Office for National Statistics

Statistical bulletin

Marine and coastal margins natural capital accounts, UK: 2025

Natural capital accounts estimating the extent, condition, and annual and asset value of biotic (living) and abiotic (non-living) ecosystem services for marine and coastal margins habitats in the UK.

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1 . Main points

- The annual value of natural capital in UK marine and coastal margins habitats that we are currently able to measure was around £43 billion in 2022, including biotic (living) and abiotic (non-living) ecosystem services, or about £3 billion excluding abiotic ecosystem services.

- The larger annual value of abiotic services, relative to biotic services, is mainly caused by the oil and gas provisioning ecosystem service (£39 billion), which was especially high in 2022 because of an increase in energy prices in that year.

- The total UK asset value of marine and coastal margins natural capital that we are currently able to value was an estimated £272 billion in 2022, including biotic and abiotic ecosystem services, and an estimated £120 billion, excluding abiotic ecosystem services.

- The proportion of the total asset value of UK marine and coastal margins habitats that are attributable to oil and gas (46%, or £126 billion) is smaller than the proportion of its annual value (91%, or £39 billion) that is attributable to oil and gas; this is because we value assets using projections that involve lower prices before 2022 and the likelihood of declining future oil and gas extraction.

- Health benefits from recreation in the marine and coastal margins habitats had an annual value of around £1 billion in 2022.

- We have included estimates of carbon dioxide equivalent sequestered by seagrass in UK waters for the first time; this amounts to a minimum of 2,529 tonnes in 2024, with an estimated minimum annual value of £0.7 million.

As a result of changing methods and expanding the range of ecosystem services measured, these latest accounts cannot be compared with previous ones on a like-for-like basis. We have applied our updated methods across all years in these new accounts, providing a consistent time series back to 1998.

2 . Extent of marine habitat

The marine broad habitat is saltwater covering the tidal zone around the UK and the sea, whereas the coastal margins broad habitat is the intertidal areas such as the beach and saltmarsh and the areas above the high tide mark, including rocky coastlines and sand dunes.

The area of the UK's marine habitat is known as "extent". Extent for natural capital accounts purposes uses a different data source than the terrestrial (land) habitats accounts. The extent of the UK marine area is based on the sea boundary for the UK's Exclusive Economic Zone (EEZ), whereas the terrestrial habitat extent data uses the UK Centre for Ecology and Hydrology's (UKCEH's) Land Cover Maps.

The total extent of the UK marine habitat was around 82 million hectares.

Table 1 describes the extent of the marine habitat, as measured by the Joint Nature Conservation Committee (JNCC). Littoral includes the region between high and low tides, sublittoral includes the region from low tide to the edge of the continental shelf, and deep-sea extends beyond that.

Table 1: Total area of selected European Nature Information System (Level 2 and 3) habitat classes of interest, measured in hectares, UK, 2025

EUNIS Class	Extent (Ha)
A1 - Littoral rock and other hard substrata	22,364
A2.1 - Littoral coarse sediment	7,231
A2.2 - Littoral sand and muddy sand	163,905
A2.3 - Littoral mud	82,250
A2.4 - Littoral mixed sediments	7,474
A2.5 - Coastal saltmarshes and saline reedbeds	11,229
A2.6 - Littoral sediments dominated by aquatic angiosperms	2,471
A2.7 - Littoral biogenic reefs	4,693
A3 - Infralittoral rock and other hard substrata	314,266
A4 - Circalittoral rock and other hard substrata	1,323,801
A5.1 - Sublittoral coarse sediment	16,250,936
A5.2 - Sublittoral sand	25,353,535
A5.3 - Sublittoral mud	6,781,030
A5.4 - Sublittoral mixed sediments	1,358,394
A6.1 - Deep-sea rock and artificial hard substrata	261,024
A6.2 - Deep-sea mixed substrata	7,318,234
A6.3 - Deep-sea sand	2,495,327
A6.4 - Deep-sea muddy sand	5,094,500
A6.5 - Deep-sea mud	15,540,984
Total Area	82,393,647

Source: UK Atlas of Seabed Habitats: combined map v2025.1 from the Joint Nature Conservation Committee

3 . Marine and coastal margins condition indicators

Condition indicators look at the health of a habitat. The main guidance for our natural capital accounting is the United Nations System of Environmental-Economic Accounting Ecosystem Accounting (SEEA-EA) (PDF, 6MB). The SEEA-EA defines ecosystem condition as "the quality of an ecosystem measured in terms of its abiotic and biotic characteristics".

The SEEA-EA organises habitat condition information in a structured way, showing changes over time. We have sourced data, where available, for the categories suggested by the SEEA-EA. These categories cover the physical, chemical, compositional, structural, and landscape/seascape conditions specific to marine and coastal margins habitats. Figure 1 provides an overview of and long-term trends for these indicators for UK marine and coastal margins habitats.

These data assist in understanding the condition of the marine and coastal margins habitats. However, condition indicators included cannot currently be directly linked to a specific ecosystem service. The only exception is the "sustainable fishing" condition indicator, which impacts the asset value calculation of the fish provisioning ecosystem service.

Figure 1: Summary of long-term trend for marine and coastal margins condition indicators

Notes:

1. Colour coding in Figure 1 reflects whether the value of an indicator is increasing or decreasing. Increasing values do not always represent a positive trend and decreasing values do not always represent a negative one. For example, an increase in the number of particles of microplastics in seafloor sediment likely shows a deterioration of the ecosystem.

2. To see more details on each indicator, hover over the squares in this figure.

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Physical and chemical indicators

Water quality

The Water Framework Directive 2017 Regulations underpin the assessment of the water environment for several types of water bodies, including estuaries and coastal waters. These water regulations were retained in UK law after Brexit. The assessment includes the overall condition of each body of water and categorises them into one of five classifications, ranging from "bad" to "high" condition status.

Figure 2 shows the percentage of estuary and coastal surface water bodies in the UK by their condition classification, based on the Joint Nature Conservation Committee's Surface water status indicator report.

Figure 2: The percentage of estuarine and coastal surface water bodies classed as high or good condition has been stable, at 76%, since 2017

Condition of estuary and coastal surface water bodies, UK, 2009 to 2022

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Coastal bathing waters

The number of UK bathing water sites being monitored increased by 30% between 2015 and 2024. The share of UK-wide water sites rated "excellent" has risen from 60% to 67% over this period, and waters rated "poor" remained broadly stable.

Figure 3: At least 59% of UK bathing waters were rated excellent between 2015 and 2024, except for in 2020 when data were unavailable

Number of bathing waters within each quality category, UK, 2015 to 2024

Notes

1. Data for 2020 are not available for England and Scotland.
2. Data from 2015 to 2020 were supplied by the European Environment Agency.

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Plastic particles in sea sediments

Accumulation of plastic is a global concern because of its effects on a range of marine organisms that are known to ingest microplastics. This is discussed in Woodall and others' The deep sea is a major sink for microplastic debris article. Figure 4 indicates the amount of microplastics measured in seafloor sediments in the seas around England and Wales.

The mean amount of microplastics measured from seafloor sediment samples was 3,000 particles per kilogram (kg) in 2021. There is not yet an agreed safe or unsafe threshold for microplastic concentrations in UK sea sediments.

Figure 4: Microplastics are present in seafloor sediments in England and Wales waters

Number of particles of microplastics per kg of seafloor sediment (dried weight) for England and Wales, 2013 to 2021

Notes:

1. The west marine region covers the northern North Sea, southern North Sea, and the English Channel.
2. The east marine region covers the western English Channel, Celtic Sea, and Irish Sea.

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Sea temperatures

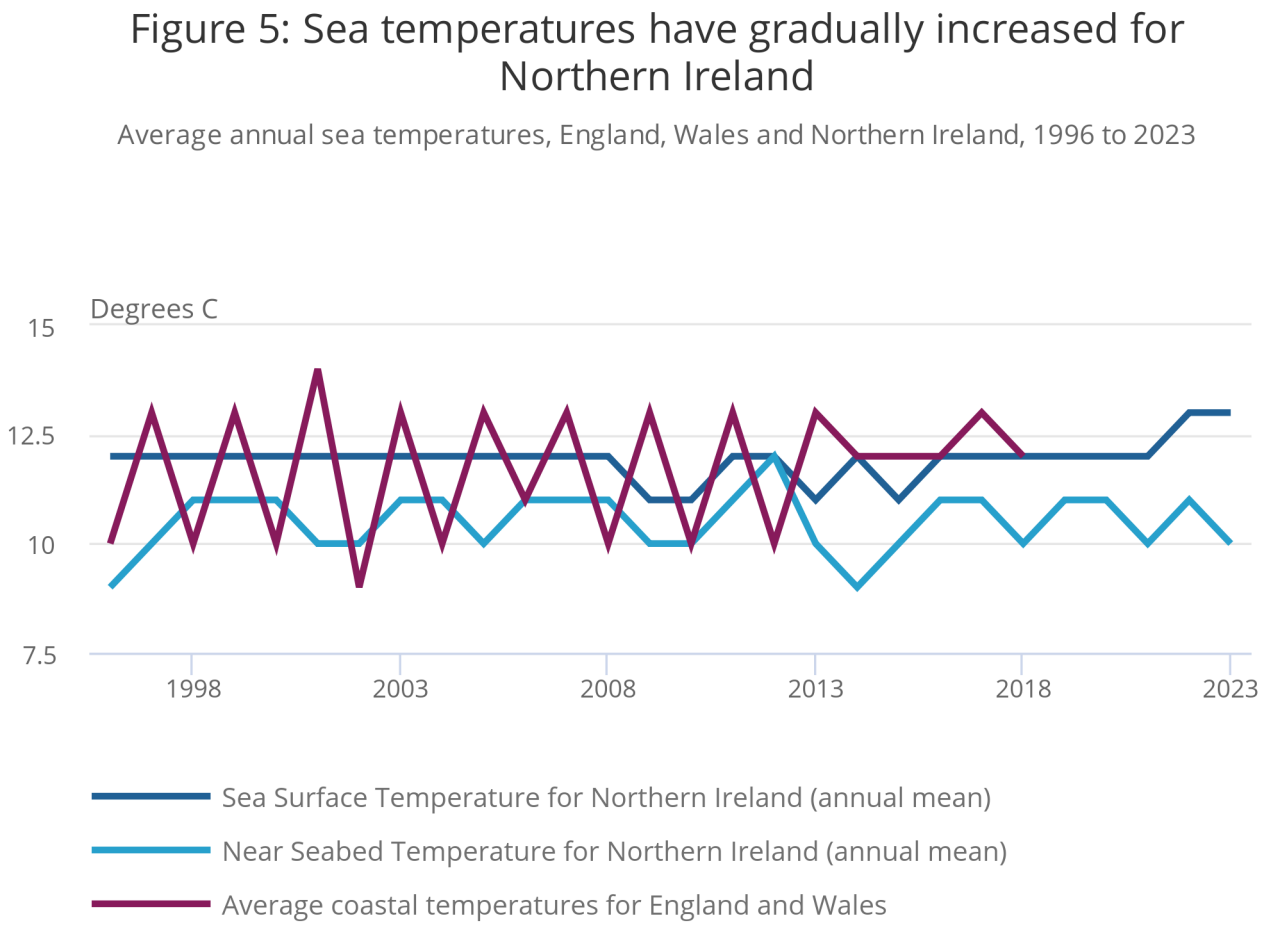
Warming sea temperatures affect marine life, including through shifts in the distribution of fish and other marine species. This is discussed in the Centre for Environment, Fisheries and Aquaculture Science's (CEFAS's) Climate change reshaping map of UK marine life, says new research news briefing.

There was a gradual trend of increasing sea temperatures for England and Wales between 2009 and 2018, according to CEFAS's Coastal Temperature Network monitoring data.

There has been a gradual increase in annual mean temperatures at the sea surface (0.092 degrees Celsius) and the sea floor (0.079 degrees Celsius) per decade in Northern Ireland, according to the Northern Ireland Statistics and Research Agency's (NISRA's) Environmental Statistics Report: May 2024 (PDF, 4MB).

Figure 5: Sea temperatures have gradually increased for Northern Ireland

Average annual sea temperatures, England, Wales and Northern Ireland, 1996 to 2023



Source: Centre for Environment, Fisheries and Aquaculture Science Coastal Temperature Network, and the Department for Agriculture, Environment and Rural Affairs for Northern Ireland

Compositional indicators

Species indicators

Bird populations are generally considered to be a useful indication of the broad state of wildlife in a given habitat.

Seabirds' smoothed index decreased by 25% between 1996 and 2023 in the UK, with little change from 2018.

The number of harbour seals increased by 12% and grey seals increased by 58% between 2000 and 2021. However, since 2019, both species have seen declines of 3%, and 4%, respectively.

In the coastal margins, the average total number of bumblebees per kilometre (km) decreased by 12%, and queen bumblebees decreased by 28% between 2010 and 2021, as found by the BeeWalk national recording scheme.

Figure 6: Compositional marine and coastal margins species for seabirds, bumblebees, harbour seals and grey seals, Great Britain or UK

Notes:

1. The gap in the time series for birds is because of the limited availability of 2020 data because of coronavirus (COVID-19) pandemic restrictions.

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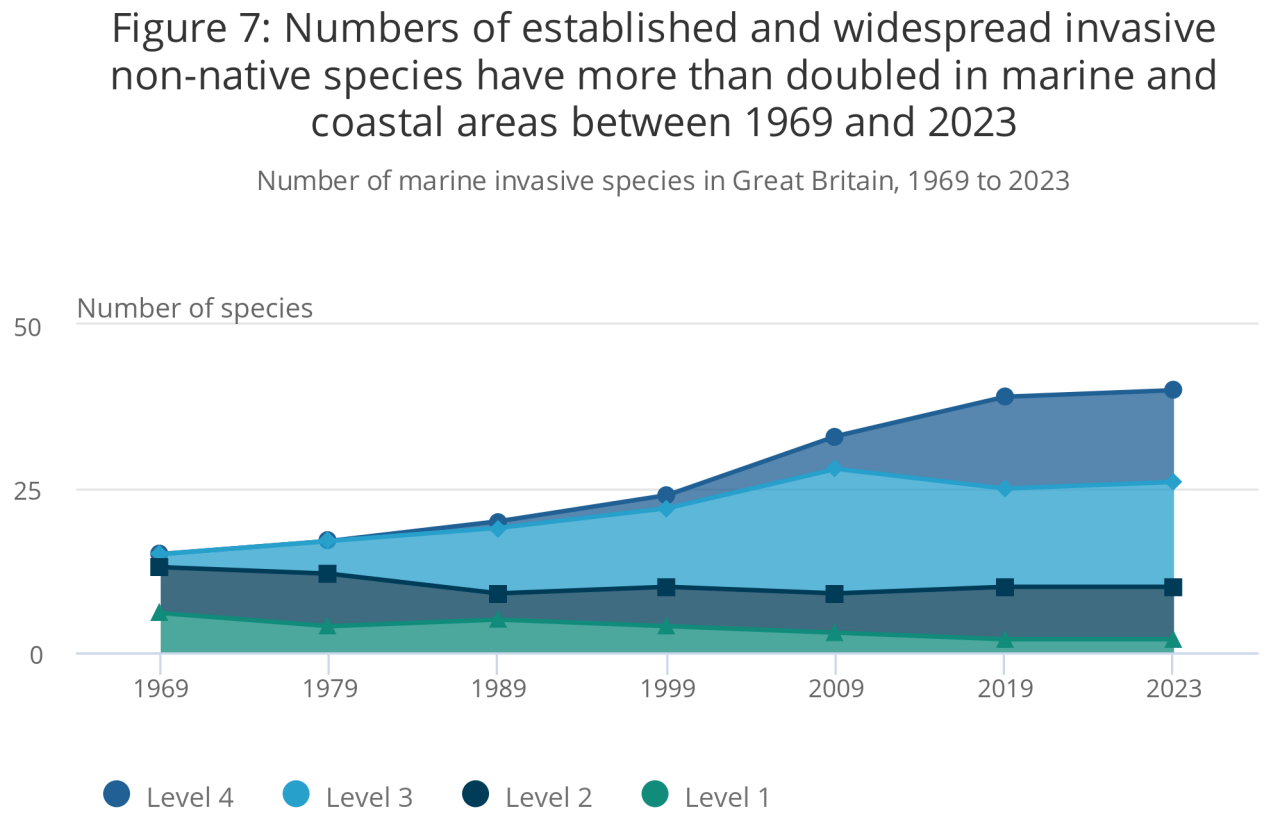
Structural indicators

Invasive species

The number of invasive non-native species established (Levels 2 and 3 in Figure 7) or widespread (Level 4 in Figure 7) in or along 10% or more of the coastline has increased from 15 in 1969 to 40 in 2023. This is discussed in JNCC's Pressure from invasive species indicator report.

Figure 7: Numbers of established and widespread invasive non-native species have more than doubled in marine and coastal areas between 1969 and 2023

Number of marine invasive species in Great Britain, 1969 to 2023



Source: Joint Nature Conservation Committee

Notes:

1. Level 1 means species are not or scarcely established.
2. Level 2 means species are established, but still generally absent, or at most occasional.
3. Level 3 means species are established and frequent in part of the territory.
4. Level 4 means species are widespread.

Seafloor integrity

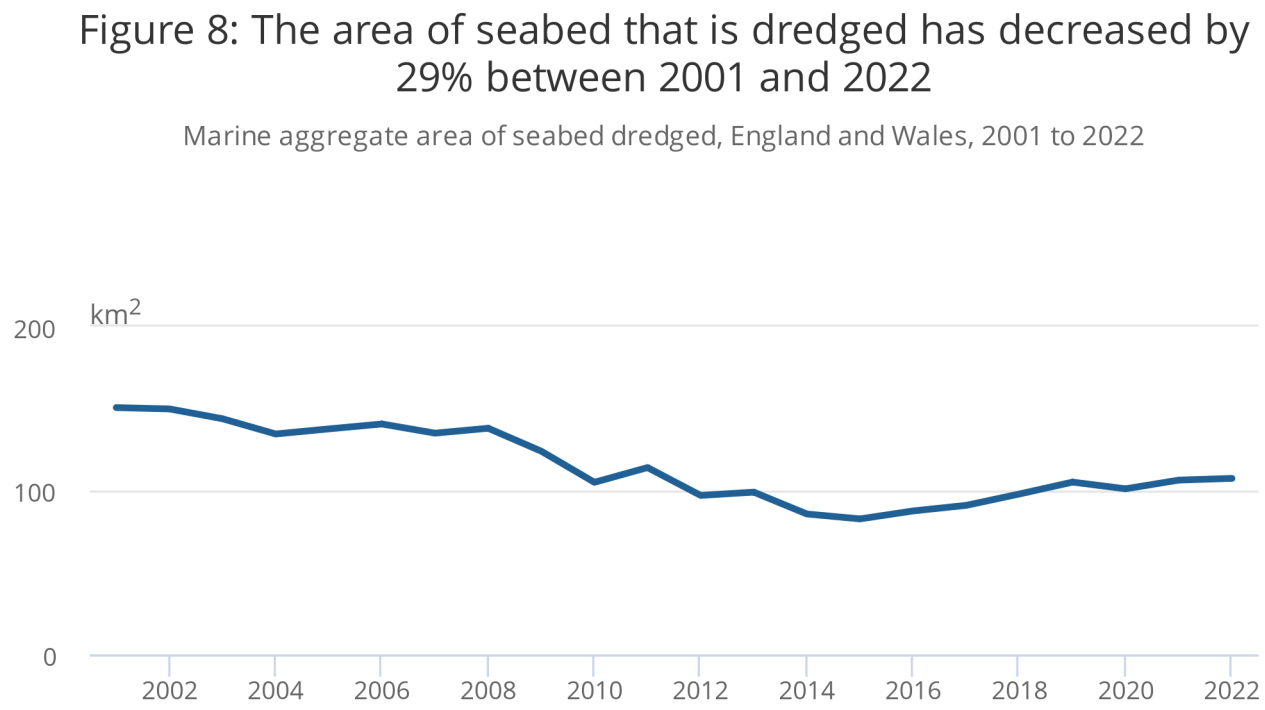
Most scallop landings are from dredge fishing, which disturbs the seabed, as discussed in the Scottish Government's Scottish Scallop Stocks Assessment report (PDF, 6.6MB). The number of tonnes (live weight) of scallops caught in UK waters decreased 25% between 2016 and 2022, from 32,076 to 23,926 tonnes. The number of tonnes caught has fluctuated over the time series, with the lowest level of 18,380 tonnes caught in 2020.

The seafloor is dredged for extraction of aggregates (sand and gravel) for building, as discussed by British Marine Aggregate Producers Association's Area dredged report. This can change the structure of the seabed, while causing habitat and biodiversity loss, as reported in the Environment Agency's State of the environment: the coastal and marine environment report (PDF, 3.8MB).

The area of seabed licenced to be dredged decreased by 22% between 2001 and 2022. The area available to be worked also decreased by 40%, from 972 square kilometres (km2) in 2001 to 581 km2 in 2022. The area dredged decreased from 151 km2 in 2001 to 107 km2 in 2022, which is a 29% reduction.

Figure 8: The area of seabed that is dredged has decreased by 29% between 2001 and 2022

Marine aggregate area of seabed dredged, England and Wales, 2001 to 2022



Source: British Marine Aggregate Producers Association, and The Crown Estate

Landscape and seascape indicators

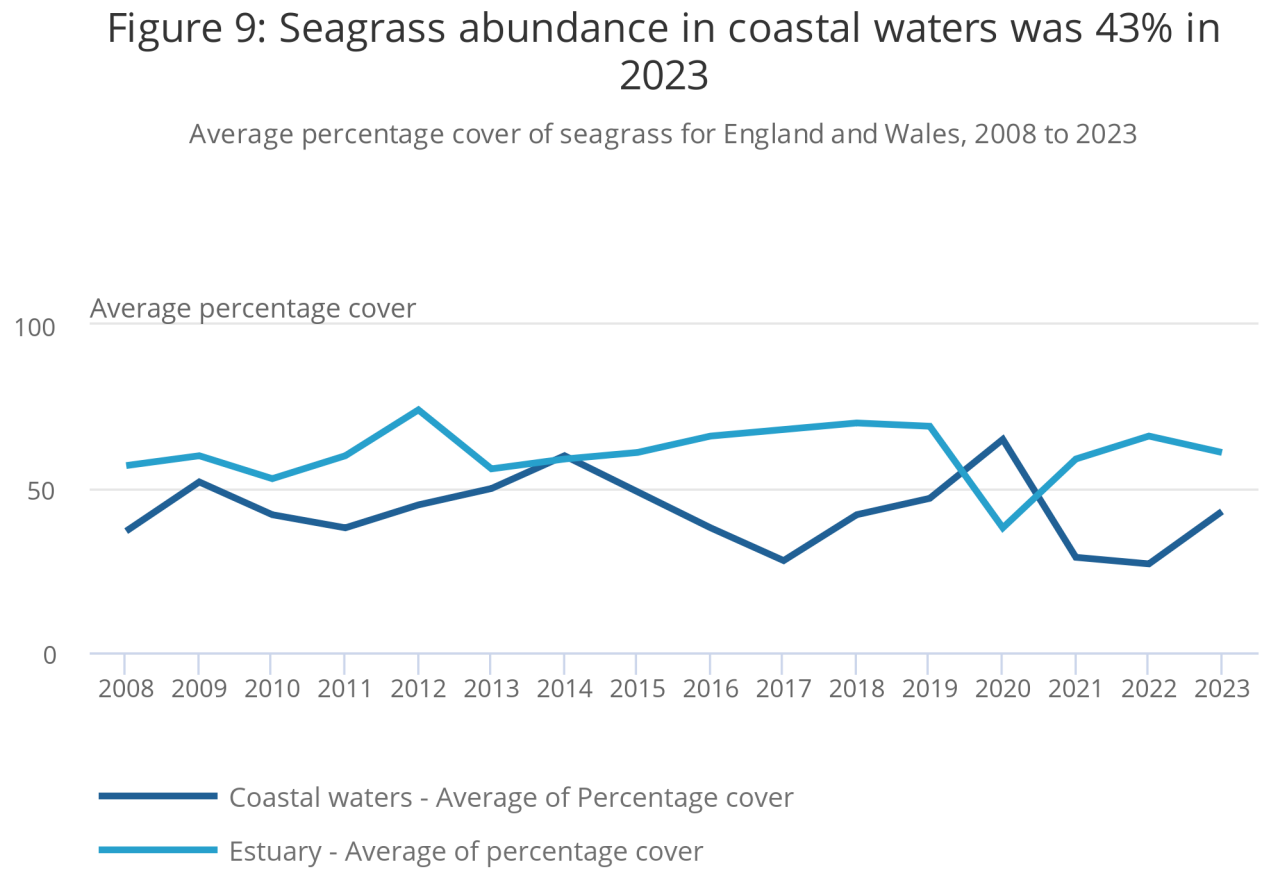
Seagrass abundance

UK seagrass meadows are important for carbon sequestration and storage and biodiversity. They are home to around 50 fish species and are a nursery ground for juvenile fish, as discussed in Project Seagrass's The ecosystem service role of UK seagrass meadows report (PDF, 2.1MB). We estimate the amount of carbon dioxide equivalent sequestered by seagrass in the UK for the first time in Section 4: Ecosystem services.

Seagrass abundance, which is the seagrass cover in transitional coastal waters of England and Wales, was 43% in 2023 for coastal waters and 61% for estuary waters.

Figure 9: Seagrass abundance in coastal waters was 43% in 2023

Average percentage cover of seagrass for England and Wales, 2008 to 2023



Source: Environment Agency

Environmental pressure indicators

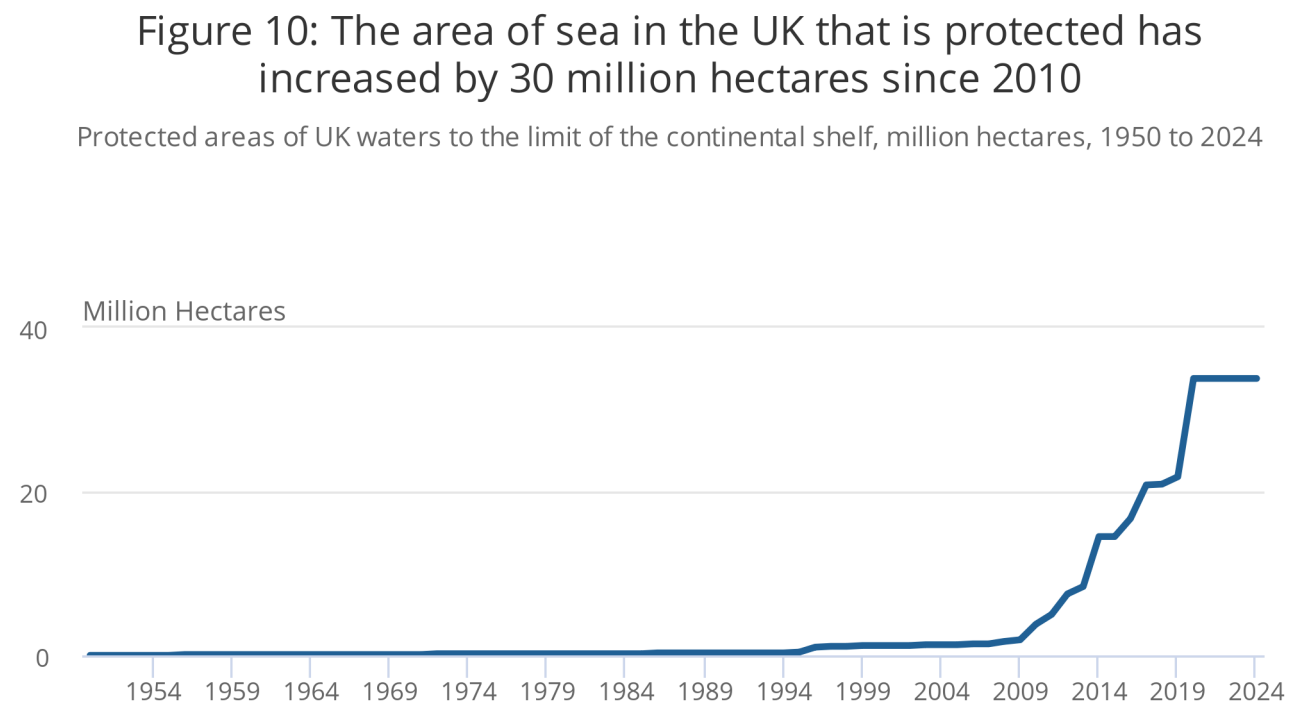
Environmental pressure indicators provide useful indicators for ecosystem condition.

Marine protected areas

The area of UK sea protected by designation under national or international legislation was 34 million hectares in 2024, according to JNCC's Extent and condition of Protected Areas indicator report. This represents 38% of UK waters (based on continental shelf limit). The UK has an international commitment to protect 30% of its land and sea area by 2030.

Figure 10: The area of sea in the UK that is protected has increased by 30 million hectares since 2010

Protected areas of UK waters to the limit of the continental shelf, million hectares, 1950 to 2024



Source: Joint Nature Conservation Committee

Wildfires in coastal margins

The number of wildfires in the coastal margins habitat in England varies over the time series. The lowest number of reported incidents (207) was in 2012 to 2013. There was a 29% decrease in the number of incidents in coastal margins between 2009 and 2021 (639 to 452, respectively).

In Wales, fires on beaches fell 17% between 2009 to 2010 and 2020 to 2021. Incidents fell 64% between periods 2015 to 2016 and 2016 to 2017. This is possibly because of increased average rainfall of 13% in the summer months and 7% in autumn months, compared with 2015.

Figure 11: The number of wildfire incidents in England have varied over the time series, but decreased by 29% in coastal margins

Number of wildfire incidents in coastal margins in England and beaches in Wales, 2009 to 2010 to 2020 to 2021

Notes:

1. England coastal margins are classified under "other", which covers coastal, freshwater and saltwater land cover classes from the UKCEH Land Cover Map

2. Wales coastal margins are classified under "other" which covers other outdoors - Beach

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Storm overflows

High spill frequency is caused when there are exceptionally high rainfall events that exceed typical rainfall.

The total number of monitored spill events and their duration (hours) decreased by 4% and 3%, respectively, in Great Britain between 2023 and 2024. The number of spill events in Scotland between 2021 and 2024 increased by 53%, but the total duration (hours) increased by only 1%.

The annual rainfall in Great Britain increased by 9% between 2021 and 2024, according to the Met Office UK's climate series.

Figure 12: The total number of spill events in Great Britain decreased by 4% between 2023 and 2024

Number of spill events and duration (hours), Great Britain, 2021 to 2024

Notes:

1. Ten water companies in England completed the Event Duration Monitoring (EDM) storm overflow annual return.

2. Some data for Dr Cymru Welsh Water are included in England data.

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4 . Ecosystem services

We estimate the contribution of marine and coastal margins habitats to the economy and society, in line with the United Nations System of Environmental-Economic Accounting Ecosystem Accounting (SEEA-EA). We include both biotic and abiotic ecosystem services, whereas the SEEA-EA only includes biotic services. Abiotic resources are covered by the SEEA Central Framework (Principle D1 of our Principles of UK natural capital accounting methodology).

In this section, we express this as an annual flow of ecosystem services, both in physical and monetary terms. We present the total value of ecosystem services both including and excluding abiotic ecosystem services for the first time in our natural capital accounts releases.

Some services have been updated, or newly included, since our Marine accounts, natural capital, UK: 2021 bulletin, and others require further development. We have:

- added the carbon dioxide equivalent (CO2e) sequestered by seagrass to our greenhouse gas regulating service for the first time
- calculated our greenhouse gas estimates using new 2025 extent data from the Joint Nature Conservation Committee (JNCC) and new rates of CO2e sequestration from the UK Blue Carbon Inventory 2024 (PDF, 6.6MB); these new rates are not comparable to those used in our 2021 publication, as a result of new research
- not included estimates of ecosystem services for water remediation or recreation and aesthetic value (house prices) of blue spaces, which require further methodological development
- used 2019 data for estimates for flood regulation, as this service requires further methodological development

Table 2: UK nations breakdown of marine and coastal margins annual physical flow by service, 2022

Service type	England	Scotland	Wales	Northern Ireland	UK
Provisioning					
Fish provisioning (thousand tonnes)	204	779	16	10	1,008
Minerals and metals provisioning (thousand tonnes)	45,536	[x]	7,536	[x]	61,103
Oil and gas provisioning (million tonnes of oil equivalent)	13	65	0	0	78
Renewable electricity provisioning (gigawatt hours)	37,100	5,798	2,132	0	45,031
Regulating					
Greenhouse gas regulating (tonnes of CO2 equivalent)	[x]	[x]	[x]	[x]	264,798
Air pollution regulating (thousand tonnes of pollutants)	3	1	1	0	5
Cultural					
Recreation and tourism (expenditure) (visits, million)	390	68	39	30	534
Recreation (health benefits) (people benefitting, million)	2	0	0	0	3

Source: Marine and coastal margins natural capital accounts from the Office for National Statistics

Notes

1. Country-level data may not add up to the overall UK total because of rounding and other data limitations.
2. [x] indicates that data are not available.
3. The value for air pollution regulating in Northern Ireland is under 1 tonne, and therefore rounded to a zero in this table.

The total annual value for the biotic and abiotic ecosystem services in marine and coastal margins habitats that we are currently able to measure was about £43 billion (2023 prices) in 2022, the latest year for which we have data. The annual value for ecosystem services in marine and coastal margins habitats excluding abiotic ecosystem services was almost £3 billion (2023 prices).

Oil and gas provisioning services is the highest valued ecosystem service we estimate. This accounted for 97% of the annual value of abiotic services and 91% of the total annual value of all ecosystem services. Detailed estimates are provided in this section under the Provisioning services subheading.

Table 3: Annual values for marine and coastal margins ecosystem services
UK, £ million (2023 prices), 2022

	England	Scotland	Wales	Northern Ireland	UK
Fish provisioning	16	167	1	1	185
Minerals and metals provisioning	228	[x]	32	[x]	273
Oil and gas provisioning	6,646	32,795	0	0	39,442
Renewable electricity provisioning	633	201	13	[x]	988
Air pollution regulating	16	0	1	0	17
Greenhouse gas regulating	[x]	[x]	[x]	[x]	74
Flood regulating	70	[x]	9	[x]	79
Recreation (health benefits)	803	97	69	43	1,012
Recreation and tourism (expenditure)	813	131	117	46	1,165
Total	9,225	33,392	242	91	43,235

Source: Marine and coastal margins natural capital accounts from the Office for National Statistics

Notes

1. Country-level data may not add up to the overall UK total because of rounding and other data limitations.
2. [x] indicates that data are not available.

Provisioning services

Provisioning services are products that can be harvested or extracted from nature, such as food, energy, and materials.

Fish provisioning

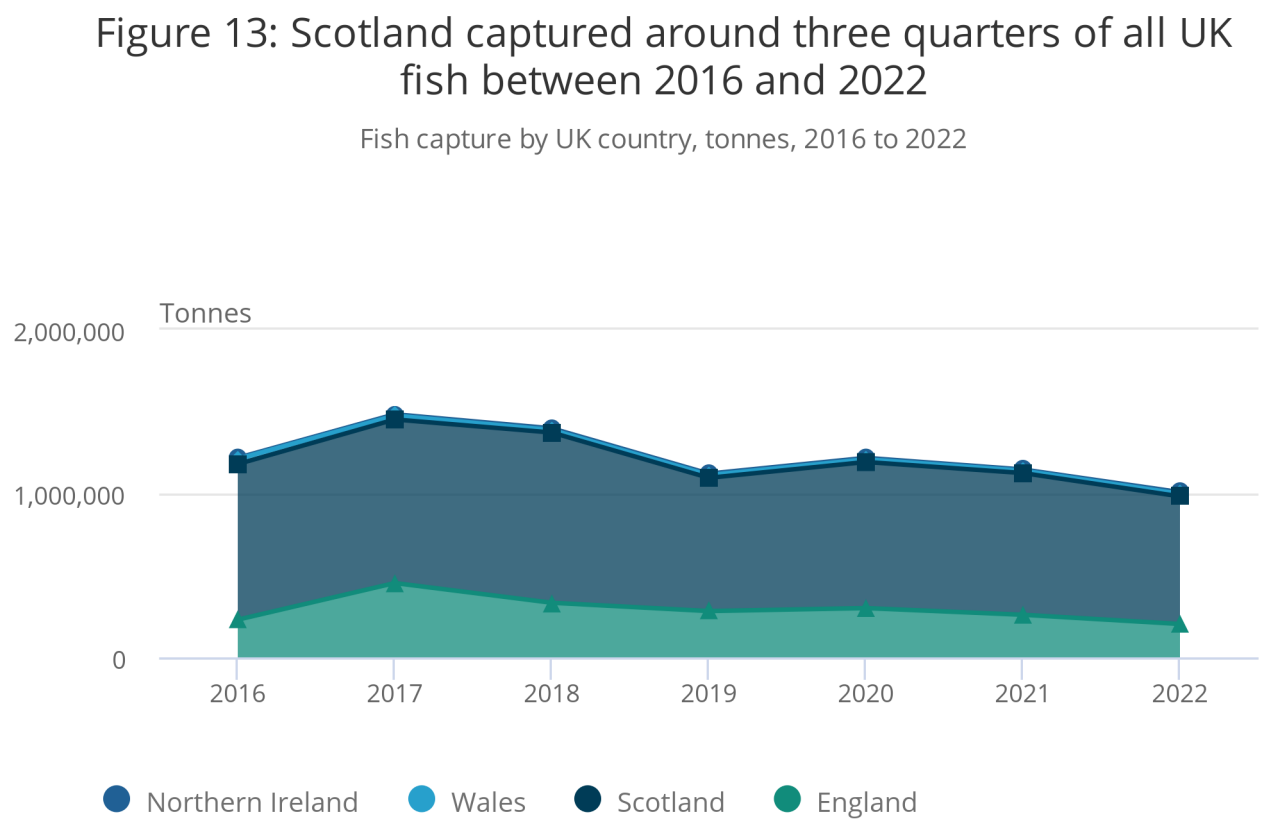
The UK natural capital accounts for marine and coastal margins include marine fish and shellfish taken from mainland UK waters. Aquaculture, or farmed fish, are excluded from these estimates, as they are a produced asset rather than a natural asset (see Principle D2 of our Principles of UK natural capital accounting methodology).

UK fish capture tonnage declined by 17% between 2016 and 2022, from 1.2 million tonnes in 2016 to 1.0 million tonnes in 2022. This is because of reductions in fishing fleet size, landings, and the time vessels spend fishing, as described in the Marine Management Organisation's (MMO's) UK Sea Fisheries Statistics 2022 report (PDF, 3.5MB).

Scotland contributed around 77% of the UK's total fish catch in 2022. England, Wales, and Northern Ireland provided 20%, 2%, and 1%, respectively.

Figure 13: Scotland captured around three quarters of all UK fish between 2016 and 2022

Fish capture by UK country, tonnes, 2016 to 2022

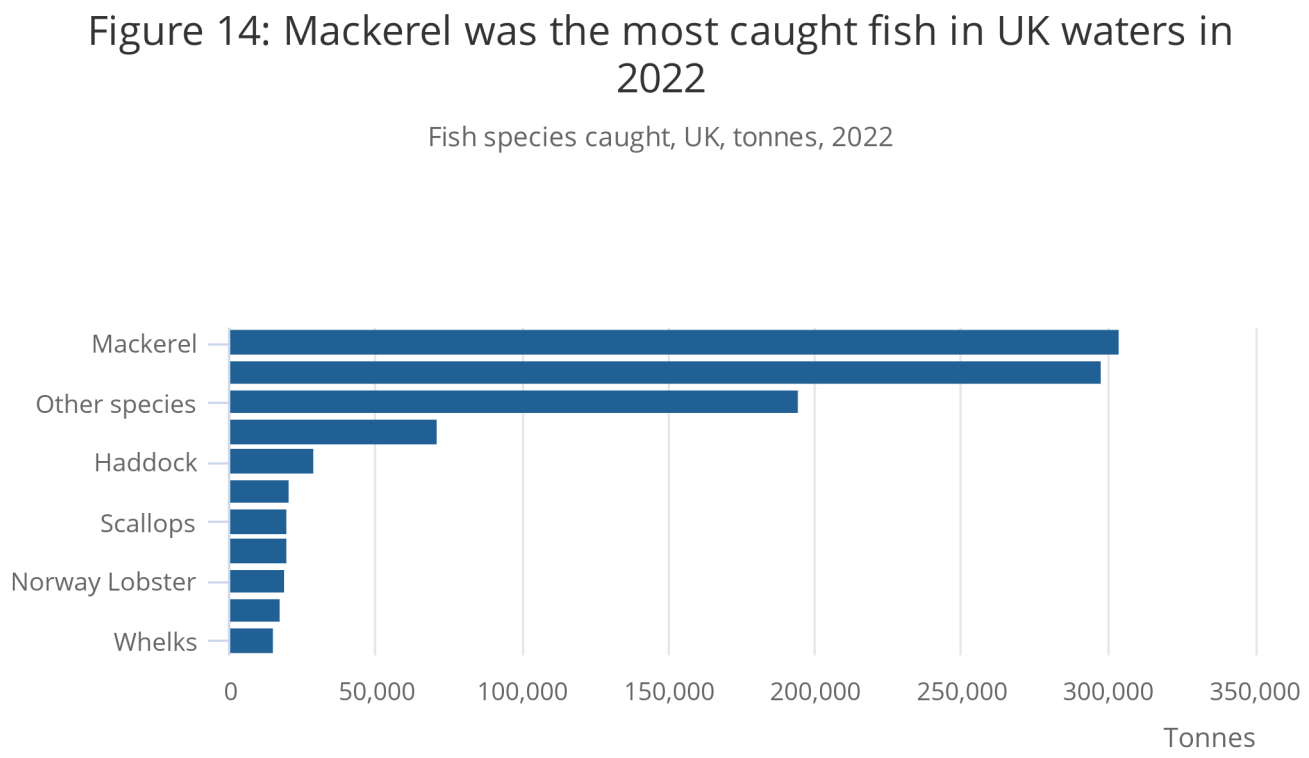


Source: Office for National Statistics and Marine Management Organisation

A total of 439 different species were caught in UK waters between 2016 and 2022. Mackerel and herring were the most caught fish in 2022; together, they represented 60% of the UK's total fish capture. The top ten most caught species represented 81% of the UK's total catch, while the remaining 429 species contributed 19%.

Figure 14: Mackerel was the most caught fish in UK waters in 2022

Fish species caught, UK, tonnes, 2022



Source: Office for National Statistics and Marine Management Organisation

We check fishing pressure for each stock against the maximum sustainable yield, using the International Council for the Exploration of the Sea's Stock assessment graphs. We also assess how each species' reproductive fish stock compared with the level capable of producing the maximum sustainable yield. Our approach does not consider indirect effects of unsustainable fishing on the ecosystem. For instance, if a fish species that forms a substantial part of other fish species' diets is managed unsustainably, it may affect the sustainability of other stocks higher up the fish food chain.

In the UK in 2022, 39% of fish capture was categorised as sustainable and 42% was unsustainable, and sustainability was not known for 20%. The amount of catch fished sustainably fell 44% between 2020 and 2022. This is largely because of a change in the sustainability status of mackerel from sustainable to unsustainable in 2021.

Figure 15: Sustainable UK fish capture reduced by 44% between 2020 and 2022

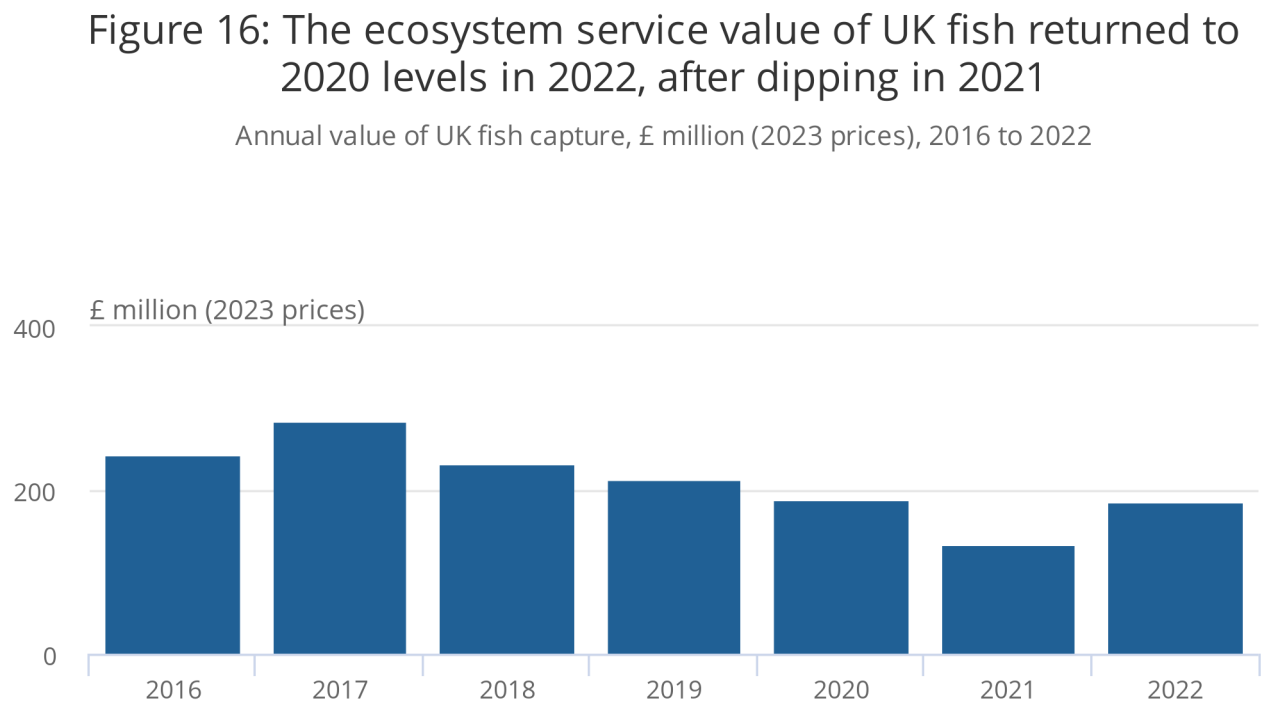
Fish capture by sustainability status, tonnes, UK, 2016 to 2022

The annual value of UK fish capture increased by more than a third between 2021 and 2022, mainly because of higher fish prices, as reported by the MMO. This followed a decrease in 2021, resulting from lower overall net profits because of higher interest costs and depreciation.

Mackerel and herring, as the UK's two most caught fish species, contributed 86% of the total annual value of this ecosystem service in 2022. Lobsters are not among the five most caught species but are the third most valuable. They contributed £5 million to the UK's total annual value for this ecosystem service in 2022 (£185 million).

Figure 16: The ecosystem service value of UK fish returned to 2020 levels in 2022, after dipping in 2021

Annual value of UK fish capture, £ million (2023 prices), 2016 to 2022



Source: Office for National Statistics, Marine Management Organisation, and Seafish

Minerals and metals provisioning

Marine aggregates extracted from the seabed include sand and gravel, mainly for use in house building, transport infrastructure, land reclamation, and beach replenishment to reduce coastal erosion.

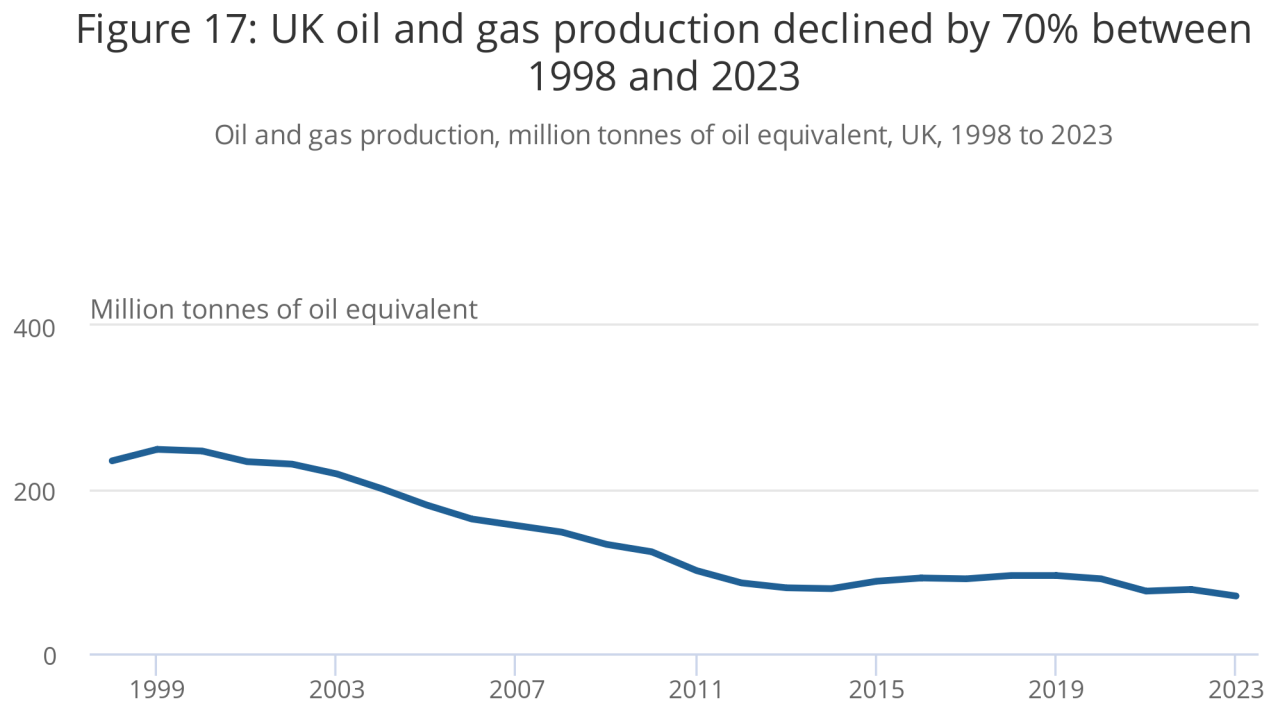
There were 61 million tonnes extracted from the marine habitat across England and Wales in 2022, valued at £273 million.

Oil and gas provisioning

From 1998 to 2023, oil and gas production peaked in 1999 at 249 million tonnes of oil equivalent (Mtoe). By 2023, production had fallen to 70 Mtoe (Figure 17).

Figure 17: UK oil and gas production declined by 70% between 1998 and 2023

Oil and gas production, million tonnes of oil equivalent, UK, 1998 to 2023



Source: Office for National Statistics, North Sea Transition Authority, and Scottish Government

The annual value of the oil and gas provisioning ecosystem service fluctuated between 1998 and 2022. This was largely caused by oil and gas price changes, along with production trends. Despite the decline in production, this service's value reached a recent peak in 2022 at £39 billion. It accounted for 91% of the total annual value of all ecosystem services in marine and coastal margins habitats. This was because of rising UK energy price inflation in the same period, as discussed in our Food and energy price inflation, UK: 2023 article. Scotland contributed 83% (£33 billion) of the UK total annual value for oil and gas provisioning in 2022.

For more information on how rapidly changing energy prices affect oil and gas provisioning estimates, see our The energy intensity of the Consumer Prices Index: 2022 article.

Renewable electricity provisioning

Renewable energy generation is dependent on natural resources, such as wind, sunshine, tides, and rainfall, as well as human investment in infrastructure.

In the UK's marine habitat, renewable electricity was overwhelmingly generated by offshore wind, at more than 99% of the total generated between 2008 and 2022. The remainder was from wave and tidal sources.

Offshore wind contributed about 45% to the UK's total electricity generation in 2022 from renewable sources included in our annual UK accounts.

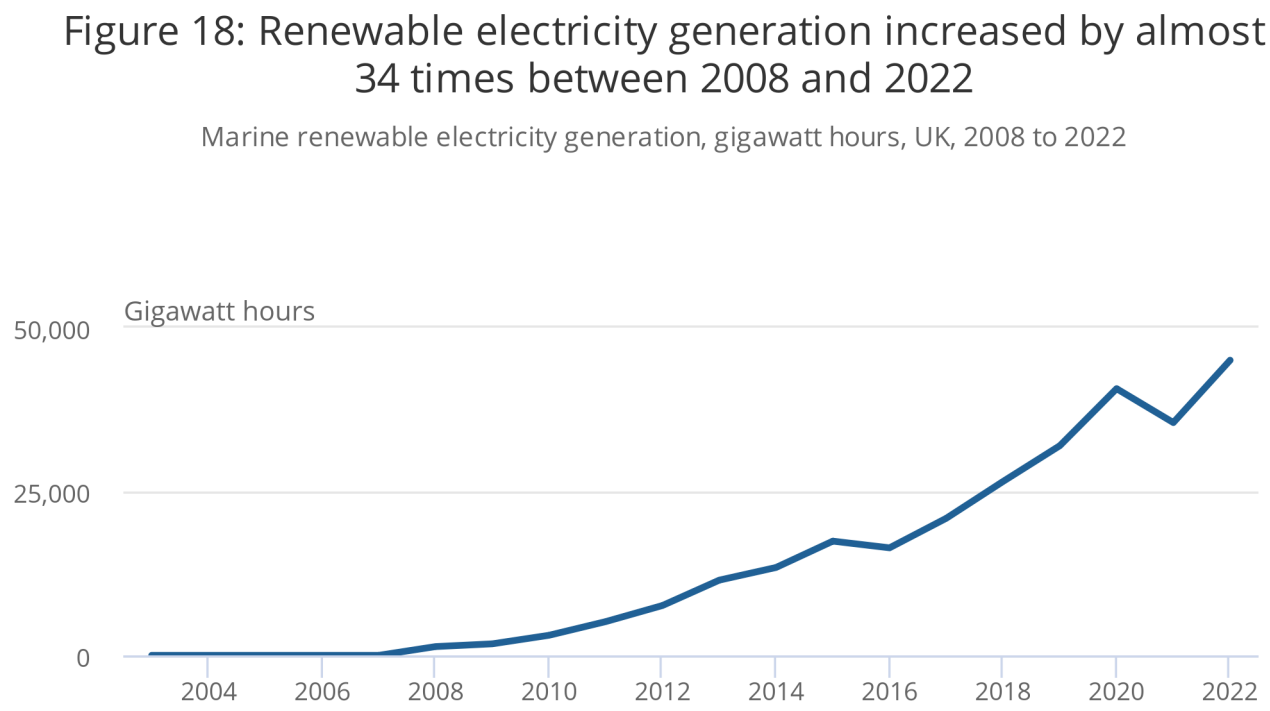
Renewable electricity provisioning from the marine and coastal margins habitat increased almost 34 times between 2008 and 2022, from 1,335 gigawatt hours (GWh) to 45,031 GWh, respectively (Figure 18). England provided 82% of this energy in 2022.

Electricity generated from offshore wind increased by 27% and from wave and tidal by 104% between 2021 and 2022. This is because of higher average wind speeds and new capacity, according to the Department for Energy Security and Net Zero's Digest of UK Energy Statistics Annual data for UK, 2022 release (PDF, 17.4MB).

This increase in output was also reflected in the annual value of the service, which rose from £189 million in 2021 to £988 million in 2022.

Figure 18: Renewable electricity generation increased by almost 34 times between 2008 and 2022

Marine renewable electricity generation, gigawatt hours, UK, 2008 to 2022



Source: Department for Energy Security and Net Zero

Regulating services

Regulating services help to maintain the quality of the environment we depend on. They include natural processes, such as regulation of air quality, greenhouse gases, and floods.

Air pollution regulating

The World Health Organisation (WHO) has estimated that outdoor air pollution contributed to 4.2 million premature deaths worldwide in 2019, according to their Ambient (outdoor) air pollution report.

Coastal vegetation, such as saltmarsh, can remove airborne pollutants from the environment, reducing harmful human health effects. Air pollutants measured are:

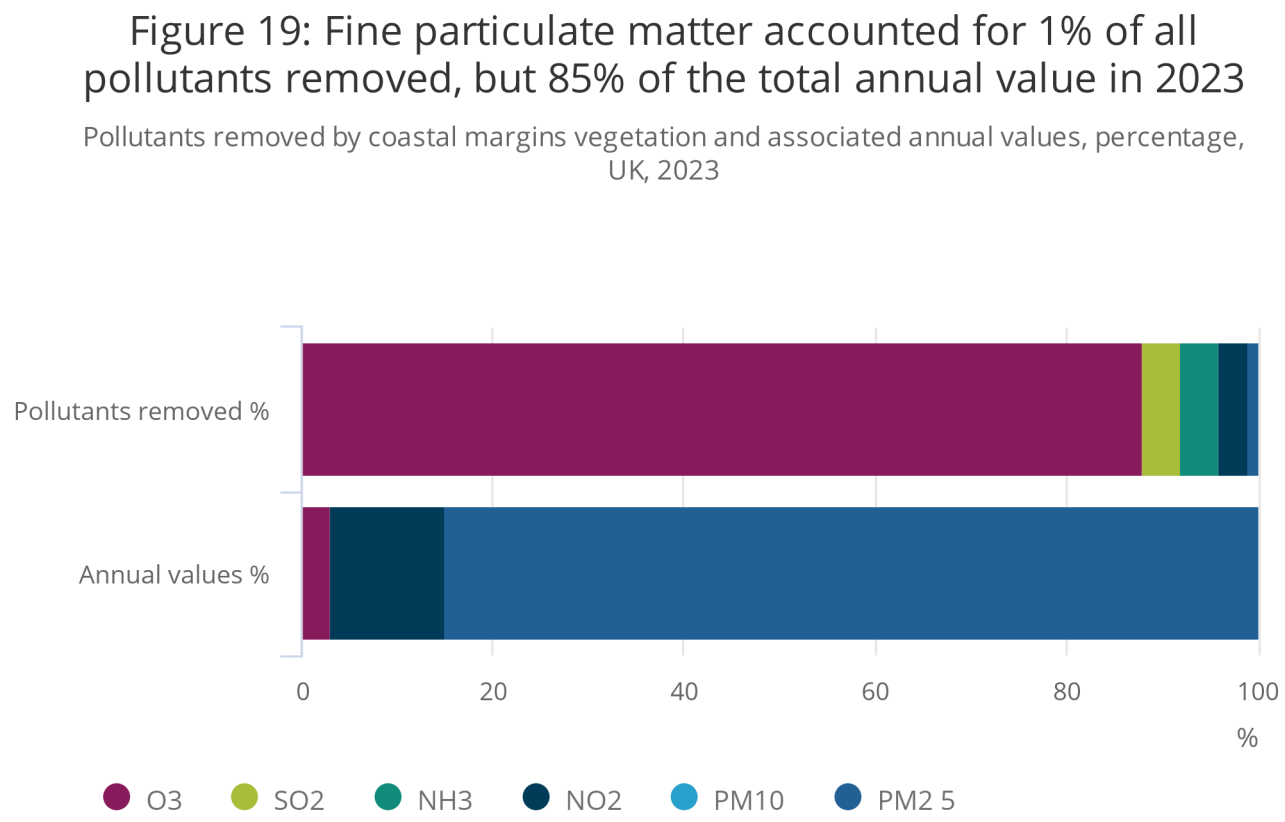
- ammonia (NH3)
- nitrogen dioxide (NO2)
- ozone (O3)
- particulate matter with a diameter of less than 10 micrometres (PM10)
- fine particulate matter (PM2.5) (a subset of PM10)
- sulphur dioxide (SO2)

Vegetation in UK coastal margins removed 5,242 tonnes of these pollutants from the atmosphere in 2023, providing an estimated £16.4 million in avoided negative health impacts.

Air pollution regulating service valuations are determined by the level of risk to health of each pollutant. Ground-level O3 represented 88% of all pollutants removed in 2023 by coastal margins vegetation, but only accounted for 3% of the annual value, as its direct impact to health is relatively low. PM2.5 poses the greatest risk to health, so it accounted for most of the annual value (85%), but only 1% of the total amount of pollutants.

Figure 19: Fine particulate matter accounted for 1% of all pollutants removed, but 85% of the total annual value in 2023

Pollutants removed by coastal margins vegetation and associated annual values, percentage, UK, 2023



Source: Office for National Statistics and UK Centre for Ecology and Hydrology

Notes:

1. O3 is ozone, SO2 is sulphur dioxide, NH3 is ammonia, NO2 is nitrogen dioxide, PM10 is particulate matter with a diameter less than 10 micrometres, and PM2.5 is fine particulate matter.

2. In this chart, PM10 does not include PM2.5 to avoid double counting.

PM.2.5 is emitted from multiple sources, including wood and coal stoves and the wear of tyres, brakes, and road surfaces, according to the Department for Environment, Food and Rural Affairs's Emissions of air pollutants in the UK - particulate matter report.

Flood regulating

Saltmarsh acts as a natural flooding buffer. It reduces the height of waves and the energy they carry, which can limit the effects of coastal flooding.

The total annual value of the flood mitigation provided by saltmarsh in England and Wales was £79 million (2023 prices) in 2019; the value was £70 million in England and £9 million in Wales.

Greenhouse gas regulating

Greenhouse gas regulating in our marine and coastal margins accounts estimates the ability of sublittoral sand, sublittoral mud, saltmarsh, and seagrass to sequester carbon dioxide equivalent (CO_2e). The sequestration of carbon by seagrass is included in these accounts for the first time.

Sequestration rates are rarely directly measured. Therefore, the sequestration rates currently available for the marine and coastal margins habitats are very variable and uncertain. We provide a range of values using rates from the UK's Blue Carbon Inventory: Assessment of Marine Carbon Storage and Sequestration Potential in UK Seas (Including Within Marine Protected Areas) (PDF, 6.6MB).

We estimate a range between 0.3 and 1.3 million tonnes of CO_2e were sequestrated in UK waters by these four marine and coastal margins environments in 2024. This has an estimated value of between £76 million and £386 million (2023 prices). Of these habitats, saltmarsh was estimated to have captured the most greenhouse gases in 2024 when using the minimum values, with a minimum of 119,577 tonnes of CO_2e (Figure 20), valued at £34 million (2023 prices). In the same period, seagrass sequestered a minimum of 2,529 tonnes of CO_2e, with an estimated minimum annual value of £0.7 million (2023 prices).

Given the range of potential sequestration estimates, we present the minimum value in Figure 20 and in our summary tables as a conservative estimate, which is more likely to underestimate the full economic value of sequestration.

Table 4: Range of physical flow and annual values for greenhouse gas regulating from marine and coastal margins by category, UK, 2024

	Physical flow (tonnes CO_2 equivalent)			Annual value (£ million, 2023 prices)		
EUNIS category	**Minimum**	**Average**	**Maximum**	**Minimum**	**Average**	**Maximum**
Sublittoral sand	92,963	185,926	278,889	27	54	80
Sublittoral mud	49,728	273,502	671,323	14	79	193
Saltmarsh	119,577	248,798	378,019	34	72	109
Seagrass	2,529	7,082	11,635	1	2	3
Total	264,798	715,309	1,339,866	76	206	386

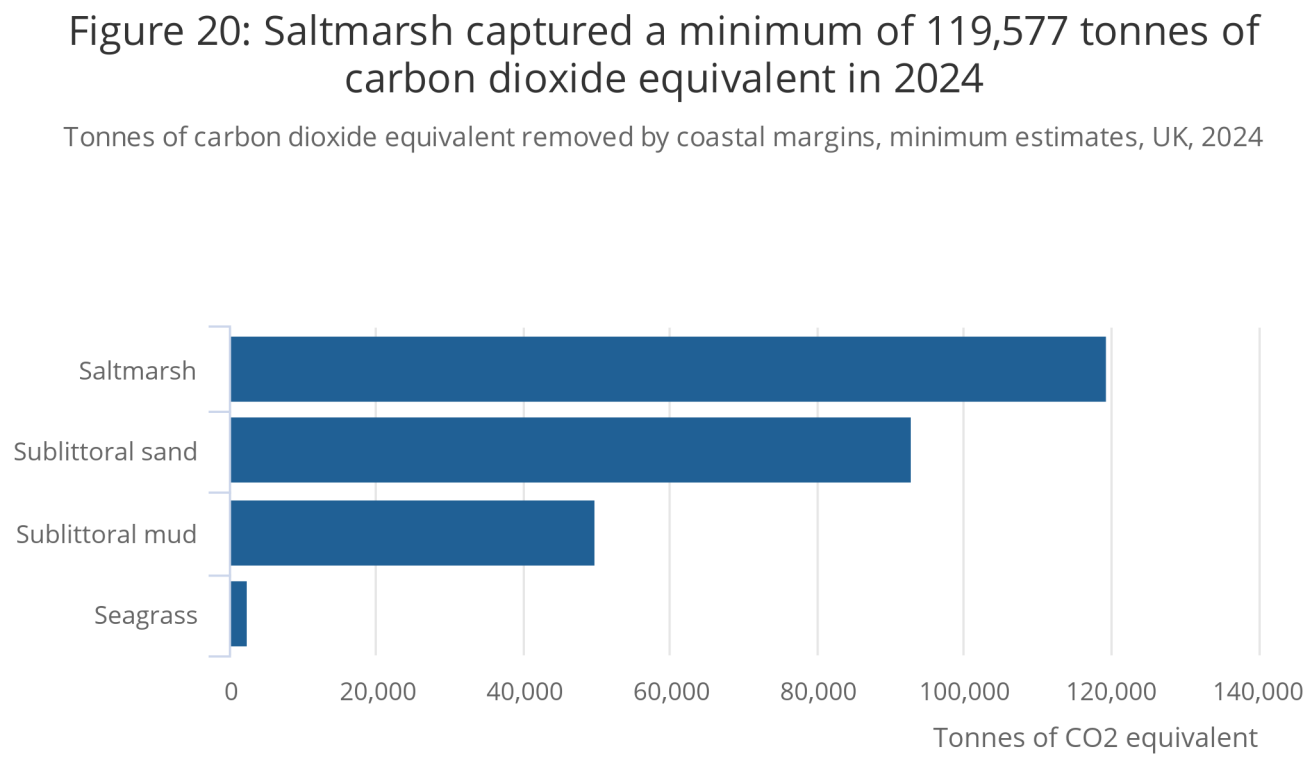
Source: Joint Nature Conservation Committee (JNCC), Scottish Association for Marine Science, University of St Andrews, Department for Energy Security and Net Zero

Notes

1. Habitat categories are defined by the European Nature Information System (EUNIS).

Figure 20: Saltmarsh captured a minimum of 119,577 tonnes of carbon dioxide equivalent in 2024

Tonnes of carbon dioxide equivalent removed by coastal margins, minimum estimates, UK, 2024



Source: Joint Nature Conservation Committee, Scottish Association for Marine Science, and the University of St. Andrews

Notes:

1. The minimum of the range of estimated values has been presented in this chart as a conservative estimate.

Cultural services

Cultural services are the non-material benefits we get from ecosystems, such as tourism and recreation in marine and coastal areas, and their associated health benefits.

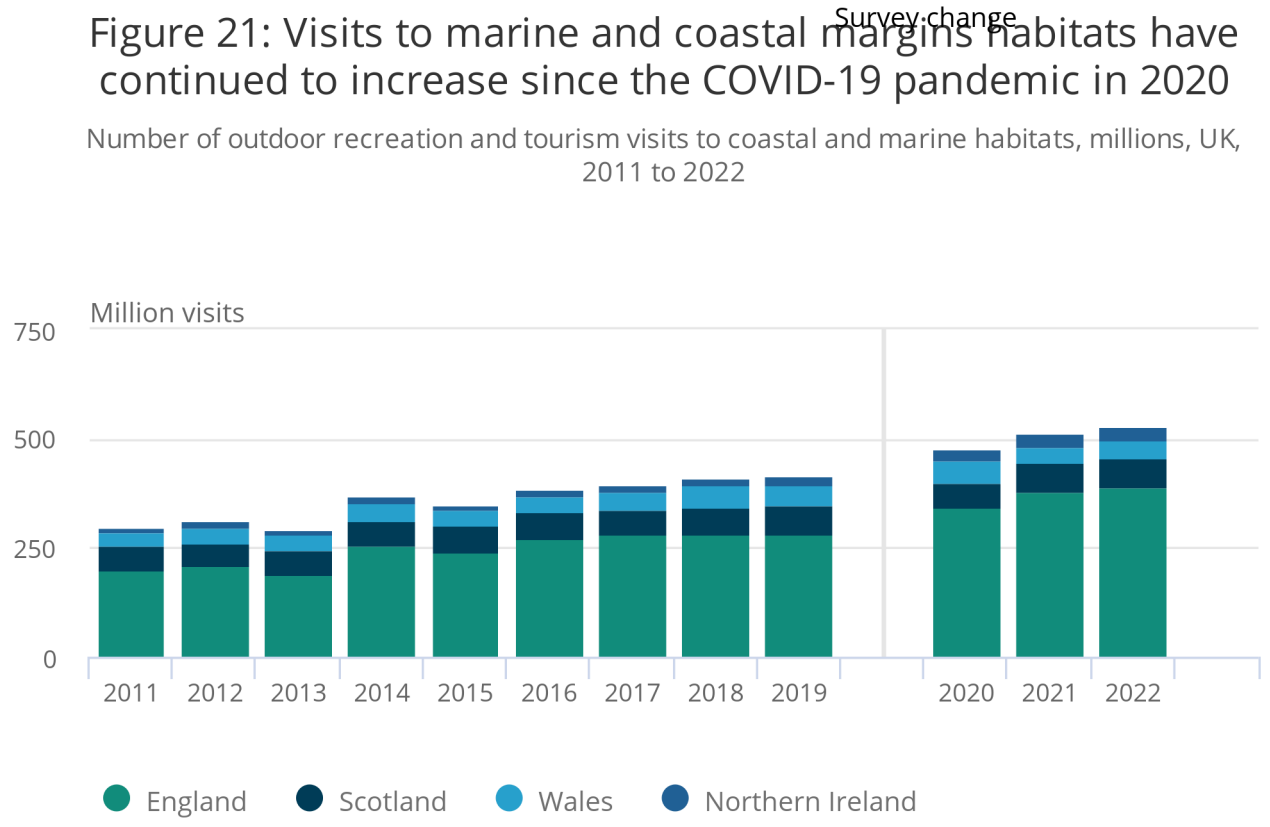
Recreation and tourism (expenditure)

UK outdoor recreation and tourism visits to coastal and marine areas has continued to rise year-on-year since the coronavirus (COVID-19) pandemic.

There were 534 million outdoor recreation and tourism visits to coastal and marine areas in 2022, which was around 11% of all visits to nature in that year. This was up 11% since 2020 (480 million) (Figure 21), the first year for which comparable data are available.

Figure 21: Visits to marine and coastal margins habitats have continued to increase since the COVID-19 pandemic in 2020

Number of outdoor recreation and tourism visits to coastal and marine habitats, millions, UK, 2011 to 2022



Source: MENE Survey and PaNS from Natural England, WORS from NRW, PaNS Wales from NRW and Natural England, the SRS and Scotland's PaNS from NatureScot, and POMNI from Outscape

Notes:

1. Natural England used Monitor of Engagement with the Natural Environment (MENE) Survey data up until 2019, when the survey concluded. They now use the People and Nature Survey (PaNS). The two surveys are not directly comparable.

2. Data in this chart are from the MENE Survey and PaNS from Natural England, the Welsh Outdoor Recreation Survey (WORS) from Natural Resources Wales (NRW), the PaNS Wales from NRW and Natural England, the Scottish Recreation Survey (SRS) and Scotland's PaNS from NatureScot, and the People in the Outdoors Monitor for Northern Ireland (POMNI) from Outscape.

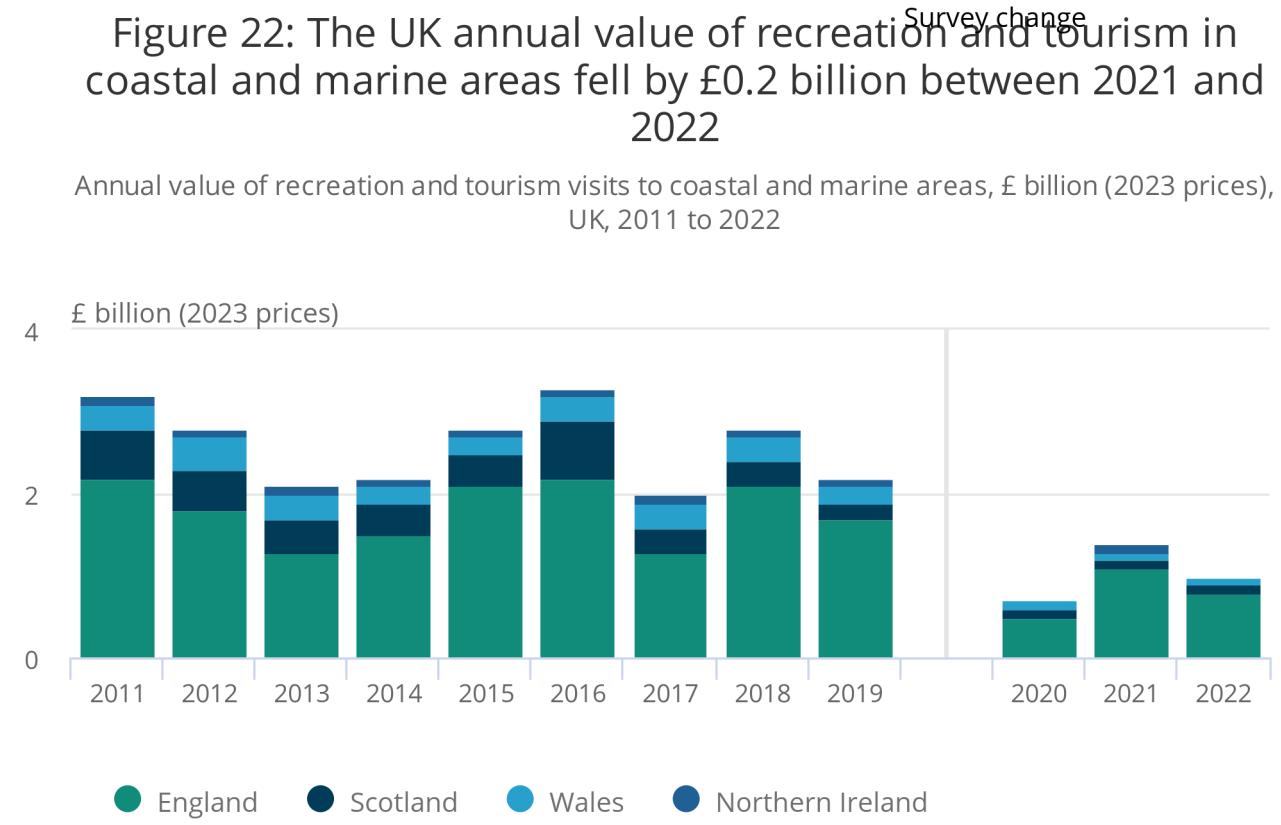
The value of recreation and tourism includes spending on travel to the natural environment and some aspects of expenditure incurred during visits, including parking fees, transport costs, vehicle running costs, and admissions.

While the number of visits increased in 2022, compared with 2021, people spent less money during these visits in 2022. Coastal and marine destinations accounted for about 10% of the UK's annual expenditure across all habitats in 2022.

The UK's annual expenditure on recreation and tourism in coastal and marine areas fell by 17% between 2021 (£1.4 billion) and 2022 (£1.2 billion). Spending decreased over the same period in England (24%), Wales (12%) and Northern Ireland (26%), but increased by 14% in Scotland (Figure 22). The average spend per visit to coastal and marine areas in the UK was £2.18 in 2022, down from £2.72 in 2021.

Figure 22: The UK annual value of recreation and tourism in coastal and marine areas fell by £0.2 billion between 2021 and 2022

Annual value of recreation and tourism visits to coastal and marine areas, £ billion (2023 prices), UK, 2011 to 2022



Source: MENE Survey and PaNS from Natural England, WORS from NRW, PaNS Wales from NRW and Natural England, the SRS and Scotland's PaNS from NatureScot, and POMNI from Outscape

Notes:

1. Natural England used Monitor of Engagement with the Natural Environment (MENE) Survey data up until 2019, when the survey concluded. They now use the People and Nature Survey (PaNS). The two surveys are not directly comparable.

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People across Great Britain visit the marine environment to feel mental health benefits (78% of respondents), physical health benefits (72%), and to spend time with others (59%), according to the Ocean Conservation Trust's Ocean Literacy Survey 2022.

Recreation (health benefits)

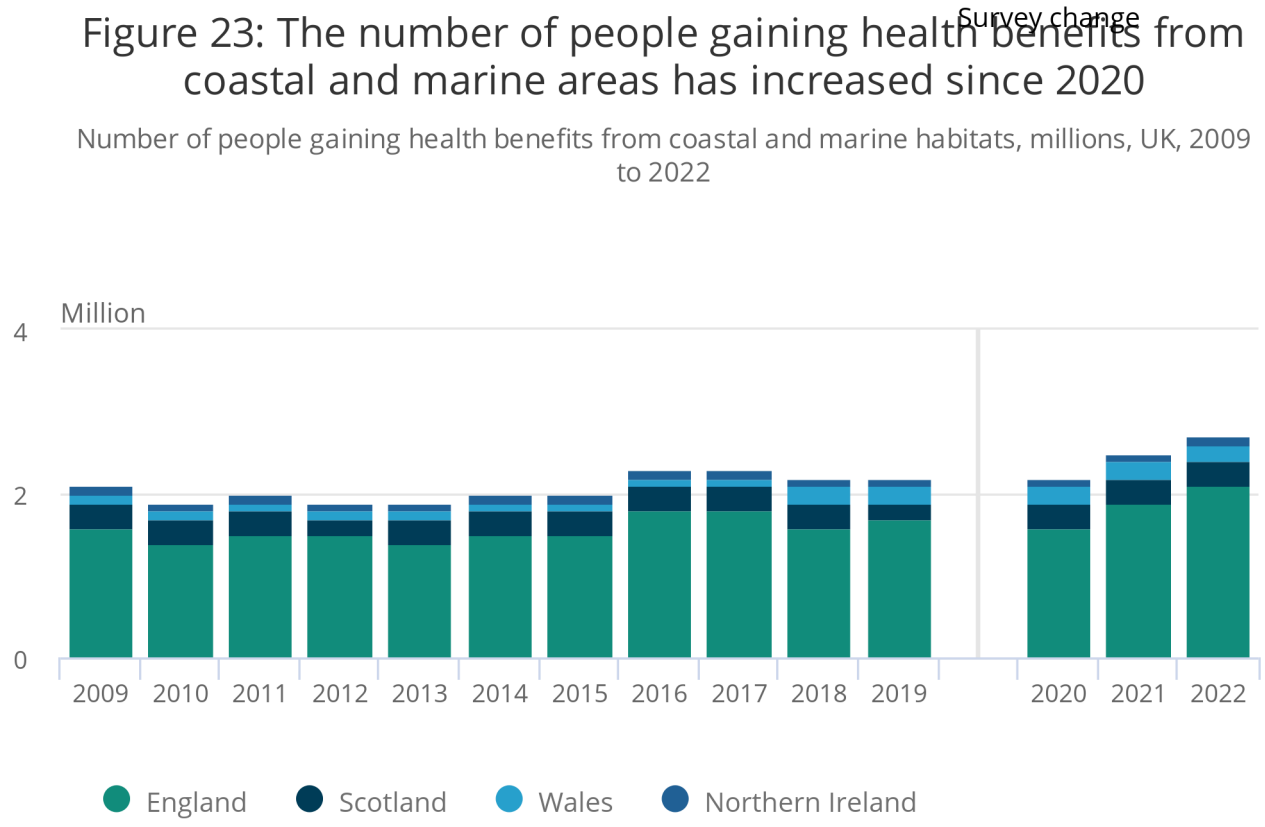
Spending at least 120 minutes a week in nature is associated with significantly higher self-reported health and well-being, according to White and others' article on this topic. We use this threshold to calculate the number of people gaining health benefits from spending time in nature, as outlined in Section 6: Methodology by service of our UK natural capital accounts methodology guide: 2024.

Approximately 4% of the UK population received health benefits from recreation in coastal and marine areas in 2022.

The number of people who gained such benefits rose from 2.1 million in 2020 to a recent high of 2.7 million in 2022, an increase of 26% (Figure 23). The annual value for this service reached £1,012 million in 2022, up 12% from £905 million in 2021.

Figure 23: The number of people gaining health benefits from coastal and marine areas has increased since 2020

Number of people gaining health benefits from coastal and marine habitats, millions, UK, 2009 to 2022



Source: MENE Survey and PaNS from Natural England, WORS from NRW, PaNS Wales from NRW and Natural England, the SRS and Scotland's PaNS from NatureScot, and POMNI from Outscape

Notes:

1. Natural England used Monitor of Engagement with the Natural Environment (MENE) Survey data up until 2019, when the survey concluded. They now use the People and Nature Survey (PaNS). The two surveys are not directly comparable.

2. Data in this chart are from the MENE Survey and PaNS from Natural England, the Welsh Outdoor Recreation Survey (WORS) from Natural Resources Wales (NRW), the PaNS Wales from NRW and Natural England, the Scottish Recreation Survey (SRS) and Scotland's PaNS from NatureScot, and the People in the Outdoors Monitor for Northern Ireland (POMNI) from Outscape.

5 . Asset value of marine and coastal margins habitats

The total UK asset value of marine and coastal margins' biotic and abiotic ecosystem services that we are currently able to value was an estimated £272 billion in 2022 (Table 5), or an estimated £120 billion, excluding abiotic services. This represents the stream of services from marine natural resources, in terms of their future expected supply and use over a reasonably predictable time horizon.

Table 5: Asset values of marine and coastal margins ecosystem services
UK, £ million (2023 prices), 2022

	England	Scotland	Wales	Northern Ireland	UK
Fish provisioning	534	3,135	49	31	3,750
Minerals and metals provisioning	3,573	[x]	440	[x]	4,150
Oil and gas provisioning	13,389	112,483	0	0	125,872
Renewable electricity provisioning	16,483	3,297	458	[x]	21,491
Air pollution regulating	780	5	53	0	839
Greenhouse gas regulating	[x]	[x]	[x]	[x]	3,494
Flood regulating	2,022	[x]	262	[x]	2,284
Recreation (health benefits)	43,100	4,985	4,628	1,925	54,638
Recreation and tourism (expenditure)	40,583	4,639	5,288	2,191	55,244
Total	120,464	128,545	11,179	4,146	271,763

Source: Marine and coastal margins natural capital accounts from the Office for National Statistics

Notes

1. Country-level data may not add up to the overall UK total because of rounding and other data limitations.
2. [x] indicates that data are not available.

The annual value of oil and gas accounted for 91% of the total annual value of all ecosystem services, but just 46% of the total asset value of ecosystem services. This is because annual value captures the monetary value of a service in a single year, whereas asset valuation considers the value of a service over an extended time. For oil and gas, this is determined by several factors, including:

- the average price of oil and gas in recent years (including years when these prices were lower than the spike of 2022)
- the scarcity of oil and gas as finite resources
- the expected decline in the volumes of oil and gas extracted each year into the future

Our asset valuation uses North Sea Transition Authority (NSTA) projections that include a decline in oil and gas extraction over time. The asset value also assumes that future resource rent will reflect a multi-year average of recent years, including lower energy prices in the years leading up to 2022 than more recently.

6 . Data on Marine and coastal margins natural capital accounts, UK, 2025

Marine and coastal margins natural capital accounts, UK: summary supplementary tables
Dataset | Released 8 August 2025
Summary supplementary tables for estimates of the financial and societal value of natural resources to people in the UK.

Marine and coastal margins natural capital accounts, UK: detailed supplementary tables
Dataset | Released 8 August 2025
Detailed supplementary tables for estimates of the financial and societal value of natural resources to people in the UK.

7 . Glossary

Asset

A natural asset is a resource that can generate goods or services to humans into the future.

Asset valuation estimates the stock, or stream, of services that are expected to be produced by the natural resource over a reasonably predictable time horizon.

Ecosystem services

Ecosystem services estimate the contribution of natural assets to the economy and society in the UK.

This includes:

- provisioning services, such as food and water
- regulating services, such as flood protection and pollution removal
- cultural services, such as recreation

Physical flow

The physical flow of a natural asset is the measure of its output in units appropriate to the goods or services.

This differs from the annual value and asset value, which measure the monetary value of a natural resource.

8 . Data sources and quality

In this bulletin, we present accounts for the marine and coastal margins habitats in four sections:

- the UK area for marine and coastal margins habitats (extent account)
- indicators of the quality of ecosystems and their ability to continue supplying services in marine and coastal margins habitats (condition account)
- quantity and value of services supplied by marine and coastal margins ecosystems (physical and monetary ecosystem service flow accounts)
- value of marine and coastal margins ecosystems as an asset, which represents the stream of services expected to be provided over the lifetime of the asset (monetary asset account)

The data underpinning marine and coastal margins natural capital come from a wide range of sources with different timeliness and coverage. This release is based on the most recent data, which are from 2024 for most condition indicators and ecosystem services and from 2025 for extent data.

These accounts have been compiled in line with the United Nations (UN) System of Environmental-Economic Accounting Ecosystem Accounting (SEEA-EA) and the UN SEEA Central Framework. These are extended accounts that complement the UN System of National Accounts (SNA). We have also published the principles we follow when interpreting UN guidance to produce natural capital accounts in our Principles of UK natural capital accounting methodology.

More detailed quality and methodology information on strengths, limitations, appropriate uses, and how the data were created is available in our accompanying Marine and coastal margins natural capital accounts methodology guide, UK: 2025.

Official statistics in development

These statistics are labelled as "official statistics in development". Until September 2023, these were called "experimental statistics". Read more about the change in the guide to official statistics in development.

We frequently review the methods and data sources of these statistics to ensure the accounts use the most appropriate data sources available and that our methods are still suitable.

9 . Related links

UK natural capital accounts quality and methods guide
Methodology | Released 30 April 2025
Quality and methodology information for the UK natural capital accounts statistical bulletin, detailing the strengths and limitations of the data, methods used, and data uses and users.

Woodland natural capital accounts, UK: 2025
Bulletin | Released 14 February 2025
Natural capital accounts containing information on the extent, condition and ecosystem services for woodlands in the UK.

UK natural capital accounts: 2024
Bulletin | Released 8 November 2024
Estimates of the financial and societal value of natural resources to people in the UK.

A million fewer people are gaining health benefits from nature since 2020
Article | Released 27 November 2023
People in the UK are spending less time in natural environments since the coronavirus (COVID-19) pandemic.

Urban natural capital accounts, UK: 2023
Bulletin | Released 7 September 2023
Natural capital accounts estimate habitat extent, condition indicators, ecosystem services and asset value of urban areas in the UK.

Scotland natural capital accounts: 2023
Bulletin | Released 15 June 2023
Estimates the value of Scottish natural capital and its beneficial effects for the population.

England natural capital accounts: 2023
Bulletin | Released 25 January 2023
Estimates the value of English natural capital and its beneficial effects for the population.

Health benefits from recreation, natural capital, UK: 2022
Bulletin | Released 27 May 2022
Further development of the UK recreation natural capital ecosystem service accounts, including specific methods used to estimate the health benefits gained from nature-based recreational activities.

10 . Cite this bulletin

Office for National Statistics (ONS), released 8 August 2025, ONS website, statistical bulletin, Marine and coastal margins natural capital accounts, UK: 2025