TAKING STOCK

The state of UK fish populations 2023

OCEANA Protecting the World's Oceans

FOREWORD

The UK is losing its fish and starving its seas: The Fish Fight isn't over

BY HUGH FEARNLEY-WHITTINGSTALL

A dozen years ago I was sailing up the Thames on a fishing boat, with a fleet from around the UK's coast behind me – it felt like a turning point. We were fighting for our fish and our seas and getting heard. The Fish Fight campaign challenged the wasteful and destructive discard practices that were endangering the UK's fish populations and depleting our marine ecosystems. And we won victories – in 2013, the EU voted in a blanket ban on dumping dead fish back into the sea.

Now, of course, our political landscape has changed. Since Brexit, the government has repeatedly made lofty claims about setting a gold standard for fisheries management. Freed from the fetters of EU policies, the narrative goes, the UK could show the world how fish populations and the fishing industry could thrive in harmony.

Where is that gold standard today?

FIVE OUT OF TEN OF THE UK'S MOST IMPORTANT FISH STOCKS ARE BEING OVERFISHED OR ARE IN A "CRITICAL" STATE, THIS REPORT SHOWS.

Less than half of the 104 stocks analysed are of a healthy size, over a third are overfished.

Three populations, including cod from the west of Scotland, have reached a crisis so extreme that a total ban on all catches has been recommended by the International Council for the Exploration of the Sea.

Now, I will always extoll the virtues of a fat fillet of cod, battered, baked or in time-honoured orange breadcrumbs, but this isn't only about the threat to what's on our plates. These fish and other overfished stocks play a vital role in the balance of complex marine food webs, and cod are sustenance not just for fish-loving folk, but also for some of our most majestic ocean wildlife, from orca to minke whales.

THE STARK FACT IS THAT OVERFISHED STOCKS HAVE ONE THING IN COMMON: THEY ARE ON COURSE FOR COLLAPSE.

If that is allowed to happen, the human livelihoods will go with them just as fast as the marine ecosystems they support. We must change our approach to fisheries management and rethink our relationship with the sea.

Today, destructive bottom trawling is allowed in 90% of UK offshore marine 'protected' areas, destroying key habitats vital to ocean health while making a mockery of the concept of ocean conservation.

Around the coast, local, lower-impact fishers, who could be thriving, are seeing their livelihoods dwindle as decades of overfishing by super-trawlers takes its heavy toll.

Restoring and protecting these fish populations is even more urgent as the climate crisis escalates. Marine heatwaves are ripping through UK seas like wildfire through a forest, with scientists warning of mass mortality of ocean life. Species already under pressure from industrial over-exploitation may be more easily pushed beyond the limits of their resilience.

The solution to this problem is not complex. The UK government must urgently commit to setting catch quotas at strictly sustainable limits that are rigorously in line with scientific advice. The reckless habit of past decades, of bunging in an extra 20% or more, to keep the fishers sweet, cannot be allowed to continue. Science that's on the side of the fish is ultimately on the side of the fishers too. And for those fish stocks where data is missing, we must err on the side of caution, so that lack of scientific certainty is not used as an excuse for postponing protections for species we know are vulnerable.

As an ocean nation, our connection to the sea goes deep – our culture is steeped in brine, and we have the potential for fisheries that are abundant, profitable, sustainable, and offer all of us a taste of one the most fantastic foods we have. Yet our government's marine policies and fish quotas are betraying that heritage to the point of destruction.

UNTIL THEY STEP UP TO TRULY PROTECT THIS PRECIOUS RESOURCE, THE FIGHT FOR OUR FISH GOES ON.

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Executive summary

UK FISH STOCKS ARE IN A DEEPLY TROUBLING STATE.

Our report found that over a third of the 104 stocks analysed are being overfished and a quarter have been depleted to critically low sizes, according to the latest scientific assessments. Of the 'top 10' stocks on which the UK fishing industry relies, half are overfished or their stock size is at a critically low level.

To safeguard marine ecosystems, coastal communities and the future of the fishing industry, the UK government must act urgently to end overfishing and meet its national and international biodiversity commitments.

MORE THAN A THIRD OF STOCKS ARE BEING OVERFISHED, QUARTER ARE AT A CRITICALLY LOW SIZE.

Over a third (34%) of the 104 stocks analysed are being overfished and only 45% are sustainably fished. The remainder could not be assessed because of lack of data.

As well as fishing pressure, the analysis assessed stock size, revealing that less than half (41%) are deemed to be of a healthy size and a quarter (25%) are in a critical condition. The health of the remaining stocks could not be determined due to lack of data, leaving them at greater risk of overfishing.

ZERO CATCHES ARE ADVISED FOR MULTIPLE STOCKS IN CRISIS.

This report considers the top five best (sustainably fished and healthy size) and worst (overfished and low size) performing stocks. Compared to the 2020 baseline, four of the five worst performing still have critically low stock sizes and are being overfished.

Three of these five worst performing stocks are in such a state of crisis that a total ban on all catches is advised by the International Council for the Exploration of the Sea (ICES). These stocks are Celtic Sea cod, West of Scotland cod and Irish Sea whiting.

The five best performing stocks are typically caught in comparatively small quantities and are of relatively low economic value.

PROGRESS IS LACKING.

The ongoing political decision to set Total Allowable Catches (TACs) higher than scientifically advised continues to lead to overfishing of North East Atlantic stocks. Comparing changes between the baseline and today, for instance, shows that six stocks that were a healthy size in 2020 have now declined to a critical state, and only three stocks have moved from being critically low to healthy since 2020.

SUSTAINABLE CATCH LIMITS MEAN HEALTHIER STOCKS.

This report confirms that sustainable catch limits lead to healthier fish stocks. For instance, for the five best performing stocks, TACs for 2020-2023 were mainly set in line with ICES scientific advice. However, for four of the five worst performing stocks, TACs were set higher than scientific advice for sustainability.

HALF OF THE 10 MOST IMPORTANT STOCKS ARE OVERFISHED OR IN A 'CRITICAL' STATE.

Of the top 10 stocks landed in greatest volumes by UK vessels, five are being overfished or their population size is critically low. These include North East Atlantic mackerel, North East Atlantic blue whiting, North Sea anglerfish, North Sea cod and Eastern English Channel king scallops.

Therefore only half of the top stocks on which the UK fishing industry relies are both of a healthy size and sustainably fished. These stocks are North Sea herring, haddock, whiting, saithe and Nephrops.

Continued exploitation exceeding sustainable limits not only puts fish populations at risk, but also everything that relies on them.

© Alamy | Gannets (*Morus bassanus*), Shetland, Scotland.

RECOMMENDATIONS

These results show that fisheries management in the UK is far from reaching the 'gold standard' that the government is aiming to achieve. Continued exploitation exceeding sustainable limits not only puts fish populations at risk, but also everything that relies on them, including marine ecosystems and the fishing industry itself.

It is time for the UK to show political leadership in sustainable fisheries both domestically and in international negotiations on shared stocks.

OUR KEY RECOMMENDATIONS FOR THE UK GOVERNMENT ARE:

- ✓ **SET CATCH LIMITS THAT DO NOT EXCEED THE SCIENTIFIC ADVICE** of the International Council for the Exploration of the Sea. Ideally, these catches should remain well below this upper limit to account for wider ecosystem, climate change, discard and bycatch issues.
- ✓ **DEVELOP A CLEAR AND AMBITIOUS STRATEGY TO END OVERFISHING**, deliver sustainable fisheries for future generations, and meet the precautionary objective, as well as providing a timeframe to achieve it.
- ✓ **FULLY IMPLEMENT THE FISHERIES ACT FISHERIES OBJECTIVES**, including ensuring that all Fisheries Management Plans contain clear measures, targets and a timeframe to achieve the Fisheries Act objectives.
- ✓ **ENSURE THAT FISHING OPPORTUNITIES FOR MIXED FISHERIES ARE CONSISTENT WITH SUSTAINABLE EXPLOITATION OF THE MOST DEPLETED STOCKS.**
- ✓ **ENSURE A HIGH STANDARD OF SUSTAINABILITY, TRANSPARENCY AND LEGALITY** of fisheries is met when granting reciprocal access to waters and resources.
- ✓ **PHASE OUT NON-SELECTIVE, CARBON INTENSIVE AND DESTRUCTIVE FISHING PRACTICES** (especially bottom-towed fishing gear) in all marine protected areas and an inshore zone within three nautical miles of the coast.

1

Introduction to the UK fisheries audit

1.1 SUSTAINABLE SEAS

Following its departure from the European Union (EU), the UK government stated its commitment to become a world leader in fisheries management by 'setting a gold standard'[1] as well as continuing to uphold the vision of 'clean, healthy, safe, productive and biologically diverse seas' set out in the UK's Marine Strategy[2]. It is vital the government deliver on these objectives in order to achieve sustainable fisheries and healthy marine ecosystems – the key components of Good Environmental Status (GES)[a,2].

a GES is defined as the environmental status of marine waters where these provide ecologically diverse and dynamic ocean and seas which are clean, healthy and productive within their intrinsic conditions, and the use of the marine environment is at a level that is sustainable, thus safeguarding the potential for uses and activities by current and future generations.

© Oceana | School of poutings (*Trisopterus luscus*), The Humber estuary, United Kingdom.

COMMITMENTS

Such achievements are also essential if the UK is to support prosperous domestic fishing fleets and coastal communities, as well as meet its commitments and obligations under international law such as the United Nations Convention on the Law of the Sea (UNCLOS), the Convention on Biodiversity (CBD) and the United Nations Sustainable Development Goal (SDG) Target 14.

During the 2000s, the percentage of fish stocks in North East Atlantic waters being overfished[b] dropped from roughly 71% to 40%, while biomass continued to increase[3]. This was a positive trend, but was insufficient given the UN and EU commitment to completely end overfishing by 2020. This drop in overfishing has not only had a positive effect on the recovery of stocks but also on the socio-economic performance of the European fleet[4]. It is essential that this trend continues and accelerates so that overfishing finally becomes a thing of the past, and so that marine ecosystems are given the chance to rebound and build resilience to large-scale threats such as climate change.

THERE IS AN OPPORTUNITY FOR THE UK TO PROVE THERE IS SOME POWER BEHIND THE RHETORIC OF BEING A FULLY INDEPENDENT COASTAL STATE FOR THE FIRST TIME IN OVER 40 YEARS AND TO LEAD THE WAY IN SUSTAINABLE FISHERIES.

In doing so, the UK can demonstrate the importance and value of implementing the best management standards, collaboration across national and international borders, and long-term, holistic environmental management. Failing to do so will rapidly compromise the progress made during past years, ecosystem health and the future of many fisheries.

b Percentages relate to number of fish stocks for which Fishing mortality (F) estimates were available (n = 63 in 2003 and n = 65 in 2018) and overfished refers to F being greater than F_{MSY} (see the Glossary in Appendix 3).

1.2 OBJECTIVES OF THE REPORT

The key objective of this report is to provide an updated, evidence-based snapshot of the status of UK fish stocks, shared stocks included, and the UK fishing sector's recent exploitation history of those stocks, now the UK has left the EU and the Common Fisheries Policy (CFP).

In doing so, the report compares the current status of those stocks to the 2020 baseline[5] in order to evaluate the UK's progress, or lack thereof, towards the sustainable management of fish stocks and the objective to bring an end to overfishing.

The report collates and presents the range of scientific and socio-economic evidence that should underpin management decisions, especially the setting of Total Allowable Catches (TACs), but also the policies within fisheries management plans and fisheries management frameworks. The breadth of the study helps contextualise decisions for individual stocks, while the case studies provide evidence of the implications of those decisions.

IN ADDITION, EVIDENCE GAPS ARE HIGHLIGHTED, WHICH THE UK GOVERNMENT WILL NEED TO PRIORITISE IN ORDER TO ACHIEVE SUSTAINABLE MANAGEMENT.

© Adobe | Atlantic puffin (*fratercula arctica*) with beak full of sand eels (*ammodytes*).

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2

Management of fisheries in UK waters

2.1 INTRODUCTION

The legal and regulatory environment that underpins fisheries management in the UK underwent significant changes following the UK's departure from the EU in early 2021 (EU Exit). This includes the enactment of the Fisheries Act 2020[6] (hereinafter referred to as 'the Act') which provides the legal and regulatory framework for fisheries management in the UK and establishes new powers for UK authorities to manage fisheries and control access to UK waters, replacing the EU's Common Fisheries Policy (CFP) with domestic legislation.

This section provides a brief overview of key components of the UK's new fisheries management system as it currently stands, as context to the snapshot of the status of UK commercial fish stocks, shared stocks included.

© Shutterstock | Atlantic cod (*Gadus morhua*).

2.2 MANAGEMENT OF SHARED STOCKS

Whilst the UK now holds the status of an independent coastal state and, through the Act, has the powers to manage fisheries and control access to its Exclusive Economic Zone (EEZ) of up to 200 nautical miles, it cannot operate in isolation, as fish do not respect political boundaries. Therefore, negotiations over fish stocks shared with the EU are managed under the terms of the EU-UK Trade and Cooperation Agreement (TCA)[7]. The TCA is a comprehensive trade deal that sets out the terms of the future relationship between the EU and the UK, following its exit from the EU (see Box 1 for details on the TCA sections relating to fisheries).

There is currently a short-term agreement in place known as the "Adjustment Period", until 30 June 2026. This provides a period of transition for the UK and EU fishing industries to adapt to the new arrangements established by the TCA. During the Adjustment Period, the EU and the UK will negotiate annually to determine fishing opportunities, including quota shares and access to each other's waters.

During the five and a half year period, 25% of the EU's share of the TAC for a number of fish stocks historically fished in UK waters will be transferred to the UK. Mutual access of fishing vessels to each other's waters is implemented through a licencing system.

Following the Adjustment Period, the EU and UK will establish a new long-term framework for the management of shared fish stocks, where the details of the framework are subject to negotiation and agreement between the Parties. Vessel access and shares of the TACs will be negotiated on an annual basis, although provisions exist for multiannual agreements. The TCA sets out provisions for resolution of disagreements through arbitration as well as for trade measures to be applied by either party if the Agreement is breached[8].

BOX 1 | EU-UK TRADE AND COOPERATION AGREEMENT (TCA)

Part Two, heading five: FISHERIES

ARTICLE 493

Sovereign rights of coastal States exercised by the Parties

The Parties affirm that sovereign rights of coastal States exercised by the Parties for the purpose of exploring, exploiting, conserving and managing the living resources in their waters should be conducted pursuant to and in accordance with the principles of international law, including the United Nations Convention on the Law of the Sea.

ARTICLE 494

Objectives and principles

1. *The Parties shall cooperate with a view to ensuring that fishing activities for shared stocks in their waters are environmentally sustainable in the long term and contribute to achieving economic and social benefits, while fully respecting the rights and obligations of independent coastal States as exercised by the Parties.*

2. *The Parties share the objective of exploiting shared stocks at rates intended to maintain and progressively restore populations of harvested species above biomass levels that can produce the maximum sustainable yield.*

3. The Parties shall have regard to the following principles:

   a. applying the precautionary approach to fisheries management;

   b. promoting the long-term sustainability (environmental, social and economic) and optimum utilisation of shared stocks;

   c. basing conservation and management decisions for fisheries on the best available scientific advice, principally that provided by the International Council for the Exploration of the Sea;

   d. taking due account of and minimising harmful impacts of fishing on the marine ecosystem and taking due account of the need to preserve marine biological diversity;

   e. applying proportionate and non-discriminatory measures for the conservation of marine living resources and the management of fisheries resources, while preserving the regulatory autonomy of the Parties;

   f. ensuring the collection and timely sharing of complete and accurate data relevant for the conservation of shared stocks and for the management of fisheries;

   g. ensuring compliance with fisheries conservation and management measures, and combating illegal, unreported and unregulated fishing; and

   h. ensuring the timely implementation of any agreed measures into the Parties' regulatory frameworks.

NEGOTIATION AND COOPERATION

The previous mechanism, referred to as 'relative stability', used to allocate fishing opportunities between member states (based on historical catch levels) is no longer operational, thereby allowing an increase in share of the TAC for UK fishing vessels for certain stocks. The transfer of this additional share of TAC is to be gradually phased over five years and is expected to be worth around £146 million for the UK fleet[48]. Time will tell if the benefits of the increase are realised by the UK fishing fleet or not.

Annual fisheries negotiations with the EU, other coastal states and international organisations will be held each year to determine the TAC limit for shared stocks and the respective fishing rights. To support the process, the Agreement establishes a Specialised Committee on Fisheries which will provide a forum for the UK and the EU to discuss and cooperate on a range of fisheries matters. These include but are not limited to: cooperation ahead of annual fisheries consultations, multi-year strategies, data-sharing and monitoring and compliance[9].

Since its exit from the EU, the UK has also negotiated several bilateral fisheries framework agreements or memoranda of understanding with other coastal nations of the North East Atlantic, including Norway[10], the Faroe Islands[11], Greenland[12], and Iceland[13]. These frameworks cover a range of issues such as fisheries management (including sharing of agreed quotas for fish stocks), cooperation over scientific research, access to waters, and trade in fish and fish products. Overall, they aim to ensure biologically and economically sustainable and well-managed fisheries, thereby also providing stability and certainty for the fishing industries in these countries.

TRILATERAL AGREEMENTS

For some jointly managed stocks, the UK also continues to participate in trilateral consultations and negotiations. For example, the UK, EU and Norway seek to cooperate over fisheries management, including agreeing fishing opportunities for shared North Sea stocks such as cod, haddock, herring, plaice, saithe and whiting. Progress towards formalising this arrangement within a trilateral framework agreement has been reported[c].

Since leaving the EU, the UK has become a Contracting Party of the North-East Atlantic Fisheries Commission, the regional fisheries management organisation responsible for **'the long-term conservation and optimum utilisation of the fishery resources… providing sustainable economic, environmental and social benefits'**. In doing so, the UK participates independently in forming agreements with the other coastal states (e.g., Norway, Faroe Islands, Greenland, Iceland, and the Russian Federation, as well as the EU) over the TACs and quotas for widely distributed stocks such as mackerel and blue whiting, which are subject to multilateral TAC agreements[14].

c https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1123184/Agreed_record_of_fisheries_consultations_between_the_European_Union__Norway_and_the_United_Kingdom_for_2023.pdf

2.3 UK FISHERIES MANAGEMENT

While negotiations over and setting of TACs are mostly led by the Department for the Environment, Food and Rural Affairs (Defra) in consultation with devolved administrations, day to day fisheries management and regulation in the UK is largely devolved, and is undertaken by each of the four fisheries administrations or policy authorities:

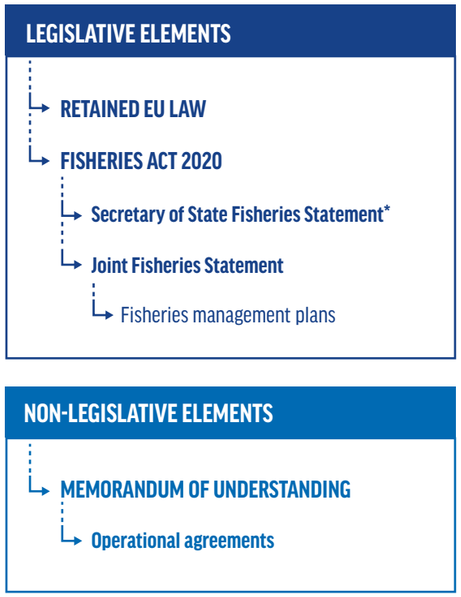
- UK government – England (Marine Management Organisation and Inshore Fisheries and Conservation Authorities (IFCAs)[d])[e]
- Scottish government (Marine Directorate of the Scottish government)
- Welsh government
- Northern Ireland Executive (Department of Agriculture, Environment and Rural Affairs)

The 'Fisheries Framework' sets out **"areas where a joint approach to fisheries management across the UK will be followed, and the UK-wide legislation, policies and principles of joint working to achieve this"**[f]. In particular much regulation is UK-wide including the Fisheries Act (Box 2) and associated statutory instruments, relevant retained EU law, the Joint Fisheries Statement (JFS)[15], Fisheries Management Plans and the Fisheries Framework Memorandum of Understanding (Figure 1). The latter sets out principles on ways of working and collaboration on fisheries management between the fisheries policy authorities. The JFS sets out the jointly agreed policies of the fisheries administrations for achieving, or contributing to the achievement of, the Act's eight fisheries objectives (as required by section 2 of the Act), including through Fisheries Management Plans. The JFS covers sea fisheries policy and management within UK waters and in negotiations with other coastal states.

The fundamental aim of the Act is to ensure the sustainable management of UK fish stocks and the wider marine ecosystem. It sets out the objectives for sustainable fisheries management, including maintaining stocks at sustainable levels and minimizing discards, as well as supporting the economic sustainability of the fishing industry (Box 2).

FIGURE 1

The Fisheries Framework and its component parts. From: Defra 2022[15]



d In England, inshore fisheries (within 0-6 nm) are managed by 10 IFCAs and regulated by IFCA byelaws. These for example specify effort limitations through fishing permits, gear requirements, minimum landing sizes and temporal and/or spatial closures, including to protect the features of Marine Protected Areas. http://www.association-ifca.org.uk/

e The Isle of Man and Channel Islands are treated as part of England for the purposes of apportioning UK quota amongst the fisheries administrations

f https://www.gov.uk/government/publications/fisheries-management-and-support-provisional-common-framework

BOX 2 OBJECTIVES AND PROVISIONS OF THE FISHERIES ACT 2020

The Fisheries Act 2020 aims to ensure sustainable fishing practices, protect marine ecosystems, and support the long-term viability of fisheries. The Act prioritises the conservation and sustainable use of marine resources while considering the social, economic, and environmental aspects of fisheries management.

More specifically, the Act sets out the UK government's powers to set a TAC for each stock and area, for all UK waters. It also creates a new licencing system for foreign fishing vessels operating in UK waters, sets out fisheries objectives and new quota allocation proposals and creates a discard prevention charging scheme for England (amongst other provisions).

The Act also **"creates common approaches to fisheries management between the Secretary of State for Environment, Food and Rural Affairs (the "Secretary of State") and the Devolved Administrations, known collectively as the Fisheries Administrations, and makes reforms to fisheries management across the UK. It also confers additional powers on the Marine Management Organisation to improve the regulation of fishing and the marine environment in the UK and beyond"**[16].

Section 1 of the Act states as follows:

"The objective of fisheries management is to ensure that fishing activities are environmentally sustainable and compatible with the precautionary approach, as well as to achieve MSY [maximum sustainable yield] for all stocks where possible."

Within the Act, the fisheries objectives include: (a) the sustainability objective, (b) the precautionary objective, (c) the ecosystem objective, (d) the scientific evidence objective, (e) the bycatch objective, (f) the equal access objective, (g) the national benefit objective, and (h) the climate change objective. These collectively cover various sustainability objectives, including a commitment to best management standards such as maximum sustainable yield (MSY)[g].

The "precautionary objective" is that: (a) the precautionary approach to fisheries management is applied, and (b) exploitation of marine stocks restores and maintains populations of harvested species above biomass levels capable of producing MSY.

The Fisheries Act also requires the UK fisheries policy authorities to develop Fisheries Management Plans (FMPs) to deliver sustainable fisheries.

Section 25 of the Act specifies the requirements for allocation of catch quota, stating they must **"include criteria relating to environmental, social and economic factors"**. More specifically, the criteria refer to the **"the impact of fishing on the environment"**, further specifying that **"the national fisheries authorities must seek to incentivise [...] the use of selective fishing gear"**, and **"the use of fishing techniques that have a reduced impact on the environment (for example that use less energy or cause less damage to habitats)"** when distributing catch quotas and effort quotas for use by fishing vessels.

g MSY is a theoretical maximum yield (catch) that can be taken from a stock in the long term under constant environmental conditions when that stock is at the biomass reference point B_{MSY} (in theory, the stock size at maximum population growth rate). The fishing mortality rate that should lead to B_{MSY}, on average (all other things being equal), is called FMSY. The Act defines MSY as "the largest average catch that can be taken from a fish stock over time without depleting the stock".

Full and effective implementation of the fisheries objectives through the TAC process, Joint Fisheries Statement, FMPs and wider management could still provide sustainable fisheries if properly delivered.

© Adobe | Bass Rock Island, Scotland.

CONCERNS OVER THE ACT

Concerns over the Act have been raised due to the lack of a firm legal duty to implement the fisheries objectives and ensure all fish stocks are fished at sustainable levels, despite attempts to strengthen the Act as it passed through parliament. The apparent flexibility of the provisions (objectives) therefore has the potential to undermine the UK government's previous assurances of commitment to 'gold standards' of fisheries management as well as the UK's international obligations on sustainability and biodiversity.

Additionally, there is a lack of timeframe for achieving healthy fish stocks and key amendments — such as requirements for remote electronic monitoring, which is considered crucial for sustainable fisheries management by some groups — were removed before its final enactment[17,18]. However, full and effective implementation of the fisheries objectives through the TAC process, Joint Fisheries Statement, FMPs and wider management could still provide sustainable fisheries if properly delivered[19].

FISHERIES MANAGEMENT PLANS

Fisheries management plans (FMPs) are intended to be evidenced-based comprehensive action plans that set out the management measures and objectives for specific fisheries or groups of fisheries. They should be designed to promote sustainable fishing practices, implement the fisheries objectives and to help ensure the long-term viability of fish stocks and fishing communities. FMPs will cover a range of issues which include ecosystem objectives, fishing opportunities, data collection and monitoring, enforcement measures, and stakeholder engagement.

THEY SHOULD IMPLEMENT, NOT UNDERMINE KEY MARINE AND FISHERIES LAWS.

They will also aim to take into account the economic and social needs of the fishing industry[20].

The FMPs will be published by the relevant fisheries policy authority or authorities and must be reviewed at least once every six years. There are presently 43 FMPs listed with a timetable for preparation and publication that spans 2021 to 2028[h,i], with the first six draft frontrunner FMPs published for consultation in July 2023[j].

The UK government is trialling different approaches in the frontrunner FMPs, with some developed by industry and others just with input from industry and other stakeholders.

CONCERNS HAVE BEEN RAISED THAT THE FISHING INDUSTRY HAVE UNDUE INFLUENCE ON THE DEVELOPMENT OF SOME FMPs, potentially leading to plans that prioritize short-term economic interests over long-term sustainability, precautionary and ecosystem objectives. This could include lobbying for higher TACs or looser regulations that allow for greater fishing effort, even if it is not sustainable in the long run[21].

Another concern is that FMPs may not be fully compatible with the objectives of the Fisheries Act. For example, the Act requires that fisheries management is environmentally sustainable and compatible with the precautionary and ecosystem approach, which means that fishing should be limited where there is uncertainty about the health of fish stocks or the wider ecosystem, e.g., scallop dredging over marine habitats. However, there may be pressure from the fishing industry to ignore these objectives in order to maintain or increase catch limits or fishing effort[22].

As the FMPs represent a key tool in the implementation of the Act, the aspirations and effectiveness of these plans, including achieving MSY, will undoubtedly continue to attract close scrutiny over the coming years as they are developed and implemented.

h The full list of Fisheries Management Plans are available here: https://www.gov.uk/government/publications/joint-fisheries-statement-jfs/list-of-fisheries-management-plans

i The 'frontrunner' (pilot) FMPs, prioritised for delivery in 2023, are Crabs and Lobsters in English waters, Whelks in English waters, king Scallop in English and Welsh waters, Bass in English and Welsh waters, Channel non-quota demersal stocks and Southern North Sea and Eastern Channel mixed flatfish.

j https://www.gov.uk/government/collections/fisheries-management-plans#fmp-consultations

2.4 DECISION-MAKING PROCESS

The primary management mechanism for North East Atlantic fisheries targeting commercial species are 'output controls' in the form of TACs, while fisheries for non-quota species are typically controlled through 'input controls' in the form of fishing effort management (Figure 2). Both management systems are intended to restrict fishing mortality to levels that are consistent with the requirements of the regulations and agreements in place.

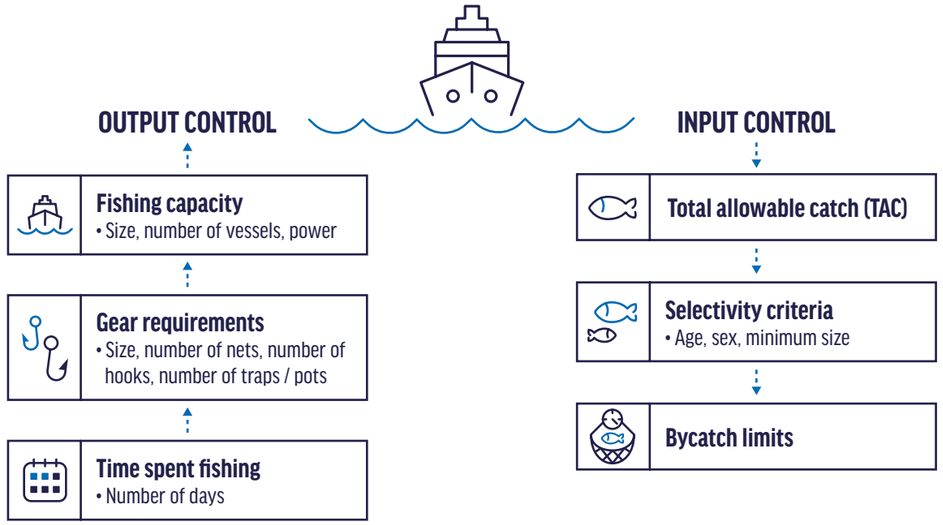
During the time the UK was part of the EU those TACs for stocks under exclusive EU competence were set by the EU Agriculture and Fisheries Council (AGRIFISH), which included the UK's Fisheries Minister, and were specified within the annual TAC and Quota Regulations. Those decisions were based on the European Commission's fishing opportunities proposals taking account of ICES advice and subsequent member state negotiations during AGRIFISH meetings.

From 1 January 2021 the UK government became responsible for setting TACs for fish stocks in UK waters, but as most stocks are shared the UK and EU have agreed to develop joint recommendations through the Trade and Cooperation Agreement on an annual basis. The process involves reviewing the scientific advice on TACs from ICES and further exchange of scientific data to inform setting the TAC for each stock and determination of the quota shares for each country. As an independent coastal state, the UK also has to negotiate TACs and quota shares with other non-EU countries with which it shares fish stocks (Norway, Faroe Islands, Iceland, Greenland) (see Section 2.2).

Negotiations for North East Atlantic TACs cover over 50 commercial species with 200 different stocks distributed across the various fishing areas within Atlantic coastal states' 200 nautical miles EEZs, as well as on the high seas outside of national jurisdiction.

FIGURE 2

Input and output control examples



© Oceana | European lobster (*Homarus gammarus*) and dead man's finger (*Alcyonium digitatum*), Black carrs at St Abb's Head, Scotland, United Kingdom.

2.5 ALLOCATION OF FISHING OPPORTUNITIES IN THE UK

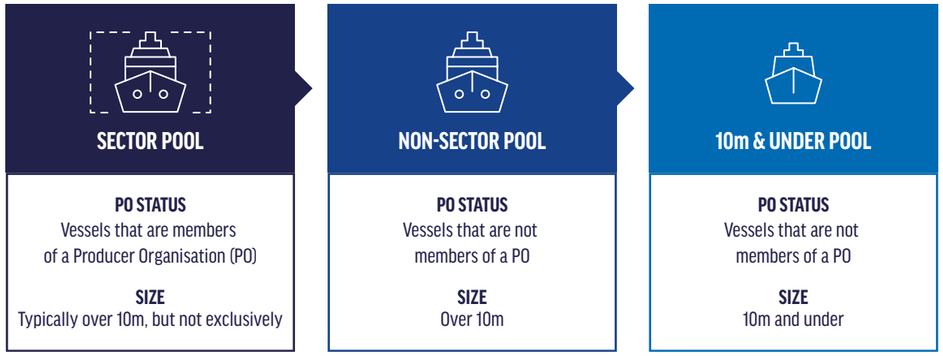
The UK's allocation of fishing opportunities is unaffected by its exit from the EU as it has always been within the UK's competence rather than the EU's. Fishing for non-quota species by UK vessels, such as most shellfish species, is also unaffected as those stocks did not fall under the CFP.

FOR THE UK, THE ALLOCATION PROCESS FOR QUOTA SPECIES IS COMPLICATED BECAUSE, LIKE FISHERIES MANAGEMENT, QUOTA DISTRIBUTION IS A DEVOLVED MATTER.

The UK system, set out in the UK 'quota management rules'[23], is based on Fixed Quota Allocation (FQA) units, allowing for any national adjustments or application of special conditions, including 'underpinning' for the non-sector pool of vessels (those not part of a producer organisation) and the pool of vessels that are under 10m, where, for some stocks, there is a guaranteed minimum level allocated to those fleet segments. FQAs represent a fixed percentage of the available quota attached to a fishing licence, based on historical average landings. Licenced vessels with a quota entitlement are divided into three groups, with each group associated with a number of FQA units (Figure 3).

FIGURE 3

Breakdown of FQA allocation



Each fisheries administration receives a quota allocation (in tonnes) from the UK government for each stock based on their proportional share of the three groups (Figure 3)[k]. Penalties can be applied to unauthorised overfishing of quota allocations by a producer organisation or fisheries administration.

The 10m and under pool is managed centrally by each fisheries administration, rather than quota allocations being associated with individual vessel licences. There are concerns over the limited availability of quota for vessels that are 10m and under, who are allocated <2% of UK quota, despite their dominance by number (almost 80% of the UK fleet)[24]. There are currently no indications that the 'under 10' sector will significantly benefit from any changes in quota allocation following the exit from the EU. In 2021, Defra apportioned additional quota between the UK administrations using a hybrid of track record (historic uptake) and zonal attachment[l], with some minor exceptions[23]. The same temporary approach was used for 2022. The outcomes of UK government consultations on the allocation of any additional ('uplift') quota between fisheries administrations, the crown dependencies and within England beyond 2023 are pending[m]. However, based on section 25 of the Fisheries Act, which specifies the requirements for distribution of catch quotas (see Box 2), allocation should be prioritised for low-impact fishers who comply with regulations and contribute to the local economy. Based on these criteria, there should be a shift in the balance of quota between the over and under 10m fleet.

ONCE ALLOCATED, QUOTA DOES NOT REMAIN STATIC.

Fisheries administrations and producer organisations can undertake domestic and international quota swaps and transfers. Under the CFP, quota movement flexibilities were important for the UK fishing industry, particularly as mitigation against choke risks[n] posed by the Landing Obligation[25].

UNDER THE TCA THERE REMAINS PROVISION FOR EU-UK QUOTA SWAPPING AND FLEXIBILITY, SUBJECT TO CERTAIN CONDITIONS.

The parties can agree to exchange quota for specific stocks and fishing areas, based on scientific advice and information provided by each party. Any such exchanges must be done in a manner that does not undermine the sustainable management of the stocks concerned. Provisions for domestic quota flexibility feature within the JFS, which allows for the transfer of unused quota between vessels, subject to certain conditions, in order to ensure that quota is utilized fully and efficiently.

However, the permitted permanent transfer of FQAs has led to the concentration of quota ownership by a limited number of both UK and foreign companies which needs to be redressed[26,27]. For example, five families own or control around 30% of UK FQAs and in England, around 50% of FQAs are held by Dutch, Icelandic, and Spanish companies[28].

k For example, https://www.gov.uk/government/publications/these-are-the-fishing-quota-allocations-for-2020-for-england-and-the-uk

l Zonal attachment takes account of the geographic distribution of the stocks and effectively means that additional quota would go to those parts of the UK where the fish are physically located.

m Consultations closed on 19 September 2022: https://consult.defra.gov.uk/fisheries/consultation-on-managing-quota-in-2023-and-beyond/supporting_documents/2022_AQ_Consultation.pdf#:~:text=In%20the%20consultation%20below%20we%20set%20out%20options,%E2%80%93%20the%20Isle%20of%20Man%2C%20Jersey%20and%20Guernsey.

n Choke risks – Occur in mixed fisheries where a fishing vessel has low quota for one or more species (typically bycatch species) but quota still available for another (typically the target species). There is therefore a risk that if the vessel were to continue fishing for the stock(s) with available quota, catches of the stock(s) for which quota is no longer available would continue, therefore exceeding the catch limit(s). To avoid this, the (target) fishery would have to close prematurely.

2.6 WHERE THE UK FLEET CATCHES FISH

The majority of landings by UK vessels in 2021 were caught in UK waters (86% or 570,000 tonnes, (t) by live weight and 90% or £838 million by value), a slight increase on the 2019 landings volume figures (81% or 500,000t in 2019) but a drop in value (87% or £847 million in 2019). By tonnage, 46% of this was from UK waters of the northern North Sea (ICES Statistical Area 27.4.a) which was predominantly (69%) made up of mackerel and herring catches. In contrast, more enclosed sea areas with large stretches of coast such as the Irish Sea, Bristol Channel, English Channel and Southern North Sea are hotspots for shellfish catches.

Outside the UK's waters, the most important fishing grounds for UK vessels remain within EU-27 waters from which landings of around 73,000 tonnes of fish and shellfish at a value of £685 million were derived in 2021. This equates to 11% by weight and 7% by value of the UK fishing industry's total landings in 2021[29].

Since the UK's exit from the EU, EU member state vessels continue to fish in UK waters, as UK vessels do in theirs. In 2021, 20,000t of fish (largely demersal species) and shellfish were landed by the non-UK fleet in the UK[o]. These landings are down 48% since 2020 and, according to the UK government, this is likely to be the result of reduced access for foreign vessels into UK waters following exit from the EU[29], but the increased complications of selling and exporting fish since the UK left the EU is also likely to be a key contributing factor[p].

o It's not clear from the MMO data what proportion of these non-UK vessel landings were caught in UK waters, but it is assumed that the majority were.

p i.e. an increase in foreign vessels' catches from UK waters being landed in non-UK ports offers an alternative explanation.

© Oceana | Juveniles of whiting (*Merlangius merlangus*) in lion's mane jellyfish (*Cyanea capillata*), Aberdeenshire, Scotland, United Kingdom.

Since the UK's exit from the EU, EU member state vessels continue to fish in UK waters, as UK vessels do in theirs.

3

Status of UK fish stocks and UK fishing industry

3.1 INTRODUCTION

The objective of this section is to provide a snapshot of the status of UK, including shared, stocks in 2022/2023 (or the most recent assessment year prior to that) based on indicators of exploitation and stock size. The broader context to this audit is presented through an overview of socio-economic characteristics of the UK fishing fleet.

The fishing fleet is supported by and connected to ancillary industries ranging from boat building and gear supply before vessels head to sea, to the post-harvest sector that processes and brings product to markets.

Here, however, the focus is on the catching sector and the section draws on data compiled by the UK government and on data collected by Seafish[q], a non-departmental public body that supports the UK seafood sector (and is funded via a UK fishing fleet levy).

The data are presented in aggregate form, at the most applicable stock, management unit or species level. Where possible and relevant, the analysis is broken down spatially (sea basin), politically (devolved fisheries administration) or by type of fishery (fish guild, vessel size).

q https://www.seafish.org/about-us/who-we-are-and-what-we-do/

3.2 KEY OBSERVATIONS

- **STOCKS CRITICAL TO UK FISHERIES INCLUDE QUOTA AND NON-QUOTA SPECIES,** with the latter not subject to UK-EU (or other jointly agreed) TACs or ICES advice.
- **OF THE 104 STOCKS AUDITED (82 OF WHICH ARE QUOTA STOCKS SHARED WITH THE EU), 25% WERE IN A CRITICAL CONDITION** (20% of shared stocks) and 41% (52% of shared stocks) were healthy in terms of stock biomass. Data limitations mean the stock status of the remaining 34% (28% of shared stocks) cannot be determined, leaving them at greater risk of overfishing and unsustainable management decisions.
- **CONSIDERING THEIR EXPLOITATION STATUS, 34% OF THE 104 AUDITED STOCKS ARE CURRENTLY BEING OVERFISHED** (28% of the 82 shared stocks) while 45% are sustainably exploited (52% of shared stocks), and the exploitation status of another 21% (20% of shared stocks) cannot be assessed against MSY reference points to guide management decisions.
- In comparison to the baseline assessment performed in 2020, the stock status of 26 stocks (25%) and the exploitation status of 29 (28%) stocks changed. Of those changes, many (14 and 13 stocks, respectively) were due to an improvement in data (stocks moved out of the data limited category).
- **HOWEVER, 6 STOCKS CATEGORISED AS HEALTHY IN THE BASELINE ARE NOW ASSESSED AS CRITICAL** relative to biomass reference points and 7 stocks categorised as sustainably exploited in the baseline are now considered overfished. Improvements in the stock and exploitation status were however seen for 3 and 9 stocks, respectively.
- **LOOKING AT STOCK AND EXPLOITATION STATUS BY SEA BASIN, THE IRISH SEA FARED WORST WITH 36% OF STOCKS IN CRITICAL STATUS** (an increase from 27% in the baseline) and 41% (an increase from 18%) being overfished, respectively. Exploitation rates relative to MSY reference points for stocks in the West of Scotland are also of significant concern, with 42% of stocks being overfished, although so far 62% of stocks that are partially or fully located in the West of Scotland have a healthy stock status. Worrying exceptions include local stocks of cod and whiting.
- **THE EXPLOITATION RATES OF BETWEEN 29% AND 38% OF STOCKS IN THE NORTH SEA, CELTIC SEA AND ENGLISH CHANNEL ARE ALSO HIGHER THAN SUSTAINABLE LIMITS.** Accordingly, 21% to 31% of stocks are in a critical state relative to MSY biomass reference points.
- **PELAGIC QUOTA SPECIES CAUGHT BY OVER 10m VESSELS DOMINATE UK LANDINGS** by volume (64%).
- **SMALLER INSHORE VESSELS (10m AND UNDER) WHICH DOMINATE THE UK FLEET BY NUMBER (78%) AND HAVE A FAR MORE LIMITED GEOGRAPHICAL RANGE THAN THE OVER 10m FLEET, RELY ON NON-QUOTA SPECIES.** More specifically, shellfish dominate 10m and under vessel landings by volume (80%).

3.3 METHODOLOGY

3.3.1 STOCKS' HEALTH AND EXPLOITATION STATUS

The UK typically received a share of over 90 TACs for shared stocks when in the EU[r]. A sub-selection of those management units was considered in Oceana's 2020 baseline UK Fisheries Audit[30], based on a UK share of ≥5% under relative stability[s]. There has been little change in the list of stocks fished by the UK fleet since its exit from the EU and so the current report is based on the same selection of stocks to support comparability and continuity.

ICES provide scientific advice on stock status and fishing opportunities for most stocks subject to EU and other coastal state TACs (quota stocks)[31]. That advice is based on stock assessments tailored to the level of data available for each stock (for which six categories are defined), leading to different approaches being applied to enable advice to be produced. These include the ICES MSY advice rule or management plan/strategy approach[t], or where data is lacking, the precautionary approach[32].

The following species have also been included in the analyses in this report due to their importance to UK fisheries, but they are not subject to shared EU or other coastal state TACs (i.e. they are non-quota stocks) or ICES advice:

- Common cockles (*Cerastoderma edule*)
- King scallops (*Pecten maximus*)
- Brown crab (*Cancer pagurus*)
- European lobster (*Homarus gammarus*)
- Common whelks (*Buccinum undatum*)
- European seabass (*Dicentrarchus labrax*)

Instead, where available, 'other' scientific assessments for specific stocks undertaken by IFCAs or the Centre for Environment, Fisheries and Aquaculture Science (Cefas) were used.

For many quota stocks, the ICES stock unit and EU management unit (TAC area) do not fully align (a management unit can encompass multiple stocks, or a single stock can occur in multiple management units). Whereas biological monitoring and scientific assessment are based on the stock's geographical distribution, TAC areas or management units are aligned with ICES Divisions[u].

As a result of this mismatch, and the additional non-quota stocks, the report presents data for the following number of stock and management units (details provided in Appendix 1):

- Number of stock units: 104, which includes:
  - Number of non-quota stock / management units: 22
- Corresponding number of management units (TACs): 70

The analyses of stock and exploitation status are based on stock unit. Information relating to landings and TAC are necessarily based on the management unit or, for some data sources, are only available at the species level.

r Plus additional TAC shares for deep sea species and stocks fished in Norwegian and other international waters.

s Relative Stability is an allocation key, agreed in the early 1980s, used to share out fishing opportunities among EU member states – prior to EU Exit this included the UK.

t Where the plan/strategy has been agreed by all relevant management parties and it has been evaluated by ICES to be consistent with the precautionary approach.

u For a detailed evaluation of this issue, see https://www.documents.clientearth.org/wp-content/uploads/library/2016-12-02-mismatch-between-tacs-and-ices-advice-ce-en.pdf

Indicators of stock status and stock exploitation status were derived from the most recent ICES advice or alternative ('other') stock assessments. These indicators are based on assessments of the stock size and fishing rates against MSY-derived reference points or proxy reference points, where available.

Such reference points provide benchmarks against which the effectiveness of management approaches can be evaluated. The categorisation in Table 1 and Table 2 was applied to form the indicators.

TABLE 1
Stock status indicators

ICES/OTHER STOCK (SSB) INDICATOR	STOCK INDICATOR (UK FISHERIES AUDIT)
SSB at or above $B_{TRIGGER}$ or $B_{TRIGGER}$ proxy or B_{MSY} target[v]	**Healthy**
SSB below $B_{TRIGGER}$ or $B_{TRIGGER}$ proxy or B_{MSY} target[v]	**Critical**
No reference point / biomass status unknown	**Data limited**
Not assessed	**Unknown**

TABLE 2
Exploitation status indicators

ICES/OTHER FISHING PRESSURE (F) INDICATOR	EXPLOITATION INDICATOR (UK FISHERIES AUDIT)
F at or below F_{MSY} or F_{MSY} proxy or F_{MSY} target[v]	**Sustainably exploited**
F above F_{MSY} or F_{MSY} proxy or F_{MSY} target[v]	**Overfished**
No reference point / exploitation status unknown	**Data limited**
Not assessed	**Unknown**

v Applies to non-quota stocks, such as crabs and lobsters, assessed by Cefas or IFCAs

The corresponding year of advice, and so reference period for the audit, varies between stocks due to the frequency and timing of advice provision.

STOCK DATA

For data sufficient[w] quota stocks, the exploitation status indicator evaluates the estimated level of recent fishing mortality relative to F_{MSY}, defined as the maximum fishing mortality that would enable the stock to reach or maintain B_{MSY} – the biomass reference point that enables a stock to deliver its MSY.

Stock size status is based on the ICES biomass reference point 'MSY $B_{TRIGGER}$', defined as the parameter in the ICES advice framework which triggers a more cautious response, typically reduced fishing mortality (F) to allow the stock to rebuild to levels compatible with MSY ($F<F_{MSY}$)[32]. Whilst this reference point reflects the lower bound of stock size fluctuation around B_{MSY}, therefore with limited scope for an arguably more precautionary management response (e.g. management action is triggered when the stock is $<B_{MSY}$ rather than at or approaching it), it is widely established as an appropriate reference for MSY[33]. It is therefore used as the basis of the stock status indicator for ease of understanding, acceptance and repetition.

For stocks that are more data limited[x], ICES classify stock and exploitation status relative to MSY proxies (MSY $B_{TRIGGER\ PROXY}$ or $F_{MSY\ PROXY}$) under the precautionary approach to advice provision. Assessment of the status of the non-quota stocks is also based on a proxy MSY level (European lobster[34]; brown crab[35]) or MSY candidate harvest rate (king scallop[36]). The proportion of stocks for which the indicators are based on these proxy reference points is stated to show the relative distribution of lower and higher confidence assessments.

w ICES categories 1 or 2 stocks: https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2019/2019/Introduction_to_advice_2019.pdf

x ICES category 3 or 4 stocks

STATUS

The corresponding year of advice, and so reference period for the audit, varies between stocks due to the frequency and timing of advice provision. For the 80 stocks assessed by ICES, the reference year for stock status is 2024 for 25% and 2023 for 47.5%, whereas it is 2022 for 18.8% and 2021 for 8.8%. For most stocks assessed by ICES, the reference point for exploitation status is one year earlier than stock status[y] whereas for non-quota stocks the reference period is the same for both indicators[z].

The stock and exploitation status results (percentage of stocks assessed as each of the four categories for each indicator) are also provided on a regional basis, by sea basin: North Sea, English Channel, Celtic Sea, Irish Sea and West of Scotland, as these represent the broad TAC areas (ICES subareas/divisions). Many stocks (and some management units) overlap with more than one sea basin and therefore their indicator status is duplicated spatially.

3.3.2 SOCIO-ECONOMIC STATISTICS

The analyses of UK vessel landings (weight in tonnes (t)) by species and vessel size category, were derived from the MMO's latest UK Sea fisheries annual statistics report (2021) with landings based on catches from the UK EEZ only[29]. The same data source provided employment and fleet size statistics, supplemented by additional data from Seafish[37].

y Because ICES advice estimates the spawning stock biomass at the beginning of the year to which the advice applies (advice year) (or at spawning time the year before the advice year for some stocks), based on the fishing mortality in the previous year.

z For non-quota stocks not assessed by ICES, the reference year for stock and exploitation status varies between 2018 and 2021.

© Oceana | Grey seals (*Halichoerus grypus*), Aberdeenshire. Scotland, United Kingdom.

3.4 RESULTS

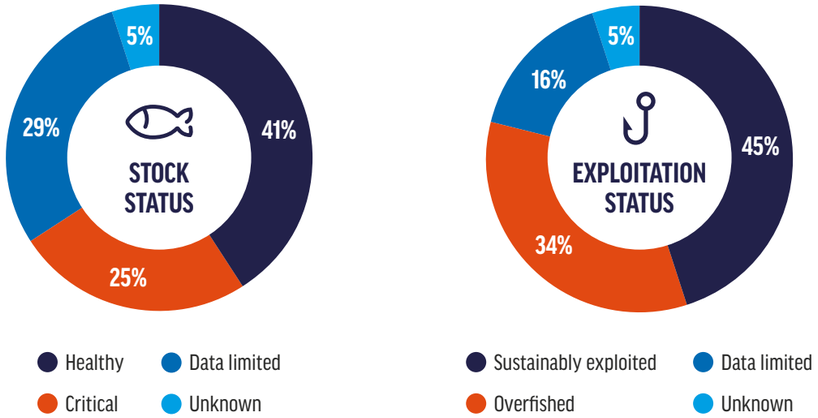
3.4.1 STOCK STATUS OVERVIEW

Of the 104 stocks assessed as part of this analysis, 43 (41%) were deemed to have a 'healthy' stock status, whilst 26 (25%) were considered to be in 'critical' condition (Figure 4).

Of these stocks classified as healthy or critical, 54 (78%) were based on a full quantitative or analytical ICES assessment, and 15 (22%) were based on proxies for MSY reference points.

FIGURE 4

Stock status and exploitation status of 104 stocks fished by UK vessels.



Similarly, when looking at exploitation status (Box 3), **47 stocks (45%) were identified as being sustainably exploited, while 35 stocks (34%) were classed as subject to overfishing** in the most recent year of assessment (Figure 4).

A higher proportion (34%, n=28) of exploitation indicator assessments were based on proxy reference points and therefore were associated with lower confidence.

BOX 3 | STOCK STATUS INDICATORS

Stock status indicators are based on the most recent assessments of stock size (stock status) and fishing mortality rate (exploitation status) relative to MSY reference points ($B_{TRIGGER}$ and F_{MSY}, respectively).

DATA LIMITATIONS

Indicators for stock and exploitation status were unavailable for 29% (n=30) and 16% (n=17) of stocks for the respective assessment types. Therefore, a notable proportion of fisheries management decisions are being made with limited data. A number of those stocks with data too limited to appoint reference points were non-quota shellfish species.

However, a variety of quota species were also data limited, including several stocks of Nephrops, skates and rays (*Raja spp.*), and other North Sea demersal species such as tusk (*Brosme brosme*) and ling (*Molva molva*).

THE STOCK STATUS AND EXPLOITATION STATUS OF THE REMAINING 5% OF STOCKS (N=5) IS COMPLETELY UNKNOWN DUE TO LACK OF SCIENTIFIC ASSESSMENT.

The same stocks were also lacking any assessment in the baseline assessment of 2020. These are two whelk (*Buccinum undatum*) (non-quota) stocks and one stock each of herring (*Clupea harengus*), plaice (*Pleuronectes platessa*) and saithe (*Pollachius virens*) – which whilst they are relatively minor stocks for the EU and UK, are subject to TAC allocations.

FIGURE 5

Number of stocks which have seen a change in stock and exploitation status since the baseline assessment in 2020

A key factor in the change in status from the baseline is an improvement in data availability.

© Oceana | Reticulated dragonet (*Callionymus reticulatus*), Humber estuary, United Kingdom.

BASELINE COMPARISON

In comparison to the baseline, 26 stocks (25%) exhibited a change in stock status and 29 stocks (28%) exhibited a change in exploitation status (Figure 5 and details in Appendix 2). Notably, 6 stocks that were categorised as healthy in the baseline are now assessed as critical relative to biomass reference points (one stock each of herring, witch, common sole and brown crab and two stocks of plaice). Also, 7 stocks which were categorised as sustainably exploited in the baseline are now considered overfished (one stock each of whiting, ling, Nephrops (one functional unit), plaice, mackerel, common sole and king scallops).

There were, however, some improvements in stock and exploitation status for other stocks (n=3 and n=9 stocks, respectively[aa]).

A key factor in the change in status from the baseline is an improvement in data availability and thereby determination of MSY reference points by ICES. This accounts for the observed stock status change for 14 of the 26 stocks (54% - with 4 of those now considered 'critical' and 10 'healthy'[bb]) and the change in exploitation status for 13 of the 29 stocks (45% - with 7 now considered overfished and 6 sustainably exploited[cc]). A further 3 stocks (of tusk, blue ling and Nephrops (one functional unit)) have changed in the opposite direction (biomass reference points are no longer available and so their stock status cannot be categorised).

aa One stock each of herring, plaice and spurdog were critical stock status in the baseline and are now healthy. One stock each of cod, haddock, whiting, plaice, saithe and turbot and three Nephrops functional units were overfished in the baseline and are now sustainably exploited.

bb One stock each of cod, whiting, pollack and European lobster were data limited in the baseline and are now categorised as 'critical' stock status. Ten other stocks are now considered healthy: one stock each of greater silver smelt, lemon sole and sprat; two stocks each of anglerfish, Nephrops (two functional units); three stocks of skates & rays.

cc One stock each of greater silver smelt, herring, anglerfish, pollack, skates & rays, king scallop and European lobster were data limited in the baseline and are now considered overfished. One stock each of cod, whiting, sprat and king scallop and two stocks of skates & rays are now considered sustainably exploited.

BOX 4 | STATUS OF THE SHARED STOCKS

For the 82 shared (quota) stocks considered in the audit, 20% (n=16) were in a critical condition with stock biomass below MSY reference points and 52% (n=43) were assessed as having healthy stock status.

Compared to the full list of audited UK stocks, a higher proportion (52%, n=43) of the shared stocks were also being fished at a sustainable rate, although 28% (n=23) were still subject to overfishing (Figure 6).

Whilst there has been an improvement since the 2020 baseline in healthy stock status and sustainable exploitation (previously 44% and 43%, respectively), a slightly higher proportion of shared stocks are now considered in critical condition compared to the baseline (previously 16%), although there has been a slight drop in overexploited stocks (previously 26%).

THE MAJORITY OF THE CHANGE RELATES TO AN IMPROVEMENT IN DATA AVAILABILITY MEANING A SHIFT FROM THE DATA LIMITED CATEGORY.

There has also been a marginal improvement since the baseline in the number of assessments based on a full quantitative or analytical ICES assessment, rather than proxy reference points.

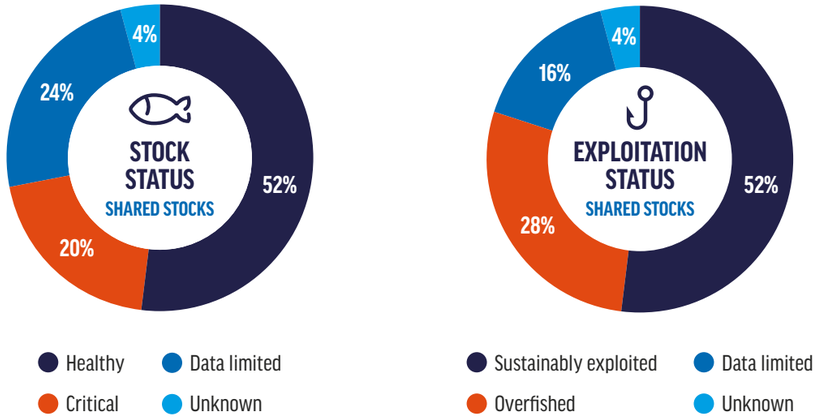
There is higher confidence in the majority of stock and exploitation status assessments for the shared stocks (90% and 80%, respectively, compared to 86% and 80% in the baseline).

HOWEVER, MSY-BASED INDICATORS FOR STOCK STATUS AND EXPLOITATION STATUS REMAIN UNAVAILABLE FOR 20 (24%) AND 13 (16%) OF THE SHARED STOCKS, RESPECTIVELY, DUE TO DATA LIMITATIONS.

These include several stocks of Nephrops, skates and rays and other North Sea demersal species such as tusk and ling. For a further 3 stocks (4%) (of herring, saithe and plaice), a scientific assessment to inform fishery management decisions remains lacking since the baseline (Figure 6).

FIGURE 6

Stock size and exploitation status of 82 shared stocks fished by UK vessels.



When aggregating the data by sea basin[dd], the **West of Scotland fared best by a considerable margin with the highest proportion of stocks in a healthy condition (62%)**, having increased from 50% in the baseline assessment in 2020. **The proportion of stocks in a healthy condition in the Irish Sea has however declined since the baseline (now 41%, previously 45%)**. The English Channel, North Sea and Celtic Sea all had a similar proportion of their stocks assessed as healthy (between 35% and 38%, Figure 7), all showing some improvement since the baseline. The West of Scotland continued to have the fewest stocks in a critical condition (12%), however, concerns remain over the status of some stocks which are still in a critical state, such as West of Scotland cod and whiting.

There has, however, been an increase in the proportion of critical stocks in the Irish Sea (now 36%, was 27%) and English Channel (now 30%, previously 23%) since the baseline, in part due to improvements in assessment quality (some were data limited) but also due to a decline in status of some stocks – notably whiting, common sole and European seabass in the English Channel.

Stocks with limited data and therefore no assessment of stock status remains highest (though lower than the baseline) in the North Sea and English Channel where 33-36% of stocks assessed had limited data, compared to 18-26% for the other regions. This represents a notable improvement for the West of Scotland for which 35% of stocks were considered data limited in the baseline (now 23%).

dd Whilst the total number of stocks represented here remains 104 some of those are duplicated across sea basins because the indicator assessments are based on ICES biological stock units rather than TAC areas, which tend to be restricted to an ICES Subarea or Division (and therefore sea basin). The following number of stocks are included in each sea basin: West of Scotland - 26, North Sea - 42 English Channel - 40, Celtic Sea - 35 , Irish Sea - 22.

Between 46 and 50% of stocks fished by UK vessels in the West of Scotland, Celtic Sea, and Irish Sea are considered to be sustainably exploited, compared to 38-40% for the North Sea and English Channel (Figure 7).

FOR THE NORTH SEA, THIS IS A NOTABLE IMPROVEMENT SINCE THE BASELINE (PREVIOUSLY 24%).

However, sustainable exploitation in the Irish Sea has reduced since 2020, moving from 59% to 50%, also coupled with a rise in the proportion of stocks being overfished during the same time period (now 41%, was 18%).

THE HIGHEST PROPORTION OF STOCKS SUBJECT TO OVERFISHING IS NOW IN THE WEST OF SCOTLAND (42%), HAVING INCREASED SIGNIFICANTLY SINCE THE BASELINE (WAS 23%).

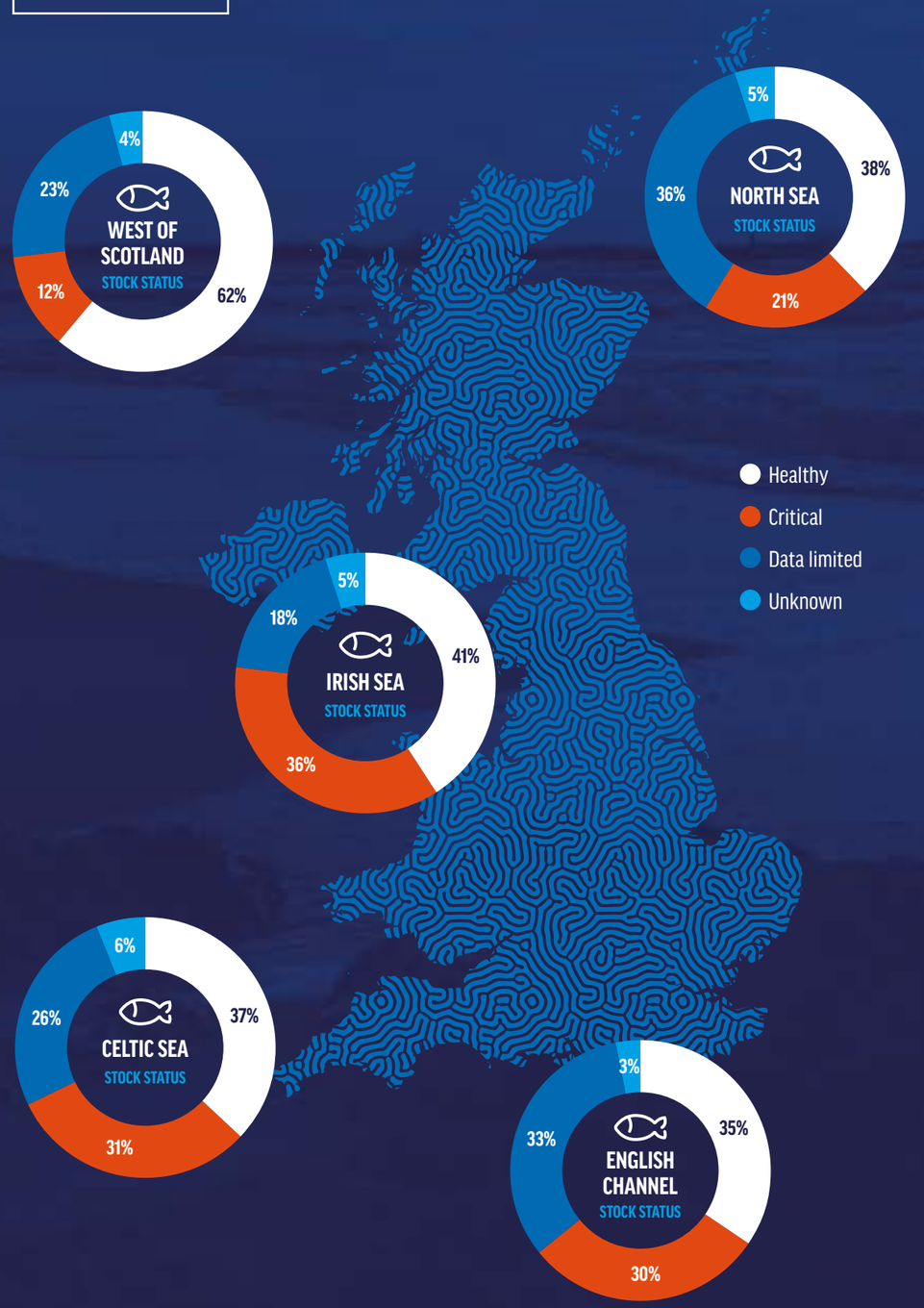
Such declines in sustainable management are also present in the Celtic Sea (now 37%, was 26%) and English Channel (now 38%, was 33%), although some changes can be attributed to a shift from data limited status for all regions.

Concerns remain over the status of some stocks which are still in a critical state, such as West of Scotland cod and whiting.

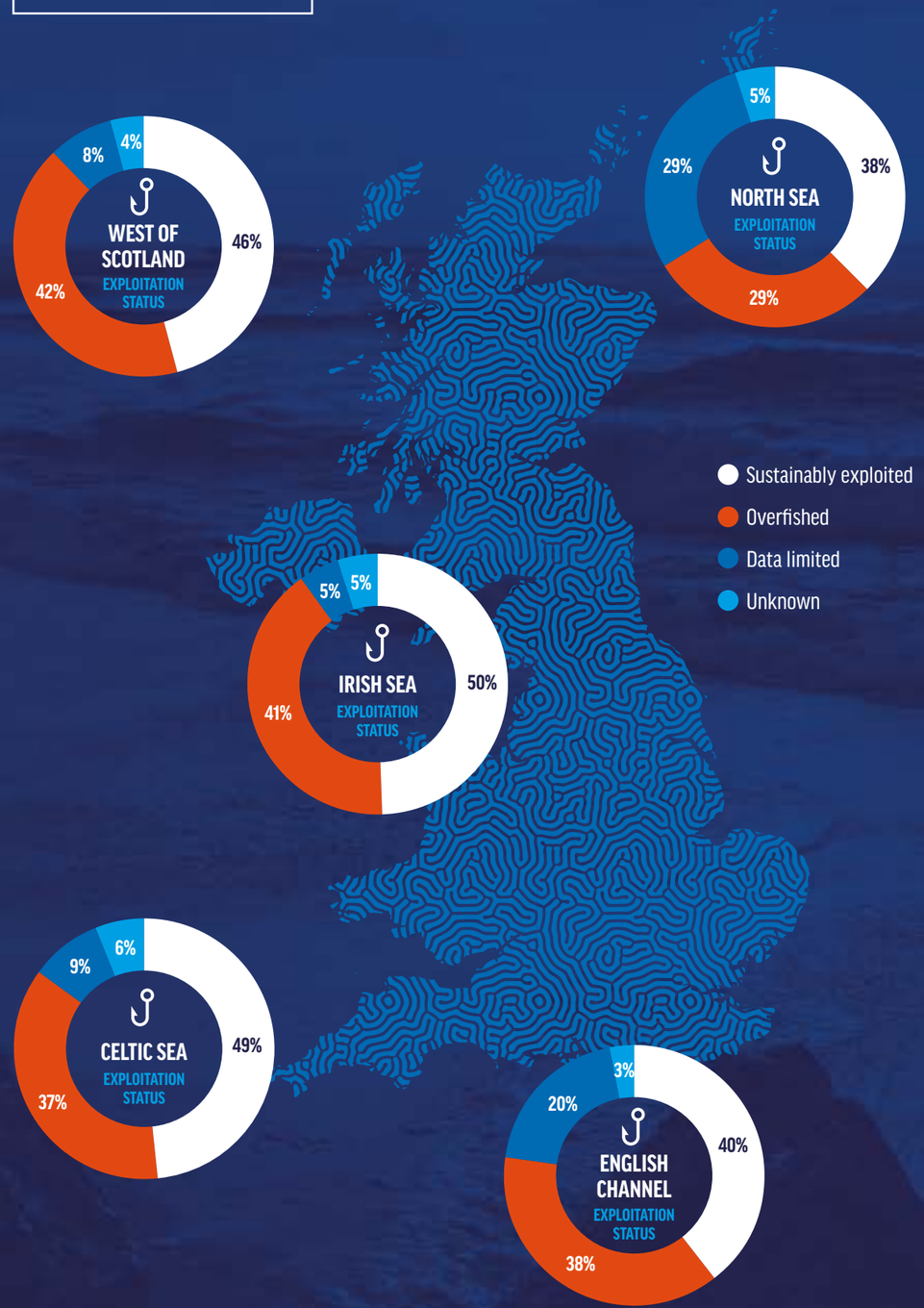
© Adobe | Scottish Highlands, United Kingdom.

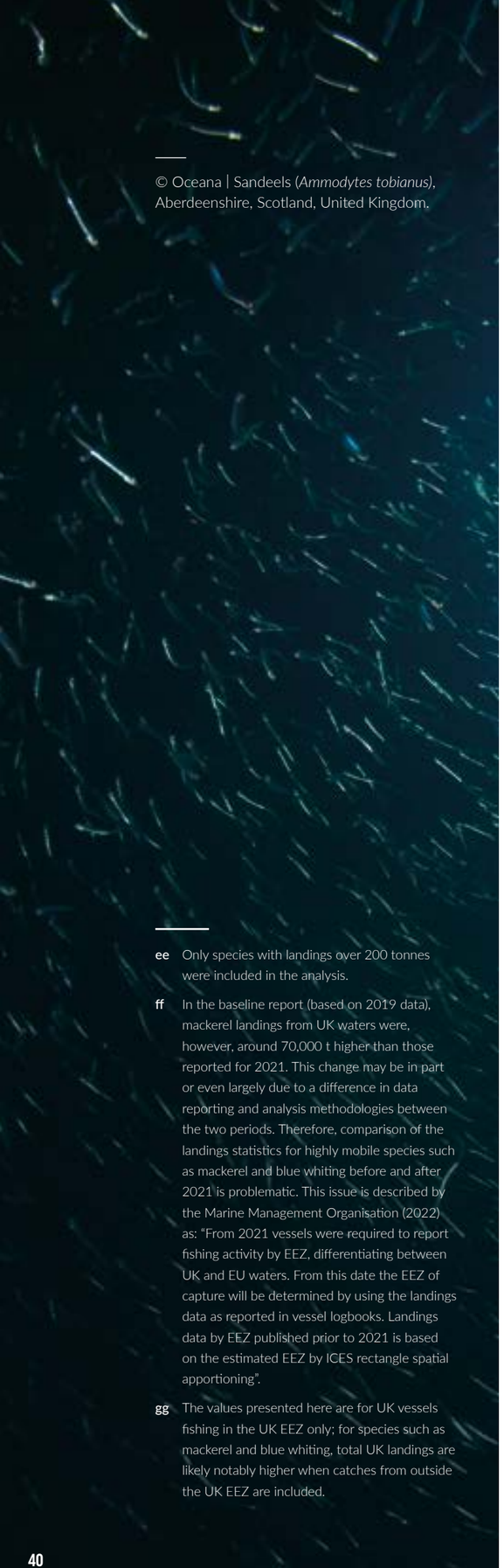
FIGURE 7
Stock status and exploitation status of stocks by sea basin

STOCK STATUS



EXPLOITATION STATUS





© Oceana | Sandeels (*Ammodytes tobianus*), Aberdeenshire, Scotland, United Kingdom.

3.4.2 COMPOSITION AND DISTRIBUTION OF UK LANDINGS

Mackerel (*Scomber scombrus*) accounted for the largest volume of landings (220,967t) from UK waters in 2021 and was predominantly caught by vessels of over 10m in length[ee]. This finding was the same in the baseline report (based on 2019 data)[ff]. Similarly to 2019, herring (*Clupea harengus*) followed with landings of almost 73,000t, while *Nephrops* (28,582t), haddock (*Melanogrammus aeglefinus*) (23,137t) and king scallops (*Pecten maximus*) (21,934t) also made a substantial contribution to the UK's annual landings in 2021 (Figure 8)[gg]. Landings of blue whiting (*Micromesistius poutassou*) from the UK's EEZ appear to have tripled between 2019 and 2021 (from ~10,000t to 31,000t), but as noted in relation to mackerel, this may be the result of differences in data reporting and analysis between the two periods[ff], rather than significantly higher catches overall.

THE TOTAL VOLUME OF LANDINGS REMAINED APPROXIMATELY STABLE BETWEEN 2019 AND 2021, BUT THE SPECIES COMPOSITION CHANGED.

The significant landings of mackerel and herring for the over 10m fleet is reflected by pelagic stocks comprising 64% of landings overall (from 54% in 2019), while demersal species (such as cod, haddock and anglerfish) and shellfish (such as Nephrops, crabs and scallops) accounted for 20% and 16%, respectively (from 25% and 21%, respectively in 2019).

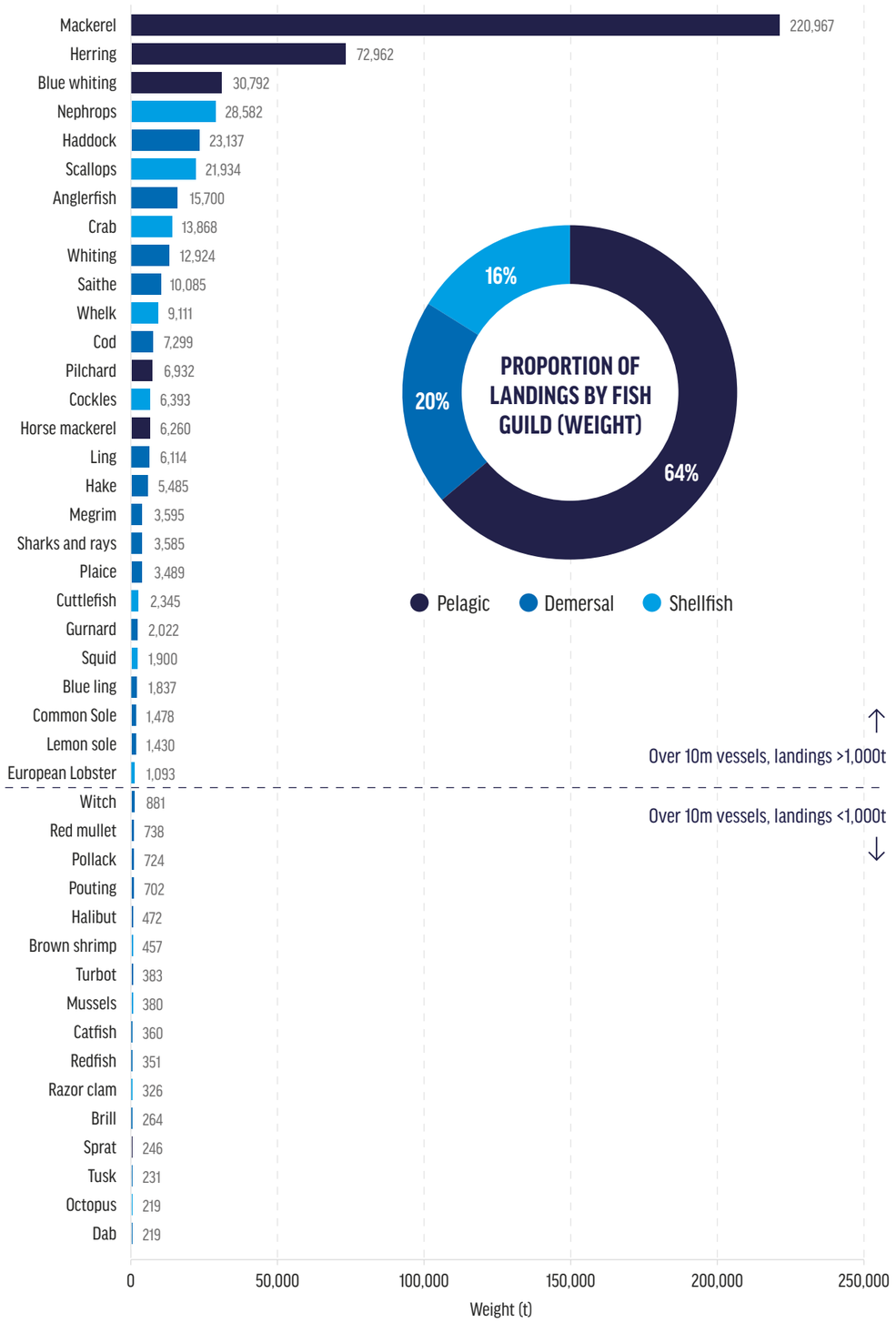
ee Only species with landings over 200 tonnes were included in the analysis.

ff In the baseline report (based on 2019 data), mackerel landings from UK waters were, however, around 70,000 t higher than those reported for 2021. This change may be in part or even largely due to a difference in data reporting and analysis methodologies between the two periods. Therefore, comparison of the landings statistics for highly mobile species such as mackerel and blue whiting before and after 2021 is problematic. This issue is described by the Marine Management Organisation (2022) as: "From 2021 vessels were required to report fishing activity by EEZ, differentiating between UK and EU waters. From this date the EEZ of capture will be determined by using the landings data as reported in vessel logbooks. Landings data by EEZ published prior to 2021 is based on the estimated EEZ by ICES rectangle spatial apportioning".

gg The values presented here are for UK vessels fishing in the UK EEZ only; for species such as mackerel and blue whiting, total UK landings are likely notably higher when catches from outside the UK EEZ are included.

FIGURE 8

Weight of UK vessel landings (tonnes, t) by species, from UK waters in 2021 for vessels Over 10m in length. Pie chart shows the proportion of landings by fish guild in 2021.



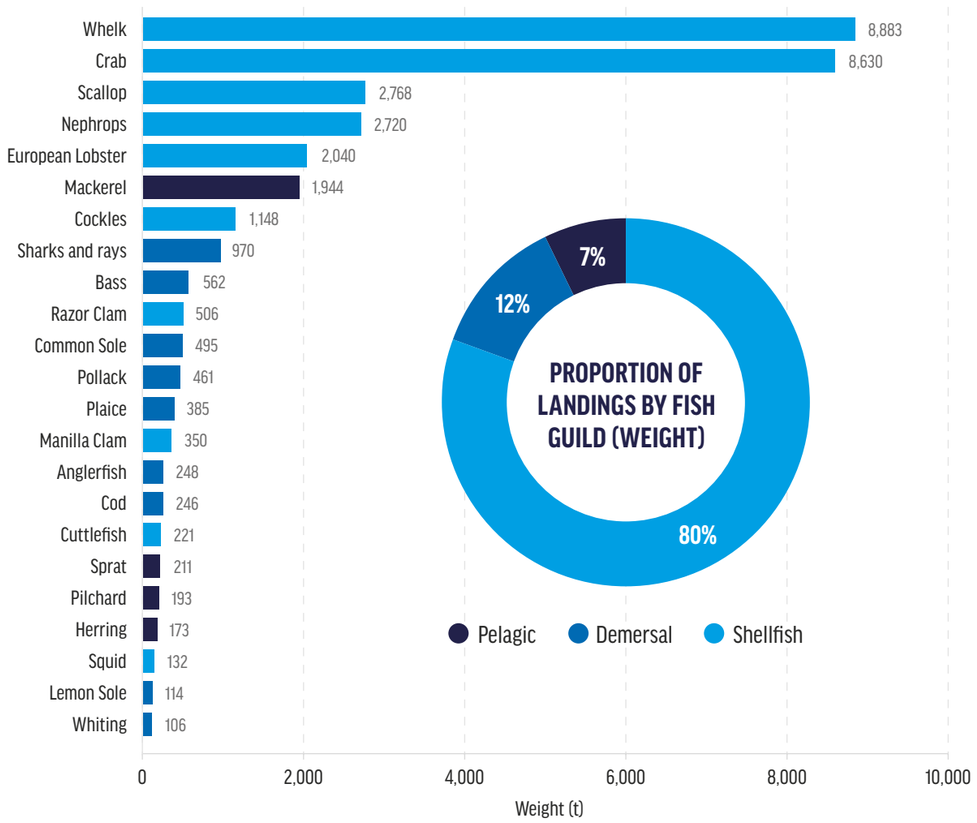
SHELLFISH LANDINGS

For smaller vessels (10m and under)[hh], shellfish such as whelks, crabs, scallops, Nephrops and European lobster (*Homarus gammarus*), accounted for a significant proportion of total landed weight by the inshore vessels (80% compared to 12% for demersal species and 7% for pelagic species) (Figure 9). This substantial contribution of shellfish landings, as well as landings of other species such as seabass (*Dicentrarchus labrax*), highlights the continual reliance on non-quota species for the fleet of vessels 10m and under.

LANDINGS OF THE MAIN SPECIES WERE A LITTLE LOWER OVERALL FOR THE ≤10m FLEET IN 2021 COMPARED TO 2019, with around 24,500t of whelks, crab, scallops, Nephrops and lobster reported in 2021 and 27,000t in 2019.

FIGURE 9

Weight of UK vessel landings (tonnes, t) by species from UK waters in 2021 for vessels 10m and under in length. Pie chart shows the proportion of landings by fish guild in 2021.



hh Only species with landings >100 tonnes were included in the analysis

3.4.3 OVERVIEW OF SOCIO-ECONOMIC CHARACTERISTICS OF THE UK FISHING FLEET

FLEET SIZE AND ACTIVITY

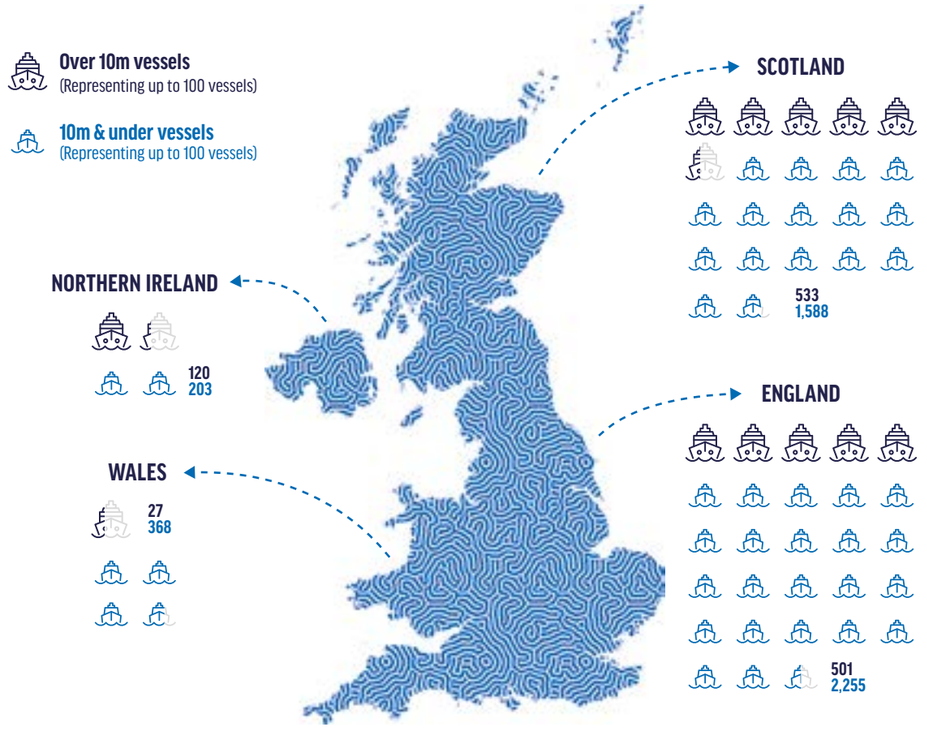
In 2021, the UK government recorded 5,783 licenced fishing vessels, an increase of 115 from 2019, although there has been a 10% reduction overall in the last 10 years[29]. Seafish provides a more detailed analysis of fishing vessels that are active (rather than just licenced) and reported a 3% decrease since 2019 from 4,546 to 4,269 active vessels in 2021. The trend is reported to predominantly reflect a drop in the number of low activity vessels which are typically characterised by vessels earning less than £10,000 per year[37]. Approximately 1,902 (66%) of the active fishing vessels use static or passive fishing gear[37] (mostly pots and traps, but also hooks, drift and fixed nets).

The 10m and under vessel size category comprises 78% (4,414 vessels) of the UK's fleet (all registered vessels, rather than only those which are considered active)[29]. The distribution of the fleet by nation in 2021 is shown in Figure 10[ii].

The highest number of 10m and under vessels are registered in England (51% of total), while Scotland has the highest number of larger, over 10m vessels (45% of total). The distribution of the Northern Ireland fleet between vessel size categories is relatively even, whereas Wales has few larger vessels.

FIGURE 10

Distribution of the UK fishing fleet by devolved nation in 2021



ii Excludes vessel numbers for 'Islands and other' i.e. Guernsey, Jersey, Isle of Man and vessels registered but not administered by a port (e.g. new vessels).

Hidden within the two size categories is a diversity of vessel types, capacities, and fishing gear.

jj See Seafish 'Economics of the UK Fishing Fleet in 2021' report for details of these fleet segments and associated information (vessel numbers, days at sea, income, operating costs, etc). Available at: https://www.seafish.org/document/?id=997d218e-0afb-4f3f-ade8-5f81db446b05

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Over the past three decades, fleet capacity across the UK has dropped by 49% in terms of vessel numbers (11,411 in 1991 to 5,783 in 2021) and the power (kW) has also decreased (1,228,931 kW to 760,324 kW) albeit by a smaller margin (38%). This is largely a reflection of national and international policies relating to quota restrictions, vessel decommissioning and caps on fleet capacity, necessitated by stock reductions resulting from overfishing[38]. Specifically, the number of active fishing vessels is greatest in England (48% of the UK fleet), followed by Scotland (41%), although the fleet size contracted between 3% and 4% in England and Scotland respectively during 2020, and continued into 2021. The Welsh fleet has been reducing at a rate of 6% since 2018, which is considered the result of an ageing work force, a high cost of entry into the sector and increasing regulatory and monitoring measures being challenging to meet for small-scale businesses[37]. In terms of days spent at sea, overall Scottish vessels were marginally more active than those registered to other administrations in 2021, however by fleet segment, vessels over 24m registered in England and Wales were the most active[37].

Hidden within the two size categories is a diversity of vessel types, capacities, and fishing gear. Seafish categorises the UK fleet based on a combination of vessel power, gear type, target species and region. This results in characterisations and economic profiles for 30 fleet segments, which range from trawlers (demersal, pelagic, beamers, Nephrops, dredges) to seine vessels (demersal, pair-trawl seiners), potting and trap vessels, netting vessels (gill nets, drift net, fixed nets), longliners, and hook and line vessels[jj]. The need for greater granularity in fleet statistics appeared to be recognised by the UK government when it commissioned advice about how to better classify small-scale fishing in 2019[39,40], however no announcements or changes have since appeared.

EMPLOYMENT IN THE FISHING SECTOR

In terms of employment, the total number of fishers has steadily declined by 48% from 20,703 fishers in 1994 to 10,724 in 2021, reflecting the reduction in fleet size and the move to fewer but larger vessels. The UK government records 10,724 fishers employed in the UK in 2021, split unevenly among the four devolved nations (Figure 11), reflecting a decrease of 11% since 2019[29].

Seafish provide alternative employment statistics based on the number of full time equivalent (FTE) jobs aboard UK vessels, using MMO employment data combined with data obtained from the fishing industry. The distribution of jobs as measured in FTE differs slightly from UK government statistics and the FTE estimate was 6,835 in 2021[37]. The majority of FTE are aboard Scottish vessels (3,357), followed by English vessels (2,683), Northern Irish vessels (564) and Welsh vessels (105).

When this is broken down by fleet segment, the top segments for FTE are pots and traps vessels (over 12m (911), 10-12m (366) and under 10m (646)), North Sea and West of Scotland demersal vessels over 24m (610), North Sea Nephrops vessels over 300kW (562) and scallop dredgers over 15m (366).

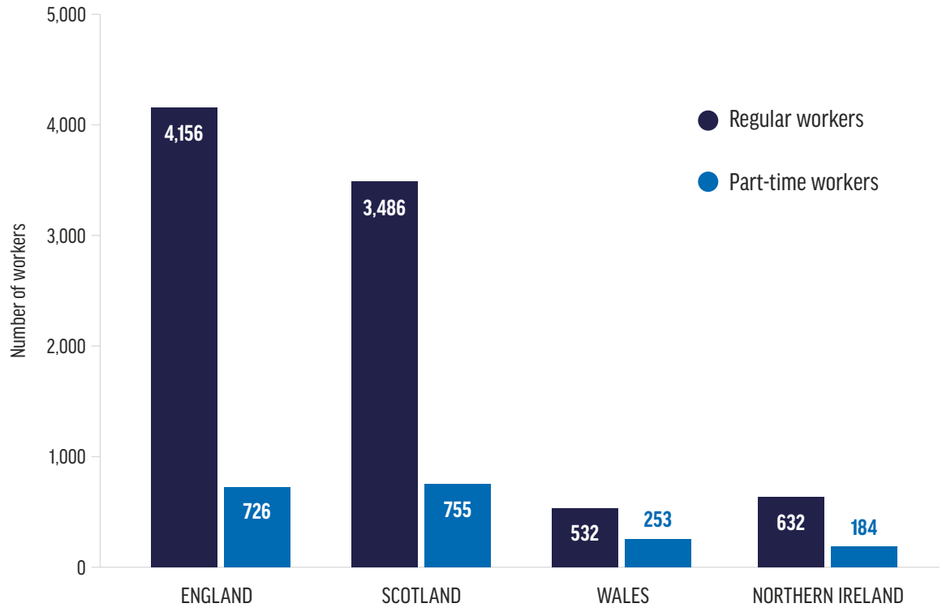
Seafish also provide gender-disaggregated data for employment in the catching sector, but this is based on a smaller sample size. For example, in 2021, Seafish collected employment and demographic[41] data on a sample of 268 vessels and 788 workers across the UK catching sector.

OF THIS, 1% OF DECKHANDS AND 0.5% OF OWNERS SURVEYED WERE FEMALE.

The proportion was higher, at 21%, when considering 'other' positions such as onshore workers.

FIGURE 11

Breakdown of catching sector employment by devolved nation in 2021



ECONOMIC PERFORMANCE OF THE FISHING SECTOR

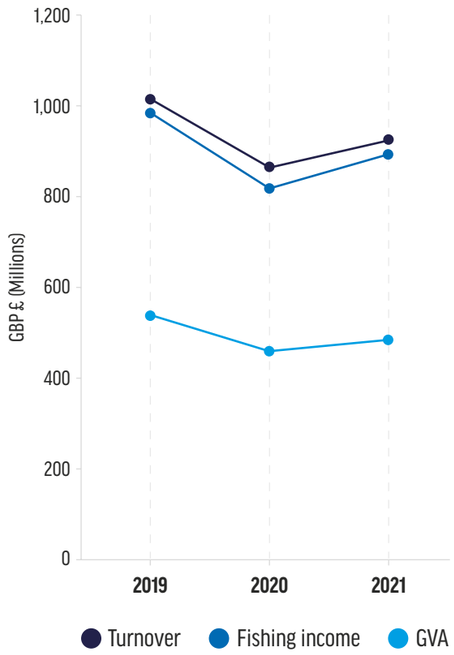
The contribution of fishing to the UK's GDP in 2021 was £590 million, which was up 17% on 2020 figures, yet down 21% from 2019 and represented 4.2% of the total for agriculture, forestry and fishing[42]. Seafish estimates total income and turnover of the UK fishing fleet was £893 million and £923 million, respectively, in 2021; a 7% increase on 2020, but still lower than the sector's economic performance in 2019. Marine fisheries produced gross value added (GVA) of £483 million in 2021[kk] (Figure 12), the majority of which was associated with the over 24m length fleet segment based in Scotland and Ireland. The same trend was reported for average income and operating profit for Scottish and Northern Irish registered vessels which can largely be attributed to the higher value of pelagic landings. Hidden within these figures are the social contribution of fisheries, particularly of the 10m and under fleet, to remote coastal communities. There is a paucity of social studies focused on how fisheries contribute to these coastal communities.

In 2021, the UK continued to **"import what is eaten and export what is caught"**[43]. Seafish report that the UK imported over 1 million tonnes of seafood worth £3.2 billion in 2021, representing a value decrease of 1% and volume decrease of 7% from 2020[44]. As a net importer of seafood, the UK's seafood consumption has significant environmental and social impacts far beyond our shores[45]. In the same year, the UK exported 445,000 tonnes of seafood valued at £1.6 billion. Despite fears of the impact of the UK exit from the EU on seafood exports to the EU, only a 3% decrease in the value of exports to the EU in 2021 was recorded, despite a reduction in volume of 28%. Conversely, there was a 24% increase in exports to non-EU countries[44].

Factors affecting economic performance vary between fleet segments, ranging from biological (e.g. local changes in stock abundance/availability), environmental (e.g. weather conditions), competition (more or fewer competing vessels and gear in the same area, and competition with other maritime industries for space and access), market prices, regulatory (e.g. quota or effort access, gear requirements), changes to operating costs (e.g. harbour dues, vessel and gear repairs, fuel prices). These factors combine to influence overall profit and economic performance. Catches (affected by multiple ecological and anthropogenic factors), market prices and fuel costs are, however, key drivers of variability in economic performance of the fishing sector.

FIGURE 12

Economic performance overview of UK fishing fleet 2019-2021 (GBP £ million)[46]



kk Seafish estimate the GVA as the sum of operating profit and crew share.

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IMPACT OF THE UK'S DEPARTURE FROM THE EU

Since the UK's departure from the EU, members of the UK fishing industry have faced a range of impacts, which were seen as unexpected to many in the industry. In 2021 the All-Party Parliamentary Group on Fisheries released a survey to members of the UK fishing industry to collect insights into experiences in the first 12 months post EU exit[47].

Financial uncertainties were frequently cited as one of the main impacts, largely due to a fall in income from increased costs associated with price increases at different stages of the supply chain, in addition to the decreasing value of catches. Bivalve producers and exporters suffered significantly owing to the ban on the export of undepurated[ll] live molluscs from Class B waters from the UK to the EU. This in turn closed many previously exploited markets, shutting down key income streams for some fleet segments. For different reasons, loss of markets was felt elsewhere and were reportedly due to increased costs and reduced reliability for the customer on the receiving end.

Significant effects were particularly felt by those involved in exports, attributed to the stringent regulatory measures implemented. Of notable impact was the increased paperwork, including health certificates, catch certificates, storage documents, process statements, packaging lists, and commercial invoices, to name a few.

Changes to the labour force affected some respondents, and mainly those on larger scale trawl fleets.

EXIT FROM THE EU EXACERBATED THE EXISTING LABOUR SHORTAGE

for UK vessels with respondents citing "low wages and uncertainty in the sector" as factors disincentivising both domestic and non-domestic workers.

The UK government describes a different picture. The EU-UK Trade and Cooperation Agreement (see Section 2.2) details how 105 stocks will be shared between the UK and EU during and at the end of the adjustment period (2026), resulting in a net uplift in TAC quota.

ll "Undepurated" bivalves are those that have not been treated by being placed in water for a period of time to purge them of any biological contaminants or physical impurities.

Projecting the exact increase in value of fishing opportunities each year is difficult due to fluctuations in TACs and changes in fishing behaviour.

THE UK GOVERNMENT HAS STATED THAT THE FULL UPLIFT IS WORTH AROUND £146 MILLION IN FISHING OPPORTUNITIES FOR THE UK FLEET.

However, projecting the exact increase in value of fishing opportunities each year is difficult due to fluctuations in TACs and changes in fishing behaviour leading to alterations in prices each year[48].

By using quota shares received in 2020 (pre-EU exit) to estimate how much quota the UK may have received had it remained an EU member state, Defra reported the UK might have received around 531,000 tonnes in 2021 (estimated to be worth around £712 million), in comparison to the 620,000 tonnes actually received. This uplift was estimated to be worth around £88 million. For 2022, the estimated uplift of 87,000 tonnes is reported to be worth around £87 million to the UK fishing fleet. When considering the likely percentage uptake (i.e. use) of this additional quota based on historic patterns, Defra adjusted (downwards) the scale and value of these additional fishing opportunities, although the results cannot be compared due to the way the data are presented[49].

© Oceana | Lamiarian forest (*Laminaria ochroleuca e hyperborea*), Aberdeenshire, Scotland, United Kingdom.

IMPACT OF COVID-19 ON THE FISHING SECTOR

The impact of the COVID-19 pandemic on the fishing industry during 2020 was significant yet varied amongst the UK fleet. UK landings value fell by 18% between January and September 2020, and the overall average landings prices dropped by 17%[50]. This challenging period followed a particularly difficult winter where many vessels were in port due to poor weather.

The shellfish sector was most significantly affected by the COVID-19 lockdown, due to their reliance on the domestic catering and international export market. Those targeting pelagic species were least affected, primarily because of the seasonality of these fisheries. Wider supply chain issues were also evident as processors either reduced or paused their operations leading to a knock-on impact for the catching sector.

OVERALL, THE DROP IN FISHING ACTIVITY AND MARKET PRICES IN 2020 LED TO AN AVERAGE REDUCED FISHING INCOME OF 23% ACROSS ALL HOME NATIONS.

Post COVID-19, fishing activity and overall fishing income and profitability of the fleet recovered in 2021 (22% average increase between 2020 and 2021), although remained below 2019 figures. Following market price and reduced fishing activity impacts of 2020, recovery trends in 2021 were mixed between fleet segments. North Sea Nephrops returned to profit in 2021, following losses in 2020 (although average profit remained lower than 2019), whilst ICES subarea 7 (Southern Celtic Sea and English Channel) demersal trawls and North Sea and West of Scotland demersal seiners continued to operate at a loss in 2021 despite a higher volume of landings compared to 2020[37].

The shellfish sector was most significantly affected by the COVID-19 lockdown, due to their reliance on the domestic catering and international export market.

4

Focus stocks

4.1 INTRODUCTION

This section investigates in greater depth the current biological and management status of a subset of the UK's fish stocks, selected according to their contribution to the total landings by the UK fleet (the 'top 10'), to determine their sustainability. We also highlight five of the most sustainably and five of the most unsustainably fished stocks[mm]. In doing so, the implications of any management actions or policy decisions by the UK government can be considered against the more detailed benchmarks for these stocks.

mm 'Sustainably fished or exploited' refers to the stocks' biomass and fishing mortality rate relative to MSY reference points, and is not a judgement on other criteria typically associated with sustainable fishing, such as environmental impacts resulting from catching method, gear type, etc.

© Shutterstock | Flying arctic tern (*Sterna paradisaea*).

4.2 KEY OBSERVATIONS

- **FIVE OF THE 'TOP 10' STOCKS WHICH DOMINATE LANDINGS BY THE UK FISHING FLEET ARE OVERFISHED OR THEIR STOCK BIOMASS IS AT A CRITICAL LEVEL**, relative to MSY reference points. Only five are being sustainably exploited and have a healthy stock status.

- Nine of the 'top 10' stocks are shared with other third parties, mainly with the EU, and subject to TACs. The exception is the high value Eastern English Channel king scallop fishery, which doesn't have a TAC (but is shared with France).

- **UK CATCH QUOTA USE EXCEEDS INITIAL UK CATCH ALLOCATIONS FOR MANY OF THE APPLICABLE 'TOP 10'**, for which the UK receives between 8% and 87% of the total TAC (shared with the EU and other coastal states).

- **APPROXIMATELY 75-90% OF THE LANDINGS FOR EACH OF THE 'TOP 10' STOCKS COME FROM SCOTTISH VESSELS**, and total landings are dominated by mackerel.

- **THE FIVE BEST PERFORMING ARE TYPICALLY CAUGHT IN RELATIVELY SMALL QUANTITIES.** These sustainably exploited and healthy stocks all held the same status in the baseline report three years previous, although fishing pressure on North Sea megrim is increasing.

- **FOUR OF THE FIVE WORST PERFORMING STOCKS (ALL SHARED WITH THE EU FLEET) STILL HAVE CRITICAL STOCK STATUS AND ARE OVERFISHED**, as was the case at the baseline (and further before). The fifth stock (North Sea witch) now features in the worst performing category due to a decline in biomass since the baseline, likely due to overexploitation exacerbated by a combined TAC for two species (witch and lemon sole), that does not follow scientific advice.

- **ZERO CATCHES CONTINUE TO BE ADVISED FOR THREE OF THE FIVE WORST PERFORMING STOCKS**, which are key bycatch species for commercially important mixed fisheries in the Celtic Sea, Irish Sea and West of Scotland.

4.3 METHODOLOGY

The 'top 10' stocks (management units) for the UK fishing sector were ranked primarily on 2021 landings statistics (volume and value) from the MMO, but with additional factors such as the UK's share of the TAC (greater share = higher score) and scientific data availability (ICES category 1 or 2 stocks = higher score) also taken into account for stocks with comparative landings rankings. The resulting list[nn] (with stocks that were not in the 'top 10' in the baseline report highlighted in bold; volume of UK vessel landings in 2021 also provided) was:

- North Sea herring (*Clupea harengus*) (HER/4AB) (65,890 tonnes)
- North Sea cod (*Gadus morhua*) (COD/2A3AX4) (6,468 tonnes)
- North Sea anglerfish (*Lophiidae spp.*) (ANF/2AC4-C) (9,624 tonnes)
- North Sea haddock (*Melanogrammus aeglefinus*) (HAD/2AC4) (17,377 tonnes)
- North Sea whiting (*Merlangius merlangus*) (WHG/2AC4) (11,621 tonnes)
- North East Atlantic blue whiting (*Micromesistius poutassou*) (WHB/1X14) (30,792 tonnes)
- **North Sea Nephrops (*Nephrops norvegicus*) (NEP/2AC4-C)** (15,670 tonnes)
- North East Atlantic mackerel (*Scomber scombrus*) (MAC/2CX14) (222,911 tonnes)
- **North Sea saithe (*Pollachius virens*) (POK/2C3A4)** (8,054 tonnes)
- Eastern English Channel king scallop (*Pecten maximus*) (non-quota) (8,819 tonnes)

A similar review is undertaken for five sustainably fished stocks[nn] ('best performers'), selected based on the indicators of their stock status (categorised 'healthy' for the 2024 or 2023 ICES advice year) and exploitation status (categorised 'sustainably exploited' for the previous year [2023 or 2022]).

In addition, there was high confidence in these assessments as they were all based on the ICES MSY approach (category 1 stocks; data sufficient). It should be noted that this assessment is focussed on the stock and not fishing method, which is often unsustainable due to use of bottom-towed gear. The resulting list was[oo]:

- **West of Scotland haddock (*Melanogrammus aeglefinus*) (HAD/5BC6A)**
- Irish Sea haddock (*Melanogrammus aeglefinus*) (HAD/07A)
- North Sea megrims (*Lepidorhombus spp.*) (LEZ/2AC4-C)
- North Sea plaice (*Pleuronectes platessa*) (PLE/2A3AX4)
- Western English Channel common sole (*Solea solea*) (SOL/07E)

The five most unsustainably fished stocks ('worst performers') were also selected on the basis of high confidence in the most recent assessment of their stock status (categorised as 'critical') and exploitation status (categorised 'overfished'). Those assessments were derived from ICES advice for 2024 or 2023.

nn Detailed as EU management unit common name, species and EU management unit code

oo With exception of West of Scotland haddock, the list is the same as the baseline. The fifth stock in 2020 was Irish Sea herring (HER/07A/MM), however, the stock biomass has fallen below B_{MSY} according to the most recent (June 2023) ICES advice. The status of West of Scotland haddock was also 'healthy' and 'sustainably exploited' in the baseline, however.

pp EU waters of 2a, 4a; 6, 7a-c,7e-k, 8abde; EU and international waters of 5b; intern. waters of 12 and 14

The resulting list (with the stock that was not in the 'worst performers' list in the baseline report highlighted in bold) was:

- West of Scotland cod (*Gadus morhua*) (COD/5BE6A)
- Celtic Sea and Western English Channel cod (*Gadus morhua*) (COD/7XAD34)
- North East Atlantic horse mackerel[pp] (*Trachurus spp.*) (JAX/2A-14)
- Irish Sea whiting (*Merlangius merlangus*) (WHG/07A)
- **North Sea witch (*Microstomus kitt*, managed as a single stock with lemon sole *Glyptocephalus cynoglossus*) (L/W/2AC4-C)**[qq]

Landings data for 2021 for each focus stock (management unit) for UK vessels in the UK EEZ by fisheries administration were sourced from the MMO[29]. The UK's percentage share of the TAC was calculated for 2022 based on published values for the TAC[51] (combined for all applicable coastal states e.g. EU-27[52] and/or Norway, Faroe Islands, Iceland, Greenland[rr]) and the UK's agreed starting share. Information on UK quota uptake in 2022[53] is provided to add additional context to the contribution of the focus stocks to the UK fishing industry.

These uptake figures are based on total UK landings in relation to both the starting and final or adjusted TAC allocation for the UK in 2022. Those TAC values may be different due to, for example, international quota swaps; between year quota transfers or penalties; in-year TAC adjustments, etc., as described in Section 2. Where applicable, the proportional allocation of the UK's quota between the devolved countries is presented (based on the MMO's allocations in 2022[54]).

© Adobe | Bedruthan Steps, Cornwall England, United Kingdom.

qq Lemon sole and witch are managed as a single stock unit (e.g. a single TAC applies jointly to both species), despite largely being caught by different fisheries in different areas. They are understandably assessed as separate species / stocks by ICES (see Appendix 1). It is only witch that is assessed as overfished and in a critical state in terms of stock biomass – lemon sole is assessed as sustainably exploited and with a healthy stock status, although the assessment for lemon sole is relative to proxy reference points due to data limitations. This therefore poses further threat to witch e.g. as stated by ICES (2022): "Management of witch and lemon sole under a combined species TAC prevents effective control of the single-species exploitation rates and could lead to the overexploitation of either species".

rr For some highly migratory stocks such as North East Atlantic mackerel and blue whiting, TACs are agreed multilaterally by several coastal states, including the EU-27 and UK. See: https://www.gov.uk/government/publications/fisheries-blue-whiting-herring-and-mackerel-management-in-the-north-east-atlantic-for-2022

The difficulties of accounting for ecosystem impacts of this fishery on habitats also results in potential flaws in TAC advice.

© Oceana | Lion's mane jellyfish (*Cyanea capillata*) and juveniles of whiting (*Merlangius merlangus*). Aberdeenshire, Scotland, United Kingdom.

4.4 RESULTS

4.4.1 THE UK'S 'TOP 10'

STATUS OVERVIEW

The 'top 10' stocks (management units) for the UK fishing sector were selected based primarily on landings, along with consideration of the UK's TAC share and data availability. **Only five of the 'top 10' (North Sea herring, North Sea haddock, North Sea Nephrops, North Sea whiting and North Sea saithe) were categorised as having a healthy stock status and being sustainably exploited in 2023[ss] (a marginal improvement on the baseline assessment in 2020)** (Figure 13). For the three which featured in the baseline 'top 10', this represents an improvement in stock status for one (herring) and in exploitation status for another (whiting).

Despite the overall status of North Sea Nephrops, ICES continues to warn that the current approach of setting a single TAC for multiple functional units (FUs)[tt] leads to uncontrolled displacement of effort (unused catch) from the larger FUs to the more minor ones, and so the risk of localised stock depletion increases. Given the data limited status of three of the FUs associated with the North Sea management unit, there is even greater risk of such consequences of the current management approach. The difficulties of accounting for ecosystem impacts of this fishery on habitats also results in potential flaws in TAC advice.

THE REMAINING FIVE OF THE 'TOP 10' WERE CATEGORISED AS EITHER CRITICAL (STOCK STATUS) OR OVERFISHED (EXPLOITATION STATUS).

North East Atlantic mackerel and North East Atlantic blue whiting had a healthy stock status but were classed as being overfished. For mackerel, this represents a downturn since the baseline[uu]. North Sea cod was categorised as being in a critical condition but was considered to be sustainably exploited in the most recent assessment, suggesting management efforts to support recovery of the stock[vv] are being successfully implemented, although biomass is yet to recover.

Continued lack of data to support assessments against reference points for Eastern English Channel scallops (in terms of stock size) also highlights a priority for sustainable management. In contrast, assessment data has improved for North Sea anglerfish since the baseline, moving this stock from data limited to being based on MSY reference points.

ss For most of the 'top 10' the most recent assessment year is 2023 or 2024 (2022 or 2023 for exploitation status, as explained in Section 3.3). However, for three of the seven functional units comprising the North Sea Nephrops management unit, it was 2022 and for scallops it was 2021.

tt For the purposes of stock assessment, Nephrops are split into a number of stocks or ICES 'functional units' (FUs) based on the discrete areas of mud which they inhabit. For North Sea Nephrops, the management unit is comprised of 7 FUs. The overall stock and exploitation status is pragmatically based on the assessment for the FUs (#s 7, 8, 9) which contribute the majority of the landings (~74% collectively in 2021) and ICES' advised catches (~85% in 2021-2023). However, three of the more minor FUs (#s 7, 33, 34) are data limited and the fourth (#6) was overfished (but healthy stock status) in the most recent ICES assessment.

uu The TAC for North East Atlantic mackerel is subject to agreement between the UK, EU, the Faroe Islands, Greenland, Iceland and Norway. Negotiations over long-term quota sharing arrangements are ongoing in 2023, with interim agreements and management measures currently being relied upon. See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1124225/Mackerel_Agreed_Record_for_2023.pdf

vv For example, UK National North Sea Cod Avoidance Plan. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1129724/UK_National_Cod_Avoidance_Plan__Jan2023update_.pdf

FIGURE 13

Stock status (healthy, critical or data limited) and exploitation status (sustainably exploited, overfished or data limited) of the 'top 10'

- Healthy / Sustainably exploited
- Critical / Overfished
- Data limited

North East Atlantic mackerel
(Scomber Scombrus)

- Stock status
- Exploitation status

North Sea herring
(Clupea harengus)

- Stock status
- Exploitation status

North East Atlantic blue whiting
(Micromesistius poutassou)

- Stock status
- Exploitation status

North Sea haddock
(Melanogrammus aeglefinus)

- Stock status
- Exploitation status

North Sea Nephrops
(Nephrops norvegicus)

- Stock status
- Exploitation status

North Sea cod
(Gadus morhua)

- Stock status
- Exploitation status

North Sea whiting
(Merlangius merlangus)

- Stock status
- Exploitation status

North Sea anglerfish
(Lophiidae)

- Stock status
- Exploitation status

North Sea saithe
(Pollachius virens)

- Stock status
- Exploitation status

Eastern English Channel scallops
(Pecten maximus)

- Stock status
- Exploitation status

LANDINGS IN 2021

Mackerel dominates UK vessel landings from UK waters, followed by North Sea herring, with the majority caught by the Scottish fleet (~82% and 77%, respectively, Figure 14). Similar to 2020 baseline figures, **Scottish registered vessels were responsible for approximately 77-90% of the landings of the 'top 10' stocks**, with the exception of North Sea saithe (although Scottish vessels still dominate landings).

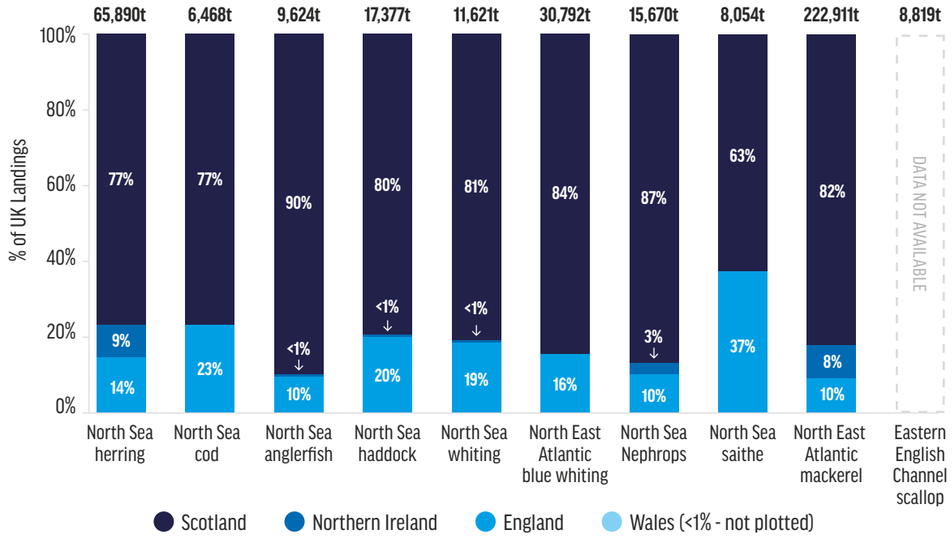
Landings by Northern Irish vessels are generally small in comparison to Scotland and to a lesser extent England. North Sea herring, North East Atlantic mackerel, and to a lesser extent, North Sea Nephrops, represent relatively important stocks for Northern Irish vessels. Landings of these stocks (and indeed landings more generally[29]) by vessels registered in Wales are very low and hence do not appear on Figure 14.

Peterhead on the North East coast of Scotland is the main port of landing for all North Sea 'top 10' stocks. For Eastern English Channel scallops, the bulk of catch is landed on the south coast of England, but attributing scallop landings to a specific stock area is challenging because the fishery is in part comprised of large (≥15m) nomadic vessels[55].

UK catches outside the UK EEZ and foreign vessels targeting the 'top 10' stocks within and outside UK waters will undoubtedly add significant volumes to those shown in Figure 14[ww,xx], although presentation of those catch sources here is constrained by lack of accessible data.

FIGURE 14

Proportion of total UK vessel landings (shown above bars) by devolved nation for the 'top 10' in 2021 (disaggregated data not available for scallops)



ww For example, see Figure 25 of the baseline report, available at: https://uk.oceana.org/uk-fisheries-audit-2021/

xx For example, in 2023 the UK and Norway bilaterally agreed that Norway can fish up to 135,141 tonnes of mackerel, which constitutes 60% of Norway's national quota in 2023, in the UK's EEZ. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1161825/Agreed_record_of_fisheries_consultations_between_the_United_Kingdom_and_Norway_on_the_management_of_mackerel_in_the_North-East_Atlantic_for_2023.pdf

© Oceana | Plaice (*Pleuronectes platessa*), Aberdeenshire, Scotland, United Kingdom.

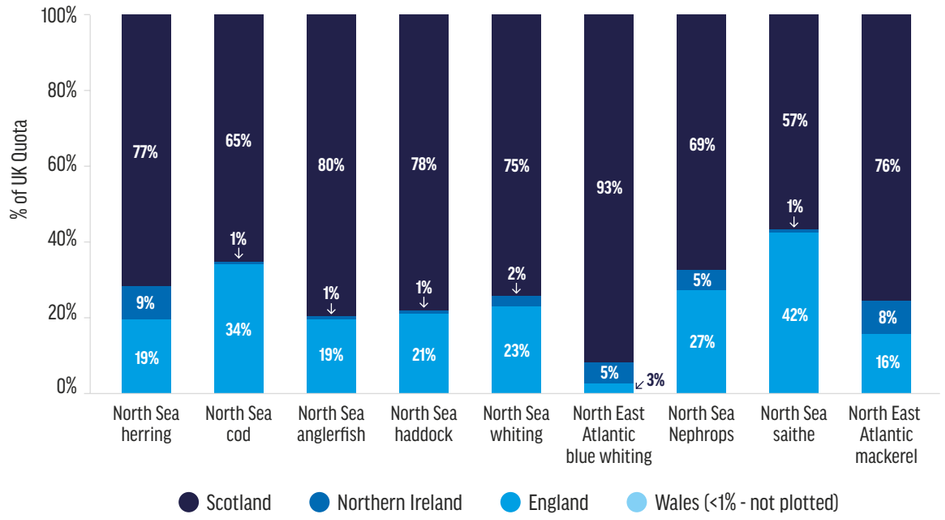
NATIONAL QUOTA DISTRIBUTION

In alignment with the national distribution of landings, **Scotland receives the largest proportion of quota** between the four fisheries administrations for each of the 'top 10' stocks (Figure 15)[yy]. The largest proportion appointed to Scotland is for **North East Atlantic blue whiting (93%)**, with Scottish landings (caught within the UK EEZ) representing approximately 84% by weight (Figure 14).

England receives the second largest proportion of quota for each of the 'top 10' stocks, however considerably less than Scotland – England's largest share is 42% for North Sea saithe.

FIGURE 15

National quota distribution for the 'top 10'



yy King scallops are non-quota species, hence are not included in the analysis.

zz The total TAC for North East Atlantic blue whiting is subject to agreement between the UK, EU, the Faroe Islands, Iceland and Norway. See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1031887/Blue_Whiting_Agreed_Record_for_2022.pdf

QUOTA ALLOCATION

The UK's (post-EU exit) share of the TACs for the 'top 10' stocks[zz] in 2022 ranged from 8% (North East Atlantic blue whiting[yy]) to 87% (North Sea anglerfish and North Sea Nephrops, Figure 16).

Additional insight into the UK fishing industry's dependence on these stocks can be gained from the quota uptake figures i.e., how much of the UK's quota was fished by the UK fleet (Table 3).

With the exception of North Sea whiting and Nephrops, almost all of the UK's initial (start of year) quota allocation, or more often in excess of that quota allocation, was caught by the UK fleet in 2022. These uptake figures are typically lower when compared to the end of year (final / adjusted) quota allocations because, with the exception of blue whiting and mackerel, the UK's quota increased during the fishing year[aaa].

FIGURE 16

UK TAC share for the 'top 10' in 2022

aaa For example, due to between year penalties and flexibilities, international swaps, and special conditions associated with TACs (e.g. transfer of quota between stocks / areas).

Almost all of the UK's initial quota allocation of the top 10 species, or more often in excess of that quota allocation, was caught by the UK fleet in 2022.

© Adobe | Fishing boat collecting lobster pots, Anglesey, North Wales, United Kingdom.

TABLE 3

Percentage uptake of UK quota in 2022 for the 'top 10' (excluding non-quota king scallops)

MANAGEMENT UNIT	% UPTAKE OF FINAL UK QUOTA (% OF INITIAL ALLOCATION)
North Sea herring (HER/4AB)	**101%** (102%)
North Sea cod (COD/2A3AX4)	**99%** (116%)
North Sea anglerfish (ANF/2AC4-C)	**93%** (106%)
North Sea haddock (HAD/2AC4)	**84%** (90%)
North Sea whiting (WHG/2AC4)	**61%** (64%)
North East Atlantic blue whiting (WHB/1X14)	**102%** (92%)
North Sea Nephrops (NEP/2AC4-C)	**65%** (65%)
North Sea saithe (POK/2C3A4)	**98%** (124%)
North East Atlantic mackerel (MAC/2CX14)	**102%** (100%)

© Oceana | Common dab (*Limanda limanda*), Norfolk Banks, England, United Kingdom.

4.4.2 BEST PERFORMERS

All five best performing stocks (Irish Sea and West of Scotland haddock, North Sea megrim and plaice, Western English Channel sole) remain at healthy stock status and are sustainably exploited relative to ICES MSY reference points for stock biomass and fishing mortality, as was the case three years ago at the baseline.

In addition, there was high confidence in these indicator assessments as they are ICES 'data sufficient' stocks. All five stocks are shared with the EU, and West of Scotland haddock and North Sea plaice are also shared with Norway[bbb].

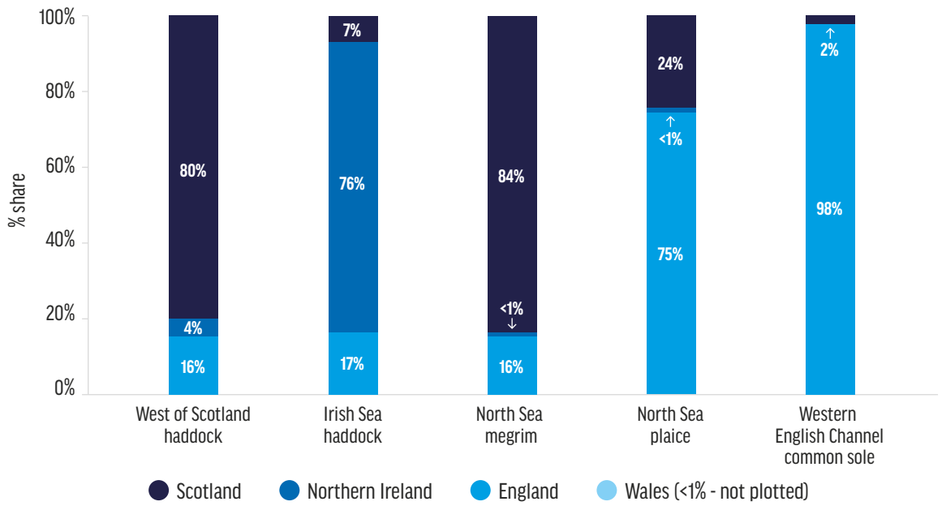
NATIONAL QUOTA DISTRIBUTION

The UK's quota for Irish Sea haddock is largely allocated to the Northern Ireland fleet, whereas for the two North Sea stocks it is split in contrasting proportions between the English and Scottish fisheries administrations.

Almost all the UK's quota for Western English Channel sole is initially allocated to the English fleet and Scotland's vessels receive the majority of the UK's quota for West of Scotland haddock. Once again, Wales hardly features in the quota allocation for these stocks (Figure 17).

FIGURE 17

National quota distribution of the best performing stocks



bbb North Sea plaice is also shared with Norway

LANDINGS IN 2021

In comparison with the majority of the 'top 10' stocks, UK landings (in UK waters) are considerably less for the five top performing stocks (Figure 18). The highest landings in 2021 for the best performing stocks were for West of Scotland haddock (2,848t).

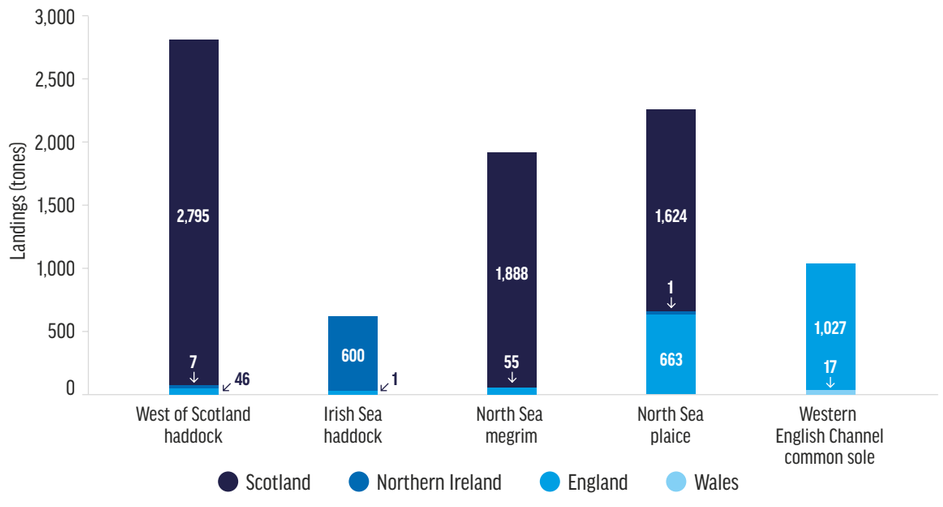
North Sea plaice and North Sea megrim are not far behind West of Scotland haddock with landings of 2,287t and 1,943t, respectively in 2021. Whilst fishing pressure on North Sea megrim has mostly declined since the mid-1990s, in 2021 fishing pressure was the highest since 2010[56]. This is also reflected by the increase of ~700t in landings recorded in 2021 in comparison to the baseline assessment of 2020 (based on 2019 landings figures).

Landings of Irish Sea haddock in 2021 dropped by a small margin when compared to 2019 figures (601t and 740t respectively) and remains primarily targeted by Northern Irish vessels.

Similarly to the 'top 10' stocks, the initial distribution of UK quota across the four fisheries administrations (Figure 17) did not necessarily translate to the total landings (Figure 18). This was most obviously the case for North Sea plaice, for example. While England received 75% of the plaice quota, English registered vessels landed 28% of the total landings compared to Scotland's 71% after an initial allocation of 24% of the UK quota. Irish Sea herring followed a similar trend whereby 17% of quota was allocated to English registered vessels and 83% of quota was allocated to Northern Irish registered vessels, but all 2,508t of the stock was landed by the Northern Irish fleet. This is due to domestic quota swaps (e.g. transfer of quota between Scottish and English producer organisations); international quota swaps (i.e. transfer of quota to non-UK vessels or organisations); catches from outside the UK EEZ; and landings into foreign ports (not included in the data presented here).

FIGURE 18

Landings (in tonnes) by UK vessels from UK waters of the best performing stocks in 2021



4.4.3 WORST PERFORMERS

Four of the five worst performing stocks (all shared with the EU[ccc]: West of Scotland cod, Celtic Sea cod, North East Atlantic horse mackerel and Irish Sea whiting) **still have critical stock status and are unsustainably exploited** relative to ICES MSY reference points, as was the case at the baseline (and further before).

The biomass of the shared stock of North Sea witch, considered to be healthy at the baseline despite being overfished, is now also considered to be below the ICES biomass reference point 'MSY $B_{TRIGGER}$'.

The catch-based management of witch is joined to that of lemon sole (e.g. a single TAC applies jointly to both species), despite largely being caught by different fisheries in different areas. Unlike witch, lemon sole is assessed as sustainably exploited and with a healthy stock status, although the assessment for lemon sole is relative to proxy reference points due to data constraints (this represents an improvement from the baseline, at which its status was data limited). It is feasible that this continued combined species TAC approach is responsible for the decline in the status of the witch stock, as it hinders effective control of the single-species exploitation rates[57].

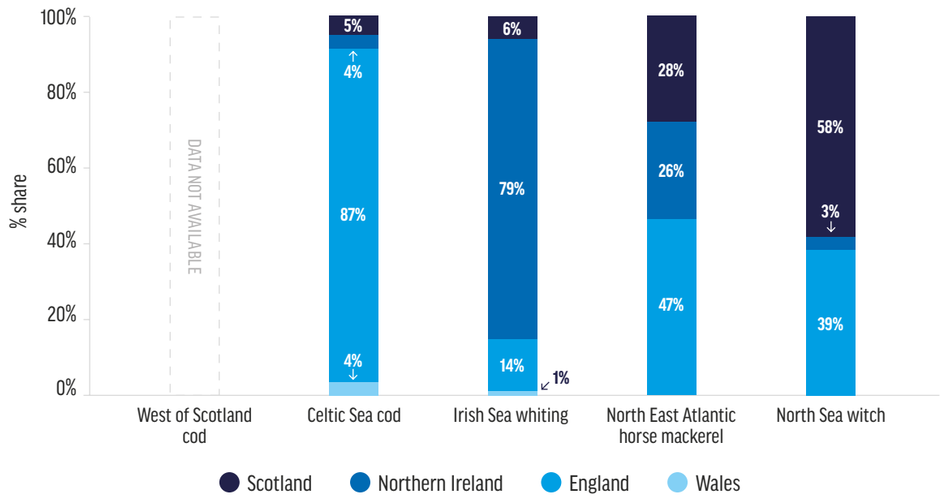
NATIONAL QUOTA DISTRIBUTION

The majority of the UK's quota for the worst performing stocks is allocated to Scotland and England, with the exception of Irish Sea whiting which is primarily allocated to Northern Ireland. Again, Wales has, at most, a very small share of the fishing opportunities for these select quota stocks (Figure 19).

Recent quota allocation data for West of Scotland cod could not be found, although Scotland is likely to receive the majority share based on previous years.

FIGURE 19

National quota distribution of the worst performing stocks



ccc The TAC for North East Atlantic horse mackerel is also shared with the Faroe Islands

© Abobe | Whitby fishing port, Yorkshire, England. United Kindgom.

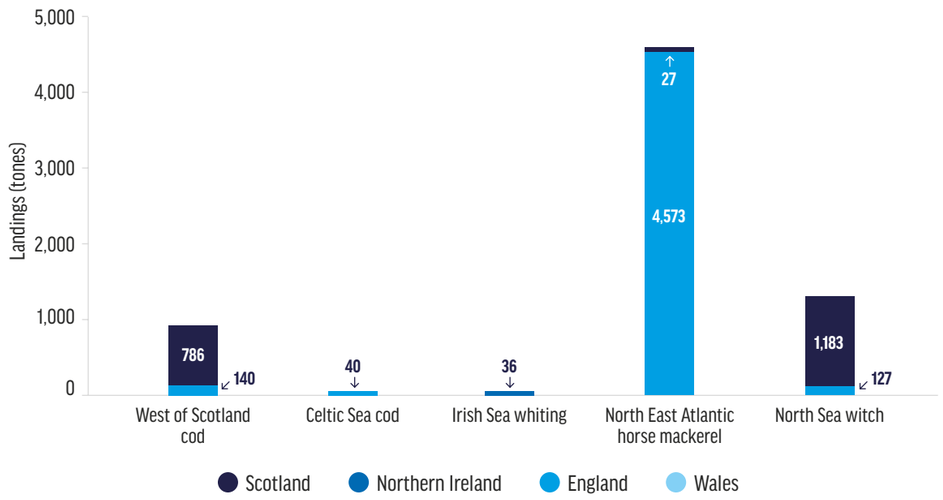
LANDINGS IN 2021

UK landings of the worst performing stocks are relatively low across the board, with landings of Irish Sea whiting and Celtic Sea cod almost negligible (Figure 20). For Celtic Sea cod, West of Scotland cod and Irish Sea whiting, the TAC is only permitted to cover bycatches of these depleted stocks, which are mainly associated with the Celtic Sea mixed otter trawl fishery targeting haddock and whiting, the West of Scotland mixed demersal trawl fisheries targeting haddock, saithe and anglerfish and the West of Scotland Nephrops fishery, and the Irish Sea Nephrops trawl fishery, respectively[ddd].

Of the devolved nations, English registered vessels caught 99% of landings from UK waters of horse mackerel, which is far higher than their initial 47% quota allocation. Conversely, Scottish and Northern Irish registered vessels each received around one quarter of the UK's quota, but landed next to nothing in 2021.

FIGURE 20

Landings (in tonnes) by UK vessels from UK waters of the worst performing stocks in 2021



ddd As detailed in the second case study within the baseline report, available at: https://uk.oceana.org/uk-fisheries-audit-2021/

5

Environmental impact case studies

5.1 INTRODUCTION

The purpose of this section is to consider three ongoing issues associated with UK fisheries and their management which have negative implications for the environment and sustainable fishing.

5.2 CASE STUDY 1

Advised versus agreed Total Allowable Catches

CASE STUDY OVERVIEW

Critical to sustainable fisheries management is ensuring catches are aligned with reliable scientific advice. Whilst multi-national exploitation of shared fish stocks across multiple fisheries jurisdictions undoubtedly poses significant challenges, political willingness to follow scientific advice provided by ICES on TAC limits is essential. However, for the majority of stocks shared by the UK with other fishing coastal states of the North East Atlantic, that political commitment is lacking, despite legal commitments to follow scientific advice.

Analyses undertaken for the UK government by their scientific advisers (Cefas) found that more than 50% of these 79 TACs were set above scientific advice in the period 2020-2023, with just 35%-40% set in line with the scientific advice (the rest could not be assessed).

Similar findings apply for the subset of stocks included in this audit. Furthermore, for four of the five worst performing stocks considered in this audit, the TAC limits for the period 2020-2023 exceeded scientific advice. Conversely, the TAC limits for the best performing stocks were mainly set at, or lower than, advised scientific limits.

The UK's influence as an independent coastal state is more important than ever and **THE GOVERNMENT MUST DEMONSTRATE ITS COMMITMENT TO SUSTAINABLE FISHERIES FOR FUTURE GENERATIONS BY HELPING TO REDUCE THE GAP BETWEEN SCIENTIFIC ADVICE AND POLITICAL DECISION MAKING.**

© Oceana | Lesser black-backed gull (*Larus fuscus*), Newcastle, England, United Kingdom.

INCREASED RESPONSIBILITY

The key management method for fish stocks exploited by the fishing fleets of the North East Atlantic is output control through catch quotas or TACs. The UK government is now responsible for setting TACs in UK waters. However, the UK and EU have agreed to develop joint recommendations through the Trade and Cooperation Agreement on an annual basis because most fish stocks are shared. The process includes review of ICES TAC advice and further exchange of scientific data to support setting the TAC for each stock and determining the quota shares for each country. As an independent coastal state, the UK must also negotiate TACs and quota shares with other non-EU countries with which it shares migratory and straddling fish stocks (Norway, Faroe Islands, Iceland and Greenland). With increased independence comes increased responsibility in ensuring sustainable management of shared fish stocks.

Negotiations for North East Atlantic TACs cover over 50 commercial species with 200 different stocks distributed across the various fishing areas within Atlantic coastal states' 200 nautical-mile EEZs, as well as on the high seas outside of national jurisdiction.

FISHING BEYOND LIMITS

Other reports, including Oceana's baseline audit[5], have provided analyses of the differences in advised versus agreed (or prescribed) TACs with concerning findings. This case study highlights the continuing misalignment between scientifically advised and politically agreed TACs, now that the UK is an independent coastal state, and in particular the relationship with the persistently depleted status of many of those stocks.

In early 2022, Cefas[eee] assessed how many TACs were set consistent with scientific advice for UK-EU as well as UK-EU-Norway and other coastal state negotiations[58], for the period 2020 to 2022, as a 'benchmark for sustainability' for the UK government. The assessment was updated and repeated in early 2023[59]. Based on their evaluation of the negotiated TAC against the tonnage consistent with ICES' scientific advice at the time of negotiation, Cefas found that for 79 TACs, 27 were set in line with the scientific advice (34%), 2 could not be scored and 50 were set above scientific advice (63%) in 2020.

eee The Centre for Environment, Fisheries, and Aquaculture Science, an Executive Agency of the UK government's Department of Environment, Food and Rural Affairs (Defra).

LITTLE CHANGE

When considering the type of ICES advice and therefore the confidence in the assessments, 18 out of 43 TACs (42%) based on MSY reference points were set in line with the advice compared to 9 out of 36 TACs (25%) based on the precautionary approach.

Cefas found very little change in these results for TACs set in 2021, 2022 or 2023. In 2023, there had been minimal improvement in the proportion of TACs set in line with scientific advice (40%) or beyond those sustainable limits (57%).

There also remained a smaller percentage of TACs consistent with precautionary scientific advice due to data limitations (20%), compared to those based on more robust MSY assessments (50%), indicating a more *laissez-faire* approach to data-deficient stocks.

Cefas' findings for only the 62 management units considered within this audit (for purposes of comparison) are presented within Figure 21 below, showing that TACs were persistently set above scientific advice for more than 50% of those assessed in this report.

FIGURE 21

Percentage of 62 management units, considered within this audit, for which Cefas[59] determined the TAC was set in line with (i.e. pass) or above (i.e. fail) scientific advice for the period 2020 to 2023.

© Oceana | Dead man's fingers (*Alcyonium digitatum*) and European edible sea urchin (*Echinus esculentus*) on a rock with polychaete cf. (*Pomatoceros triqueter*) and kelp, Scotland, United Kingdom.

A closer examination of Cefas' findings for the focus stocks considered in Section 4 of this report (Table 4) shows that for four of the five 'worst performers' (most unsustainably fished based on their depleted stock and over exploited status, relative to ICES MSY reference points for biomass and fishing mortality), TACs were inconsistent with scientific advice for the period 2020-2023. This includes the three gadoid stocks (West of Scotland and Celtic Sea cod, Irish Sea whiting) for which ICES continues to advise zero catches due to their severely depleted status[fff]. In 2023, the TAC was also set above scientific advice for the fifth stock, North East Atlantic horse mackerel. Conversely, for four of the five 'best performers' (healthy stock status and sustainably exploited) TACs were set in line with ICES' advice for the same period.

For the 'top 10' stocks identified as most important to the UK fishing fleet[ggg], and considered in more detail in this audit, only two received TACs that were in line with scientific advice for the four-year period (Table 4; North Sea haddock and North Sea saithe).

When considering their most recent stock and exploitation status, these two stocks are both assessed as being at healthy biomass and sustainably exploited.

For the remaining seven of the 'top ten' quota stocks there is a mixed picture. Cefas' findings could indicate that for the four stocks currently categorised (in this audit) as either overfished or critical (for exploitation or stock status, respectively[hhh]), there may continue to be politically-induced constraints on improvement in the near future if TACs continue to be set above scientific advice. This includes North East Atlantic mackerel which dominates UK landings. For North Sea cod, ongoing management efforts to rebuild the stock are reflected in the most recent (2023) TAC, which was set in line with scientific advice for the first time during the time series. Furthermore, for the other three stocks[iii] currently assessed as having healthy stock status and being sustainably exploited relative to MSY reference points, there may be risks of future decline given that scientific advice over sustainable catch limits continues to be ignored.

fff Although it is recognised that the TACs are intended for bycatches only rather than targeted fishing, in order to help address the 'choke' issue for the mixed fisheries in which they are caught (see the baseline audit for more detail on these stocks and fisheries and 'choke' problems).

ggg Missing Eastern English Channel king scallops for which TACs are not set (non-quota species).

hhh North Sea cod, North Sea anglerfish, North East Atlantic blue whiting, North East Atlantic mackerel

iii North Sea herring, North Sea whiting, North Sea Nephrops

TABLE 4

Results of Cefas'[58] assessment of whether TACs were set consistent with scientific advice for the period 2020-2023 for the 'focus stocks' considered in Section 4 of this report. Those for which the TAC was set in line with advice (=pass) or above advice (=fail) are highlighted in green and red, respectively.

	TAC NAME	TAC CODE	2020	2021	2022	2023
WORST PERFORMERS	Cod (West of Scotland)	COD/5BE6A	✗	✗	✗	✗
	Cod (Celtic Sea)	COD/7XAD34	✗	✗	✗	✗
	Horse Mackerel (Western)	JAX/2A-14	✓	✓	✓	✗
	Lemon Sole and Witch (North Sea)	L/W/2AC4-C	✗	✗	✗	✗
	Whiting (Irish Sea)	WHG/07A.	✗	✗	✗	✗
BEST PERFORMERS	Haddock (Irish Sea)	HAD/07A.	✓	✓	✓	✓
	Haddock (West of Scotland)	HAD/5BC6A	✓	✓	✓	✓
	Megrims (North Sea)	LEZ/2AC4-C	✗	✗	✗	✗
	Sole (Western Channel)	SOL/07E.	✓	✓	✓	✓
	Plaice (North Sea)	PLE/2A3AX4	✓	✓	✓	✓
'TOP 10'	Anglerfish (North Sea)	ANF/2AC4-C	✓	✗	✗	✗
	Cod (North Sea)	COD/2A3AX4	✗	✗	✗	✓
	Haddock (North Sea)	HAD/2AC4.	✓	✓	✓	✓
	A-fleet Herring (North Sea, Southern North Sea and Eastern Channel)	North Sea Herring (A- Fleet): HER/4AB. & HER/4CXB7D	✗	✗	✗	✗
	Saithe (North Sea)	POK/2C3A4	✓	✓	✓	✓
	Whiting (North Sea)	WHG/2AC4.	✗	✗	✗	✗
	Nephrops (North Sea)	NEP/2AC4-C	✗	✗	✗	✗
	Mackerel (North Sea & Western)	Coastal states North-East Atlantic Mackerel: MAC/2A34. & MAC/2CX14-	✗	✗	✗	✗
	Blue Whiting (Northern)	Coastal states North-East Atlantic Blue Whiting: WHB/1X14	✗	✗	✗	✗

PRECAUTIONARY APPROACH LACKING

Based on their analysis of the TACs set for EU/UK stocks from 2015-2020, ClientEarth[60] found **the percentage of agreed TACs that exceeded the scientific advice was 43% in 2020 and 31% in 2022**, following a fairly steady drop in this excess from the peak of close to 70% in 2017. Whilst the methodologies and scope between these two reports (Cefas and ClientEarth) may not be the same, the general findings concluding that many TACs continue to exceed scientific advice and progress has been limited or insufficient, are comparable. The overall magnitude (how much greater the agreed TAC was than the underlying advice, summed across all TACs set above scientific advice) has declined from around 14% in 2015 to 6% in 2022.

However, prior to 2020 the overall percentage overshoot (where TACs were set above scientific advice) was consistently multiple times higher than the percentage undershoot (where TACs were set below the scientific advice), which has been increasing in recent years.

A closer look at the figures revealed that, similar to Cefas' recent findings, for those stocks where advice is based on the ICES Precautionary Approach or its approach to data limited stocks, higher than advised TACs were agreed for 79-85% of stocks between 2015 and 2019 and between 57 and 59% from 2020 to 2022, whereas for stocks with MSY-based advice this figure was much lower at 30% in 2020, 33% in 2021 and 16% in 2022[jjj].

THIS INDICATES A TENDENCY TO MORE FREQUENTLY EXCEED PRECAUTIONARY ADVICE THAN MSY-BASED ADVICE.

Also, throughout most of the time series, the proportion of stocks where the advice was exceeded was considerably higher for economically less important bycatch stocks compared to target stocks, indicating lower ambitions for sustainability[60].

An earlier study[62] with wider geographical scope similarly found that 55% of agreed TACs were set above ICES advice in 2017 and that 30% of 2017 TACs were more than double the scientific advice.

ACTION NOT RHETORIC

In advance of the UK's exit from the EU, the UK government stated its "commitment to sustainable fisheries for future generations" and to "setting a gold standard for sustainable fishing around the world"[63]. Whilst the UK now sits at a different seat at the negotiating table, being a positive influence on future catch limits and striving for alignment with scientific advice is an opportunity to put sustainability at the forefront of its independence and to demonstrate action rather than rhetoric.

jjj For data sufficient stocks with a full analytical assessment (Category 1 and 2 stocks), ICES provides catch advice based on their MSY rule i.e. based on biomass and fishing mortality reference points consistent with MSY (maximum sustainable yield). For data limited stocks (Category 3 and 4 stocks), or where the stock status in relation to reference points is unknown, ICES applies its Precautionary Approach framework.

5.3 CASE STUDY 2

Ongoing damage to offshore marine protected areas

CASE STUDY OVERVIEW

Marine protected areas (MPAs), designated to protect a portion of representative habitats as well as the UK's most valuable and threatened species and habitats, comprise 38% of the UK's waters (and 36% of the offshore zone - beyond 12 nautical miles out to the UK EEZ or the continental shelf limit). Despite this apparent win for marine conservation, the vast majority of offshore MPAs remain unprotected from the damage caused by bottom-towed fishing gear and are therefore little more than 'paper parks'[64].

While byelaws are gradually being developed, swifter and more comprehensive action is needed to ensure that these sites, and their essential ecosystem services, are protected in full and not just within arbitrary, feature-based delineations. Until that time, the UK's marine regulators remain in breach of a number of laws and obligations and, moreover, continue to contribute to the diminishing biodiversity and resilience of our seas.

© Adobe | Falmouth Harbour, England, United Kingdom.

PROTECTION COMMITTMENTS

MPAs are intended to protect habitats and species of conservation importance within our coastal and marine areas. The objective of MPAs as a conservation tool is to support healthy and resilient ecosystems and to help increase their ability to adapt to and mitigate global climate change.

MPAs within the UK's Exclusive Economic Zone (EEZ) are designated under different legislative (national and international) frameworks and therefore differ slightly in their specification. The legislation which MPAs are designated under includes the Offshore Marine Habitats and Species Regulations 2017; the Conservation of Habitats and Species Regulations 2017; the Marine and Coastal Access Act, 2009 and Marine (Scotland) Act, 2010. A well-managed, and hence protected, MPA network is also required to meet various national, regional and international commitments[65] including the Marine Strategy Regulations 2010; the Fisheries Act 2020, the UK Marine Policy Statement, Biodiversity 2020 (the England Biodiversity Strategy), the UK 25 Year Environment Plan and the Environmental Improvement Plan (EIP) 2023.

International commitments include the Oslo and Paris Convention, and the United Nations Convention on Biological Diversity 30 by 30 commitment – an initiative the UK government led on with its Global Ocean Alliance's 30by30 initiative[kkk].

30 BY 30 MEANS PROTECTING, NOT TRAWLING, 30% OF UK SEAS IN MPAS, AND THE INTERNATIONAL UNION FOR CONSERVATION OF NATURE STATES THAT MPAS MUST EXCLUDE ALL INDUSTRIAL FISHING[LLL].

The UK now has 374 MPAs which cover 38% of its waters, both inshore (from mean high water spring tides to 12 nautical miles from shore) and offshore (extending from 12 nautical miles to the EEZ or UK continental shelf limit). Many MPAs include both inshore and offshore waters (Table 5)[66-69].

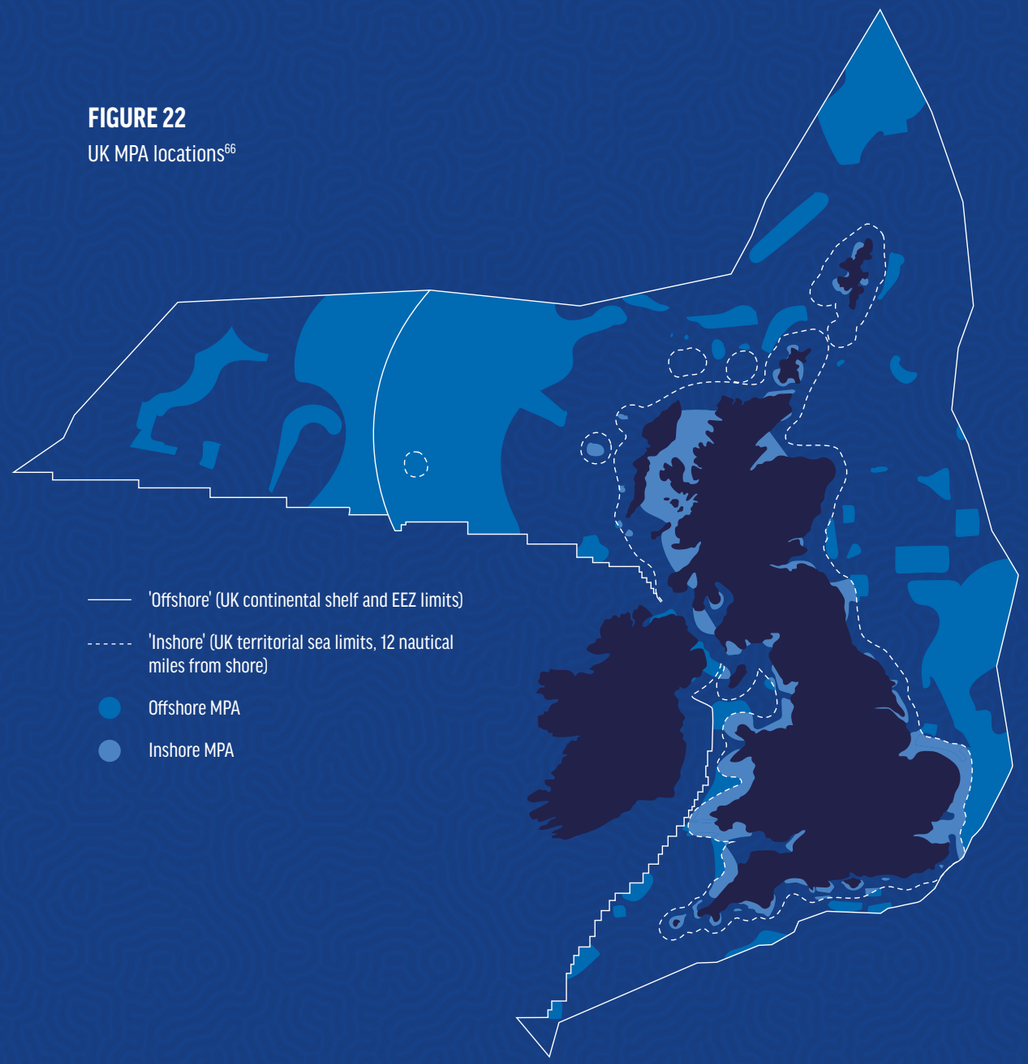
kkk Target to protect at least 30% of the global ocean by 2030, through a network of MPAs and Other Effective area-based Conservation Measures (OECMs). See: https://www.gov.uk/government/topical-events/global-ocean-alliance-30by30-initiative/about

lll https://www.iucncongress2020.org/motion/066

TABLE 5
UK MPA statistics[66]

UK WATERS	UK WATERS AREA (KM²)	NUMBER OF MPAs	MPA AREA (KM²)	UK WATERS COVERED BY MPAs (%)
All	885,430	374	338,545	38
Inshore	163,302	328	77,003	47
Offshore	722,128	76	261,542	36

FIGURE 22
UK MPA locations[66]



WHALES TO SEAHORSES

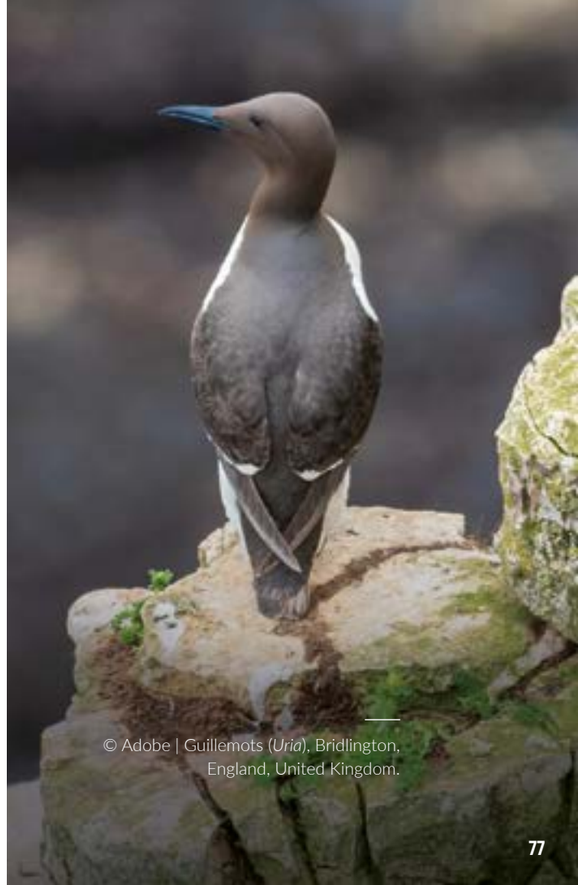
The UK's MPAs contain a variety of features of importance, both representative and rare, which contribute to the biodiversity and functioning of the marine environment, both within and beyond the UK's political boundaries. This includes vulnerable habitats such as underwater mountains called seamounts, cold-water coral reefs and deep-sea sponge aggregations and a wide variety of other habitats providing numerous species with shelter, food, spawning grounds and other essential functions.

Designated species themselves range from the ecosystem engineers (*maerl*) to the charismatic seahorse (*Hippocampus spp.*) and Minke whale (*Balaenoptera acutorostrata*)[70]. Over 50 bird species are also key features of the UK's MPAs and these are either resident within or visitors to the UK's coasts and seas comprising the UK MPA network features list[71].

To date, a feature-based approach has been taken to the designation and protection of MPAs – meaning that conservation objectives are developed and implemented for each feature, rather than for the site as a whole.

THIS IS DESPITE THE FACT THAT THE HABITATS REGULATIONS ARE CLEAR THAT 'SITE INTEGRITY' MUST BE MAINTAINED AND CASE LAW CONFIRMS THE WHOLE SITE SHOULD BE PROTECTED.

Over 50 bird species are also key features of the UK's MPAs and these are either resident within or visitors to the UK's coasts and seas.



© Adobe | Guillemots (*Uria*), Bridlington, England, United Kingdom.

Long-term monitoring at Lyme Bay has shown that management measures to prevent fishing with bottom-towed gear on broad-scale habitats have benefited both the reef features of conservation interest and the surrounding mixed sediment and sand habitats.

ECOLOGICAL INTEGRITY

A key issue associated with the feature-based approach to MPA designation and protection is that it does not take into account the ecological links between the designated features of the site and the habitats and species beyond those arbitrary boundaries, including the role of non-designated habitats present within the MPA (e.g. resulting in unprotected zones, and associated species, that lie between the identified features of conservation importance). In other words, the focus is not on the ecological integrity of the site as a whole but rather specific components of it.

THERE IS AN EXPANDING BODY OF EVIDENCE SHOWING THAT THE FEATURE-BASED APPROACH DOES NOT SUPPORT THE RECOVERY OF MARINE BIODIVERSITY[72,73].

Although much of the evidence comes from tropical marine environments, there is also good evidence from temperate waters. In the UK, long-term monitoring at Lyme Bay[74] has shown that management measures to prevent fishing with bottom-towed gear on broad-scale habitats have benefited both the reef features of conservation interest and the surrounding mixed sediment and sand habitats, resulting in a significant increase in biodiversity in areas beyond the protected feature and site boundaries[75]. Furthermore, the focus on trying to manage adverse impacts of activities on specific features of the MPA, rather than the site as a whole, leads to often complex measures which are slow to be developed and agreed and do not necessarily help achieve conservation objectives. This issue is particularly true for fishing activities which typically vary in their location, intensity and type within a site.

DAMAGING IMPACT

Not all fishing activities are incompatible with the conservation objectives of MPAs; those considered less damaging such as pots, traps and static nets, and pelagic gears which are less likely to interact with the seafloor, are likely to remain permitted within most of the UK's MPAs, perhaps with some restrictions on intensity or to prevent interaction with the most sensitive features, for example.

However, some fishing gears, especially bottom-towed gears such as demersal trawls and dredges pose significant threats to protected features and sites as a whole. Ecosystem impacts[76-85] associated with these activities include:

- Reduction of species diversity of both infauna and epifauna communities;
- Removal and mortality of non-target benthic and other species;
- Changes to faunal communities (particularly invertebrates) and replacement by opportunistic, more resilient and fast-growing forms of life;
- Damage or destruction of benthic habitats and communities on which commercial and other species depend and loss of seabed complexity;
- Disturbance and resuspension of sediments;
- Alteration of seabed processes such as the release of nutrients and chemical substances which may affect the functioning of the entire ecosystem;
- Disturbance of carbon stored in seafloor and release from sediments to the water column.

© Adobe | Lyme Bay, Devon, England, United Kingdom.

MANAGEMENT NEEDED

Despite these impacts, recent analysis of vessel tracks by Oceana indicated that around 900 UK and EU vessels spent over 136,000 hours fishing in MPAs in 2022, with at least 7,000 hours using bottom-towed fishing gear[mmm]. Furthermore, the analyses found that time spent fishing by EU and UK vessels, primarily industrial trawling boats, in MPAs has increased by over 4,000 hours compared to 2021[nnn].

FOLLOWING A LEGAL CHALLENGE BY OCEANA IN 2021, THE UK AND SCOTTISH GOVERNMENTS AGREED TO PROACTIVELY MANAGE ALL OFFSHORE MPAs BY 2024 AND BYELAWS ARE GRADUALLY BEING INTRODUCED.

However, **there is still no commitment to ban bottom-towed fishing activity in MPAs** and government bodies continue to pursue the feature, rather than whole site, approach.

Bottom-towed gear is currently only banned through Marine Management Organisation (MMO)[ooo] byelaws in two offshore English MPAs which fall fully or partially beyond the 12 nautical mile limit ('offshore')[ppp], along with a specified-area only ban in three others[qqq]. In January 2023, the MMO consulted on byelaws in 13 MPAs[rrr], but these have been subject to criticism for only protecting reef features, where trawling is less likely to occur anyway. The MMO have now undertaken a call for evidence for byelaws regulating bottom-towed gear across the remaining sediment habitats in offshore MPAs, with the consultation likely to take place in early 2024.

Informal consultations were undertaken on fisheries management measures last year for Scottish offshore MPAs[sss]. Again these proposals did not take the whole site approach and in some MPAs protection of only a portion of the features was suggested. The formal consultation has yet to be launched. In inshore waters around England, the Inshore Fisheries and Conservation Authorities have introduced management of bottom-towed gear within MPAs within the 0-6 nautical mile limit to varying degrees and a few are consulting on more byelaws. However, these byelaws are seldom based on the whole site approach and in places are not even protecting the designated features.

This means that the majority of offshore MPAs within the UK's EEZ, designated to protect the UK's most valuable and threatened marine species and habitats, remain unprotected from the damage caused by highly harmful bottom-towed fishing practices. Swift action is needed to ensure that these sites, and their essential ecosystem services, are protected in full and not just within arbitrary feature-based delineations.

UNTIL THESE WHOLE-SITE BYELAWS ARE IMPLEMENTED, THE UK AND DEVOLVED GOVERNMENTS REMAIN IN BREACH OF A NUMBER OF LAWS AND OBLIGATIONS AND, MOREOVER, CONTINUE TO CONTRIBUTE TO THE DIMINISHING BIODIVERSITY AND RESILIENCE OF OUR SEAS.

This means that the majority of offshore MPAs within the UK's EEZ, designated to protect the UK's most valuable and threatened marine species and habitats, remain unprotected from the damage caused by highly harmful bottom-towed fishing practices.

mmm Data from the Global Fishing Watch (GFW) were analysed by Oceana to identify apparent fishing activity in UK seas. All GFW data only indicates apparent fishing activities in these marine protected areas.

nnn https://uk.oceana.org/press-releases/exposed-uk-government-permits-destructive-trawling-in-marine-protected-areas/

ooo The government's principal regulator for fishing in English waters in both inshore waters (6-12 nm), and offshore waters (12 to 200 nm), as well as the government's principal regulator for other marine licensable activities in all waters and marine non-licensable activities from 0 to 12 nm.

ppp Dogger Bank SAC; South Dorset MCZ (majority of site falls within 6-12 nm, partially extends beyond 12 nm) . See: https://www.gov.uk/guidance/marine-conservation-byelaws#current-mmo-byelaws

qqq Inner Dowsing, Race Bank and North Ridge SAC; Haisborough, Hammond and Winterton SCI (sites extend from inshore waters within 6 nm, out into the UK EEZ beyond 12 nm); The Canyons MCZ (fully offshore).

rrr Situated within and beyond the 12 nautical mile territorial seas limit. See: https://consult.defra.gov.uk/mmo/stage-2-formal-consultation/

sss https://www.gov.scot/publications/proposed-fisheries-management-measures-in-offshore-marine-protected-areas-pre-consultation-workshop-minutes-december-2022/

© Oceana | Beam trawler fishing. Norfolk Banks, United Kingdom.

5.4 CASE STUDY 3

Forage fish are key components of the UK's marine ecosystem

CASE STUDY OVERVIEW

Forage fish, including Norway pout, sandeels, sprat and herring, play a crucial role in marine ecosystems as a vital food source for higher trophic level fish, marine mammals and seabirds. These species, some of which are also key target species of extensive international commercial fisheries supplying both the human and animal food markets, are integral to the transfer of energy, carbon and nutrients through the food web.

Given the significant role forage species play in supporting predator biomass, both below and above the surface of our seas, closure of some fisheries, such as those for sandeels, is needed and management of others must ensure stock biomass remains at healthy levels. Therefore, the ecosystem and precautionary approaches should be the cornerstones of forage fish fisheries management, which in turn will help support the ecosystem objective of the UK Fisheries Act 2020, as well as help support the UK's international biodiversity commitments.

FIGURE 23
Colony of Kittiwakes and Guillemots. Two of the many seabird species that rely on forage fish as their primary food source (source: Oceana)

CRUCIAL ROLE

Forage fish, or prey fish, are small-medium schooling fish (see Table 6). They play a crucial role in marine ecosystems as a vital food source for higher trophic levels of larger fish, marine mammals and seabirds (Figure 23)[86-89] and are integral to the transfer of energy, carbon, and nutrients across the food web[90]. In addition, they contribute over half of total landed fish from the North East Atlantic waters, making them important for human consumption and commercial purposes, such as fish oils and animal feed including for aquaculture.

Forage fish are associated with marked interannual variability in recruitment and biomass, as well as early maturation, which are typical for a short-lived species.

This makes populations inherently sensitive to external factors, both natural and human-induced, and leads to 'spiky' population trends, adding significant challenge to scientific assessment and robust and sustainable fisheries management. Thus a precautionary approach to fisheries management is particularly important for these species.

Changes in environmental conditions, particularly those associated with climate change, exert pressure on forage fish populations by altering physical processes, ecosystem dynamics and food availability[90,91].

HOWEVER, UNSUSTAINABLE FISHING PRACTICES IN THE UK, EU AND OTHER COASTAL STATES' SHARED WATERS ARE LIKELY THE MAIN CAUSE OF DIMINISHING STOCKS, IN TURN EXACERBATING PROBLEMS CAUSED BY CLIMATE CHANGE.

The UK's status as an independent coastal state, responsible for managing the fisheries in its waters, presents an opportunity to incorporate ecosystem-based fisheries management into the new domestic management framework.

TABLE 6

Species in UK waters conforming to at least one of the two critical 'forage fish' definitions in US Forage Fish Conservation Act 2019 ("at a low trophic level" and "contributes significantly to the diets of other fish, marine mammals or birds")[ttt]

FAMILY		SPECIES
Anchovies (*Engraulidae*)		European anchovy (*Engraulis encrasicolus*)
Boarfishes (*Caproidae*)		Boarfish (*Capros aper* + other *Caproidae spp*)
Cods and haddocks (*Gadidae*)		Blue whiting (*Micromesistius poutassou*)
		Norway pout (*Trisopterus esmarkii*)
		Poor cod (*Trisopterus minutus*)
Dragonets (*Callionymidae*)		Dragonet (*Callionymus lyra* + other *Callionmyid spp*)
Herrings, shads, sardines, menhadens (*Clupeidae*)		Atlantic herring (*Clupea harengus*)
		European Sprat (*Sprattus sprattus*)
		European pilchard (sardine) (*Sardina pilchardus*)
Mackerels, tunas, bonitos (*Scombridae*)		Atlantic mackerel (*Scomber scombrus*)
		Atlantic horse mackerel (*Trachurus trachurus* (+ other *Trachurus spp*)
Needlefishes (*Belonidae*)		Garfish (*Belone belone*)
Rocklings (*Lotidae*)		Three-bearded rockling (*Gaidropsarus vulgaris* + other *Lotidae spp*)
Sand lances (*Ammodytidae*)		Sandeel (*Ammodytes marinus* + other *ammodytid spp*)
Smelts (*Osmeridae*)		European smelt (*Osmerus eperlanus*)

ttt From eNGO letter to Defra 4th July 2022 'Securing ambitious, ecosystem-based management of forage fish in the UK'. Signed by The Pew Trusts, RSPB, ClientEarth, Blue Marine Foundation, Marine Conservation Society, Oceana and Whale and Dolphin Conservation.

FIGURE 24
Sandeels in a cave in North East Scotland (source: Oceana)

SANDEELS

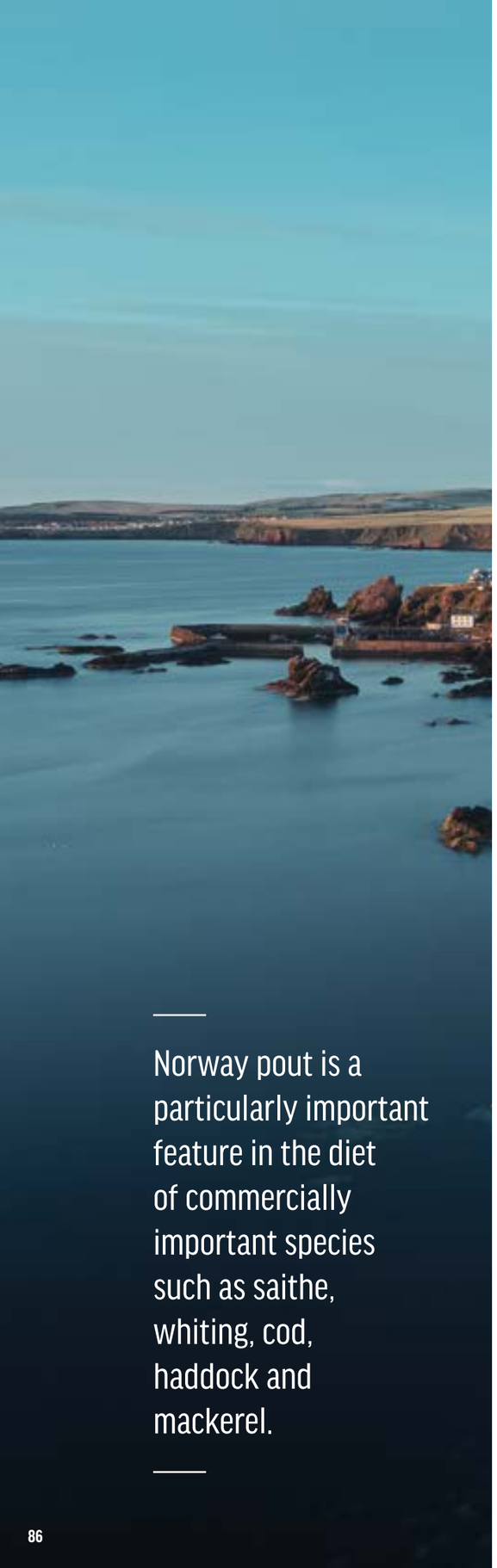
Herein we consider the case of a few key forage fish species fished in UK and EU waters, namely sandeel (predominantly *Ammodytes marinus*), Norway pout (*Trisopterus esmarkii*), European sprat (*Sprattus sprattus*) and Atlantic herring (*Clupea harengus*), to highlight their role in the North East Atlantic ecosystem, and their current exploitation and management status.

Sandeels (Figure 24) have remained a focus of advocacy efforts, largely because of the wealth of evidence showing how their removal by fishing effects marine ecosystems[uuu,92]. The link between declining availability of sandeels and reduced breeding productivity and success of certain seabirds (such as kittiwake and Arctic skua) is clear. Worryingly, evidence suggests 35% of 'surface feeding' seabirds have experienced **"frequent, widespread breeding failures, largely driven by reduced availability of small fish"**[90]. The avian flu pandemic currently depleting wild bird populations increases the urgency for removal of other threats to the survival of these important components of coastal and marine ecosystems.

Studies point to the decline of sandeels in several areas around the UK[90], where the North Sea sandeel stock is made up of seven distinct, near reproductively isolated, subpopulations. Sandeels tend to remain in a 30km area throughout their lifecycle which makes them vulnerable to localised depletion[93]. Sandeels are targeted by fishing fleets from Denmark, Norway, Sweden, the UK and Germany, with Denmark catching 70% of the annual total landings, largely from the Dogger Bank in the North Sea[90]. Much of the Danish catch supplies the fishmeal industry for human and animal consumption[94].

WHILST AN AREA CLOSURE TO COMMERCIAL FISHING OF SANDEELS WAS IMPLEMENTED ON THE EAST COAST OF SCOTLAND IN 2000, THE SUBPOPULATION NEVER FULLY RECOVERED, DESPITE AN INITIAL BOUNCE BACK[95,96].

uuu https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1140706/What_are_the_ecosystem_risks_and_benefits_of_full_prohibition_of_industrial_Sandeel_fishing_in_the_UK_waters_of_the_North_Sea__ICES_Area_IV_.pdf



Norway pout is a particularly important feature in the diet of commercially important species such as saithe, whiting, cod, haddock and mackerel.

CLOSURE

Steps to begin the protection of these vital sandeel populations continue into 2023, with Defra's announcement of a third year of no sandeel quota being allocated (or accessible for quota swaps) in the English waters of the North Sea[97]. Moreover, the UK government has undertaken a consultation on a permanent ban on fishing for sandeels in the North Sea and the decision in response to the consultation[vvv] remains eagerly awaited, as does a matching consultation in Scotland that has recently commenced. Anything less than a ban on sandeel fishing in the North Sea would be likely to receive widespread and significant criticism given their vital role in the ecosystem and the fact that over 95% of the respondents to Defra's consultation supported a closure[www].

NORWAY POUT

Norway pout, for which there was a call for evidence by the UK government in 2022[www], are relatively abundant in UK waters, particularly in the North Sea where the stock is predominantly found in deep waters north of 57°N. The species is a particularly important feature in the diet of commercially important species such as saithe, whiting, cod, haddock and mackerel[98]. The Norway pout fishery is part of a small mixed fishery, along with blue whiting. However, Norway pout commonly mix with juvenile whiting and herring, resulting in unwanted bycatch[99], and further implications for the sustainability of other fish stocks. Stock biomass of Norway pout, despite being highly variable, is above precautionary levels.

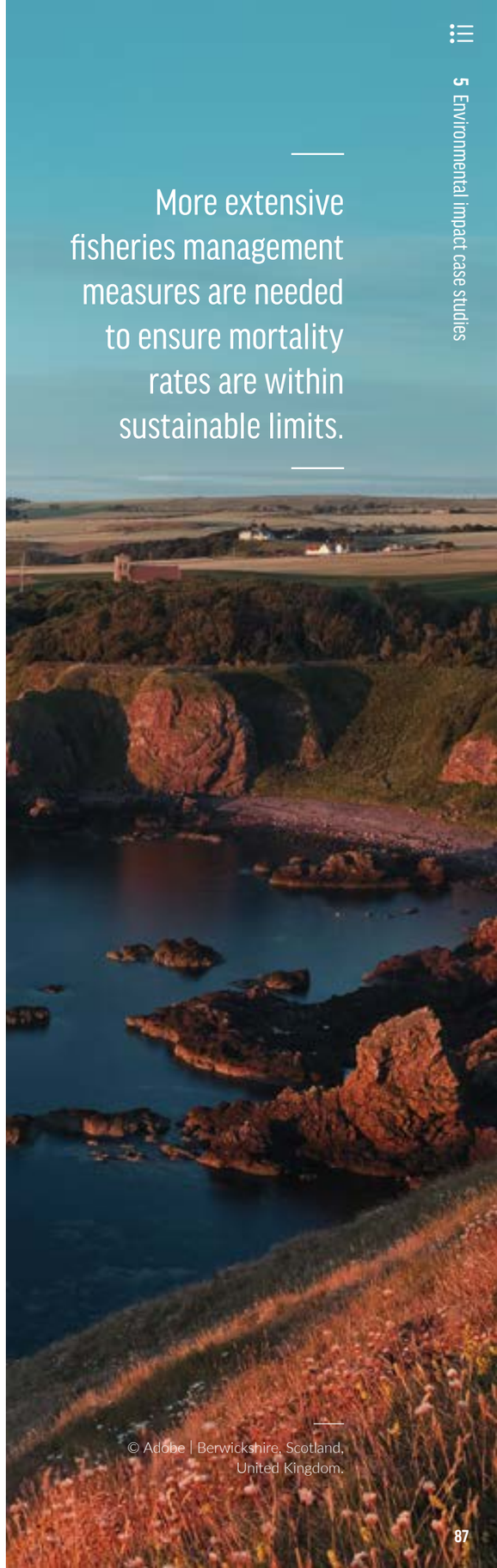
However, biomass variability is likely the result of high natural mortality rates given the species' sensitivity to environmental conditions and predation, exacerbated by it typically spawning only once per year – an important consideration when managing the stock, as sustainable levels of fishing mortality are even more difficult to predict and high fishing rates may be maintained when stock productivity is in rapid decline, masking stock collapse until it is too late[100].

Fishing pressure reference points for Norway pout have not been defined, although annual landings have decreased over time from over 750,000 tonnes in the mid-1970s to <100,000 tonnes in recent years[101]. Norway and Denmark are the only nations specifically targeting the species, but quota uptake in recent years has been substantially lower than the allocated amount[98]. An estimated 88% of landings from EU countries (almost exclusively Denmark) have been derived from UK waters for the period 2011-2015[102]. Further, Norway pout is one of the stocks for which the UK has received a greater than 20% uplift in share of the TAC following its EU exit. This is estimated to equate to additional fishing opportunities for the UK fleet with a potential value of £8 million per year[103]. The UK's role in protection of this essential component of the North Sea ecosystem has therefore become even more vital.

A closed area, known as the Norway pout box, was established in 1986, and still exists today along the eastern Scottish coast in the North Sea to protect juveniles of larger gadoid species such as cod, haddock, saithe and whiting from the Norway pout fishery[104]. Minimum mesh sizes, bycatch regulations and sorting grids were also implemented to help avoid unwanted catches. However, more extensive fisheries management measures are needed to ensure mortality rates are within sustainable limits, both directly for Norway pout populations and indirectly for the species which rely on them.

vvv https://www.gov.uk/government/consultations/consultation-on-spatial-management-measures-for-industrial-sandeel-fishing/outcome/summary-of-responses

www https://www.gov.uk/government/consultations/future-management-of-sandeel-and-norway-pout-in-uk-waters-call-for-evidence/outcome/summary-of-responses#foreword



More extensive fisheries management measures are needed to ensure mortality rates are within sustainable limits.

© Adobe | Berwickshire, Scotland, United Kingdom.

© Adobe | Grey seal (*Halichoerus grypus*), Whitley Bay, England, United Kingdom.

SPRAT

Sprat is an important prey species and as a result the natural mortality used in ICES' assessment of the North Sea stock includes predation by several bird species, other fishes and mammals (grey seal and harbour porpoise)[105].

SPRAT IN THE NORTH SEA ARE TARGETED BY THE INDUSTRIAL PELAGIC TRAWL FISHERY, AGAIN PREDOMINANTLY DANISH VESSELS, FOR THE FISH OIL AND FISH MEAL MARKET.

The structure, biomass status and fishing pressure associated with sprat in waters west of Scotland and in the Celtic Sea remains poorly understood and unquantified. There is currently no TAC limit for the eco-region, although reported catches, by mainly the Irish and Scottish fleets, have persistently exceeded the precautionary advice provided by ICES since 2013[106]. Within the English Channel a small, but locally important, autumn-winter fishery occurs off Lyme Bay, largely by UK vessels, although catches have been very low in the last couple of years. The relationship between this sub-population and the wider Celtic Sea stock structure remains poorly understood[107].

HERRING

Herring are key target species for the UK, EU and other coastal states' fleets for human consumption markets and are highly valuable both ecologically and economically. Whilst the main herring stocks are currently harvested at sustainable levels by fleets from numerous coastal states including the UK, and are assessed as having a healthy stock status, there have been many examples of entire herring stocks collapsing due to overfishing, with slow rates of recovery (still absent in some cases)[108-110].

Whilst for the purposes of stock assessment it is assumed that herring aggregate in a series of discrete units, in fact there is significant mixing of stocks that spawn in different seasons in waters around the UK and Ireland[111], creating complex population assemblages that are difficult to account for in fisheries management. The 100-fold reduction in herring biomass of the North Sea between the 1940s and 1970s undoubtedly affected the trophodynamic structure, functioning, and energy flows in the North Sea ecosystem[112]. Juvenile herring are key prey for other forage species such as mackerel (*Scomber scrombrus*) and horse mackerel (*Trachurus spp.*)[113], whereas mature herring contribute to the diets of predatory fish such as gadoids (cod, haddock, whiting, etc.) as well as birds, seals and other marine mammals[114].

Also critical to the sustainability of herring populations is the protection of their spawning habitats, not only from the damaging impacts of fishing but also other anthropogenic activities such as gravel extraction. This is because herring, somewhat unusually for pelagic fish, use specific seabed sediment habitats to deposit and fertilise their eggs. ICES is not able to quantify the level and relative impact of cumulative anthropogenic factors on the reproductive capacity of the stock through herring spawning habitat degradation[115], but given how busy the waters of the North East Atlantic are, such potential impacts should not be underestimated.

MANAGEMENT

Management measures for forage fish must safeguard for variable recruitment and the bycatch of other species. Given the significant role the species play in supporting other wildlife, both below and above the surface of our seas, management tools should ensure stock biomass is persistently high enough to support such food webs. On this basis, the ecosystem and precautionary approaches should be cornerstones of management. This would support the ecosystem objective of the UK Fisheries Act 2020 and the UK's international biodiversity commitments.

Most forage fish species lack comprehensive stock, ecological, and biological information, including population levels and age composition.

THIS INFORMATION GAP CONTRIBUTES TO UNCERTAINTY SURROUNDING POPULATION AND FISHING PRESSURE ESTIMATES FOR FORAGE FISH.

IN ADDITION, THESE SPECIES GROUPS ARE OFTEN TARGETED EASILY, WHICH CAN CREATE AN ILLUSION OF ABUNDANCE, AND THERE ARE ISSUES WITH MISREPORTING, WHERE CATCHES ARE CLASSIFIED AS OTHER SPECIES.

The combination of these factors underscores the need for a precautionary approach in their management, for robust science-based reference points and the protection of marine habitats of ecosystem importance, recognizing the potential risks and uncertainties associated with their population dynamics and ecological significance, including in light of the mounting pressures from climate change.

6

Conclusions

UK FISHERIES AT RISK

The objective of this audit was to provide an evidence-based snapshot of the status of UK fish stocks, shared stocks included, and the UK fishing sector's recent exploitation history of those stocks, now the UK has left the EU and the CFP. In doing so, the report compared the current status of those stocks to the 2020 baseline in order to evaluate the UK's progress, or lack thereof, in the sustainable management of fish stocks and the objective to bring an end to overfishing.

In 2021, UK vessels landed around 652,000 tonnes in the UK and abroad with a value of £923 million, with pelagic species such as mackerel and herring dominating UK catches by volume. In terms of GDP, the fishing industry contributed £590 million in 2021, representing 4.2% of the total for agriculture, forestry and fishing combined. Heterogeneity, for example in geographical catch distribution, fleet composition, species diversity and devolved interests, is a key feature of the UK fishery sector.

© Adobe | Blue shark (*prionace glauca*).

The majority (86%) of UK fisheries landings from the North East Atlantic in 2019 came from UK waters, with around 46% of this being caught in the Northern North Sea.

In 2021, 20,000 tonnes of fish were landed in the UK by foreign vessels, down 48% on 2020. The decrease is likely a reflection of the reduced access for foreign vessels into UK waters as well as increased complications of selling and exporting fish since the UK left the EU.

THE UK CONTINUES TO BE A NET IMPORTER OF SEAFOOD.

When the UK was part of the EU, TACs for stocks under exclusive and non-exclusive EU competence were set or negotiated by the EU Agriculture and Fisheries Council, which included the UK's Fisheries Minister. For the 82 shared stocks considered in this audit, the UK now directly negotiates bilateral and multilateral agreements over catch quotas and other management measures as an independent coastal state.

OUT OF THE 104 STOCKS AUDITED, 41% WERE HEALTHY IN TERMS OF STOCK STATUS (52% OF SHARED STOCKS), AND 25% WERE IN A CRITICAL CONDITION (20% OF SHARED STOCKS), i.e. assessed as below MSY biomass reference points in recent assessments.

Worryingly, for the 82 shared EU stocks, MSY-based indicators for stock status and fishing mortality rate remain unavailable for 24% and 16% of stocks, respectively. These include several stocks of Nephrops, skates and rays (*Raja spp.*), and other North Sea demersal species such as tusk and ling. For a further 4% (three stocks including herring, saithe and plaice), a scientific assessment to inform fishery management decisions remains completely lacking, leaving them at greater risk of poor management decisions.

DATA IMPROVEMENTS

However, improvements were noted in the number of stocks considered data limited when compared to the baseline assessment in 2020. For example, 28% of the 104 audited stocks exhibited a change in exploitation status, with 13 of those 29 stocks moving from a data limited status – 7 of these are now considered overfished and 6 are sustainably exploited. Stock status changed in 25% of stocks since 2020, with 14 of those 26 stocks moving from data limited status - 4 are now considered 'critical' and 10 'healthy'.

Of the 26 stock status revisions since the baseline, only 3 stocks moved from having a critical to a healthy stock status whereas 6 stocks were healthy in the baseline but are now assessed as critical relative to biomass reference points. The exploitation status of 9 stocks has improved from being overfished in the baseline assessment to now being classed as sustainably exploited, but 7 stocks which were categorised as sustainably exploited in the baseline are now considered overfished.

Non-quota stocks, predominantly shellfish, typically managed through national effort and technical restrictions (input control measures), are very important resources for the UK fishing industry, particularly the coastal fleet of 10m and under. Shellfish comprise around 16% of landings by larger (over 10m) vessels but >80% of 10m and under vessel landings by volume, in part the result of the fleet's limited (<2%) access to UK quota, despite their domination by number (78% of the UK fleet in 2021).

Whilst assessment of some of these non-quota species and stocks by UK scientific advisers and management bodies has improved in recent years, there remain significant gaps in understanding and monitoring of sustainable levels of fishing; addressing these deficiencies should be a priority for the UK in the near term. Landings of European lobsters, brown crabs and king scallops collectively contributed around 51,500 tonnes and £159 million to the UK fishing industry in 2019. Of the 17 stocks (or fishery units) of these 3 species included in the audit, only three scallop stocks were thought to be sustainably exploited, although their biological status could not be assessed. In contrast, 9 crab and lobster units were in a critical state due to overexploitation (2 more since the baseline), plus 1 additional stock was classed as overfished. All assessments were based on proxy reference points, but for 2 stocks even these were not available.

Focusing on 10 ten stocks which are particularly important to the UK fishing fleet in terms of landed volume and value, 9 of which are shared with third parties – mainly the EU – and managed through quotas, 5 are overfished or their stock status is at a critical level: North East Atlantic mackerel, North East Atlantic blue whiting, North Sea anglerfish, North Sea cod, Eastern English Channel king scallops. Further, there is insufficient data to define stock status for Eastern English Channel scallops. Therefore, only 5 of the top 10 stocks upon which the UK fishing industry relies are considered to be healthy and sustainably exploited: North Sea herring, North Sea haddock, North Sea Nephrops, North Sea whiting and North Sea saithe.

SCIENTIFIC ADVICE

Alongside implementation of successful recovery plans, lagging full policy implementation and political decisions to set TACs above advised catch levels are still pending issues of fisheries management. There is evidence from this report that stocks where TACs are set according to scientific advice are in better health than those where TACs are repeatedly set above the advised catch. For many of the stocks in the most worrying state, predominantly gadoids (cod and whiting) in the Celtic Sea eco-region, resolving this issue of misalignment between advised and agreed TACs is highly politically sensitive due to their status as bycatch species in economically important mixed fisheries.

Whilst the majority of the report refers to the sustainability of fishing activities in the context of stock and exploitation status in relation to MSY reference points, sustainable fisheries management has far wider-ranging considerations.

The UK has an opportunity to fully integrate an ecosystem-based approach to sustainability into its new domestic fishing regime by explicitly accounting for the environmental impacts of fishing activities in management decisions and regulation. Key examples of where this is urgently required have been provided in this report, namely accounting for the ecological importance of forage fish, such as sandeels, Norway pout, sprat and herring. Future management strategies should take this into account, implementing measures such as ensuring that marine protected areas – which are vital for the biodiversity and resilience to climate change – are fully protected from the destructive effects of bottom-towed fishing gear.

The UK has an opportunity to fully integrate an ecosystem-based approach to sustainability by explicitly accounting for the environmental impacts of fishing activities.

© Adobe | Manx shearwater (*Puffinus puffinus*).

THE WAY FORWARD

This audit indicates there are still rough seas ahead for sustainable management of fishery resources in UK and EU waters. Sub-optimal levels of scientific evidence, numerous examples of stocks not recovering from over-exploitation when fishing pressure is reduced, and climate change, mean application of the precautionary principle is as important as ever. This must also go hand-in-hand with effective collaboration across borders, whether they are national or international. The UK's status as an independent coastal state with continued significant interests in these shared resources offers ecological and socio-economic opportunities, as well as risks.

ULTIMATELY, IF THE LONG-TERM VISION OF SETTING "A GOLD STANDARD FOR SUSTAINABLE FISHING" IS TO BE ACHIEVED THE UK GOVERNMENT MUST ENSURE TRANSPARENT DECISION-MAKING THAT ALIGNS WITH SCIENTIFIC ADVICE AND ENCOURAGE ITS EUROPEAN NEIGHBOURS TO DO LIKEWISE.

This will undoubtedly require a shift in the balance from short-term economic priorities to ones that are actively fighting the corner of the long-term health ocean ecosystems and future generations of fishers and coastal communities.

Sub-optimal levels of scientific evidence, numerous examples of stocks not recovering from over-exploitation when fishing pressure is reduced, and climate change, mean application of the precautionary principle is as important as ever.

© Shutterstock | Bottlenose Dolphin (*Tursiops*), The Moray Firth, Scotland, United Kingdom

7

Oceana's policy recommendations

THIS REPORT REVEALS THE ALARMING STATE OF UK FISH POPULATIONS.

Over a third (34%) of the 104 stocks analysed are overfished, only 45% are sustainably fished with the rest data deficient. Half of the 10 stocks on which the UK fishing industry relies are overfished or at a critically low size. Yet the UK continues to set fishing limits exceeding scientific advice, in contravention of the UK Fisheries Act.

It is time for the UK to show political leadership in sustainable fisheries both domestically and in international negotiations on shared stocks.

WE RECOMMEND THAT THE UK GOVERNMENT:

- ✓ **SET CATCH LIMITS THAT DO NOT EXCEED THE SCIENTIFIC ADVICE OF THE INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA.** For stocks with sufficient data for a full assessment, catch limits must not exceed maximum sustainable yield. Ideally, these catches should also remain well below this upper limit to account for wider ecosystem, climate change, discard and bycatch issues. For stocks that are vulnerable or data-limited, the precautionary approach should be followed.

- ✓ **DEVELOP A CLEAR AND AMBITIOUS STRATEGY TO END OVERFISHING,** deliver sustainable fisheries for future generations, and meet the precautionary objective, as well as providing a timeframe to achieve it.

- ✓ **FULLY IMPLEMENT THE FISHERIES ACT FISHERIES OBJECTIVES (SEE BOX 5).** As well as fulfilling these in general, the government should specifically ensure that all Fisheries Management Plans contain clear measures, targets and a timeframe to achieve the Fisheries Act objectives.

- ✓ **ENSURE THAT FISHING OPPORTUNITIES FOR MIXED FISHERIES ARE CONSISTENT WITH THE SUSTAINABLE EXPLOITATION OF THE MOST DEPLETED STOCKS,** and that by-catch Total Allowable Catches for depleted stocks are not granted unless rebuilding plans are implemented.

- ✓ **ENSURE A HIGH STANDARD OF SUSTAINABILITY, TRANSPARENCY AND LEGALITY** of fisheries is met when granting reciprocal access to waters and resources. The UK, EU and third countries need to become ever more constructive partners in the fight against overfishing in the face of the biodiversity and climate crisis.

- ✓ **PHASE OUT NON-SELECTIVE, CARBON INTENSIVE AND DESTRUCTIVE FISHING PRACTICES (ESPECIALLY BOTTOM-TOWED FISHING GEAR) IN ALL MARINE PROTECTED AREAS AND AN INSHORE ZONE** within three nautical miles of the coast.

- ✓ **IMPROVE MANAGEMENT OF DATA-DEFICIENT FISHERIES,** including by improving data collection and developing Fisheries Management Plans for all such stocks.

- ✓ **IMPLEMENT ECOSYSTEM-BASED FISHERIES MANAGEMENT** as required by the Fisheries Act, especially for forage fish. As part of this, the government should ban sandeel fishing in UK waters and publish a strategy to manage other forage species that accounts for their importance in the ecosystem.

- ✓ **PREVENT ILLEGAL, UNREPORTED, AND UNREGULATED FISHING** by ensuring adequate control and enforcement of fisheries in UK waters, including Remote Electronic Monitoring.

BOX 5 | **UK COMMITMENTS**

THE UK HAS MADE COMMITMENTS BOTH DOMESTIC AND INTERNATIONAL THAT, IF FULLY IMPLEMENTED, WOULD SUBSTANTIALLY IMPROVE THE HEALTH OF UK FISH POPULATIONS AND OCEAN ECOSYSTEMS.

The UK government must fully implement the relevant international agreements and law including the **EU-UK Trade and Cooperation Agreement**, the **United Nations Convention on the Law of the Sea**, the precautionary approach under **United Nations Fish Stocks Agreement**, the **Convention on Biodiversity** and the United **Nations Sustainable Development Goal Target 14**.

The UK must also implement the Fisheries Act 2020 and particularly its objectives, which include: **the sustainability objective**; **the precautionary objective**; **the ecosystem objective**; **the scientific evidence objective**; **the bycatch objective**; **the equal access objective**; **the national benefit objective**, and **the climate change objective**.

The 'precautionary objective' is especially important in ending overfishing, and stipulates that:

a. the precautionary approach to fisheries management is applied, and

b. exploitation of marine stocks restores and maintains populations of harvested species above biomass levels capable of producing maximum sustainable yield.

© Shutterstock | Common sunstar (*Crossaster papposus*) and dead man's finger (*Alcyonium digitatum*), Newcastle, near Farne Islands, United Kingdom

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Appendices

APPENDIX 1	List of stocks and corresponding management units included in the UK fisheries audit
APPENDIX 2	Change in stock and exploitation status since the baseline
APPENDIX 3	Glossary of terms

8.1 APPENDIX 1

List of stocks and corresponding management units included in the UK fisheries audit

ADVICE STOCK AREA (ICES/OTHER)	ADVICE CODE (ICES)	SEA BASIN(S) - STOCK	MANAGEMENT AREA	MANAGEMENT UNIT CODE (EU)	SEA BASIN(S) - MANAGEMENT UNIT	SPECIES	
Greater silver smelt (Argentina silus) in divisions 5.b and 6.a (Faroes grounds and west of Scotland)	aru.27.5b6a	West of Scotland	EU and int. waters of 5, 6 and 7	ARU/567	Celtic Sea, West of Scotland, Irish Sea	Greater silver smelt	*Argentina silus*
Greater silver smelt (*Argentina silus*) in subareas 7–10 and 12, and in Division 6.b (other areas)	aru.27.6b7	Celtic Sea, West of Scotland, Irish Sea					
Tusk (*Brosme brosme*) in subareas 4 and 7–9, and in divisions 3.a, 5.b, 6.a, and 12.b (Northeast Atlantic)	usk.27.3a45b6a7-912b	Celtic Sea, West of Scotland, Irish Sea, North Sea	EU waters of 4	USK/04-C	North Sea	Tusk	*Bromse bromse*
			EU and int. waters of 5, 6 and 7	USK/567EI	Celtic Sea, West of Scotland, Irish Sea		
Boarfish (*Capros aper*) in subareas 6–8 (Celtic Seas, English Channel, and Bay of Biscay)	boc.27.6-8	Celtic Sea, English Channel	EU and int. waters of 6, 7 and 8	BOR/678	Celtic Sea, English Channel	Boarfish	*Capros aper*
Herring (Clupea harengus) in Subarea 4 and divisions 3.a and 7.d, autumn spawners (North Sea, Skagerrak and Kattegat, eastern English Channel)	her.27.3a47d	North Sea, English Channel	EU and Norwegian waters of 4 north of 53° 30' N	HER/4AB	North Sea	Herring	*Clupea harengus*
			4c, 7d	HER/4CXB7D	North Sea, English Channel		
			4, 7d and Union waters of 2a	HER/2A47DX	North Sea, English Channel		
Herring (*Clupea harengus*) in Division 6.a (North), autumn spawners (West of Scotland)	her.27.6aN	West of Scotland	EU and int. waters of 5b, 6b and 6aN	HER/5B6ANB	West of Scotland		
Herring (*Clupea harengus*) in Division 7.a North of 52°30'N (Irish Sea)	her.27.nirs	Irish Sea	7a	HER/07A/MM	Irish Sea		
no ICES advice	no ICES advice		7e and 7f	HER/7EF	English Channel, Celtic Sea		
Cod (*Gadus morhua*) in Subarea 4, Division 7.d, and Subdivision 20 (North Sea, eastern English Channel, Skagerrak)	cod.27.47d20	North Sea, English Channel	4; EU waters of 2a; that part of 3a not covered by the Skagerrak and Kattegat	COD/2A3AX4	North Sea	Cod	*Gadus morhua*
			7d	COD/07D	English Channel		
Cod (*Gadus morhua*) in Division 6.a (West of Scotland)	cod.27.6a	West of Scotland	6a; EU and int. waters of 5b east of 12° 00' W (by-catches)	COD/5BE6A	West of Scotland		
Cod (*Gadus morhua*) in Division 7.a (Irish Sea)	cod.27.7a	Irish Sea	7a	COD/07A	Irish Sea		
Cod (*Gadus morhua*) in divisions 7.e–k (western English Channel and southern Celtic Seas)	cod.27.e-k	Celtic Sea, English Channel	7b, 7c, 7e-k, 8, 9 and 10; Union waters of CECAF 34.1.1	COD/7XAD34	Celtic Sea, English Channel		
Megrim (*Lepidorhombus spp.*) in divisions 4.a and 6.a (northern North Sea, West of Scotland)	lez.27.4a6a	North Sea, West of Scotland	EU waters of 2a and 4	LEZ/2AC4-C	North Sea	Megrims	*Lepidorhombus spp.*
			EU and int. waters of 5b; 6	LEZ/56-14	West of Scotland		
Megrim (*Lepidorhombus whiffiagonis*) in divisions 7.b–k, 8.a–b, and 8.d (west and southwest of Ireland, Bay of Biscay)	meg.27.7b-k8abd	Celtic Sea, English Channel	7	LEZ/07	Celtic Sea, English Channel, Irish Sea		

ADVICE STOCK AREA (ICES/OTHER)	ADVICE CODE (ICES)	SEA BASIN(S) - STOCK	MANAGEMENT AREA	MANAGEMENT UNIT CODE (EU)	SEA BASIN(S) - MANAGEMENT UNIT	SPECIES	
Anglerfish (Lophius budegassa, Lophius piscatorius) in subareas 4 and 6 and in Division 3.a (North Sea, Rockall and West of Scotland, Skagerrak and Kattegat)	anf.27.3a46	North Sea, West of Scotland	EU waters of 2a and 4	ANF/2AC4-C	North Sea	Anglerfish	*Lophiidae*
			6; EU and int. waters of 5b; int. waters of 12 and 14	ANF/56-14	West of Scotland		
White anglerfish (*Lophius piscatorius*) in Subarea 7 and in divisions 8.a–b and 8.d (southern Celtic Seas, Bay of Biscay)	mon.27.78abd	Celtic Sea, English Channel	7	ANF/07	Celtic Sea, English Channel, Irish Sea		
Black-bellied anglerfish (*Lophius budegassa*) in Subarea 7 and divisions 8.a–b and 8.d (Celtic Seas, Bay of Biscay)	ank.27.78abd	Celtic Sea, English Channel					
Haddock (*Melanogrammus aeglefinus*) in Subarea 4, Division 6.a, and Subdivision 20 (North Sea, West of Scotland, Skagerrak)	had.27.46a20	North Sea, West of Scotland	4; EU waters of 2a	HAD/2AC4	North Sea	Haddock	*Melanogrammus aeglefinus*
			5b,6a	HAD/5BC6A	West of Scotland		
Haddock (*Melanogrammus aeglefinus*) in Division 6.b (Rockall)	had.27.6b	West of Scotland	EU and int. waters of 6b, 12 and 14	HAD/6B1214	West of Scotland		
Haddock (*Melanogrammus aeglefinus*) in divisions 7.b–k (southern Celtic Seas and English Channel)	had.27.7b-k	Celtic Sea, English Channel	7b-k, 8, 9 and 10; EU waters of CECAF 34.1.1	HAD/7X7A34	Celtic Sea, English Channel		
Haddock (*Melanogrammus aeglefinus*) in Division 7.a (Irish Sea)	had.27.7a	Irish Sea	7a	HAD/07A	Irish Sea		
Whiting (*Merlangius merlangus*) in Subarea 4 and Division 7.d (North Sea and eastern English Channel)	whg.27.47d	North Sea, English Channel	4; EU waters of 2a	WHG/2AC4	North Sea	Whiting	*Merlangius merlangus*
Whiting (*Merlangius merlangus*) in Division 6.a (West of Scotland)	whg.27.6a	West of Scotland	6; EU and int. waters of 5b; int. waters of 12 and 14 (by-catches)	WHG/56-14	West of Scotland		
Whiting (*Merlangius merlangus*) in Division 7.a (Irish Sea)	whg.27.7a	Irish Sea	7a	WHG/07A	Irish Sea		
Whiting (*Merlangius merlangus*) in divisions 7.b–c and 7.e–k (southern Celtic Seas and western English Channel)	whg.27.7b-ce-k	Celtic Sea, English Channel	7b-h, 7j, 7k	WHG/7X7A-C	Celtic Sea, English Channel		
Hake (*Merluccius merluccius*) in subareas 4, 6, and 7, and in divisions 3.a, 8.a–b, and 8.d, Northern stock (Greater North Sea, Celtic Seas, and the northern Bay of Biscay)	hke.27.3a46-8abd	North Sea, Celtic Sea, West of Scotland	2a and 4	HKE/2AC4-C	North Sea	Hake	*Merluccius*
			5b, 6, 7, 12 and 14	HKE/571214	Celtic Sea, West of Scotland, Irish Sea		
Blue whiting (*Micromesistius poutassou*) in subareas 1–9, 12, and 14 (Northeast Atlantic and adjacent waters)	whb.27.1-91214	Celtic Sea, West of Scotland, Irish Sea, North Sea	1 to 7, 8abde, 12, 14 (EC and Int. waters)	WHB/1X14	Celtic Sea, West of Scotland, Irish Sea, North Sea	Blue whiting	*Micromesistius poutassou*
Lemon sole (*Microstomus kitt*) in Subarea 4 and divisions 3.a and 7.d (North Sea, Skagerrak and Kattegat, eastern English Channel)	lem.27.3a47d	North Sea, English Channel	2a(EC), and 4(North Sea)(EC)	L/W/2AC4-C	North Sea	Lemon sole	*Microstomus kitt*
Witch (*Glyptocephalus cynoglossus*) in Subarea 4 and divisions 3.a and 7.d (North Sea, Skagerrak and Kattegat, eastern English Channel)	wit.27.3a47d	North Sea, English Channel				Witch	*Glyptocephalus cynoglossus*
Blue ling (*Molva dypterygia*) in subareas 6–7 and Division 5.b (Celtic Seas and Faroes grounds)	bli.27.5b67	Celtic Sea, West of Scotland, Irish Sea	EC and int. waters of 5b, 6, 7	BLI/5B67	Celtic Sea, West of Scotland, Irish Sea	Blue ling	*Molva dypterygia*
Blue ling (*Molva dypterygia*) in subareas 1, 2, 8, 9, and 12, and in divisions 3.a and 4.a (Northeast Atlantic)	bli.27.nea	North Sea	EU and int. waters of 2 and 4 (by-catches)	BLI/24	North Sea		

ADVICE STOCK AREA (ICES/OTHER)	ADVICE CODE (ICES)	SEA BASIN(S) - STOCK	MANAGEMENT AREA	MANAGEMENT UNIT CODE (EU)	SEA BASIN(S) - MANAGEMENT UNIT	SPECIES	
Ling (*Molva molva*) in subareas 6–9, 12, and 14, and in divisions 3.a and 4.a (Northeast Atlantic and Arctic Ocean)	lin.27.3a4a6-91213	Celtic Sea, West of Scotland, Irish Sea	Union waters of 4	LIN/04-C	North Sea	Ling	*Molva molva*
			EU and intl. waters of 6, 7, 8, 9, 10,12, 14	LIN/6X14	Celtic Sea, West of Scotland, Irish Sea		
Norway lobster (*Nephrops norvegicus*) in Division 4.a, Functional Unit 10 (northern North Sea, Noup)	nep.fu.10	North Sea	EU waters of 2a and 4	NEP/2AC4-C	North Sea	Norway lobster	*Nephrops norvegicus*
Norway lobster (*Nephrops norvegicus*) in Division 4.a, Functional Unit 7 (northern North Sea, Fladen Ground)	nep.fu.7	North Sea					
Norway lobster (*Nephrops norvegicus*) in Division 4.b, Functional Unit 33 (central North Sea, Horn's Reef)	nep.fu.33	North Sea					
Norway lobster (*Nephrops norvegicus*) in Division 4.b, Functional Unit 34 (central North Sea, Devil's Hole)	nep.fu.34	North Sea					
Norway lobster (*Nephrops norvegicus*) in Division 4.b, Functional Unit 6 (central North Sea, Farn Deeps)	nep.fu.6	North Sea					
Norway lobster (*Nephrops norvegicus*) in Division 4.b, Functional Unit 8 (central North Sea, Firth of Forth)	nep.fu.8	North Sea					
Norway lobster (*Nephrops norvegicus*) in Division 4.a, Functional Unit 9 (central North Sea, Moray Firth)	nep.fu.9	North Sea					
Norway lobster (*Nephrops norvegicus*) in Division 6.a, Functional Unit 11 (West of Scotland, North Minch)	nep.fu.11	West of Scotland	6; EU and int. waters of 5b	NEP/5BC6	West of Scotland		
Norway lobster (*Nephrops norvegicus*) in Division 6.a, Functional Unit 12 (West of Scotland, South Minch)	nep.fu.12	West of Scotland					
Norway lobster (*Nephrops norvegicus*) in Division 6.a, Functional Unit 13 (West of Scotland, the Firth of Clyde, and the Sound of Jura)	nep.fu.13	West of Scotland					
Norway lobster (*Nephrops norvegicus*) in Division 7.a, Functional Unit 14 (Irish Sea, East)	nep.fu.14	Irish Sea	7	NEP/07	Celtic Sea, Irish Sea		
Norway lobster (*Nephrops norvegicus*) in Division 7.a, Functional Unit 15 (Irish Sea, West)	nep.fu.15	Irish Sea					
Norway lobster (*Nephrops norvegicus*) in Division 7.b, Functional Unit 17 (west of Ireland, Aran grounds)	nep.fu.17	Celtic Sea					
Norway lobster (*Nephrops norvegicus*) in divisions 7.a, 7.g, and 7.j, Functional Unit 19 (Irish Sea, Celtic Sea, eastern part of southwest of Ireland)	nep.fu.19	Celtic Sea, Irish Sea					
Norway lobster (*Nephrops norvegicus*) in divisions 7.b–c and 7.j–k, Functional Unit 16 (west and southwest of Ireland, Porcupine Bank)	nep.fu.16	Celtic Sea					
Norway lobster (*Nephrops norvegicus*) in divisions 7.g and 7.f, Functional Unit 22 (Celtic Sea, Bristol Channel)	nep.fu.22	Celtic Sea					
Norway lobster (*Nephrops norvegicus*) in divisions 7.g and 7.h, functional units 20 and 21 (Celtic Sea)	nep.fu.2021	Celtic Sea					

ADVICE STOCK AREA (ICES/OTHER)	ADVICE CODE (ICES)	SEA BASIN(S) - STOCK	MANAGEMENT AREA	MANAGEMENT UNIT CODE (EU)	SEA BASIN(S) - MANAGEMENT UNIT	SPECIES	
Plaice (*Pleuronectes platessa*) in Subarea 4 (North Sea) and Subdivision 20 (Skagerrak)	ple.27.420	North Sea	4; EU waters of 2a; that part of 3a not covered by the Skagerrak and the Kattegat	PLE/2A3AX4	North Sea	Plaice	*Pleuronectes platessa*
no ICES advice	no ICES advice		EU waters of 5b, 6, 12, 14	PLE/56-14	West of Scotland		
Plaice (*Pleuronectes platessa*) in Division 7.a (Irish Sea)	ple.27.7a	Irish Sea	7a	PLE/07A	Irish Sea		
Plaice (*Pleuronectes platessa*) in Division 7.d (eastern English Channel)	ple.27.7d	English Channel	7de	PLE/7DE	English Channel		
Plaice (*Pleuronectes platessa*) in Division 7.e (western English Channel)	ple.27.7e	English Channel					
Plaice (*Pleuronectes platessa*) in divisions 7.f and 7.g (Bristol Channel, Celtic Sea)	ple.27.7fg	Celtic Sea	7fg	PLE/7FG	Celtic Sea		
Plaice (*Pleuronectes platessa*) in divisions 7.h–k (Celtic Sea South, southwest of Ireland)	ple.27.7h-k	Celtic Sea	7hjk	PLE/7HJK	Celtic Sea		
Pollack (*Pollachius pollachius*) in subareas 6–7 (Celtic Seas and the English Channel)	pol.27.67	Celtic Sea, English Channel, Irish Sea	6; EU and int. waters of 5b; int. waters of 12 and 14	POL/56-14	West of Scotland	Pollack	*Pollachius pollachius*
			7	POL/07	Celtic Sea, Irish Sea, English Channel		
Saithe (*Pollachius virens*) in subareas 4 and 6, and in Division 3.a (North Sea, Rockall and West of Scotland, Skagerrak and Kattegat)	pok.27.3a46	North Sea, West of Scotland	3a and 4; EU waters of 2a	POK/2C3A4	North Sea	Saithe	*Pollachius virens*
			6; EU and int. waters of 5b, 12 and 14	POK/56-14	West of Scotland		
no ICES advice	no ICES advice		7, 8, 9 and 10; EU waters of CECAF 34.1.1	POK/7/3411	Celtic Sea, Irish Sea		
Turbot (*Scophthalmus maximus*) in Subarea 4 (North Sea)	tur.27.4	North Sea	EU waters of 2a and 4	T/B/2AC4-C	North Sea	Turbot	*Psetta maxima*
Brill (*Scophthalmus rhombus*) in Subarea 4 and divisions 3.a and 7.d–e (North Sea, Skagerrak and Kattegat, English Channel)	bll.27.3a47de	North Sea, English Channel				Brill	*Scophthalmus rhombus*
Shagreen ray (*Leucoraja fullonica*) in subareas 6–7 (West of Scotland, southern Celtic Seas, English Channel)	rjf.27.67	West of Scotland, Celtic Sea, Irish Sea, Eastern English Channel	EU waters of 6a, 6b, 7a-c and 7e-k	SRX/67AKXD	West of Scotland, Celtic Sea, Irish Sea, Eastern English Channel	Skates and rays	*Leucoraja fullonica*
Thornback ray (*Raja clavata*) in Subarea 6 (West of Scotland)	rjc.27.6	West of Scotland					*Raja clavata*
Blonde ray (*Raja brachyura*) in Subarea 6 and Division 4.a (North Sea and West of Scotland)	rjh.27.4a6	West of Scotland, North Sea					*Raja brachyura*
Small-eyed ray (*Raja microocellata*) in divisions 7.f and 7.g (Bristol Channel, Celtic Sea North)	rje.27.7fg	Celtic Sea	EU waters of 7f 7g	RJE/7FG	Celtic Sea	Small eyed ray	*Raja microocellata*
Cuckoo ray (*Leucoraja naevus*) in Subarea 4 and Division 3.a (North Sea, Skagerrak, and Kattegat)	rjn.27.3a4	North Sea	EU waters of 2a and 4	SRX/2AC4-C	North Sea	Skates and rays	*Leucoraja naevus*

ADVICE STOCK AREA (ICES/OTHER)	ADVICE CODE (ICES)	SEA BASIN(S) - STOCK	MANAGEMENT AREA	MANAGEMENT UNIT CODE (EU)	SEA BASIN(S) - MANAGEMENT UNIT	SPECIES	
Blonde ray (*Raja brachyura*) in divisions 4.c and 7.d (southern North Sea and eastern English Channel)	rjh.27.4c7d	English Channel, North Sea	7d	SRX/07D	English Channel	Skates and rays	*Raja brachyura*
			EU waters of 2a and 4	SRX/2AC4-C	North Sea		
Thornback ray (*Raja clavata*) in Subarea 4 and in divisions 3.a and 7.d (North Sea, Skagerrak, Kattegat, and eastern English Channel)	rjc.27.3a47d	English Channel, North Sea	7d	SRX/07D	English Channel		*Raja clavata*
			EU waters of 2a and 4	SRX/2AC4-C	North Sea		
Spotted ray (*Raja montagui*) in Subarea 4 and in divisions 3.a and 7.d (North Sea, Skagerrak, Kattegat, and eastern English Channel)	rjm.27.3a47d	English Channel, North Sea	7d	SRX/07D	English Channel		*Raja montagui*
Small-eyed ray (*Raja microocellata*) in divisions 7.d and 7.e (English Channel)	rje.27.7de	English Channel	7d	SRX/07D	English Channel		*Raja microocellata*
Undulate ray (*Raja undulata*) in divisions 7.d–e (English Channel)	rju.27.7de	English Channel	EU waters of 7d and 7e	RJU/7DE	English Channel	Undulate ray	*Raja undulata*
Greenland halibut (*Reinhardtius hippoglossoides*) in subareas 5, 6, 12, and 14 (Iceland and Faroes grounds, West of Scotland, North of Azores, East of Greenland)	ghl.27.561214	West of Scotland	EU waters of 2a and 4; EU and int. waters of 5b and 6	GHL/2A-C46	North Sea, West of Scotland	Greenland halibut	*Reinhardtius hippoglossoides*
Mackerel (*Scomber scombrus*) in subareas 1–8 and 14, and in Division 9.a (the Northeast Atlantic and adjacent waters)	mac.27.nea	Celtic Sea, West of Scotland, Irish Sea, English Channel	3a and 4; EU waters of 2a, 3b, 3c and Subdivisions 22-32	MAC/2A34	North Sea	Mackerel	*Scomber scombrus*
			6, 7, 8a, 8b, 8d and 8e; EU and int. waters of 5b; int. waters of 2a, 12 and 14	MAC/2CX14	Celtic Sea, West of Scotland, Irish Sea, English Channel		
Sole (*Solea solea*) in Division 7.a (Irish Sea)	sol.27.7a	Irish Sea	7a	SOL/07A	Irish Sea	Common sole	*Solea solea*
Sole (*Solea solea*) in Division 7.d (eastern English Channel)	sol.27.7d	English Channel	7d	SOL/07D	English Channel		
Sole (*Solea solea*) in Division 7.e (western English Channel)	sol.27.7e	English Channel	7e	SOL/07E	English Channel		
Sole (*Solea solea*) in divisions 7.f and 7.g (Bristol Channel, Celtic Sea)	sol.27.7fg	Celtic Sea	7fg	SOL/7FG	Celtic Sea		
Sole (*Solea solea*) in divisions 7.h–k (Celtic Sea South, southwest of Ireland)	sol.27.7h-k	Celtic Sea	7hjk	SOL/7HJK	Celtic Sea		
Sprat (*Sprattus sprattus*) in divisions 7.d and 7.e (English Channel)	spr.27.7de	English Channel	7de	SPR/7DE	English Channel	Sprat	*Sprattus sprattus*
Spurdog (*Squalus acanthias*) in the Northeast Atlantic	dgs.27.nea	Celtic Sea, West of Scotland, Irish Sea, English Channel	EU and intern. waters of 1, 5, 6, 7, 8, 12 and 14	DGS/15X14	Celtic Sea, West of Scotland, Irish Sea, English Channel	Spurdog	*Squalus acanthias*
Horse mackerel (*Trachurus trachurus*) in divisions 3.a, 4.b–c, and 7.d (Skagerrak and Kattegat, southern and central North Sea, eastern English Channel)	hom.27.3a4bc7d	North Sea, English Channel	EU waters of 4b, 4c and 7d	JAX/4BC7D	North Sea, English Channel	Horse mackerel	*Trachurus spp.*
Horse mackerel (*Trachurus trachurus*) in Subarea 8 and divisions 2.a, 4.a, 5.b, 6.a, 7.a–c, and 7.e–k (the Northeast Atlantic)	hom.27.2a4a5b6a7a-ce-k8	Celtic Sea, West of Scotland, Irish Sea, English Channel, North Sea	EU waters of 2a, 4a; 6, 7a-c,7e-k, 8abde; EU and intern. waters of 5b; intern. waters of 12 and 14	JAX/2A-14	Celtic Sea, West of Scotland, Irish Sea, English Channel, North Sea		

ADVICE STOCK AREA (ICES/OTHER)	ADVICE CODE (ICES)	SEA BASIN(S) - STOCK	MANAGEMENT AREA	MANAGEMENT UNIT CODE (EU)	SEA BASIN(S) - MANAGEMENT UNIT	SPECIES	
The Wash	no ICES advice	North Sea	The Wash	non-quota	North Sea	Cockles	*Cerastoderma edule*
Thames Estuary	no ICES advice	North Sea	Thames Estuary	non-quota	North Sea		
ICES Subdivision 27.7.e - Inshore Cornwall	no ICES advice	English Channel	ICES Subdivision 27.7.e - Inshore Cornwall	non-quota	Celtic Sea	King scallops	*Pecten maximus*
ICES Subdivision 27.7.e - Offshore Cornwall	no ICES advice	English Channel	ICES Subdivision 27.7.e - Offshore Cornwall	non-quota	Celtic Sea		
ICES Subdivision 27.7.e - Lyme Bay	no ICES advice	English Channel	ICES Subdivision 27.7.e - Lyme Bay	non-quota	English Channel		
ICES Subdivision 27.7.d - South	no ICES advice	English Channel	ICES Subdivision 27.7.d - South	non-quota	English Channel		
ICES Subdivision 27.7.d - North	no ICES advice	English Channel	ICES Subdivision 27.7.d - North	non-quota	English Channel		
ICES Subdivision 27.7.f.l - Bristol Channel	no ICES advice	Celtic Sea	ICES Subdivision 27.7.f.l - Bristol Channel	non-quota	Celtic Sea		
ICES Subdivision 27.4.b - North Sea South	no ICES advice	North Sea	ICES Subdivision 27.4.b - North Sea South	non-quota	North Sea		
ICES Subdivision 27.4.b	no ICES advice	North Sea	Central North Sea	non-quota	North Sea	Edible crab	*Cancer pagurus*
ICES Subdivision 27.4.b,c	no ICES advice	North Sea	Southern North Sea	non-quota	North Sea		
ICES Subdivision 27.7.e,f,h	no ICES advice	English Channel, Celtic Sea	Western English Channel	non-quota	English Channel, Celtic Sea		
ICES Subdivision 27.7.f,g,a	no ICES advice	Celtic Sea, Irish Sea	Celtic Sea	non-quota	Celtic Sea, Irish Sea		
ICES Subdivision 27.7.d, 4.c	no ICES advice	English Channel, North Sea	Eastern English Channel	non-quota	English Channel, North Sea		

8.2 APPENDIX 2

Change in stock and exploitation status since the baseline

Stocks where there has been a change in **stock status** since the baseline

SPECIES	MANAGEMENT UNIT	ADVICE CODE	STOCK STATUS 2023	STOCK STATUS 2020
Greater silver smelt	ARU/567	aru.27.5b6a	Healthy	Data limited
Tusk	USK/04-C; USK/567EI	usk.27.3a45b6a7-912b	Data limited	Healthy
Herring	HER/4AB; HER/4CXB7D; HER/2A47DX	her.27.3a47d	Healthy	Critical
Herring	HER/07A/MM	her.27.nirs	Critical	Healthy
Cod	COD/07A	cod.27.7a	Critical	Data limited
Anglerfish	ANF/2AC4-C; ANF/56-14	anf.27.3a46	Healthy	Data limited
Anglerfish	ANF/07	ank.27.78abd	Healthy	Data limited
Whiting	WHG/56-14	whg.27.6a	Critical	Data limited
Lemon sole	L/W/2AC4-C	lem.27.3a47d	Healthy	Data limited
Witch	L/W/2AC4-C	wit.27.3a47d	Critical	Healthy
Blue ling	BLI/24	bli.27.nea	Data limited	Critical
Norway lobster	NEP/2AC4-C	nep.fu.9	Healthy	Data limited
Norway lobster	NEP/07	nep.fu.17	Data limited	Critical
Norway lobster	NEP/07	nep.fu.2021	Healthy	Data limited
Plaice	PLE/7DE	ple.27.7d	Critical	Healthy
Plaice	PLE/7FG	ple.27.7fg	Critical	Healthy
Plaice	PLE/7HJK	ple.27.7h-k	Healthy	Critical
Pollack	POL/56-14; POL/07	pol.27.67	Critical	Data limited
Skates and rays	SRX/67AKXD	rjc.27.6	Healthy	Data limited
Small eyed ray	RJE/7FG	rje.27.7fg	Healthy	Data limited
Undulate ray	RJU/7DE	rju.27.7de	Healthy	Data limited
Common sole	SOL/07D	sol.27.7d	Critical	Healthy
Sprat	SPR/7DE	spr.27.7de	Healthy	Data limited
Spurdog	DGS/15X14	dgs.27.nea	Healthy	Critical
Edible crab	NA	NA	Critical	Healthy
Lobster	NA	NA	Critical	Data limited

Stocks where there has been a change in **exploitation status** since the baseline

SPECIES	MANAGEMENT UNIT	ADVICE CODE	STOCK STATUS 2023	STOCK STATUS 2020
Greater silver smelt	ARU/567	aru.27.6b7	Overfished	Data limited
Herring	HER/5B6ANB	her.27.6aN	Overfished	Data limited
Cod	COD/2A3AX4; COD/07D	cod.27.47d20	Sustainably exploited	Overfished
Cod	COD/07A	cod.27.7a	Sustainably exploited	Data limited
Anglerfish	ANF/2AC4-C; ANF/56-14	anf.27.3a46	Overfished	Data limited
Haddock	HAD/6B1214	had.27.6b	Sustainably exploited	Overfished
Whiting	WHG/2AC4	whg.27.47d	Sustainably exploited	Overfished
Whiting	WHG/56-14	whg.27.6a	Sustainably exploited	Data limited
Whiting	WHG/7X7A-C	whg.27.7b-ce-k	Overfished	Sustainably exploited
Ling	LIN/04-C; LIN/6X14	lin.27.3a4a6-91214	Overfished	Sustainably exploited
Norway lobster	NEP/2AC4-C	nep.fu.8	Sustainably exploited	Overfished
Norway lobster	NEP/2AC4-C	nep.fu.9	Sustainably exploited	Overfished
Norway lobster	NEP/5BC6	nep.fu.13	Overfished	Sustainably exploited
Norway lobster	NEP/07	nep.fu.2021	Sustainably exploited	Overfished
Plaice	PLE/7FG	ple.27.7fg	Overfished	Sustainably exploited
Plaice	PLE/7HJK	ple.27.7h-k	Sustainably exploited	Overfished
Pollack	POL/56-14; POL/07	pol.27.67	Overfished	Data limited
Saithe	POK/2C3A4; POK/56-14	pok.27.3a46	Sustainably exploited	Overfished
Turbot	T/B/2AC4-C	tur.27.4	Sustainably exploited	Overfished
Skates and rays	SRX/67AKXD	rjc.27.6	Overfished	Data limited
Small eyed ray	RJE/7FG	rje.27.7fg	Sustainably exploited	Data limited
Undulate ray	RJU/7DE	rju.27.7de	Sustainably exploited	Data limited
Mackerel	MAC/2A34; MAC/2CX14	mac.27.nea	Overfished	Sustainably exploited
Common sole	SOL/07A	sol.27.7a	Overfished	Sustainably exploited
Sprat	SPR/7DE	spr.27.7de	Sustainably exploited	Data limited
King scallops	27.7.e.L	NA	Overfished	Sustainably exploited
King scallops	27.7.f.I	NA	Sustainably exploited	Data limited
King scallops	27.4.b.S	NA	Overfished	Data limited
Lobster	NA	NA	Overfished	Data limited

8.3 APPENDIX 3

GLOSSARY

Blim
is the limit biomass reference point, below which the stock has reduced reproductive capacity and an increased risk of stock collapse.

Bmsy
is a biomass reference point which in theory represents the stock size at maximum population growth rate and therefore the biomass of a stock at which it could deliver its MSY.

Btrigger
is a biomass reference point defined as the parameter in the ICES advice framework which triggers a more cautious response, typically reduced fishing mortality, to allow the stock to rebuild to levels compatible with MSY (F<Fmsy).

Catches
mean all fish taken from the sea regardless of whether they are landed (also referred to as wanted catch) or discarded (known as unwanted catch) back into the sea.

Demersal
refers to fish species living on or near the sea floor.

Fishing mortality (F)
is a parameter used in fisheries population dynamics (which forms the basis of stock assessments) to account for the rate of loss of organisms from a population due to removals associated with fishing.

Fixed Quota Allocation (FQA)
is a system designed to allocate quota as a percentage of total available quota, to a certain fishing licence, based on historical average landings.

Flim
is the fishing mortality which will result in an average stock size of Blim in the long term.

Fmsy
is the fishing mortality rate that should, on average (all other things being equal) lead to a stock reaching Bmsy.

Gross Domestic Product (GDP)
is an indicator of the economic performance of a country.

Gross Value Added (GVA)
is a measure of the value of goods and services produced by an industry.

ICES
is the International Council for the Exploration of the Sea (www.ices.dk): 'an intergovernmental marine science organization, meeting societal needs for impartial evidence on the state and sustainable use of our seas and oceans'.

Landings
mean the part of the total catch that is physically landed at a port. Landed fish may be whole, gutted and headed or filleted.

Management unit
is the component of the stock unit that is considered a 'stock' for the purposes of fisheries management.

Maximum sustainable yield (MSY)
is a theoretical maximum yield (catch) that can be taken from a stock in the long term under constant environmental conditions when that stock is at the biomass reference point Bmsy.

Overfished
is the term used in this report when the fishing mortality is above Fmsy; such excessive fishing poses high risk of stock depletion.

Pelagic
refers to fish species found mainly in shoals in midwater or near the sea surface.

Shellfish
covers all crustaceans (such as crabs and lobsters) and molluscs (such as scallops and mussels).

Spawning Stock Biomass (SSB)
is typically the metric used to indicate the status of a stock. SSB represents the reproductive capacity of the stock as it is an estimate of the combined weight of all (mature) individuals which are capable of reproducing.

Stock unit
refers to a part of a fish population usually with a particular migration pattern, specific spawning grounds, and subject to a distinct fishery. In theory, a stock unit comprises all the individuals of fish in an area, which are part of the same reproductive process. It is self-contained, with no emigration or immigration of individuals from or to the stock[xxx].

Total Allowable Catch (TAC)
is a catch limit set for a particular fishery, typically for a fishing year or season. TACs set by the European Commission are typically for a given management unit.

xxx Taken from: http://www.ices.dk/community/Documents/Advice/Acronyms_and_terminology.pdf

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