

Red List of Ecosystem assessment series

Produced by JNCC and NatureScot, supported by Natural Resources Wales, Natural England, and Northern Ireland Environment Agency.

This resource is one in a series/number of Ecosystem Red List assessments developed to accompany the UK Biodiversity Indicator '[Red List of Ecosystems](#)'. The assessments are available at: <https://jncc.gov.uk/resources/7b922dfc-708b-4c8c-9e6a-e2040447fb39>.

Resilient ecosystems are crucial for preventing biodiversity loss and species extinction. Maintaining healthy ecosystems safeguards the essential services they provide, which are fundamental to human well-being and a thriving economy. However, pressures and threats such as deforestation, overfishing, or climate change, can disturb the balance of ecosystems and threaten their health and functioning. Assessing the level of threat facing ecosystems is important in helping us understand the current status of the environment, and on a practical level, assessments can be used to help prioritise conservation funding decisions and where to take conservation management action on the ground.

The 'Red List of Ecosystems' (RLE) is a global assessment approach set out by the International Union on Conservation of Nature (IUCN). The approach includes consideration of a series of criteria, including change in geographic distribution through time; whether the ecosystem distribution is geographically restricted; evidence for any environmental degradation; and disruption to biotic processes or interactions. We have not carried out the quantitative analyses of the probability of ecosystem collapse necessary to assess criterion E as we do not have the data needed to carry out such analyses consistently. The IUCN methodology is widely used as a robust approach to assessing the status of ecosystems. Further details of the criteria used in these assessments are available on the [IUCN portal](#).

This assessment series sets out the RLE assessment conclusions for ecosystems found in the UK, alongside the details of how the assessment was made, including for each IUCN component criterion. The assessments have been peer-reviewed, and source data is referenced. Once complete, the series will cover the full range of natural and seminatural habitats that occur in the UK, throughout marine, terrestrial and freshwater environments.

Assessments are conducted according to the [Global Ecosystem Typology Level 3](#) (Ecosystem Functional Groups). This enables the assessments to feed into the Kunming-Montreal [Global Biodiversity Framework](#) (GBF) headline indicator A.1 Red List of Ecosystems. This indicator, which has been incorporated into the UK Biodiversity Indicator suite, is designed to measure progress against [Goal A](#) ('Protect and restore') and [Target 1](#) ('Plan and manage all areas to reduce biodiversity loss') of the GBF.

Any gridded maps are derived from public sector information licensed under the Open Government Licence v3.0. Coastline boundary is derived from the Oil and Gas Authority's and Lloyds Register SNS Regional Geological Maps (Open Source).

M1.7 Subtidal Sand Beds

1. Key facts

Ecosystem description: Subtidal sand beds consist of sandy, coarse and mixed sediments and are located within the shelf biome. These habitats are unvegetated and are characterised by detritivores and suspension feeders including burrowing polychaetes, crustaceans, echinoderms, and molluscs. These habitats have low structural habitat complexity, are homogeneous, and are moderately to high energy environments which promote substrate instability.



Image credits: (Left to right) Plain of rippled sand ©JNCC; Coarse sand with tubes and burrows © JNCC, Cefas

Overall assessment conclusion: Near Threatened (NT) based on criteria B1 and C1

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Corresponding habitat classifications:

The following habitats were considered in the production of this assessment:

EUNIS codes: [MB32](#); [MB42](#); [MB52](#); [MC32](#); [MC42](#); [MC52](#); [MD32](#); [MD42](#); [MD52](#)

UK Marine Habitat Classification:

Sublittoral coarse sediment (unstable cobbles and pebbles, gravels and coarse sands) [SS.SCS](#);

Sublittoral mixed sediment [SS.SMx](#);

Sublittoral sands and muddy sands [SS.SSa](#)

2. Assessment against IUCN criteria

Criterion A: Reduction in geographic distribution

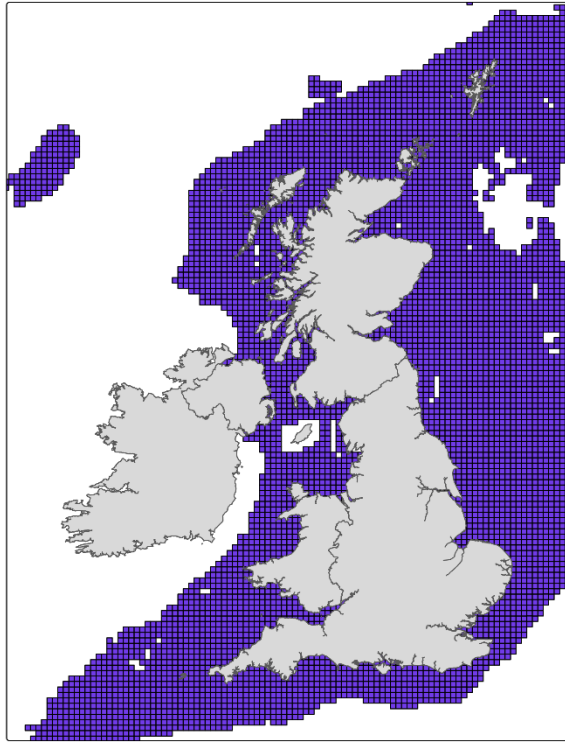
Criterion A considers reduction in geographic distribution over ANY of the defined time periods for criteria A1, A2a, A2b or A3. For details of time periods and criteria see [IUCN Red List of Ecosystems Criteria Summary Sheet 2.2 EN.pdf](#)

Subtidal sand beds are defined by their topography and substrate type. Their distribution is determined by geological and/or hydrodynamic processes maintaining the area. The nature of these processes means that the geographic range of this feature is unlikely to change significantly overtime, and therefore is considered to be relatively stable. There have been no records of a decline in the geographic distribution of these features although some localised areas may have seen declines due to anthropogenic activities (DAERA, 2025; JNCC, 2019; JNCC, 2025; NatureScot, 2025; NRW, 2025).

Least Concern – there is no evidence of a reduction in distribution of subtidal sand beds.

Criterion B: Restricted geographic distribution

Criterion B considers restricted geographic distribution indicated by any of criteria B1, B2 or B3. For details of criteria see [IUCN Red List of Ecosystems Criteria Summary Sheet 2.2 EN.pdf](#).



Subtidal sand beds are widely distributed throughout the UK. Assessments of the Annex I feature “Sandbanks which are slightly covered by sea water all the time.” indicate that in the UK that approximately 50% of this feature is not in good condition (DAERA, 2025; JNCC, 2019; JNCC, 2025; NatureScot, 2025; NRW, 2025). Furthermore, assessments of broadscale habitats undertaken for the UK Marine Strategy indicate multiple failures where Good Environmental Status was not achieved or condition was classed as not good depending on region, habitat type and indicator, failures were particularly evident offshore (Duncombe-Smith et al., 2025; Marra et al., 2025; Phillips 2025; Wijnhoven et al., 2025; Woodcock et al., 2025).

Near Threatened (NT) – While a large proportion of this habitat is in poor condition, there is 430,735 km² of this habitat within the UK (Mountford et al., 2025).

Criterion C: Environmental degradation

Criterion C considers environmental degradation over ANY of the time periods for criteria C1, C2a, C2b or C3. For details of time periods and criteria see [IUCN Red List of Ecosystems Criteria Summary Sheet 2.2 EN.pdf](#).

Key environmental impacts experienced by subtidal sand beds include fishing; impacts from infrastructure such as wind farms and cables; aggregate extraction; litter and pollution (DAERA, 2025; Jackson-Bue, 2025; JNCC, 2019; JNCC, 2025; NatureScot, 2025; NRW, 2025; OSPAR, 2023a). Due to the sensitivity of species that inhabit this habitat and the high spatial overlap of fished areas it has resulted in a number of areas not meeting Good Environmental Status (Woodcock et al., 2025). While there has been an increase in areas protected from physical disturbance from fishing gear, further evidence is required to assess the effectiveness of these measures (OSPAR, 2023a). There has also been a large increase in offshore renewable energy since 2010 which is predicted to continue (OSPAR, 2023a). Aggregate extraction has increased in the Greater North Sea and remains a significant threat in sand beds (OSPAR, 2023a).

Climate change pressures are acting on subtidal sand beds, with ocean warming predicted to increase in the future. Offshore circalittoral sediments are thought to face a strong effect of increased temperatures in the future (OSPAR, 2023b). Impacts include changing distributions, species introductions, potential changes in community structure, and vulnerability caused by ocean acidification (Birchenough et al., 2013; Hoppit & Schmidt, 2022; Moore & Smale, 2020).

C1 Near Threatened (NT): – Large areas of subtidal sand beds have been subjected to fishing pressure over the past decades with measures only relatively recently coming into place. Continued fishing activities outside of MPAs and increase in renewables and extraction activity mean that this habitat has been assessed as Near Threatened.

Criterion D. Disruption of biotic processes or interactions

Criterion D considers Disruption of biotic processes or interactions over ANY of the time periods for criteria D1, D2a, D2b or D3. For details of time periods and criteria see [IUCN Red List of Ecosystems Criteria Summary Sheet 2.2 EN.pdf](#)

Subtidal sand beds are impacted by nutrient pollution, particularly close to urban sites and in proximity to estuaries. For example, in Wales, water quality was identified as a threat to condition of sand beds (Jackson-Bué, 2025). Open coasts and offshore areas are less likely than estuaries to be impacted, and within the UK, trends in nutrient loads along open coasts are generally continuing to decrease, except at a small number of reporting regions (Devlin et al., 2025). Non-native species have also been flagged as a threat to sand beds, with several species recorded, however there is limited evidence that the presence of non-native taxa are impacting communities (Stebbing et al., 2015; Tillin et al., 2020). Increased biosecurity initiatives and management efforts are thought to be reducing the rates of introduction though climate change may exacerbate this in the future (Davison et al., 2025; Stæhr et al., 2022).

Least Concern (LC) – Impacts from nutrient pollution are more likely to be observed in inshore, coastal locations. It is expected that the wider efforts to reduce nutrient pollution and the spread of non-native species will minimise impact though climate change may exacerbate this.

Conservation measures in place

Subtidal sand beds are widely distributed throughout the UK. There are site specific measures in place where sand beds are located within Marine Protected Areas (MPAs). Subtidal sand beds are afforded protections across the network of UK MPAs which include Marine Conservation Zones (e.g. South West Deeps (East)), Highly Protected Marine Areas (e.g. North East of Farnes Deep MPA), and Special Areas of Conservation (SACs) (e.g. Dogger Bank). Sand beds within SACs are protected via the Habitats Regulations as a component of the Annex I habitat Sandbanks which are slightly covered by sea water all the time. However, it should be noted that Annex I sandbanks represent only a small fraction of the total sand beds resource. Site-specific Conservation Objectives, information on pressures and threats, and details of the habitats and species are contained within the Conservation and Management Advice packages for each site. From the point of designation of MPAs, most human activities with the potential to have adverse effects are managed through a licensing and consents process. Sites benefit from legal protections under the Marine and Coastal Access Act 2009 and the Fisheries Act 2020, with recent byelaws (e.g. Dogger Bank) prohibiting damaging fishing activities. In addition, UK fisheries management plans (a requirement of the Fisheries Act 2020) are being developed and should focus on sustainable management and mitigation of marine industries and activities.

Overall assessment conclusion

Subtidal sand beds in the UK are assessed as being Near Threatened (NT) based on criteria B1, C1.

3. Literature references

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