

Table 1.1 JNCC Biotope Description list

Biotope	Description
SS.SBR.PoR.##	<p>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.</p>
SS.SBR.PoR.SspiMx	<p>The tube-building polychaete <i>Sabellaria spinulosa</i> 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 <i>Protodorvillea kefersteini</i>, <i>Pholoe synophthalmica</i>, <i>Harmothoe</i> spp, <i>Scoloplos armiger</i>, <i>Mediomastus fragilis</i>, <i>Lanice conchilega</i> and cirratulids, together with the bivalve <i>Abra alba</i>, and tube building amphipods such as <i>Ampelisca</i> spp. The epifauna comprise a variety of bryozoans including <i>Flustra foliacea</i>, <i>Alcyonidium diaphanum</i> and <i>Cellepora pumicosa</i>, in addition to calcareous tubeworms, pycnogonids, hermit crabs and amphipods. The reefs formed by <i>Sabellaria</i> 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 <i>Sabellaria</i> which are known to selectively settle in areas of suitable sediment and particularly on existing <i>Sabellaria</i> tubes. These reefs are particularly affected by dredging or trawling and in heavily dredged or disturbed areas an impoverished community may be left particularly if the activity or disturbance is prolonged. However, it is likely that reefs of <i>S. spinulosa</i> can recover quite quickly from short term or intermediate levels 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.</p>
SS.SCS.CCS.MedLumVen	<p>Circlittoral gravels, coarse to medium sands, and shell gravels, sometimes with a small amount of silt and generally in relatively deep water (generally over 15-20 m), may be characterised by polychaetes such as <i>Mediomastus fragilis</i>, <i>Lumbrineris</i> spp., <i>Glycera lapidum</i> with the pea urchin <i>Echinocyamus pusillus</i>. Other taxa may include Nemertea spp., <i>Protodorvillea kefersteini</i>, <i>Owenia fusiformis</i>, <i>Spiophanes bombyx</i> and <i>Amphipholis squamata</i> along with amphipods such as <i>Ampelisca spinipes</i>. This biotope may also be characterised by the presence of conspicuous venerid bivalves, particularly <i>Timoclea ovata</i>. Other robust bivalve species such as <i>Moerella</i> spp., <i>Glycymeris glycymeris</i> and <i>Astarte sulcata</i> may also be found in this biotope. <i>Spatangus purpureus</i> may be present especially where the interstices of the gravel are filled by finer particles, in which case, <i>Gari tellinella</i> may also be prevalent. 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 <i>Hydroides norvegicus</i> and <i>Pomatoceros lamarcki</i>. In sand wave areas this biotope may also contain elements of the SS.SSa.IMuSa.FfabMag biotope, particularly <i>Magelona</i> species. This biotope has</p>

	<p>previously been described as the 'Deep Venus Community' and the 'Boreal Off-Shore Gravel Association' by other workers and may also be part of the Venus community and in the infralittoral etage. SS.SCS.CCS.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, a 'Series A' and a 'Series B' characterised by <i>Echinocardium cordatum-Chamelea gallina</i> and <i>Spatangus purpurea-Clausinella fasciata</i>. 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 <i>Arcopagia crassa</i>, <i>Laevicardium crassum</i> and others including <i>Glycymeris glycymeris</i>. This high porosity fine gravel or coarse sand may be a separate biotope.</p>
SS.SCS.CCS.Pkef	<p>In coarse gravelly or shelly sand sometimes with a slight mud content, along open coasts in depths of 10 to 30 m, and in shallower offshore areas, an impoverished community characterised by <i>Protodorvillea kefersteini</i> may be found. This biotope has a number of other species associated with it including Nemertea spp., <i>Caulleriella zetlandica</i>, <i>Minuspio cirrifera</i>, <i>Glycera lapidum</i>, <i>Ampelisca spinipes</i> and numerous other polychaete species all occurring at low abundances. The polychaete <i>Sabellaria spinulosa</i> is also found in low numbers in this biotope.</p>
SS.SCS.CCS.PomB	<p>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 <i>Pomatoceros triqueter</i> (or <i>P. lamarcki</i>), small barnacles including <i>Balanus crenatus</i> and <i>Balanus balanus</i>, 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 <i>Sertularia argentea</i> and <i>Hydrallmania falcata</i> are present. This biotope often grades into SS.SMx.CMx.FluHyd which is characterised by large amounts of the above hydroids on stones also covered in <i>Pomatoceros</i> and barnacles. The main difference here is that SS.SMx.CMx.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.</p>
SS.SCS.ICS.Glap	<p>In infralittoral mixed slightly gravelly sands on exposed open coasts impoverished communities characterised by the polychaete <i>Glycera lapidum</i> (agg.) may be found. <i>Glycera lapidum</i> 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 sublittoral coarse sediment (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 <i>Spio martinensis</i> and <i>Spiophanes bombyx</i>, <i>Nephtys</i> spp. and in some areas the bivalve <i>Spisula elliptica</i>. It is possible that SS.SCS.ICS.Glap is not a true biotope, rather an impoverished, transitional community, which in more settled conditions develops into other more stable communities.</p>

SS.SCS.ICS.HeloMsim	<p>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 eg around the Race Bank, Docking Shoal and Inner Dowsing banks, and in the Southern Bight of the North Sea and off the Belgian coast. These habitats support interstitial communities living in the spaces between the grains of sand, in particular hesionurid polychaetes such as <i>Hesionura elongata</i> and <i>Microphthalmus similis</i>, along with protodrilid polychaetes such as <i>Protodrilus</i> spp. and <i>Protodriloides</i> spp. Other important species may include <i>Turbellaria</i> spp. and larger deposit feeding polychaetes such as <i>Travisia forbesii</i>. 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.</p>
SS.SCS.ICS.SLan	<p>Dense beds of <i>Lanice conchilega</i> 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 eg <i>Spiophanes bombyx</i>, <i>Scoloplos armiger</i>, <i>Chaetozone setosa</i> and <i>Magelona mirabilis</i>. <i>Lanice</i> beds are found in a wide range of habitats including muddier mixed sediment. The dense <i>Lanice</i> biotope (LS.LGS.SLan) on certain lower shores may be a littoral extension of the current biotope. The presence of <i>L. conchilega</i> in high numbers may, over time, stabilise the sediment to the extent where a more diverse community may develop. Possibly as a result of this, there is a high level of variation with regard the infauna found in SS.SCS.ICS.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 <i>Lanice</i> beds are often found intermixed with <i>Sabellaria spinulosa</i> beds in muddier mixed sediment, particularly in the channels between the shallow sandbanks, which are so prevalent in this area. It is possible that the presence of <i>Lanice</i> has stabilised the habitat sufficiently to allow the deposition of finer material, which has subsequently assisted the development of <i>S. spinulosa</i>. It may be more accurate to define SS.SCS.ICS.SLan as an epibiotic biotope which overlays a variety of infaunal biotopes (eg SS.SSa.IFiSa.NcirBat in finer sands and SS.SSa.CMuSa.AalbNuc or SS.SSa.IMuSa.FfabMag in slightly muddier areas).</p>
SS.SCS.OCS.HeloPkef	<p>Offshore (deep) circalittoral habitats with coarse sand may support populations of the interstitial polychaete <i>Hesionura elongata</i> with <i>Protodorvillea kefersteini</i>. Other notable species include the phyllodocid polychaete <i>Protomystides limbata</i> and the bivalve <i>Moerella pygmaea</i>. This biotope was reported in the offshore northern North Sea. Relatively little data exists for this biotope.</p>
SS.SSa.CFiSa.ApriBatPo	<p>In circalittoral and offshore medium to fine sands between 25 m and 100 m a community characterised by the bivalve <i>Abra prismatica</i>, the amphipod <i>Bathyporeia elegans</i> and polychaetes such as <i>Scoloplos armiger</i>, <i>Spiophanes bombyx</i>, <i>Aonides paucibranchiata</i>, <i>Chaetozone setosa</i>, <i>Ophelia borealis</i> and <i>Nephtys longosetosa</i> may be found. Crustacea such as the cumacean <i>Eudorellopsis deformis</i> and the opheliid polychaetes such as <i>Ophelia borealis</i>, <i>Travisia forbesii</i> or <i>Ophelina neglecta</i> are often present in this biotope and the brittlestar <i>Amphiura filiformis</i> may also be common at some sites. This biotope has been reported in the central and northern North</p>

	Sea.
SS.SSa.CMuSa.AalbNuc	Non-cohesive muddy sands or slightly shelly/ gravelly muddy sand characterised by the bivalves <i>Abra alba</i> and <i>Nucula nitidosa</i> . Other important taxa include <i>Nephtys</i> spp., <i>Chaetozone setosa</i> and <i>Spiophanes bombyx</i> with <i>Fabulina fabula</i> also common in many areas. The echinoderms <i>Ophiura albida</i> and <i>Asterias rubens</i> may also be present. The epibiotic biotope SS.SSa.IMuSa.EcorEns may overlap this biotope. This biotope is part of the <i>Abra</i> community and the infralittoral etage.
SS.SSa.IFiSa##	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 (<i>Bathyporeia</i>) and robust polychaetes including <i>Nephtys cirrosa</i> and <i>Lanice conchilega</i> .
SS.SSa.IFiSa.IMoSa	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 <i>Gastrosaccus spinifer</i> , the polychaete <i>Nephtys cirrosa</i> and the isopod <i>Eurydice pulchra</i> . Sand eels <i>Ammodytes</i> sp. may occasionally be observed in association with this biotope (and others). This biotope is more mobile than SS.SSa.IFiSa.NcirBat and may be closely related to LS.LSa.MoSa.BarSa on the shore. Common epifaunal species such as <i>Pagurus bernhardus</i> , <i>Liocarcinus depurator</i> , <i>Carcinus maenas</i> and <i>Asterias rubens</i> may be encountered and are the most conspicuous species present.
SS.SSa.IFiSa.NcirBat	Well-sorted medium and fine sands characterised by <i>Nephtys cirrosa</i> and <i>Bathyporeia</i> spp. (and sometimes <i>Pontocrates</i> 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 <i>Magelona mirabilis</i> may be frequent in this biotope in more sheltered, less tideswept areas whilst in coarser sediments the opportunistic polychaete <i>Chaetozone setosa</i> may be commonly found. The faunal diversity of this biotope is considerably reduced compared to less disturbed biotopes (such as SS.SSa.IMuSa.FfabMag) and for the most part consists of the more actively-swimming amphipods. Sand eels <i>Ammodytes</i> sp. may occasionally be observed in association with this biotope (and others) and spionid polychaetes such as <i>Spio filicornis</i> and <i>S. martinensis</i> may also be present. Occasional <i>Lanice conchilega</i> may be visible at the sediment surface.
SS.SSa.IFiSa.TbAmPo	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 <i>Corophium crassicorne</i> with other tube building amphipods such as <i>Ampelisca</i> spp. also common. Other taxa include typical shallow sand fauna such as <i>Spiophanes bombyx</i> , <i>Urothoe elegans</i> , <i>Bathyporeia</i> spp. along with various polychaetes including <i>Exogone hebes</i> and <i>Lanice conchilega</i> . <i>Polydora ciliata</i> may also be abundant in some areas. At the sediment surface, <i>Arenicola marina</i> worm casts may be visible and occasional seaweeds such as <i>Laminaria saccharina</i> 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 SS.SMu.ISaMu.AmpPlon, to which it is related, appears to have a patchy distribution.
SS.SCS.ICS.MoeVen	Infralittoral medium to coarse sand and gravelly sand which is subject to moderately strong water movement from tidal streams may be characterised by <i>Moerella</i> spp. with the polychaete <i>Glycera lapidum</i> (agg.) and venerid bivalves. Typical species include <i>Moerella pygmaea</i> or <i>M. donacina</i> with other robust bivalves such as <i>Dosinia lupinus</i> , <i>Timoclea ovata</i> , <i>Goodallia triangularis</i> and <i>Chamelea gallina</i> . Other infauna include nephtyd and spionid polychaetes and amphipod crustacea. Another important component of this biotope in some areas is the bivalve <i>Spisula solida</i> (see Kühne & Rachnor 1996 in Connor <i>et al</i> , 2004 ⁽¹⁾) which may be common or abundant. In conjunction with SS.SSa.IMuSa.FfabMag this biotope may form part of the 'Shallow <i>Venus</i> Community', the 'Boreal Off-shore Sand Association' and the ' <i>Goniadella</i> - <i>Spisula</i> association' of previous workers. Epifaunal communities may be reduced in this biotope when compared to SS.SSa.IMuSa.FfabMag; both types may have surface sand waves which may be indicative of the presence of venerid bivalves. 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 <i>Paphia</i> , <i>Ensis</i> and <i>Spatangus</i> . In southern areas of the UK and the North Sea, in slightly siltier sand and shelly sand, SS.SCS.ICS.MoeVen may give way to the other <i>Spisula</i> biotope SS.SSa.IMuSa.SsubNhom. Together these two biotopes replace the old biotope IGS.Sell.

(1) Connor, D.W., Allen, J.H., Golding, N., Howell, K.L., Lieberknecht, L.M., Northen, K.O., Reker, J.B. 2004. The marine habitat classification for Britain and Ireland. Version 04.05. Joint Nature Conservation Committee, Peterborough, available at www.jncc.gov.uk/MarineHabitatClassification.