2	
Echinocardium cordatum	●●●●	Present	8	13
Pomatoschistus minutus	●●	Occasional	2	
Polyides rotundus	●●●	Occasional	2	
Plocamium cartilagineum	●●●	Occasional	2	
Lomentaria clavellosa	●●●	Occasional	2	
Ceramium	●●	Frequent	1	
Pterothamnion plumula	●●	Frequent	1	
Polysiphonia elongata	●●●	Occasional	3	
Desmarestia aculeata	●●	Occasional	1	
Desmarestia viridis	●●●	Occasional	2	
Chorda filum	●●●	Occasional	2	
Laminaria saccharina	●●●●●	Occasional	9	
Ulva	●●●	Occasional	2	

SS.SMP.KSwSS.LsacR.Mu *Laminaria saccharina* with red and brown seaweeds on lower infralittoral muddy mixed sediment

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Muddy gravelly mixed sediment
Zone:	Infralittoral, Infralittoral - lower
Depth band:	5-10 m, 10-20 m

Previous code

part of IMX.LsacX	97.06

Biotope description

Slightly deeper kelp community in the lower infralittoral, found on sandy gravelly mud, in sheltered and very sheltered conditions, with very weak tidal currents. The community is characterised by occasional *Laminaria saccharina* with an undergrowth of red and brown algae. Characteristic red seaweeds, as with other LsacR biotopes include *Plocamium cartilagineum* and *Phycodrys rubens*. However, the sheltered conditions of this biotope allow the '*Trailliella*' phase of *Bonnemaisonia hamifera* to develop (although not to the extent of forming distinct mats as in SMP.Tra), and the related species *Bonnemaisonia asparagoides*. Brown algal species present, as with other LsacR biotopes, include *Desmarestia* spp at low abundance. The ubiquitous green seaweed *Ulva* sp. may also be present. The muddy substrate is home to a variety of typical mud dwelling fauna including the burrowing anemone *Cerianthus lloydii*. The gravelly component of this biotope provides a substrate for encrusting species such as the polychaete *Pomatoceros triqueter* and coralline encrusting algae.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMP.LsacR.Sa	Similar species composition, however the two differ in their sediment characteristics and therefore in their infaunal communities.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Cerianthus lloydii	••••	Occasional	5	
Terebellidae	•••	Occasional	4	
Lanice conchilega	•••	Occasional	2	
Pomatoceros triqueter	•••	Occasional	2	
Pagurus bernhardus	••••	Occasional	8	
Liocarcinus depurator	••••	Occasional	5	
Gibbula magus	•••	Occasional	2	
Gibbula cineraria	•••	Occasional	2	
Pecten maximus	•••	Occasional	2	
Asterias rubens	••••	Occasional	7	
Ophiura albida	•••	Occasional	2	
Echinus esculentus	•••	Occasional	3	
Pomatoschistus minutus	••	Occasional	1	
Bonnemaisonia asparagoides	•••	Frequent	2	
Trailliella intricata	••	Occasional	2	
Corallinaceae	••	Occasional	1	
Plocamium cartilagineum	•••	Occasional	2	
Delesseria sanguinea	••	Occasional	1	
Phycodrys rubens	•••	Occasional	3	
Brongniartella byssoides	••	Frequent	1	
Desmarestia aculeata	••	Occasional	1	
Desmarestia viridis	•••	Occasional	2	
Laminaria saccharina	•••••	Occasional	8	
Ulva	••	Occasional	1	

SS.SMP.KSwSS.LsacCho *Laminaria saccharina* and *Chorda filum* on sheltered upper infralittoral muddy sediment

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Weak, Very weak
Substratum:	Sandy mud and gravel
Zone:	Sublittoral fringe, Infralittoral - upper
Depth band:	0-5 m, 5-10 m

Previous code

part of IMX.LsacX 97.06

Biotope description

Shallow kelp community found on sandy mud and gravelly sandy mud, in sheltered or extremely sheltered conditions, with very weak tidal currents. The community is characterised by a reasonable covering of *Laminaria saccharina* and *Chorda filum*. Beneath the kelp canopy, *Ulva lactuca* is often frequent and some filamentous and foliose red algae may be present, along with filamentous brown ectocarpoid algae although in much lower abundance than in the LsacR biotopes. At the sediment surface ubiquitous fauna such as *Asterias rubens*, crabs such as *Pagurus bernhardus*, *Carcinus maenas*, and the gastropod *Gibbula cineraria* may be visable and in some areas *Sabella pavonina* may be present. Given the nature of the sediment it is likely that a wide range of infaunal bivalves and polychaetes are present including *Arenicola marina*, *Mediomastus fragilis* and *Anaitides mucosa*. In more tideswept areas with coarser and generally less muddy sediments SMP.LsacCho may be replaced by one of the sub biotopes of SMP.LsacR.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*	
Hydractinia echinata	●●●	Occasional	3		
Anaitides mucosa	●●●●●	Present	50		100
Mediomastus fragilis	●●●●●	Present	50		100
Arenicola marina	●●●	Frequent	5		
Balanus crenatus	●●	Occasional	1		
Pagurus bernhardus	●●●	Occasional	5		
Liocarcinus depurator	●●	Occasional	2		
Carcinus maenas	●●●●	Occasional	9		
Gibbula cineraria	●●	Occasional	2		
Buccinum undatum	●●	Occasional	2		
Asterias rubens	●●●	Occasional	4		
Ascidiella aspersa	●●	Frequent	2		
Polyides rotundus	●●	Occasional	2		
Chorda filum	●●●●●	Frequent	18		
Laminaria saccharina	●●●●●	Frequent	23		
Enteromorpha	●●	Occasional	1		
Ulva	●●	Occasional	3		

SS.SMP.KSwSS.LsacMxVS *Laminaria saccharina* with *Psammechinus miliaris* and/or *Modiolus modiolus* on variable salinity infralittoral mixed sediment

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Stoney mixed sediment
Zone:	Sublittoral fringe, Infralittoral
Depth band:	0-5 m, 5-10 m

Previous code

None

Biotope description

Shallow kelp community found on stoney mixed sediment, in full or variable salinity, in sheltered or moderately exposed conditions, with weak or very weak tidal currents. The community is characterised by a dense covering of *Laminaria saccharina*. Beneath the kelp canopy, frequent *Psammechinus miliaris* may be found grazing the algal turf and scattered *Modiolus modiolus* are characteristic of this biotope. Encrusting the suface of stones and pebbles are *Pomatoceros triqueter* and in the sediment between the stones, the burrowing anemone *Cerianthus lloydii* may also be present. Small patches of *Lithothamnion glaciale* may be found in this biotope, although these patches do not form distict beds as in SBR.Lgla. In addition, a more ubiquitous fauna such as *Asterias rubens* and *Pagurus bernhardus* are also present. This biotope is generally found in sealochs.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Cerianthus lloydii	●●●	Common	5	
Metridium senile	●●	Occasional	2	
Pomatoceros triqueter	●●●●	Frequent	8	
Pagurus bernhardus	●●●●	Occasional	9	
Carcinus maenas	●●●	Occasional	2	
Buccinum undatum	●●●	Occasional	3	
Modiolus modiolus	●●●●	Occasional	5	
Mya truncata	●●	Occasional	1	
Asterias rubens	●●●●	Occasional	8	
Psammechinus miliaris	●●●●	Frequent	10	
Gobiusculus flavescens	●●	Common	2	
Corallinaceae	●●●	Frequent	3	
Lithothamnion glaciale	●●●	Frequent	3	
Phycodrys rubens	●●●	Frequent	3	
Polysiphonia elongata	●●	Occasional	1	
Chorda filum	●●●	Occasional	2	
Laminaria saccharina	●●●●●	Common	20	

SS.SMP.KSwSS.LsacGraFS *Laminaria saccharina, Gracilaria gracilis* and brown seaweeds on full salinity infralittoral sediment

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Moderately strong, Weak
Substratum:	Muddy sand and pebbles
Zone:	Sublittoral fringe, Infralittoral - upper
Depth band:	0-5 m, 5-10 m

Previous code

None

Biotope description

Shallow kelp community found on muddy sand, in moderately exposed or sheltered, fully marine conditions, with weak tidal currents. The community is characterised by a reasonable covering of *Laminaria saccharina*. Frequent *Chorda filum* may also form part of the canopy although not at the abundance in LsacCho. Beneath the canopy the community is characterised by the red algae *Gracilaria gracilis*, and various brown algal species particularly *Dictyota dichotoma*. Other members of the understory may include a variety of other filamentous and foliose red algae in particular *Ceramium nodulosum* and the green alga *Ulva*. The muddy sand substrate supports a variety of faunal species including polychaetes (*Lanice conchilega*) and gastropods (*Hinia reticulata*).

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMP.LsacGraVS	LsacGraVS has a more sparse covering of *L. saccharina*, and a greater number of sponges and ascidians.
SMP.LsacCho	*Chorda filum* is much more prominant in LsacCho than in the present biotope.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Cerianthus lloydii	••	Occasional	1	
Lanice conchilega	•••	Frequent	4	
Pagurus bernhardus	••	Occasional	1	
Carcinus maenas	•••	Frequent	4	
Hinia reticulata	•••	Occasional	2	
Dudresnaya verticillata	••	Occasional	1	
Corallinaceae	••	Occasional	1	
Gracilaria gracilis	•••••	Frequent	15	
Polyides rotundus	••	Occasional	2	
Halarachnion ligulatum	••	Occasional	1	
Rhodophyllis divaricata	••	Occasional	2	
Ceramium nodulosum	•••	Frequent	3	
Dictyota dichotoma	•••	Occasional	3	
Chorda filum	•••	Frequent	6	
Laminaria saccharina	•••••	Frequent	11	
Ulva	••••	Frequent	8	

SS.SMP.KSwSS.LsacGraVS *Laminaria saccharina* and *Gracilaria gracilis* with sponges and ascidians on variable salinity infralittoral sediment

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Moderately strong, Weak
Substratum:	Stoney sediment
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m

Previous code

None

Biotope description

Shallow kelp community found on stony sediment, in extremely sheltered, variable salinity conditions, with moderately strong tidal currents. The community is characterised by a more sparse covering of *Laminaria saccharina*, particularly when compared to the fully marine version of this sub biotope (SMP.LsacGraFS). Beneath the canopy the community is characterised by the red algae *Gracilaria gracilis*, and a variety of faunal species in particular sponges (*Suberites ficus* and *Halichondria panacea*) and ascidians (*Ascidiella aspersa* and *Dendrodoa grossularia*). The stony substrate provides a surface for attachment for these and many other filter and suspension feeding species, particularly barnacles (*Balanus crenatus*), hydroids (*Urticina feline* and *Hydractinia echinata*) and anemones. Other members of the understory may include a variety of filamentous and foliose red algae in particular *Pterothamnion plumula*, and the green alga *Ulva*.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Suberites ficus	●●●	Rare	3	
Halichondria panicea	●●●	Occasional	2	
Hydractinia echinata	●●	Occasional	1	
Urticina felina	●●	Frequent	2	
Cereus pedunculatus	●●●	Frequent	5	
Terebellidae	●●	Frequent	2	
Lanice conchilega	●●●	Occasional	2	
Pomatoceros	●●●	Occasional	2	
Balanus crenatus	●●●●	Frequent	7	
Pagurus	●●	Frequent	2	
Carcinus maenas	●●●●	Occasional	8	
Gibbula cineraria	●●●	Occasional	2	
Crepidula fornicata	●●●	Rare	2	
Asterias rubens	●●	Occasional	1	
Ascidiella aspersa	●●	Frequent	2	
Dendrodoa grossularia	●●●	Frequent	5	
Gracilaria gracilis	●●●	Frequent	5	
Antithamnionella spirographidis	●●	Occasional	1	
Griffithsia corallinoides	●●	Frequent	1	
Pterothamnion plumula	●●●	Frequent	3	
Laminaria saccharina	●●●	Occasional	4	
Ulva	●●●●	Occasional	5	

SS.SMP.KSwSS.Tra Mats of *Trailliella* on infralittoral muddy gravel

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Weak, Very weak
Substratum:	Muddy gravel; muddy sand
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

IMX.Tra	97.06

Biotope description

Dense loose-lying beds of the '*Trailliella*' phase of *Bonnemaisonia hamifera* may occur in extremely sheltered shallow muddy environments. Beds of this alga are often 10 cm thick but may reach 100 cm at some sites. Other loose-lying algae may also occur such as *Audouinella floridula*, *Phyllophora crispa* and species of *Derbesia*. Often the mud is gravelly or with some cobbles and may be black and anoxic close to the sediment surface. This biotope is widely distributed in lagoons, sealochs and voes but should only be described as SMP.Tra when a continuous mat is found. It is likely that the infaunal component of this biotope may be considerably modified by the overwhelming quantity of loose-lying algae.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Cerianthus lloydii	••	Occasional	1	
Protodorvillea kefersteini	•••••	Present	3	350
Capitella capitata	•••••	Common	5	800
Mediomastus fragilis	•••••	Common	6	5600
Arenicola marina	••	Occasional	1	
Tubificoides benedii	•••••	Abundant	45	6450
Corophium acherusicum	•••••	Present	3	150
Pagurus bernhardus	•••	Occasional	5	
Liocarcinus depurator	•••	Occasional	4	
Carcinus maenas	•••	Occasional	3	
Gibbula magus	•••	Present	4	
Mytilus edulis	•••••	Present	3	100
Mysella bidentata	•••••	Abundant	19	2400
Mya arenaria	•••••	Present	3	300
Asterias rubens	•••	Occasional	6	
Ophiura albida	•••	Present	4	
Ascidiella aspersa	•••	Rare	6	
Pomatoschistus minutus	•••	Rare	5	
Rhodothamniella floridula	••	Present	2	
Bonnemaisonia hamifera	•••	Present	9	
Trailliella intricata	••••	Common	16	
Phyllophora crispa	•••	Rare	4	
Chorda filum	•••	Rare	5	
Laminaria saccharina	•••	Occasional	6	

SS.SMP.KSwSS.Pcri Loose-lying mats of *Phyllophora crispa* on infralittoral muddy sediment

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Sheltered, Very sheltered
Tidal streams:	Weak, Very weak
Substratum:	Mud or muddy sand with shells, gravel or pebbles
Zone:	Infralittoral - lower
Depth band:	5-10 m, 10-20 m, 20-30 m

Previous code

IMX.Pcri	97.06

Biotope description

Infralittoral muddy sand and sandy mud, sometimes with some shells or pebbles, and a dense, loose-lying cover of *Phyllophora crispa*. This biotope occurs in very sheltered conditions such as those found in sealochs and voes. SMP.Pcri is similar to other biotopes described with dense, loose-lying algae but has been less frequently recorded, and from the few records available, appears to occur in slightly deeper infralittoral waters primarily between 10m to 30m and typically in fully saline waters. The seaweeds in this biotope may be epiphytised by ascidians such as *Ascidiella aspera.* Kelp such as *Laminaria saccharina* and red seaweeds including *Plocamium cartilagineum* may be present in some areas. The scallops *Pecten maximus* and *Aequipecten opercularis* may also be found occasionally in this biotope and *Trailliella*/*Bonnemaisonia hamifera* may also be present but not at the levels found in SMP.Tra.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMP.Tra	Similar to Pcri however, *Trailliea*, if present in Pcri, does not form distinct mats as in Tra.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Hydractinia echinata	••	Occasional	2	
Cerianthus lloydii	••	Frequent	1	
Terebellidae	•••	Frequent	1	
Balanus crenatus	•••	Occasional	2	
Pagurus bernhardus	••••	Occasional	6	
Liocarcinus depurator	•••••	Frequent	14	
Carcinus maenas	•••	Occasional	3	
Aequipecten opercularis	•••	Occasional	2	
Pecten maximus	•••	Occasional	2	
Electra pilosa	••	Occasional	1	
Henricia	••	Rare	1	
Asterias rubens	•••	Occasional	6	
Echinus esculentus	•••	Occasional	3	
Ascidiella aspersa	•••	Frequent	5	
Bonnemaisonia hamifera	••	Common	2	
Phyllophora crispa	•••••	Abundant	27	
Plocamium cartilagineum	•••	Frequent	3	
Laminaria saccharina	•••	Frequent	3	

SS.SMP.KSwSS.FilG Filamentous green seaweeds on low salinity infralittoral mixed sediment or rock

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Extremely sheltered
Tidal streams:	Weak, Very weak
Substratum:	Muddy sediment with pebbles & cobbles & boulders
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m

Previous code

SIR.FiG	96.7
IMX.FiG	97.06

Biotope description

Shallow muddy sediments, often with boulders, cobbles and pebbles around the edges of lagoons, or other areas that are exposed to wide salinity variations are unsuitable for colonisation by many species. Such areas may be colonised by a dense blanket of ephemeral green algae such as *Enteromorpha* spp., *Chaetomorpha linum*, *Cladophora liniformis* or *Rhizoclonium riparium*. This biotope may also contain some red seaweeds, such as *Furcellaria lumbricalis*, but always at low abundance (compare with PolFur). Amongst the filamentous green algae, grazing molluscs and solitary ascidians may be present. Infauna may typically include *Corophium volutator*, *Heterochaeta costata*, *Tubificoides benedeni* and other taxa suited for low/variable salinity environments.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Hediste diversicolor	••••	Present	7	174
Pygospio elegans	••••	Present	5	27
Arenicola marina	••	Occasional	5	
Heterochaeta costata	••••	Abundant	19	174
Tubificoides benedii	••••	Abundant	12	301
Mysidae	•••	Frequent	15	
Corophium volutator	•••••	Super-abundant	56	589
Corophium volutator	•		2	
Carcinus maenas	••	Occasional	2	
Gasterosteus aculeatus	••	Occasional	3	
Beggiatoa	••	Occasional	2	
Enteromorpha	••	Frequent	5	
Enteromorpha intestinalis	••	Frequent	18	
Chaetomorpha linum	••	Frequent	9	
Cladophora	••	Frequent	5	
Rhizoclonium riparium	••	Frequent	3	
Derbesia marina	•	Common	2	
Filamentous green algae	••	Common	9	

SS.SMP.SSgr Sublittoral seagrass beds

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Medium to fine sandy muds
Zone:	Sublittoral fringe, Infralittoral
Depth band:	0-5 m, 5-10 m

Previous code

IMS.Sgr	97.06

Biotope description

Beds of seagrass (*Zostera marina* or *Ruppia* spp.) in shallow sublittoral sediments. These communities are generally found in extremely sheltered embayments, marine inlets, estuaries and lagoons, with very weak tidal currents. They may inhabit low, variable and full salinity marine habitats. Whilst generally found on muds and muddy sands they may also occur in coarser sediments, particularly marine examples of *Zostera* communities.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m^2)*
Anemonia viridis	••	Occasional	1	
NEMERTEA	••	Common	1	12
NEMATODA	•	Common	1	791
Hediste diversicolor	•	Super-abundant	2	378
Pygospio elegans	••	Frequent	4	820
Capitella capitata	••	Frequent	2	565
Arenicola marina	••	Occasional	5	
Lanice conchilega	••	Occasional	2	
Heterochaeta costata	••	Super-abundant	19	5838
Tubificoides benedii	••	Frequent	3	4893
Enchytraeidae	••	Common	3	442
Mysidae	••	Frequent	6	
Idotea baltica	••	Present	3	153
Pagurus bernhardus	•	Occasional	1	
Carcinus maenas	••	Occasional	5	
Chironomida	•••	Abundant	28	6009
Asterias rubens	••	Occasional	1	
Ectocarpaceae	•	Frequent	2	
Chorda filum	••	Frequent	3	
Laminaria saccharina	••	Occasional	1	
Enteromorpha	•	Occasional	2	
Zostera marina	••••	Abundant	35	
Ruppia	••	Common	13	

SS.SMP.SSgr.Zmar *Zostera marina/angustifolia* beds on lower shore or infralittoral clean or muddy sand

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Moderately strong, Weak, Very weak
Substratum:	Clean sand to muddy fine sand or mud
Zone:	Infralittoral
Height band:	Lower shore
Depth band:	0-5 m, 5-10 m

Previous code

IGS.Zmar	96.7
IMS.ZmarBv	96.7
LMSND.ZOS	6.95

Biotope description

Expanses of clean or muddy fine sand and sandy mud in shallow water and on the lower shore (typically to about 5 m depth) can have dense stands of *Zostera marina/angustifolia* [Note: the taxonomic status of *Z. angustifolia* is currently under consideration]. In Zmar the community composition may be dominated by these *Zostera* species and therefore characterised by the associated biota. Other biota present can be closely related to that of areas of sediment not containing *Zostera marina*, for example, *Laminaria saccharina*, *Chorda filum* and infaunal species such as *Ensis* spp. and *Echinocardium cordatum* (e.g. Bamber 1993). From the available data it would appear that a number of sub-biotopes may be found within this biotope dependant on the nature of the substratum and it should be noted that sparse beds of *Zostera marina* may be more readily characterised by their infaunal community. For example, coarse marine sands with seagrass have associated communities similar to MoeVen, SLan or Glap whilst muddy sands may have infaunal populations related to EcorEns, AreISa and FfabMag. Muddy examples of this biotope may show similarities to SundAasp, PhiVir, Are or AfilMysAnit. At present the data does not permit a detailed description of these sub-biotopes but it is likely that with further study the relationships between these assemblages will be clarified. Furthermore, whilst the *Zostera* biotope may be considered an epibiotic overlay of established sedimentary communities it is likely that the presence of *Zostera* will modify the underlying community to some extent. For example, beds of this biotope in the south-west of Britain may contain conspicuous and distinctive assemblages of Lusitanian fauna such as *Laomedea angulata*, *Hippocampus* spp. and Stauromedusae. In addition, it is known that seagrass beds play an important role in the trophic status of marine and estuarine waters, acting as an important conduit or sink for nutrients and consequently some examples of *Zostera marina* beds have markedly anoxic sediments associated with them.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SSA.EcorEns	The overlap between these two biotopes requires examination

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Anemonia viridis	••	Occasional	3	
NEMERTEA	•••	Common	6	20
NEMATODA	••	Common	5	1318
Exogone hebes	••	Present	2	30
Platynereis dumerilii	••	Frequent	3	30
Scoloplos armiger	•••	Abundant	5	63
Pygospio elegans	••	Frequent	3	768
Spio filicornis	••	Frequent	2	30
Spiophanes bombyx	••	Present	1	7
Capitella capitata	••	Common	2	822
Mediomastus fragilis	••	Common	1	70
Notomastus latericeus	••	Present	2	14
Arenicola marina	••	Occasional	3	
Euclymene oerstedii	•	Common	1	12
Lanice conchilega	••	Occasional	3	
OLIGOCHAETA	••	Frequent	1	21
Heterochaeta costata	•	Super-abundant	3	4583
Tubificoides benedii	••	Frequent	4	7173
Urothoe elegans	••	Present	2	18
Atylus swammerdamei	••	Present	2	9
Dexamine spinosa	••	Frequent	2	44
Dexamine thea	••	Frequent	1	20
Ampelisca brevicornis	••	Frequent	3	33
Corophium volutator	••	Abundant	9	1711
Idotea baltica	••	Present	1	91
Apseudes latreillii	••	Frequent	1	515
Pagurus bernhardus	••	Occasional	2	
Carcinus maenas	•••	Occasional	3	
Chironomida	•	Abundant	3	2411
Gibbula cineraria	••	Occasional	1	
Hinia reticulata	••	Occasional	2	
Thyasira flexuosa	•	Present	2	22
Mysella bidentata	••	Common	3	555
Fabulina fabula	••	Present	3	15
Abra alba	••	Common	2	20
Asterias rubens	••	Occasional	2	
Amphipholis squamata	••	Abundant	1	16
Chorda filum	••	Frequent	4	
Laminaria saccharina	••	Occasional	2	
Ulva	••	Occasional	2	
Zostera marina	•••••	Abundant	52	

SS.SMP.SSgr.Rup *Ruppia maritima* in reduced salinity infralittoral muddy sand

Habitat classification

Salinity:	Reduced (18-30ppt)
Wave exposure:	Extremely sheltered
Tidal streams:	Very weak
Substratum:	Muddy fine sand to mud
Zone:	Infralittoral
Depth band:	0-5 m

Previous code

IMS.Rup	97.06

Biotope description

In sheltered brackish muddy sand and mud, beds of *Ruppia maritima* and more rarely *Ruppia spiralis* may occur. These beds may be populated by fish such as *Gasterosteus aculeatus* which is less common on filamentous algal-dominated sediments. Seaweeds such as *Chaetomorpha* spp., *Enteromorpha* spp., *Cladophora* spp., and *Chorda filum* are also often present in addition to occasional fucoids. In some cases the stoneworts *Lamprothamnium papulosum* and *Chara aspera* occur. Infaunal and epifaunal species may include mysid crustacea, the polychaete *Arenicola marina*, the gastropod *Hydrobia ulvae*, the amphipod *Corophium volutator* and oligochaetes such as *Heterochaeta costata*. In some areas *Zostera marina* may also be interspersed with the *Ruppia* beds.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Hediste diversicolor	••	Super-abundant	2	835
Pygospio elegans	••	Abundant	2	899
Capitella capitata	••	Present	1	179
Arenicola marina	••	Occasional	5	
Heterochaeta costata	••••	Super-abundant	27	7720
Enchytraeidae	•••	Present	3	457
Mysidae	•••	Frequent	13	
Gammarus locusta	••	Present	1	180
Gammarus zaddachi	•		2	2656
Corophium volutator	•••	Abundant	12	2459
Idotea baltica	••	Present	3	246
Carcinus maenas	••	Occasional	4	
Chironomida	••••	Abundant	43	11406
Gasterosteus aculeatus	••	Rare	3	
Ectocarpaceae	••	Occasional	2	
Enteromorpha	••	Occasional	2	
Enteromorpha intestinalis	••	Frequent	2	
Chaetomorpha linum	••	Occasional	2	
Filamentous green algae	••	Frequent	3	
Lamprothamnium papulosum	••	Frequent	2	
Zostera marina	•		1	
Ruppia	••••	Abundant	43	
Ruppia maritima	•	Abundant	2	

SS.SMP.Ang Angiosperm communities in reduced salinity

Habitat classification

Salinity:	Variable (18-35ppt), Reduced (18-30ppt), Low (<18ppt)
Wave exposure:	Extremely sheltered
Tidal streams:	Very weak
Substratum:	Sandy mud with some pebbles and boulders
Zone:	Infralittoral
Depth band:	0-5 m

Previous code

IMU.Ang	97.06

Biotope description

Lagoon communities, subject to reduced or low salinity conditions, dominated by angiosperms, including *Potamogeton pectinatus* beds and fringing habitats with reeds *Phragmites australis*.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Mysidae	•••	Frequent	25	
Potamopyrgus antipodarum	•••	Frequent	23	
Mytilus edulis	••	Occasional	4	
Enteromorpha intestinalis	•	Frequent	2	
Cladophora liniformis	••	Frequent	4	
Filamentous green algae	•	Occasional	2	
Chara aspera	•	Frequent	3	
Potamogeton	••••	Frequent	26	
Potamogeton pectinatus	••	Common	8	

SS.SMP.Ang.NVC A12 *Potamogeton pectinatus* community

Habitat classification

Salinity:	Variable (18-35ppt), Low (<18ppt)
Wave exposure:	Extremely sheltered, Ultra sheltered
Tidal streams:	Very weak
Substratum:	Mud and sandy mud (often with some stones and shells)
Zone:	Sublittoral fringe, Infralittoral
Depth band:	0-5 m

Previous code

IMU.Pot	96.7
IMU.NVC A12	97.06

Biotope description

Low and variable salinity infralittoral mud with beds of *Potamogeton pectinatus*. Other associated species are broadly similar to that of Rup, with blankets of filamentous green algae such as *Enteromorpha intestinalis*, *Cladophora liniformis* and *Rhizoclonium riparium*. The grazing gastropod *Potamopyrgus antipodarum* is found in this biotope and juvenile *Mytilus edulis* have been observed settled on *Potamogeton* leaves and amongst the algae. The nationally scarce charaphyte *Lamprothamnium papulosum* may be found to some extent in this biotope but more often in neighbouring habitats (see Plaza & Sanderson 1997). Mysids, trout (*Salmo trutta*), and sticklebacks *Gasterosteus aculeatus* can be found swimming amongst the vegetation. *Mya arenaria* may be found in some examples of this biotope, but the infaunal component of this biotope requires further investigation but is likely to contain oligochaetes, *Arenicola marina*, *Corophium volutator* and *Gammarus* spp.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMP.Rup	Similar associated species but *Ruppia*, if present in NVC A12, does not form distinct beds.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Mysidae	●●●	Frequent	25	
Hydrobia ulvae	●	Occasional	1	
Potamopyrgus antipodarum	●●●	Frequent	23	
Mytilus edulis	●●	Occasional	4	
Salmo trutta	●	Occasional	2	
Gasterosteus aculeatus	●●	Occasional	1	
Enteromorpha intestinalis	●	Frequent	2	
Cladophora liniformis	●●	Frequent	4	
Filamentous green algae	●	Occasional	2	
Chara aspera	●	Frequent	3	
Potamogeton	●●●●	Frequent	26	
Potamogeton pectinatus	●●	Common	8	

SS.SMP.Ang.NVC S4 *Phragmites australis* swamp and reed beds

Habitat classification

Salinity:	Low (<18ppt)
Wave exposure:	Extremely sheltered, Ultra sheltered
Tidal streams:	Very weak
Substratum:	Mud; peat; sand
Zone:	Infralittoral - upper
Depth band:	0-5 m

Previous code

IMU.Phr	96.7
IMU.NVC S4	97.06

Biotope description

Permanently low salinity muds or peaty muddy sands with some gravel which supports *Phragmites australis* reed beds. These reed beds are often found in enclosed water bodies influenced by freshwater inflow and may have notable quantities of decaying reed material. The substratum may be mixtures of mud, peaty mud, sand and some gravel. Filamentous green algae and charaphytes such as *Lamprothamnium papulosum* and *Chara aspera* may also be found in association with this biotope as well as a the freshwater quillwort *Myriophyllum* spp. The infaunal component of this biotope is poorly known. This biotope is further described as NVC type S4 (Rodwell 1995).

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m^2)*
Phragmites	●●●●●	Super-abundant		
Myriophyllum		Occasional		
Cladophora		Present		
Rhizoclonium		Present		
Chara aspera		Common		
Lamprothamnium papulosum		Common		

SS.SBR Sublittoral biogenic reefs on sediment

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Strong, Moderately strong, Weak, Very weak
Substratum:	Pebbles, gravel, sand and mud.
Zone:	Infralittoral, Circalittoral
Depth band:	0-5 m, 5-10 m, 10-20 m, 20-30 m, 30-50 m, 50-100 m

Previous code

New habitat complex

Biotope description

Sublittoral biogenic reef communities. This complex includes polychaete reefs, bivalve reefs (e.g. mussel beds) and cold water coral reefs. These communities develop in a range of habitats from exposed open coasts to estuaries, marine inlets and deeper offshore habitats and may be found in a variety of sediment types and salinity regimes.

Situation

No situation data available.

Temporal variation

No temporal data available.

SS.SBR.PoR Polychaete worm reefs (on sublittoral sediment)

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Exposed, Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Strong, Moderately strong, Weak
Substratum:	Muddy gravelly sand with pebbles
Zone:	Circalittoral
Depth band:	5-10 m, 10-20 m, 20-30 m

Previous code

New biotope complex

Biotope description

Sublittoral reefs of polychaete worms in mixed sediments found in a variety of hydrographic conditions. Such habitats may range from extensive structures of considerable size to loose agglomerations of tubes. Such communities often play an important role in the structural composition or stability of the seabed and provide a wide range of niches for other species to inhabit. Consequently polychaete worm reefs often support a diverse flora and fauna.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Nemertesia antennina	●●●	Occasional	2	
Hydrallmania falcata	●●	Rare	1	
Urticina felina	●●	Occasional	1	
NEMERTEA	●●●	Common	3	27
NEMATODA	●●	Frequent	2	58
Harmothoe impar	●●●	Common	3	54
Pholoe synophthalmica	●●	Frequent	2	29
Eulalia tripunctata	●●	Abundant	3	31
Eumida sanguinea	●●	Abundant	1	13
Typosyllis armillaris	●●	Frequent	2	30
Nereis longissima	●●●	Present	2	10
Protodorvillea kefersteini	●●	Frequent	2	36
Scoloplos armiger	●●●	Abundant	2	66
Caulleriella zetlandica	●●	Frequent	2	49
Mediomastus fragilis	●●●	Common	7	294
Sabellaria alveolata	●●●	Super-abundant	24	684
Sabellaria spinulosa	●●●●	Abundant	15	773
Sabellaria spinulosa	●●●	Common	7	
Lanice conchilega	●●	Common	1	71
Sabella pavonina	●●	Occasional	1	
Pomatoceros triqueter	●●●	Frequent	6	
Serpula vermicularis	●●●	Common	9	
Balanus crenatus	●●	Occasional	2	
Ampelisca spinipes	●●	Frequent	1	42
Pagurus bernhardus	●●●●	Occasional	9	
Gibbula cineraria	●●●	Occasional	2	
Buccinum undatum	●●●	Occasional	4	
Aequipecten opercularis	●●	Occasional	1	
Abra alba	●●	Common	2	84
Alcyonidium diaphanum	●●	Occasional	2	
Flustra foliacea	●●●	Occasional	5	
Asterias rubens	●●●	Occasional	5	
Ophiothrix fragilis	●●●	Occasional	5	
Psammechinus miliaris	●●●	Frequent	6	
Diplosoma listerianum	●●	Frequent	2	
Ciona intestinalis	●●	Rare	1	
Ascidiella aspersa	●●	Frequent	2	
Ascidia mentula	●●●	Frequent	2	
Dendrodoa grossularia	●●●	Frequent	3	
Corallinaceae	●●	Occasional	1	

SS.SBR.PoR.SspiMx *Sabellaria spinulosa* on stable circalittoral mixed sediment

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered
Tidal streams:	Strong, Moderately strong
Substratum:	Mixed sediment of sandy mud, muddy sand with gravel pebbles and cobbles
Zone:	Circalittoral
Depth band:	10-20 m, 20-30 m

Previous code

CMX.SspiMx	97.06

Biotope description

The tube-building polychaete *Sabellaria spinulosa* at high abundances on mixed sediment. These species typically forms loose agglomerations of tubes forming a low lying matrix of sand, gravel, mud and tubes on the seabed. The infauna comprises typical sublittoral polychaete species such as *Protodorvillea kefersteini*, *Pholoe synophthalmica*, *Harmothoe* spp, *Scoloplos armiger*, *Mediomastus fragilis*, *Lanice conchilega* and cirratulids, together with the bivalve *Abra alba*, and tube building amphipods such as *Ampelisca* spp. The epifauna comprise a variety of bryozoans including *Flustra foliacea*, *Alcyonidium diaphanum* and *Cellepora pumicosa*, in addition to calcareous tubeworms, pycnogonids, hermit crabs and amphipods. The reefs formed by *Sabellaria* consolidate the sediment and allow the settlement of other species not found in adjacent habitats leading to a diverse community of epifaunal and infauna species. The development of such reefs is assisted by the settlement behaviour of larval *Sabellaria* which are known to selectively settle in areas of suitable sediment and particularly on existing *Sabellaria* tubes (Tait and Dipper, 1997; Wilson 1929). These reefs are particularly affected by dredging or trawling and in heavily dredged or disturbed areas an impoverished community may be left (e.g. Pkef) particularly if the activity or disturbance is prolonged. However, it is likely that reefs of *S. spinulosa* can recover quite quickly from short term or intermediate levels of disturbance as found by Vorberg (2000) in the case of disturbance from shrimp fisheries and recovery will be accelerated if some of the reef is left intact following disturbance as this will assist larval settlement of the species.

Situation

S. spinulosa reefs are often found in areas with quite high levels of natural sediment disturbance

Temporal variation

In some areas the reefs are periodically destroyed by storm events leading to a cyclical shift in biotopes from SspiMx to other biotopes e.g. Pkef or AalbNuc with re-establishment of the *Sabellaria* colonies in the following year.

Similar biotopes

MCR.Sspi	*Sabellaria* on rock often with more associated hard substratum species. On sediment *Sabellaria* changes the habitat

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Halichondria panicea	●●●	Occasional	2	
Dysidea fragilis	●●●	Occasional	2	
Tubularia indivisa	●●●	Occasional	2	
Nemertesia antennina	●●●	Occasional	1	
Hydrallmania falcata	●●●●	Rare	4	
Urticina felina	●●●●	Occasional	4	
NEMERTEA	●●●●	Common	4	42
NEMATODA	●●	Frequent	1	88
Harmothoe impar	●●●●	Common	3	89
Pholoe synophthalmica	●●●	Frequent	4	49
Eteone longa	●●●	Present	2	22
Eumida sanguinea	●●	Abundant	1	17
Nereis longissima	●●●	Present	2	14
Protodorvillea kefersteini	●●●●	Frequent	4	61
Scoloplos armiger	●●●●	Abundant	3	107
Minuspio cirrifera	●●	Frequent	1	14
Caulleriella zetlandica	●●●	Frequent	4	83
Chaetozone setosa	●●	Abundant	1	198
Aphelochaeta marioni	●●●	Common	2	94
Mediomastus fragilis	●●●	Common	4	383
Sabellaria spinulosa	●●●●●	Abundant	27	1316
Sabellaria spinulosa	●●●●●	Common	22	
Lanice conchilega	●●	Occasional	1	
Lanice conchilega	●●●	Common	3	121
Pomatoceros triqueter	●●●	Frequent	4	
Balanus crenatus	●●●●	Occasional	5	
Ampelisca diadema	●●●	Common	2	182
Ampelisca spinipes	●●●	Frequent	3	72
Pagurus bernhardus	●●●●●	Frequent	9	
Calliostoma zizyphinum	●●●	Rare	1	
Buccinum undatum	●●●●	Rare	3	
Abra alba	●●●●	Common	4	143
Alcyonidium diaphanum	●●●●	Occasional	6	
Cellepora pumicosa	●●●	Frequent	2	
Flustra foliacea	●●●●●	Occasional	16	
Asterias rubens	●●	Occasional	1	
Dendrodoa grossularia	●●●	Occasional	2	

SS.SBR.PoR.SalvMx *Sabellaria alveolata* on variable salinity sublittoral mixed sediment

Habitat classification

Salinity:	Variable (18-35ppt)
Wave exposure:	Exposed, Moderately exposed, Sheltered
Tidal streams:	Strong, Weak
Substratum:	Mixed sandy sediment with pebble and cobbles
Zone:	Infralittoral
Depth band:	0-5 m, 5-10 m

Previous code

None

Biotope description

Tide-swept sandy mixed sediments with cobbles and pebbles, in variable salinity or fully marine conditions, may be characterised by surface accumulations of the reef building polychaete *Sabellaria alveolata*. The presence of *Sabellaria* sp. has a strong influence on the associated infauna as the tubes bind the surface sediments together and provide increased stability. Such reefs may form large structures up to a metre in height although they are considerably less extensive than the intertidal reefs formed by this species (Salv). Other associated species may include the polychaete *Melinna cristata*, itself often as dense aggregations, mobile surface feeding polychaetes including *Typosyllis armillary* and *Eulalia tripunctata*. Other polychaetes may include *Mediomastus fragilis* and *Pygospio elegans* whilst amphipods such as *Harpinia pectinata* and tubificid oligochaetes may also be found.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SBR.SspiMx	SalvMx has a reduced species richness in comparison with SspiMx, particularly in mature *S. alveolata* beds where the species tends to completely cover the seabed allowing few other species to colonise the habitat.
LBR.Salv	The reefs formed in sublittoral sediments are considerably less extensive than the intertidal reefs formed by this species.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m^2)*
Golfingia vulgaris vulgaris	●●●	Present	2	56
Eulalia tripunctata	●●●●	Abundant	7	74
Typosyllis armillaris	●●●	Frequent	66	4
Pygospio elegans	●●	Frequent	1	15
Mediomastus fragilis	●●●	Common	4	168
Sabellaria alveolata	●●●●●	Super-abundant	66	1646
Melinna cristata	●●●	Abundant	2	79
Harpinia pectinata	●●	Frequent	2	34

SS.SBR.PoR.Ser *Serpula vermicularis* reefs on very sheltered circalittoral muddy sand

Habitat classification

Salinity:	Full (30-35ppt), Variable (18-35ppt)
Wave exposure:	Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Weak, Very weak
Substratum:	Calcareous tubes; pebbles; shells; gravel on sandy mud
Zone:	Infralittoral - lower, Circalittoral
Depth band:	0-5 m, 5-10 m, 10-20 m, 20-30 m

Previous code

SCR.Sver	96.7
CMS.Ser	97.06

Biotope description

Large clumps (mini 'reefs') of the calcareous tubes of *Serpula vermicularis*, typically attached to stones on muddy sediment in very sheltered conditions in sealochs and other marine inlets. A rich associated biota attached to the calcareous tube may include *Esperiopsis fucorum*, thin encrusting sponges, and the ascidians *Ascidiella aspersa*, *Ascidia mentula*, *Dendrodoa grossularia* and *Diplosoma listerianum*. The echinoderms *Ophiothrix fragilis* and *Psammechinus miliaris* and the queen scallop (*Aequipecten opercularis*) are also found throughout this biotope. In shallow water dense *Phycodrys rubens* may grow on the 'reefs'. This biotope has been recorded in the U.K. from Loch Creran, where these reefs have been well studied (Moore 1996), and Loch Sween, where they are reported to have deteriorated. The only other known sites for this biotope are Salt Lake, Cliffden and Killary Harbour, Co. Galway.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Esperiopsis fucorum	●●●	Frequent	2	
Nemertesia antennina	●●●	Occasional	1	
Sabella pavonina	●●●	Occasional	1	
Pomatoceros triqueter	●●●	Common	3	
Serpula vermicularis	●●●●●	Common	25	
Pagurus bernhardus	●●●●	Occasional	4	
Carcinus maenas	●●●●	Rare	2	
Gibbula cineraria	●●●	Occasional	2	
Buccinum undatum	●●●	Occasional	2	
Aequipecten opercularis	●●●●	Occasional	4	
Asterias rubens	●●●●	Occasional	4	
Ophiothrix fragilis	●●●●●	Occasional	8	
Psammechinus miliaris	●●●●●	Frequent	16	
Diplosoma listerianum	●●●	Frequent	2	
Ciona intestinalis	●●●	Occasional	1	
Corella parallelogramma	●●●	Frequent	1	
Ascidiella aspersa	●●●●	Frequent	5	
Ascidia mentula	●●●●	Rare	3	
Dendrodoa grossularia	●●●	Common	3	
Corallinaceae	●●●	Occasional	2	
Lithothamnion glaciale	●●	Occasional	1	
Phycodrys rubens	●●●	Occasional	2	

SS.SBR.SMus Sublittoral mussel beds (on sublittoral sediment)

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Strong, Moderately strong, Weak, Very weak
Substratum:	Muddy sand, sandy muds, gravel and pebbles
Zone:	Infralittoral - lower, Circalittoral
Depth band:	0-5 m, 5-10 m, 10-20 m, 20-30 m

Previous code

New biotope complex

Biotope description

Sublittoral mussel beds comprised of either the horse mussel *Modiolus modiolus* or the common mussel *Mytilus edulis*. These communities may be sublittoral extensions of littoral reefs or exist independently. Found in a variety of habitats ranging from sheltered estuaries and marine inlets to open coasts and offshore areas they may occupy a range of substrata, although due to the stabilising effect such communities have on the substratum muddy mixed sediments are typical. A diverse range of epibiota and infauna often exists in these communities.

Situation

No situation data available.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
ANTHOZOA	••	Abundant	1	14
Alcyonium digitatum	••	Occasional	2	
Urticina felina	••	Occasional	1	
TURBELLARIA	••	Frequent	2	9
NEMERTEA	••••	Abundant	7	65
Harmothoe imbricata	••	Super-abundant	1	8
Harmothoe impar	••	Abundant	3	28
Eteone longa	••	Common	2	20
Kefersteinia cirrata	••	Super-abundant	2	16
Scoloplos armiger	••	Abundant	1	26
Capitella capitata	••	Common	2	25
Heteromastus filiformis	••	Common	2	38
Pomatoceros	••	Frequent	2	
Pomatoceros triqueter	••	Abundant	2	25
Pomatoceros triqueter	••	Frequent	3	
OLIGOCHAETA	••	Abundant	10	787
CIRRIPEDIA	••	Common	2	22
Balanus balanus	••	Occasional	1	
Balanus crenatus	••	Frequent	2	
Gammarus salinus	••	Super-abundant	8	612
Pagurus bernhardus	••••	Occasional	6	
Hyas araneus	••	Occasional	2	
Liocarcinus depurator	••	Occasional	1	
Gibbula cineraria	••	Occasional	1	
Nucella lapillus	••	Common	1	13
Buccinum undatum	•••	Occasional	4	
Mytilus edulis	••	Super-abundant	16	1395
Modiolus modiolus	•••••	Abundant	20	
Aequipecten opercularis	••	Frequent	3	
Antedon bifida	••	Occasional	1	
Crossaster papposus	•••	Rare	2	
Asterias rubens	••••	Occasional	8	
Ophiothrix fragilis	••••	Frequent	10	
Ophiocomina nigra	••	Frequent	2	
Echinus esculentus	••••	Occasional	6	
Corella parallelogramma	••	Occasional	1	
Dendrodoa grossularia	••	Occasional	1	
Corallinaceae	••	Frequent	2	
Phycodrys rubens	••	Frequent	2	

SS.SBR.SMus.ModT *Modiolus modiolus* beds with hydroids and red seaweeds on tide-swept circalittoral mixed substrata

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered
Tidal streams:	Strong, Moderately strong
Substratum:	Cobbles, pebbles and Modiolus shells
Zone:	Infralittoral - lower, Circalittoral
Depth band:	5-10 m, 10-20 m, 20-30 m, 30-50 m

Previous code

MCR.ModT	97.06

Biotope description

Modiolus beds on mixed substrata (cobbles, pebbles and coarse muddy sediments) in moderately strong currents or wave exposed areas, typically on the open coast but also in tide-swept channels of marine inlets. *Ophiothrix fragilis* are often common in this biotope along with the calcareous tubes of *Pomatoceros triqueter*, anemones such as *Alcyonium digitatum* and *Urticina felina* and hydroids such as *Abietinaria abietina* and *Sertularia argentea*. *Buccinum undatum* may also be important and in some areas the clam *Chlamys varia* may be frequent but not in the same abundances as in ModCvar. Little information on the infaunal component is given here although it is likely that it is very rich and may highlight more subtle differences in the *Modiolus* biotopes. This biotope is typified by examples off the north-west Lleyn Peninsula in N Wales and off Co. Down, Northern Ireland.

Situation

No situation data available.

Temporal variation

No temporal data avaiable.

Similar biotopes

SBR.ModMx	Tends to occur in deeper water than ModT and has a more divesre infauna as a result of the lower tidal current strength.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m^2)*
Abietinaria abietina	●●●	Frequent	3	
Sertularia argentea	●●	Occasional	1	
Alcyonium digitatum	●●●●	Common	10	
Urticina felina	●●●	Occasional	2	
Pomatoceros triqueter	●●●	Frequent	4	
Balanus crenatus	●●	Frequent	1	
Pagurus bernhardus	●●●●	Occasional	3	
Buccinum undatum	●●●●	Occasional	4	
Modiolus modiolus	●●●●●	Abundant	27	
Crossaster papposus	●●	Rare	1	
Asterias rubens	●●●●●	Occasional	8	
Ophiothrix fragilis	●●●●	Common	13	
Ophiocomina nigra	●●●	Frequent	2	
Psammechinus miliaris	●●	Common	2	
Echinus esculentus	●●●	Occasional	2	
Ciona intestinalis	●●	Rare	1	
Phycodrys rubens	●●	Common	2	

SS.SBR.SMus.ModMx *Modiolus modiolus* beds on open coast circalittoral mixed sediment

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Sheltered
Tidal streams:	Moderately strong
Substratum:	Muddy gravel and sand, with shells and stones
Zone:	Circalittoral
Depth band:	50-100 m

Previous code

CMX.ModMx	97.06

Biotope description

Muddy gravels and coarse sands in deeper water of continental seas may contain venerid bivalves with beds of *Modiolus modiolus*. The clumping of the byssus threads of the *M. modiolus* creates a stable habitat that attracts a very rich infaunal community with a high density of polychaete species including *Glycera lapidum*, *Paradoneis lyra*, *Aonides paucibranchiata*, *Laonice bahusiensis*, *Protomystides bidentata*, *Lumbrineris* spp., *Mediomastus fragilis* and syllids such as *Exogone* spp. and *Sphaerosyllis* spp. Bivalves such as *Spisula elliptica*, *Timoclea ovata* and other venerid species are also common. Brittlestars such as *Amphipholis squamata* may also occur with this community. This biotope is very similar to SMX.PoVen and the 'boreal off-shore gravel association' and the 'deep Venus community' described by previous workers (Ford 1923; Jones 1951). Similar *Modiolus* beds (though with a less diverse infauna) on open coast stable boulders, cobbles and sediment are described under MCR.ModT.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMX.PoVen	PoVen is similar to ModMx but lacks the epifaunal *Modiolus* bed
SBR.ModT	ModT tends to occur at the entrance to channels where tidal streams are strong

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
NEMERTEA	●●●●●	Common	2	58
Harmothoe impar	●●●●●	Common	2	54
Protomystides bidentata	●●●●●	Common	2	53
Nereiphylla lutea	●●●●●	Abundant	1	56
Glycera lapidum	●●●●●	Common	3	94
Syllis	●●●●●	Frequent	1	22
Eusyllis blomstrandi	●●●●●	Frequent	1	39
Exogone hebes	●●●●●	Frequent	2	75
Exogone verugera	●●●●●	Common	3	151
Sphaerosyllis	●●●●●	Frequent	2	41
Sphaerosyllis bulbosa	●●●●	Frequent	1	203
Lumbrineris gracilis	●●●●●	Common	2	75
Paradoneis lyra	●●●●●	Common	2	90
Aonides paucibranchiata	●●●●●	Common	3	164
Laonice bahusiensis	●●●●●	Common	2	69
Polydora flava	●●●●●	Frequent	1	35
Mediomastus fragilis	●●●●●	Common	2	288
Clymenura johnstoni	●●●●	Abundant	1	52
Asclerocheilus intermedius	●●●●●	Frequent	1	32
Lysilla	●●●●●	Abundant	1	26
Polycirrus	●●●●●	Common	2	50
Hydroides norvegica	●●●●●	Frequent	1	35
Grania	●●●●●	Present	1	44
Leptochiton asellus	●●●●●	Abundant	2	122
Modiolus modiolus	●●●●●	Super-abundant	4	385
Spisula elliptica	●●●●●	Common	2	51
Timoclea ovata	●●●●●	Common	1	29
Amphipholis squamata	●●●●●	Abundant	2	71
Echinocyamus pusillus	●●●●	Abundant	2	140

SS.SBR.SMus.ModHAs *Modiolus modiolus* beds with fine hydroids and large solitary ascidians on very sheltered circalittoral mixed substrata

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered, Very sheltered, Extremely sheltered
Tidal streams:	Weak, Very weak
Substratum:	Boulders, cobbles and shells on muddy sediment
Zone:	Infralittoral - lower, Circalittoral
Depth band:	5-10 m, 10-20 m, 20-30 m

Previous code

SCR.ModHAs	97.06

Biotope description

Beds or scattered clumps of *Modiolus modiolus* in generally sheltered conditions with only slight tidal movement. Typically occurs in sealochs and the Shetland voes. Brittlestars *Ophiothrix fragilis* and *Ophiocomina nigra*, as well as *Ophiopholis aculeata* are often frequent, sometimes forming a dense bed as described in OphMx. The queen scallop *Aequipecten opercularis* is often present in moderate abundances. Large solitary ascidians (*Ascidiella aspersa*, *Corella parallelogramma, Dendrodoa grossularia*) and fine hydroids (*Kirchenpaueria pinnata*) are present attached to the mussel shells. Decapods such as hermit crabs (*Pagurus bernhardus*) and spider crabs (*Hyas araneus*) are typically present. Coralline algal crusts may be found on the mussel shells, with some red seaweeds in shallower water such as *Phycodrys rubens*. Little information on the infaunal component is given here although it is likely that it is very rich and may highlight more subtle differences in the *Modiolus* biotopes.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

SMX.ClloModHo	ClloModHo occurs in similar physiographic features, although seems to be in softer sediment in some cases and with a much lower abundance of *Modiolus* and a lower diversity in general.
SBR.ModCvar	ModCvar is a more species rich biotope with far more sponges and hydroids growing on and amongst the *Modiolus* and large numbers of *Chlamys varia*

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Kirchenpaueria pinnata	●●●	Occasional	1	
Terebellidae	●●	Occasional	1	
Pomatoceros triqueter	●●	Frequent	4	
Balanus balanus	●●●	Occasional	2	
Balanus crenatus	●●●	Occasional	2	
Pagurus bernhardus	●●●●	Occasional	6	
Hyas araneus	●●●●	Occasional	3	
Liocarcinus depurator	●●●	Occasional	2	
Gibbula cineraria	●●	Occasional	1	
Buccinum undatum	●●●●	Occasional	3	
Modiolus modiolus	●●●●●	Common	19	
Aequipecten opercularis	●●●●	Frequent	6	
Antedon bifida	●●	Occasional	1	
Crossaster papposus	●●●	Rare	2	
Asterias rubens	●●●●	Occasional	5	
Ophiothrix fragilis	●●●●	Frequent	8	
Ophiocomina nigra	●●	Frequent	2	
Ophiopholis aculeata	●●	Occasional	1	
Echinus esculentus	●●●●●	Occasional	8	
Corella parallelogramma	●●●	Occasional	2	
Ascidiella aspersa	●●	Frequent	1	
Dendrodoa grossularia	●●●	Occasional	3	
Corallinaceae	●●●	Frequent	2	
Phycodrys rubens	●●●	Occasional	1	

SS.SBR.SMus.ModCvar *Modiolus modiolus* beds with *Chlamys varia*, sponges, hydroids and bryozoans on slightly tide-swept very sheltered circalittoral mixed substrata

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Sheltered, Very sheltered
Tidal streams:	Strong, Moderately strong, Weak
Substratum:	Pebble, gravel and shells on sandy mud sediments
Zone:	Infralittoral, Circalittoral
Depth band:	5-10 m, 10-20 m, 20-30 m

Previous code

SCR.ModCvar	97.06
SCR.ModSHBy	96.7

Biotope description

Dense *Modiolus modiolus* beds, covered by hydroids and bryozoans, on soft gravelly, shelly mud with pebbles in areas of slight or moderate tidal currents. The variable scallop (*Chlamys varia*) is frequently found in large numbers amongst the *Modiolus* shells. Hydroids such as *Halecium* spp. and *Kirchenpaueria pinnata* and ascidians such as *Ascidiella aspersa*, *Corella parallelogramma* and *Ciona intestinalis* may be found attached to pebbles or mussel shells. The echinoderms *Ophiothrix fragilis* and *Antedon bifida* are often frequent in this biotope as is the encrusting polychaete *Pomatoceros triqueter*. Similar communities have been found on cobble and pebble plains in stable, undisturbed conditions in some sealochs, although not all these examples have *Modiolus* beds.

Situation

No situtation data available.

Temporal variation

No temporal data available.

Similar biotopes

SBR.ModHAs	ModHAs is less species rich with far fewer sponges and hydroids growing on and amongst the *Modiolus* and few if any *Chlamys varia*

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
Halecium halecinum	••	Frequent	1	
Kirchenpaueria pinnata	•••	Frequent	1	
Alcyonium digitatum	••••	Occasional	2	
Cerianthus lloydii	•••	Occasional	2	
Urticina felina	•••	Occasional	3	
Terebellidae	•••	Occasional		
Pomatoceros triqueter	•••••	Frequent	7	
Serpula vermicularis	••	Occasional		
Protula tubularia	•••	Frequent	2	
Balanus balanus	•••	Occasional	2	
Pagurus bernhardus	•••	Occasional	2	
Hyas araneus	••••	Occasional	3	
Inachus dorsettensis	•••	Occasional		
Macropodia rostrata	••••	Occasional		
Liocarcinus depurator	••••	Occasional	3	
Gibbula cineraria	•••	Occasional	1	
Calliostoma zizyphinum	•••	Occasional	1	
Buccinum undatum	•••••	Occasional	3	
Pleurobranchus membranaceus	••••	Frequent		
Modiolus modiolus	•••••	Common	9	
Chlamys varia	•••••	Occasional	4	
Aequipecten opercularis	•••	Occasional	1	
Antedon bifida	••••	Frequent	5	
Crossaster papposus	•••	Rare	1	
Asterias rubens	•••••	Frequent	5	
Ophiothrix fragilis	•••••	Frequent	7	
Ophiocomina nigra	••••	Occasional	2	
Ophiura albida	•••	Occasional	1	
Psammechinus miliaris	•••	Frequent		
Echinus esculentus	•••••	Occasional	5	
Thyone fusus	••	Rare		
Thyone roscovita	•••	Occasional		
Thyonidium drummondii	••	Occasional		
Ciona intestinalis	•••	Occasional	2	
Corella parallelogramma	•••	Occasional	2	
Ascidiella aspersa	•••	Frequent	3	
Pyura microcosmus	••	Occasional		
Corallinaceae	•••	Frequent	3	
Lithothamnion glaciale	••••	Occasional		
Phycodrys rubens	•••	Frequent	1	
Laminaria hyperborea	•••	Common	2	

SS.SBR.SMus.MytSS *Mytilus edulis* beds on sublittoral sediment

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Moderately exposed, Sheltered
Tidal streams:	Moderately strong
Substratum:	Mixed muddy sediment
Zone:	Infralittoral, Circalittoral
Depth band:	0-5 m, 5-10 m, 10-20 m

Previous code

IMX.MytV	97.06

Biotope description

Shallow sublittoral mixed sediment, in fully marine coastal habitats or sometimes in variable salinity conditions in the outer regions of estuaries, are characterised by beds of the common mussel *Mytilus edulis*. Other characterising infaunal species may include the amphipod *Gammarus salinus* and oligochaetes of the genus *Tubificoides*. The polychaetes *Harmothoe* spp., *Kefersteinia cirrata* and *Heteromastus filiformis* are also important. Epifaunal species in addition to the *M. edulis* include the whelks *Nucella lapillus* and *Buccinum undatum*, the common starfish *Asterias rubens* the spider crab *Maja squinado* and the anemone *Urticina felina*. Relatively few records are available for this biotope and it is possible that as more data is accumulated separate estuarine and fully marine sub-biotopes may be described. Further clarification may also be required with regard to the overlap between littoral and sublittoral mussel beds and with regard to mussel beds biotopes on hard substratum.

Situation

No situation data available.

Temporal variation

No temporal data available.

Similar biotopes

LBR.Myt	MytSS may be an extension of the littoral biotope Myt
SMX.AphPol	AphPol may be separated from MytSS by the dominance of *M. edulis* in 'beds' rather than scattered individuals. Care must be taken with data to ensure juvenile spat recruitments are not classified as mussel beds.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m ^{2})*
ANTHOZOA	●●●●	Abundant	2	35
Urticina felina	●●●	Occasional	7	
Actinothoe sphyrodeta	●●	Occasional	2	
TURBELLARIA	●●●●●	Frequent	2	24
NEMERTEA	●●●●●	Abundant	6	123
Harmothoe imbricata	●●●●	Super-abundant	2	20
Harmothoe impar	●●●●●	Abundant	4	69
Pholoe inornata	●●●●	Common	1	39
Eteone longa	●●●●	Abundant	2	48
Kefersteinia cirrata	●●●●●	Super-abundant	2	36
Nereididae	●●●●●	Present	1	9
Scoloplos armiger	●●●●	Abundant	1	63
Capitella capitata	●●●●	Common	2	62
Heteromastus filiformis	●●●●	Common	3	95
Pomatoceros triqueter	●●●●	Abundant	2	58
OLIGOCHAETA	●●●●●	Abundant	15	1966
CIRRIPEDIA	●●●●	Common	2	55
Gammarus salinus	●●●●●	Super-abundant	11	1531
Paguridae	●●	Occasional	1	
Pagurus bernhardus	●●	Frequent	3	
Maja squinado	●●●	Frequent	6	
Cancer pagurus	●●●	Occasional	4	
Necora puber	●●	Occasional	2	
Crepidula fornicata	●●	Occasional	1	
Nucella lapillus	●●●●	Common	2	34
Buccinum undatum	●●	Occasional	1	
Mytilus edulis	●●●●●	Super-abundant	25	3488
Mytilus edulis	●●●●●	Abundant	60	
Flustra foliacea	●●	Occasional	1	
Asterias rubens	●●●●	Abundant	2	22
Asterias rubens	●●	Occasional	3	
Pleuronectes platessa	●●	Rare	2	

SS.SBR.Crl Coral reefs

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Ultra sheltered
Tidal streams:	Moderately strong, Weak
Substratum:	Fine silt with occasional small cobbles or stones.
Zone:	Circalittoral - lower, Bathyal
Depth band:	50-100 m, 100-200 m, 200-500 m, 500-1000 m, 1000-2000 m

Previous code

New biotope complex

Biotope description

The coral reef structures in UK waters are found in cold (12-4øC), largely aphotic waters, generally along the shelf edge and in offshore waters down to 2000m. In the north east Atlantic, *Lophelia pertusa* is the dominant colonial coral and is the characterising species of the biotope described under this biotope complex. *Lophelia* and its deep-water allies lack the symbiotic algae of their tropical relatives, so can live in the permanent darkness of the deep sea. These corals form colonies and can aggregate into patches and banks which may be described as reefs. These deep-sea corals can support and shelter hundreds of other species, including sponges, polychaete worms, echinoderms (starfish, sea urchins, brittle stars) and bryozoans (sea mats). Some 200-300 species can be found in one of these coral habitats, a number comparable to that found in other important deep-water habitats. Unlike tropical coral reef systems, they are dominated by only a few hard-coral species, and there are far fewer fish species.

Situation

No situation data available.

Temporal variation

No temporal data available.

SS.SBR.Crl.Lop *Lophelia* reefs

Habitat classification

Salinity:	Full (30-35ppt)
Wave exposure:	Extremely sheltered
Tidal streams:	Moderately strong, Weak
Substratum:	Fine silt, rock and other hard substrata
Zone:	Circalittoral - lower, Bathyal
Depth band:	50-100 m, 100-200 m, 200-500 m, 500-1000 m, 1000-2000 m

Previous code

COR.Lop	97.06

Biotope description

Reefs of the coral *Lophelia pertusa*, typically supporting a range of other biota. *Lophelia* reefs are generally found in areas of elevated current. The coral provides a 3 dimensional structure and a variety of microhabitats that provide shelter and a surface of attachment for other species. Boring sponges, anemones, bryozoans, gorgonians including *Paragorgia arborea*, *Paramuricea placomus*, *Primnoa resedaeformis*, polychaetes, barnacles, squat lobsters (*Munida sarsi*) and bivalves have all been recorded within and among the corals (Wilson, 1979; Mortensen et al., 1995) Other hard corals such as *Madrepora oculata* and *Solenosmilia variabilis* may also be present. Mobile species present include the redfish (*Sebastes viviparous* and *Sebastes marinus*), Ling (*Molva molva*) and tusk (*Brosme brosme*) (Husebo et al., 2002).

Situation

In British waters *Lophelia* reefs have been found on fine silt sediment and rock on the continental slope, on rock on the continental shelf, and on other hard structures such as the legs of oil platforms.

Temporal variation

No temporal data available.

Characterising species

	% Frequency	*Abundance (SACFOR)*	*%Contribution to similarity*	*Abundance (nos / m^2)*
Lophelia pertusa	●●●●●	Abundant		