

Proposed North Sea Greater Silver Smelt Fisheries Management Plan



Department
for Environment
Food & Rural Affairs



DAERA

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Environment and Rural Affairs

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Contents

Contents.....	1
Executive Summary	4
Abbreviations	5
What is an FMP?.....	6
Why an FMP for North Sea Greater Silver Smelt?	6
Stakeholder Engagement.....	6
Vision	7
Policies.....	7
Scope	8
Background	9
Stock.....	9
Location	10
Fishery.....	11
Stock Assessment and MSY	12
Scientific evidence	12
Assessment of evidence	12
Fisheries management.....	13
Management strategy for North Sea greater silver smelt.....	13
Current technical measures	14
Current monitoring and enforcement	14
Environmental considerations	16
Conservation advice	16
Climate Change	21
FMP policies.....	24
Policy 1: Harvest the North Sea GSS stock sustainably, contributing to maintaining or restoring the biomass above the level capable of producing MSY	24
Policy 2: Use the best-available scientific evidence to support management decisions relating to the setting of sustainable fishing opportunities.....	26
Policy 3: Monitor catches of North Sea GSS and ensure that where possible all catches are counted against quotas	27
Policy 4: Deliver wider sustainable management by minimising the impact of the North Sea GSS fishery on the marine ecosystem	28
Policy 5: Reduce the impact of fishing on climate change and support the fishing industry to adapt to the impacts of climate change	29

Implementation and Monitoring	30
Glossary	32

Executive Summary

The North Sea greater silver smelt Fisheries Management Plan (FMP) is one of 43 FMPs set out in the [Joint Fisheries Statement](#) (JFS). It has been developed by the Scottish Government and Department for Environment, Food & Rural Affairs (Defra) and the Department of Agriculture, Environment and Rural Affairs (DAERA) with input from industry, scientists, non-governmental organisations (NGOs), and Statutory Nature Conservation Bodies (SNCBs).

This FMP sets out the policies and actions to manage the North Sea greater silver smelt (GSS) stocks at sustainable levels, ensuring that they can continue to play a key ecological role as both a predator and prey in the marine food web whilst also setting out a number of actions to improve management where this is needed.

Historically, the North Sea GSS (*Argentina silus*, also known as greater Argentine) was fished for its high oil content, which made it valuable for fishmeal production. In the North Sea (ICES Division 3.a and Subarea 4) GSS is a bycatch in fisheries and a targeted fishery is primarily conducted by licensed Norwegian midwater and bottom trawlers in Division 2.a. In addition to the target fisheries in Division 2.a, trawl fisheries for other species along the Norwegian Deep in Division 4.a (northern North Sea) result in variable but sometimes significant landed bycatch of GSS. Based on available data, these are dominated by Norwegian catches in Norwegian waters from 2006 onwards.

North Sea GSS is jointly managed by the UK and EU. Although this is not a fishery of direct commercial interest to the UK currently, the UK has a wider interest in the stock as a bycatch in other fisheries, and as a part of the North Sea ecosystem.

Sufficient evidence is available for the relevant fisheries policy authorities to make an assessment of MSY, and North Sea GSS is currently fished within sustainable limits.

This FMP therefore describes a vision with policies and actions which set out how management can continue to support an MSY approach for the North Sea GSS fishery, and highlights areas that could lead to refinements of management approaches in the future. Areas for action include those which support the wider delivery of policies within the JFS and which contribute to the delivery of the objectives contained within the 2020 Act.

Abbreviations

BMP - Bycatch Monitoring Programme
CFP - Common Fisheries Policy
CO₂e - Carbon Dioxide Equivalent
DAERA - Department of Agriculture, Environment and Rural Affairs
Defra - Department for Environment, Food and Rural Affairs
EU - European Union
Flim - Limit reference point for fishing mortality
FMP - Fisheries Management Plan
FMSY - Fishing mortality consistent with Maximum Sustainable Yield
GES - Good Environmental Status
GSS - Greater Silver Smelt (Argentina silus)
IBTS - International Bottom Trawl Survey
ICES - International Council for the Exploration of the Sea
JFS - Joint Fisheries Statement
JNCC - Joint Nature Conservation Committee
MCRS - Minimum Conservation Reference Size
MCCIP - Marine Climate Change Impacts Partnership
MCS - Monitoring, Control and Surveillance
MMO - Marine Management Organisation
MPA - Marine Protected Area
MSY - Maximum Sustainable Yield
MSY Btrigger - The spawning stock biomass reference point used within the MSY framework
OSPAR - Convention for the Protection of the Marine Environment of the North-East Atlantic
PMF - Priority Marine Feature
REM - Remote Electronic Monitoring
SI - Statutory Instrument
SNCB - Statutory Nature Conservation Body
SPiCT - Stochastic Production Model in Continuous Time
TAC - Total Allowable Catch
TCA - Trade and Cooperation Agreement
UK - United Kingdom
UK MS - UK Marine Strategy
VMS - Vessel Monitoring System
WGDEEP - ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources

What is an FMP?

A Fisheries Management Plan (FMP) is a document prepared and published under the Fisheries Act 2020 that sets out policies to restore one or more stocks of sea fish to, or maintain them at, sustainable levels or contribute to the restoring or maintenance at sustainable levels. It is an evidence-based action plan that supports delivery of sustainable fisheries for current and future generations. The FMP is a strategic plan that must be reviewed and, if necessary, revised at least once every six years. It sets out both a long-term vision for the fishery (or fisheries), together with the policies and management interventions necessary in the medium-term to achieve this vision.

Why an FMP for North Sea Greater Silver Smelt?

Historically, the greater silver smelt (GSS) (*Argentina silus*, also known as greater Argentine) was fished for its high oil content, which made it valuable for fishmeal production. In the North Sea (ICES Division 3.a and Subarea 4) GSS is a bycatch in fisheries and a targeted fishery is primarily conducted by licensed Norwegian midwater and bottom trawlers in Division 2.a. In addition to the target fisheries in Division 2.a, trawl fisheries for other species along the Norwegian Deep in Division 4.a (northern North Sea) result in variable but sometimes significant landed bycatch of GSS. Based on available data, these are dominated by Norwegian catches in Norwegian waters from 2006 and onwards.

GSS is jointly managed by the UK and EU. Although this is not a fishery of direct commercial interest to the UK currently, the UK has a wider interest in the stock as a bycatch in other fisheries, and as a part of the North Sea ecosystem.

Stakeholder Engagement

This FMP has been informed by a range of stakeholder engagement initiatives. A working group of over 50 industry, environmental and Statutory Nature Conservation Bodies (SNCBs) stakeholders was formed in 2023 and met multiple times to help inform the overall shape and contents of Scottish-led FMPs. On pelagic FMPs specifically discussion took place over a number of months to gather additional views and input. This was part of a process known as 'pre-consultation'. As part of the process, the Scottish Government shared drafts of some of the pelagic FMPs and gathered comments from stakeholders at workshops held in March 2026. Stakeholder knowledge has been valuable in providing context for the FMP, and in developing meaningful actions that will support the sustainable management of GSS in the future.

Feedback received as part of formal public consultation will help shape the final FMP.

Vision

The vision for this FMP is that the North Sea GSS fishery in UK waters is managed sustainably, to help ensure that stocks are maintained above biomass levels capable of producing Maximum Sustainable Yield ¹(MSY).

The policies and actions laid out in this FMP set out how this will be delivered in a way that is consistent with, and supportive of, the wider achievement of the fisheries objectives set out in the Fisheries Act 2020, the policies contained within the Joint Fisheries Statement (JFS) and other legislative commitments.

Policies

As sufficient evidence is available for the relevant fisheries policy authorities to make an assessment of MSY, and GSS is currently fished within sustainable limits, the FMP must contain policies and actions which at least contribute to maintaining the stock above levels capable of producing MSY. In addition, in accordance with section 5.4 of the JFS, the design and structure of FMPs directly relate to the fisheries objectives identified in section 5.4.2 but may also address wider issues in fisheries management depending upon the specific goals or targets of each plan and may contribute to one or more of the remaining fisheries objectives.

To ensure effective ongoing management of the GSS fishery in UK waters, the FMP identifies five policies focussed on domestic and international management priorities. Each policy describes the outcome that is being worked towards, and the actions intended to support the delivery of those outcomes.

The policies are subject to the consideration of the consultation and will be prioritised to ensure realistic and measurable outputs. They were drafted to meet the requirements of section 6(3)(a) of the 2020 Act (policy 1 and 2) and policies set out in the JFS (policies 3, 4 and 5).

For each policy, the plan sets out:

- a rationale;
- ongoing, short- and longer-term actions;
- how the actions support delivery of the fisheries objectives.

Performance indicators for the FMP are addressed towards the end of this document.

The five policies of this FMP are:

¹ The Fisheries Act 2020 defines Maximum Sustainable Yield (MSY) as 'the highest theoretical equilibrium yield that can be continuously taken on average from a marine stock under existing environmental conditions without significantly affecting the reproduction process

- Policy 1: Harvest the North Sea GSS stock sustainably, contributing to maintaining or restoring the biomass above the level capable of producing MSY
- Policy 2: Use the best-available scientific evidence to support management decisions relating to the setting of sustainable fishing opportunities
- Policy 3: Monitor catches of North Sea GSS and ensure that where possible all catches are counted against quotas
- Policy 4: Deliver wider sustainable management by minimising the impact of the North Sea GSS fishery on the marine ecosystem
- Policy 5: Reduce the impact of fishing on climate change and support the fishing industry to adapt to the impacts of climate change

Scope

This FMP relates to fisheries for GSS (*Argentina silus*, also known as greater Argentine) in UK waters of ICES subarea 4 and division 2.a (North Sea).

The Fisheries Act 2020 requires the relevant authority or authorities to prepare and publish FMPs in accordance with the list and timetable included in the JFS.² The relevant authorities for this FMP are the Department of Agriculture, Environment and Rural Affairs (DAERA), the Department for Environment, Food & Rural Affairs (Defra) and the Scottish Government.³ The plan has been prepared and published jointly by the relevant authorities for the purposes of the Fisheries Act 2020: by the Scottish Government, as the coordinating authority, on behalf of the other relevant authorities, Defra and DAERA.⁴

² UK Government (2022) [Joint Fisheries Statement](#). The updated timetables are set out in the updated Annex A (amended December 2024)

³ The definition for an “authority” is given in Annex A (p. 55) of the JFS, which is: “**Authority or Authorities responsible for preparation and publication of plan:** The authority or authorities which are responsible for preparing and publishing the plan. There can be up to four fisheries policy authorities acting jointly in a plan.”.

⁴ The definition for a “co-ordinating authority” is given in Annex A (p. 55) of the JFS, which is:- “**Coordinating Authority:** The fisheries policy authority which will coordinate the preparation and management of the plan on behalf of the other fisheries policy authorities acting jointly”.

Background

Stock

Whilst this FMP covers the fishery in UK waters of ICES areas 4 and 2.a. ICES assesses greater silver smelt in areas 1, 2, 4 and 3.a. The stock unit was originally defined based on historical and present fishing patterns.

In the Norwegian Sea and North Sea-Skagerrak the distribution is continuous from the Skagerrak along the Norwegian Deep northwards along the Norwegian shelf to the entrance to the Barents Sea. Documented spawning areas are deep shelf troughs and upper slope waters off of mid-Norway and deeper parts of the Skagerrak, but it is likely that the species also spawns in deep Norwegian fjords. Studies of population genetics have not been conducted in the relevant areas.

GSS in UK waters of area 4 are at the southern end of the biological range and are only generally caught as bycatch. The principal targeted fishery is in Norwegian waters of area 2, further to the north.

GSS can reach a maximum length of around 60-70 cm, and form dense, demersal-associated schools, with distributions stretching from the Skagerrak to the Barents Sea. Adults generally reside deeper (>300m) than juveniles.

GSS is a deep-water schooling species that is caught by semi-pelagic and demersal fishing vessels. It is therefore more accurately described as a semi-pelagic, benthopelagic or bathypelagic species.

The species is an opportunistic predator that feeds largely on zooplankton and small marine species. Its diet commonly includes copepods, euphausiids, amphipods, mysid shrimps and small fish. Juveniles largely consume smaller planktonic organisms, while larger adults predate on larger crustaceans and other marine fish. Feeding behaviour may vary with depth, season and prey availability. (Bergstad, 1993; ICES 2024⁵).

Within the marine food web, GSS are considered to occupy the mid-level as by feeding on planktonic crustaceans and small fish species this links the lower trophic levels to larger predators. Importantly North Sea GSS act as prey for commercially and ecologically important species, including larger fish (cod, saithe and ling) and marine mammals. Therefore, the intermediate position that GSS inhabits in the marine foodweb makes it an important link in the movement of energy through deep-sea ecosystems. (Bergstad, 1993; ICES 2024)

The stock is currently assessed as being fished within safe biological limits. The 2026 ICES advice⁶ indicated that fishing pressure on the stock is below F_{MSY} , and the stock size is above $MSY B_{trigger}$.

⁵ [ICES advice 2024: Greater Silver Smelt \(Argentina silus\) in Divisions 5.b and 6.a](#)

⁶ [ICES advice 2026: Greater silver smelt \(Argentina silus\) in subareas 1, 2, and 4 and in Division 3.a \(Northeast Arctic, North Sea, Skagerrak, Kattegat\)](#)

Location

This stock is found in ICES subareas 1, 2, and 4, and Division 3.a (Northeast Arctic, North Sea, Skagerrak and Kattegat). This FMP only applies to the UK waters of Subarea 4 (North Sea) and Division 2.a.

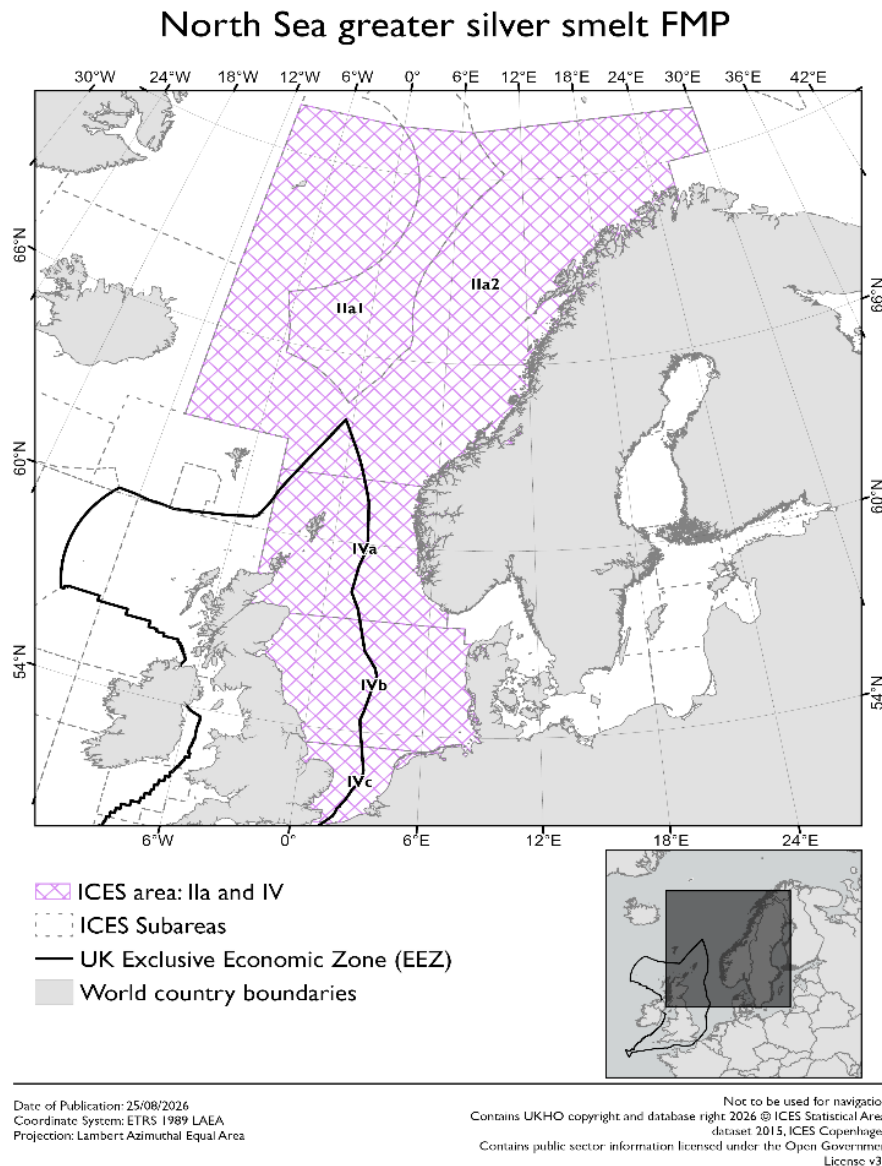


Figure 1: The ICES areas covered by the North Sea greater silver smelt FMP

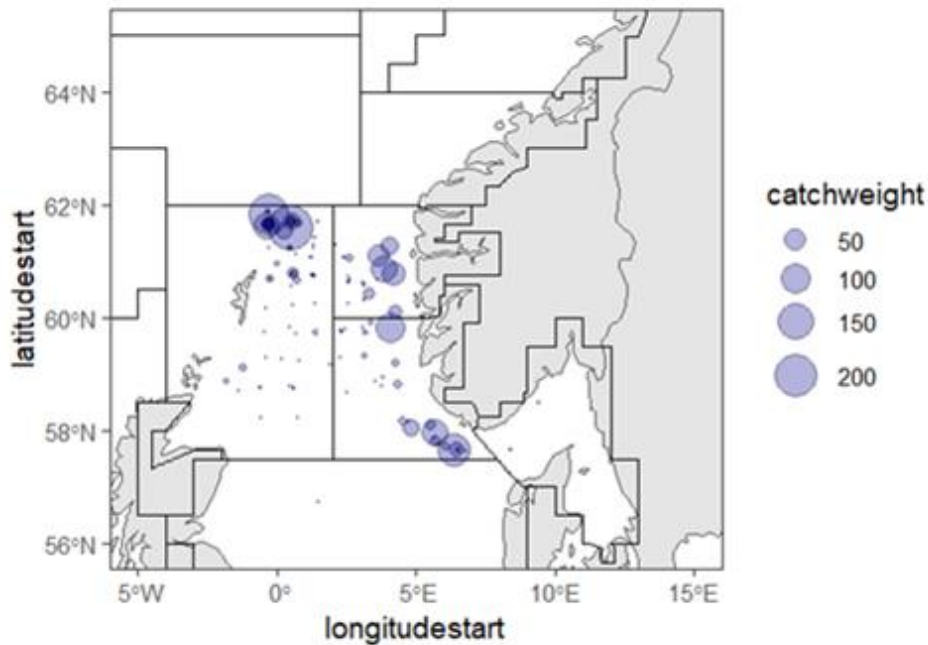


Figure 2. GSS catches in the IBTS Q3 survey, 2023. Weights are in kg per haul. Source: ICES WGDEEP (2022).

Fishery

The principal targeted GSS fishery is in Norwegian waters of Division 2.a where the species is caught as part of an industrial targeted fishery by EU vessels. In the North Sea (ICES Division 3.a and Subarea 4) GSS is primarily caught as bycatch in other fisheries. Trawl fisheries for other species along the Norwegian Deep in Division 4.a (northern North Sea) result in variable but sometimes significant landed bycatch of GSS.

GSS in UK waters of area 4 are at the southern end of the biological range and are only generally caught as bycatch.

Historically there was a targeted pelagic fishery for North Sea GSS in UK waters of ICES areas 4 and 2.a, however this hasn't existed for a number of years.

There have been no substantial recorded catches of North Sea GSS by the UK fleet since 2015. The only recorded catch was 376 kg in 2022. This suggests that the stock is of minimal importance to the UK fleet. There are occasional bycatches from the UK's demersal over 24 metres fleet, though these are small in number.

Stock Assessment and MSY

Scientific evidence

As set out in Section 3.2 of the JFS, the UK takes an evidence-based approach to fisheries management, making use of the best available scientific evidence. For the purpose of fisheries management and setting catch limits (Total Allowable Catch (TAC) setting), this tends to focus on the use of advice produced by ICES, although other sources of information, including data from the fishing industry, may also be used.

ICES provides biennial advice for GSS in the Northeast Arctic, North Sea, Skagerrak and Kattegatt. ICES advice is organised according to categories, ranging from 1 (the most information available) to 6 (the least). The stock is now an ICES Category 2 stock with the new assessment method (SPiCT) considered a marked improvement compared to the previously used ICES trend-based advice rule. The acoustic survey providing the biomass index is conducted every second year. Hence, advice is given biennially.

Benchmark exercises are a process used by ICES to evaluate existing and new scientific evidence and methods and, where relevant, apply them in the stock assessment process. They are part of the continuous improvement process which ensures that ICES advice is based on the best available scientific evidence. ICES completed an assessment benchmarking process for GSS in the Northeast Arctic, North Sea, Skagerrak and Kattegatt in 2024.

Assessment of evidence

The following evidence has been collated from the most recent ICES advice sheet (ICES 2026)⁷. ICES advice indicates that current fishing pressure on the stock is below F_{MSY} and F_{lim} , and the stock size is above $MSY_{Btrigger}$.

ICES advice for GSS is given biennially for North Sea GSS. GSS is an ICES Category 2 stock with the new assessment method (SPiCT). However, due to high uncertainty in the survey index used in the assessment, ICES recommends using the lower catch percentile (i.e. 15th percentile) than in the standard ICES rule.

⁷ [Item - Greater silver smelt \(*Argentina silus*\) in subareas 1, 2, and 4 and in Division 3.a \(Northeast Arctic, North Sea, Skagerrak, Kattegatt\) - International Council for the Exploration of the Sea - Figshare](#)

Fisheries management

Management strategy for North Sea greater silver smelt

In the JFS, the UK fisheries policy authorities lay out a shared ambition to deliver 'world class, sustainable management of our sea fisheries and aquaculture across the UK, and to play our part in supporting delivery of this globally'. The JFS also states that 'As part of being an independent coastal State, the fisheries policy authorities will work together to support a vibrant, profitable, and sustainable fishing and aquaculture sector supported by a healthy marine environment that is resilient to climate change'. These ambitions are managed in line with numerous domestic and international policy drivers, which oblige action to consider and mitigate for the wider adverse environmental impacts of fishing activity.

In UK waters fisheries are managed in line with UK fisheries legislation (such as the 2020 Act, UK and Devolved Government secondary legislation) and licence conditions where appropriate.

The management of the fishery in the UK is carried out within this overarching context.

North Sea GSS (ARU/3A4-C⁸) is a shared stock under the UK-EU trade and Cooperation Agreement (TCA) and therefore we have a joint responsibility with the EU to manage the fishery sustainably. Fishing opportunities are determined annually through UK and EU bilateral consultations. The approach to bilateral consultations follows the principles for international negotiation stated in the JFS.

The TAC is agreed through these annual consultations and set out in a Written Record of the consultations. In compliance with the TCA (see Annex 35⁹), the TAC for North Sea GSS is split between the UK and EU. The UK quota for each year is published in the UK Quota Determination document by the Secretary of State under section 23 of the Fisheries Act 2020. Following this, the UK's quota is apportioned between the four UK Fisheries Administrations in line with the UK Quota Management Rules.¹⁰ Each UK Fisheries Administration then allocates its share of apportioned quota to vessels/licences under their administration, in line with their quota management¹¹ and section 25 of the 2020 Act. Quotas are transferable: for example, they may be exchanged between the management groups which represent UK fishing vessels or exchanged with the EU.

⁸ ICES stock management area code for North Sea Greater Silver Smelt.

⁹ [Trade and Cooperation Agreement between UK and EU – CP 426](#)

¹⁰ Department for Environment, Food & Rural Affairs (2024) [UK Quota Management Rules](#).

¹¹ Separate quota management rules are set by the [Scottish Government](#), [annual](#) and DAERA.

Current technical measures

All fishing activity in UK waters is managed through a range of technical measures. These technical measures were historically laid out in the form of technical conservation regulations written into the Common Fisheries Policy (CFP) legislation through various EU delegated acts, which have been retained into UK law following the UK's exit from the European Union and are referred to as 'assimilated law'. Following the UK's exit from the EU, the UK Government and Devolved Governments have various powers available to them to introduce new technical measures, for example by using licence conditions, or through secondary legislation under the 2020 Act or other relevant UK laws.

Technical measures tend to apply to specific groupings of vessels, or types of fish, and as such can be very similar. This means that the technical measures in place to support sustainable exploitation of the GSS stock, are likely to be similar to those in place to manage the other pelagic stocks.

Current [technical measures](#)¹² in place to manage sustainable exploitation of the GSS stock include:

- Minimum Conservation Reference Sizes (MCRS) (which prevents targeting of undersized fish by ensuring that only fish above the MCRS can be sold for human consumption),
- Minimum mesh sizes and structure of fishing nets (which set a minimum standard intended to reduce catches of fish below the MCRS and generally make fishing operations more efficient and effective),
- The Landing Obligation¹³ stipulates that all catches of quota species, which includes GSS and includes all catches below MCRS must be landed and counted against quota unless exemptions apply.

Further detail regarding technical measures can be found on the UK Government's Technical Conservation and Landing Obligation rules and regulations webpage.¹⁴

Current monitoring and enforcement

Fisheries regulations serve a range of purposes, including the prevention of actions which adversely impact the sustainability of the marine environment. Fisheries policy

¹² The majority of the technical measures applying to fishing vessels are set out under the Common Fisheries Policy legislation which was passed by the European Parliament in 2013, updated in 2019, and assimilated into UK law on the UK's exit from the EU. This link provides details of the assimilated UK law.

¹³ the Landing Obligation is set out in Article 15 of the assimilated EU law Regulation number 1380/2013 This can be accessed on legislation.gov.uk [here](#). Note, subsequent exemptions under the grounds of de minimis or high survivability are set out in supporting EU delegated Acts and UK statutory instruments.

¹⁴ UK Government (2024) [Technical Conservation and Landing Obligation rules and regulations from 2022 onwards](#).

authorities are focused on reducing the main risks for non-compliance with those regulations.

Fisheries enforcement authorities (the Marine Directorate of the Scottish Government, the Department of Agriculture, Environment and Rural Affairs (DAERA), and the Marine Management Organisation (MMO) in this instance) carry out enforcement that is intelligence-led, risk-based or is required by the UK's international obligations. Enforcement of the respective regulations (domestic and international) is in line with applicable guidelines for regulators. Across the UK there are a range of assets to support this, including compliance vessels, surveillance aircraft, and the UK Fisheries Monitoring Centre and Marine Enforcement officers conducting physical and office-based inspections throughout the chain of traceability.

Fishing vessels over 12 metres are required to have fully operational satellite Vessel Monitoring Systems (VMS), and electronic logbooks, enabling authorities to remotely monitor and control fishing activity and encourage higher compliance. Understanding and being able to monitor and control where fishing activity is taking place is an important part of fisheries management, particularly where area restrictions are in place. Accurate and robust locational data is also crucial for informing marine planning decisions.

In addition, from 7 March 2026, pelagic fishing vessels operating in Scottish waters, and Scottish pelagic vessels wherever they are fishing, must have Remote Electronic Monitoring (REM) equipment on board. This will help deter and detect pelagic fishing vessels from engaging in any illegal fishing activity. It will also help deliver a greater confidence in the quality of scientific evidence on fish catches, which is important for stock assessment and advice on sustainable fishing levels.

UK fisheries authorities apply a fishing vessel licensing regime along with control measures throughout the whole chain of traceability from catching to sale. These measures include requirements to record catch details whilst at sea, the weight of catch landed, transport and takeover documents once landed, and sales notes from registered buyers. This comprehensive data stream enables fisheries authorities to effectively monitor fishing activity and compliance with national and local regulations.

These measures are not specific to the GSS fishery, but apply across the wider pelagic fishing fleet. Compliance risks are factored into the overarching risk management approach taken by the UK fisheries enforcement teams, and also as part of the international monitoring, control and surveillance group (MCS) for pelagic fish stocks in the Northeast Atlantic, and will continue to be monitored on an ongoing basis. As a stock managed with other coastal States, it is important that this FMP reflects appropriate actions identified through MCS Group.

Actions to maintain the current monitoring and enforcement approach are contained within 'Actions' under policy 3.

Environmental considerations

Conservation advice

FMPs are subject to legal duties and requirements relating to the protection of the natural environment arising from legislation such as the Habitats Regulations, the Marine Strategy Regulations 2010, and the UK Marine Policy Statement, the Environment Act 2021, Marine and Coastal Access Act 2009, and the Marine (Scotland) Act 2010.

Alongside these requirements, FMPs seek to support a range of other existing environmental policies that focus on enhancing the health of our seas for future generations, restoring marine biodiversity and tackling the causes and impacts of climate change. To support the development of policies aimed at protecting the natural environment, Statutory Nature Conservation Bodies (SNCBs) provided conservation advice¹⁵ for the Scottish-led pelagic FMPs.

Advice provided to fisheries policy authorities by SNCBs gives more detail on the risks associated with fishing for species covered by the pelagic FMPs in relation to the protected features of Marine Protected Areas (MPAs), Priority Marine Features (PMFs) for Scotland and UK Marine Strategy (UKMS) Descriptors. Joint advice from JNCC and NatureScot, commissioned by the Scottish Government's Marine Directorate and covering Scottish waters, was received for Pelagic FMPs in Scottish waters as part of a single assessment. Additional joint advice from Natural England and JNCC, commissioned by Defra and covering English waters, was received for the draft blue whiting FMP, Northern Shelf Mackerel FMP, North Sea Greater Silver Smelt FMP, North Sea Herring FMP, and North Sea Horse Mackerel FMP.

Methodology

The SNCBs developed a 'risk rating' which is intended to help identify where the greatest impacts of fishing are likely to occur. A three-point scale has been used in the conservation advice: low, moderate and high risk.

- Low risk - An impact pathway exists, but evidence or expert opinion suggests that impacts are minimal or unlikely.
- Moderate risk – Interactions rated as moderate risk typically have an evidenced impact or expert judgment indicates a genuine risk, but factors such as evidence gaps around the scale of impact or exposure to pressures, existing mitigations, or difficulties disentangling impact sources, make it difficult to determine whether the risk is high or low. This precautionary approach to risk assessment is aimed at managing identified risks proactively while acknowledging gaps in current understanding. SNCB advice recommends that FMPs consider enhanced data collection or mitigation

¹⁵ [Detailed Nature Conservation Advice from NatureScot and JNCC for Pelagic FMPs](#)

options if a moderate risk is identified, taking a proactive approach towards minimising impacts.

- High risk - Interactions identified as high risk are those where available evidence or expert opinion suggests there is an impact at such a scale as is likely to require mitigation.

In contrast to the SNCBs routine advice on environmental sensitivity of distinct habitats or species, the methodology developed specifically for the conservation advice on FMPs provides 'indicative risk ratings' on pelagic fisheries in general. These ratings consider the scale of risk associated with the different components of the pelagic fisheries to help identify where the greatest impacts are likely to occur.

The conservation advice provided practical guidance on the most significant risks associated with the interactions between the fishing gear types used to target pelagic fish and the protected features of MPAs, PMFs¹⁶ (Scottish waters only) and UKMS descriptors.

Summary

The conservation advice highlighted several moderate environmental risks associated with pelagic fisheries in UK waters, including:

- bycatch of fish, marine mammals and birds in the fisheries
- prey reduction, and
- the introduction of marine litter.

Details on the risks to MPAs, PMFs and UKMS descriptors are set out in the below, and more detail can be found in the published conservation advice.

MPAs and PMFs in Scottish Waters

Fisheries contained in the pelagic FMPs have the potential to impact the protected features of MPAs and on PMFs in 2 primary ways;

- through the bycatch of protected features of MPAs/PMFs, and
- the direct (targeted) and indirect (bycatch) removal of prey species on which designated and PMF species depend.

MPAs – risk summary

Evidence suggests that pelagic trawl and purse seine fisheries pose a relatively low risk to the MPA designated marine mammal and fish species features in terms of bycatch¹⁷, with limited records of bycatch¹⁸ of harbour porpoise, grey seals, basking shark and 'common' skate. However, due to low sampling effort, improved evidence is needed to support a low risk rating for these species.

¹⁶ [Priority Marine Features in Scotland's seas - The List | NatureScot](#)

¹⁷ The UK bycatch monitoring programme ('the BMP') places dedicated sensitive species bycatch observers on pelagic trawl and purse seine vessels. In 2022 the BMP conducted monitoring for 15 days at sea in the midwater trawl fishery and 35 days at sea in seine fisheries. No marine mammal or seabird bycatch was recorded in these gears. Several instances of elasmobranch and fish bycatch were recorded. [Microsoft Word - 2022 BMP Annual Report](#)

Several MPA designated bird species features are considered sensitive to bycatch in these fisheries; guillemot, razorbill and cormorant have all been recorded as bycatch in pelagic trawls. In light of limited evidence on bycatch and based on the potential sensitivity to bycatch, expert advice suggests the risk ought to be classed as moderate.

Owing to gaps in the available evidence, the risk rating for bycatch in pelagic fisheries is considered moderate. However, with the introduction and rollout of REM to pelagic fishing vessels in English and Scottish waters, this will enhance the evidence base and could lead to a downgrading of the risk in the future.

This topic is explored further in Policies 3 and 4.

All the fish species managed through the pelagic FMPs are considered prey species for a broad range of predators and as such, are an important part of the marine ecosystem around Scotland. There is good evidence to demonstrate that many of the pelagic species covered in the pelagic FMPs are key prey for many of the designated fish, marine mammal, and seabird features in Scottish MPAs. However, the extent to which features rely on specific pelagic prey species is less clear. As such, the risk rating for pelagic fisheries in Scottish waters regarding removal of important prey species that designated species depend on is considered moderate.

This topic is explored further in Policies 1, 2 and 4.

PMFs (Scotland only)– risk summary

As discussed above for MPA features, pelagic fisheries are not expected to pose a substantial risk of bycatch; however, as evidence gaps remain this has resulted in a precautionary rating of ‘moderate’ for PMF bycatch. Addressing evidence gaps through the collection of REM data, or through enhanced data collection will improve confidence in the assessment of bycatch risks, and may result in a downgrading of the risk in the future.

This topic is explored further in Policies 3 and 4.

Several marine mammal and fish PMFs, in addition to those species designated as MPA features, are likely to utilise pelagic species at various life stages as a prey resource. Though they exhibit a variety of foraging strategies, many killer whale groups, including those that visit Scottish waters, are fish-eating specialists, feeding almost exclusively on schooling pelagic fish species such as herring and mackerel. Fin whales feed on small schooling fish species such as herring and sprat. Herring and mackerel are also important prey species for adult porbeagle. Many of the species targeted by fisheries listed under the pelagic FMPs are important prey species for a variety of cetaceans and fishes, including species of conservation interest which are not listed as PMFs, such as the humpback whale. There is a lack of evidence available in relation to the overall ecosystem interactions, and therefore a moderate risk to PMFs (fish, marine mammals) through removal of key prey species in pelagic fisheries is concluded.

This topic is explored further in Policy 4.

MPAs in English Waters

The main impacts of the fisheries incorporated in this FMP on the protected features of MPAs arising from fishing activity outside MPA site boundaries, with an indication of their risk level, are summarised below.

- There is a moderate risk of bycatch of mobile species that are protected features of MPAs in pelagic trawls and purse seines.
- There is a moderate risk to the designated species of MPAs from reductions in their prey through the targeted blue whiting fishery.

UK Marine Strategy Descriptors

Background

The UK Marine Strategy Regulations 2010 (SI 2010/1627) provide the policy framework for delivering marine environmental policy at the UK level and set out how the vision of clean, healthy, safe, productive, and biologically diverse oceans and seas will be achieved. The Regulations require the Secretary of State, in consultation with the devolved authorities to define the characteristics of Good Environmental Status (GES). In turn the Secretary of State and devolved policy authorities must develop an associated Programme of Measures to deliver this. The [UK Marine Strategy Part Three: UK Programme of Measures](#) outlines the actions and initiatives the UK is taking to do this.

The advice focussed only on the most relevant descriptors in terms of risks posed by commercial and recreational fisheries: D1 biodiversity, D3 commercial fish and shellfish, D4 foodwebs, D6 seafloor integrity and D10 marine litter. In the UKMS these descriptors are assessed using indicators for each of their constituent 'ecosystem components.' The assessment was undertaken by providing advice on the risks to eight descriptor-ecosystem component combinations:

- Cetaceans - D1, D4
- Seals - D1, D4
- Seabirds - D1, D4
- Fish - D1, D4
- Foodwebs - D4
- Seafloor integrity - D1, D6
- Marine litter - D10

The results of an initial consideration of the available evidence and expert opinion of the main risks arising from the fisheries covered by the pelagic FMPs to UK MS Descriptors are summarised below.

Risk summary

There is a moderate risk to achieving GES for the biological diversity of cetaceans, seals, and birds, due to impacts from pelagic fishing activities related to bycatch and through targeted removal of blue whiting, as an important prey species. However, it is important to understand the differences between fishing methods. For trawl vessels,

it is thought they have relatively little bycatch risk (although evidence could be improved – as set out already). The lack of evidence to provide a confident assessment of bycatch risk suggests the risk is likely to be moderate. Given the importance of pelagic stocks within the UK marine ecosystem, the potential to impact prey availability needs further consideration for pelagic fisheries.

This topic is explored further as part of Policy 4.

There is a moderate risk to marine litter, with limited evidence available to help disentangle the relative contribution of pelagic fisheries to marine litter. The conservation advice indicates that more robust estimates of abandoned, lost, or discarded fishing gear from pelagic fisheries are required.

The advice also acknowledges that fishing litter is likely to be a relatively small component of overall marine litter, therefore fishing measures alone are unlikely to contribute significantly to the achievement of GES. In Scotland a range of actions are undertaken to address issues with marine litter, as set out in the Marine Litter Strategy for Scotland¹⁹ and these will continue to be delivered as part of a separate programme of work. In addition, the pelagic sector also has designated gear recycling programmes in place.

It should be noted that there is ongoing work with regard to the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) to implement the second Regional Action Plan on Marine Litter. This includes action to tackle marine litter from land and sea-based sources, including fishing.

Context and interpretation of the conservation advice²⁰

On bycatch, the moderate risk relates to the limited evidence base and can be classed as a precautionary rating. Given that REM policies for the Scottish pelagic fleet (which are the main pelagic targeting vessels in the UK) are well advanced, and that positive steps are being undertaken elsewhere in the UK to introduce REM, this evidence gap will be addressed, and this is noted within the FMP.

On predator/prey interaction, many pelagic species are integral parts of the wider food web and can often be key predatory and/or prey species. Whilst these interactions between different parts of the food chain are understood, at the present time, ICES does not follow a fully integrated ecosystem-based fisheries assessment model, and therefore fisheries management decisions which include these considerations are not fully possible. Actions to consider this further are contained in the policies and actions section.

On marine litter, there are two main considerations, firstly the risk that fishing in general, (rather than specifically pelagic fishing) presents to marine litter overall, and secondly, gaps in evidence. These two considerations have resulted in a moderate risk rating. However, the fisheries policy authorities do not believe that there is a prevalence or significant risk of marine litter in pelagic fisheries and therefore a

¹⁹ [Supporting documents - Marine litter strategy - gov.scot](https://www.gov.scot/supporting-documents/marine-litter-strategy)

²⁰ This section is not part of the original conservation advice and provides information on the policy context in which the FMPs are nested.

specific action on this is not included within the FMP, although positive action is being taken by the UK, through OSPAR, on this, as set out above.

As noted within the FMPs, the pelagic fishing industry is largely regarded as a relatively clean fishery. In general terms, pelagic fish tend to school together as a species, meaning that different species can be targeted by fishing vessels rather than being caught as part of a mixed fishery. This reduces, although doesn't eliminate, unwanted catches of fish that aren't the target species. In the UK there is currently a requirement under fishing vessel licence conditions for all fishing vessels operating in UK waters to report any bycatch (incidental mortality or injury) of marine mammals to the MMO within 48 hours of the end of the fishing trip. As of August 2025, no marine mammal bycatch has been reported in Scottish waters to the Marine Management Organisation. Finally, the main fishing fleet targeting pelagic species operates with trawls that rarely come into contact with the seabed, meaning that benthic disturbance is generally not an issue. This is important context in considering the conservation advice and whether any new management action is necessary.

Environmental and ecosystem considerations for pelagic fisheries are also included in the Proposed Fisheries Management Plan for Celtic Sea and Western Channel pelagic species²¹, which should be considered alongside this FMP.

Climate change

Climate change impacts on greater silver smelt

Evidence indicates that climate change is already altering fish distributions, productivity and ecosystem interactions, creating significant challenges for fisheries management systems that have historically been based on relatively stable environmental conditions (Baudron et al., 2020²²; Townhill et al., 2023²³).

Pelagic fish species generally respond more rapidly and over greater distances to ocean warming than demersal species because their distributions are closely linked to temperature and prey availability. However, the response of individual species depends on biological characteristics such as thermal tolerance, dispersal capacity and life-history traits (Rose, 2005²⁴; Baudron et al., 2020; Montero Serra et al., 2015²⁵; AZTI, 2023²⁶).

Greater silver smelt is more accurately described as a semi-pelagic, benthopelagic or bathypelagic species, forming large aggregations close to the seabed, typically at depths greater than 500 m²⁷. As a deep-water, cold-affinity species, it may be particularly sensitive to environmental changes affecting deeper marine habitats and

²¹ [Fisheries Management Plan](#)

²² [Changing fish distributions challenge the effective management of European Fisheries](#)

²³ [Climate change projections of commercial fish distribution and suitable habitat around north western Europe](#)

²⁴ [On distributional responses of North Atlantic fish to climate change](#)

²⁵ [Warming shelf seas drive the subtropicalization of European pelagic fish communities](#)

²⁶ [AZTI, 2023: Species acclimatization pathways: Latitudinal shifts and timing adjustments to track ocean warming](#)

²⁷ [Technical report - Great silver smelt - Marine and Freshwater Research Institute, Iceland](#)

may respond differently to climate-driven environmental change than more resilient pelagic stocks (Rose, 2005). Its association with deep benthic habitats may limit the availability of suitable refuges as environmental conditions change. Greater silver smelt is also relatively slow-growing and late-maturing compared to many pelagic species, which may reduce its capacity to recover from environmental stressors and periods of poor recruitment. Warming temperatures, declining oxygen concentrations and ocean acidification could reduce the extent or quality of suitable habitat, while increased environmental variability may influence stock distribution, early-life, recruitment success, population resilience and the reliability of stock assessments (MCCIP, 2025²⁸).

However, there is currently limited evidence on the specific impacts of climate change on GSS, and uncertainty remains high regarding the extent, magnitude and timing of any future effects. Current projections are largely inferred from broader ecological responses observed in other cold-water and deep-water fish species rather than from species-specific studies. See Table 1 below for climate related changes and projected direction for this stock:

Table 1. Climate related changes and projected direction of change for GSS

Stock	Current Stock Type / Thermal Affinity	Observed Climate Related Changes	Projected Direction of Change (to ~2050)
Greater silver smelt	Deep-water, cold-affinity, semi-pelagic/bathypelagic species	Limited stock-specific evidence. Potential vulnerability to warming, deoxygenation and ocean acidification in deep-water habitats.	High uncertainty due to limited evidence; Potential changes in distribution, habitat suitability and recruitment; possible movement to deeper and/or more northerly waters.

Vessel emissions

In addition to the impacts of climate change on North Sea GSS and the fisheries that interact with the species, it is important to consider the contribution of fishing activity to greenhouse gas emissions and the need for all sectors to meet net zero targets. The UK policy authorities have different targets relating to climate change and are developing plans to support the drive towards net zero.

The fishing sector contributes to greenhouse gas emissions primarily through fuel use by fishing vessels, the use of refrigerants, and the transport and distribution of seafood products (Engelhard et al., 2022²⁹). At UK level, fuel use from all fishing activity contributed an estimated 467 kt CO₂e in 2024—representing around 0.12% of total UK territorial emissions (378 Mt CO₂e) and 0.43% of domestic transport

²⁸ [MCCIP Oxygen update Aug 2025](#)

²⁹ [Carbon emissions in UK fisheries: recent trends, current levels, and pathways to Net Zero](#)

emissions (109 Mt CO₂e), and equivalent to about 1.1% of agricultural emissions (41.0 Mt CO₂e).

Although North Sea GSS is present in UK waters, the stock is of relatively low economic importance to UK fisheries and UK ports and is primarily targeted by EU vessels as well as licensed Norwegian midwater and bottom trawlers.

While the direct contribution of the GSS fishery is insignificant, consideration of overarching fisheries emissions reduction and fuel efficiency remains relevant as part of wider efforts to support a sustainable, economically viable and climate-resilient fishing sector.

The UK and Norwegian^{30 31} fishing fleets have broadly similar annual emissions; each estimated at around 0.8-1.1 million tonnes of CO₂/CO₂e per year. In comparison, between 2015-2019 the total emissions from EU fishing fleets were approximately 7.3 million tonnes CO₂e annually (Engelhard et al., 2022). While the UK ranked fourth among EU fishing nations for total fishing-vessel emissions, Norway's emissions appear comparable to those of the UK.

Long term considerations

Climate change is increasing uncertainty in the distribution, productivity and management of pelagic fish stocks. As a deep-water, cold-affinity species, greater silver smelt may be vulnerable to changes in habitat suitability associated with ocean warming, deoxygenation and ocean acidification. However, evidence on climate-driven impacts on greater silver smelt remains limited, and significant uncertainty exists regarding the magnitude and timing of future effects. This uncertainty reinforces the need for adaptive, evidence-led fisheries management and continued monitoring of stock dynamics and distribution.

To support delivery of the climate change objective in the 2020 Act, as well as of national strategies such as Scotland's Fisheries Management Strategy, the fisheries policy authorities will work in partnership with stakeholders to support fisheries in the drive to net zero and consider where and how we need to adapt our approaches to take account of the impacts of climate change.

The FMPs will be reviewed and revised as research into climate change impacts develops and new methods to address challenges from climate change become available.

³⁰ [Emissions report for Norwegian fisheries and aquaculture industries at sea - SINTEF](#)

³¹ Norwegian figures are generally reported as CO₂ emissions from fisheries fuel use and come from Norwegian fisheries and national statistics sources using different methodologies

FMP policies

In developing the policies and actions for this FMP, the fisheries policy authorities have considered the current policy landscape including applicable international agreements and declarations, conservation advice and wider policy development already underway, in addition to considering what additional evidence, measures or policies may be needed to support both the vision of this FMP and delivery of the fisheries objectives. In most cases, individual actions within this FMP will directly link to one or more of the fisheries objectives and these links are made below. FMPs are one of the tools that support the achievement of the fisheries objectives, although they are not the only policy vehicle available to do this. The fisheries policy authorities have also considered the conservation advice received from the SNCBs and included the outputs from that work in considering where policy action may be needed.

Effective management of the overall marine space is critical to sustainable development of existing and emerging sectors, and the protection of the marine environment. Whilst not a specific topic that is covered in detail within the FMPs, the fisheries policy authorities are working on a range of policies to help manage the increased demand for marine space, reduce the conflict arising from competition for marine space, and ensure that the right protections are in place to manage broader impacts from wider use. This FMP has been developed within the wider context of the Marine Plans in place in England, Scotland and Northern Ireland. Consideration will also be given to the objectives and principles outlined in the EU-UK Trade and Cooperation Agreement when considering measures.

In most cases further policy development work will be needed for any new actions, which could include additional evidence gathering or public consultation, along with the completion of appropriate impact assessments.

It should also be noted that North Sea GSS is a jointly managed stock with the EU, and therefore overall fishing opportunities are determined through international negotiation. The stock is subject to different management measures in different areas of the sea by individual coastal States, so we will endeavour to work in cooperation to jointly deliver sustainable management and catching opportunities for this stock.

The first two policies set out below largely relate to management measures to achieve long-term sustainability of the North Sea GSS stock, and the remaining policies set out actions in relation to wider sustainable management.

Policy 1: Harvest the North Sea GSS stock sustainably, contributing to maintaining or restoring

the biomass above the level capable of producing MSY

Rationale

The primary aim of the FMPs, such as this North Sea GSS FMP where there is sufficient available scientific evidence to enable assessment of a stock's MSY, is to set out policies designed to maintain or restore the stock to a sustainable level. This is in line with section 6(3)(a) of the Fisheries Act 2020, where the role of fisheries managers is to help ensure stocks are harvested sustainably, in order to protect the long-term viability of the stocks and the fisheries that depend upon them.

The use of TACs as a measure to manage fisheries is a key approach adopted by the UK to help ensure that the fishing pressure is kept within sustainable levels, whilst also taking account of relevant socio-economic factors. This is consistent with the sustainability objective of the Act.

Although fishing pressure on North Sea GSS is currently below F_{MSY} , the total international landings exceed advice every year because of third party (non-UK or EU) catches. Until this management issue is resolved, the stock will continue to fail Cefas's sustainability assessment.

Implementation of REM in March 2026 on Scottish pelagic vessels and pelagic vessels fishing in Scottish waters will enhance monitoring of catches in directed fisheries where GSS may be a bycatch, further supporting the use of a TAC management approach. Defra is also working towards introducing REM in English waters.

It should also be noted that the health of fish stocks can change over time and is affected by a range of different factors, not only fishing activity.

The actions below are focussed on maintaining and improving the current management approach.

Actions

Ongoing actions

- Continue to take an approach to TAC setting informed by the best available scientific advice and in line with an MSY approach.
- Continue to work with the EU to support the sustainable harvesting of the stock through international negotiations.

Relevant Fisheries Act objectives

The relevant Fisheries Act objectives are the:

- sustainability objective
- precautionary objective
- scientific evidence objective
- ecosystem objective

Policy 2: Use the best-available scientific evidence to support management decisions relating to the setting of sustainable fishing opportunities

Rationale

This policy is in accordance with section 3.2 ('Science and Evidence') of the JFS.

Scientific evidence is essential for delivering appropriate and sustainable fisheries management. A considerable level of work is carried out at national and international level to ensure that the scientific evidence base is robust and up-to-date.

North Sea GSS has a high level of scientific evidence and data in place which already enables fisheries policy authorities to make an MSY assessment for the stock and to take evidence-based decisions in relation to the setting of fishing opportunities. While current ICES stock assessments are considered sufficiently robust to inform management decisions, improvements in the incorporation of ecological evidence, including predator-prey interactions, into stock assessments will lead to more accurate advice.

The actions below are focussed on maintaining the current data collection and scientific approach, along with considering longer-term improvements.

Some actions are not specific to the stock but are general actions which underpin the UK's overall approach to collection and use of scientific data to support fisheries management.

Actions

Ongoing actions

- Continue to participate in ICES working groups to support ongoing data collection and maintenance of the international scientific evidence base that supports the setting of fishing opportunities at sustainable levels.
- Continue to undertake scientific surveys, participate in international stock assessments and contribute to the international advice process.
- Continue to work collaboratively with the fishing industry in allowing observers and samplers to gather bycatch data both at sea and on land, ensuring that high-quality representative data are gathered and submitted to ICES.
- Continue to use the best available evidence to underpin management decisions, implementing the precautionary approach when robust data is not yet available.

Short term actions (one to two years)

- Utilise additional and new data streams, including the use of biological data from the observer, and scientific data derived from new technology such as REM.
- Work with ICES to consider further developing ecosystem-informed assessments and ecosystem modelling approaches in the future.

Relevant Fisheries Act objectives

The relevant Fisheries Act objectives are the:

- sustainability objective
- scientific evidence objective
- precautionary objective

Policy 3: Monitor catches of North Sea GSS and ensure that where possible all catches are counted against quotas

Rationale

This policy is in accordance with section 4.2.8 ('Reducing Bycatch and Minimising Catches of Sensitive Species') of the JFS.

There is a legislative requirement under the Landing Obligation to land all species of fish subject to quota regulations, and for fishers to ensure that all catches are counted and recorded. UK fisheries policy authorities have different approaches in place or in development to improve the operation of the current legislation and the recording of catches, and this includes consideration of the rollout of new technology including REM.

From March 2026, all pelagic fishing vessels fishing in Scottish waters and all Scottish pelagic vessels wherever they fish, must have REM on board. Similar measures are being developed for English waters. REM is an effective way of ensuring that fishing vessels comply with relevant fisheries legislation.

REM supports fisheries managers to understand levels of fish bycatch and take appropriate action if needed.

Actions

Ongoing actions

- Continue to monitor demersal fishing activity using at sea observers, on land market sampling, REM (where available) and other tools, and take appropriate action to tackle non-compliance as needed.
- Monitor levels of fish bycatch within fisheries and take appropriate management action as required.

Relevant Fisheries Act objectives

The relevant Fisheries Act objectives are the:

- bycatch objective
- scientific evidence objective
- sustainability objective

Policy 4: Deliver wider sustainable management by minimising the impact of the North Sea GSS fishery on the marine ecosystem

Rationale

This policy is in accordance with section 4 ('Delivering Sustainable Management of Fisheries') of the JFS.

To varying degrees, all forms of fishing have an impact on the marine environment and marine ecosystems, whether through the removal of target fish species or incidental bycatch of non-target fish or other marine species.

GSS plays an important ecological role as both a predator and prey in the marine food web. As a predator, it controls plankton populations, while it is also an important prey species for larger fish (cod, saithe and ling) and marine mammals. Its presence is integral to the food web in these regions, linking lower and higher trophic levels.

Understanding and minimising these impacts is an important part of delivering an ecosystem-based approach. The fishing industry has taken a number of steps over previous years to try and mitigate against this, for example by using more selective fishing gears, or trialling new tools to reduce bycatch of non-fish species and seabirds. The conservation advice that supports this FMP has identified some impacts and evidence gaps that need to be addressed in order to ensure that the risk posed by pelagic fishing to the wider marine ecosystem is minimised. In particular, conservation advice has flagged the need for an improved evidence base around bycatch levels, with potential action needed in relation to bycatch in pelagic static/drift net fisheries (albeit noting that the majority of pelagic fish caught by UK vessels is from the trawl fleet) and a recognition of the need for greater understanding and identification of potential actions in relation to predator/prey interactions, given the importance of pelagic and semi-pelagic species in the marine food chain. In some cases, action is already being taken on this and there are a range of policies and initiatives already in place or in development across the UK which contribute to this.

Actions

Ongoing and long-term actions (three to five years)

- Monitor levels of bycatch in pelagic trawl fisheries through REM, to improve understanding of risk and to support appropriate management if required.
- Where possible, improve evidence base on the ecosystem role and function of GSS to support an improved understanding of the most appropriate ecosystem-based management approach for these stocks.
- Promote existing good practice within the fishing industry in relation to handling of sensitive marine species and returning them to the sea unharmed, where practical to do so.
- Work with UK experts to consider the ecological role of pelagic and semi-pelagic species in the North Sea and West of Scotland, and how an ecosystem-based approach could be integrated into fisheries management.

Medium- to short-term actions (three to five years)

- Work with ICES to consider further developing ecosystem-informed assessments and ecosystem modelling approaches in the future.

Relevant Fisheries Act objectives

The relevant Fisheries Act objectives are the:

- sustainability objective
- ecosystem objective
- bycatch objective

Policy 5: Reduce the impact of fishing on climate change and support the fishing industry to adapt to the impacts of climate change

Rationale

This policy is in accordance with section 4.1 ('Delivering Sustainable Management of Fisheries - Our approach to Fisheries Management') of the JFS.

The evidence base underpinning climate change and fisheries is developing, and more work is needed to fully understand a) how carbon emissions can be reduced in a sustainable way, and b) the likely impacts of climate change on fish stocks and fishing communities and the scale / nature of change required to adapt.

It is likely that there are going to be changes to the distribution and size composition of the GSS stock as a result of climate change, but the overall impacts are not yet fully understood. The actions below consider how we can build and use an improved evidence base in order to make informed decisions on management action for the future.

In comparison to other forms of food production, fishing can provide a high-protein and low carbon method of production and offers opportunities to provide food security particularly as we move towards net zero. However, we also know that

fishing vessels need to reduce fuel emissions in the future although there are no ready solutions in place for fishing vessels to currently utilise.

As our evidence base grows, we will understand better the specific impacts of climate change on GSS, and the scale of change required to support vessels fishing for GSS to reduce their emissions and also adapt to changes in the GSS stock and general fishing conditions. These actions are likely to adjust over time and will become more refined.

Possible measures which could support this are already in development and / or being delivered. The FMP will support these measures, although it is not directly introducing or delivering them.

Actions

Medium to long term actions (three to five years)

- Collaborate across the UK and internationally on further evidence and analysis to understand the impact of climate change on GSS and develop options for how the GSS fishery may adapt to climate change impacts in the future.
- As additional information becomes available in relation to climate change, explore the implications for this stock.

Relevant Fisheries Act objectives

The relevant Fisheries Act objectives are the:

- sustainability objective
- climate change objective
- Ecosystem objective

Implementation and Monitoring

Implementation

The actions contained within this FMP will be taken forward following its publication. However, it is important to remember that many of the actions are already underway and part of multi-year delivery programmes.

Indicators for monitoring the effectiveness of the plan and review process

This FMP contains a number of policies and actions intended to ensure that the North Sea GSS fishery covered by this FMP continues to be fished sustainably with respect to an MSY approach and also to support improvements in the overall management approach.

ICES stock assessments assess how fish populations have changed over time and the effect that fishing pressure is having on stocks. Key biological indicators are provided as reference points, which give indication towards their MSY, fishing pressure and spawning stock biomass. Fisheries policy authorities undertake a review of ICES stock assessments on an annual basis, to determine how stocks are performing against these reference points, and any other reference points provided within the advice^{32,33}.

The health of the stock will continue to be reviewed in this way as part of the ongoing negotiations cycle, utilising the ICES stock assessment process, and will also be reviewed on a more in-depth basis as part of the ICES benchmark process (which varies from stock to stock). The health of the stock will be the indicator used to monitor the effectiveness of this FMP in managing the GSS stock sustainably.

The policies and actions within this FMP will be reviewed as part of the three year review cycle for the JFS. In addition, as set out within the Fisheries Act 2020 and the JFS, this FMP will be reviewed at least every six years. An earlier review may be triggered in light of a change to relevant evidence, international obligations, or wider events. The decision to review earlier will be taken by the fisheries policy authorities. The review of the FMP will include a report on individual policies and actions and whether they have been a) implemented and b) any known interactions between the actions and health of the stock.

³² [Supplementary Tables - Scottish Sea Fisheries Statistics 2024 - gov.scot](#)

³³ [Assessing the sustainability of fisheries catch limits negotiated by the UK for 2026](#)

Glossary

Bathymersal species - A species that lives close to the seabed in deep-water environments, typically at depths of several hundred metres or more.

Biomass - The total weight of a fish stock or population in a given area.

Btrigger - The spawning stock biomass reference point used within the MSY framework that triggers management caution when stock size falls below it.

Bycatch - Non-target fish or other marine species caught during fishing operations.

Coastal State - A country with rights and responsibilities for managing marine resources within its waters.

Demersal fishery - A fishery targeting species that live on or near the seabed.

Ecosystem-based fisheries management - An approach that considers interactions between target stocks, other species, habitats and wider ecosystem processes when making management decisions.

Evidence-based management - Fisheries management informed by the best available scientific, economic and stakeholder evidence.

Fishing mortality - The rate at which fish are removed from a stock through fishing activity.

Fisheries Management Plan (FMP) - A statutory plan prepared under the Fisheries Act 2020 that sets out policies and actions for the sustainable management of fish stocks.

Good Environmental Status (GES) - The environmental condition that marine waters should achieve under the UK Marine Strategy.

Greater Silver Smelt (*Argentina silus*) - A deep-water schooling fish species found in the North Atlantic and managed under this FMP.

International Bottom Trawl Survey (IBTS) - A long-running scientific survey that provides data on the abundance and distribution of fish stocks in the North Sea and surrounding areas.

Landing Obligation - A regulatory requirement that catches of quota species must generally be landed and counted against quota, subject to specific exemptions.

Marine Protected Area (MPA) - A designated area where measures are used to conserve marine habitats, species or ecosystem features.

Maximum Sustainable Yield (MSY) - The highest long-term average catch that can be taken from a fish stock without compromising its future productivity.

Precautionary Approach - A management approach whereby action is taken to prevent environmental harm despite scientific uncertainty.

Priority Marine Feature (PMF) - A marine species, habitat or geological feature identified as being of conservation importance in Scottish waters.

Quota - A share of a Total Allowable Catch allocated to a country, administration, licence holder or vessel.

Recruitment - The process by which young fish survive and enter the fishable stock.

Remote Electronic Monitoring (REM) - The use of cameras and sensors on fishing vessels to collect information about fishing activity and catches.

Shared Stock - A fish stock that occurs within the waters of more than one country and is managed jointly through international arrangements.

Semi-pelagic species - A species that spends time both near the seabed and within the water column.

Spawning Stock Biomass (SSB) - The total weight of sexually mature fish in a stock and a key indicator used in stock assessments.

Sustainability Objective - The Fisheries Act 2020 objective requiring fish stocks to be exploited in a way that is environmentally sustainable in the long term.

Total Allowable Catch (TAC) - The maximum quantity of a stock that may be caught over a specified period, usually one year.

Trade and Cooperation Agreement (TCA) - The agreement governing UK-EU relations, including arrangements for the management of shared fish stocks.

Vessel Monitoring System (VMS) - A satellite-based system used to track the location and activity of fishing vessels.