7.2 Celtic Seas ecoregion – fisheries overview

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Executive summary

The commercial fisheries in the Celtic Seas ecoregion target a large number of stocks. The pelagic fisheries, which account for the largest catches (by weight) in the region are the midwater trawl fisheries for blue whiting, mackerel, horse mackerel, herring, boarfish, and sprat. The largest demersal fishery targets hake along the shelf edge using gillnets and longlines. There are also large mixed bottom-trawl fisheries targeting benthic species, Norway lobster, and gadoids. The species composition of these mixed fisheries tends to vary, depending on the area and the countries involved in the fishery.

The relationship of biomass status or the fishing mortality to reference points is not known for 60% of the 107 stocks that are assessed in the ecoregion. Though only 31% of the stocks are fished below F_{MSY}, these stocks account for nearly 44% of the total landings. There has been a trend of declining fishing mortality since the mid-1990s for the benthic and demersal stocks with known status. The average F/F_{MSY} ratio is below 1 for assessed benthic stocks and just above for the assessed demersal stocks. The trend for stock size in assessed benthic and demersal stocks has been increasing over the same period. The average F/F_{MSY} ratio is below 1 for the crustacean stocks, and the average biomass has been above 1 in the past decade. The average F/F_{MSY} ratio for pelagic assessed stocks has been above 1 in recent years, and the average stock size indicator is declining in recent years but remains above MSY $B_{trigger}$.

Technical interactions in demersal mixed fisheries are described for three areas within the ecoregion. Norway lobster account for the highest landings in the Irish Sea; they are mainly taken in trawl fisheries where they account for more than 90% of the total landings. In the Celtic Sea and west of Ireland hake account for the majority of the landings; they are mainly taken in longline and gillnet fisheries which are also dominated by hake. In the west of Scotland Norway lobster again account for the highest landings; they are mainly taken using otter trawls but also in pots.

Supporting data used in the Celtic Seas fisheries overview is accessible at https://doi.org/10.17895/ices.advice.21641312

Introduction

The Celtic Seas ecoregion covers the northwestern shelf seas of Europe (Figure 1). It includes areas of the deeper eastern Atlantic Ocean and coastal seas that are heavily influenced by oceanic inputs. The ecoregion ranges from north of Shetland to Brittany in the south. Three key areas constitute this ecoregion:

- northern parts; the Malin shelf, west of Scotland, eastern Rockall Bank, and north of Scotland (parts of Subdivision 2.a.2, divisions 4.a and 6.a, and Subdivision 6.b.2);
- the Celtic Sea, Bristol Channel, Western English Channel, southwest and west of Ireland (Division 7.b and Subdivision 7.c.2; parts of divisions 7.e, 7.f, 7.g, 7.h, and subdivisions 7.j.2 and 7.k.2);
- the Irish Sea (Division 7.a).

In the north there are strong links with the North Sea, in the southeast a strong link with the channel area, and in the south a strong link with the Bay of Biscay. The eastern part of the Rockall Bank is within the geographic scope of the ecoregion although it is separated from the western European shelf by the Rockall Trough.

This fisheries overview provides:

- a short description of each of the national commercial fishing fleets in the ecoregion, including their fishing gears, and spatial and temporal patterns of activity;
- a summary of the status of the fisheries resources and the level of exploitation relative to agreed objectives and reference points;
- mixed-fisheries considerations of relevance to the management of the fisheries; and
- an evaluation of the effects of fishing gear on the ecosystem in terms of the seabed and on the bycatch of protected, endangered, and threatened species.

The scientific names of all species described in this overview are listed in Table A2 in the Annex.

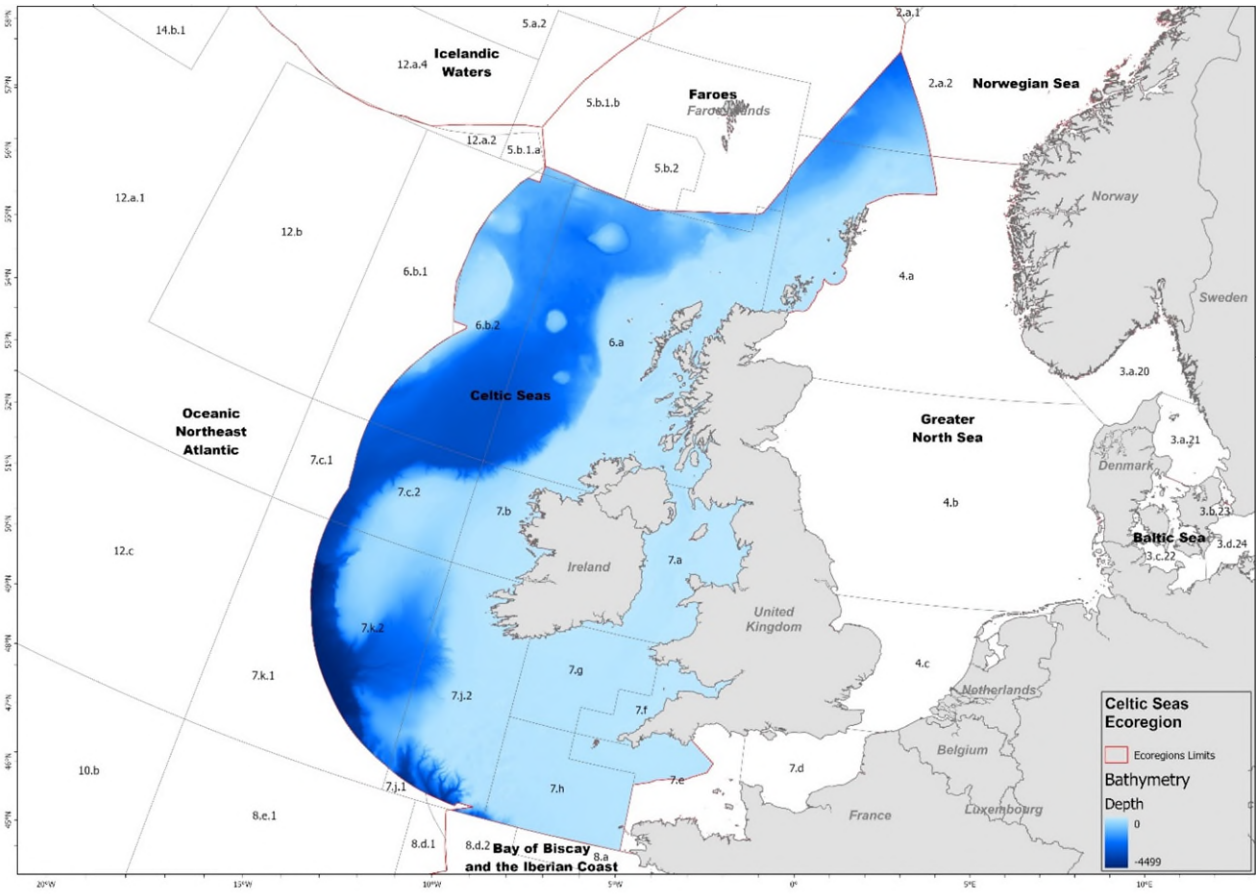


Figure 1 The Celtic Seas ecoregion and ICES statistical areas.

The overview covers ICES subareas 27.7 (excluding Division 27.7.d) and 27.6, (hereafter, the "27" area prefixes are omitted). Some fisheries statistics do not allow the full differentiation of sections of subareas 4 and 2, and (in earlier years) western sections of subareas 6 and 7 as well as the southeastern section of Division 7.e.

Note that updates to the figures using data from the stock assessment Ggaphs (SAG) include only advice published before 10 October 2022. Therefore, anf.27.3a46, mon.27.78abd, lez.27.6b, meg.27.7b-k8abd, had.27.6b, rjn.27.678abd, rju.27.7de, and all Norway lobster stocks refer to the advice current at this time (the advice applicable for 2022).

Who is fishing

Fourteen nations currently have fisheries targeting the many marine stocks within this diverse and extensive ecoregion. Landings by country have varied over the past ten years, with most taken by Norway, UK, Ireland, the Netherlands, Denmark, and France. Lesser amounts are landed by the Faroe Islands, Germany, Spain, Belgium, Lithuania, Poland, and Estonia (Figure 2; note that this figure includes some landings from waters to the west of the ecoregion).

Landings from several of these nations, including Norway, the Netherlands, Germany, Denmark, Lithuania, and Poland, are dominated by pelagic species. Nations within UK and EU target a combination of pelagic, demersal (including Norway lobster), deep-water, and shellfish species. Of these, UK has the greatest landings, with an almost equal split between pelagic and non-pelagic landings.

In the European Commission's Scientific Technical and Economic Committee for Fisheries (STECF), Fisheries Dependence Information (FDI) data call, "confidentiality" in the landings and effort tables by country was introduced. The data call suggests that data related to fewer than three vessels could be considered confidential. Given the disaggregation of this data call (e.g. vessel length, gear, mesh size, quarter) many entries were submitted as confidential. It is therefore not possible to assess the extent to which the effort data are impacted by confidentiality and whether this is consistent over time. As a consequence, no effort by country was presented.

Belgium

The Belgian fleet consists of about 33 active vessels of which about 21 fish in the Irish Sea. The majority (89%) of the vessels are > 24 m, while the remainder of the vessels are between 18 and 24 m. The Belgian fleet uses beam trawls and otter trawls for rays, plaice, sole, and anglerfish.

Denmark

Eight Danish vessels fish in this ecoregion, targeting blue whiting with pelagic trawls.

Faroe Islands

Up to ten vessels from the Faroe Islands operate in this ecoregion, targeting blue whiting with pelagic trawls.

France

The French offshore fishery in the Celtic Sea (divisions 7.g and 7.h) is mostly composed of bottom trawlers (18–35 m, around 350 vessels) targeting gadoids, Norway lobster or anglerfish, megrim, and rays, with fewer than ten vessels using Danish seine. In the west of Scotland (Division 6.a), around ten bottom trawlers target both saithe and deep-sea fish (at depths of less than 800 m), and fewer smaller vessels target hake using longlines or nets. Finally, two large pelagic trawlers target herring and mackerel, and one is also involved in the blue whiting fishery.

Germany

About ten German vessels fish in the ecoregion. This includes vessels that mainly target anglerfish and hake with gillnets and longline and about three large freezer trawlers that target mackerel.

Ireland

The Irish fishing fleet is very diverse with around 1500 < 10 m and 500 ≥ 10 m active vessels. Small vessels (< 10 m) operate inshore, typically targeting shellfish with pots or demersal fish with nets. On the shoreline, there is widespread hand gathering of periwinkles. The vessels ≥ 10 m target a wide variety of species using several types of gear. Vessels in the 12–25 m length range target Norway lobster using trawls on several grounds around Ireland and on the Porcupine Bank. Both inshore and offshore mixed demersal fisheries use trawls and seine nets to target gadoids and benthic species. Vessels using gillnets target hake offshore and pollack, monkfish, and cod in inshore areas. Ten beam trawlers target benthic species such as megrim, anglerfish, flatfish, and rays. There are dredge fisheries for razor clams and scallops in inshore and

offshore areas. About 100 vessels are engaged in aquaculture related activities, including dredging for seed mussels, and mussel and oyster dredging. Twenty large (≥ 30 m) pelagic fishing vessels operate across the whole of the area. Vessels using pelagic trawls target mackerel, horse mackerel, blue whiting, boarfish, and sprat. Pelagic trawling for albacore tuna occurs in the ecoregion.

Lithuania

Two large Lithuanian freezer trawlers target pelagic species in this ecoregion.

Netherlands

Around 10–15 large Dutch pelagic freezer trawlers operate in this ecoregion, mainly targeting horse mackerel and mackerel.

Norway

About 60 Norwegian vessels operate in this ecoregion. Pelagic trawlers mainly target blue whiting but also other pelagic species. There is also a demersal longline fishery that mainly targets ling and blue ling.

Spain

The Spanish fleet comprises 67 vessels >24 m that operate mainly in Subarea 7 (the Porcupine and Great Sole banks) and, to a lesser degree, in Subarea 6 (west of Scotland). All of these vessels target demersal species: set longlines target hake (44 vessels), bottom otter trawl target megrim, anglerfish, and hake (21 vessels), and set gillnet target hake (two vessels).

United Kingdom

Scotland

Most fishing activity by Scottish vessels (754 boats in 2015) occurs in Subarea 6. Around 62 demersal trawlers (mostly > 10 m) fish for mixed gadoids and benthic species such as anglerfish and megrim. A small number of boats target haddock at Rockall. In inshore areas, a fleet of 164 trawlers fish mainly for Norway lobster – 34 of these boats are under 10 m. Pot or creel fishing is carried out by almost 400 vessels. Over 300 of these boats are under 10 m and target either Norway lobster, lobsters, and various crab species. Around 60 larger vessels (> 10 m) fish for crustaceans (mainly brown crab) in more offshore areas to the far north and west of Scotland. Scallop fishing is carried out by around 50 dredgers (mostly > 10 m) and by hand gathering (diving). Limited amounts of inshore longlining and gillnetting are also carried out. About 20 large pelagic trawlers fish in the northern parts of the Celtic Seas ecoregion.

In the Irish Sea, the main Scottish activity is dredging for scallops around the Isle of Man, performed by around 50 boats (mainly > 10 m). Pot fishing occurs along the Solway Firth coast (22 vessels), and about 12 trawlers take part in the Irish Sea Norway lobster fishery. Trawling for Norway lobster also occurs at the Porcupine Bank and in the Celtic Sea (divisions 7.c and 7.k). Mixed-fish trawling, longlining, and gillnetting occurs in the Celtic Sea and western English Channel (Division 7.e). Some boats also dredge for scallops in the western English Channel.

Northern Ireland

The Northern Irish fleet consists of around 130 ≥ 10 m and 180 < 10 m vessels. The fleet predominantly operates within divisions 7.a and 6.a. A small number of vessels target Norway lobster or pelagic species in other parts of the ecoregion. Within the Irish Sea, demersal trawling for Norway lobster dominates the fishing effort.

Vessels operating inshore typically target shellfish with pots, or by dredging (for king scallops) in divisions 6.a and 7.a. Both trawl nets and dredge gear are used to catch queen scallops in the Irish Sea and north of Rathlin Island in Division 6.a.

A small number of vessels trawl for haddock, hake, and (historically) cod. At present (2022), there is no permitted commercial targeted fishery for cod. A pelagic and gillnet herring fishery operates in late summer–early autumn in the pre-

and post-spawning periods. The gillnet fishery occurs on the western Irish Sea coastline whilst two large pelagic trawlers target herring aggregations in the northern English Channel and around the Isle of Man.

England and Wales

The largest sector in terms of vessel numbers are the potting fleets targeting non-quota stocks such as crabs, lobsters (mainly in divisions 7.e, 7.f, and 7.g), and whelks in Division 7.a. The majority of these vessels are under 10 m in length (~600 vessels from a total potting sector of ~700) although more than 50% are polyvalent (vessels using multiple gears).

Vessels employing otter trawls (~300 vessels, around half of which are < 10 m) are mostly found in Division 7.e, with additional activity in divisions 7.a and 7.f; they take a mixture of demersal stocks although some target whitefish and elasmobranchs. The Norway lobster fleet in Division 7.a comprises around 15 vessels in the 10–15 m sector, with < 10 vessels under 10 m. This sector employs otter trawls that use selective gear to reduce whitefish bycatch. Beam-trawling activity (~60 vessels) is dominated by vessels longer than 15 m (~45 vessels), taking a mixture of flatfish and anglerfish with evidence of an increasing targeted fishery for cuttlefish in Division 7.e. Dredge fisheries, predominantly for king scallops, operate in divisions 7.e and 7.a. Dredging activity occurs across all vessel sizes although there is proportionally less activity by < 15 m vessels in Division 7.a.

Isle of Man

The main fisheries undertaken in the Isle of Man's territorial sea (12 nautical miles) are for king scallop, queen scallop, crab, lobster, and whelk.

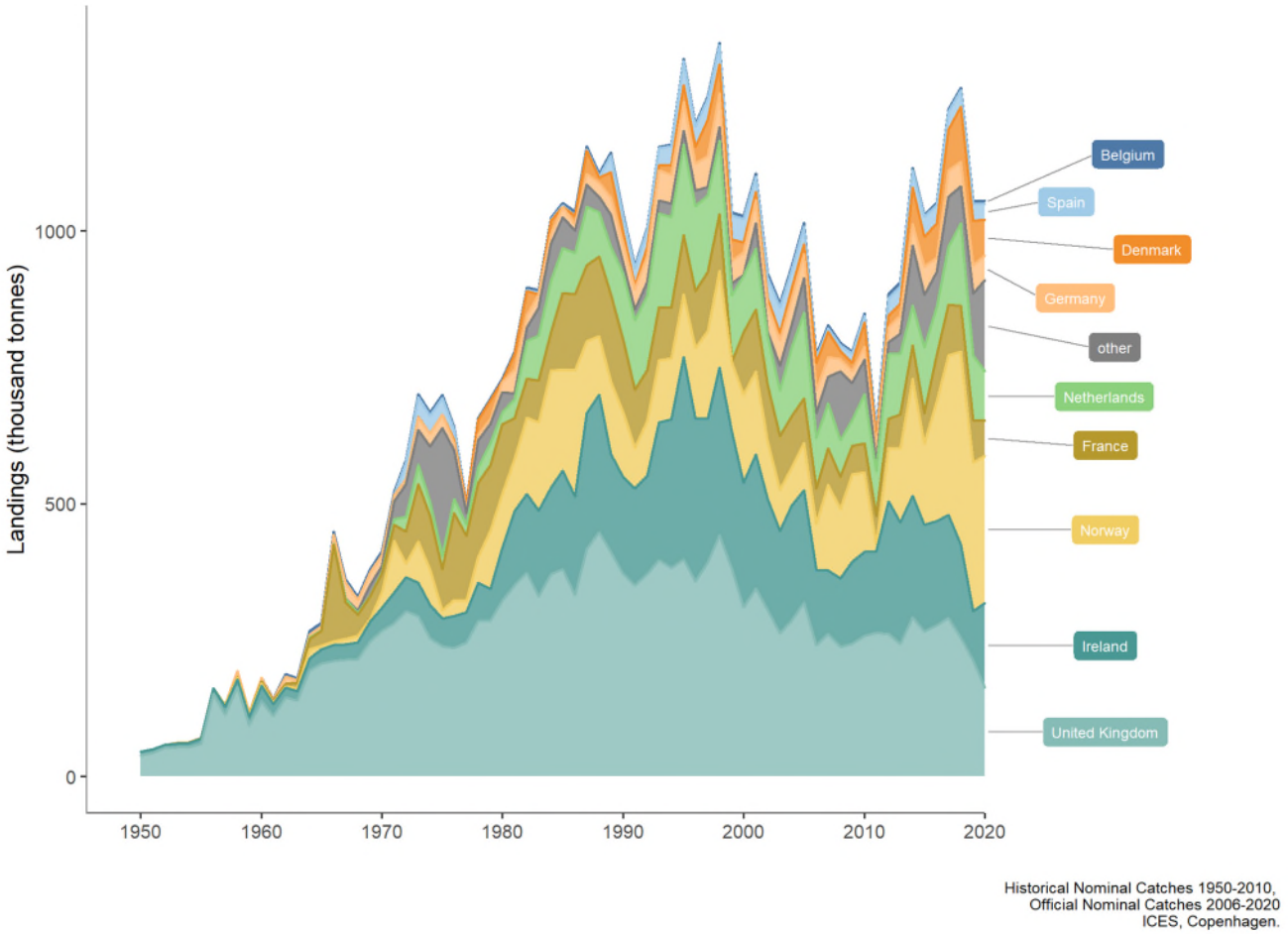


Figure 2 Landings (thousand tonnes) from ICES subareas 6 and 7 (excluding Division 7.d). This approximates to the majority of the Celtic Seas ecoregion in 1950–2020, by (current) country. The nine countries having the highest landings are shown individually; the remaining countries are aggregated and displayed as "other".

Catches over time

Landings of pelagic species within the ecoregion showed an increasing trend from the 1960s to the mid-1990s then declined through the 2000s. Since 2011 pelagic landings again increased (Figure 3). Blue whiting and mackerel constitute the highest proportions of the catches, with herring and horse mackerel declining in relative importance in the last decade (Figure 4). The demersal fisheries show a generally increasing trend to the late 1980s and a declining trend since then (Figure 3). Hake, whiting, and haddock account for the highest landings of demersal species (Figure 4). Anglerfish and megrim are also very important, whereas the relative importance of cod, saithe, and ling has declined. Crustacean fisheries have remained relatively stable in the last few decades; Norway lobster accounts for the highest landings (Figure 4). Other important crustacean species include scallop, crab, and lobster.

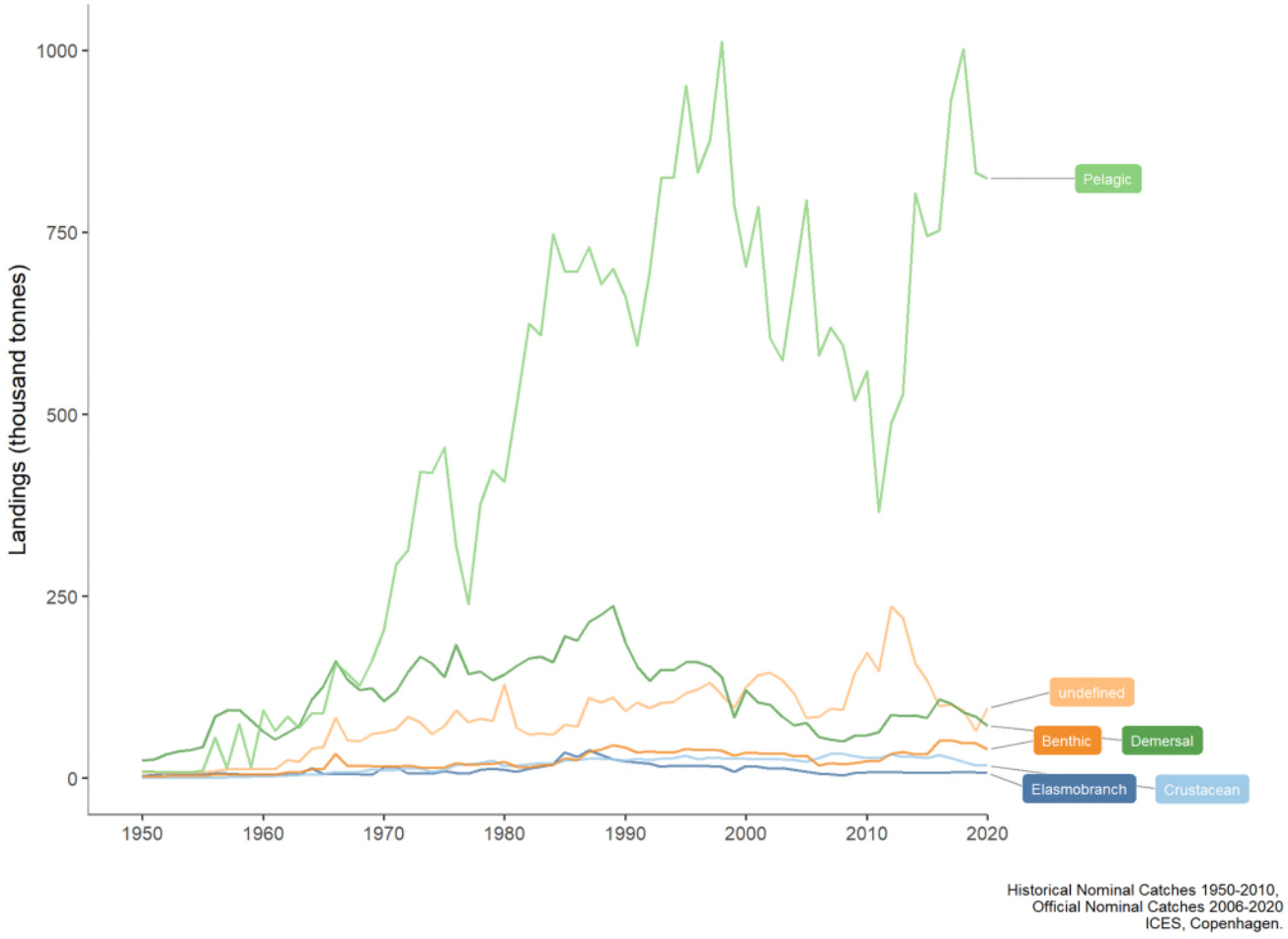


Figure 3 Landings (thousand tonnes) from ICES subareas 6 and 7 (excluding Division 7.d) in 1950–2020, by fish category. Table A1 in the Annex details the species that belong to each fish category.

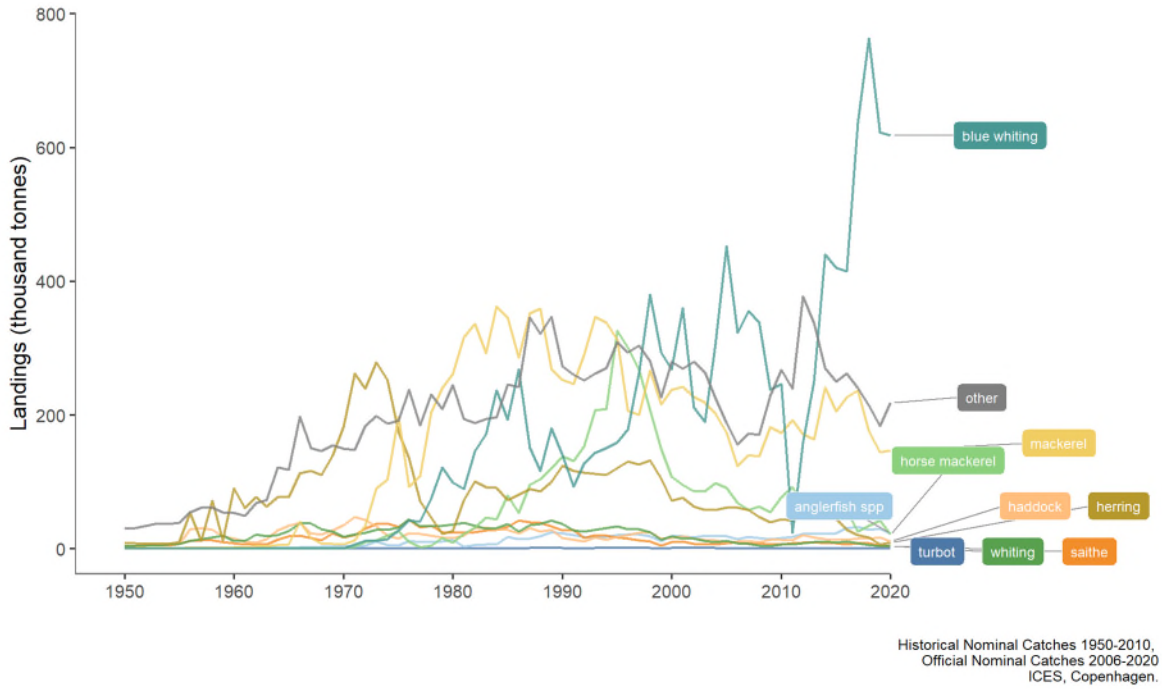


Figure 4 Landings (thousand tonnes) from ICES subareas 6 and 7 (excluding Division 7.d) in 1950–2020, by species. The eleven species having the highest cumulative landings over the entire time-series are displayed separately; the remaining species are aggregated and labelled as "other".

There are fluctuations in pelagic landings (Figure 5). Landings by demersal otter trawls, beam trawlers, pots, and static gears (mostly gillnet) have been more stable.

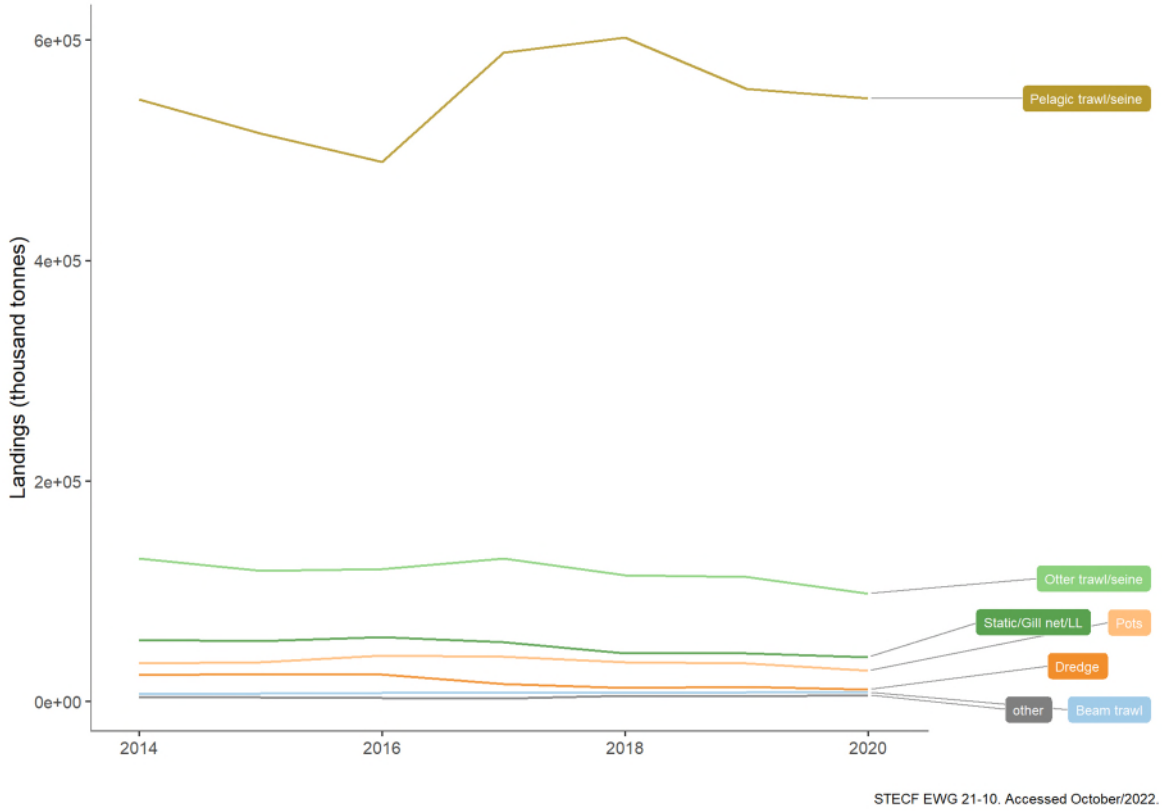


Figure 5 Commercial landings (thousand tonnes) from ICES subareas 6 and 7 (excluding Division 7.d) in 2014–2020, by gear type (LL = longline) for EU Member States. Confidential values have been reported from Ireland, Portugal, and France.

Discards

Total discard tonnage (and therefore rate) of pelagic species is estimated to be very low (Figure 6). Discards of demersal, crustacean, and benthic species are estimated to be around 10%. Discard rates for some species are very high in the ecoregion, for example plaice (around 60% of tonnage) and whiting (50–99% of tonnage).

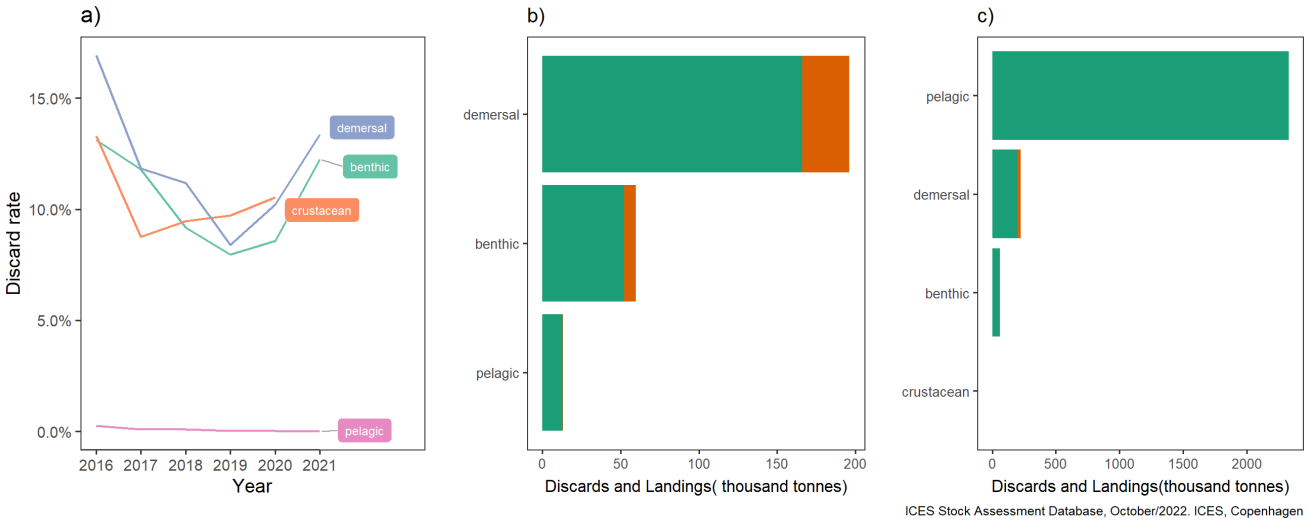


Figure 6 ICES subareas 6 and 7 (excluding Division 7.d). Left panel (a): discard rates in 2018–2021 by fish category, shown as percentages (%) of the total annual catch in that category. Middle panel (b): landings (green) and discards (orange) in 2021 by fish category (in thousand tonnes) only of those stocks with recorded discards. Right panel (c): landings (green) and discards (orange) in 2021 by fish category (in thousand tonnes) of all stocks, including stocks with zero discards or without discard information. There is uncertainty over the elasmobranch data and thus it is not presented here.†

Description of the fisheries

Fisheries that take place within the Celtic Seas ecoregion catch a wide range of different species, including those considered to be demersal, benthic, pelagic, widely distributed, and deep-water.

Otter trawl fishing is highest on the *Nephrops* grounds in the Celtic Sea, and close to the continental shelf edge (Figure 7). Demersal seiners are mainly active in the Celtic Sea. Static gear (longlines and gillnets) fisheries are concentrated close to the continental shelf edge, particularly in the southern and northern parts of the ecoregion. Pelagic trawl fisheries (pelagic seines are not normally used in this ecoregion) occur throughout the ecoregion, but there is generally more effort close to the shelf edge (Figure 7). Beam-trawl effort is concentrated in the Celtic Sea and western English Channel, with some additional effort in the Irish Sea. There is little beam trawling in the northern part of the ecoregion. Dredge fisheries are concentrated on scallop grounds around the Isle of Man, western English Channel, southeast of Ireland, and along the Scottish coast (Figure 7).

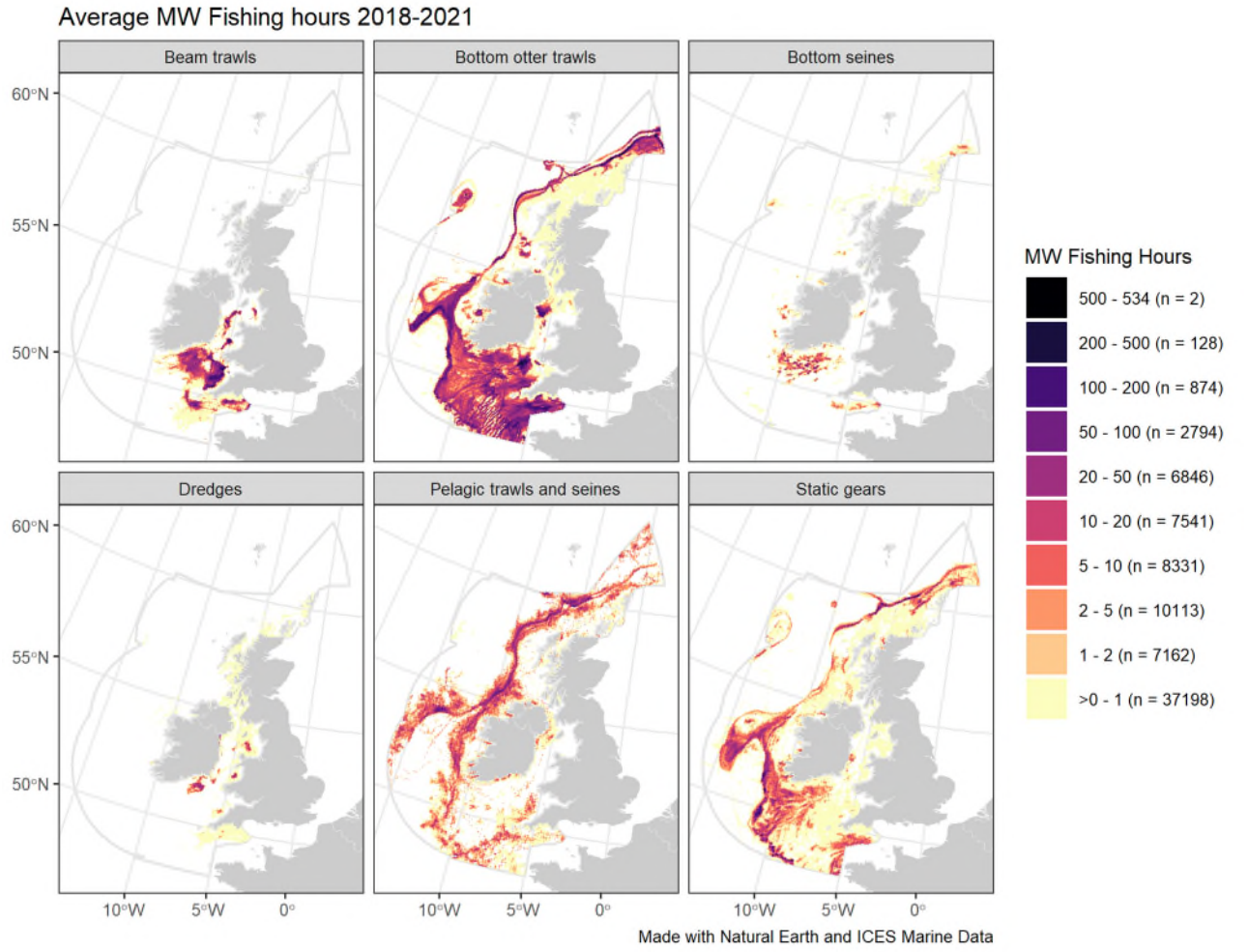


Figure 7 Spatial distribution of average annual fishing effort (mW fishing hours) in the Celtic Seas ecoregion, by gear type. Fishing effort data are only shown for vessels > 12 m with vessel monitoring systems (VMS)[‡], this will bias the distributions, particularly in coastal areas.

Catches of pelagic species vary both spatially and temporally. Mackerel and blue whiting are caught mainly on their southward migrations along the shelf edge to spawning grounds in spring. The highest mackerel catches in recent years have been in the northern part of the ecoregion, while the highest catches of blue whiting are around the Porcupine Bank (Figure 8). Horse mackerel are caught throughout the ecoregion, and catches are highest west of Ireland in the spring. Herring catches are concentrated in three areas: north of Scotland, in the Celtic Sea, and around the Isle of Man. The highest boarfish catches are in the western Celtic Sea. The albacore tuna fishery occurs in the southwestern part of the ecoregion.

Hake are caught in deeper waters (> 70 m) throughout the ecoregion. Catches are concentrated along the continental shelf edge in the southern and northern parts of the ecoregion where the directed gillnet and longline fisheries occur (Figure 8). Anglerfish are also common throughout the ecoregion, with the highest catches on the shelf edge, in the Celtic Sea and western English Channel. The highest megrim catches are in the western Celtic Sea.

Whiting catches are highest in the Celtic Sea south of Ireland, where there are also significant catches of haddock and cod (Figure 8). Saithe are mainly caught in the northern part of the ecoregion. Pollack are mainly caught in inshore areas of Cornwall and along the southern coast of Ireland.

[‡] Details on countries submitting data can be found at https://data.ices.dk/accessions/allaccessions.aspx?search=vms

The main Norway lobster catches are in the western Irish Sea, in the Minches, the Celtic Sea, and on the Porcupine Bank (Figure 8). There are also significant catches of scallops in the Irish Sea (around the Isle of Man) and off southern Cornwall. Brown crab catches mainly occur in coastal areas of Cornwall, north of Ireland, and north of Scotland.

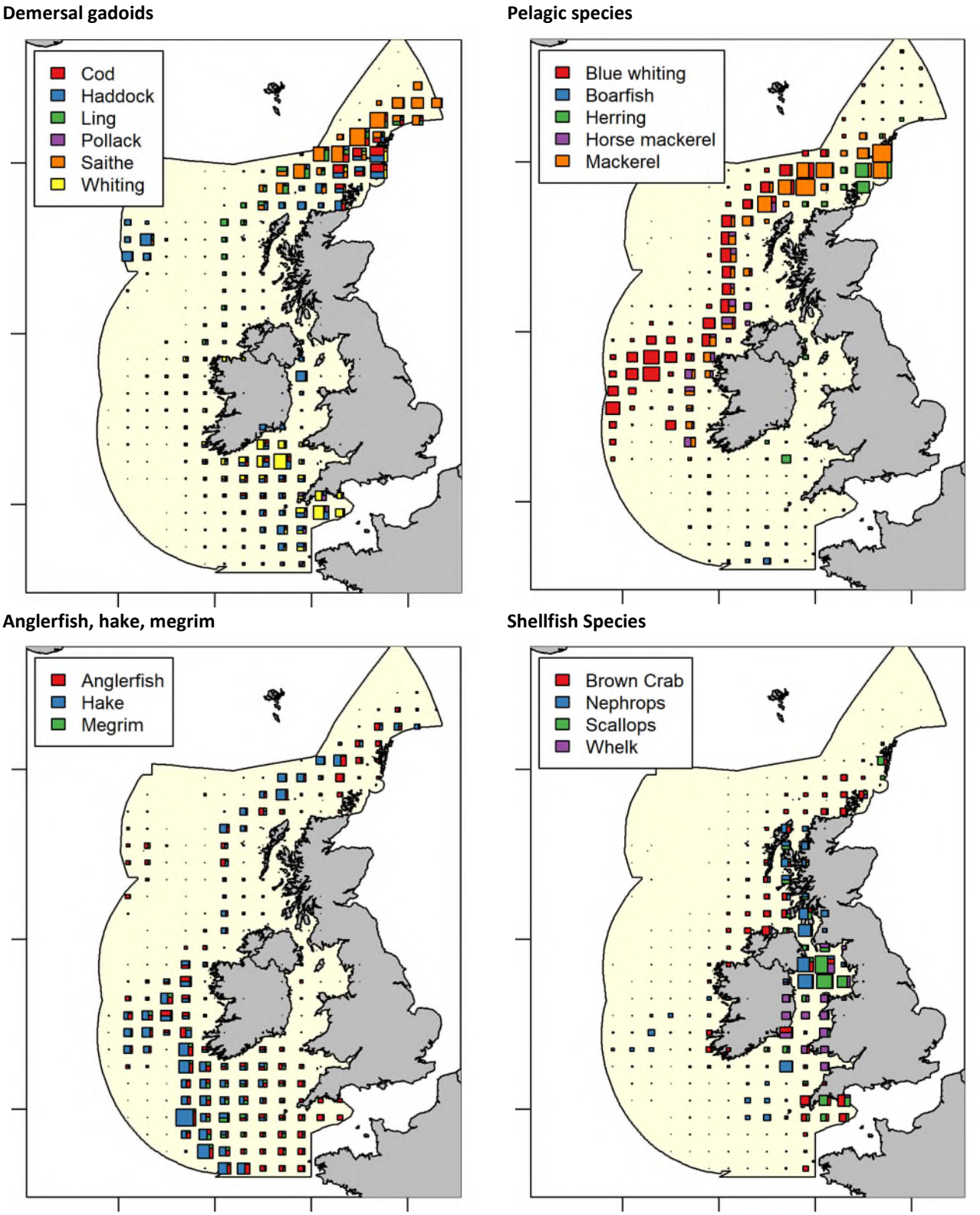


Figure 8 Spatial distribution of the landings for the main pelagic, benthic, gadoid, and shellfish species in the Celtic Seas ecoregion. Landings (tonnes) are represented proportionately within each panel, but not between panels. Based on data for > 10 m EU vessels, 2015–2019. Source: STECF FDI[§].

[§] https://stecf.jrc.ec.europa.eu/dd/fdi/spatial-land-map

Otter trawl

The species caught by otter trawl depends on the area, depth-range habitat, and season fished as well as on the codend mesh size, but in all cases the catches consist of a mixture of different species.

Norway lobster-directed otter trawl

Norway lobster is an important target species on discrete muddy grounds within the ecoregion. Vessels typically, although not exclusively, use twin- or quad-rig trawls with 80 mm codends. A small wanted bycatch of fish species includes cod, haddock, plaice, anglerfish, and to a lesser extent sole. The use of highly selective gears (grids, square mesh, and separator panels) to reduce unwanted fish bycatch has increased over time, but significant discarding issues still exist on some grounds. Mixed fisheries target both Norway lobster and finfish in the Celtic Sea using a larger mesh size (100 mm or more).

Finfish-directed otter trawl and seine

Fish are targeted with both small (80–99 mm) and larger (> 99 mm) mesh sizes in different parts of the ecoregion, depending on regulation and target assemblage. Smaller mesh otter trawls and seiners are typically used to target a broad mixture of species, including gadoids, flatfish, and other benthic species. These fisheries primarily occur within the Celtic Sea, along the slope west of Ireland and Scotland, and in the western English Channel. Large-mesh otter trawlers (typically 100 mm or 120 mm) tend to target gadoids, anglerfish, or rays.

Deep-water trawl

Until 2016, deep-water trawl fisheries were conducted in ICES subareas 6 and 7, principally by France, with some Spanish, Irish, and Scottish participation. Trawling deeper than 800 m has been banned since December 2016. This mixed deep-water trawl fishery mainly targeted roundnose grenadier, black scabbardfish, and blue ling, with a bycatch mainly of smoothheads and deep-water sharks on the continental slope and offshore banks of subareas 6 and 7.

Beam trawl

Beam trawlers operate on sandy grounds in the Irish and Celtic seas and in the western English Channel. The majority of the vessels use meshes in the range of 80–89 mm, and come from Belgium, UK, and Ireland. In the Irish Sea, the vessels primarily target plaice and sole. There is also a fishery for ray species in the southern Irish Sea. In the Celtic Sea, the beam trawl fishery occurs on grounds where sole, anglerfish, cuttlefish, and megrim are abundant and the seabed is suitable for beam trawling. The fishery has bycatches of anglerfish, cod, haddock, and whiting. In the western English Channel (Division 7.e) beam trawling, using 80–90 mm mesh, mainly targets sole and cuttlefish.

Gillnet

The main gillnet fishery, (mainly with 120 mm mesh size) in this ecoregion targets hake along the continental slope. Spanish, French, UK, and Irish vessels are involved in the fishery, which typically operates at depths of 150–600 m. In the shallower Celtic Sea, where mesh sizes used are 120–219 mm, target species include anglerfish, flatfish, and gadoids.

A large number of inshore gillnetters (< 12 m) are also active in the ecoregion. The target species and gears used tend to vary spatially and temporally. In the first quarter, the primary target of inshore gillnetters operating in divisions 7.g and southern 7.a is cod. Fisheries around the Irish coast seasonally target anglerfish, flatfish, pollack, and dogfish.

Prior to 2006, UK, French, German, and Spanish gillnetters operated in deep waters of subareas 6 and 7 targeting hake, monkfish, and deep-water sharks. This fishery stopped or seriously reduced from 2006, following EU regulation of deep-water gillnetting at depths below 600 m.

Longline and line

Spanish-, French-, and UK-registered longliners target hake along the continental slope with bycatches of ling, blue ling, and other deep-water species. An English handline fleet operates inshore around the coast of Cornwall in divisions 7.e–f targeting mackerel in an area where other fishing methods for this species are not permitted.

Pelagic trawl

The spatial distributions of the main pelagic species are shown in Figure 8.

Blue whiting

The main fisheries target spawning and post-spawning fish west of Ireland and of Scotland. The fishery extends into Faroese and international waters west of the Porcupine Bank. Most of the catch (~90%) is taken in the first half of the year. The multi-national fleet targeting blue whiting mostly consists of large pelagic trawlers. Blue whiting is mainly used for fishmeal.

Mackerel

The Northeast Atlantic mackerel stock ranges over a wide area, part of which includes the Celtic Seas ecoregion. Within the ecoregion the fleet consists of two pelagic trawl components: freezer trawlers, which are commonly large vessels (up to 150 m) that usually operate a single midwater pelagic trawl, although smaller vessels may also work as pair trawlers. Non-freezer trawlers vary in size, from 20 to 100 m, and operate both individually and as pairs. The larger of the pelagic trawlers use refrigerated seawater (RSW) tanks for storage.

Horse mackerel

Germany, the Netherlands, and Ireland have trawl fisheries for horse mackerel. The Dutch and German fleets operate mainly west of the English Channel. Irish vessels fish mainly to the west of Ireland. Prior to the 1990s, most of the catches were used for meal and oil; this has changed so most of the catches are now used for human consumption.

Herring

The herring fishery occurs in four main parts of the ecoregion.

- The fishery in Division 6.a North is conducted by single and pair RSW trawlers and by single-trawl freezer trawlers. Prior to 2006, there was a fairly even distribution of effort, both temporally and spatially. UK and Ireland are the main exploiters, but vessels registered to the Netherlands, Germany, and France also participate in the fishery.
- In divisions 6.a South and 7.b–c, the fishery is conducted entirely by RSW pelagic trawlers and dry-hold vessels, both inshore and offshore on the northwestern Irish coast. In recent years, only Ireland has exploited herring in this area. The fishery is concentrated in quarters one and four.
- The herring Division 7.a North fishery has not changed in recent years. UK pelagic trawlers take the majority of catches in quarters three and four.
- The main herring fishery in divisions 7.a South and 7.g–k takes place on coastal spawning grounds and on offshore feeding grounds south of Ireland. The Netherlands, Ireland, and Germany exploit this fishery using two types of vessels, larger boats with RSW storage and smaller dry-hold vessels.

Boarfish

The fishery operates from September to March. Catches are generally free from bycatch from September to February. From March onwards a bycatch of mackerel can be found in the catches and the fishery generally ceases at this time. Information on the bycatch of other species in the boarfish fishery is sparse, bycatch numbers are thought to be minimal. The fishery uses pelagic trawl nets with mesh sizes 32–54 mm.

Sprat

Sprat fisheries using pelagic trawls take place in the south Minch and in Irish inshore waters during autumn and winter.

Other fisheries

In addition, a number of small-scale coastal fisheries exist throughout the ecoregion for stocks where ICES does not provide routine assessments or advice. For example, dredging for shellfish includes scallops, razor clams, cockles, clams, and oysters. There are also important pot and trap fisheries for crabs, lobsters, and whelks. There are target fisheries for squid at Rockall in some years.

Eels migrate through the Celtic Sea, but there is no marine fishery targeting eel in the ecoregion. However, in some transitional waters of the United Kingdom, there are fisheries targeting glass eels (recruits). Similarly, Atlantic salmon also migrate through this ecoregion but commercial fisheries are either prohibited or very restricted.

Recreational

Marine recreational fishing is an important activity in the Celtic Sea with a diverse range of species exploited from a variety of platforms (i.e. shore, boat, charters) using many gears (e.g. rod and line, speargun, nets, pots, traps). The main countries with recreational fisheries are UK, France, and Ireland, with methods varying between countries. In UK and Ireland, no licence is required and angling from shore and boat is the most popular method, with a number of charter boats offering trips. Angling, nets, and spearfishing are popular gears in France. Catches can be significant representing around 5%, 27% and 42% of total removals of cod, sea bass, and Pollack, respectively (Hyder *et al*., 2018; Radford *et al*., 2018). The main targets include: mackerel, pollack, sea bass, saithe, cod, spurdog (*Squalus acanthias*), flatfish (plaice, dab, flounder, sole), sea bream, wrasse, and whiting. There are also catches of sharks, skates, and rays. In addition, shellfish, crustaceans, and cephalopods are also caught by recreational fishers.

Fisheries management

The Celtic Seas ecoregion includes all or parts of the exclusive economic zones (EEZs) of Ireland, UK, France, and of the Isle of Man. Management within EU waters was conducted in accordance with the EU Common Fisheries Policy (CFP), up to 2020. Catching opportunities for stocks under EU competency were agreed during meetings of the Council of Ministers. Under the CFP's regionalization policy, proposals on certain issues (for example discard plans) are made by the North western waters Regional Fisheries Group, and national authorities manage activities in coastal waters (i.e. within 12 nautical miles). From 2021, UK was no longer a member of the EU, and catching opportunities for stocks under shared UK and EU competency are agreed during bilateral negotiations according to the Trade and Cooperation Agreement (TCA). UK now sets the rules on technical measures for operations in its waters. The fisheries for some widely distributed stocks are managed based on agreements by the North-East Atlantic Fisheries Commission (NEAFC) and by coastal states. Salmon fisheries are managed nationally based on agreements at the North Atlantic Salmon Conservation Organization (NASCO), and fisheries for large pelagic fish are managed based on agreements at the International Commission for the Conservation of Atlantic Tunas (ICCAT). International fisheries advice is provided by ICES, STECF, the Standing Scientific Committee of ICCAT, and the North Western Waters and Pelagic Advisory Councils.

Total allowable catches (TAC) is the main fishery management tool in the ecoregion. TACs were introduced for most stocks in 1982, but were generally not restrictive (nor were quotas) until the early 1990s. The 2013 reform of the CFP aimed to eliminate discarding through the introduction of the EU landing obligation (LO). The LO was introduced for pelagic species in 2015 and was phased in for demersal TAC species since 2016. From 2019, the LO applies to all TAC species, although there are some exemptions.

A large number of technical measures are in place. These include measures to improve the selectivity of towed gears (partly in order to reduce bycatch), and gear restrictions.

Spatial management also occurs, both for fisheries and for ecosystem reasons. Closed areas/seasons are used to protect e.g. spawning grounds for fish. Protected areas have also been designated for habitats and species listed by EU Nature Directives (Natura 2000). In 2022, closed areas were introduced for the protection of VMEs (vulnerable marine ecosystems) between 400-800 m. Regulations are in place to restrict certain fisheries that may affect relevant habitats and species, e.g. for cold-water corals.

Management plans

Several of the demersal stocks in the Celtic Seas ecoregion are shared between EU and UK. For shared stocks where there is no agreed management plan that ICES has evaluated to be precautionary, ICES advice is based on the MSY approach. In the case of the Celtic Seas, no agreed, precautionary management plans are in place. Since 2016 the EC has developed multiannual sea basin plans for demersal species caught together in mixed fisheries. These plans are commonly referred to as, multiannual plans (MAPs). For the ecoregion the Western Waters MAP (2019/472) and the North Sea (2016/0238) MAPs are of most relevance. The MAPs set out to achieve the objectives of the CFP, facilitate the implementation of the landing obligation, and promote a fair standard of living for those who depend on fishing activities. They were drafted to be coherent with the MSFD (2008/56), and the Birds Directive (2009/147). Unlike previous management plans which laid out a TAC setting rule, the principle of the MAPs is to implement the MSY policy adopted under the CFP, following best scientific advice. This is done whilst having due regard for the fact that many species are caught together, and that some of the species caught by the fisheries are not targeted but bycatches. Implementing the principles has meant that target species are identified under the plans (species not listed as target are implicitly considered as bycatch) and that TACs are set on target species within a range about F_{MSY}, but that the upper part of the range can only be used under the conditions set out in the MAPs. For stocks not shared with UK, ICES advice is based on the MAPs

A number of pelagic stocks in the ecoregion have been managed under agreed multiannual management plans in the past. For pelagic stocks, ICES currently only provides advice according to the agreed international management plan for blue whiting.

Status of the fishery resources

Fishing mortalities and spawning-stock sizes have been evaluated against maximum sustainable yield (MSY) and precautionary approach (PA) reference points, and the status of these stocks has also been assessed relative to safe biological limits, i.e. $F < F_{pa}$ and $SSB > B_{pa}$ (Figure 9). Around 33% of the assessed stocks are fished at or below F_{MSY} target levels. The majority of benthic and crustacean stocks are fished below F_{MSY}, the status of nearly all elasmobranch stocks is unknown, and the status for the majority of the demersal and pelagic stocks is also unknown.

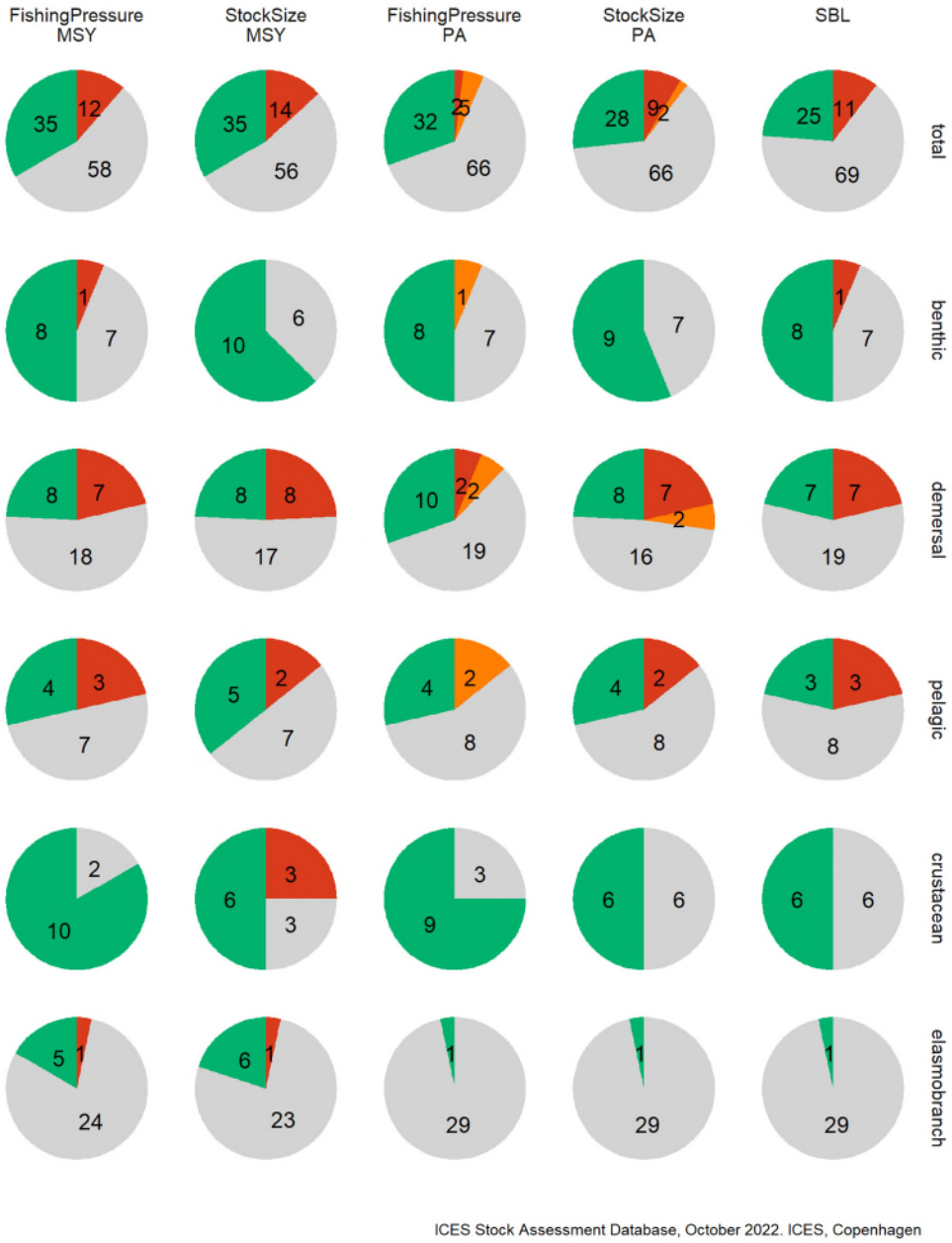
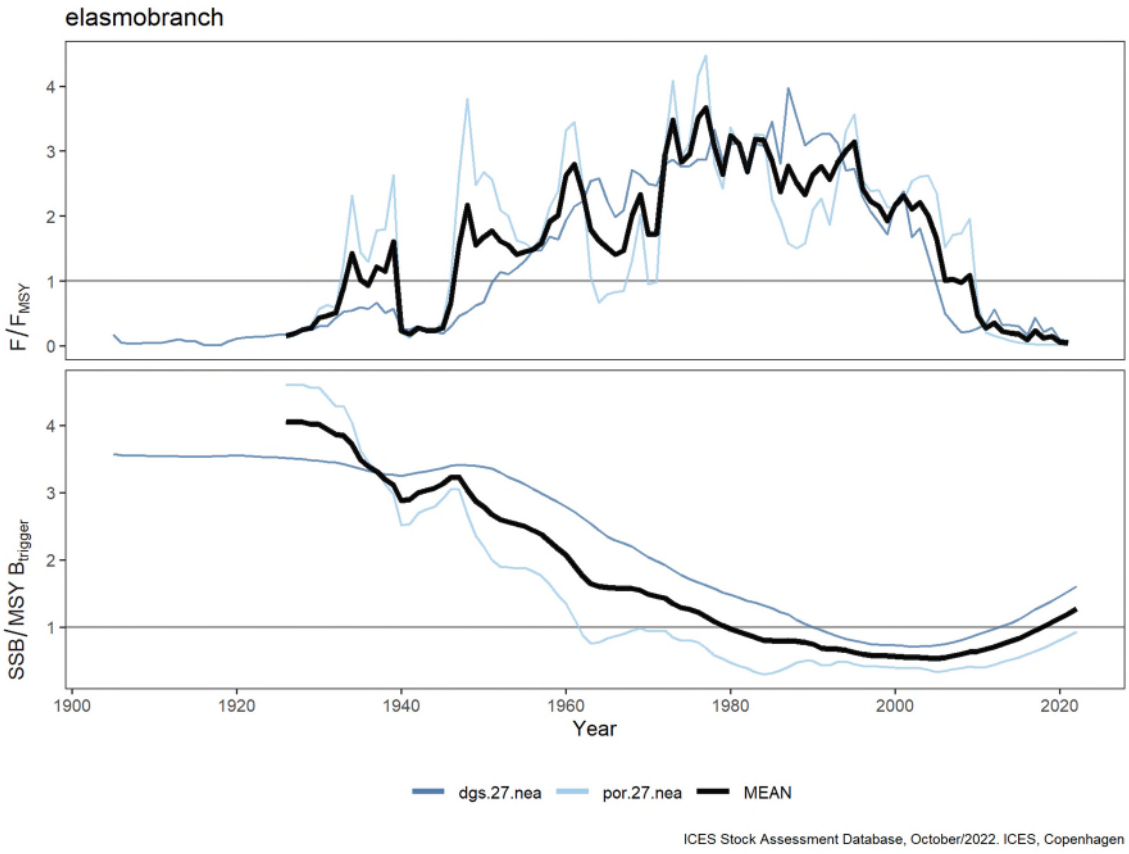


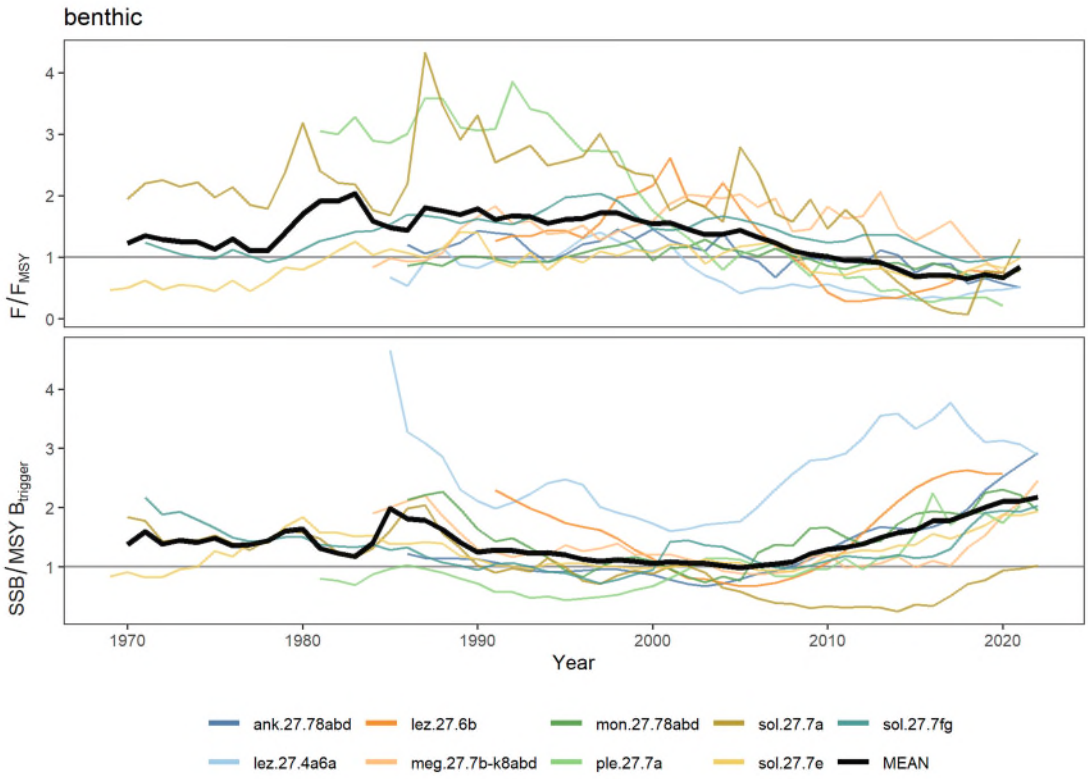
Figure 9 Status summary of Celtic Seas ecoregion stocks (excluding European eel, salmon, and sea trout). in 2022 relative to ICES maximum sustainable yield (MSY) approach and precautionary approach (PA). . For the MSY approach: green represents a stock that is either fished below F_{MSY} or whose size is greater than MSY $B_{trigger}$; red represents a stock status that is either fished above F_{MSY} or whose size is lower than MSY $B_{trigger}$. For the PA: green represents a stock that is fished at or below F_{pa} while its size is equal to or greater than B_{pa}; orange represents a stock that is either fished between F_{pa} and F_{lim} or whose size is between B_{lim} and B_{pa}; red represents a stock that is fished above F_{lim} or whose size is less than B_{lim}. Stocks with a fishing mortality at or below F_{pa} and whose size is above B_{pa} are defined as being inside safe biological limits. If this condition is not fulfilled the stock is defined as being outside safe biological limits. Grey represents unknown reference points. For stock-specific information, see Table A1 in the Annex.

Figure 10 Status summary of Celtic Seas ecoregion stocks in 2022 relative to the EU Marine Strategy Framework Directive (MSFD) assessment criteria of the level of pressure of fishing activity (D3C1) and reproductive capacity of the stock (D3C2). Green represents the proportion of stocks that are either fished below F_{MSY} or whose size is greater than MSY $B_{trigger}$, for criteria D3C1 and D3C2. Red represents the proportion of stocks that are either fished above F_{MSY} or whose size is lower than MSY $B_{trigger}$, for criteria D3C1 and D3C2. Grey represents the proportion of stocks without MSY reference points. For stock-specific information, see Table A1 in the Annex.

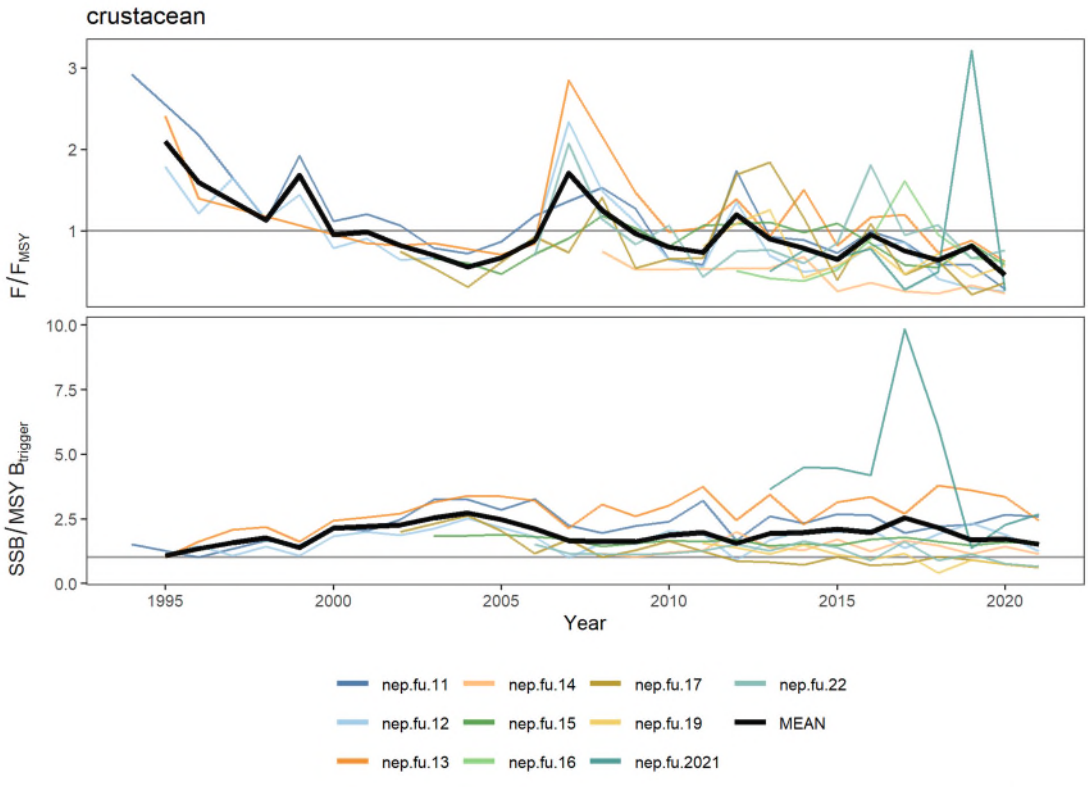
The Celtic Seas ecoregion has 105 stocks for which ICES provided advice in 2021. These encompass the following categories: 16 benthic, 12 crustacean, 33 demersal, 30 elasmobranch, and 14 pelagic stocks. Of these the pelagic, crustaceans (Norway lobster), and demersal stocks are the best known, having the highest number of quantitative assessments (ICES data category 1 stocks). 33% are sustainably fished (i.e. D3C1 where $F < F_{MSY}$); these account for around 9% of the total landings (Figure 10). Other groups, such as the elasmobranchs, have a more limited knowledge base. This limited data means these stocks are placed in ICES categories 2, 3, 5, and 6. While these data-limited stocks account for the majority of stocks (54%), they only account for less than 4% of the total landings (Figure 10). Around 29% of the stocks were assessed to be above MSY $B_{trigger}$ (D3C2); these accounted for around 90% of the total biomass caught.

Clear trends show a declining fishing mortality ratio for category 1 benthic and demersal stocks since the mid-1990s (Figure 11). The mean fishing mortality is now below the F_{MSY} target. The SSB ratio shows an increasing trend over the same period and the mean values are now more than twice MSY $B_{trigger}$. Note that though the mean fishing mortality and biomass ratios are in a desirable condition, this does not infer that all stocks are in that condition. The mean fishing mortality ratio is fluctuating less than F_{MSY} and the SSB ratio is fluctuating above 1 for the crustacean stocks. For pelagic stocks, the mean fishing mortality ratio declined between 2000 and 2012 but has been increasing in recent years to above 1. The mean biomass ratio for pelagic species remains above MSY $B_{trigger}$ but has also been declining in recent years.





ICES Stock Assessment Database, October/2022. ICES, Copenhagen



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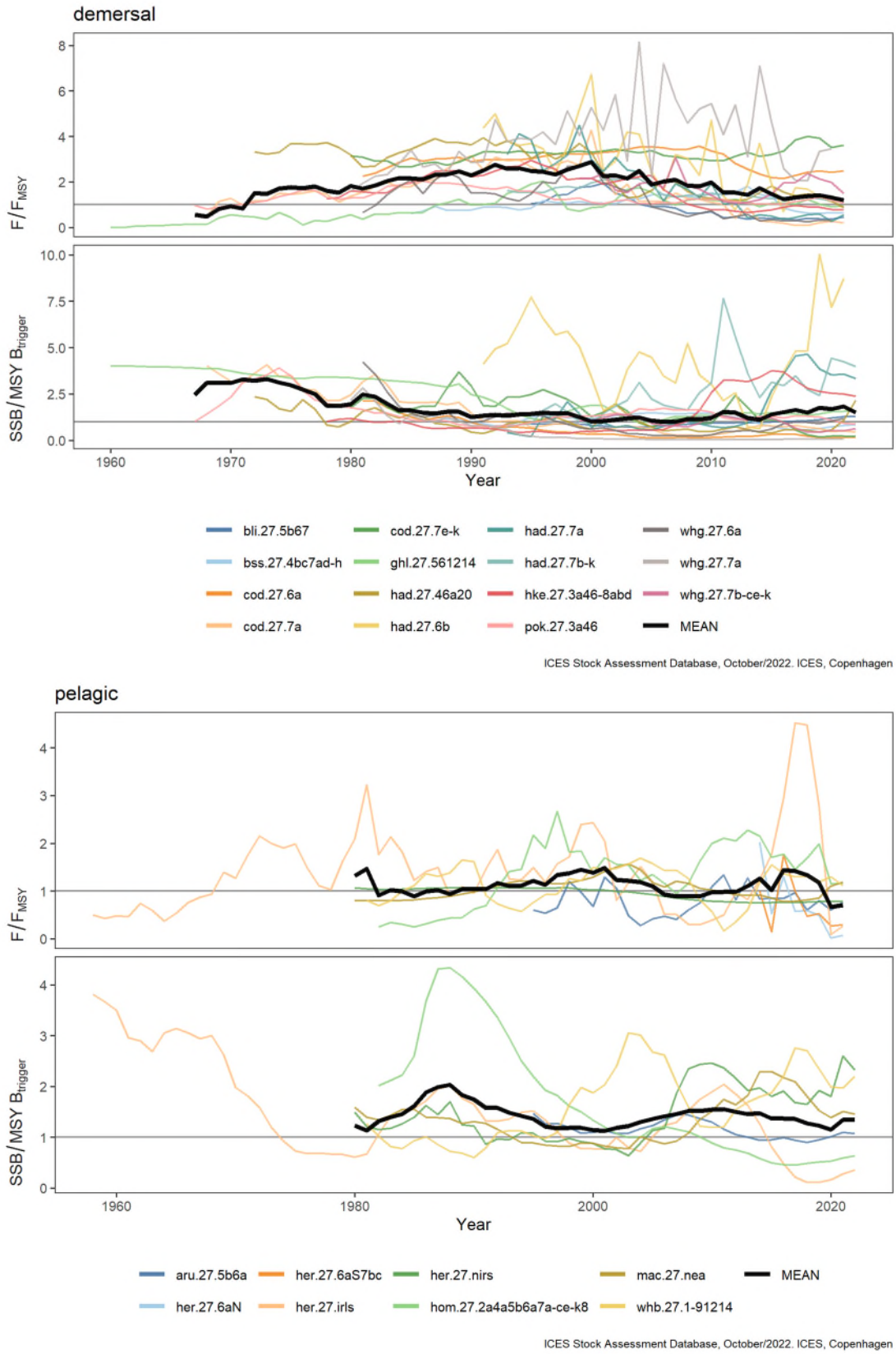
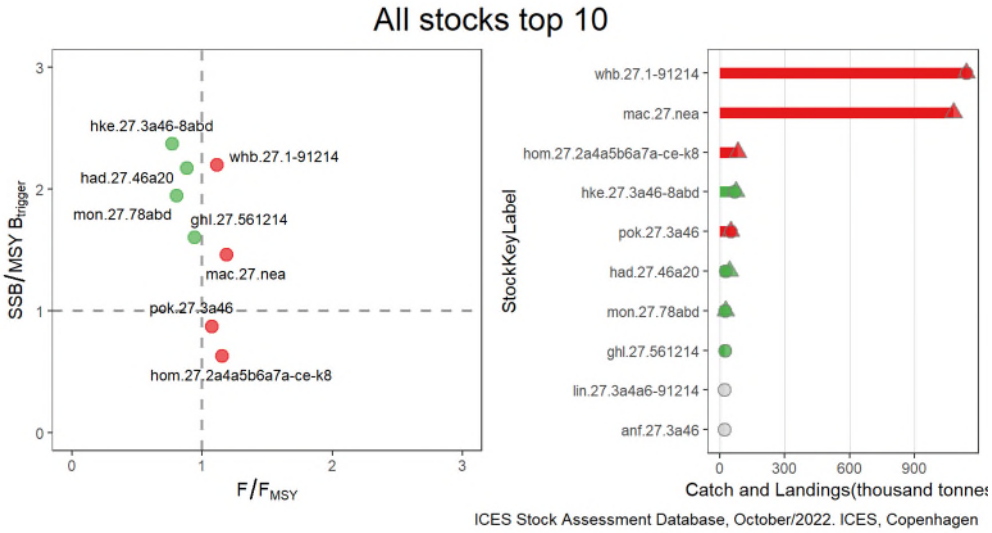
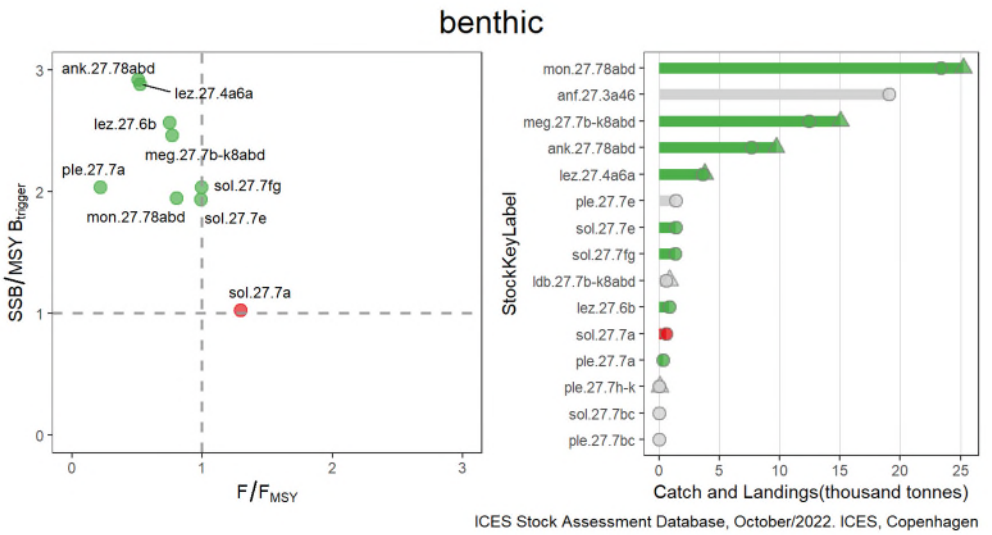
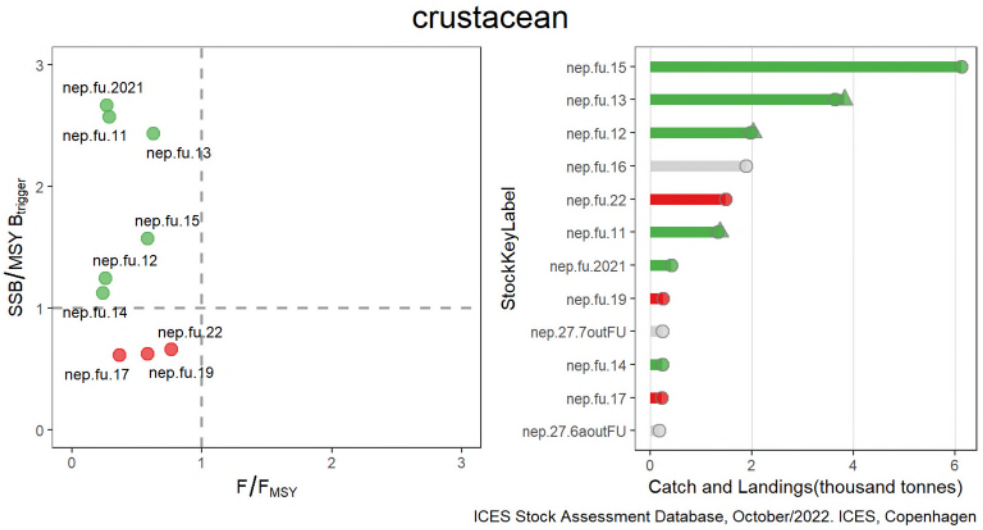


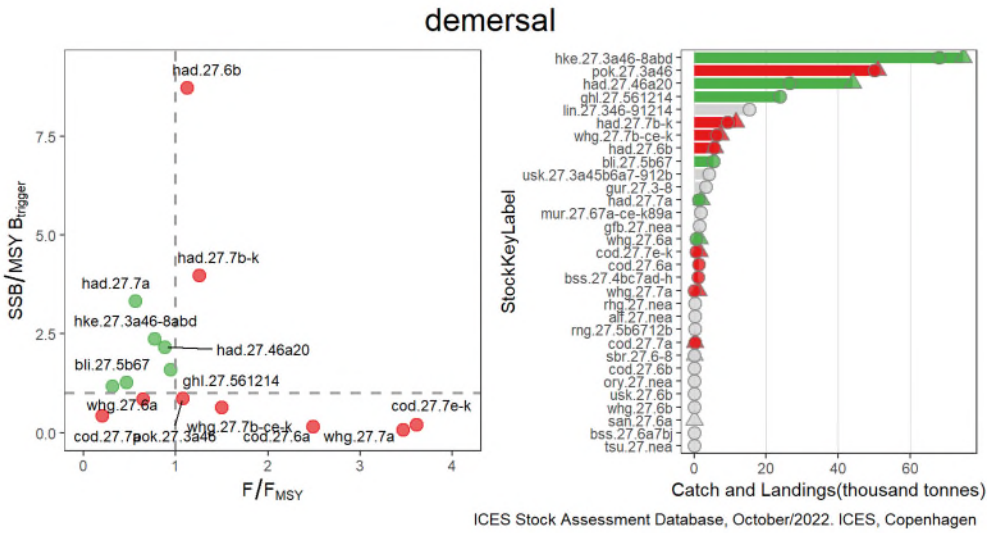
Figure 11 Temporal trends in F/F_{MSY} and SSB/MSY $B_{trigger}$ for Celtic Seas ecoreion benthic, crustacean, demersal, and pelagic stocks. Only stocks with defined MSY reference points are considered. For full stock names, see Table A1 in the Annex.

The stock status relative to F_{MSY} and MSY $B_{trigger}$ is shown for all stocks and partitioned by stock groups in Figure 12. This shows that the hake, anglerfish, and some haddock stocks have the best status among all stocks (multiples of MSY $B_{trigger}$). Cod in divisions 6.a and 7.e–k and whiting in 7.a have the worst stock status, being fished around 3.5 times higher than F_{MSY} and with SSB well below MSY $B_{trigger}$. Blue whiting and mackerel account for the highest landings. Fishing mortality for blue whiting and mackerel is higher than F_{MSY}. Five demersal stocks and one pelagic stock are in the bottom-right quadrant of the stock status plot indicate that they need to be rebuilt and that fishing mortality remains too high. Several stocks are in the bottom-left quadrant, indicating that while fishing mortality is lower than F_{MSY}, stock size remains below MSY $B_{trigger}$. In general, the crustacean and benthic stocks have a better stock status than the demersal or pelagic stocks.






crustacean
SSB/MSY B$_{trigger}$
F/F$_{MSY}$
nep.fu.2021
nep.fu.11
nep.fu.13
nep.fu.15
nep.fu.12
nep.fu.14
nep.fu.22
nep.fu.17
nep.fu.19
StockKeyLabel
Catch and Landings(thousand tonnes)
nep.fu.15
nep.fu.13
nep.fu.12
nep.fu.16
nep.fu.22
nep.fu.11
nep.fu.2021
nep.fu.19
nep.27.7outFU
nep.fu.14
nep.fu.17
nep.27.6aoutFU
ICES Stock Assessment Database, October/2022. ICES, Copenhagen


demersal
SSB/MSY B$_{trigger}$
F/F$_{MSY}$
had.27.6b
had.27.7b-k
had.27.7a
hke.27.3a46-8abd
had.27.46a20
bli.27.5b67
ghl.27.561214
whg.27.6a
cod.27.7e-k
whg.27.7b-ce-k
cod.27.7a
pok.27.3a46
cod.27.6a
whg.27.7a
StockKeyLabel
Catch and Landings(thousand tonnes)
hke.27.3a46-8abd
pok.27.3a46
had.27.46a20
ghl.27.561214
lin.27.346-91214
had.27.7b-k
whg.27.7b-ce-k
had.27.6b
bli.27.5b67
usk.27.3a45b6a7-912b
gur.27.3-8
had.27.7a
mur.27.67a-ce-k89a
gfb.27.nea
whg.27.6a
cod.27.7e-k
cod.27.6a
bss.27.4bc7ad-h
whg.27.7a
rhg.27.nea
alf.27.nea
rng.27.5b6712b
cod.27.7a
sbr.27.6-8
cod.27.6b
ory.27.nea
usk.27.6b
whg.27.6b
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tsu.27.nea
ICES Stock Assessment Database, October/2022. ICES, Copenhagen

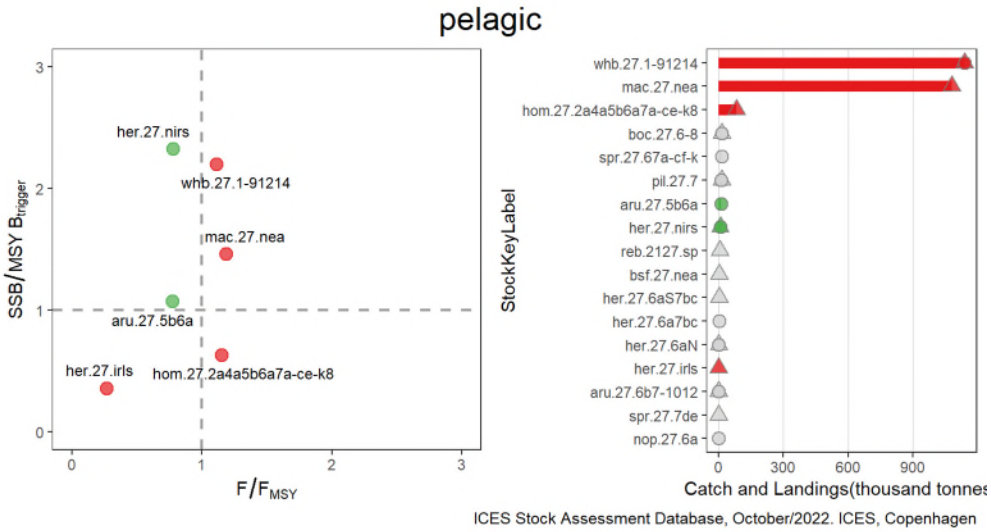


Figure 12 Status of Celtic Seas ecoregion stocks relative to the joint distribution of exploitation (F/F_{MSY}) and stock size (SSB/ MSY $B_{trigger}$ [left panels, by individual stocks]) and catches (triangles)/landings (circles) from the latest advice of these stocks [right panels]. The left panels only include stocks for which MSY reference points have been defined (MSY where available). Stocks in green are exploited at or below F_{MSY} while their size is also at or above MSY $B_{trigger}$. Stocks in red are either exploited above F_{MSY} or their size is below MSY $B_{trigger}$, or both. Stocks in grey have unknown/undefined status in relation to reference points or they have not updated advice this year. "All stocks" refers to the ten stocks with highest catch and landings across fisheries guilds in 2021. For full stock names, see Table A1 in the Annex.

European eel cannot be assessed against any PA or MSY reference points. Recruitment of the species has declined sharply in recent decades. The non-fishing anthropogenic mortality factors affecting European eel are: (a) hydropower, pumping stations, and other water intakes; (b) habitat loss or degradation; (c) pollution, diseases, and parasites; and (d) other management actions that may affect levels of predation (e.g. conservation vs. control of predators).

Celtic Seas and Irish Sea Mixed fisheries

Mixed-fisheries advice considerations

For the Celtic Sea and west of Ireland (divisions 7.b–k, excluding Division 7.d) mixed-fisheries considerations are presented for cod (cod.27.7e-k), haddock (had.27.7b-k), whiting (whg.27.7b-ce-k), Norway lobster (functional units [FUs] 16, 17, 19, 20–21, 22, and 27.7 outside FUs), sole (sol.27.7e and sol.27.7fg), white and black-bellied anglerfish (mon.27.78abd and ank.27.78abd), megrim (meg.27.7b-k8abd), and hake (hke.27.3a46-8abd). Based on mixed-fisheries considerations and single-stock catch advice, cod is the most limiting stock for Celtic Sea demersal fisheries. This is due to the zero-catch advice for cod, because almost all fisheries operating with demersal gears catch cod.

For the Irish Sea (27.7a) mixed-fisheries considerations are presented for cod (cod.27.7a), haddock (had.27.7a), plaice (ple.27.7a), sole (sol.27.7a), whiting (whg.27.7a), and Norway lobster (functional units [FUs] 14 & 15). Based on mixed-fisheries considerations and single-stock catch advice, demersal fisheries in the Irish Sea are limited by the zero-catch advice for whiting and cod as almost all fleets within the mixed-fishery catch these stocks. The least limiting stock is haddock (12 of 14 fleets).

Mixed-fisheries description

Fishing operations typically catch more than one species at a time, although some are more species-selective than others. For example, individual hauls from pelagic trawling and purse-seining consist mainly of a single species with small proportions of bycatch; gillnetters and longliners catch relatively few species, while demersal trawling catches several

species simultaneously. These operations are reported to ICES at a level that is aggregated by country to the following key descriptors of fishing activity (hereafter called "métier"): gear, target assemblage, mesh size range, vessel length, ICES division, and quarter (ICES division and quarters have been aggregated to ecoregion and year in the analyses below). The catch composition resulting from any fishing activity is described as a technical interaction.

The analyses have been carried out at national level because it allows the incorporation of the effects of market considerations and quota availability on technical interactions. In the descriptions below, the term "landings" is used because the analyses are based on landings reported in logbooks.

In this advice, only the technical interactions occurring within demersal fisheries in the Celtic Seas ecoregion are considered. For this analysis, an average of the 2019, 2020, and 2021 data on métier was used. The Celtic Seas ecoregion was subdivided into three distinct areas: Irish Sea (Division 7.a), Celtic Sea and west of Ireland (divisions 7.b–k, excluding Division 7.d), and west of Scotland (divisions 6.a and 6.b). The technical interactions within each of these areas are described in relation to the main demersal TAC species (cod, megrims, anglerfish, whiting, hake, haddock, Norway lobster, plaice, sole, pollack, and saithe).

Irish Sea

The ten demersal TAC species that dominate the landings in the Irish Sea (Norway lobster, haddock, anglerfish, hake, megrim, cod, whiting, sole, plaice and pollack; Figure 14) are predominantly landed by three countries – Ireland, United Kingdom, and Belgium – using eleven main métiers – GNS_DEF, GTR_DEF, LLS_DEF, LLS_FIF, OTB_CRU, OTB_DEF, OTM_DEF, OTM_SPF, PTM_SPF, TBB_DEF, and SSC_DEF (Figure 13; see Table A4 in the Annex for a definition of métiers).

Norway lobster is the main species landed within the Irish Sea mixed fisheries (mean 7190 tonnes year^{-1}). It is primarily targeted using otter trawls (OTB_CRU). Other species in the Norway lobster fishery constitute a low proportion of the overall landings (< 10%; Figure 13). However, there is evidence of significant discarding in these fisheries, including that of whiting. Haddock accounts for the second highest landings (1249 tonnes year^{-1}) is mainly caught in otter trawls targeting demersal fish (OTB_DEF, OTM_DEF, Figure 13). Around 75% of haddock is caught by these two métiers (Figure 13). Sole in the Irish Sea is mainly targeted by beam trawls, and the species has technical interactions with megrim, plaice, and some other species (mainly rays; Figure 13). There is some variation in the landings profiles of each métier at the country level, reflecting different fishing patterns, practice, and quota shares.

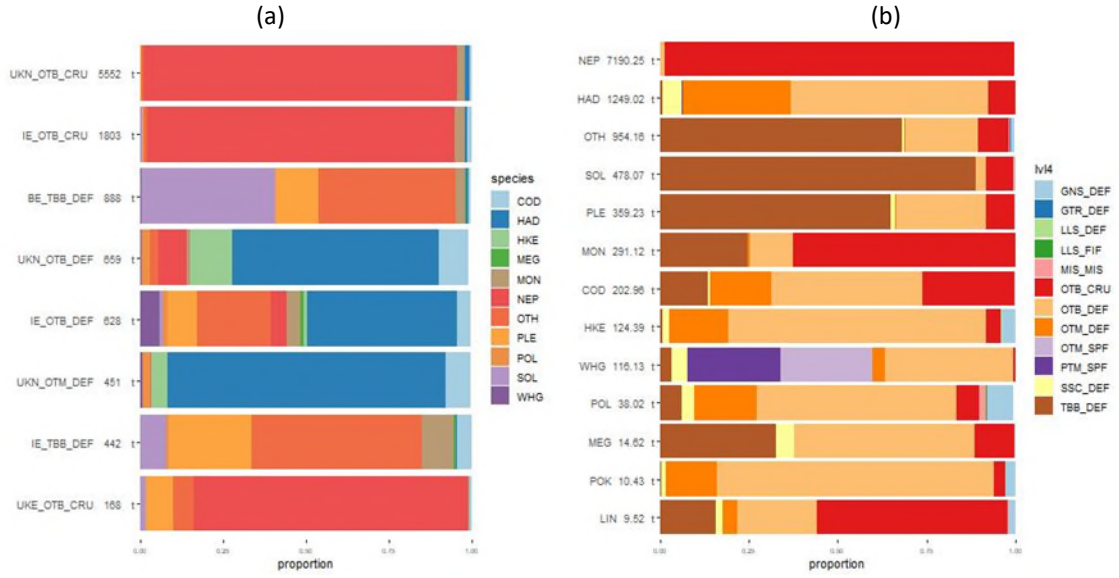


Figure 13 Description of technical interactions of demersal TAC species in the Irish Sea. The left panel (a) shows the species composition of the main demersal métiers (landings > 100 tonnes) operating in the Irish Sea. The *y*-axis label incorporates the country code, métier, and mean annual (2019–2021) landings (tonnes). The right panel (b) shows the proportion of the landings of each species accounted for by the different demersal métiers. The *y*-axis panel includes the species code and the mean annual landings (2019–2021).

Celtic Sea and west of Ireland

The Celtic Sea and west of Ireland has highly diverse mixed fisheries. Twelve demersal TAC species dominate the landings in the Celtic Sea (hake, anglerfish, megrim, whiting, Norway lobster, haddock, cod, pollack, sole, ling, saithe, and plaice; panel b in Figure 14). These are landed by seven nations (Ireland, France, United Kingdom, Spain, the Netherlands, Germany and Belgium), using 14 main métiers (OTB_DEF, LHM_DEF, GNS_DEF, TBB_DEF, OTB_CRU, OTB_MOL, OTT_CRU, OTT_DEF, SSC_DEF, GTR_DEF, OTM_SPF, PTM_SPF, LLS_DEF, and LLS_FIF; Figure 14). In this area, unlike the Irish Sea, landings profiles by métier vary greatly by country. For example, demersal otter trawl fisheries carried out by France, Ireland, and United Kingdom yield very different species compositions and therefore result in different technical interactions (panel a in Figure 14).

Hake is the main species landed by demersal mixed fisheries (mean 21 852 tonnes year^{-1}) from the Celtic Sea and west of Ireland. Hake are targeted primarily by longliners (LLS_DEF) and gillnetters (GNS_DEF; Figure 14). The landings of other species in the hake directed fishery constitutes a low proportion of the overall catch (< 10%; panel a in Figure 14). Hake is caught in the majority of métiers to varying extents. The slope species, anglerfish (19 188 tonnes year^{-1}) and megrims (8 084 tonnes year^{-1}), constitute the next highest landings. Both anglerfish and megrims are primarily targeted by otter trawls (OTB_DEF; panel b in Figure 14) and represent the dominant species of that métier (> 50%; panel a in Figure 14). Most whiting is caught by otter trawls targeting fish; these trawls also catch haddock and varying amounts of other benthic and gadoid species. Eighty percent of Norway lobster are caught in crustacean trawl fisheries with minor catches of other species.

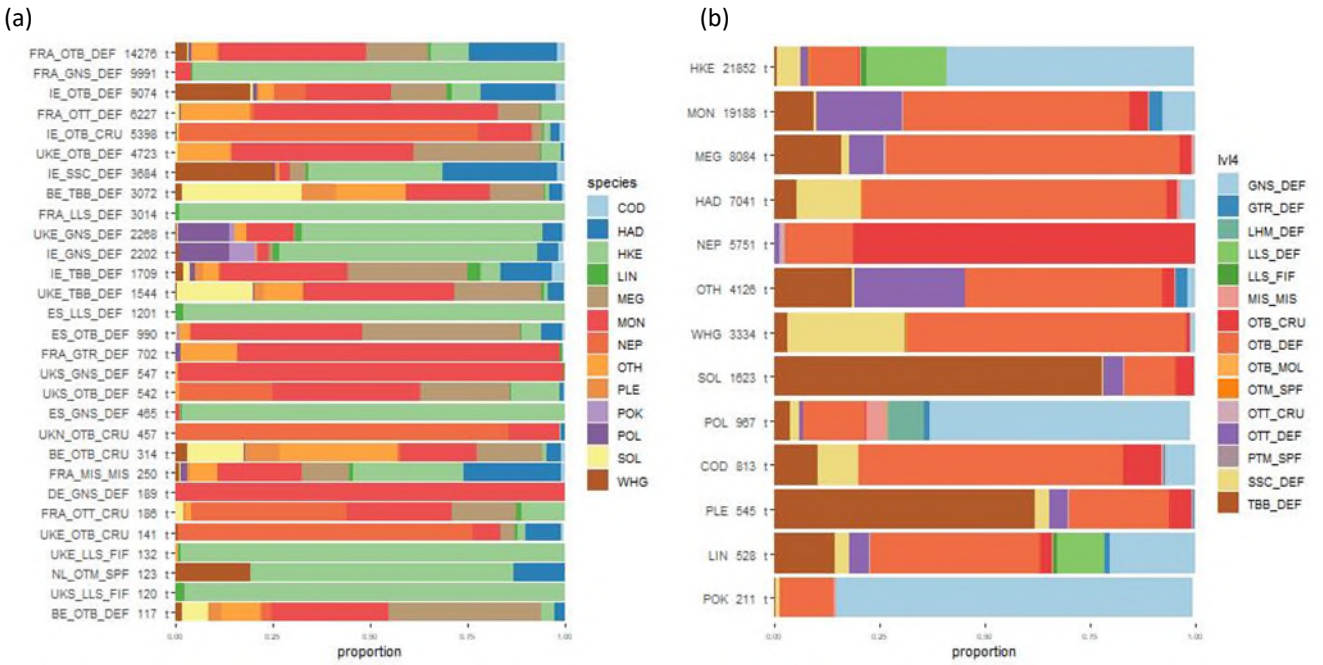


Figure 14 Description of technical interactions of demersal TAC species in the Celtic Sea and west of Ireland. The left panel (a) shows the species composition of the main demersal métiers (landings > 100 tonnes) operating in the Celtic Sea and west of Ireland. The *y*-axis label incorporates the country code, métier, and mean annual (2019–2021) landings (tonnes). The right panel (b) shows the composition of the landings of each species accounted for by the different demersal métiers. The *y*-axis label includes the species code and the mean annual landings (2019–2021).

West of Scotland

Twelve demersal TAC species dominate the landings from west of Scotland (haddock, Norway lobster, hake, anglerfish, saithe, ling, megrim, cod, whiting, plaice; pollack, and sole; Figure 15). These are landed by six nations (United Kingdom, Ireland, France, Spain, Norway, and the Netherlands) using fourteen main métiers (OTB_DEF, OTB_CRU, LHP_DEF, LLS_DEF, LLS_FIF, FPO_CRU, GNS_DEF, SSC_DEF, OTT_DEF, OTM_SPF, OTM_DEF, PTM_DEF, TBB_DEF, and OTB_DWS; panel b in Figure 15).

Haddock, the main species in the landings of demersal fisheries of west of Scotland (average 8828 tonnes year^{-1}), are primarily targeted by otter trawls (OTB_DEF), and have technical interactions with many other species, including hake, ling, pollack, anglerfish, whiting, and Norway lobster (Figure 15). Norway lobster accounts for the second highest landings (8770 tonnes year^{-1}); it is targeted mainly by otter trawls (OTB_CRU) and with creels (FPO_CRU). However, there is evidence of significant discarding in these fisheries. Ling has the third highest landings (5422 tonnes year^{-1}) in fisheries in this area. It is mainly caught using a mix of otter trawls and longliners (OTB_DEF, LLS_DEF, LLS_FIF; Figure 15). As with the Celtic Sea, landings profiles in this area vary greatly depending on the country. For example, the demersal otter trawl fisheries carried out by France, Ireland, and United Kingdom have very different species compositions and therefore result in different technical interactions (Figure 15).

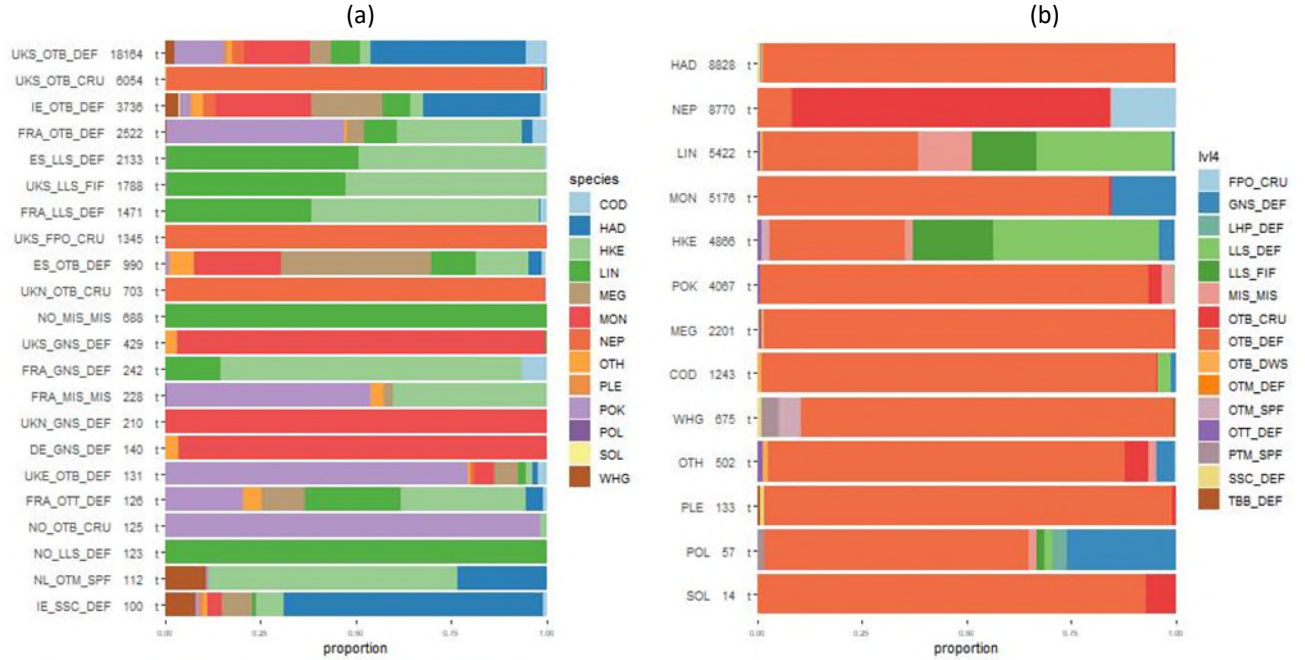


Figure 15 Description of technical interactions of demersal TAC species for the west of Scotland. The left panel (a) shows the species composition of the main demersal métiers (landings > 100 tonnes) operating in these seas. The label in the y axis incorporates the country code, métier, and mean annual (2019–2021) landings (tonnes). The right panel (b) shows the proportion of the landings of each species accounted for by the different demersal métiers. The *y*-axis label includes the species code and the mean annual landings (2019–2021).

The species interactions and relative proportions of catches in mixed fisheries are not likely to change greatly between years. Generally, the interactions between species and the selectivity of fisheries change gradually over time.

Species interaction

Fish species are part of the marine foodweb and interact in various ways, including through predation and competition. Natural mortality is becoming proportionately more significant in the Celtic Seas ecoregion because fishing mortality has been reduced on many stocks. Predation mortality can occur from other fish, seabirds, and marine mammals. The abundance of some mammal species has been increasing in some parts of the ecoregion.

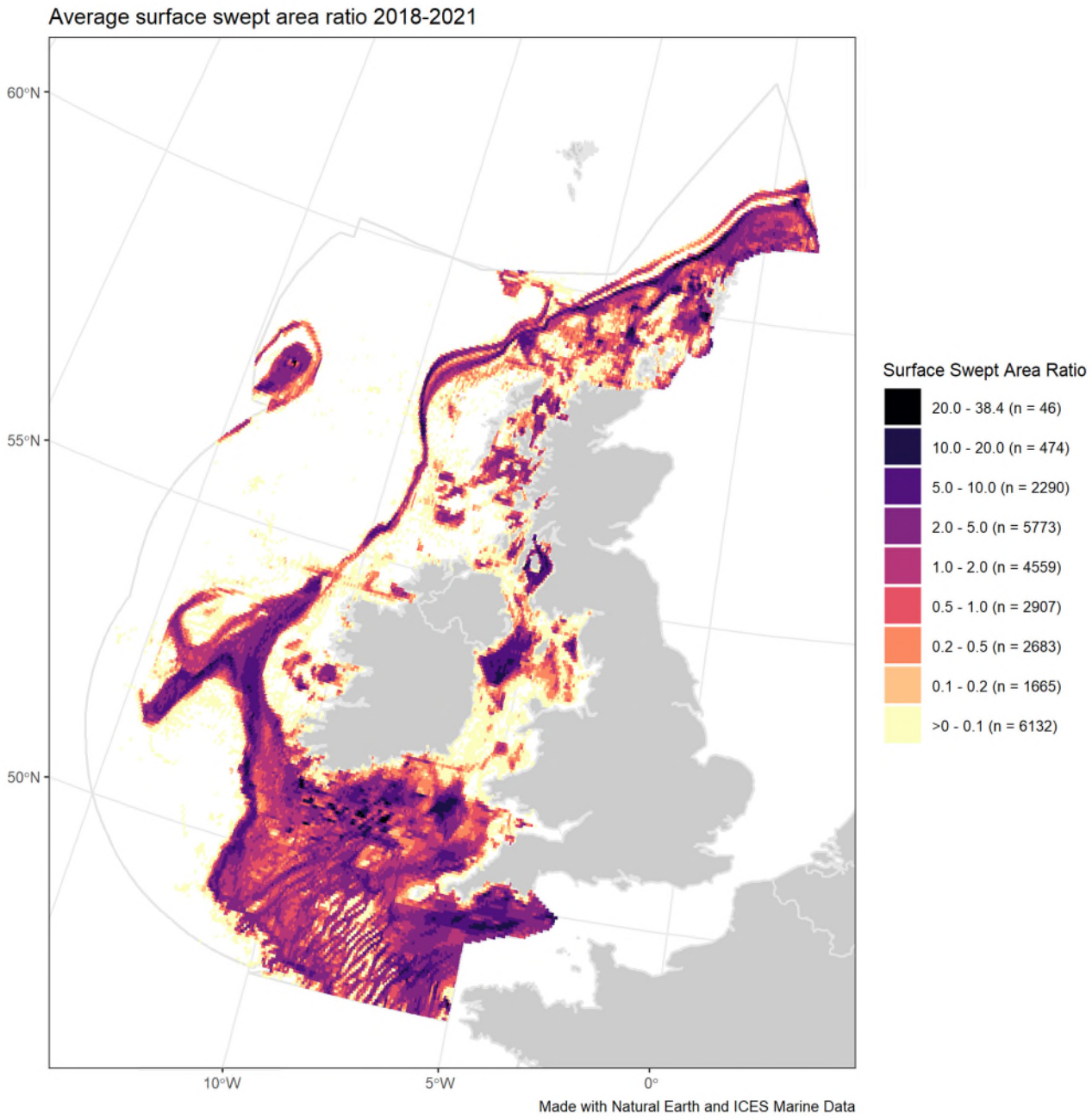
There is no operational multispecies modelling of the interactions of Celtic Seas species to quantify predation mortality. However, in the North Sea, the modelling indicates that the yields of many stocks are strongly affected by the abundance of cod, saithe, and mackerel, which are the main predator fish species. Changes in fishing mortality on these species influences the abundance and yield of other fish stocks. Indirect predation effects are also important. For example, reduced fisheries exploitation on cod increases cod biomass, which not only leads to reductions in SSB and yields of whiting and haddock (direct predation effect) but also to increases in SSB and yield of herring, sandeel, Norway pout, and sprat. Similar interactions could be expected in the Celtic Seas ecoregion.

Effects of fisheries on the ecosystem

Physical disturbance of benthic habitats by mobile bottom-contacting fishing gear

Abrasion of the seabed by mobile bottom-contacting fishing gears has been investigated to describe the extent, magnitude, and effects of fishing on benthic habitats. Mobile bottom-contacting gears are concentrated on the *Nephrops* grounds, along the continental shelf edge, and throughout the Celtic Sea (Figure 16). There is little activity by mobile bottom-contacting gears in much of the area west of Scotland and west of Ireland.

The greatest physical disturbance of the seabed in the ecoregion occurs by mobile bottom-contacting gear during which are concentrated on the *Nephrops* grounds, along the continental shelf edge, and throughout the Celtic Sea. Incidental bycatches of protected, endangered, and threatened species occur in several fisheries, highest bycatches are reported for seals in static gillnet fisheries and for seabirds in longline fisheries.


Average surface swept area ratio 2018-2021
60°N
55°N
50°N
10°W
5°W
0°
Made with Natural Earth and ICES Marine Data
Surface Swept Area Ratio
20.0 - 38.4 (n = 46)
10.0 - 20.0 (n = 474)
5.0 - 10.0 (n = 2290)
2.0 - 5.0 (n = 5773)
1.0 - 2.0 (n = 4559)
0.5 - 1.0 (n = 2907)
0.2 - 0.5 (n = 2683)
0.1 - 0.2 (n = 1665)
>0 - 0.1 (n = 6132)

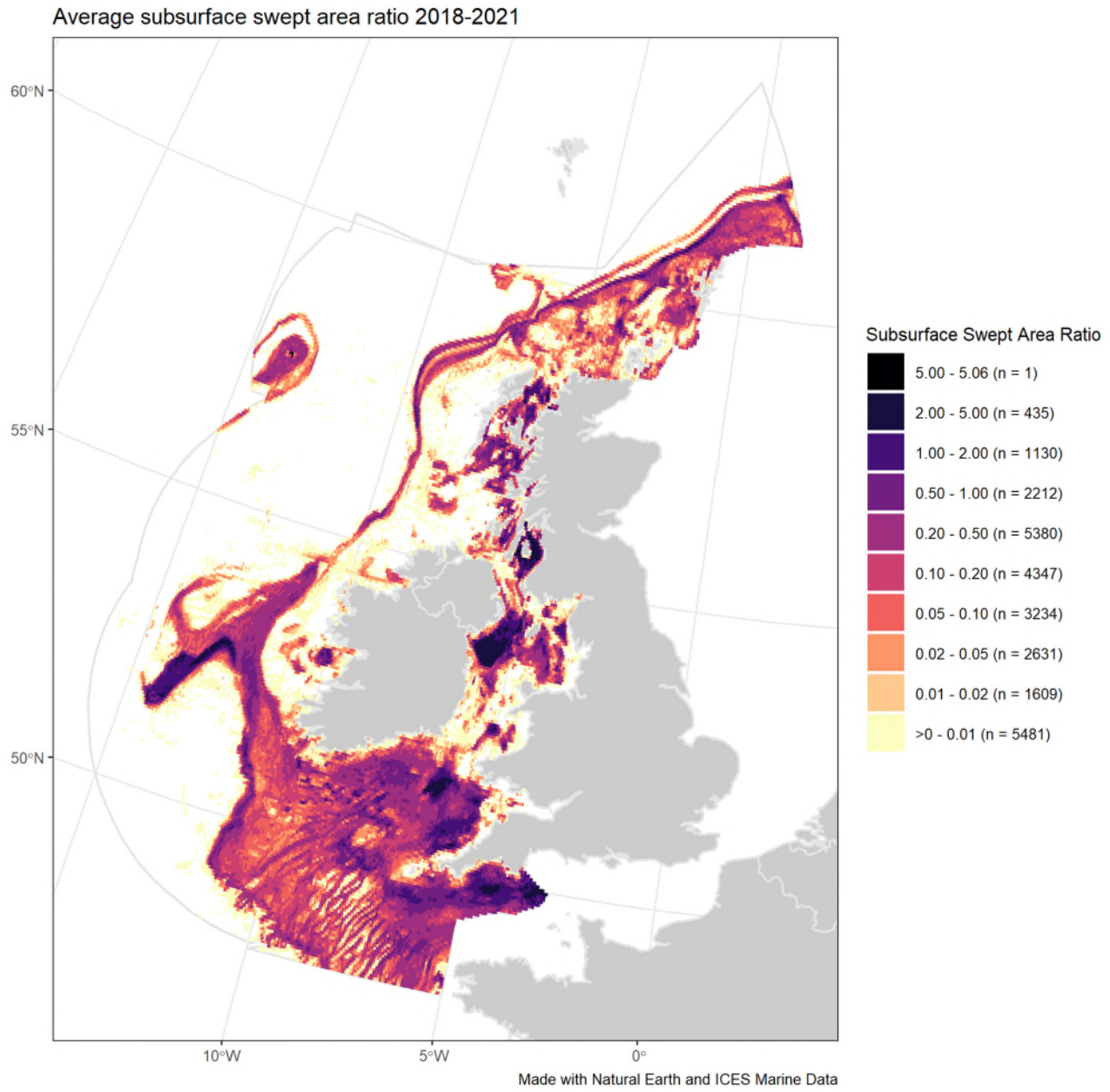


Figure 16 Average annual surface (top) and subsurface (bottom) disturbance by mobile bottom-contacting fishing gear (bottom otter trawls, bottom seines, dredges, beam trawls) in the Celtic Seas ecoregion, expressed as average swept-area ratios (SAR)**.

** Details on countries submitting data can be found at https://data.ices.dk/accessions/allaccessions.aspx?search=vms

Bycatch of protected, endangered, and threatened species

All fisheries have the potential to catch protected, endangered, or threatened species, such as seabirds and marine mammals, as non-targeted bycatch. Data submitted to ICES through annual data calls indicated that between 2017–2021 nine ICES Member Countries had fisheries operating in the Celtic Seas ecoregion (ICES, 2022a). During the same period approximately 10 000 monitoring days were undertaken, primarily by at-sea observers, in a variety of static and mobile gears and on vessels ranging from under 8 m to over 40 m. Most bycatch data collection in the ecoregion is carried out within multipurpose programmes under the DCF and through dedicated bycatch monitoring programmes.

Bycatch records in 2021

Data submitted to ICES for 2021 indicated that approximately 1400 monitoring days were undertaken in the ecoregion that year. Data were provided by all nine countries with fisheries operating in the area and were collected by three methods: at-sea observers (49% of monitored days), vessel crew observers (45%) and logbooks (6%).

In 2021, 68 marine mammals from at least four species were recorded as bycatch, mostly in net métiers (Table 1). Twelve seabirds from at least four species were recorded bycaught in bottom trawl, longline, purse seine and net fisheries. Over 118 000 specimens of fish of potential conservation interest were recorded from a wide mix of static and mobile gears. Most of the fish records were of blackbelly rosefish/bluemouth rockfish in bottom trawls. No turtles were reported as bycatch.

Table 1 The five most frequently reported marine mammal, seabird, fish and turtle species in the Celtic Seas ecoregion during 2021, based on data submitted through ICES data call and held in the bycatch database of ICES Working Group on Bycatch of Protected Species (WGBYC).

Marine mammals		Seabirds	
Species	Number reported	Species	Number reported
Harbour seal	46	European herring gull	5
Grey seal	15	Northern gannet	3
Common dolphin	5	Great shearwater	2
Harbour porpoise	1	Common guillemot	1
Seal species	1	Shore birds	1
Fish		Turtles	
Species	Number reported	Species	Number reported
Blackbelly rosefish/bluemouth rockfish	115114	None reported	0
John Dory	1492		
Tub gurnard	570		
Rabbitfish	458		
Turbot	319		

Multiannual bycatch rates

Highest bycatch rates (pooled data 2017–2021) were observed for grey seal and harbour seal in set gillnets (GNS) and tramme nets (GTR; Figure 17). Common dolphin bycatch was recorded in several metiers (GNS, GTR, OTB, OTT, and PTM). Long-finned pilot whale and grey seal were recorded in midwater otter trawls (OTM). Harbour porpoise were recorded in gillnets and otter trawls (GNS, OTB, OTT).

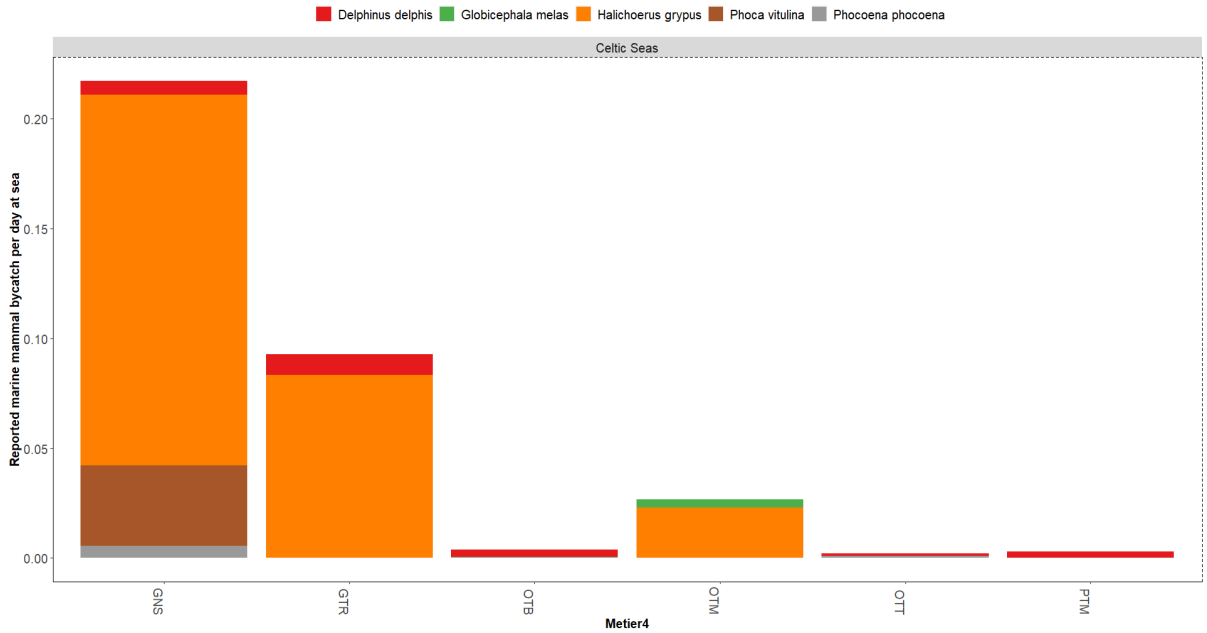


Figure 17 Reported marine mammal bycatch rates in the Celtic Seas ecoregion 2017–2021 by level 4 métier. Here and below: data used for the calculation of bycatch rates was selected based on the following criterion: monitoring coverage within a métier (level 4) was above an arbitrarily set limit of 50 days-at-sea[††]. GNS = set gillnets, GTR = trammelnets, OTB = otter trawls, OTM = midwater otter trawl, OTT = multirig otter trawl, PTB = bottom pair trawl.

The highest seabird bycatch rates (pooled data 2017–2021) were observed in set longlines (LLS), where northern fulmar and northern gannet had the highest reported bycatch rate (Figure 18). Guillemots were reported in set gillnets (GNS). Low rates of seabird bycatch was observed in some trawl metiers (OTB, OTT, and PTM).

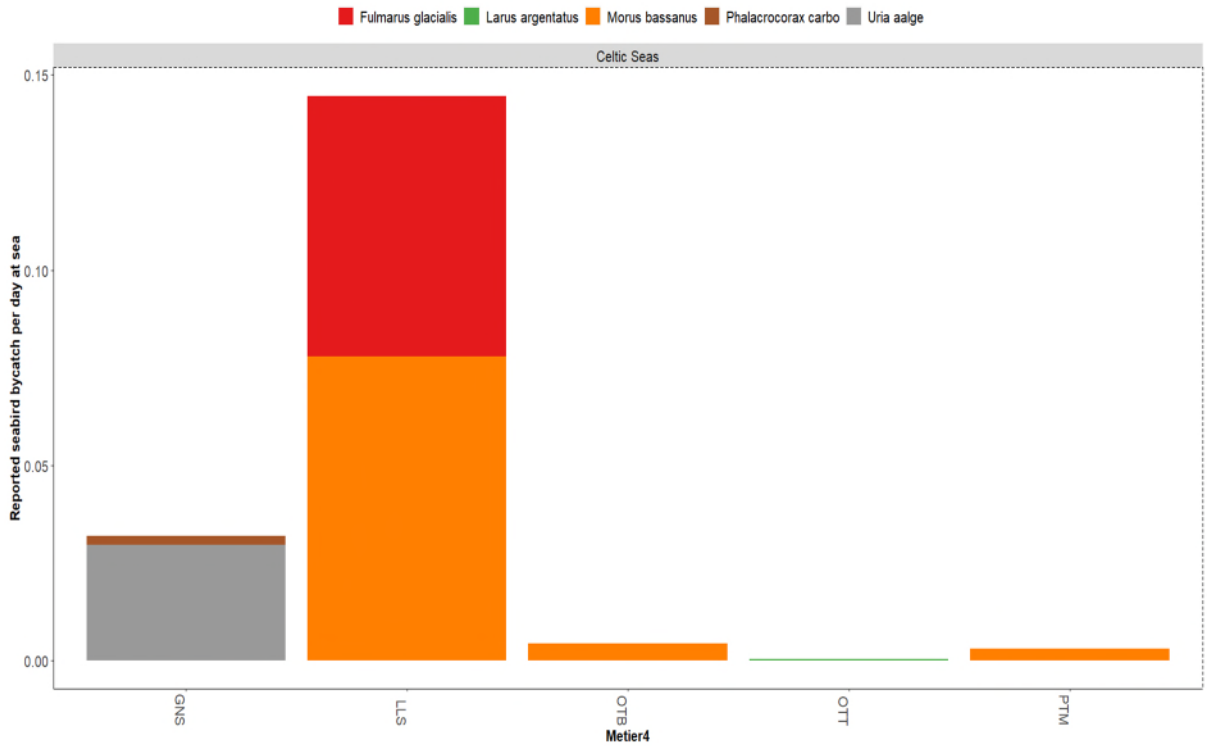


Figure 18 Reported seabirds bycatch rates in the Celtic Seas Ecoregion 2017–2021 by level 4 métier. GNS = set gillnets, LLS = longlines, OTB = otter trawls, OTT = multirig otter trawl, PTM = pelagic pair trawl.

[††] A description of métiers can be found at https://vocab.ices.dk/?ref=1498

Fishing effort

The highest fishing effort was reported in otter trawls (OTB and OTT; Figure 19). Although these gears have generally low bycatch rates of marine mammals and seabirds because of the high levels of fishing effort, this can result in high total bycatch estimates.

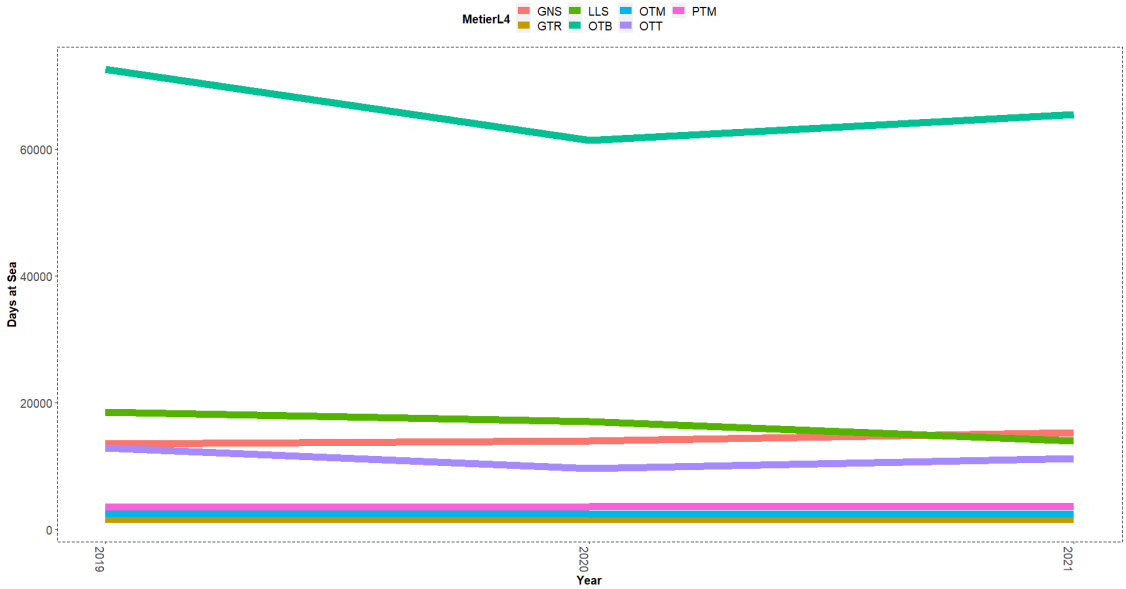


Figure 19 Fishing effort in days-at-sea by year for the level 4 métiers with reported bycatch in the Celtic Seas ecoregion (data prior to 2019 was incomplete and not shown). GNS = set gillnets, GTR = trammelnets, LLS = longlines, OTB = otter trawls, OTM = midwater otter trawl, OTT = multirig otter trawl, PTM = pelagic pair trawl.

Additional information

ICES continues to advise zero catches in this ecoregion for stocks which have been either targeted or bycaught in fisheries in the past and are now considered depleted, such as basking shark, angel shark, the common skate complex, white skates, undulate ray (rju.27.7bj), orange roughy and deep-water sharks (kitefin shark, leafscale gulper shark, Portuguese dogfish). Under EU TAC regulations, it is prohibited to fish for or to land starry ray, leafscale gulper shark, Portuguese dogfish, birdbeak dogfish, kitefin shark, great lanternshark, tope shark, basking shark, porbeagle, undulate ray in 6, common skate complex (*Dipturus cf. flossada* and *Dipturus cf*. intermedia), and angel shark. If specimens are caught within the Celtic Seas ecoregion they should be promptly released unharmed.

One basking shark, one common skate, six greater lanternshark, 15 birdbeak dogfish, and 229 thorny skate/starry ray were recorded in the 2021 bycatch data in the Celtic Seas ecoregion. There were also bycatches in 2021 of some vulnerable (e.g. velvet-belly shark, nursehound, marbled electric ray, rabbit-fish) and near-threatened (e.g. seven longfin mako shark, smalleyed ray, bluntnose sixgill shark) species.

Information on these species is generally sparse, but they require special management attention to conserve remaining populations.

Sources and references

BIM. 2022. Fisheries Management 2018: BIM fisheries management chart. Produced by Bord Iascaigh Mhara, Ireland. http://www.bim.ie/media/bim/content/downloads/BIM-fisheries-management-chart-2022.pdf

Dolder, P. J., Thorson, J., and Minto, C. 2018. Spatial separation of catches in highly mixed fisheries. Scientific Reports, 10. 4773. https://doi.org/10.1038/s41598-020-60583-5

EU. 2019. Regulation (EU) 2019/472 of the European Parliament and of the Council of 19 March 2019 establishing a multiannual plan for stocks fished in the Western Waters and adjacent waters, and for fisheries exploiting those stocks,

amending Regulations (EU) 2016/1139 and (EU) 2018/973, and repealing Council Regulations (EC) No 811/2004, (EC) No 2166/2005, (EC) No 388/2006, (EC) No 509/2007 and (EC) No 1300/2008. Official Journal of the European Union, L 83: 1–17. http://data.europa.eu/eli/reg/2019/472/oj

Gerritsen, H. D., Lordan, C., Minto, C., and Kraak, S. B. M., 2012. Spatial patterns in the retained catch composition of Irish demersal otter trawlers: High-resolution fisheries data as a management tool. Fisheries Research, 129–130: 127–136. https://doi.org/10.1016/j.fishres.2012.06.019

Gerritsen, H. D., and Lordan, C. 2014. Atlas of commercial fisheries around Ireland, Marine Institute, Ireland. ISBN 978-1-902895-56-7. 59 pp. http://hdl.handle.net/10793/958

ICES. 2012. ICES Implementation of Advice for Data-limited Stocks in 2012 in its 2012 Advice. ICES DLS Guidance Report 2012. ICES CM 2012/ACOM:68. 40 pp. https://doi.org/10.17895/ices.pub.5322

ICES. 2020. Workshop on fisheries Emergency Measures to minimize BYCatch of short-beaked common dolphins in the Bay of Biscay and harbour porpoise in the Baltic Sea (WKEMBYC). ICES Scientific Reports. 2:43. 354 pp. http://doi.org/10.17895/ices.pub.7472

ICES. 2022a. Working Group on Bycatch of Protected Species (WGBYC). ICES Scientific Reports. http://doi.org/10.17895/ices.pub.21602322 *In preparation*

ICES. 2022b. European eel (Anguilla anguilla) throughout its natural range. In Report of the ICES Advisory Committee, 2022. ICES Advice 2022, ele.2737.nea, https://doi.org/10.17895/ices.advice.19772374

ICES. 2022c. Working Group for the Bay of Biscay and the Iberian Waters Ecoregion (WGBIE). ICES Scientific Reports. 4:52. 847 pp. https://doi.org/10.17895/ices.pub.20068988

ICES. 2022d. Working Group for the Celtic Seas Ecoregion (WGCSE). ICES Scientific Report. ICES Scientific Reports. 4:45. 1413 pp. http://doi.org/10.17895/ices.pub.19863796

ICES. 2022e Working Group on Mixed Fisheries Advice (WGMIXFISH-ADVICE). ICES Scientific Reports. 4:83. 229 pp. https://doi.org/10.17895/ices.pub.21501414

Mateo, M., Pawlowski, L., and Robert, M. 2016. Highly mixed fisheries: fine-scale spatial patterns in retained catches of French fisheries in the Celtic Sea. ICES Journal of Marine Science, 74: 91–101. https://doi.org/10.1093/icesjms/fsw129.

Moore, C., Davie, S., Robert, M., Pawlowski, L., Dolder, P., and Lordan, C. 2019. Defining métier for the Celtic Sea mixed fisheries: A multiannual international study of typology. Fisheries Research, 219. DOI: https://doi.org/10.1016/j.fishres.2019.105310.

Recommended citation: ICES. 2022 Celtic Seas Ecosystem – fisheries Overview. *In* Report of the ICES Advisory Committee, 2022. ICES Advice 2022, section 7.2. https://doi.org/10.17895/ices.advice.21641312

Annex

Table A1 Status summary of the Celtic Seas ecoregion stocks in 2022, relative to maximum sustainable yield (MSY) and ICES precautionary approach (PA) (excluding salmon and sea trout). For MSY: green represents a stock that is fished below F_{MSY} or the stock size is greater than MSY $B_{trigger}$; red represents a stock that is fished above F_{MSY} or the stock size is lower than MSY $B_{trigger}$. For PA: green represents a stock that is fished below F_{pa} or the stock size is greater than B_{pa}; yellow represents a stock that is fished between F_{pa} and F_{lim} or the stock size is between B_{lim} and B_{pa}; red represents a stock that is fished above F_{lim} or the stock size is less than B_{lim}. Stocks having a fishing mortality below or at F_{pa} and a stock size above B_{pa} are defined as being inside safe biological limits. Grey represents stocks for which reference points are unknown. MSFD = EU Marine Strategy Framework Directive; D3C1 = MSFD indicator for fishing mortality; D3C2 = MSFD indicator for spawning-stock biomass; SBL = safe biological limits; GES = good environmental status. Stock codes contain a hyperlink for the most recent ICES advice.

Stock name	Stock description	Species Scientific Name	Species Common Name	Fisheries Guild	Data Category	Assessment Year	Advice Category	Approach	Fishing Pressure	Stock Size	D3C1	D3C2	GES	SBL
agn.27.nea	Angel shark in subareas 1-10, 12 and 14	*Squatina squatina*	Angel shark	Elasmobranch	6.3	2019	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
alf.27.nea	Alfonsinos in subareas 1-10, 12 and 14	*Beryx*	Alfonsinos	Demersal	5.2	2022	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
anf.27.3a46	Anglerfish in Subareas 4 and 6, and Division 3.a	*Lophius budegassa, Lophius piscatorius*	Anglerfish	Benthic	3.2	2021	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
ank.27.78abd	Black-bellied anglerfish in Subarea 7 and divisions 8.a-b and 8.d	*Lophius budegassa, Lophius piscatorius*	Anglerfish	Benthic	1	2022	MSY	Maximum sustainable yield	✓	✓	✓	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		

Stock name	Stock description	Species Scientific Name	Species Common Name	Fisheries Guild	Data Category	Assessment Year	Advice Category	Approach	Fishing Pressure	Stock Size	D3C1	D3C2	GES	SBL
aru.27.5b6a	Greater silver smelt in divisions 5.b and 6.a	*Argentina silus*	Greater silver smelt	Pelagic	1	2022	MSY	Maximum sustainable yield	✓	✓	✓	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		
aru.27.6b7-1012	Greater silver smelt in subareas 7-10 and 12, and Division 6.b	*Argentina silus*	Greater silver smelt	Pelagic	3.2	2021	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
bli.27.5b67	Blue ling in subareas 6-7 and Division 5.b	*Molva dypterygia*	Blue ling	Demersal	1	2022	MSY	Maximum sustainable yield	✓	✓	✓	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		
boc.27.6-8	Boarfish in subareas 6-8	*Capros aper*	Boarfish	Pelagic	3.2	2021	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
bsf.27.nea	Black scabbardfish in subareas 1, 2, 4-8, 10, and 14, and divisions 3.a, 9.a, and 12.b	*Aphanopus carbo*	Black scabbardfish	Pelagic	3.2	2022	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
bsk.27.nea	Basking shark in Subareas 1-	*Cetorhinus maximus*	Basking shark	Elasmobranch	6.3	2019	PA	Maximum sustainable yield	?	?	?	?	?	?

Stock name	Stock description	Species Scientific Name	Species Common Name	Fisheries Guild	Data Category	Assessment Year	Advice Category	Approach	Fishing Pressure	Stock Size	D3C1	D3C2	GES	SBL
	10, 12 and 14							Precautionary approach	?	?	?	?		
bss.27.4bc7ad-h	Seabass in Divisions 4.b-c, 7.a, and 7.d-h	*Dicentrarchus labrax*	Seabass	Demersal	1.2	2022	MSY	Maximum sustainable yield	✓	✗	✓	✗	?	✗
								Precautionary approach	✓	o	✓	o		
bss.27.6a7bj	Seabass in divisions 6.a, 7.b, and 7.j	*Dicentrarchus labrax*	Seabass	Demersal	6.2	2020	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
cod.27.6a	Cod in Division 6.a	*Gadus morhua*	Cod	Demersal	1.2	2022	MSY	Maximum sustainable yield	✗	✗	✗	✗	✗	✗
								Precautionary approach	✗	✗	✗	✗		
cod.27.6b	Cod in Division 6.b	*Gadus morhua*	Cod	Demersal	6.2	2020	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
cod.27.7a	Cod in Division 7.a	*Gadus morhua*	Cod	Demersal	3	2022	PA	Maximum sustainable yield	✓	✗	✓	✗	✗	✗
								Precautionary approach	✓	✗	✓	✗		
cod.27.7e-k	Cod in divisions 7.e-k	*Gadus morhua*	Cod	Demersal	1	2022	MSY	Maximum sustainable yield	✗	✗	✗	✗	✗	✗

Stock name	Stock description	Species Scientific Name	Species Common Name	Fisheries Guild	Data Category	Assessment Year	Advice Category	Approach	Fishing Pressure	Stock Size	D3C1	D3C2	GES	SBL
								Precautionary approach						
cyo.27.nea	Portuguese dogfish in subareas 1-10, 12 and 14	*Centrophorus squamosus, Centroscymnus coelolepis*	Portuguese dogfish	Elasmobranch	6.3	2019	PA	Maximum sustainable yield						
								Precautionary approach						
dgs.27.nea	Spurdog in Subareas 1-10, 12 and 14	*Squalus acanthias*	Spurdog	Elasmobranch	1.2	2022	MSY	Maximum sustainable yield						
								Precautionary approach						
ele.2737.nea	European eel throughout its natural range	*Anguilla anguilla*	Eel	Demersal	3.14	2021	PA	Maximum sustainable yield						
								Precautionary approach						
gag.27.nea	Tope in subareas 1-10, 12 and 14	*Galeorhinus galeus*	Tope	Elasmobranch	5.2	2021	PA	Maximum sustainable yield						
								Precautionary approach						
gfb.27.nea	Greater forkbeard in subareas 1-10, 12 and 14	*Phycis blennoides*	Greater forkbeard	Demersal	3.2	2022	PA	Maximum sustainable yield						
								Precautionary approach						
ghl.27.561214	Greenland halibut in subareas 5,	*Reinhardtius hippoglossoides*	Greenland halibut	Demersal	1	2022	MSY	Maximum sustainable yield						

Stock name	Stock description	Species Scientific Name	Species Common Name	Fisheries Guild	Data Category	Assessment Year	Advice Category	Approach	Fishing Pressure	Stock Size	D3C1	D3C2	GES	SBL
	6, 12, and 14							Precautionary approach	?	✓	?	✓		
guq.27.nea	Leafscale gulper shark in subareas 1-10, 12 and 14	*Centrophorus squamosus*	Leafscale gulper shark	Elasmobranch	6.3	2019	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
gur.27.3-8	Red gurnard in subareas 3-8	*Chelidonichthys cuculus*	Red gurnard	Demersal	3	2021	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
had.27.46a20	Haddock in Subarea 4, Division 6.a, and Subdivision 20	*Melanogrammus aeglefinus*	Haddock	Demersal	1	2022	MSY	Maximum sustainable yield	✓	✓	✓	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		
had.27.6b	Haddock in Division 6.b	*Melanogrammus aeglefinus*	Haddock	Demersal	1	2021	MSY	Maximum sustainable yield	✗	✓	✗	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		
had.27.7a	Haddock in Division 7.a	*Melanogrammus aeglefinus*	Haddock	Demersal	1	2022	MSY	Maximum sustainable yield	✓	✓	✓	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		
had.27.7b-k	Haddock in Divisions 7.b-k	*Melanogrammus aeglefinus*	Haddock	Demersal	1	2022	MSY	Maximum sustainable yield	✗	✓	✗	✓	✓	✓

Stock name	Stock description	Species Scientific Name	Species Common Name	Fisheries Guild	Data Category	Assessment Year	Advice Category	Approach	Fishing Pressure	Stock Size	D3C1	D3C2	GES	SBL
								Precautionary approach	✓	✓	✓	✓		
her.27.irls	Herring in divisions 7.a South of 52°30'N, 7.g-h, and 7.j-k	*Clupea harengus*	Herring	Pelagic	1	2022	MSY	Maximum sustainable yield	✓	✗	✓	✗	✗	✗
								Precautionary approach	✓	✗	✓	✗		
her.27.nirs	Herring in Division 7.a North of 52°30'N	*Clupea harengus*	Herring	Pelagic	1	2022	MSY	Maximum sustainable yield	✓	✓	✓	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		
hke.27.3a46-8abd	Hake in subareas 4, 6, and 7, and divisions 3.a, 8.a-b, and 8.d, Northern stock	*Merluccius merluccius*	Hake	Demersal	1	2022	MSY	Maximum sustainable yield	✓	✓	✓	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		
hom.27.2a4a5b6a7a-ce-k8	Horse mackerel in Subarea 8 and divisions 2.a, 4.a, 5.b, 6.a, 7.a-c,e-k	*Trachurus trachurus*	Horse mackerel	Pelagic	1	2022	MSY	Maximum sustainable yield	✗	✗	✗	✗	✗	✗
								Precautionary approach	○	✗	○	✗		
ldb.27.7b-k8abd	Four-spot megrim in divisions	*Lepidorhombus boscii*	Four-spot megrim	Benthic	5.2	2022	PA	Maximum sustainable yield	?	?	?	?	?	?

Stock name	Stock description	Species Scientific Name	Species Common Name	Fisheries Guild	Data Category	Assessment Year	Advice Category	Approach	Fishing Pressure	Stock Size	D3C1	D3C2	GES	SBL
	7.b-k, 8.a-b, and 8.d							Precautionary approach	?	?	?	?		
lez.27.4a6a	Megrim in divisions 4.a and 6.a	*Lepidorhombus*	Megrim	Benthic	1	2022	MSY	Maximum sustainable yield	✓	✓	✓	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		
lez.27.6b	Megrim in Division 6.b	*Lepidorhombus*	Megrim	Benthic	2.11	2021	MSY	Maximum sustainable yield	✓	✓	✓	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		
lin.27.346-91214	Ling in subareas 3,4, 6–9, 12, and 14	*Molva molva*	Ling	Demersal	3.2	2021	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
mac.27.nea	Mackerel in subareas 1-8 and 14 and division 9.a	*Scomber scombrus*	Mackerel	Pelagic	1	2022	MSY	Maximum sustainable yield	✗	✓	✗	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		
meg.27.7b-k8abd	Megrim in divisions 7.b-k, 8.a-b, and 8.d	*Lepidorhombus whiffiagonis*	Megrim	Benthic	1	2022	MSY	Maximum sustainable yield	✓	✓	✓	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		
mon.27.78abd	White anglerfish in Subarea	*Lophius piscatorius*	White anglerfish	Benthic	1	2022	MSY	Maximum sustainable yield	✓	✓	✓	✓	✓	✓

Stock name	Stock description	Species Scientific Name	Species Common Name	Fisheries Guild	Data Category	Assessment Year	Advice Category	Approach	Fishing Pressure	Stock Size	D3C1	D3C2	GES	SBL
	7 and divisions 8.a-b and 8.d							Precautionary approach	✓	✓	✓	✓		
mur.27.67a-ce-k89a	Striped red mullet in subareas 6 and 8, and divisions 7.a-c, 7.e-k, and 9.a	*Mullus surmuletus*	Striped red mullet	Demersal	5.2	2020	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
nep.27.6aoutFU	Norway lobster in Division 6.a, outside the functional units	*Nephrops norvegicus*	Norway lobster	Crustacean	5.2	2020	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
nep.27.7outFU	Norway lobster in Subarea 7, outside the functional units	*Nephrops norvegicus*	Norway lobster	Crustacean	5.2	2020	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
nep.fu.11	Norway lobster in Division 6.a, Functional Unit 11	*Nephrops norvegicus*	Norway lobster	Crustacean	1	2021	MSY	Maximum sustainable yield	✓	✓	✓	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		
nep.fu.12	Norway lobster in Division 6.a,	*Nephrops norvegicus*	Norway lobster	Crustacean	1	2021	MSY	Maximum sustainable yield	✓	✓	✓	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		

Stock name	Stock description	Species Scientific Name	Species Common Name	Fisheries Guild	Data Category	Assessment Year	Advice Category	Approach	Fishing Pressure	Stock Size	D3C1	D3C2	GES	SBL
	Functional Unit 12													
nep.fu.13	Norway lobster in Division 6.a, Functional Unit 13	*Nephrops norvegicus*	Norway lobster	Crustacean	1	2021	MSY	Maximum sustainable yield	✓	✓	✓	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		
nep.fu.14	Norway lobster in Division 7.a, Functional Unit 14	*Nephrops norvegicus*	Norway lobster	Crustacean	1	2021	MSY	Maximum sustainable yield	✓	✓	✓	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		
nep.fu.15	Norway lobster in Division 7.a, Functional Unit 15	*Nephrops norvegicus*	Norway lobster	Crustacean	1	2021	MSY	Maximum sustainable yield	✓	✓	✓	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		
nep.fu.16	Norway lobster in divisions 7.b-c and 7.j-k, Functional Unit 16	*Nephrops norvegicus*	Norway lobster	Crustacean	1	2021	FMSY Ranges	Maximum sustainable yield	✓	?	✓	?	?	?
								Precautionary approach	✓	?	✓	?		
nep.fu.17	Norway lobster in Division 7.b, Functional Unit 17	*Nephrops norvegicus*	Norway lobster	Crustacean	1	2021	FMSY Ranges	Maximum sustainable yield	✓	✗	✓	✗	?	?
								Precautionary approach	✓	?	✓	?		

Stock name	Stock description	Species Scientific Name	Species Common Name	Fisheries Guild	Data Category	Assessment Year	Advice Category	Approach	Fishing Pressure	Stock Size	D3C1	D3C2	GES	SBL
nep.fu.19	Norway lobster in divisions 7.a, 7.g, and 7.j, Functional Unit 19	*Nephrops norvegicus*	Norway lobster	Crustacean	1	2021	FMSY Ranges	Maximum sustainable yield	✓	✗	✓	✗	?	?
								Precautionary approach	?	?	?	?		
nep.fu.2021	Norway lobster in divisions 7.g and 7.h, functional units 20 and 21	*Nephrops norvegicus*	Norway lobster	Crustacean	1	2021	MSY	Maximum sustainable yield	✓	✓	✓	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		
nep.fu.22	Norway lobster in divisions 7.f and 7.g, Functional Unit 22	*Nephrops norvegicus*	Norway lobster	Crustacean	1	2021	MSY	Maximum sustainable yield	✓	✗	✓	✗	?	?
								Precautionary approach	✓	?	✓	?		
nop.27.6a	Norway pout in Division 6.a	*Trisopterus esmarkii*	Norway pout	Pelagic	6.3	2021	No advice	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
ory.27.nea	Orange roughy in subareas 1-10, 12 and 14	*Hoplostethus atlanticus*	Orange roughy	Demersal	6.3	2020	PA	Maximum sustainable yield	?	?	?	?	✗	?
								Precautionary approach	?	✗	?	✗		
pil.27.7	Sardine in Subarea 7	*Sardina pilchardus*	Sardine	Pelagic	3	2021	PA	Maximum sustainable yield	?	?	?	?	?	?

Stock name	Stock description	Species Scientific Name	Species Common Name	Fisheries Guild	Data Category	Assessment Year	Advice Category	Approach	Fishing Pressure	Stock Size	D3C1	D3C2	GES	SBL
								Precautionary approach	?	?	?	?		
ple.27.7a	Plaice in Division 7.a	*Pleuronectes platessa*	Plaice	Benthic	1	2021	MSY	Maximum sustainable yield	✓	✓	✓	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		
ple.27.7bc	Plaice in divisions 7.b-c	*Pleuronectes platessa*	Plaice	Benthic	6.2	2020	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
ple.27.7e	Plaice in Division 7.e	*Pleuronectes platessa*	Plaice	Benthic	3.2	2022	PA	Maximum sustainable yield	?	✓	?	✓	?	?
								Precautionary approach	?	?	?	?		
ple.27.7fg	Plaice in divisions 7.f and 7.g	*Pleuronectes platessa*	Plaice	Benthic	3.2	2021	PA	Maximum sustainable yield	✓	✓	✓	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		
ple.27.7h-k	Plaice in divisions 7.h-k	*Pleuronectes platessa*	Plaice	Benthic	3.2	2021	MSY	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
pok.27.3a46	Saithe in Subareas 4,	*Pollachius virens*	Saithe	Demersal	1	2022	MSY	Maximum sustainable yield	✗	✗	✗	✗	?	✗

Stock name	Stock description	Species Scientific Name	Species Common Name	Fisheries Guild	Data Category	Assessment Year	Advice Category	Approach	Fishing Pressure	Stock Size	D3C1	D3C2	GES	SBL
	6 and Division 3.a							Precautionary approach	✓	o	✓	o		
pol.27.67	Pollack in subareas 6-7	*Pollachius pollachius*	Pollack	Demersal	4.12	2022	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
por.27.nea	Porbeagle in subareas 1-10, 12 and 14	*Lamna nasus*	Porbeagle	Elasmobranch	2	2022	MSY	Maximum sustainable yield	✓	✗	✓	✗	?	?
								Precautionary approach	?	?	?	?		
raj.27.67a-ce-k	Other rays and skates in Subarea 6 and divisions 7.a-c and 7.e-k	*Rajidae*	Rays and skates	Elasmobranch	6.9	2022	No advice	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
reb.2127.sp	Beaked redfish in ICES subareas 5, 12, and 14 and NAFO subareas 1 and 2	*Sebastes mentella*	Beaked redfish	Pelagic	3	2021	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
rhg.27.nea	Roughhead grenadier in subareas 5-8, 10, 12 and 14	*Macrourus berglax*	Roughhead grenadier	Demersal	6.3	2020	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		

Stock name	Stock description	Species Scientific Name	Species Common Name	Fisheries Guild	Data Category	Assessment Year	Advice Category	Approach	Fishing Pressure	Stock Size	D3C1	D3C2	GES	SBL
rja.27.nea	White skate in subareas 1-10, 12 and 14	*Rostroraja alba*	White skate	Elasmobranch	6.3	2019	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
rjc.27.6	Thornback ray in Subarea 6	*Raja clavata*	Thornback ray	Elasmobranch	3	2022	MSY	Maximum sustainable yield	✗	✓	✗	✓	?	?
								Precautionary approach	?	?	?	?		
rjc.27.7afg	Thornback ray in divisions 7.a and 7.f-g	*Raja clavata*	Thornback ray	Elasmobranch	3	2022	MSY	Maximum sustainable yield	✓	✓	✓	✓	?	?
								Precautionary approach	?	?	?	?		
rjc.27.7e	Thornback ray in Division 7.e	*Raja clavata*	Thornback ray	Elasmobranch	5.2	2022	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
rje.27.7de	Small-eyed ray in divisions 7.d and 7.e	*Raja microocellata*	Small-eyed ray	Elasmobranch	5.2	2022	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
rje.27.7fg	Small-eyed ray in divisions 7.f and 7.g	*Raja microocellata*	Small-eyed ray	Elasmobranch	3	2022	MSY	Maximum sustainable yield	?	✓	?	✓	?	?
								Precautionary approach	?	?	?	?		

Stock name	Stock description	Species Scientific Name	Species Common Name	Fisheries Guild	Data Category	Assessment Year	Advice Category	Approach	Fishing Pressure	Stock Size	D3C1	D3C2	GES	SBL
rjf.27.67	Shagreen ray in subareas 6-7	*Leucoraja fullonica*	Shagreen ray	Elasmobranch	5.2	2022	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
rjh.27.4a6	Blonde ray in Subarea 6 and Division 4.a	*Raja brachyura*	Blonde ray	Elasmobranch	5.2	2021	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
rjh.27.7afg	Blonde ray in divisions 7.a and 7.f-g	*Raja brachyura*	Blonde ray	Elasmobranch	5.2	2022	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
rjh.27.7e	Blonde ray in Division 7.e	*Raja brachyura*	Blonde ray	Elasmobranch	5.2	2022	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
rji.27.67	Sandy ray in subareas 6-7	*Leucoraja circularis*	Sandy ray	Elasmobranch	5.2	2022	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
rjm.27.67bj	Spotted ray in Subarea 6 and divisions 7.b and 7.j	*Raja montagui*	Spotted ray	Elasmobranch	3	2022	MSY	Maximum sustainable yield	✓	✓	✓	✓	?	?
								Precautionary approach	?	?	?	?		

Stock name	Stock description	Species Scientific Name	Species Common Name	Fisheries Guild	Data Category	Assessment Year	Advice Category	Approach	Fishing Pressure	Stock Size	D3C1	D3C2	GES	SBL
rjm.27.7ae-h	Spotted ray in divisions 7.a and 7.e-h	*Raja montagui*	Spotted ray	Elasmobranch	3	2022	MSY	Maximum sustainable yield	✓	✓	✓	✓	?	?
								Precautionary approach	?	?	?	?		
rjn.27.678abd	Cuckoo ray in subareas 6-7 and divisions 8.a-b and 8.d	*Leucoraja naevus*	Cuckoo ray	Elasmobranch	3.2	2020	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
rjr.27.23a4	Starry ray in Subareas 2 and 4, and Division 3.a	*Amblyraja radiata*	Starry ray	Elasmobranch	3.14	2019	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
rju.27.7bj	Undulate ray in divisions 7.b and 7.j	*Raja undulata*	Undulate ray	Elasmobranch	6.3	2022	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
rju.27.7de	Undulate ray in divisions 7.d and 7.e	*Raja undulata*	Undulate ray	Elasmobranch	3.2	2020	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
rng.27.5b6712b	Roundnose grenadier in subareas 6-7 and divisions 5.b and 12.b	*Coryphaenoides rupestris*	Roundnose grenadier	Demersal	5.2	2022	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		

Stock name	Stock description	Species Scientific Name	Species Common Name	Fisheries Guild	Data Category	Assessment Year	Advice Category	Approach	Fishing Pressure	Stock Size	D3C1	D3C2	GES	SBL
san.27.6a	Sandeel in Division 6.a	*Ammodytes*	Sandeel	Demersal	6.3	2021	No advice	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
sbr.27.6-8	Blackspot seabream in subareas 6-8	*Pagellus bogaraveo*	Blackspot seabream	Demersal	6.3	2022	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
sck.27.nea	Kitefin shark in subareas 1-10, 12 and 14	*Dalatias licha*	Kitefin shark	Elasmobranch	6.3	2019	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
sdv.27.nea	Smooth-hound in subareas 1-10, 12 and 14	*Mustelus asterias*	Smooth-hound	Elasmobranch	3.2	2021	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
sho.27.67	Black-mouth dogfish in subareas 6 and 7	*Galeus melastomus*	Black-mouth dogfish	Elasmobranch	3.9	2021	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
sol.27.7a	Sole in Division 7.a	*Solea solea*	Sole	Benthic	1	2022	MSY	Maximum sustainable yield	✗	✓	✗	✓	?	✗
								Precautionary approach	o	✓	o	✓		

Stock name	Stock description	Species Scientific Name	Species Common Name	Fisheries Guild	Data Category	Assessment Year	Advice Category	Approach	Fishing Pressure	Stock Size	D3C1	D3C2	GES	SBL
sol.27.7bc	Sole in divisions 7.b and 7.c	*Solea solea*	Sole	Benthic	6.2	2020	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
sol.27.7e	Sole in Division 7.e	*Solea solea*	Sole	Benthic	1	2022	MSY	Maximum sustainable yield	✓	✓	✓	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		
sol.27.7fg	Sole in divisions 7.f and 7.g	*Solea solea*	Sole	Benthic	1	2022	MSY	Maximum sustainable yield	✓	✓	✓	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		
sol.27.7h-k	Sole in Divisions 7.h-k	*Solea solea*	Sole	Benthic	5	2021	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
spr.27.67a-cf-k	Sprat in Subarea 6 and Divisions 7.a-c and 7.f-k	*Sprattus sprattus*	Sprat	Pelagic	5.2	2021	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
spr.27.7de	Sprat in divisions 7.d and 7.e	*Sprattus sprattus*	Sprat	Pelagic	3.2	2022	MSY	Maximum sustainable yield	✓	✓	✓	✓	?	?
								Precautionary approach	?	?	?	?		

Stock name	Stock description	Species Scientific Name	Species Common Name	Fisheries Guild	Data Category	Assessment Year	Advice Category	Approach	Fishing Pressure	Stock Size	D3C1	D3C2	GES	SBL
syc.27.67a-ce-j	Lesser spotted dogfish in Subarea 6 and divisions 7.a-c and 7.e-j	*Scyliorhinus canicula*	Lesser-spotted dogfish	Elasmobranch	3.9	2021	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
syt.27.67	Greater-spotted dogfish in subareas 6 and 7	*Scyliorhinus stellaris*	Greater-spotted dogfish	Elasmobranch	3.9	2021	No advice	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
tsu.27.nea	Roughsnout grenadier in subareas 1-2, 4-8, 10, 12, 14 and Division 3a	*Trachyrincus scabrus*	Roughsnout grenadier	Demersal	6.3	2020	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
usk.27.3a45b6a7-912b	Tusk in subareas 4 and 7-9 and divisions 3.a, 5.b, 6.a, and 12.b	*Brosme brosme*	Tusk	Demersal	3.2	2021	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
usk.27.6b	Tusk in Division 6.b	*Brosme brosme*	Tusk	Demersal	5.2	2022	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
whb.27.1-91214	Blue whiting in subareas 1-	*Micromesistius poutassou*	Blue whiting	Pelagic	1	2022	MP	Maximum sustainable yield	✗	✓	✗	✓	?	✗

Stock name	Stock description	Species Scientific Name	Species Common Name	Fisheries Guild	Data Category	Assessment Year	Advice Category	Approach	Fishing Pressure	Stock Size	D3C1	D3C2	GES	SBL
	9, 12, and 14							Precautionary approach	o	✓	o	✓		
whg.27.6a	Whiting in Division 6.a	*Merlangius merlangus*	Whiting	Demersal	1	2021	MSY	Maximum sustainable yield	✓	✓	✓	✓	✓	✓
								Precautionary approach	✓	✓	✓	✓		
whg.27.6b	Whiting in Division 6.b	*Merlangius merlangus*	Whiting	Demersal	6.2	2021	PA	Maximum sustainable yield	?	?	?	?	?	?
								Precautionary approach	?	?	?	?		
whg.27.7a	Whiting in Division 7.a	*Merlangius merlangus*	Whiting	Demersal	1	2021	MSY	Maximum sustainable yield	✗	✗	✗	✗	✗	✗
								Precautionary approach	✗	✗	✗	✗		
whg.27.7b-ce-k	Whiting in divisions 7.b-c and 7.e-k	*Merlangius merlangus*	Whiting	Demersal	1	2022	MSY	Maximum sustainable yield	✗	✗	✗	✗	✗	✗
								Precautionary approach	o	✗	o	✗		

Table A3 Scientific names of species.

Common name	Scientific name	Common name	Scientific name
Albacore tuna	Thunnus alalunga	Mackerel	*Scomber scombrus*
Angel shark	Squatina squatina	Megrim	*Lepidorhombus whiffiagonis*
Alfonsinos	*Beryx* spp.	Megrims	*Lepidorhombus* spp.
		Northern fulmar	*Fulmarus glacialis*
		Northern gannet	
Anglerfish	*Lophius budegassa, Lophius piscatorius*	Norway lobster	*Nephrops norvegicus*
Basking shark	*Cetorhinus maximus*	Norway pout	*Trisopterus esmarkii*
Birdbeak dogfish	*Deania calcea*	Norwegian skate	*Dipturus nidarosiensis*
Black-bellied anglerfish	*Lophius budegassa*	Orange roughy	*Hoplostethus atlanticus*
Blackbelly rosefish/bluemouth rockfish	*Helicolenus dactylopterus*		
Black-mouth dogfish	*Galeus melastomus*	Oyster	*Ostrea edulis*
Black scabbardfish	*Aphanopus carbo*	Plaice	*Pleuronectes platessa*
Blackspot seabream	*Pagellus bogaraveo*	Pollack	*Pollachius pollachius*
Blonde ray	*Raja brachyura*	Porbeagle	*Lamna nasus*
Blue ling	*Molva dypterygia*	Portuguese dogfish	*Centroscymnus coelolepis,*
Blue whiting	*Micromesistius poutassouu*	Queen scallop	*Chlamys opercularis*
		Rabbitfish	*Chimaera monstrosa*
Boarfish	*Capros aper*	Rays and skates	*Rajidae*
Brown crab	*Cancer pagurus*	Razor clam	*Ensis magnus*
Clam	*Spisula*	Red gurnard	*Chelidonichthys cuculus*
Cockle	*Cerastoderma edule*	Roughhead grenadier	*Macrourus berglax*
Cod	*Gadus morhua*	Roughsnout grenadier	*Trachyrincus scabrus*
Common dolphin (Long-finned)	*Delphis delphinus*	Roundnose grenadier	*Coryphaenoides rupestris*
Common guillemot	*Uria aalge*		
Common skate	*Dipturus batis*-complex includes flapper skate *Dipturus cf. flossada* and blue skate *Dipturus cf. intermedia*	Saithe	*Pollachius virens*
Cuckoo ray	*Leucoraja naevus*	Salmon	*Salmo salar*
Cuttlefish	*Sepia officinalis*	Sandy ray	*Leucoraja circularis*
European eel	*Anguilla anguilla*	Sardine	*Sardina pilchardus*
European herring gull	*Larus argentatus*		
Four-spot megrim	*Lepidorhombus boscii*	Sea bass	*Dicentrarchus labrax*
Great lanternshark	*Etmopterus princeps*	Sea trout	*Salmo trutta*
Great shearwater	*Puffinus gravis*	Shore birds	*Charadriiformes*
Greater forkbeard	*Phycis blennoides*	Shagreen ray	*Leucoraja fullonica*
Greenland halibut	*Reinhardtius hippoglossoides*	Small-eyed ray	*Raja microocellata*
Greater silver smelt	*Argentina silus*	Smooth-head	*Alepocephalus bairdii*
Greater-spotted dogfish	*Scyliorhinus stellaris*	Smooth-hound	*Mustelus* spp.
Grey seal	*Halichoerus grypus*		
Haddock	*Melanogrammus aeglefinus*	Smooth lanternshark	*Etmopterus pusillus*
Harbour porpoise	*Phocoena phocoena*	Sole	*Solea solea*
Herring	*Clupea harengus*	Spotted ray	*Raja montagui*
Hake	*Merluccius merluccius*	Sprat	*Sprattus sprattus*
Horse mackerel	*Trachurus trachurus*	Spurdog (Piked dogfish)	*Squalus acanthias*
John Dory	*Zeus faber*		
Kitefin shark	*Dalatias licha*	Starry ray	*Amblyraja radiata*
Leafscale gulper shark	*Centrophorus squamosus*	Striped red mullet	*Mullus surmuletus*
Lesser-spotted dogfish	*Scyliorhinus canicula*	Thornback ray	*Raja clavata*
Ling	*Molva molva*	Thorny skate	*Amblyraja radiata*
Lobster	*Homarus gammarus*	Thresher sharks	*Alopias* spp.
Tope	*Galeorhinus galeus*	Tub gurnard	*Chelidonichthys lucerna*
Turbot	*Scophthalmus maximus*		

Common name	Scientific name	Common name	Scientific name
Tusk	*Brosme brosme*	White skate	*Rostroraja alba*
Undulate ray	*Raja undulata*	Whelk	*Buccinum undatum*
White anglerfish	*Lophius piscatorius*	Whiting	*Merlangius merlangus*

Table A4 Métier definitions.

Area	Gear type	Target assemblage	Métier label
West of Scotland (Division 6.a) and Rockall (Division 6.b)	Pots and traps	Crustaceans	FPO_CRU
	Gillnets	Demersal fish	GNS_DEF
	Longline	Finfish	LLS_FIF
	Otter trawl	Crustaceans	OTB_CRU
		Demersal fish	OTB_DEF
		Deep-water species	OTB_DWS
		Molluscs	OTB_MOL
	Mid-water trawl	Demersal fish	OTM_DEF
		Small pelagic fish	OTM_SPF
	Seines	Small pelagic fish	SSC_SPF
	Others	Miscellaneous	MIS_MIS
Irish Sea (Division 7.a)	Pots and traps	Crustaceans	FPO_CRU
		Molluscs	FPO_MOL
	Gillnets	Demersal fish	GNS_DEF
	Otter trawl	Crustaceans	OTB_CRU
		Demersal fish	OTB_DEF
		Molluscs	OTB_MOL
	Beam trawl	Demersal fish	TBB_DEF
	Others	Miscellaneous	MIS_MIS
Celtic Sea, Bristol Channel, Western English Channel, south-west and west of Ireland (Division 7.b and Subdivision 7.c.2; parts of divisions 7.e, 7.f, 7.g, 7.h, and subdivisions 7.j.2 and 7.k.2)	Gillnets	Demersal fish	GNS_DEF
		Deep-water species	GNS_DWS
	Otter trawl	Demersal fish	OTB_DEF
		Deep-water species	OTB_DWS
		Molluscs	OTB_MOL
		Small pelagic fish	OTB_SPF
		Crustaceans	OTB_CRU
	Midwater trawl	Small pelagic fish	OTM_SPF
		Demersal fish	OTM_DEF
	Trammel nets	Demersal fish	GTR_DEF
	Beam trawls	Demersal fish	TBB_DEF
	Longlines	Finfish	LLS_FIF
		Demersal fish	LLS_DEF
	Seines	Demersal fish	SSC_DEF
		Demersal fish	SDN_DEF
	Pots and traps	Crustaceans	FPO_CRU
	Others	Miscellaneous	MIS_MIS