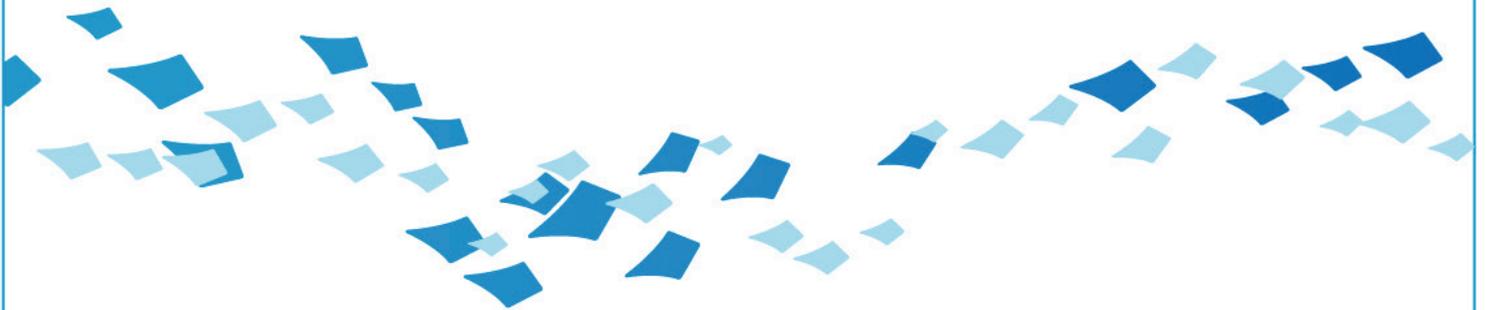
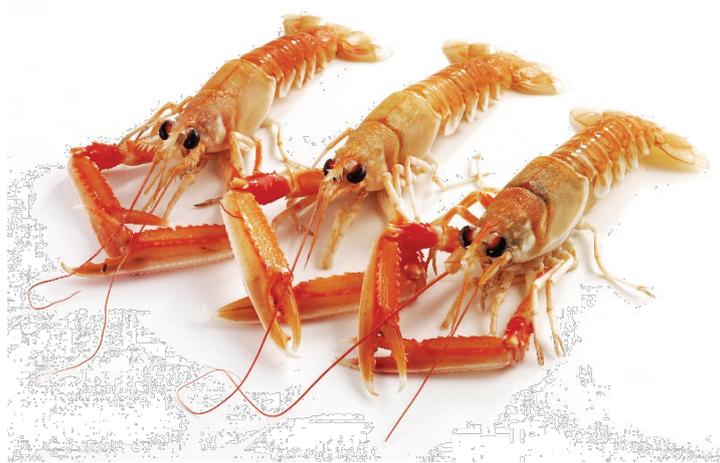


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# Proposed Fisheries Management Plan for North Sea Nephrops



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## Executive summary

The North Sea Nephrops (*Nephrops norvegicus*) 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, Department for Environment, Food & Rural Affairs (DEFRA) and the Department of Agriculture, Environment and Rural Affairs (DAERA) in partnership with the Sea Fish Industry Authority (Seafish) 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 Nephrops stocks at sustainable levels, ensuring that they can continue to play a key role in providing positive socio-economic benefits to the UK, whilst also setting out a number of actions to improve management where this is needed. The FMP applies to the sustainable management of the North Sea Nephrops fisheries within UK waters in International Council for the Exploration of the Sea (ICES) Subarea 4 and has been developed in line with the fisheries objectives of the Fisheries Act 2020 (the '2020 Act') and as required by the JFS.

Nephrops are one of the limited number of shellfish species that are managed by quota in the UK. Stock assessments are carried out for specific areas across the North Atlantic by ICES. Nephrops can be found in burrowed mud and these specific areas of suitable habitat have been delineated into stock areas for assessment which are called Functional Units (FUs). There are 34 FUs for Nephrops in the Northeast Atlantic, and this FMP covers seven FUs in the North Sea area. The West of Scotland Nephrops FMP should be read alongside this FMP.

Whilst Nephrops in the North Sea are assessed at FU level, management takes place at an overarching North Sea level. Overall, North Sea Nephrops have a high level of data available although this is not the case for all individual FUs. There is sufficient available scientific evidence for the relevant fisheries policy authorities to make annual Maximum Sustainable Yield (MSY) assessments of four of the North Sea stocks. The remainder are data limited and assessed biennially. Overall, the Nephrops stocks relevant to this FMP are currently being fished sustainably within MSY limits<sup>1</sup>, although there remains uncertainty over levels within some FUs, and there is concern about the level of exploitation of some individual FU stocks.

This FMP describes a vision with policies and actions which set out how management can support an MSY approach<sup>2</sup> for the North Sea Nephrops fisheries, and highlights areas that could lead to refinements to 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. The FMP also sets out action to consider options around FU management.

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<sup>1</sup> Assessed FUs showing overall stock size above MSY Btrigger excluding FUs 5,10,13,34 and outside FU where MSY Btrigger is not defined.

<sup>2</sup> An explanation of a MSY approach to fishing is provided in [Advice published by ICES](#)

## Abbreviations

The 2020 Act – the Fisheries Act 2020

CO<sub>2</sub>e – Carbon Dioxide equivalent

CFP - Common Fisheries Policy

DAERA - Department of Agriculture, Environment and Rural Affairs

DEFRA - Department for Environment, Food & Rural Affairs

EU – European Union

FMP – fisheries management plan

FMSY - Fishing Mortality Maximum Sustainable Yield

FTE - Full-Time Equivalent

FU – Functional Unit

GES – Good Environmental Status

ICES – International Council for the Exploration of the Sea

JFS – Joint Fisheries Statement

MCRS - Minimum Conservation References Size

MMO – Marine Management Organisation

MPAs - Marine Protected Areas

MSY – Maximum Sustainable Yield

NCAP – North Sea Cod Avoidance Plan

NGOs – Non-Governmental Organisations

PMFs – Priority Marine Features

REM – Remote Electronic Monitoring

SNCBs – statutory nature conservation bodies

TAC – total allowable catch

North Sea Nephrops FMP

UK – United Kingdom

UKBCEP - UK Blue Carbon Evidence Partnership

VMS - vessel monitoring system

## What is an FMP?

An FMP is a document prepared and published under the 2020 Act that sets out policies designed 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 long-term plan that must be reviewed and, if necessary, revised at least once every six years. It sets out both a vision for the fisheries, together with the policies and management interventions necessary to achieve this vision.

## Why an FMP for Nephrops?

There are two Nephrops FMPs, covering the North Sea (ICES subarea 4) and the West of Scotland (WoS) (ICES subarea 6). The areas covered by the FMPs have distinct issues and challenges that warrant separate consideration. Whilst each area has its differences, there are similarities across FMPs to ensure consistency in management approaches. Both FMPs have cross-cutting policies to address sustainable management, and specific policies to address regional issues.

Nephrops are the most commercially valuable shellfish fisheries in the UK, contributing significantly to the economy and wider society. MMO sea fisheries statistics show that a total of 28,600 tonnes of Nephrops, with a first sale value of £116.7 million, were landed in the UK by all vessels in 2022.

## Stakeholder engagement

The FMP has been informed by a range of stakeholder engagement initiatives. As part of the FMP development process, Seafish, on behalf of the fisheries policy authorities, delivered a series of stakeholder engagement events between March and April 2024. This was part of a process known as 'pre-consultation'. Feedback from these events was used to refine draft content and to develop the policies and actions presented in this plan. Further pre-consultation work was undertaken during 2025, with the Scottish Government sharing a draft of one of the Nephrops FMPs and gathering comments from stakeholders at workshops held on 29 May 2025 and 5 June 2025 and by inviting written feedback.

Stakeholder knowledge has been valuable in providing context for the FMP, and in developing meaningful actions that will support the sustainable management of North Sea Nephrops in the future.

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

## Vision

The vision for this FMP is that Nephrops in UK waters of the North Sea are managed to ensure long-term sustainability, economic profitability of dependent fisheries, businesses and communities; and minimise environmental impact, whilst maintaining the social and cultural value this important resource contributes to the UK.

The policies and actions 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 2020 Act, the policies contained within the JFS and other legislative commitments.

## Policies

As there is sufficient available evidence to assess MSY for economically and socially critical FUs in the North Sea, the FMP must contain policies which will at least contribute to restoring or maintaining at MSY levels. 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 and 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. It should be noted that for some FUs, and Nephrops outside of FUs in the North Sea, data is limited and MSY cannot be estimated. There are no current plans to improve data for these areas given that they do not contain the most significant economically and socially critical Nephrops stocks.

The proposed FMP identifies six policies focussed on domestic and international management priorities. These policies are subject to the consideration of the consultation and will be prioritised appropriately to ensure realistic and measurable outputs. They were drafted with stakeholder input to meet the requirements of section 6(3) of the Act (policy 1) and policies set out in the JFS (policies 2, 3, 4, 5 and 6).

For each policy, the FMP sets out:

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

Each policy describes the outcome that is being worked towards, and the actions are intended to support the delivery of those outcomes.

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

The six policies of this FMP are to:

1. Harvest Nephrops stocks sustainably, with biomass maintained above the level capable of producing MSY.
2. Understand and minimise the benthic impact of Nephrops fisheries.

3. Minimise the impact of Nephrops fishing activities on sensitive marine species by reducing bycatch and entanglement of these species.
4. Address discarding issues in the Nephrops fisheries and ensure that where possible all catches are accounted for against quotas.
5. Support fishing businesses to continue to deliver socio-economic benefits to coastal communities and the wider UK economy.
6. Reduce the impact of Nephrops fishing on climate change and support the fishing industry to adapt to the impacts of climate change

There is significant overlap in policies between the North Sea and West Coast of Scotland (Subarea 6) Nephrops FMPs; this is intentional to ensure that there is harmonisation in management approaches and delivery as far as practicable.

## Scope

This FMP relates to Nephrops (*Nephrops norvegicus*) which consists of the North Sea Nephrops fisheries in UK waters of the ICES Subarea 4 (North Sea). The 2020 Act requires the relevant authority or authorities to prepare and publish FMPs in accordance with the list and timetable included in the JFS.<sup>3</sup> The relevant authorities<sup>4</sup> for this FMP are the Department of Agriculture, Environment and Rural Affairs (DAERA), the Department for Environment, Food & Rural Affairs (Defra) and Scottish Government in collaboration with the Sea Fish Industry Authority (Seafish) with input from industry, scientists, non-governmental organisations (NGOs) and Statutory Nature Conservation Bodies (SNCBs). As the coordinating authority, the Scottish Government has coordinated the preparation and management of this plan on behalf of the other relevant authorities.<sup>5</sup>

## Background

### Stock

Nephrops are a small decapod crustacean ranging in total body length from 8-24cm (including the tail, carapace and clawed legs). Females will reach maturity at around three years of age although growth is difficult to assess in Nephrops, and it varies geographically, often dependent on food supply. Mating takes place in early summer following moulting and females will carry the eggs for up to nine months before they

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<sup>3</sup> UK Government (2022) [Joint Fisheries Statement](#). The updated timetables are set out in the updated Annex A (amended December 2024)

<sup>4</sup> 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.”.

<sup>5</sup> 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”.

hatch. During this period berried (egg carrying) female Nephrops will remain mostly hidden in their burrows.<sup>6</sup>

Therefore, throughout this period males are more heavily exploited in the fisheries compared with other times of the year. Since a significant proportion of Nephrops are fished using demersal trawls and because animals are protected from trawls when in their burrows, the emergence patterns significantly influence catch rates.<sup>7</sup> The timing of Nephrops emergence to feed appears to be related to light levels, and greatest catches are often taken at dawn and dusk, although this may vary with water depth and clarity.

## Location

Across Northeast Atlantic, Nephrops are assessed as individual stocks in 34 functional units (FUs). These are based on discrete patches of mud which they inhabit. Within the UK sector of the North Sea there are seven FUs that are targeted by fishers. These include the Farn Deep, Firth of Forth, Moray Firth, Fladen Ground and, to a lesser extent, the Noup, Devil's Hole and Botney Cut-Silver Pit (Figure 1).

Nephrops are found across the North Sea although their distribution directly correlates to the mud patches they inhabit. As a result, Nephrops fleet activity is generally confined to certain areas of suitable habitat around the North Sea where the mud patches are accessible. The most prominent inshore fishing areas are the Farn Deep (FU6) off the Northumberland coast in northeast England and along the Firth of Forth (FU8) and Moray Firth (FU9) in Scotland. The largest and most distant area being the Fladen Ground (FU7) which is situated about 100 miles northeast of Aberdeen, between Scotland and Norway. The Fladen Ground borders the Norwegian Deep FU, and the easternmost part of the Fladen's straddles the median line between UK and Norwegian waters; other North Sea FUs are entirely inside UK waters. Botney Cut-Silver Pit (FU5) is northeast of the Norfolk coast within UK waters and is covered by this FMP also.

Ports in the northeast of Scotland and northeast England are heavily reliant on Nephrops fisheries which make up a significant proportion of the total value of landings. Nephrops are landed either whole live, whole fresh, or tailed, and in some cases, vessels will freeze whole Nephrops at sea. Whole Nephrops are predominantly exported to the EU, whilst the tails are used in scampi production for domestic markets.

Nephrops fisheries in the North Sea are often mixed, with Nephrops caught alongside quota whitefish species such as cod, haddock, and whiting. The mixed

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<sup>6</sup> Chapman, C.J. & Ballantyne, K.A., 1980. Some observations on the fecundity of Norway lobsters in Scottish waters. International Council for the Exploration of the Seas Council Meeting Papers, C.M.1980/K:25.

<sup>7</sup> Atkinson, R.J.A., 1989. Baseline survey of the burrowing megafauna of Loch Sween, proposed Marine Nature Reserve, and an investigation of the effects of trawling on the benthic megafauna. Report to the Nature Conservancy Council, Peterborough, from the University Marine Biological Station, Millport, pp.1-59.

## North Sea Nephrops FMP

nature of these demersal fisheries is often critical to economic viability of individual vessels.

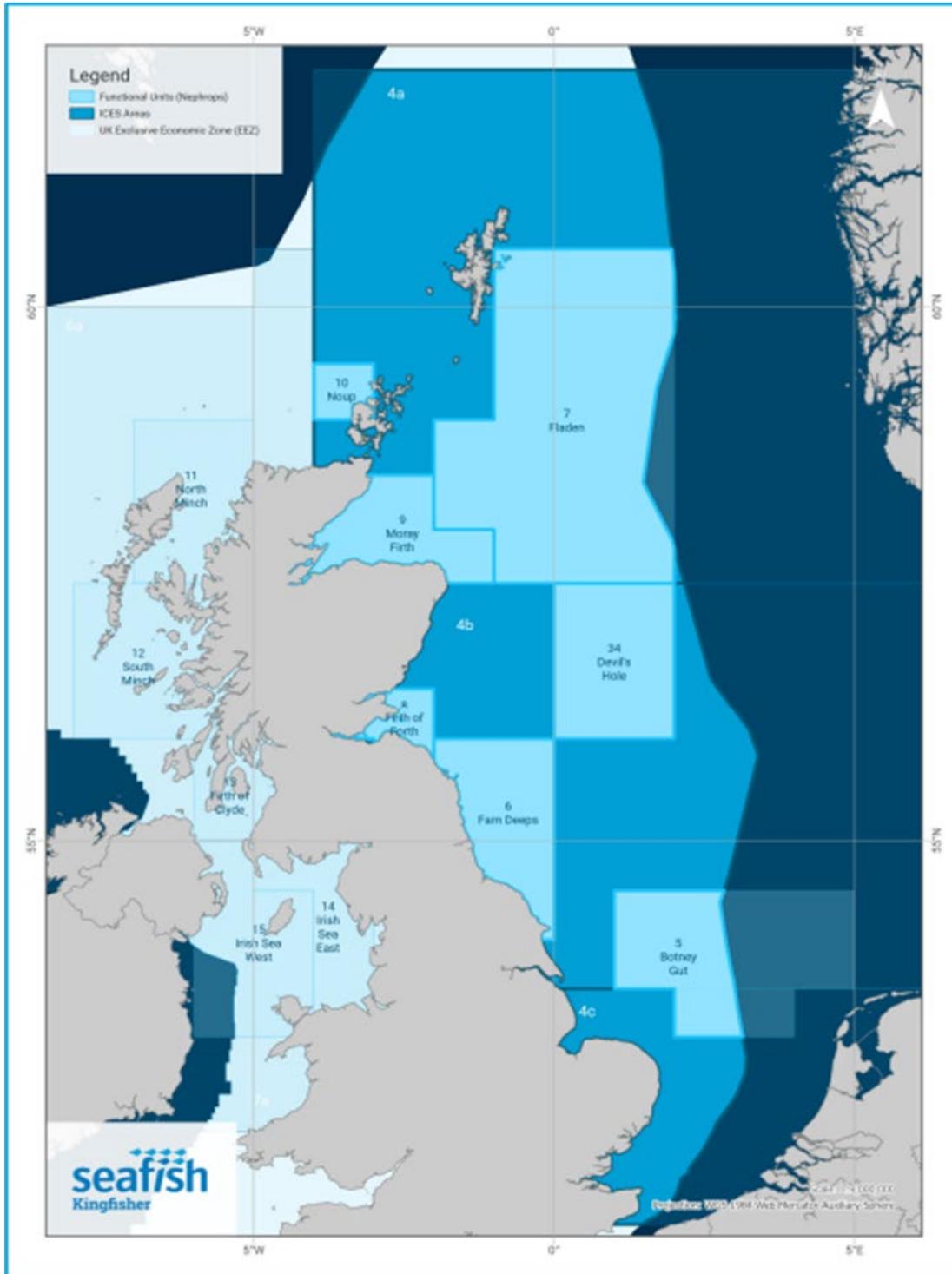


Figure 1. Map showing functional units in the North Sea, ICES Subarea 4, that are included within the scope of this FMP.

## Fisheries

Fishing for Nephrops in UK waters can take place as part of a targeted and also a mixed fishery. Even within the targeted fisheries, bycatch of non-targeted fish does occur, and it is often the case that when fishing for Nephrops, bycatch of both quota and non-quota species can form part of the overall catch. The composition of the overall whitefish bycatch can vary between functional unit. In the North Sea, there is a specific mixed Nephrops / whitefish fishery, with vessels targeting both species as part of their overall business model. The extent to which there are issues with bycatch and discarding depends on the type of gear and areas in which fishing occurs, along with considerations of available quota and the type of business model followed.

The majority (73%) of Nephrops targeted in the North Sea are caught using otter trawls. Most of the Nephrops caught in trawls are fished by vessels over 10m, working out of ports in the northeast of England and northeast of Scotland. Larger trawlers will often fish multi-day trips, whilst the smaller vessels under 10m are usually restricted to fishing within the 12nm limit and often return to port each day.

The two most common trawls used in the Nephrops fleet in the North Sea are the demersal trawl and the twin rig trawl. The Nephrops twin rig was initially developed in northeast Scotland as a follow on from the Danish twin rig set up for shrimp and Nephrops. Both these gears are characterised by having long winged low nets, with lightweight ground gear for towing over the soft, muddy areas where Nephrops are found. A pair of otter boards or trawl doors are used to keep the mouth of the net open (Figure 2).

The main difference between the demersal trawl and the twin rig trawl is that a twin rig utilises two separate trawls joined together; this increases fishing efficiency by increasing swept area for species like Nephrops which are less likely to be 'herded' towards the net by sweeps. Twin rigs still use only one pair of otter boards to keep the nets open but use a clump or weight between the trawls to stop the inner wings of the net folding over and to keep the sweeps on the seabed (Figure 2). Nephrops trawls are designed to skim over the soft mud and have less interaction with the seabed than some other mobile gears. This is due to carefully balanced footropes and headlines, in conjunction with towing speeds.

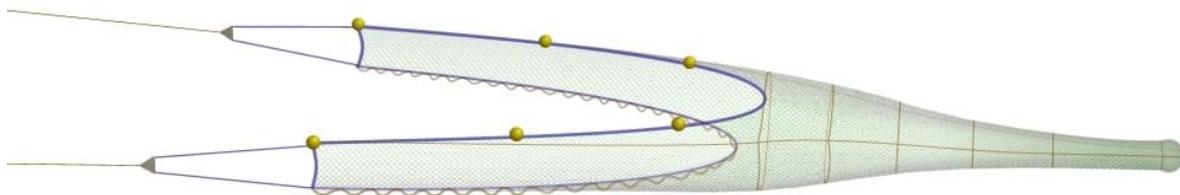


Figure 2. A single prawn trawl. In this instance the trawl is 'coverless' meaning the headline is inline or behind the footrope. This allows non-target fish to pass up and over the trawl. (Seafish, 2023).

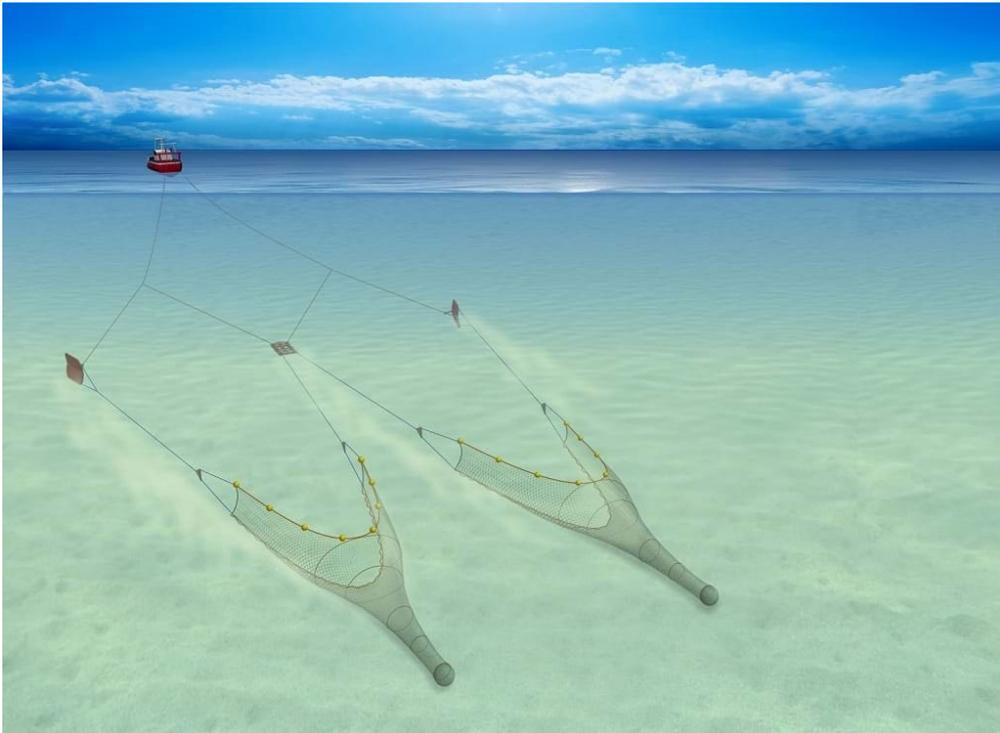


Figure 3. Twin rig trawl utilising one set of otter boards and a single clump separating the two trawls (Seafish, 2023)

The main landing sites for North Sea Nephrops in Scotland are located along the northeast coast. Of particular significance is Fraserburgh which is the UK's principal Nephrops port, as well as Peterhead. Combined these two ports alone were responsible for nearly 60% of Nephrops landings out of the top 10 Nephrops ports in Scotland. The main landing ports in northeast England for Nephrops are North Shields, Blyth, Amble and Hartlepool. North Shields being the principal port of the Farn Deeps FU fishery.

### **Target and non-target bycatch in Nephrops trawl fisheries**

Whilst Nephrops is the target species for Nephrops fishing vessels, they may also take a bycatch of other fish species. In some cases, this can be in small numbers, and significant steps have been taken to reduce this over the years, however, there can be a cumulative effect, meaning that whilst bycatch at individual level is often small, when scaled up across the number of vessels in the fishery, it can be large. This is further demonstrated later in this FMP when we discuss technical measures. There is also a distinction between wanted and unwanted bycatch of fish – some vessels will rely on a mixed fishery as part of their business model. This is particularly the case for fishing vessels operating within the Fladens area which operate as part of a mixed offshore fishery. For other vessels where whitefish is not part of the business model, this can lead to issues with discarding.

### **Nephrops landings profile**

## North Sea Nephrops FMP

Annual landings fluctuated between 2016 and 2023, ranging from 6,959 tonnes in 2015 to 18,589 tonnes in 2019 (4). The value of landings closely followed tonnage trends, fluctuating between £24.4 and £59.9 million, although dipping to £27.5 million in 2020 due to the impact of Covid-19 on global seafood markets. Both value and tonnage in 2024 have increased compared with 2015 in landings and value by 64% and 46% respectively.

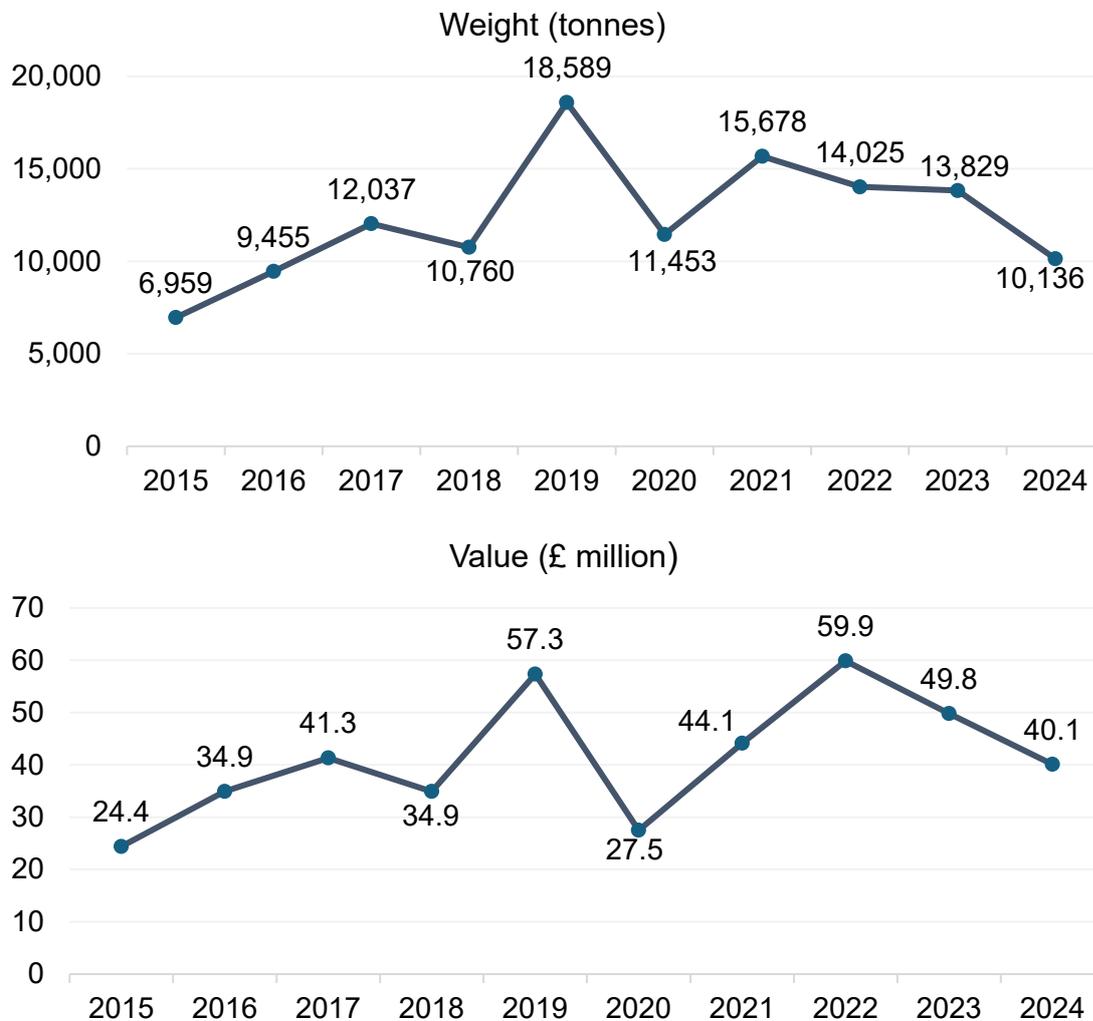


Figure 4: Total Landings (weight and value) of North Sea Nephrops by UK Vessels, 2015 to 2024

The Fladen Grounds (FU7) are responsible for the largest proportion of total Nephrops landings at 42,833 tonnes (46%) between 2016-2022 within the FMP area. The Farn Deep (FU6), Firth of Forth (FU8), and Moray Firth (FU9) each contributed 17%, 16% and 9% to total annual FMP landings respectively. By ICES rectangle, 41E7 (FU8) and 39E8 (FU6) were responsible for the most landings, 12,175 tonnes and 8,365 tonnes, between 2016 and 2022.

Nephrops landings in the North Sea generally peak mid-summer. Average monthly landings between 2020 and 2024 increased rapidly during June and peaked in July

averaging 1,095 tonnes. Average landings then gradually declined throughout autumn, winter and spring, reaching a low of 347 tonnes in May.

### **Nephrops export figures**

The volume of UK Nephrops exports generally ranged from 22,600-26,600 tonnes between 2016 and 2022, except for 2016 and 2020 when exports dropped to 19,795 and 17,091 tonnes respectively. Between 2016 and 2021, Nephrops export values (not adjusted for inflation) ranged from £107.9 to £119.7 million, except for 2020 when the value of exports dropped to £80.6 million. This was likely related to the impacts of the Covid-19 pandemic on global markets.

Export values then rose by 13% in 2022 reaching £124.9 million, associated with a lower export volume and a higher price per kilo (£10.43/kg in 2022 compared to £7.81-£8.97/kg between 2016-21). The majority of Nephrops exports are frozen (77% on average) with a smaller amount of live/fresh (23% on average), however in terms of export value, the split between the two presentation formats is more even. Frozen Nephrops constitutes 55% of the total export value on average, and live / fresh Nephrops constitutes 45% on average.

## **Stock assessment and MSY**

### **Scientific evidence**

Assessments for each Nephrops FU are carried out using an underwater television camera mounted on a sledge, which is towed across the seabed by research vessels. The abundance of Nephrops is estimated from the number of occupied burrows per unit area as counted in images, raised up to the area of Nephrops habitat in the FU. Nephrops catch (including estimated dead discards) is divided by the abundance of Nephrops estimated by the survey to calculate the harvest rate for the FU.

To provide management advice, scientists define reference points for harvesting of Nephrops stocks. The two key reference points used are MSY  $B_{\text{trigger}}$ <sup>8</sup> – a biomass (B) threshold below which management measures or action may be needed, and an optimal harvest rate ( $F_{\text{MSY}}$ )<sup>9</sup>.

MSY  $B_{\text{trigger}}$  is typically defined as the lowest historically observed stock level, however for Nephrops this trigger is typically set at a level representing the lower bound of natural stock fluctuations around the biomass that would produce maximum sustainable yield (BMSY). Higher trigger levels are however set if the stock has shown signs of stress at this level of abundance. The optimal harvest rate reference point ( $F_{\text{MSY}}$ ) is derived taking into consideration biological characteristics such as

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<sup>8</sup> MSY  $B_{\text{trigger}}$  expressed as abundance in numbers of individuals.

<sup>9</sup> The term used in the Nephrops assessments is  $F_{\text{MSY}}$ ; rate of fishing mortality at MSY expressed as a percentage by number of individuals caught.

growth, size at maturity, burrow density, variability in stock size, and historical fishing levels.

Scientific advice is published by ICES on the size and status of the individual Nephrops stocks or FUs in relation to these reference points. The recommended catch advice for each stock is usually given based on fishing at  $F_{MSY,r}$ . If a stock falls below MSY Btrigger, ICES advises a reduced catch to promote rebuilding and with the aim of returning the stock to sustainable levels.

## Assessment of evidence

As set out above, North Sea Nephrops generally have a high level of data available, although some individual Nephrops stocks in the North Sea are data limited. Overall, there is sufficient available scientific evidence for the relevant fisheries policy authorities to make annual MSY assessments for the most economically and socially critical FUs.

Overall, the North Sea Nephrops fisheries covered by this FMP are currently being fished sustainably, with assessed FUs showing stock health above MSY biomass reference points and fishing pressure mostly below MSY fishing mortality reference points.

The advice for each FU is detailed below:

1. Outside Functional Units
  - Stock status: Unknown (data limited stock)
2. FU7 - Fladen Ground
  - Stock status (for 2026): Fishing pressure on the stock is below  $F_{MSY}$ , and stock size is above MSY Btrigger.
3. FU9 - Moray Firth
  - Stock status (for 2026): Fishing pressure on the stock is below  $F_{MSY}$ , and stock size is above MSY Btrigger.
4. FU10 - Noup
  - Stock status: Unknown (data limited stock)
5. FU6 - Farn Deep
  - Stock status (for 2026) Fishing pressure on the stock is above  $F_{MSY}$ , and stock size is above MSY Btrigger. (note the condition of this FU has improved since 2023-24)
6. FU8 - Firth of Fourth
  - Stock status (for 2026): Fishing pressure on the stock is below  $F_{MSY}$ , and stock size is above MSY Btrigger.
7. FU34 - Devils Hole
  - Stock status (2023, 2024): Unknown (data limited stock)

8. FU5 – Botney Gut / Silver Pit
  - Stock status (for 2026): Unknown (data limited stock)

Stock advice summaries provided are based on the most recent available information at time of writing, therefore providing important context for the development of this FMP and retaining consistency with the data provided in this document and annexes. Please refer to the most up to date ICES scientific advice, which is available through the [ICES Advice Explorer](#).

## Fisheries management

### Management strategy for Nephrops

The UK fisheries policy authorities set out in the JFS 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 administration secondary legislation) and licence conditions where appropriate.

North Sea Nephrops (in ICES Subarea 4) is also covered by North Sea Multi Annual Plan (MAP) (Regulation 2018/973)<sup>10</sup>. The MAP contains measures to restore and maintain fish stocks above levels capable of producing MSY, and requirements relating to the determination of fishing opportunities, implementation of the landing obligation and engagement with third countries to ensure the relevant stocks are managed in a sustainable manner in line with the MAP objectives.

The management of Nephrops fisheries in the UK is carried out within this overarching context. Furthermore, Nephrops are jointly managed stocks with quota opportunities determined through the bilateral coastal State negotiations between the UK and the EU.

Following the conclusion of annual negotiations with the EU, an agreed Total Allowable Catch (TAC) is then determined as fishing opportunities for British fishing fleet by the Secretary of State and published in a document under section 23 of the

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<sup>10</sup> The MAP was part of the EU Common Fisheries Policy which was retained and now, as amended, forms part of assimilated law in the UK and is contained within assimilated Regulation number 2019/472. This can be accessed on [legislation.gov](https://legislation.gov.uk) [here](#).

2020 Act.<sup>11</sup> Following this, the UK’s quota is apportioned between the four UK Fisheries Administrations in line with the UK Quota Management Rules<sup>12</sup>. Each UK Fisheries Administration then allocates its share of apportioned quota to vessels/licences under their administration, in line with their quota management rules and Section 25 of the 2020 Act. Quotas are adaptable, for example, they may be transferred between the management groups which represent UK fishing vessels or exchanged with the EU.

## 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. Following the UK’s exit from the EU, technical conservation regulations under the CFP are now assimilated into UK law. The UK Government and evolved Governments now have powers to introduce new technical measures, using licence conditions or secondary legislation under the 2020 Act or other relevant UK laws.

There are currently a range of technical measures used within Nephrops fisheries, primarily to reduce discarding of non-target species and undersized fish through improved selectivity, to reduce overall fishing mortality, and to minimise the impact fishing activity has on the wider marine ecosystem.

Nephrops live in areas of muddy substrate which are often inhabited by several other commercially targeted species including cod, haddock and whiting, as well as flatfish like plaice. This means that Nephrops can often be targeted as part of a mixed fishery, which can be of benefit to those fishers that hold quota against other fish species. Technical measures that include mesh sizes and selectivity devices, alongside the landing obligation, play an important role in maintaining the selectivity of the fisheries, and reduce the bycatch of unwanted or undersized species. Specific conditions are also in place under the North Sea Cod Avoidance Plan (NCAP)<sup>13</sup> which permit fishing for Nephrops in the North Sea using a net smaller than the standard 120mm only in defined Nephrops ‘mud areas’.

There are currently two different variations of the Minimum Conservation Reference Size (MCRS) for Nephrops, split by ICES area, as shown in Table 1.

**Table 1. Minimum Conservation Reference Sizes for Nephrops in UK waters**

	Subarea 4			Subarea 6 and 7		
	Total Length	Carapace Length	Tail	Total Length	Carapace Length	Tail
Whole Nephrops	85mm	25mm	46mm	70mm	20mm	37mm
Nephrops tails	-	-	46mm	-	-	37mm

<sup>11</sup> Department for Environment, Food & Rural Affairs (2024) [Fishing opportunities for British fishing boats](#).

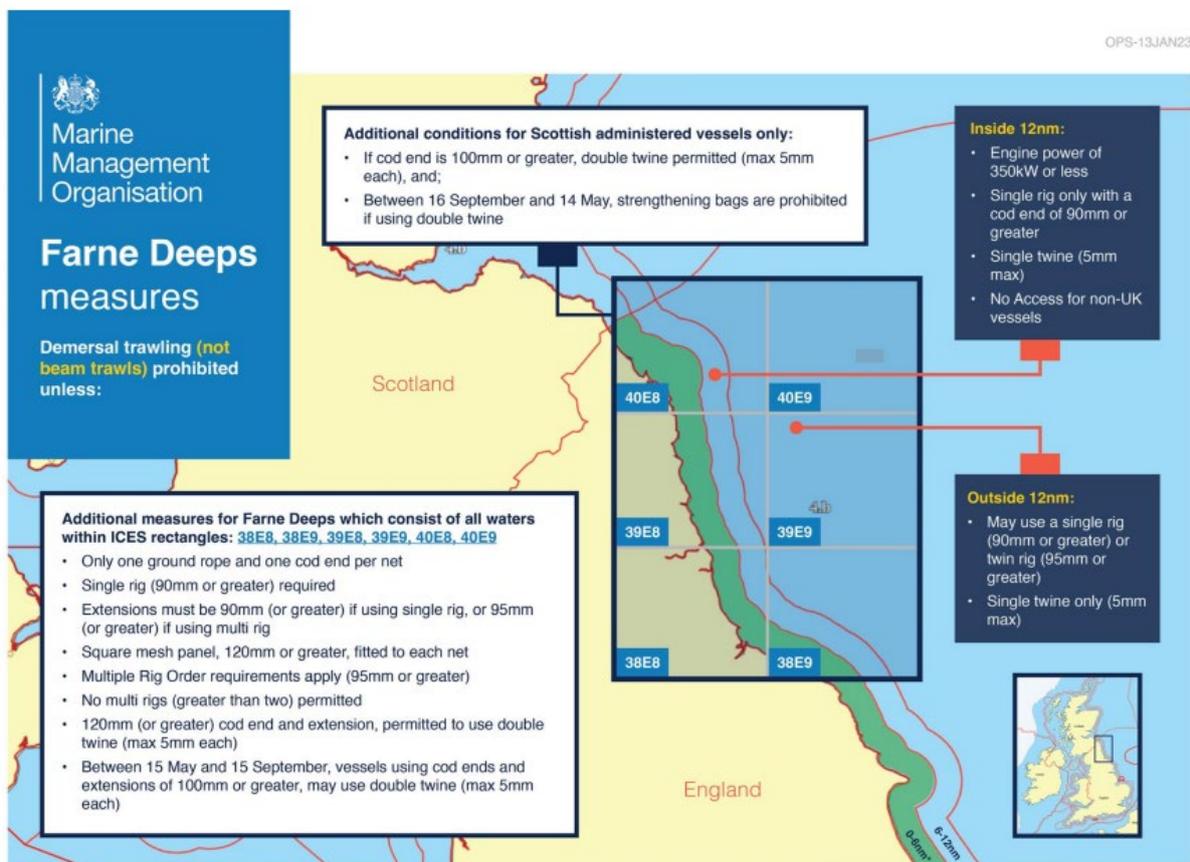
<sup>12</sup> Weblink to [UK Quota Management Rules](#).

<sup>13</sup> Weblink to [UK national North Sea cod avoidance plan - gov.scot](#)

In English waters, Inshore Fisheries Conservation Authorities (IFCAs) have a duty to manage the inshore waters out to 6nm. This can include introduction of specific management measures via IFCA byelaws, such as permits for trawling, technical measures and gear restrictions, and vessel size restrictions. In the Northumberland IFCA district a number of byelaws are in place which stipulate:

- A permit is required for vessels targeting Nephrops with a single trawl in the district;
- Only vessels under 18.3m can fish for Nephrops with trawls inside 6nm; and
- Technical measures and gear restrictions are in place in specific designated areas, such as Coquet to St. Mary's Marine Conservation Zone.
- Target and non-target bycatch in Nephrops fisheries

Additional technical measures apply in the Farn Deeps (FU6) which are intended to provide additional protection of a coastal functional unit which is vulnerable to overexploitation.



\*Vessels fishing within the 0-6nm limit should check with the relevant IFCA for any additional information (see green boundary)

Figure 5: Farne Deeps measures.

## Environmental considerations

In addition to the requirements of the 2020 Act, 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<sup>14</sup>, and the UK Marine Policy Statement<sup>15</sup>, 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, SNCBs provided conservation advice for the North Sea Nephrops and West Coast of Scotland Nephrops FMPs. This advice encompasses English, Northern Irish and Scottish waters where Nephrops stocks are targeted. The advice draws on information from ongoing monitoring and evidence programmes related to Marine Protected Areas (MPAs) and the UK Marine Strategy. These programmes gather data to better inform us about the risks that marine activities, including fishing, pose to the marine environment.

The conservation advice provided practical guidance on the most significant risks associated with the interactions between the fishing gear types used to target Nephrops and the designated features of MPAs, Priority Marine Features (PMFs)<sup>16</sup> (Scottish waters only) and UK Marine Strategy descriptors. The advice identified otter trawls and creels, as the primary gear types for consideration.

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. Activities with a moderate risk indicate that fisheries management authorities may need to take additional action to reduce the impact of fishing or, in some cases, improve the evidence base in order to more accurately assess risk in the future. For activities with a high rating it is generally suggested that action will be needed. The advice noted that more detailed information on gear types, location and fishing effort would improve the ability to assess environmental risks associated with each FMP and could alter some of the risk ratings presented.

The evidence and advice provided by SNCBs underpins the proposed actions in the 'policies' section of this FMP, in particular Policy 2: Understand and minimise the benthic impact of Nephrops fisheries. In addition, policies 1 and 3 directly support the delivery of improvements to the UK Marine Strategy descriptors relating to stock health. It is important to note that many of the actions that sit under these policies

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<sup>14</sup> Weblink to [The Marine Strategy Regulations 2010](#)

<sup>15</sup> Weblink to [UK marine policy statement - GOV.UK](#)

<sup>16</sup> Weblink to [Priority Marine Features in Scotland's seas - The List | NatureScot](#)

support work already underway. Additionally, some of the risks identified require further data gathering or analysis before appropriate actions can be designed and therefore some of the actions have strategic elements and relate to data collection that will help to develop the evidence-base needed.

It should also be recognised that the act of fishing in general, by its very nature, impacts on marine species and the marine environment in which fishing boats operate. However, understanding and, where possible, mitigating these risks and impacts, is an important part of effective fisheries management. In particular, the need to balance environmental action with consideration of the socio-economic benefits that fishing brings, is an important component of fisheries management.

### **MPAs and Priority Marine Features (PMFs) (Scottish waters only)**

The conservation advice identified that Nephrops fisheries have the potential to impact the designated features of MPAs and PMFs in three ways:

- Through the bycatch and entanglement of species that are designated features of MPAs and PMFs (in Scottish waters);
- Through removal of prey species on which designated species depend; and
- Through physical impacts to seafloor resulting in habitat impacts.

The advice recognises that measures have already been introduced, or are in the process of being introduced, which seek to mitigate the impact of Nephrops fishing in MPA areas, covering the above three impacts.

For MPAs, risk relating to bycatch of mobile species (e.g. marine mammals and fish species) is deemed to be **moderate**. Some species - such as basking shark, minke whale, and to a lesser extent, Risso's dolphin – are potentially at a greater risk of entanglement in creel fisheries. This risk is most relevant to the West Coast of Scotland Nephrops FMP which encompasses the majority of creeling activity, with only a small amount taking place in the North Sea. Flapper skate (*Dipturus intermedius*) (RJB)<sup>17</sup> may be at greater risk through bycatch from Nephrops trawls owing to their habitat preferences. Gathering additional evidence on bycatch will help improve the evidence base and support improved management and actions relating to this are set out under the 'policies' section. Finally, there is a **low** risk of removal of important prey species that designated species depend on as Nephrops are not considered a key prey species, and bycatch of key prey species is not thought to be at a level of concern.

In Scottish waters, the risk for bycatch involving PMFs is considered **moderate**. However, further evidence collection to better understand the issue could lower this risk in the future. In addition to the bycatch risks associated with MPAs features, creeling poses an entanglement risk for other large whale species such as fin, sperm whales, and humpback whales (although this species is not listed as a PMF). This issue is mainly a concern for the WoS Nephrops FMP, however it is considered in the 'policies' section of this FMP, which outlines current and planned actions for

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<sup>17</sup> ICES provide advice for 'common skate complex' in the North Sea/3a - that includes blue skate (*Dipturus batis*) & flapper skate (*Dipturus intermedius*). The code they use for that skate complex is RJB.

evidence gathering and bycatch mitigation signposting to the positive initiatives already being undertaken by the fishing industry.

Similar to MPAs, there is also a **low** risk of removing PMFs that serve as important prey species for PMF species. However, there is value in continuing to develop and improve measures for minimising bycatch of fish in the Nephrops fisheries to support stock sustainability and broader biodiversity outcomes.

The risk rating for physical impacts to benthic and habitat PMFs is considered **moderate**, due to the fact that these features will be offered some protection through the MPA management process. This rating is primarily driven by the trawl fisheries, but creeling also contributes to this risk, with the relative impact linked to the intensity of creel fishing in an area.

This topic is further explored in Policy 2 'Understand and minimise the benthic impact of Nephrops fisheries'. Some actions to address benthic impacts are already underway such as the introduction of inshore Vessel Monitoring Systems (VMS) and the implementation of fisheries management measures in existing MPAs and for PMFs (in Scottish waters).

## Highly Protected Marine Areas - England

Highly Protected Marine Areas (HPMAs) are areas of the sea (including the shoreline) that allow the protection and full recovery of marine ecosystems. By setting aside some areas of sea with high levels of protection, HPMAs will allow nature to fully recover to a more natural state, allowing the ecosystem to thrive.

HPMAs will protect all species and habitats and associated ecosystem processes within the site boundary, including the seabed and water column. The first three Highly Protected Marine Areas (HPMAs) designations in English waters came into force on 5 July 2023.

The three sites are:

- Allonby Bay
- North East of Farnes Deep
- Dolphin Head

Any actions arising from the FMPs that overlap with HPMAs will comply with the conservation objectives for designated features.

## UK Marine Strategy Descriptors

The Marine Strategy Regulations 2010<sup>18</sup> require management action to be taken to achieve or maintain Good Environmental Status (GES). The [UK Marine Strategy Part Three: UK Programme of Measures](#) outlines the actions and initiatives the UK is taking to do this.

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<sup>18</sup> Weblink to [The Marine Strategy Regulations 2010](#)

The conservation advice for Nephrops focused on the most relevant descriptors in terms of risks posed by commercial and recreational fisheries (D1 biodiversity, D4 foodwebs, D6 seafloor integrity and D10 marine litter). The advice also noted that additional consideration of screened-out descriptors may be required in the future and that the status of many of the current indicators are currently 'uncertain' or 'unassessed' and as the evidence base develops, the advice pertinent to those descriptors will need to be updated.

The conservation advice noted a number of risks from Nephrops fishing. This included a **moderate risk** to achieving GES for the biological diversity of marine mammals, particularly cetaceans, and seabirds through bycatch and prey reduction.

There is also a **high risk** to seafloor integrity due to benthic disturbance caused by mobile demersal gears. The indicator did not include impacts from the Nephrops creel fishery, and while these are likely to be lower risk, these gears may impact seafloor integrity if operating at a high intensity. The advice noted that further work was needed to identify and quantify impacts from individual fisheries. Actions in relation to this issue are contained within the 'policies' section.

The advice also noted a **moderate risk** to marine litter from Nephrops fishing, however, more evidence is needed on abandoned, lost, or discarded fishing gear in the fisheries to better understand the issue.

This topic is further explored as part of Policy 2 'Understand and minimise the benthic impact of Nephrops fisheries' and Policy 3 'Minimise the impact of Nephrops fishing activities on sensitive marine species by reducing bycatch and entanglement'. Some actions to address these impacts are already underway such as monitoring the spatial footprint of fishing and introducing fisheries management measures to protect marine features. This includes improving the accuracy of fisheries spatial data through the introduction of inshore VMS. Longer term actions involve collaborating across the UK to reduce unwanted bycatch of marine species, through the UK Marine Wildlife Bycatch Mitigation Initiative. This initiative aims to improve understanding of the risk and frequency of sensitive species interactions, and the effectiveness of existing mitigation and avoidance measures.

## Climate change

Both adapting to the impacts of climate change and reducing greenhouse gas emissions to support reaching net-zero, presents several significant challenges for the fisheries sector, highlighting the need for a collective approach to understanding these issues and co-developing solutions. Significant progress has been made over the last decade in strengthening the evidence base, with greater attention from both

policy and industry on climate change impacts, and opportunities for adaptation<sup>19</sup> and mitigation<sup>20</sup>.

Climate change is expected to affect many commercial sea fish and shellfish species—particularly those inhabiting or relying on inshore waters—through changes in habitat suitability, geographical distribution, and overall productivity.

### **Climate change impacts on Nephrops stocks and fisheries**

Nephrops populations in UK waters are considered eurythermal (temperature tolerant) and are thought to be within the colder end of their thermal range. As such, they are not expected to experience major temperature driven changes under projected warming scenarios, which will occur in warmer end of their thermal ranges. Warming seas have shifted the timing of larval release earlier in the year, but this change has had little effect on larval survival or dispersal to date, indicating physiological and ecological flexibility. However, ocean acidification may have adverse effects, including reduced immune function (Thornborrow et al., 2024<sup>21</sup>; Hernroth et al., 2012<sup>22</sup>).

West coast of Scotland Nephrops populations in particular, benefit from larval input from the western Irish Sea, which can help support Scottish stocks during periods of low local recruitment. This cross-boundary larval exchange may provide a buffer under moderate climate pressures. However, despite their tolerance to temperature change, habitat suitability for Nephrops along the West Coast of Scotland is projected to decline. Reductions in suitable muddy burrow habitats could pose a significant long-term risk to populations, even if the species remains physiologically resilient. Certain fishing practices—such as trawling and dredging—can further damage key seabed habitats.

Overall, while Nephrops exhibit some resilience and adaptability, the longer-term decline in habitat suitability remains a concern for future population stability.

### **Vessel emissions**

In addition to the impacts of climate change on Nephrops fisheries, and the need to adapt to these changes, it is also important to consider climate change mitigation (and net zero targets) in relation to fishing. The fishing sector contributes to carbon emissions through vessel emissions and transport of exports.

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<sup>19</sup>**Adaptation** means “The adjustment in economic, social or natural systems in response to actual or expected climatic change, to limit harmful consequences and exploit beneficial opportunities.”

<sup>20</sup>**Mitigation** means “Reducing greenhouse gas emissions in order to slow or stop global climate change”

<sup>21</sup> Weblink to research report [Informing Scotland's fisheries policies to be adapted and resilient to climate change and ocean acidification](#);

<sup>22</sup> Hernroth B, Sköld HN, Wiklander K, Jutfelt F, Baden S. Simulated climate change causes immune suppression and protein damage in the crustacean *Nephrops norvegicus*. *Fish & Shellfish Immunology*. 2012 Nov 1;33(5):1095-101.

For 2023<sup>23</sup>, estimated fuel use emissions from fishing within UK's territorial emissions (491 kt CO<sub>2e</sub>) represented 0.12% of the UK's total territorial emissions (424 Mt CO<sub>2e</sub>), or 0.44% of the UK's domestic transport emissions (112 Mt CO<sub>2e</sub>). Estimated emissions from fishing would have been equivalent to 1.1% of total agricultural emissions in 2023 (46.6 Mt CO<sub>2e</sub>).

Passive gears are generally less emission-intensive than mobile gears, however quantification of carbon emissions across the fishing fleet supply chain (for example, preharvest through to postharvest) is required to truly understand the fisheries carbon footprint.

Fishing can also play a positive role in addressing climate change through diet through diet, as fisheries provide high-quality protein with a low carbon footprint. The UK policy authorities have different targets relating to climate change and are developing plans to support the drive towards net zero.

### **Blue carbon**

Fishing practices that impact the seabed (e.g., through the use of bottom contact gear) can disturb the organic carbon stored in some marine habitats ("blue carbon habitats"). The JFS emphasises protecting and restoring these habitats to support climate resilience.

The [Scottish Blue Carbon Action Plan](#) sets out how the Scottish Government will integrate emerging evidence on blue carbon into conservation and climate policy, focusing on preventing the loss of organic carbon from existing blue carbon habitats — saltmarsh, seagrass, seabed sediments, and kelp and other seaweeds. Restoration and creation of new habitats is possible but offers limited mitigation potential. These habitats are not yet included in the UK greenhouse gas inventory due to remaining evidence gaps, although their carbon storage role is increasingly recognised. More widely, work at a cross-UK level by the UK Blue Carbon Evidence Partnership (UKBCEP) is progressing to build up the evidence base for blue carbon and to support the potential inclusion of appropriate habitats into the UK greenhouse gas inventory, beginning with saltmarsh. Other habitats such as maerl beds, oyster reefs, and serpulid reefs<sup>24</sup> support biodiversity and contribute to the ocean carbon cycle by trapping organic carbon within their complex structures but are not considered blue carbon habitats. While blue carbon habitats in the UK represent globally important stores of organic carbon, their value for climate change mitigation should be considered holistically, alongside the full range of ecosystem services these habitats provide<sup>25</sup>.

Seabed sediments face the greatest pressures, particularly from bottom trawling, which resuspends sediment and exposes stored organic carbon, potentially releasing CO<sub>2</sub>. Near-shore sediments may be especially vulnerable, though the scale of carbon loss and long-term impacts remain uncertain. Research is ongoing to

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<sup>23</sup>Weblink to the [UK Greenhouse Gas Inventory 1990-2023](#)

<sup>25</sup> Weblink to research report by Nature Scot: [NatureScot Research Report 1326 - Scottish Blue Carbon - a literature review of the current evidence for Scotland's blue carbon habitats | NatureScot](#)

understand how repeated disturbance and biological changes influence sediment carbon cycling.

Next steps include improving the evidence on seabed sediment carbon stores and their interactions with human activities. Many carbon-rich habitats, such as burrowed mud, already receive protection through MPAs and Priority Marine Feature designations. Future policies and proposed fisheries management measures will build on these protections to reduce pressures and better safeguard blue carbon stores.

### **Long term considerations**

Addressing many of these challenges are beyond the scope of the FMPs. 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 delivery of mitigation strategies for climate change is not within scope of this first iteration of these FMPs. The FMPs do, however, contain an objective to explore options for adapting fishery management to challenges presented by the changing climatic conditions. The FMPs will be reviewed and adapted as research into climate change develops and new methods to address challenges from climate change are available.

### **FMP policies**

In developing the policies and actions for this FMP, the relevant fisheries policy authorities have considered the current policy landscape including applicable international agreements and declarations, conservation advice and wider policy development 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.

This FMP has been developed with regard for the prevailing Marine Plans in place in [England](#) and [Scotland](#).

As part of developing the new national marine plan for Scotland, the relationship between marine spatial planning and FMPs will also be considered, and how these

policies can work in a joined-up way to ensure more effective use of the marine space and resources.

Consideration will also be given to the objectives and principles outlined in the EU-UK Trade and Cooperation Agreement (TCA) when considering implementing fisheries management measures.

In Scotland, these policies will help achieve the outcomes set out in the Good Food Nation Plan, and its vision of Scotland becoming “a Good Food Nation, where people from every walk of life take pride and pleasure in, and benefit from, the food they produce, buy, cook, serve, and eat each day”.

In the conservation advice issues around marine litter were identified. In Scotland a range of actions are undertaken to address issues with marine litter, as set out in the Marine Litter Strategy for Scotland<sup>26</sup> and these will continue to be delivered as part of a separate programme of work.

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

## **Policy 1: Harvest the North Sea Nephrops stock sustainably, with biomass maintained above the level capable of producing MSY.**

### **Rationale**

There is sufficient evidence to assess MSY for FUs 6, 7, 8 and 9 contained within this FMP. Therefore, this FMP is required to set out policies designed to restore or maintain fish stocks to sustainable levels or contribute to the restoration or maintenance at sustainable levels. This is in line with section 6(3)(a) of the 2020 Act.

There is an insufficient evidence base for North Sea Nephrops outside functional units, and Nephrops within FUs 10, 34, and 5. Therefore for those specific areas, this FMP falls under section 6(3)(b) of the 2020 Act. That section of the Act requires the fisheries policy authorities to specify policies for maintaining or increasing levels of the stock, and to specify steps to improve the scientific evidence (or provide reasons why no steps are proposed).

As already set out within the FMP, the fisheries policy authorities manage North Sea Nephrops on an overarching basis, and actions to ensure overall sustainable management across the North Sea are in place. This is generally achieved through the setting of a TAC alongside appropriate technical management measures. There are no current plans in place to improve the evidence base for those areas where current evidence is poor, rather scientific resources are concentrated on those Nephrops FUs of most importance commercially and socially.

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<sup>26</sup>Weblink to Scottish Government [Marine litter strategy - gov.scot](https://www.gov.scot/publications/marine-litter-strategy/pages/introduction.aspx)

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 fishing communities which depend upon them. This helps to ensure that fish stocks remain productive and can support socio-economic outcomes and wider ecosystem objectives for future generations.

The use of TACs is a fundamental part of sustainable management and helps to ensure that the fishing pressure in the harvesting of Nephrops is kept within sustainable levels, whilst also taking account of relevant socio-economic factors. This is consistent with the sustainability objective of the 2020 Act. Nonetheless, ICES recommends that management should be implemented at FU level. Transfer of advised catch from other FUs to an explicit FU can lead to overexploitation. This suggests that further consideration of a move towards FU management may be needed and this will be considered as part of the actions under this FMP.

There are a number of options for taking this work forward, and due process, including thorough consultation with stakeholders and international partners, will need to be followed to ensure full consideration of impacts and costs versus benefits. The actions below are intended to set out a path for considering the most appropriate management options for Nephrops in the future. This includes considering the potential for continuing to manage using the current approach, full TAC management at FU level (with TAC levels varying between FU area), or using a technical measure 'toolbox' approach, whereby a pre-determined set of measures – deemed to be appropriate for the fisheries in question – are triggered by stocks reaching agreed reference points.

As part of this, developing a harvest strategy which is related to stock level reference points (e.g.  $MSY_{Btrigger}$ ) could allow for more agile management of the fisheries by enacting measures only when scientific evidence suggests that action needs to be taken to maintain or improve stocks in a specific area. The impact of such options would need to be considered as part of any consultation, particularly in reference to impact on local fleets with limited scope for movement outside of the FU area.

In addition to the proposed work in relation to management options, in Scotland a programme of work is under development, known as the Inshore Fisheries Management Improvement (IFMI) programme. This work will develop a new inshore fisheries management framework that is more agile, sustainable and makes decisions based on the most up to date evidence. This aims to transition to a regional model that better engages stakeholders who rely on these fisheries. This work is relevant to those fishing vessels fishing for Nephrops in inshore areas.

### **Ongoing actions**

- Continue to take an approach to TAC setting informed by the best available scientific advice and in line with an MSY approach for those functional units with MSY advice.
- Continue to work with Coastal State partners with the aim of maintaining sustainable harvesting through international negotiations.

### **Short-term actions (one to two years)**

- Undertake an in-depth options appraisal for potential FU management of Nephrops, exploring available options, opportunities, impacts, consequences and cost / benefit analysis.
- Consider options around setting limits and MSY reference points at a stock level (for FUs and areas outside of FUs).
- As part of the options appraisal, consider development of an appropriate harvest strategy for each FU, alongside the development of suitable measures which could be adapted to each FU, and which may be available for use in a stock depletion / collapse scenario should this occur in the future.
- Consider the circumstances under which quota management measures should be applied, how they should be appraised and what the measures should be.
- Consult on options for management.
- Continue to develop the Scottish Inshore Fisheries Management Improvement (IFMI) programme in consultation with stakeholders, to deliver a more agile, regional approach to inshore fisheries management

### **Long-term actions (three to five years)**

- Work with the fishing industry and other stakeholders to implement changes if required following the FU options appraisal process.

### **Relevant Fisheries Act objectives**

- Sustainability objective
- Precautionary objective
- Scientific objective
- Ecosystem objective

## **Policy 2: Understand and minimise the benthic impact of Nephrops fisheries.**

### **Rationale**

All forms of fishing have an impact on the marine environment and marine ecosystems to varying degrees, whether through the removal of target fish species, incidental bycatch of non-target fish or other marine species, or seabed interaction. Managing benthic impact of fisheries is an integral component of the 2020 Act ecosystem objective and is a key delivery component under the UK Marine Strategy. Given the number of complimentary policies and strategies already in place to manage benthic impact of mobile fishing activities, the FMP focuses on:

- Supporting the implementation of associated policies and initiatives already underway, and;
- Building the evidence base on the impact of Nephrops fisheries on benthic habitats, PMFs, and vulnerable marine ecosystems (VMEs) to inform better management in the future.

Key evidence gaps exist regarding the benthic impact of Nephrops fisheries, and these will require the support of the fishing industry and wider academic and science community in order to be addressed. Addressing these gaps will enable better management in alignment with the policies and strategies outlined above and would support achievement of GES. Actions also relate to broader work already underway to understand and mitigate the impact of fishing on benthic habitats.

### **Short-term actions (one to two years)**

- Continue to implement fisheries management measures for existing MPAs where these are not already in place, as well as the most sensitive PMFs<sup>27</sup> in Scottish inshore waters.
- Collaborate across the UK to implement the UK Marine Strategy Programme of Measures (POM).
- Support and enable the fishing industry to explore alternative gear options that can help reduce benthic impacts through the provision of funding or licence derogations, building on the positive work already carried out in this area.

### **Medium to long-term actions (three to five years)**

- Develop understanding of where Nephrops fishing activity is taking place by gathering data at suitable spatial resolution and across all parts of the fleet. This will be supported by the rollout of inshore vessel tracking to the under 12m fishing fleet that is already underway.
- Support research on benthic habitats aiming at informing future management actions, including a) research to better understand the spatial extent of sensitive benthic habitats and the overlap with Nephrops fishing activity; b) investigating the direct impacts caused by Nephrops fishing gear on benthic habitats and c) research to understand the resilience of benthic habitats to Nephrops fishing activity and their ability to recover.

### **Relevant Fisheries Act objectives**

- ecosystem objective
- sustainability objective
- scientific evidence objective

## **Policy 3: Minimise the impact of Nephrops fishing activities on sensitive marine species by reducing bycatch and entanglement of these species.**

### **Rationale**

Nephrops fisheries present a potential bycatch risk to a number of sensitive marine species, including cetaceans and basking sharks (by entanglement in static gears),

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<sup>27</sup> As defined by [NatureScot](#).

and flapper skate (by accidental capture in mobile gears). Entanglement is more of an issue in the West of Scotland due to the prevalence of creel fishing in that area.

Mitigating interactions with sensitive species is a priority of several initiatives already including work within the fisheries policy authorities to reduce unwanted catches of non-fish bycatch such as seabirds, seals, and cetaceans. The UK Marine Wildlife Bycatch Mitigation Initiative<sup>28</sup> outlines steps to reduce bycatch of sensitive marine species including elasmobranchs (sharks, skates, and rays).

### **Short-term actions (one to two years)**

- Introduce additional voluntary and mandatory bycatch avoidance measures where these are needed. In Scotland, this will be taken forward as part of the Future Catching Policy programme of work.
- Continue to support the fishing industry to take action to reduce instances of entanglement and bycatch of sensitive marine species, particularly focussed on entanglements in creel fisheries.
- Support and expand existing initiatives that are shown to be effective at reducing or minimising the risk posed to sensitive marine species specific to Nephrops fisheries. This could include gear modifications such as negatively buoyant ropes between creels, ropeless creel gears, selectivity devices in trawls, or could focus on remedial action such as best practice handling guidance for when interactions do occur.

### **Medium to long-term actions (three to five years)**

- Continue to collect data under the UK Marine Wildlife Bycatch Mitigation Initiative to improve understanding of risk and frequency of sensitive species interactions.
- Continue to deliver actions under the UK Marine Wildlife Bycatch Mitigation Initiative to reduce the risk, frequency and impact of fisheries on sensitive marine species including seabirds.
- Collaborate across the UK to develop policy to reduce/eliminate sensitive marine species bycatch in the UK through regular information sharing across Devolved Governments, and collaborative working on projects.
- Continue to collect data in the Scottish whitefish and prawn trawler fleets through the Scottish Demersal Observer Programme to improve understanding of risk and frequency of sensitive species interactions, and the effectiveness of existing mitigation and avoidance measures, where applicable.

### **Relevant Fisheries Act objectives**

- ecosystem objective

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<sup>28</sup> The initiative brings together, and builds on, existing work such as the UK Bycatch Monitoring Programme and [Clean Catch UK](#), recognising that further actions need to be taken if we are to achieve our objectives. More information on the BMI and some detail on ongoing work can be found at: [Marine wildlife bycatch mitigation initiative - GOV.UK](#)

- sustainability objective
- bycatch objective

## **Policy 4: Address discarding issues in the Nephrops fisheries and ensure that where possible all catches are accounted for against quotas.**

### **Rationale**

Reducing bycatch and unwanted catch across all fisheries is already a policy priority under a number of different initiatives. There is a legislative requirement to land all quota species of fish, including Nephrops, under the landing obligation, 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 the rollout of new technology including REM. Actions to support improved accountability and recording of catches are outlined below.

There has been research on bycatch issues in Nephrops trawl fisheries with 32 documented selectivity trials over the last 20 years. From these several gear modifications or selectivity devices have already become a legal requirement. This includes technical measures such as different cod-end configurations, square mesh panels, and inclined panels. There continues to be scope for improvement, particularly in relation to those vessels that operate in the mixed Nephrops and whitefish fisheries, and the actions below aim to support innovation in fishing gear technology and increase uptake of the most effective gear modifications or selectivity devices, in alignment with other relevant legislation. Making it easier for fishermen (and scientists) to trial and then adopt gear modifications will help reduce bycatch and meet national goals.

### **Short-term actions (one to two years)**

- Subject to appropriate consultation and assessment, introduce new technical measures to minimise discarding by supporting a reduction in unwanted catches through improvements to gear selectivity or fishing techniques where appropriate
- Deliver improvements to the current management and rules to ensure that, wherever possible, all catches are accounted for against quotas. In Scotland this will take place as part of the Future Catching Policy programme of work.

### **Medium to long-term actions (three to five years)**

- Develop a roadmap for rollout of REM in priority fisheries around the UK, with clear prioritisation criteria and implementation timetable.
- Fisheries policy authorities will continue to work with industry and other stakeholders to promote the use of selective fishing gear and fishing techniques that have a reduced impact on the environment.

### **Relevant Fisheries Act objectives**

- bycatch objective
- scientific evidence objective
- sustainability objective

## **Policy 5: Support fishing businesses to continue to deliver socio-economic benefits to coastal communities and the wider UK economy.**

### **Rationale**

Nephrops are an important species to fishers due to its accessibility around the coast to all vessels, as well as its high value to both domestic and international markets.

Appropriate management will ensure long-term sustainable, social, and economic benefits across the entire Nephrops supply chain. Understanding the current socio-economic landscape of Nephrops fisheries is fundamental in identifying key areas that require further support, to maximise benefits to the supply chain.

Many in the fishing industry recognise the need to promote the principles of fair work within their businesses, and whilst this isn't included as a specific action within the FMP, the fisheries policy authorities are supportive of efforts to improve standards within the sector in order to create and promote positive and safe working conditions.

### **Ongoing actions**

- Continue to take account of socio-economic considerations as part of international negotiations and as part of the process to determine fishing opportunities.
- Continue to gather and use evidence on economic aspects of the fisheries to ensure management decisions are informed by the best available evidence.
- Support the fishing industry to explore and utilise accreditation schemes where these will help to drive improvements in management.
- Encourage and support industry-led initiatives to: improve the operational effectiveness of fishing vessels while maintaining a commitment to sustainability; identify circular economy benefits; encourage diversification into additional fisheries; and support proposals that create sustainable employment in coastal communities.

### **Medium to long-term actions (three to five years)**

- Consider enhancing social and economic data

### **Relevant Fisheries Act objectives**

- national benefit objective
- equal access objective

- sustainability objective

## **Policy 6: Reduce the impact of Nephrops fishing on climate change and support the fishing industry to adapt to the impacts of climate change**

### **Rationale**

The JFS sets out the UK's approach to implementing the climate change objective by identifying and supporting changes to adapt to and mitigate against climate change, including reducing emissions across the fishing industry to support decarbonisation. It also recognises the importance of protecting and restoring blue carbon habitats to support resilience to climate change, whilst ensuring a commitment to work with the scientific community to develop the evidence base.

Whilst the overall contribution made by Nephrops fishing vessels to carbon emissions is relatively small, improving the understanding of the carbon footprint in Nephrops fisheries, as well as mitigating and reducing emissions from the Nephrops supply chain will help the industry contribute to national and global goals to combat climate change and to meeting net-zero commitments.

### **Medium to long-term actions (three to five years)**

- Collaborate with partners across government, industry, and academic sectors on initiatives to reduce environmental impacts of the North Sea Nephrops fishery (including reduction of carbon emissions), whilst also taking into account the socio-economic importance of fisheries as well as food security.
- Commission research into the assessment of the carbon footprint of the different components of Nephrops fisheries.
- Collaborate with partners across government, industry, and academic sectors in identifying and exploring alternative ways to reduce carbon footprint within the Nephrops supply chain.
- Collaborate across the UK and internationally on further evidence and analysis to understand the impact of climate change on Nephrops and develop options for how the Nephrops fishery may adapt to climate change impacts in the future.

### **Relevant Fisheries Act objectives**

- sustainability objective
- climate change objective

## **Implementation and monitoring**

### **Implementation**

This FMP proposes new actions but does not implement them. The actions contained within this FMP will be taken forward following its publication. However, it

is important to note 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 Nephrops 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 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.<sup>29</sup>

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 stocks will be the indicator used to monitor the effectiveness of this FMP in managing the fisheries 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 2020 Act, 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) whether there have been any known interactions between the actions and health of the stock.

## Glossary

### **CO<sub>2</sub>e - Carbon Dioxide equivalent**

A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential.

### **ICES - The International Council for the Exploration of the Sea**

A global organization that develops science and advice to support the sustainable use of the oceans.

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<sup>29</sup>Weblink to [Sustainability of Fish Stocks | National Performance Framework](#)

### **MSY - Maximum Sustainable Yield**

The highest possible annual catch that can be sustained over time by keeping the stock at the level producing maximum growth.

MSY refers to a hypothetical equilibrium between the exploited population and fishing activity.

When discussing MSY, it is essential to distinguish between MSY, BMSY, and FMSY.

### **MSY Btrigger**

A parameter in the ICES MSY framework that triggers advice on reduced fishing mortality relative to FMSY.

### **Benthic Impact**

The negative effect of human activities—such as bottom trawling, deep-sea mining, or pollution—on the seafloor and its organisms, disrupting habitats, food webs, and essential ecosystem services like water quality and carbon sequestration.

### **Blue carbon**

In Scotland, blue carbon refers to carbon captured, sequestered, and stored by marine and coastal ecosystems, especially in seafloor sediments and habitats like saltmarshes, seagrasses, and kelp beds.

### **Bycatch**

Unwanted fish and other marine creatures trapped by commercial fishing nets when targeting a different species.

### **FMSY — Fishing Mortality Maximum Sustainable Yield**

A catch rate calculated by dividing MSY (annual catch) by BMSY (population size).

When the population is at BMSY and annual catches equal MSY, the resulting fishing mortality is FMSY.

### **Coastal State**

Under UNCLOS, a Coastal State must jointly manage fisheries resources, set allowable catches, and grant access to others only if it cannot harvest the full allowable catch itself.

A Coastal State controls its Exclusive Economic Zone (EEZ) out to 200 nautical miles. Access can be traded annually, often linked to quota-sharing arrangements.

### **Fisheries Act 2020**

The Act requires the UK's four fisheries policy authorities (MMO, Scottish Ministers, Welsh Ministers, and DAERA in Northern Ireland) to produce a Joint Fisheries Statement (JFS), outlining how the Act's objectives will be met.

### **Fisheries Policy Authorities**

The Secretary of State, Scottish Ministers, Welsh Ministers, and the Department of Agriculture, Environment and Rural Affairs in Northern Ireland.

### **Fishing quotas**

Amounts of each fish species that may be legally landed by EU Member States.

In Scotland, quota management aims to fully use annual fishing opportunities while ensuring quotas are not exceeded.

### **FMP - Fisheries Management Plan**

A document under the Fisheries Act 2020 setting out policies to restore or maintain fish stocks at sustainable levels.

### **GES - Good Environmental Status**

A condition where marine waters are ecologically diverse, clean, healthy, and productive, ensuring sustainable use that protects opportunities for current and future generations.

### **Inshore waters**

Scotland's inshore waters extend to 12 nautical miles; most fishing occurs within 6 nm. Anything beyond 12 nm is "offshore".

### **Joint Fisheries Statement (JFS)**

A document that details how the fisheries policy authorities will meet the eight objectives of the Fisheries Act 2020. It forms part of the UK Fisheries Management and Support Framework and sets the UK's ambition for world-class, sustainable fisheries management.

### **MPAs - Marine Protected Areas**

Areas designated to protect vulnerable marine species and habitats. Scotland's MPA network covers about 20% of its seas.

### **Marine Strategy Regulations 2010**

These require the UK to take necessary measures to achieve or maintain Good Environmental Status through a UK Marine Strategy.

### **Nephrops**

*Nephrops norvegicus* (Norway lobster, langoustine, scampi, Dublin Bay prawn), a pale orange burrowing crustacean growing up to 25 cm, typically 18–20 cm.

### **OSPAR - Convention for the Protection of the Marine Environment of the North-East Atlantic**

The mechanism by which 15 Governments and the EU cooperate to protect the North-East Atlantic's marine environment.

### **PMFs - Priority Marine Features**

Habitats and species considered conservation priorities in Scottish waters.

**REM - Remote Electronic Monitoring**

Cameras and sensors used to monitor fishing activity, collect data, and support compliance and best practice.

**SSFI - Scottish Sustainable Fishing Index**

Summarises current trends in fishing mortality relative to estimated sustainable rates that lead to MSY.

**TACs - Total Allowable Catches**

Catch limits (in tonnes or numbers) set for most commercial fish stocks. The European Commission prepares proposals based on scientific advice from ICES and STECF.



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