MarLIN
Marine Information Network
Information on the species and habitats around the coasts and sea of the British Isles

Barren or amphipod-dominated mobile sand shores

MarLIN – Marine Life Information Network
Marine Evidence–based Sensitivity Assessment (MarESA) Review

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The Marine Life Information Network, Marine Biological Association of the United Kingdom.

Please note. This MarESA report is a dated version of the online review. Please refer to the website for the most up-to-date version [https://www.marlin.ac.uk/habitats/detail/343]. All terms and the MarESA methodology are outlined on the website (https://www.marlin.ac.uk)

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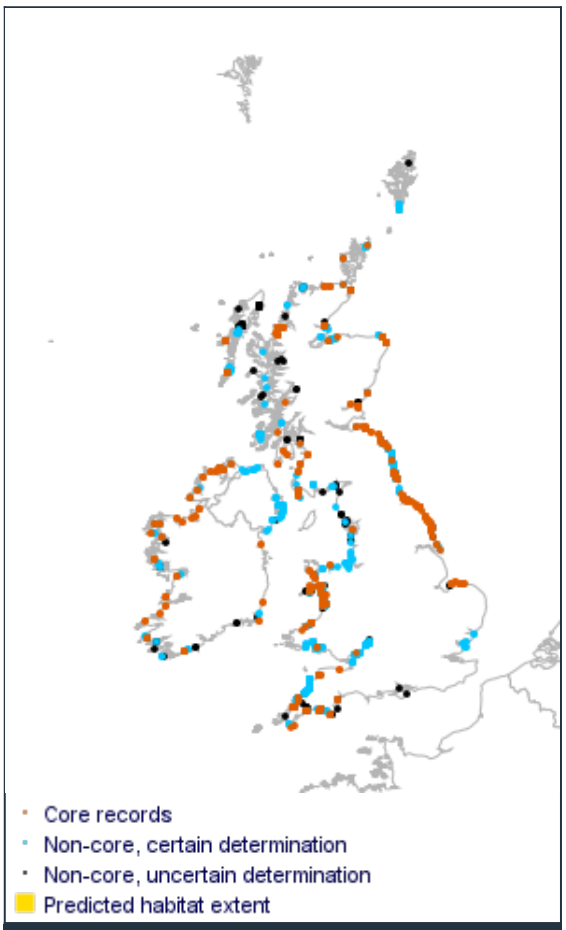
Barren or amphipod-dominated mobile sand shores
Photographer: Keith Hiscock



17-09-2018
Biotope distribution data provided by EMODnet Seabed Habitats (www.emodnet-seabedhabitats.eu)

Researched by Dr Heidi Tillin **Refereed by** Admin

Summary

UK and Ireland classification

EUNIS 2008	A2.22	Barren or amphipod-dominated mobile sand shores
JNCC 2015	LS.LSa.MoSa	Barren or amphipod-dominated mobile sand shores
JNCC 2004	LS.LSa.MoSa	Barren or amphipod-dominated mobile sand shores
1997 Biotope	LS.LGS.S	Sand shores

Description

Shores consisting of clean mobile sands (coarse, medium and some fine-grained), with little very fine sand, and no mud present. Shells and stones may occasionally be present on the surface. The sand may be duned or rippled as a result of wave action or tidal currents. The sands are non-cohesive, with low water retention, and thus subject to drying out between tides, especially on the upper shore and where the shore profile is steep. Most of these shores support a limited range of species, ranging from barren, highly mobile sands to more stable clean sands supporting

communities of isopods, amphipods and a limited range of polychaetes. Species which can characterize mobile sand communities include *Scolelepis squamata*, *Pontocrates arenarius*, *Bathyporeia pelagica*, *Bathyporeia pilosa*, *Haustorius arenarius* and *Eurydice pulchra*.

Mobile sand shores are typically situated along open stretches of coastline, with a relatively high degree of wave exposure. Bands of gravel and shingle may be present on the upper shore of exposed beaches. Where the wave exposure is less, and the shore profile more shallow, mobile sand communities may also be present on the upper part of the shore, with more stable fine sand communities present lower down. A strandline of talitrid amphipods (Tal) typically develops at the top of the shore where decaying seaweed accumulates. Mobile sand shores may show significant seasonal changes, with sediment accretion during calm summer periods and beach erosion during more stormy winter months. There may be a change in sediment particle size structure, with finer sediment grains washed out during winter months, leaving behind coarser sediments. (Information from Connor *et al.*, 2004; JNCC, 2015).

Depth range

Strandline, Upper shore, Mid shore, Lower shore

Additional information

-

Listed By

- none -

Further information sources

Search on:

G G JNCC

Sensitivity review

Sensitivity characteristics of the habitat and relevant characteristic species

The biotope description and characterizing species are taken from JNCC (2015). The biotope group is characterized by clean mobile sands (coarse, medium and some fine-grained), with little very fine sand, and no mud present. The sands are mobile, retain little water and organic matter and dry out between tides, so that they support only a limited range of species. Species which can characterize mobile sand communities include *Scolelepis squamata*, *Pontocrates arenarius*, *Bathyporeia pelagica*, *Bathyporeia pilosa*, *Haustorius arenarius* and *Eurydice pulchra*. The sensitivity assessments are based on the abiotic (non-living) habitat which defines the biotope and the key characterizing amphipod, isopod and polychaetes.

Resilience and recovery rates of habitat

This biotope is subject to high levels of abrasion resulting from sediment mobility. The species that are present (if any) are robust animals that can withstand some physical disturbance and/or recover rapidly, or migrate as adults into the biotope. The LS.LSa.MoSa.BarSa biotope is primarily identified by the type of the substratum rather than the biological community, which may be absent, or if present, occur in extremely low abundance. The mobile species that may be found in the LGS.BarSnd biotope occur throughout the littoral zone and are not dependent specifically on this biotope. Therefore the substratum type has been used primarily to indicate the sensitivity of this biotope and no species indicative of sensitivity were chosen.

Resilience assessment. As this biotope is characterized by the absence, rather then the presence of species, recovery is assessed as 'High' for any level of impact. The biotope would be considered to be sensitive to pressures that allowed the establishment of a permanent, species rich biological assemblage as low abundances and low species richness are characteristic of the biotope.

Hydrological Pressures

	Resistance	Resilience	Sensitivity
Temperature increase (local)	High Q: High A: Medium C: NR	High Q: High A: High C: High	Not sensitive Q: High A: Medium C: Low

This biotope is characterized by the absence of species resulting from sediment mobility and abrasion (JNCC, 2015), rather than the presence of typical species: changes in temperature will therefore not alter the biotope (based on the abiotic habitat). Resistance to an increase in temperature is therefore assessed as 'High' and resilience as 'High' (by default) and this biotope is considered to be 'Not sensitive'.

Temperature decrease (local)	High Q: High A: Medium C: NR	High Q: High A: High C: High	Not sensitive Q: High A: Medium C: Low

This biotope is characterized by the absence of species resulting from sediment mobility and abrasion (JNCC, 2015), rather than the presence of typical species: changes in temperature will therefore not alter the biotope (based on the abiotic habitat). Resistance to a decrease in temperature is therefore assessed as 'High' and resilience as 'High' (by default) and this biotope is

considered to be 'Not sensitive'.

Salinity increase (local)	High Q: High A: Medium C: NR	High Q: High A: High C: High	Not sensitive Q: High A: Medium C: Low

This biotope is characterized by the absence of species resulting from sediment mobility and abrasion (JNCC, 2015), rather than the presence of typical species: changes in salinity will therefore not alter the biotope (based on the abiotic habitat). Resistance to an increase in salinity is therefore assessed as 'High' and resilience as 'High' (by default) and this biotope is considered to be 'Not sensitive'.

Salinity decrease (local)	High Q: High A: Medium C: Low	High Q: High A: High C: High	Not sensitive Q: High A: Medium C: Low

This biotope is characterized by the absence of species resulting from sediment mobility and abrasion (JNCC, 2015), rather than the presence of typical species: changes in salinity will therefore not alter the biotope (based on the abiotic habitat). Resistance to a decrease in salinity is therefore assessed as 'High' and resilience as 'High' (by default) and this biotope is considered to be 'Not sensitive'.

Water flow (tidal current) changes (local)	High Q: Low A: NR C: NR	High Q: High A: High C: High	Not sensitive Q: Low A: Low C: Low

Changes in water flow at the pressure benchmark are considered unlikely to lead to alterations in the biotope as wave exposure would still result in sediment mobility, preventing the establishment of a more species rich biotope. Resistance is therefore assessed as 'High' and resilience as 'High' (by default) so that the biotope is considered to be 'Not sensitive'. A reduction in water flow (coupled with reduced wave exposure) exceeding the pressure benchmark, could reduce sediment mobility and this may allow the establishment of a biotope such as LS.LSa.MoSa.AmSco.Sco or LS.LSa.MoSa.AmSco.Eur where finer sands were deposited.

Emergence regime changes	Low Q: Low A: NR C: NR	High Q: Low A: NR C: NR	Low Q: Low A: Low C: Low

This biotope occurs from the lower to upper shore and sediment mobility, rather than emergence, is a key factor preventing the establishment of a more species rich biotope. An increase in the emergence period of this biotope would make it even more inhospitable to marine invertebrates. Where the biotope occurs in the supralittoral zone, a reduction in saline spray and splash may favour the colonization of terrestrial plants, which if able fully to establish will have a stabilising effect on the substratum. Consequently, this factor has the potential to alter the LGS.BarSnd biotope so that its starts to become another biotope. Similarly a decrease in emergence that led to this biotope becoming fully sublittoral would result in reclassification. The LGS.BarSnd biotope would not be recognized in either scenario and resistance has therefore been assessed as 'Low'. On return to prior emergence regime sublittoral species that are intolerant of emergence and plants that may have colonized the substratum and which are intolerant to saline splash and spray will probably decline rapidly. Therefore resilience has been assessed as 'High'. This biotope is therefore considered to have 'Low' sensitivity' to changes in emergence.

Wave exposure changes (local)	High Q: High A: Medium C: NR	High Q: High A: High C: High	Not sensitive Q: High A: Medium C: Low

This biotope is found on shores that are judged to be moderately exposed, exposed or very exposed to wave action (JNCC, 2015). The presence of this biotope across these three categories is considered to indicate (by proxy) that increases or decreases in wave exposure at the pressure benchmark are unlikely to lead to alterations to the biotope. Resistance is therefore assessed as 'High' and resilience as 'High' (by default) so that the biotope is considered to be 'Not sensitive'. A reduction in wave exposure (exceeding the pressure benchmark), could reduce sediment mobility and this may allow the establishment of a biotope such as LS.LSa.MoSa.AmSco.Pon or LS.LSa.MoSa.AmSco.Eur where finer sands were deposited.

Chemical Pressures

	Resistance	Resilience	Sensitivity
Transition elements & organo-metal contamination	Not Assessed (NA) Q: NR A: NR C: NR	Not assessed (NA) Q: NR A: NR C: NR	Not assessed (NA) Q: NR A: NR C: NR

This pressure is **Not assessed** but evidence is presented where available. As this biotope is characterized by the lack of species, exposure to contaminants will not result in significant impacts.

Hydrocarbon & PAH contamination	Not Assessed (NA) Q: NR A: NR C: NR	Not assessed (NA) Q: NR A: NR C: NR	Not assessed (NA) Q: NR A: NR C: NR

This pressure is **Not assessed** but evidence is presented where available. As this biotope is characterized by the lack of species, exposure to contaminants will not result in significant impacts.

Synthetic compound contamination	Not Assessed (NA) Q: NR A: NR C: NR	Not assessed (NA) Q: NR A: NR C: NR	Not assessed (NA) Q: NR A: NR C: NR

This pressure is **Not assessed** but evidence is presented where available. As this biotope is characterized by the lack of species, exposure to contaminants will not result in significant impacts.

Radionuclide contamination	No evidence (NEv) Q: NR A: NR C: NR	Not relevant (NR) Q: NR A: NR C: NR	No evidence (NEv) Q: NR A: NR C: NR

No evidence

Introduction of other substances	Not Assessed (NA) Q: NR A: NR C: NR	Not assessed (NA) Q: NR A: NR C: NR	Not assessed (NA) Q: NR A: NR C: NR

This pressure is **Not assessed**.

De-oxygenation	High Q: Low A: NR C: NR	High Q: High A: High C: High	Not sensitive Q: Low A: Low C: Low

As this biotope is characterized by the lack of species, de-oxygenation will not result in significant impacts. De-oxygenation is unlikely as this biotope is intertidal and exposure to air and tidal flushing is likely to recharge oxygen levels. Biotope resistance is therefore assessed as 'High', and resilience as 'High' (by default) and the biotope is considered to be 'Not sensitive'.

Nutrient enrichment	High Q: Low A: NR C: NR	High Q: High A: High C: High	Not sensitive Q: Low A: Low C: Low

As this biotope is characterized by the lack of species present due to sediment mobility, nutrient enrichment will not result in significant impacts. Biotope resistance is therefore assessed as 'High', and resilience as 'High' (by default) and the biotope is considered to be 'Not sensitive'.

Organic enrichment	High Q: Low A: NR C: NR	High Q: High A: High C: High	Not sensitive Q: Low A: Low C: Low

As this biotope is characterized by the lack of species, organic enrichment will not result in significant impacts. Organic deposits are likely to be removed rapidly by wave action although in periods of calm an organic deposit may be rapidly colonized by oligochaetes. Biotope resistance is assessed as 'High' as enrichment is likely to be very short-lived, and resilience as 'High' (by default), the biotope is considered to be 'Not sensitive'.

Physical Pressures

	Resistance	Resilience	Sensitivity
Physical loss (to land or freshwater habitat)	None Q: High A: High C: High	Very Low Q: High A: High C: High	High Q: High A: High C: High

All marine habitats and benthic species are considered to have a resistance of ‘None’ to this pressure and to be unable to recover from a permanent loss of habitat (resilience is ‘Very Low’). Sensitivity within the direct spatial footprint of this pressure is therefore ‘High’. Although no specific evidence is described confidence in this assessment is ‘High’, due to the incontrovertible nature of this pressure.

Physical change (to another seabed type)	None Q: High A: Medium C: NR	Very Low Q: High A: High C: High	High Q: High A: Medium C: Low

This biotope is characterized by coarse sands (JNCC, 2015). A change to a hard or artificial substratum would significantly alter the character of the biotope. The biotope is therefore considered to have 'No' resistance to this pressure (based on a change to a sediment habitat), recovery is assessed as 'Very low', as the change at the pressure benchmark is permanent. Biotope sensitivity is therefore assessed as 'High'.

Physical change (to another sediment type)	None Q: High A: Medium C: Low	Very Low Q: High A: High C: High	High Q: High A: Medium C: Low

The benchmark for this pressure refers to a change in one Folk class. The pressure benchmark originally developed by Tillin *et al*., (2010) used the modified Folk triangle developed by Long (2006) which simplified sediment types into four categories: mud and sandy mud, sand and muddy sand, mixed sediments and coarse sediments. The change referred to is therefore a change in sediment classification rather than a change in the finer-scale original Folk categories (Folk, 1954). The change in one Folk class is considered to relate to a change in classification to adjacent categories in the modified Folk triangle. For coarse sands a change in one folk class may refer to a change to gravels, mixed sediments or muddy sands, sandy muds and muds. A change in sediment type would result in reclassification of the biotope (JNCC, 2015) and a change to mixed or fine sediments would likely result in the establishment of a species rich and more diverse community (depending on other habitat factors). Biotope resistance is therefore assessed as 'None' and resilience as 'Very low' as the change at the pressure benchmark is permanent. Sensitivity is therefore 'High'.

Habitat structure changes - removal of substratum (extraction)	None Q: High A: Low C: NR	High Q: Low A: NR C: NR	Medium Q: Low A: Low C: Low

The process of extraction will remove the abiotic habitat; therefore a resistance of 'None' is recorded. As the coarse sands are mobile where small areas are impacted infilling is likely to be rapid following sediment redistribution by wave action. For instance, at Village Bay on St Kilda, an island group far out into the Atlantic west of Britain, an expanse of sandy beach was removed offshore as a result of winter storms to reveal an underlying rocky shore (Scott, 1960). Yet in the following summer the beach was gradually replaced when wave action was less severe. In view of such observations, that many sandy beaches disappear in winter and reappear in spring, it is likely that recovery would occur in less than a year or six months. As a result, resilience is assessed as 'High', and sensitivity as 'Medium'. Recovery where large volumes of sand are removed over wide areas may lead to slower recovery if sediments are not available and/or water transport is limited.

Abrasion/disturbance of the surface of the substratum or seabed	High Q: High A: Medium C: NR	High Q: High A: High C: High	Not sensitive Q: High A: Medium C: Low

This biotope is characterized by the absence of species through sediment mobility (JNCC, 2015), rather than the presence of typical species: abrasion will therefore not alter biotope character. The highly mobile species present occasionally in this biotope may only be found in extremely low abundance and are not specifically dependent on this biotope. Resistance to this pressure is therefore assessed as 'High' and resilience as 'High' (by default) and this biotope is considered to be 'Not sensitive'.

Penetration or disturbance of the substratum subsurface	High Q: High A: Medium C: NR	High Q: High A: High C: High	Not sensitive Q: High A: Medium C: Low

This biotope is characterized by the absence of species through sediment mobility (JNCC, 2015),

rather than the presence of typical species: abrasion will therefore not alter biotope character. The highly mobile species present occasionally in this biotope may only be found in extremely low abundance and are not specifically dependent on this biotope Resistance to this pressure is therefore assessed as 'High' and resilience as 'High' (by default) and this biotope is considered to be 'Not sensitive'.

Changes in suspended solids (water clarity)	High Q: High A: Medium C: NR	High Q: High A: High C: High	Not sensitive Q: High A: Medium C: Low

This biotope occurs in scoured habitats and it is likely, depending on local sediment supply, that the biotope is exposed to chronic or intermittent episodes of high-levels of suspended solids as local sediments are re-mobilised and transported. This biotope is characterized by the absence of species through sediment mobility (JNCC, 2015), rather than the presence of typical species: changes in suspended solids will therefore not alter the biotope. Resistance to an increase or decrease in suspended solids is therefore assessed as 'High' and resilience as 'High' (by default) and this biotope is considered to be 'Not sensitive'.

Smothering and siltation rate changes (light)	High Q: High A: Medium C: NR	High Q: High A: High C: High	Not sensitive Q: High A: Medium C: Low

This biotope is characterized by the absence of species through sediment mobility (JNCC, 2015), rather than the presence of typical species: the addition of a single deposit of fine sediments which will be removed by wave action will therefore not alter the biotope. Resistance to this pressure is therefore assessed as 'High' and resilience as 'High' (by default) and this biotope is considered to be 'Not sensitive'.

Smothering and siltation rate changes (heavy)	High Q: High A: Medium C: NR	High Q: High A: High C: High	Not sensitive Q: High A: Medium C: Low

This biotope is characterized by the absence of species through sediment mobility (JNCC, 2015), rather than the presence of typical species: the addition of a single deposit of fine sediments which will be removed by wave action will therefore not alter the biotope. Resistance to this pressure is therefore assessed as 'High' and resilience as 'High' (by default) and this biotope is considered to be 'Not sensitive'.

Litter	Not Assessed (NA) Q: NR A: NR C: NR	Not assessed (NA) Q: NR A: NR C: NR	Not assessed (NA) Q: NR A: NR C: NR

Not assessed.

Electromagnetic changes	No evidence (NEv) Q: NR A: NR C: NR	Not relevant (NR) Q: NR A: NR C: NR	No evidence (NEv) Q: NR A: NR C: NR

No evidence

Underwater noise changes	Not relevant (NR) Q: NR A: NR C: NR	Not relevant (NR) Q: NR A: NR C: NR	Not relevant (NR) Q: NR A: NR C: NR

Not relevant.

Introduction of light or shading	Not relevant (NR) Q: NR A: NR C: NR	Not relevant (NR) Q: NR A: NR C: NR	Not relevant (NR) Q: NR A: NR C: NR

Not relevant.

Barrier to species movement	Not relevant (NR) Q: NR A: NR C: NR	Not relevant (NR) Q: NR A: NR C: NR	Not relevant (NR) Q: NR A: NR C: NR

Not relevant.

Death or injury by collision	Not relevant (NR) Q: NR A: NR C: NR	Not relevant (NR) Q: NR A: NR C: NR	Not relevant (NR) Q: NR A: NR C: NR

Not relevant' to seabed habitats. NB. Collision by grounding vessels is addressed under surface abrasion.

Visual disturbance	Not relevant (NR) Q: NR A: NR C: NR	Not relevant (NR) Q: NR A: NR C: NR	Not relevant (NR) Q: NR A: NR C: NR

Not relevant.

Biological Pressures

	Resistance	Resilience	Sensitivity
Genetic modification & translocation of indigenous species	Not relevant (NR) Q: NR A: NR C: NR	Not relevant (NR) Q: NR A: NR C: NR	Not relevant (NR) Q: NR A: NR C: NR

This biotope is not characterized by any typical species, those that are present, such as *Bathyporeia spp.* are not translocated and this pressure is therefore considered 'Not relevant'.

Introduction or spread of invasive non-indigenous species	High Q: Low A: NR C: NR	High Q: High A: High C: High	Not sensitive Q: Low A: Low C: Low

The high levels of abrasion resulting from movement of coarse sands and the subsequent sediment instability will limit establishment of all but the most highly scour resistant invasive non-indigenous species (INIS) and no direct evidence was found for effects of INIS on this biotope. The low levels of water and organic matter retained by this biotope, are considered to additionally inhibit permanent colonization by invasive species.

Sensitivity assessment. Overall, there is no evidence of this biotope being adversely affected by non-native species. Resistance is therefore assessed as 'High', and resilience as 'High' (by default), and the biotope is considered to be 'Not sensitive'.

Introduction of microbial pathogens	Not relevant (NR) Q: NR A: NR C: NR	Not relevant (NR) Q: NR A: NR C: NR	Not relevant (NR) Q: NR A: NR C: NR

As this biotope is characterized by the absence of a biological assemblage apart from occasional and ephemeral presence of *Bathyporeia* spp. this pressure is considered to be 'Not relevant'.

Removal of target species	Not relevant (NR) Q: NR A: NR C: NR	Not relevant (NR) Q: NR A: NR C: NR	Not relevant (NR) Q: NR A: NR C: NR

As this biotope is characterized by the absence of a biological assemblage apart from occasional and ephemeral presence of *Bathyporeia* spp. this pressure is considered to be 'Not relevant'.

Removal of non-target species	Not relevant (NR) Q: NR A: NR C: NR	Not relevant (NR) Q: NR A: NR C: NR	Not relevant (NR) Q: NR A: NR C: NR

As this biotope is characterized by the absence of a biological assemblage apart from occasional and ephemeral presence of *Bathyporeia* spp. this pressure is considered to be 'Not relevant'.

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