Department
for Environment
Food & Rural Affairs

Proposed fisheries management plan for queen scallop in English waters

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Abbreviations and definitions

Cefas: Centre for Environment, Fisheries and Aquaculture Science

Defra: Department for Environment Food and Rural Affairs

EEZ: Exclusive Economic Zone

EU: European Union

EU Vessels: Vessels registered to the 27 countries within European Union.

FMP: Fisheries management plan(s)

FMP species: Species that are within the scope of the queen scallop FMP.

GES: Good environmental status

ICES: International Council for the Exploration of the Sea

IOM: Isle of Man

IFCAs: Inshore Fisheries and Conservation Authorities

JFS: Joint Fisheries Statement

MCRS: Minimum conservation reference size. Previously known as minimum landing size (MLS)

MMO: Marine Management Organisation

MPAs: Marine protected areas

MSY: Maximum sustainable yield

REM: Remote electronic monitoring

TCA: UK/EU Trade and Cooperation Agreement

The Act: Fisheries Act 2020

UK Vessels: Vessels that are registered to countries within the United Kingdom

Executive summary

Context

The United Kingdom has some of the best wild seafood resources in the world. Our fish stocks are a public asset which generate food and create jobs, and recreational opportunities in a sector with a strong sense of identity and pride for their communities. These fish stocks also form a vital part of our marine ecosystems.

Many of our fish stocks are under pressure, for example, from fishing and climate change. Fishing can also have impacts from gears on the seabed. It is therefore important to consider both the positive and negative effects of fishing as part of our overall management of fish stocks and the marine environment.

Fisheries management plans (FMPs) provide a tool for managing fishing activity towards more sustainable fisheries. They are a requirement of the:

- Fisheries Act 2020 ('the Act')
- UK Joint Fisheries Statement in 2022
- Environmental Improvement Plan 2023 for England

The Joint Fisheries Statement (JFS) sets out how the UK fisheries policy authorities (Defra, and the devolved administrations in Northern Ireland, Scotland, and Wales) will prepare and publish 43 FMPs by 2028. The plans bring together the evidence on the state of the stocks and identify measures and actions necessary to improve the evidence base and manage our fisheries in a sustainable way. Policies in an FMP will set out both the short-term actions and longer-term vision for the management of the fishery.

The plans also consider relevant wider legal obligations, including the environmental principles under the Environment Act 2021 and the need for strategic environmental assessment under the Environmental Assessment of Plans and Programmes Regulations 2004.

The queen scallop FMP has been developed by the Non-Quota Species Shellfish team in Defra in consultation with industry, through the Queen Scallop Management Group, and other interest parties. Defra has also drawn on a report produced by consultants ABPMer as a key evidence source, which collated information on the queen scallop

fishery in English waters and considered potential management options that could be applied. This FMP is for English waters only.

What is an FMP?

An FMP is an evidence-based action plan that charts a course to sustainable fisheries. They are long-term plans that must be reviewed and, if necessary, revised at least every 6 years. An FMP sets out a vision and goals for the target fishery (or fisheries), together with the policies and management interventions necessary to achieve these goals.

Defra intends to use FMPs to tackle environmental, social and economic issues associated with our fisheries, significantly enhancing our ecosystem-based approach to fisheries management. FMPs will be regularly reviewed and updated to ensure they respond to new evidence and practical experience to remain effective.

Why an FMP for queen scallops?

Queen scallops have been prioritised for an FMP due to the stocks' vulnerability to over-exploitation, lack of evidence to assess and monitor the state of the stock, and the potential environmental effects of the fishery.

Queen scallop fisheries contribute to coastal communities through employment but there is currently a lack of management in English and wider UK waters to protect stocks from overexploitation. Additional management action is therefore needed to ensure queen scallop fishing is sustainable. This will be achieved by conserving the stocks to secure their future and the future of the industry that depends on them.

Queen scallops are found around the British Isles, with the main UK queen scallop fishery based in the Irish Sea and around the northern Welsh waters and the Isle of Man (IOM). Similarly, the north-eastern Irish Sea is the location of the main queen scallop grounds in English waters. Landings of queen scallops have also been reported in the western English Channel in some years, although it is likely that this is an opportunistic fishery rather than a targeted fishery, as the landings were low and inconsistent.

There is currently little queen scallop-specific management in the UK, and for several years there has been concern from the catching sector about the potential for fishing effort to increase if the market value of queen scallops increases. This has been a

contributing factor to queen scallops having been prioritised for an FMP in English waters.

Summary of the state of the stocks

At present, there is insufficient evidence to determine maximum sustainable yield (MSY) for queen scallop stocks in English waters. The International Council for the Exploration of the Sea (ICES) does not assess or provide advice for queen scallops, and no formal stock assessment units have been agreed in English waters or around the UK. Available information on queen scallops in English waters is currently restricted to fishing activity data, which on their own, do not provide sufficient evidence for the determination of sustainable catches. Landings have decreased in recent years compared to a peak in 2013, but not enough information is currently available to understand the current state of the stocks.

Queen scallops are known to have a patchy distribution, even within individual fishing grounds, and currently insufficient information exists about their biology and ecology to allow a scientific identification of distinct populations.

Current management framework

Current management within the FMP area (English waters)

The current measures regulating English queen scallop fisheries include days at sea restrictions through the retained EU Western Waters effort regime, set at a UK level and combining queen and king scallops. There is a national minimum conservation reference size (MCRS) of 40mm and, since 2018, a seasonal closure between April and July to protect spawning stock.

Inshore management measures, with the 6 nautical mile (nm) zone, vary depending on the Inshore Fisheries and Conservation Authority (IFCA) area. All IFCAs have general byelaws restricting the size and power of vessels permitted to fish within their 6nm zone. All IFCA areas have a MCRS for queen scallops of 40mm. Other IFCA management measures are not currently aligned across IFCA districts and are not specific to the queen scallop fishery. The North-Western IFCA manages the English inshore area of the Irish Sea and operates a permit system for dredge vessels but does not have any other scallop specific byelaws.

Current management outside of the FMP area

Within the IOM territorial sea (0 to 12nm from the coast), a range of management measures for queen scallops are in place, which are covered under the Isle of Man Fisheries Act 2012, various secondary legislation, and restrictive licensing conditions.

Key goals and proposed actions

A key aim of this FMP is to develop proposals for a comprehensive data collection programme for English and UK-wide queen scallop fisheries. This is required to enable effective, evidence-based management to be applied to these fisheries, which will contribute towards the long-term vision to achieve MSY or a similar measurement that reflects the health of the stock.

Early management interventions have been identified to closely align with implementation of the king scallop FMP which was published in late 2023. This is to mitigate against early management being introduced for king scallops that could potentially displace pressure on the queen scallop stocks. Early management measures for implementation include a proposed increase of MCRS from 40mm to 55mm, consideration around gear specifications, and improved data collection. Once initial measures are in place and more data becomes available, an effort or catch limit system could be introduced to manage overall fishing pressure.

The actions and goals set out in this FMP include specific measures to mitigate environmental impacts of queen scallop fishing on the seabed and wider environment.

Wider issues and environmental impacts

In addition to the objectives in the Act, all FMPs are subject to legal obligations for environmental protection arising from The Conservation of Habitats and Species Regulations 2017, Marine and Coastal Access Act 2009, Marine Strategy Regulations 2010, the Environmental Principles Policy Statement for the Environment Act 2021, the Conservation of Offshore Marine Habitats and Species Regulations 2017, the Environmental Assessment of Plans and Programmes Regulations 2004 (the SEA regulations) and the biodiversity duty of the Environment Act 2021.

The queen scallop FMP will contribute to the commitments to improve our marine ecosystem set out in the Environmental Improvement Plan 2023 and the UK Marine Strategy.

Foreword

The overarching aims of this FMP are to:

- identify opportunities to provide increased protection to queen scallop stocks in English waters in the short-term
- improve the evidence base to inform the development of management for the long-term sustainability of UK queen scallop fisheries
- reduce the impact of the fishery on the marine environment

This FMP has been prepared to comply with requirements in the Joint Fisheries Statement (JFS), section 6 of the Act, and the Environmental Assessment of Plans and Programmes Regulations 2004 (the SEA regulations).

In terms of navigating this FMP, the key sections are as follows:

- Introduction – how the queen scallop FMP meets the requirements of the Act and wider legislation and policy initiatives
- Long-term goal - sets out the overarching vision of the FMP and FMP objectives, which are based around the key themes of evidence, social and economic factors, and sustainable fisheries, and will contribute to all of the Act's objectives
- Scope and status of the English queen scallop fisheries – the species in scope of the FMP, the FMP location, and a description and outline of the status of the fishery
- FMP management approaches – sets out proposed management measures and approaches to achieve the priority FMP objectives
- Managing and addressing environmental risks – how wider environmental considerations will be addressed
- Implementation, monitoring and review of the FMP – the approach that will be followed to implement the FMP, how Defra will measure performance in terms of delivering the FMP, and how the state of the fishery has improved because of the activities undertaken

Queen scallop fisheries management plan for English waters

Introduction

The queen scallop FMP has been prepared for the purpose of meeting the requirements set out in the Fisheries Act 2020. This statement confirms the obligation set out in section 6(5) of the Act. The Joint Fisheries Statement (JFS), published in November 2022, sets out further details of the policies the fisheries authorities will follow to achieve or contribute to achieving the 8 fisheries objectives in the Act. It includes:

- a list of FMPs
- setting out the lead authority for each FMP
- the stocks covered
- timescales for publication

In addition to meeting the requirements of the Fisheries Act, the plan also supports:

- the implementation of wider commitments on protecting the marine environment restoring biodiversity
- addressing climate change

The issue of increasing spatial pressures, due to ongoing changes in marine spatial use, and the challenges it can pose to fisheries needs to be considered. This includes any relevant social, economic and environmental implications resulting from possible displacement. The UK Government has established a marine spatial prioritisation (MSPri) programme to help support a more strategic approach to managing future pressures in English waters. The programme will engage with stakeholders and evaluate existing and emerging evidence to understand future demands and determine the best way of managing them. Outputs from the programme will inform the implementation and subsequent reviews of the FMP, as well as Defra's approach to marine planning.

Long-term goal

The long-term goal of this plan is to ensure future fisheries management restores and maintains English queen scallop stocks at or above maximum sustainable yield (MSY) or a proxy for MSY. Management measures are required to reach and maintain this goal. This plan brings together existing measures for queen scallops and begins to identify where evidence gaps exist and what is required to fill those gaps, to enable the necessary protection for stocks now and in the long term.

Fishing for queen scallops has an impact on the environment, particularly the seabed. This FMP includes objectives to ensure that the environmental impacts associated with queen scallop fishing are understood. Where queen scallop fisheries are considered to have an adverse impact on the marine environment, action will be taken to avoid, remedy or mitigate such impacts.

The Fisheries Act 2020 includes a precautionary objective where the absence of sufficient scientific information is not used to justify postponing or failing to take management measures to conserve target species, associated or dependent species, non-target species or their environment.

The precautionary approach must:

- consider undesirable outcomes, such as fishing effort being limited unnecessarily
- provide contingencies to avoid or mitigate such outcomes

This FMP will adopt an evidence-based approach, with management measures developed and implemented based on the best available evidence. It will also identify evidence gaps and how these will be addressed. Additional information on the fishery, existing measures and evidence gaps has been included in a supporting evidence statement which will be published alongside the FMP at the end of 2024.

Development of the draft FMP

The queen scallop FMP has been prepared for the purposes of meeting the requirements set out in the Fisheries Act 2020. This statement and the contents of the plan meet the obligation set out in section six of the Act

This FMP has been prepared and published to comply with requirements in the JFS. The draft FMP was developed by the Non-Quota Species policy team within Defra's Domestic Fisheries and Reform division.

A series of sessions to engage interested parties and inform the development of the draft FMP took place during February and March 2024. A description of this engagement and feedback received which contributed to the draft FMP can be found in the supporting document ‘Queen scallop FMP Engagement Report’.

Scope of the queen scallop FMP and status of the fishery

This FMP applies to queen scallop (Aequipecten opercularis) in English waters only.

Description of the fishery

Biology & lifecycle

Queen scallops are a filter-feeding bivalve mollusc which usually grow to a maximum shell height of around 90mm (Schmidt et al., 2008). It is commonly found on sand or gravel along the British and Irish coasts, up to a depth of about 100 metres (m) (Carter, 2008) but predominantly at depths between 20m to 45m (Brand, 2006b).

Queen scallops have a natural life expectancy of 6 to 10 years. Common predators are starfish, demersal fish and crabs (Hayward & Ryland, 1995). Queen scallops reach sexual maturity when they are about 1 year old (Hayward & Ryland, 1995). However, at this time the gonads are very small and do not make a significant contribution to total egg production until the later years. As with all scallops, fecundity of the adult queen scallop is high and increases with age (Andrews et al., 2011). Spawning occurs in the spring (March to May), although secondary spawning can occur later in the year (autumn), and also periodically throughout the summer.

Stock distribution

Figure 1 shows recorded distribution of queen scallops around the British Isles since the late 1960s, where queen scallop have been or are still found within International Council for the Exploration of the Sea (ICES) divisions 4b (Central North Sea), 4c (Southern North Sea), 7a (Irish Sea), 7d (Eastern English Channel), 7e (Western English Channel), 7f (Bristol Channel),7g (Northern Celtic Sea), 7h (Southern Celtic Sea) and 7j (Southwest of Ireland).

All scallop species have a highly aggregated spatial distribution within their geographical range (Brand, 2006a), referred to as beds. Some beds are essentially permanent, being fairly distinct in their location and separated by clearly demarked areas that are unsuitable for scallops, while others vary in their location from year to year, resulting from sporadic settlement or differences in early survival (Andrews et al., 2011).

Irish Sea

The main UK queen scallop fishery is in the Irish Sea, based around the northern Welsh waters and the Isle of Man (IOM). Similarly, the north-eastern Irish Sea is the location of the main queen scallop grounds in English waters.

Queen scallops are present and fished across UK waters (Figure 2). While the scope of this FMP is English waters, data and descriptions of assessments and management measures in other parts of the UK Exclusive Economic Zone (EEZ) have been included due to the lack of information on queen scallop fisheries in English waters only, and to provide a wider overview given the shared nature of the main queen scallop fishery in the Irish Sea.

English Channel

Landings of queen scallops have also been reported in the Western English Channel in some years. It is likely that this is an opportunistic fishery rather than a targeted fishery, as the landings were low and not constant throughout time (Stott et al., 2020).

In recent years there have also been reported landings of scallop as bycatch in the Fal oyster fishery in the south-west of England, locally referred to as ‘queenies’. These landings consisted of a different species of scallop (‘Mimachlamys varia’ or the variegated scallop) to that which is caught further offshore. Such landings have reduced significantly with Fal fishery licence holders returning to targeting and landing oysters. The fishery for both species is very discrete in size and scale and exists only in the Fal Fishery Order area, which is managed by the Cornwall IFCA.

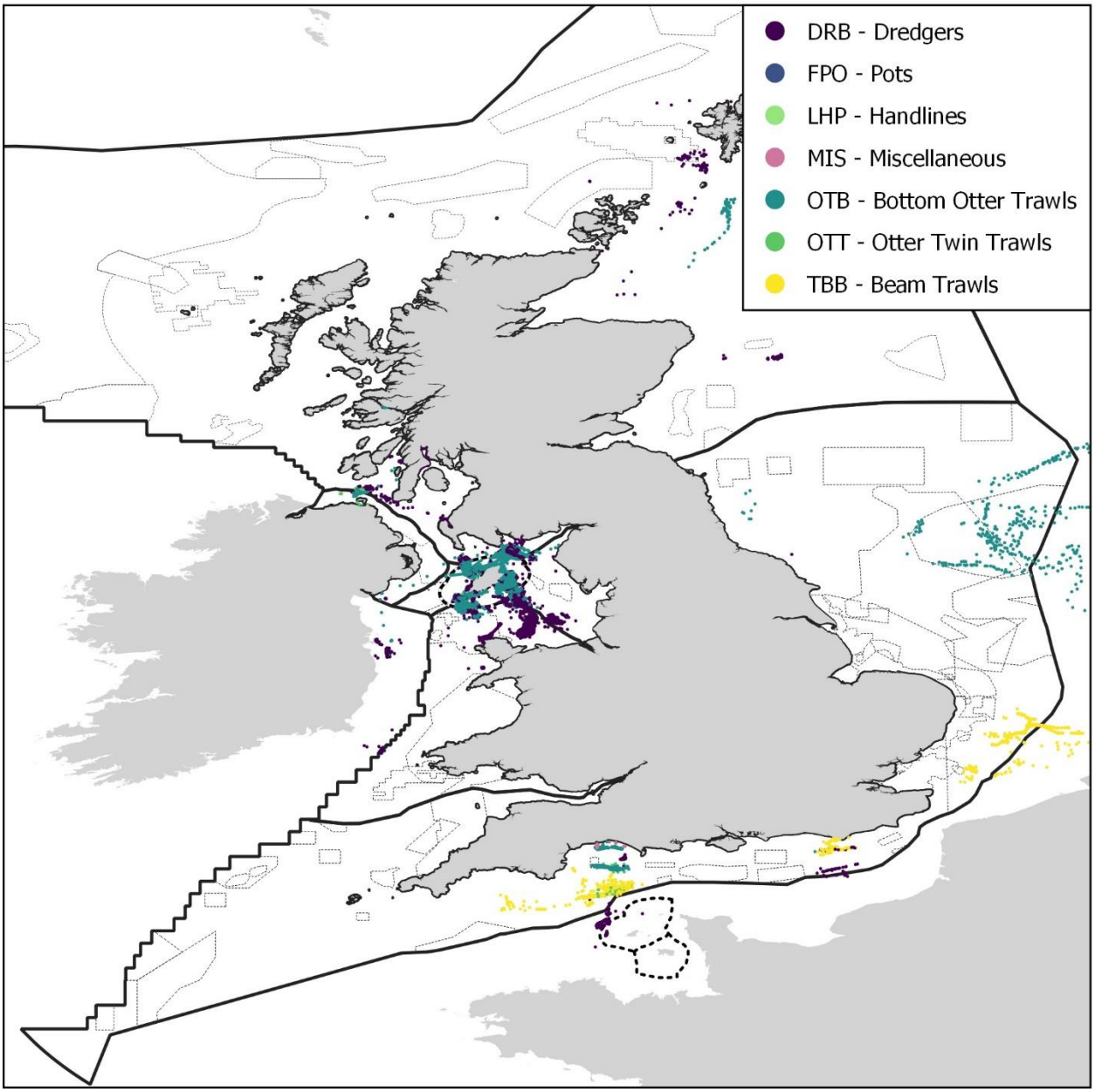

Figure 1*:* Queen scallop fishing activity by gear type for the period 2018 to 2022.

Figure 1 description: a map showing the recorded areas of queen scallop fishing activity using various gear types around the British Isles, with Marine Protected Areas (MPAs) overlaid. The main areas of activity are in the Irish Sea, with some activity in the English Channel. The gear types shown on the map are dredgers, pots, handlines, bottom otter trawls, otter twin trawls, beam trawls and other miscellaneous types. The main gear types shown to be active are dredgers and otter trawls in the Irish Sea and beam trawls in the Channel.

Landings: UK vessels

Over the period 2012 to 2022, the value and volume of landings within the UK queen scallop fishery peaked in 2013 (Figures 3 and 4), and combined with a high market value, this led to an increase of vessels active in the fishery. By 2014 the stock size had significantly reduced, leading to a decrease in landings. The low point for both volume and value of landings for the fishery across the UK, as well as specifically in English waters, was in 2020, which was likely to be a reflection of Covid-19 restrictions. Overall, landings volume and value were relatively low during the period 2018 to 2022 compared to previous years.

In 2022 the volume of landings in the UK queen scallop fishery was 2,979 tonnes, which included 865 tonnes (29% of the total) caught in English waters by UK vessels.

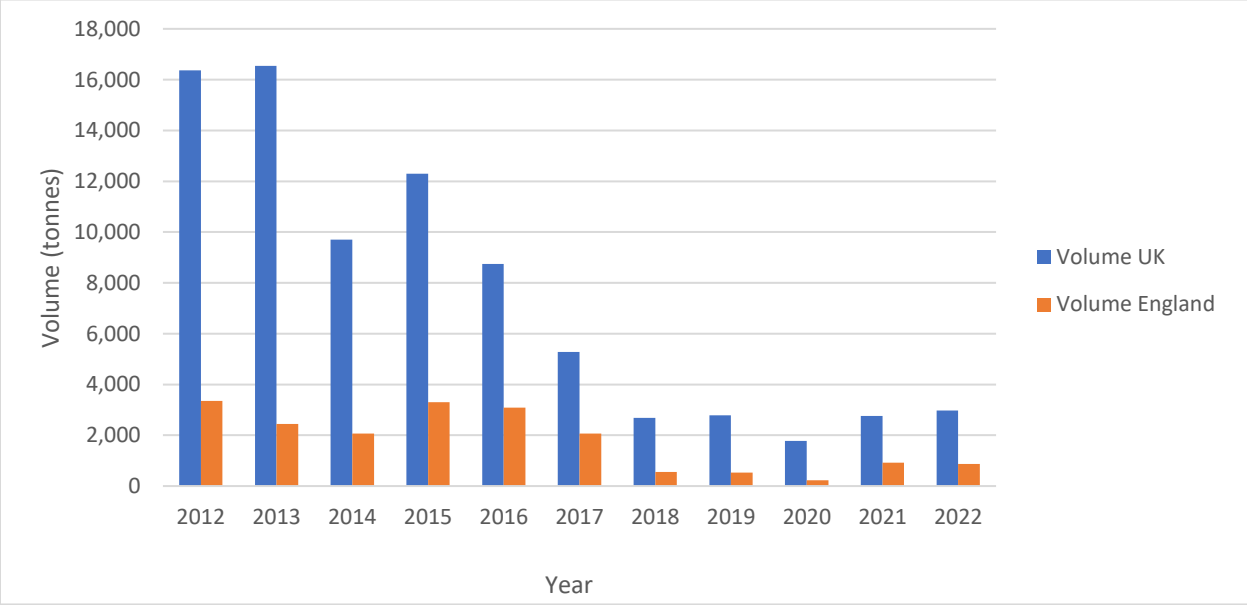

Figure 2: Estimated queen scallop landings by live weight for all UK vessels fishing in UK waters and fishing only in English waters.

Figure 2 description: a bar chart showing estimated total volumes, in tonnes, of live weight queen scallops landed by UK vessels from 2012 to 2022. For each year, the graph shows the volumes which were fished in UK waters and in English waters only.

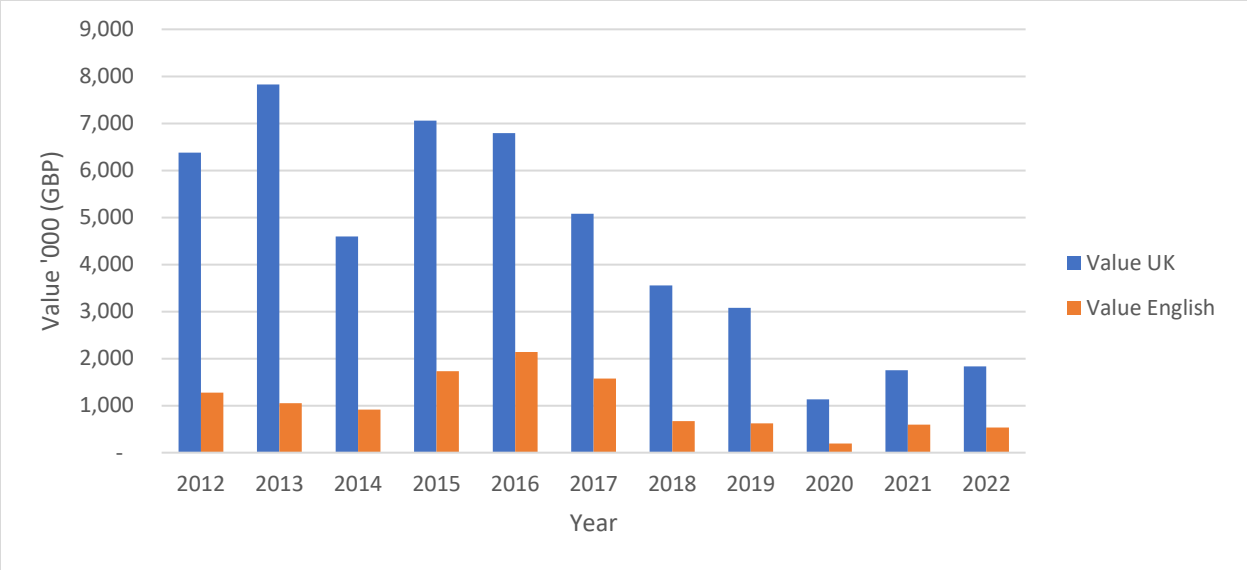

Figure 3: Estimated queen scallop landings by value for all UK vessels fishing in UK and fishing only in English waters.

Figure 3 description: a bar chart showing estimated values of live weight queen scallops landed by UK vessels from 2012 to 2022. For each year, the graph shows the values of the catch fished in UK waters and in English waters only.

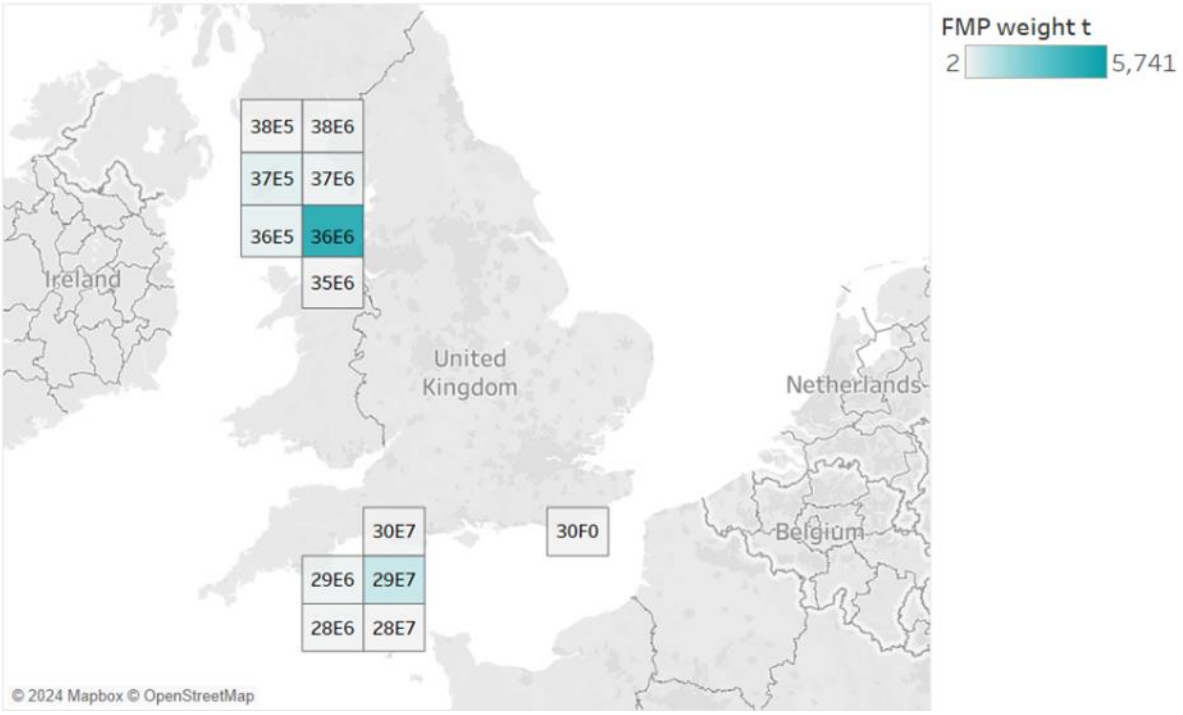

Figure 4: Spatial distribution of queen scallop landings by UK vessels in English waters, by ICES rectangle, for the period 2016 to 2022.

Note: Cumulative landings of queen scallops amounting to less than one tonne have been removed, to highlight the main fishing areas.

Figure 4 description: a map showing the weight of queen scallop landings by UK fishing vessels in English waters, broken down by ICES rectangle, for the period 2016 to 2022. The highest amount of queen scallop landed are from the Irish Sea.

This information shows that when looking specifically at activity in English waters, a significant proportion of landings are coming from the north-eastern Irish Sea. However, since 2021 vessels have been required to specify their catch location in more detail, meaning that data is now available to separate fishing activity in the IOM waters from activity in UK waters. This data on total landings in English waters since 2021 suggests that a significant proportion of historic landings that were proportionally allocated to UK waters were, in fact, caught in IOM waters. The area that produces the most queen scallop landings is in ICES rectangle 36E6, which is located north of Wales. The second largest volume landed was from ICES rectangle 29E7, in the English Channel.

Landings: EU vessels

On average, landings of queen scallops by EU vessels make up 15% of the total landings from English waters. EU vessel activity shows a similar pattern to UK vessels, decreasing significantly since 2012, although for EU vessels the lowest landings were recorded in 2015. Unexpectedly, there was a peak in landings from EU vessels in 2019, which coincides with some of the lowest historical landings for UK vessels. This may be a result of altered fishing activity in anticipation of the UK leaving the EU and the expected impact that new legislation might have for vessels without a historical track record. This also coincides with an increase in the value of landings of queen scallop by EU vessels.

Vessel numbers

Since 2012 the total number of UK vessels landing queen scallops from UK waters has declined from 82 vessels in 2012 to 42 vessels in 2022. The number of vessels fishing in English waters declined significantly in 2020 (due to a reduction in English and Northern Irish vessels). There was a further reduction in 2021 (as improved reporting provided a more realistic picture of the activity of IOM vessels) to the lowest recorded number of vessels on record (23).

In 2022 there were 29 vessels that reported landings of queen scallops from English waters, but of these, only 19 vessels landed more than one tonne in total. This further demonstrates the opportunistic nature of the fishery, where there are several vessels actively targeting queen scallops, but most catch it as bycatch or more sporadically.

Data seems to show that this opportunistic fishery applies more to English vessels than to any other nationality, as the total number of English vessels is more variable each year and there are only a small number catching more than one tonne. This opportunistic approach to fishing queen scallops in English waters was also documented by Stott et al. (2020) and Lawler (2020).

The fluctuation in vessel numbers in the fishery may also be a result of the ‘boom and bust’ nature of the fishery, in which the biomass naturally fluctuates as a result of queen scallops being a short-lived species, with populations heavily reliant on recruitment levels. It may also be a result of changes in the market demand for and value of queen scallops.

Fleet characteristics

The queen scallop fishery in English waters is primarily targeted by vessels that are over 18m and less than 24m in length. During the period 2013 to 2017 there were also significant landings from vessels between 24.01m and 40m in length. Historical landings from under 12m vessels are small, while Marine Management Organisation (MMO) data shows that vessels over 15m landed on average 80% of queen scallops from English waters since 2012. Fishing effort of vessels 15m or above harvesting queen scallops is generally higher than that of under 15m vessels (Stott et al., 2020).

Gear type

Queen scallops in English waters are primarily fished using dredge gear (84%), except for IOM-registered vessels, which predominantly use otter trawls. Some English and Northern Irish vessels are also licensed to use otter trawls to fish for queen scallops in IOM waters. Landings of queen scallop using beam trawl and other mobile gears are also recorded from English waters, which are likely a result of bycatch from other fisheries, given the low landings of queen scallop seen by these gear types.

The Scallop Fishing (England) Order 2012 defines the legal specifications and maximum number of dredges that can be deployed for the capture of king scallops. There is no equivalent legislation applied in English waters for queen scallops. The number of nets or dredges deployed during fishing operations varies, depending on the size and power of the vessel.

Recreational fishing for queen scallops, predominantly dive fishing, is managed by the IFCAs through issuing of licences, and is understood to be minimal in comparison with the trawl and dredge fishery.

Further information on the species, fishery and fleet characteristics, including fishing gears, has been included in a supporting evidence statement which will be published alongside the FMP at the end of 2024.

Economic and social importance

Economic dependence by fleet segment

Seafish economics data shows that queen scallops make up less than 5% of revenue for the majority of vessels in the fishery, and there have been no vessels relying on

queen scallops to make up more than 40% of their revenue since 2017. Recently, the majority of landings by weight have been caught by vessels that rely on queen scallops for less than 20% of their revenue, with only one vessel in 2021 with a dependency over 20% on queen scallop. However, that vessel landed 59% of the total weight of queen scallops from English waters, representing between 20% to 40% of its revenue.

The queen scallop fishery does not operate year-round, and even the largest operators switch to targeting king scallops for part of the year to maintain their income. The importance of queen scallop as a target species varies between boats, with some fishing queen scallops as a target species, whereas others land the species infrequently or land small amounts when the opportunity arises (Marine Scotland 2017).

Since 2016 there has been a steady decline in the number of vessels dependent on the queen scallop fishery for over 20% of their income. The majority of these vessels are over 18m, with only one 12m to 18m vessel more than 20% economically dependent on queen scallops in 2017. Since 2016 there have been no vessels under 12m that are more than 20% economically dependent on the queen scallop fishery in English waters.

Port reliance on the queen scallop fishery

Queen scallops from English waters do not make up a significant proportion of the total value of overall landings into any UK port, suggesting that no UK ports are overly dependent on landings of queen scallops.

MMO data has shown that in 2022 the largest proportion of landings of queen scallops by UK vessels from English waters was in Kirkcudbright (Scotland). Three of the top five ports for queen scallop landings from English waters were on the IOM (Peel, Port St Mary and Douglas). Landings into ports in England were small, and only Whitehaven had landings of more than 5 tonnes of queen scallops in 2022. Reeves (2020a) also concluded that there are only minor landings of queen scallop from English waters going into English ports, further reiterating the sporadic and opportunistic nature of the queen scallop fishery in English waters.

Current status of the fishery

At present, there is insufficient evidence to determine MSY, or a proxy for MSY, for queen scallop stocks in English waters.

Formal stock assessments

ICES does not assess or provide advice for queen scallops, and no formal stock assessment units have been agreed for queen scallops in English waters or around the UK. The queen scallop fishery in UK waters is considered data poor, with the only published stock assessment for this region being in IOM territorial seas. A summary of the latest queen scallop stock assessment carried out by Bangor University in the IOM Territorial Sea on behalf of DEFA is included in a supporting evidence statement, which will be published alongside the FMP at the end of 2024. This provides wider context for the abundance of queen scallops in parts of the UK EEZ outside the FMP area.

Scientific surveys

Despite a lack of formal stock assessment, there are both fishery-dependent and independent data sources available for queen scallops around the UK. A few regular surveys provide information about biology, as well as temporal changes in stock size and population structure. For example, queen scallops have sporadically been monitored on some of the Centre for Environment Fisheries and Aquaculture Science (Cefas) annual fishing surveys, such as beam trawl, otter trawl and ground fish surveys. Such surveys are designed for other species, such as flatfish, and are therefore not best suited to sample scallops but have provided some data such as queen scallop size samples.

Surveys capturing queen scallop data are also carried out by Northern Ireland and Scotland. The Agri-Food and Biosciences Institute (AFBI) carries out annual fishery independent surveys in the North Channel of the Irish Sea, on behalf of the Northern Irish Department of Agriculture, Environment and Rural Affairs (DAERA), with additional sites surveyed to the south-east of the IOM and within the IOM territorial seas in collaboration with Bangor University.

In Scotland, annual scallop surveys have been carried out by Marine Scotland around the Scottish coast with 3 annual dredge surveys undertaken, during which queen and king scallops are routinely measured and aged.

Evidence gaps

Significant knowledge gaps remain that limit the reliability of potential stock assessment models within English waters. Several studies (Lawler 2020, Stott et al. 2020, Reeves

2020a) have reviewed the current data and identified knowledge gaps which this FMP will seek to review and build on where required (proposed measure 4, below).

Available information on queen scallops in English waters is currently restricted to fishing activity data, which on their own are unlikely to provide sufficient evidence for the determination of sustainable catches.

Insufficient information exists about the biology and ecology of queen scallops, including information on genetic differences, larval dispersal, adult migration, and the locations of nursery habitats in exploited and unexploited areas. This information would enable population dynamics and stock boundaries to be identified. There is limited information available on size and age distributions, total live weight, total meat weight including gonads, and gonad weight. Collecting this information would allow an assessment of general health and would help to determine maturity-at-age relationships, the size of the spawning population, and the timing of the spawning season within different fishing grounds. This improved knowledge of the stock-recruitment relationship would be necessary to inform fisheries management measures.

While fishing activity for queen scallops in the Irish Sea is structured around the seasonal quality of meat, the fishery in the rest of English waters (English Channel and North Sea) is considered opportunistic, which may make regular sampling difficult and limit data available to undertake an accurate stock assessment. Reeves (2020a) suggested that in these areas fishing activity data and landings should be collected, and technical measures implemented as a baseline for fisheries management. As the queen scallop stock in UK waters is the responsibility of the devolved administrations, data collection and analysis would be most effective if coordinated across these jurisdictions to support the development and implementation of a stock level assessment (Lawler 2020)

Stock distribution

Queen scallops are known to have a patchy distribution, even within individual fishing grounds, and currently insufficient information exists about their biology and ecology to allow a scientific identification of distinct populations.

It has not been determined whether the stocks in English waters belong to a single population or comprise sub populations (Stott 2021). If it is one population, the large removal of one part of the biomass will have a knock-on effect on the biomass of the whole area and therefore may lead to an overall decrease in population (stock-recruitment relationship). If there are sub-populations, the large removal of one part of

the biomass may have more or less of an impact depending on the migration patterns (Stott 2021). Understanding the stock structure is a key evidence gap that will have significant impact on the approach taken to manage the fishery as proposed in this FMP.

Further information on stock assessments and existing data collection has been included in a supporting evidence statement which will be published alongside the FMP at the end of 2024.

Current fishery management

Fisheries management in the UK is the responsibility of the devolved administrations. The queen scallop fishery in England is managed by Defra through the MMO outside of 6 nautical miles, and by the regional IFCAs inside of 6 nautical miles.

The Trade and Cooperation Agreement (TCA) between the UK and the EU outlines access arrangements for EU vessels fishing in English waters. There is currently little queen scallop-specific management in the UK. For several years there has been concern from the catching sector about the potential for fishing effort to increase if the market value of queen scallops increases, whilst there is insufficient management in place to ensure stocks are fished sustainably. This has been a contributing factor to queen scallops having been prioritised for an FMP in English waters.

Current management within the FMP area (English waters)

These are the current measures regulating English queen scallop fisheries.

1. Any vessel fishing in UK waters must have a commercial fishing licence. However, unlike king scallops, vessels landing queen scallops do not require a dredge permit.
2. Vessels of 15m or over in length are managed at a UK level by a ‘days at sea’ (DAS) scheme through the retained EU Western Waters effort regime – although effort for king and queen scallops is combined.
3. There is a minimum conservation reference size (MCRS) of 40mm in place for UK waters (from assimilated EU legislation) and queen scallops must be landed whole.

4. Since 2018, there has been a seasonal closure between April and July in ICES divisions 6a and 7a, designed to protect queen scallops during part of their spawning season and support future growth in the population. The closure applies to all EU, IOM and UK vessels.

Inshore management measures, within the 6nm zone, vary depending on the IFCA area. All IFCAs have general byelaws restricting the size and power of vessels permitted to fish within their 6nm zone. All IFCA areas have a MCRS for queen scallops of 40mm. Other IFCA management measures include seasonal and spatial closures for dredge gear, permit requirements for dredge gear, requirements for catch returns, requirements to minimise shell damage, and limits on the number of dredges towed. These measures are not currently aligned across IFCA districts and are not specific to the queen scallop fishery. The North-West IFCA manages the English inshore area of the Irish Sea and operates a permit system for dredge vessels but does not have any other scallop specific byelaws.

Current management outside of the FMP area

Within the IOM territorial sea (0 to 12nm from the coast), a range of management measures for queen scallops are in place, which are covered under the Isle of Man Fisheries Act 2012, various secondary legislation, and restrictive licensing conditions. These measures include:

- a requirement to hold an IOM sea fishing licence to fish for queen scallops within the IOM territorial sea
- annual catch quotas
- closed areas and seasons
- technical measures for gears
- area-specific gear limitations
- vessel power restrictions
- a MCRS of 55mm (higher than the UK MCRS of 40mm)

UK queen scallop management consultation 2016

In 2016 the Scottish Government led a consultation on behalf of all UK fisheries administrations on proposed management measures for the Irish Sea queen scallop fishery. Feedback was sought on:

- increasing the MCRS
- introducing an annual closed season
- introducing limits on the number of vessels able to prosecute the fishery, specifically via entry restrictions, such as permits
- effort reduction measures (restricting the time that vessels can fish)
- catch-based limits
- closed areas
- gear-specific management

There was a high level of support for the introduction of management measures and for the proposed measures. Read more information on the UK consultation, including a summary of responses.

Queen scallop fishery management plan objectives

The purpose of an FMP is to produce an evidence-based action plan for maintaining or restoring sustainable fish stocks, including setting out management proposals and frameworks to support our shared ambitions in the Joint Fisheries Statement (JFS) to achieve:

- sustainable stocks
- a healthy marine environment
- a vibrant and profitable fishing sector

The overarching aim of this first iteration of the FMP is to identify opportunities to provide increased protection to queen scallop stocks in English waters in the short term, and to improve the evidence base to inform the development of management for the long-term sustainability of UK queen scallop fisheries.

It is recognised that applying management measures at an England-only level would not be sufficient to protect stocks which cover a wider area, such as in the Irish Sea, and could result in adverse effects to the wider stock. A cautious approach to developing and introducing new management measures has therefore been taken when developing this FMP, which will continue to be taken as measures are developed further and during implementation.

This FMP does, however, consider where there may be opportunities to increase stock protection in the short term and build an effective evidence base to inform potential future UK-wide approaches for shared stocks.

The FMP sets out goals to achieve the overarching aims, which are described below, along with:

- the rationale for the objective
- potential activities that will help to deliver it
- how it links to the Fisheries Act objectives

There is currently insufficient evidence to assess MSY for queen scallop stocks in English waters. Therefore, the purpose of the proposed FMP objectives is to:

- specify policies of the relevant authority or authorities for maintaining or increasing levels of the stock,
- specify the steps (if any) that the relevant authority or authorities propose to take to obtain the scientific evidence necessary to enable an assessment of the stock's MSY, and
- where no such steps are proposed, state the reasons for that

The draft queen scallop FMP in English waters sets out 5 overarching objectives across the following four themes:

- evidence
- sustainable fisheries (fisheries management and wider environment)
- social and economic factors
- climate change

These objectives are set out below.

Objective 1: Develop proposals for a comprehensive data collection programme for English and UK-wide queen scallop fisheries, which supports a data-rich future and results in the establishment of a reliable

time series that facilitates well-informed, sustainable management

Rationale

Provision of better stock data allows for improved fisheries management as scientists, regulators, managers and industry have access to the information they need to make evidence-based decisions. Better data moves us away from precautionary management and further towards achieving MSY for these fisheries. This will support the sustainability objective outlined in the Fisheries Act 2020.

Evidence requirements

Cefas recommended that future work on queen scallop stock assessments be undertaken through the ICES Scallop Working Group due to the level of international collaboration required to manage shared resources (Lawler and Laptikhovsky 2020). In 2020 the ICES WG Scallop updated its terms of reference and is starting to look specifically at queen scallop stocks and fisheries in more detail for the first time. The working group received landings and effort data on queen scallops during a data call issued in 2019 and aims to continue doing this annually (Stott 2021). A biological sampling program within the working group will be set up to collect samples via surveys or processors from each ICES area to enable age, growth and other biological parameters to be assessed and compared across the distribution area (ICES WG Scallop 2020).

Stakeholder views

During engagement events (in early 2024), there was a high level of support for improving the evidence base and ongoing data collection and monitoring for queen scallop fisheries. Examples of existing best practice, and stock assessment surveys and data collection in UK and IOM waters could be a starting point. While there is support in principle to working towards a formal ICES stock assessment, a cautious approach is suggested due to the fluctuating and limited life span of queen scallops and the potential impacts of applying existing ICES categorisation to these data-poor stocks.

Actions

1. Identify and map current gaps in the evidence base and consider actions required to fill them.
2. Support the ICES WG Scallop group in developing stock assessment methods suitable for the queen scallop stock in the Irish Sea.
3. Develop a more formal approach to stock surveys in collaboration with scientists from around the UK.
4. Explore and encourage opportunities for investment in the development of evidence to support appropriate management decisions.
5. Explore opportunities for piloting data collection approaches in English waters.

Relevant Fisheries Act 2020 objective

The scientific evidence objective.

Objective 2: Seek opportunities for strengthening existing measures in English waters to increase stock protection in the short-term

Rationale

Consider measures to manage the risk of increased fishing pressure on stock sustainability, and assess the likely effectiveness of such measures applying in English waters only, while improving the evidence base to underpin future decisions.

Evidence requirements

Captured as actions below.

The following evidence sources will also be used to support this objective:

- Previous work carried out, and consulted upon, by UK administrations and the Queen Scallop Management Group to develop management for the Irish Sea queen scallop fishery. Read more information on the UK consultation, including a summary of responses.

- Proposed actions under management measure three (below) around reviewing existing queen scallop management measures, to collate information on existing measures, estimate how they contribute to achieving stock sustainability, and exploring opportunities for broad alignment or expansion into English waters.

Stakeholder views

During engagement events (in early 2024), there was general support for increasing protection to stocks in the short term, although it's not clear how this could be achieved (in addition to increasing the MCRS in English waters) unless a UK-wide approach is taken.

Actions

1. Carry out a review of existing measures within and outside of English waters, to ensure they are fit for purpose and seek opportunities for strengthening and expanding measures (where appropriate).
2. Develop proposals for potential management measures to be introduced in the short term, building on previous work carried out and consulted upon by UK administrations on potential queen scallop measures, for example, increased MCRS for queen scallop in UK waters, consideration of gear specifications, and newly emerging management proposals or measures introduced in other areas.

Relevant Fisheries Act 2020 objectives

- sustainability objective
- equal access objective

Objective 3: Assess the interactions with the marine environment and potential impacts associated with queen scallop fisheries, and develop an action plan setting out appropriate measures to reduce damaging impacts

Rationale

Improved understanding of the wider environmental interactions of queen scallop fishing activities, in particular:

- the scale and footprint of the fishery which allows for more sustainable management
- barriers to the achievement of good environmental status (GES)
- adoption of best practice

Evidence requirements

Scallop fisheries have the potential to impact the wider marine environment, which can cause disruption to ecosystem state and function, in relation to both seafloor disturbance and bycatch of non-target species. Assessment of the impact of bottom-towed gears and other fishing activity taking place within Marine Protected Areas (MPAs) is carried out by the IFCAs or the MMO in English waters. The relevant regulator will then introduce appropriate management where necessary to ensure any fishing is compatible with the MPA's conservation objectives.

Planned wind farms in the Irish Sea not only have significant overlap with the main queen scallop fishing grounds but may also cause disturbances that alter the preferred settlement location for spat.

ICES rectangle 36E6 has the most queen scallop fishing activity in English waters, and the ABPMer findings also highlighted the significant number of spatial restrictions taking place there. For the purposes of this FMP, we will consider the impacts of spatial squeeze and potential displacement issues when we develop longer-term measures for queen scallop management.

Stakeholder views

General agreement around the need for assessing environmental impacts of queen scallop fishing, particularly as this is a priority measure in the king scallop FMP.

Actions

The following proposed actions will be considered in conjunction with work being developed for the king scallop FMP (where applicable).

1. Improve understanding of the spatial and temporal extent of queen scallop fisheries in English waters, both for dredging and otter trawling, to improve confidence around the assessments of wider environmental risks associated with queen scallop fishing.

2. Improve understanding of the impact that queen scallop vessels have on the marine environment (including seabed, food webs, other commercial species, blue carbon, carbon dioxide (CO2) emissions and marine litter) through collaborative studies.
3. Identify key information gaps and evidence requirements relating to abandoned, lost, discarded fishing gear (ALDFG) in English and shared UK queen scallop fisheries.
4. Identify barriers and workable solutions to reduce the environmental footprint of the queen scallop sector, while also considering economic sustainability.
5. Continue steps towards stewardship, over the longer term, to ensure compliance with the UK Marine Strategy (UKMS) and follow MPA and Highly Protected Marine Area (HPMA) management measures.
6. Develop a plan to provide combined spatial data to support evidence-based MPAs and ecosystem management for all sectors (acknowledging potential confidentiality issues).
7. To mitigate the potential risk caused by scallop dredging on the bycatch of mobile species, the queen scallop FMP will align with the actions set out in the published king scallop FMP to implement a bycatch monitoring and reporting plan, which will enable listed mobile species bycatch to be properly understood and effective management measures put in place.

Relevant Fisheries Act 2020 objectives

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

Objective 4: Explore the impacts of changes in marine spatial use on queen scallop fisheries from an environmental, economic, and social perspective

Rationale

Maintaining constructive engagement and communication between the UK queen scallop sector and other potential marine users ensures the interests and potential

impacts (economic, environment and social) of future marine uses are understood and considered.

Evidence requirements

Captured as actions below.

Stakeholder views

There are concerns over the risks to the queen scallop fishery in the Irish Sea from planned wind farm developments, both in terms of where the wind farms may be located, for example over key fishing grounds, and the increased pressure on marine spatial use. Spatial overlaps between queen scallop fishing activity and windfarm developments should be mapped to provide additional context around this proposed objective.

Actions

The following proposed actions will be considered in conjunction with work being developed for the king scallop FMP (where applicable).

1. Undertake a desk-based review of current and proposed future marine space use to better understand the social and economic importance of English queen scallop fisheries.
2. Ensure outputs of the queen scallop FMP feed into the cross-government MSPri programme, to link to current and proposed future marine space use in English waters.
3. Encourage proactive and inclusive engagement with the queen scallop sector when developing management measures within MPAs or HPMAs, offshore renewables.
4. Identify and address evidence gaps to ensure the queen scallop sector has the appropriate data, evidence, narrative and means of engaging with regulators and potential marine users on marine spatial planning (feeding into the MSPri programme in England) and access issues
5. Improve understanding of engagement options to ensure the queen scallop sector can provide input on spatial issues.
6. Develop a plan to provide amalgamated spatial data to support MPA and ecosystem management for all sectors, for example, remote electronic monitoring (REM) (acknowledging potential confidentiality issues).

Relevant Fisheries Act 2020 objectives

- ecosystem objective
- sustainability objective
- climate change objective

Objective 5: Develop climate change mitigation and adaptation measures for shared UK queen scallop fisheries

Rationale

Compliance with the climate change objective in the Fisheries Act.

Scallop stocks and fisheries are sensitive to the environmental change brought about by climate change such as ocean warming and ocean acidification. While these stocks and fisheries are affected by this change, they are also one of the contributors. All fishing activity leaves a carbon footprint, which can further exacerbate the environmental impacts of climate change. The contribution of carbon emissions from scallop fisheries comes from vessel emissions, as well as potentially through the disruption and release of stored carbon from the marine environment via fishing gears impacting the seafloor.

To support the scallop fisheries to continue to sustainably harvest their stocks under changing climate, while also reducing their contribution to the cause, there is a need to move towards climate adaptive fisheries management.

Evidence requirements

Impact of climate change on scallops: scallop larvae are particularly sensitive to the changes in ocean acidification, with experiments of predicted ocean acidification levels demonstrating deformity in larval shell formation and increased mortality. These impacts can have significant economic implications for the scallop fisheries.

Impact of queen scallop fishery on net zero targets: queen scallops in English waters are primarily fished using dredge gear (84%), apart from IOM vessels which use otter trawls. Recent analysis has shown that the total UK scallop dredge fishing fleet segment (which comprises 209 vessels fishing queen and king scallops) produced 10.2% of the total carbon emissions (85 kilotonnes of carbon dioxide equivalent – CO2e) at sea each year across the UK's fishing fleets (Engelhard, GH. Harrod, OL., Pinnegar, JK. 2022).

Stakeholder views

This objective mirrors an objective included in the published king scallop FMP for English and Welsh waters, which was consulted upon as part of the draft FMP consultation and supported by stakeholders. The Shellfish Industry Advisory Group (SIAG) have collectively agreed to consider the impact of climate change on the shellfish industry as a key objective. There is a recognition among stakeholders that this issue requires clear actions.

Actions

The following proposed actions will be considered in conjunction with work being developed for the king scallop FMP (where applicable).

1. Improve understanding of the impact that queen scallop vessels have on the marine environment (including seabed, blue carbon and CO2 emissions) through collaborative studies.
2. Industry and government to consider reducing overall CO2 emissions, through smart fishing, reduced fuel emissions, prospecting, fishing times, more efficient gear, and imposed effort limitations.
3. Use and develop carbon hot spot and climate ‘refugia’ maps to identify and reduce potential overlap with king scallop fishing footprint.
4. Develop understanding of the likely impacts of climate change on the queen scallop status (plus ecosystem links) and fisheries to inform adaptive management and long-term sustainability for the environment and industry.
5. Collate relevant evidence generated from existing monitoring and research programmes over the next 2 years.

Relevant Fisheries Act 2020 objective

- climate change objective
- national benefit objective

Management approaches

Considerations when developing management approaches for English queen scallop fisheries

This FMP will build on the work carried out previously at a UK level to develop management approaches and will be informed by the consultation feedback already received as part of this process. This will support the FMP's aim to further develop effective measures for managing queen scallop fisheries sustainability.

Any such management applied by Defra would only be applicable to vessels fishing in English waters. Data showing the number of UK vessels active in each national management jurisdiction indicates that in 2022 most vessels were fishing at least part of their time in English waters (29 vessels out of the 42 UK vessels that landed queen scallops from anywhere in the UK). This could have two potential impacts which need to be considered and explored further when developing and applying management to English queen scallop fisheries:

1. If access to English waters is restricted, vessels may look to fish elsewhere in the Irish Sea and increase the fishing pressure outside of English waters (in Welsh, Scottish or Northern Irish waters).
2. If these vessels need to make changes in their fishing practices to access stocks in English waters, they may continue to use these methods when fishing outside of English waters, which could have conservation benefits for the wider Irish Sea.

The opportunistic and seasonal nature of the queen scallop fishery, as well as the cross-border fishing patterns, suggests that a harmonised approach to managing the fishery in the Irish Sea is required. Uncoordinated management could result in contrasting regulations creating practical difficulties for fishermen and increasing the risk of non-compliance. Regulatory differences across management jurisdictions may also result in displacement, as vessels will be attracted to less strictly managed grounds or pushed into other areas when catch limits are reached. It may take a combination of measures to achieve a sustainable queen scallop fishery in English waters.

Given the relatively small size of the English queen scallop fishery, and its low volume and value compared to other English fisheries, consideration will be needed as to the availability of resources to implement effective data collection and management approaches. Aligning the development of management for queen scallops with the

process for introducing management in the king scallop fishery, as set out in the king scallop FMP for English and Welsh waters, may help to streamline resource requirements. This may also help to limit stakeholder fatigue, as there is overlap in the vessels landing both species.

Purpose and aims

Management of queen scallop fisheries in English and UK waters aims to achieve environmental, social and economic sustainability, benefitting coastal communities and wider society. A key priority of the FMP is to ensure these stocks are being fished sustainably, to ensure they reach and maintain MSY or an alternative measure which reflects the health of the stock.

Increased protection through the development and implementation of management measures and well-informed scientific evidence is needed to ensure the long-term sustainability of stocks.

Proposed management approaches to achieve priority sustainability objectives

To address concerns about the long-term sustainability of the queen scallop fishery and deliver on the precautionary principles of the Fisheries Act, 6 initial management interventions are proposed at English and UK level (for shared queen scallop stocks in the Irish Sea), as well as proposals for developing an overarching framework for management and assessing the environmental impacts of fishing for queen scallops.

Proposed early interventions, as listed below, are intended to increase protection for stocks and the fishery while more information is being gathered to inform the necessary components for responsive management in the future. This supports the requirement of the Fisheries Act to take a precautionary approach to stock management while the evidence base improves.

As the queen scallop evidence base improves, the focus will be on delivering more tailored management to ensure stock status remains at or above an agreed MSY target. Below is an overview of management approaches that could be used to manage effort in queen scallop fisheries. The precautionary objective of the Act stresses the need to take management action even in the absence of sufficient scientific information.

Proposed initial management interventions

Measure 1: Increase MCRS for queen scallops in English waters from 40mm to 55mm (short to medium term)

Rationale

The current retained EU MCRS for queen scallop (Aequipecten opercularis) is 40mm, which applies in all UK waters, although in the IOM territorial sea the MCRS is 55mm.

MCRS is a commonly used fishery management tool that helps ensure that a proportion of animals are reproductively mature and have spawned before being harvested. This helps ensure that recruitment of juveniles is maintained, and that the population remains healthy.

For queen scallops, scientific information indicates that size at maturity is between 22mm and 45mm and varies according to area, due to different growth rates. Therefore, with a MCRS of 40mm it is likely that the majority of animals caught and retained have matured, but it may not ensure that most animals have spawned at least once in all areas. Additionally, it has been shown that smaller scallops, for example those in their first spawning years, have a lower reproductive output which may be of lower quality. Larger animals produce more larvae of better quality and have had more opportunity to spawn (multiple years), so protecting scallops until they are larger is likely to be beneficial to the recruitment process.

The option to increase the MCRS was included in the 2016 UK queen scallop management consultation and was supported by 94% of respondents. Read more information on the UK consultation, including a summary of responses. Most vessels are landing at a higher size already, because it is less economical to process queen scallops smaller than that. Recent conversations with the catching sector indicate they are still supportive of this measure.

Desired outcomes

- provide increased protection to queen scallop stocks in English waters by allowing animals increased opportunities to spawn

- provide greater protection to wider stock areas by aligning the MCRS in English waters with adjacent, wider stock areas, for example, IOM territorial waters

Actions

Four important short-term actions have been identified.

1. Review existing scientific evidence relating to size at maturity for queen scallops in the Irish Sea and English Channel and assess the likely benefits and impacts of increasing MCRS.
2. Review and take into consideration responses and evidence received as part of the 2016 UK queen scallop management consultation, relating to a proposed increase to MCRS.
3. Work with industry to identify likely economic impacts of increasing MCRS, for example percentage of landings reduction and, changes to gear requirements, as well as likely impacts and benefits where queen scallop are landed as bycatch.
4. Exploring options around implementation to mitigate impacts, for example, the use of longer lead-in times to allow fishers to prepare for changes.

Implementation

Explore the use of licence conditions to increase MCRS in specified areas prior to amendment of the retained EU Technical Conservation Regulation.

Relevant queen scallop FMP objective

Objective 2: Seek opportunities for strengthening existing measures.

Measure 2: Explore potential options for introducing gear specifications for queen scallop fishing in English waters (short to medium term)

Rationale

Queen scallops in English waters are primarily fished using dredge gear, but there are currently no legal specifications around the type and configuration of dredges that can be used to target queen scallops. The Scallop Fishing (England) Order 2012 defines the legal specifications and maximum number of dredges that can be deployed for the

capture of king scallops, but there is no equivalent legislation applied in English waters for queen scallops.

Consideration is needed around the appropriate technical specifications that could be applied to queen scallop fishing, both to minimise bycatch of undersized queen scallops (particularly if MCRS is increased, as proposed above) or of other species, as well as minimising the potential impact of gear on the wider environment.

Desired outcomes

- improved understanding of gear types and specifications which catch queen scallops, both targeted and as bycatch
- improved understanding of potential regional variations that should be incorporated into gear specifications due to differences in growth rates
- development of potential gear specification options
- assessment of the environmental and economic impacts of potential gear specification measures

Actions

Four important short-term actions have been identified.

1. Collate information on all current gear types and specifications used to catch queen scallops, to build a comprehensive picture of the gears being used in different areas around the UK, and catch compositions, including the species and sizes being caught (both targeted and as bycatch).
2. Identify and collate available scientific evidence on queen scallop growth rates in areas where queen scallop is found in English waters.
3. In collaboration with scientists, industry and fishery managers, develop options for potential gear specifications.
4. Assess the likely environmental and economic benefits and impacts of initial gear specification proposals.

Relevant queen scallop FMP objective

Objective 2: Seek opportunities for strengthening existing measures.

Measure 3: Review existing queen scallop management measures applied across the UK and

consider replicating measures in English waters to increase stock protection (short to medium term)

Rationale

Although data is showing that landings of queen scallops and vessel numbers (both in UK and English waters) have declined since 2013, increases in biomass of the fishery or changes in the market demand and value for queen scallops could lead to an increase in vessels and fishing effort, as seen in 2013 when the value and volume of queen scallop landings peaked.

Consideration is needed around managing the risk of increased fishing pressure on stock sustainability. This will be supported by the following approaches while the evidence base to underpin future decisions is developed:

2 a review of existing measures to ensure they are fit for purpose
3 exploring opportunities and the likely effectiveness of introducing measures in English waters only

Given the breadth of measures already applied to queen scallop fisheries in other areas, for example IOM, and evidence acquired from the previous UK queen scallop management consultation, there could be opportunities to increase protection for queen scallops in English waters as a short-term measure. As mentioned above, a review of existing measures will also be required, in parallel with the development of a new overarching management framework. This will ensure that existing measures are fit for purpose to achieve stock sustainability under the new management framework, and opportunities for broad alignment of measures (where appropriate) are explored.

Desired outcomes

- consider current and new measures in English waters to ensure they are applied at the most appropriate level
- consider a broad alignment of measures where there are benefits (environmental, social or economic) to doing so
- review existing measures, as proposed under measure 4 below, which will enable this work to progress

Actions

Two stages have been identified.

Stage 1 actions:

1. Collate information on existing measures applying to queen scallop fisheries in English, UK and IOM waters.
2. Identify where measures differ across areas and explore opportunities for broad alignment or expansion into English waters.
3. Assess where there may be social, economic or environmental impacts from broadly aligning or expanding specific measures in various areas.
4. Estimate how measures will contribute to achieving stock sustainability and overarching FMP goals, and likely timeframes.
5. Identify potential implementation options and timings, for example, legislation, use of existing powers and, if relevant, whether piloting a proposed approach could be beneficial.
6. Regularly seeking wider stakeholder views to inform the development of approaches.

Stage 2 actions:

1. Continue to develop and maintain a log of all existing management measures applied to queen scallops in English, UK and IOM waters, as a source of up-to-date information.
2. Ongoing consideration of where there are benefits to broadly aligning or expanding new management approaches or whether measures should be regional specific.
3. Ongoing consideration of the potential for existing management measures to be strengthened in parallel with the development of new measures.
4. Review available catch per unit effort (CPUE) data to determine whether it varies seasonally, and consider whether restrictions to the fishery at particular times of the year that maximise CPUE should be considered.

Relevant queen scallop FMP objective

Objective 2: Seek opportunities for strengthening existing measures.

Measure 4: Review existing queen scallop data collection programmes and approaches applied across the UK, and identify key information gaps and evidence requirements (short to medium term)

Rationale

Although a data-poor species, there are currently both fishery-dependent data (collected directly by fishers) and fishery independent data (collected by scientific surveys) sources available for queen scallops around the UK. Although queen scallops are known to have patchy distribution, surveys are carried out in certain areas which provide information about biology, as well as temporal changes in stock size and population structure.

To ensure sufficient stock data is available on which to make evidence-based fishery management decisions, there is a need to understand the type, scope and purpose of queen scallop stock data already being collected and analysed around the UK. This will help to understand where the key evidence gaps may lie and whether data to fill these is already available or if additional data collection approaches are needed.

Several studies (Lawler 2020, Stott et al. 2020, Reeves 2020a) have reviewed the current data and identified knowledge gaps, which can provide an effective starting point for this work.

Desired outcomes

- increased understanding of existing scientific and fishery data, how and where it is collected, how it's used and why
- identification of key evidence gaps and requirements, including provision of scientific and fishing data

Actions

Three important actions have been identified.

1. Identify and collate information from existing data gathering and scientific forums to inform work on queen scallop data collection in UK and English waters.
2. Map out existing data and stock assessment approaches.

3. Map out likely important evidence gaps, including determining size and age distributions, genetic differences, larval dispersal, adult migration, the locations of nursery habitats in exploited and unexploited areas, annual amounts of commercial discards of queen scallops, discard survival rates, and mortality levels associated with mobile fishing gear.

Relevant queen scallop FMP objective

Objective 1: Develop proposals for a comprehensive data collection programme for English and UK wide queen scallop fisheries.

Measure 5: Consider developing a scientifically-based fisheries management framework, based on output or input controls (short to medium term)

Rationale

Fisheries management frameworks are generally based on output or input controls. Output-based controls limit the amount of stock that can be caught and landed. These limits are based on scientifically-based estimations of stock MSY. Input controls seek to limit fishing activity through controls on fishing effort. This may take the form of limiting the amount of time that vessels can spend fishing, such as by setting a maximum number of days at sea.

Controlling fishing activity has been identified as a key management approach to ensuring stocks are fished sustainably. It is acknowledged that one measure cannot work alone to achieve this. A future approach must combine a suite of measures, with a framework supported by a range of management measures (or interventions), including input or output controls.

This proposed approach would be progressed alongside development of an overarching framework for king scallops, as set out in the king scallop FMP in English and Welsh waters. This is important given that both fisheries have shared aims and are affected by common issues, and are already partly managed together under the retained EU Western Waters effort regime.

Any application of output or input controls to the English queen scallop fishery would likely be on precautionary basis, at least to begin with, due to the current lack of available scientific data on queen scallop stocks.

A proposed suite of measures, including an overarching framework, is set out below.

Proposed overarching management framework:

- scientifically-based output controls (for example, catch objective)
- scientifically-based effort controls (for example, days at sea)

Measures:

- entry restrictions such as permits, to manage the number of vessels targeting queen scallops
- area-based closures, to protect spawning stocks and the seabed during settlement phase
- technical measures, such as gear specifications

While the proposed approaches are high level at this stage, they do provide a sound basis on which to develop potential management measures in more detail. This will require a UK approach for shared stocks and detailed analysis by fishery managers, industry and scientists, through a collaborative approach, to cover areas such as:

- the provisions included under each proposed measure
- the type and level of scientific evidence required to underpin and inform measures
- the benefits to stock sustainability, including likely effectiveness of applying measures to English only waters (where applicable)
- potential implementation of measures
- potential methods for allocation of fishing opportunities across all sectors and fleets
- monitoring compliance and effectiveness of the measures
- legal implications of the TCA with the EU

Desired outcomes

- To consider the pros and cons of output and input control measures, in order to inform evidence-based development of measures that support sustainable fishing (both approaches will be analysed and considered in equal measure).
- To consider the extent to which such measures could effectively be applied to the English queen scallop fishery, and the level of precautionary action that would be required due to a current lack of data on which to inform or set new limits.
- This will inform consultations on proposals for the implementation of new queen scallop fisheries management measures.

Actions

There are 3 main stages that have been identified, along with additional ongoing actions and implementation actions.

Stage 1 actions:

1. Identify and collate existing information on output and input control measures applied to other fisheries (including queen scallop fisheries) and associated environmental, social and economic benefits or issues.

Stage 2 actions:

1. Develop a potential approach to how output or input controls could be applied to queen scallop fisheries – including options for the method by which limits may be set, the allocation method and criteria for fishing opportunities, and the monitoring required to measure effectiveness.
2. Identify relevant data required, including appropriate time series of data, to underpin output or input controls, and understand if this is collected already or if new methods for data collection are needed.

Stage 3 actions:

1. Assess the environmental, social and economic impacts of applying output or input control limits.
2. Estimate how measures will contribute to achieving stock sustainability and overarching FMP goals, and likely timeframes.
3. Scope potential implementation options and timing, for example legislation and use of existing powers.

Ongoing action:

- Seek wider stakeholder views on approach to inform development and assess benefits and impacts.

Implementation action:

- To be informed by above analysis and stakeholder input. Consider a phased approach and trials across stock areas and sectors, with results to be reported on as appropriate to inform the measures.

Relevant queen scallop FMP objective

Objective 2: Seek opportunities for strengthening existing measures.

Measure 6: Management framework: assess and mitigate the effects of queen scallop fishing on seafloor integrity (short to medium term)

Rationale

This FMP includes goals to ensure that the environmental impacts associated with queen scallop fishing are understood and mitigated where possible, to support ambitions in the JFS to achieve a healthy marine environment and sustainable stocks.

Where queen scallop dredge fisheries are considered to have an adverse impact on the marine environment, action will be taken to avoid, remedy or mitigate such impacts.

We recognise concerns around not only the impact of scallop dredging on seafloor integrity, but also around the potential impacts of bottom-towed gears on non-target species and fisheries, and on the wider marine environment. The FMP includes goals which aim to understand and mitigate issues associated with gear conflict, as well as improved understanding of the impact queen scallop vessels have on the marine environment, including other, non-targeted, commercial species, such as lobster and brown crab.

This work will consider the potential effects of fishing activities within the wider context of ongoing changes in marine spatial use, as well as the level of environmental protection needed to achieve the objective of GES under the UKMS.

Desired outcomes

- the FMP will feed into and influence the work of a Benthic Impact Working Group, in which evidence will be used to develop further recommendations on how to manage the potential effects of fishing activities (alongside other activities) on seafloor integrity and the state of benthic habitats
- an improved understanding of the wider environmental interactions of queen scallop fishing activities, in particular the environmental and carbon footprint of the fishery

- to develop and implement an action plan for reducing damaging impacts

Actions

The first stage has been identified.

Stage 1 actions:

1. Feed into wider work around exploring the potential of a focused Benthic Impact Working Group. This would complement existing groups considering pressures on benthic habitats, with a remit to help progress achievement of the FMP and wider objectives relating to queen scallop fishing impacts.
2. Map current fished areas alongside areas where queen scallop stocks are present but fishing is not permitted or feasible, such as in some MPAs and offshore windfarms, to improve understanding of the overall footprint of the fishery.
3. Identify and collate information on existing evidence and data required to map the interactions of queen scallop fishing with other fisheries and non-target species and the wider environment, including identification of potential evidence gaps and plans to address them.
4. As a priority, we consider the Benthic Impact Working Group should look to carry out a review of the fishing methods used to fish for queen scallops, the evidence required to assess the environmental impacts of the different methods, and opportunities for innovations in catching methods.

We will use the Benthic Impact Working Group as a route to support and drive further stages and actions. We will work with the Benthic Impact Working Group to ensure there are tangible mechanisms for delivering identified actions exists and a comprehensive action plan is developed and implemented in due course.

Relevant queen scallop FMP objective

Objective 3: Assess the interactions with the marine environment and potential impacts associated with queen scallop fisheries.

Timeline for management measures

Sufficient time is required to develop the detail of future measures. This will vary depending on the nature of the measure, for example:

- whether the measure is new or updated

- the complexity of the proposed measure
- the geographical and stock area to which it applies
- the evidence available on which to underpin and inform the details
- what mechanism will be required to implement the measure

Thorough analysis will be needed to develop the measures set out in the FMP, building on existing evidence and information as well as lessons learnt from measures already applied to queen scallop or other relevant fisheries.

Input and output management frameworks need to be supported by a suite of management measures. Their relative importance and design may vary under either system. Work will be undertaken to understand how these management measures can support the delivery of the FMP objectives, and how they may need to be designed differently under either an input or output framework. This will continue to utilise and build on existing evidence, such as the information that has informed the development of this FMP and work already under way as part of the king scallop FMP.

The actions set out in this section, once finalised, will be progressed in 2025, particularly those identified as a high priority. To support this, detailed work plans setting out the required actions, time and resource (at each work stage) to deliver future measures will be developed in collaboration with relevant stakeholders. This will feed into implementation planning across the wider suite of FMPs, which will support the introduction of precautionary measures to provide increased protection to stocks.

Ahead of detailed work plans being developed and agreed, the following provides an initial estimate of the time required to deliver actions set out for the various approaches:

- short term – within 1 to 2 years of publication of the plan
- medium term – in the next 3 to 5 years
- long term – more than 5 years (to reflect the more complex work required to develop them)

Further work and analysis will be required to develop priority measures. An initial assessment of the stages in policy development are set out below.

Managing and addressing environmental risks

Under the UK Marine Strategy Regulations 2010, the UK has a responsibility to take the necessary measures to achieve or maintain good environmental status (GES). The UK Marine Strategy (UKMS) provides the policy framework for delivering marine policy at the UK level and sets out how the vision of clean, healthy, safe, productive and biologically diverse oceans and seas will be achieved. The target for GES is measured through 11 qualitative descriptors, which describe what the environment will look like once GES has been achieved. In addition to ensuring stocks are fished sustainably, the queen scallop FMP includes objectives to ensure that the environmental impacts associated with queen scallop fishing are understood. Where queen scallop fisheries are considered to have an adverse impact on the marine environment, action is taken to avoid, remedy or mitigate such impacts.

Natural England investigated the impact of the pressures associated with fishing activities across all 11 descriptors of GES. This identified risks arising from queen scallop fishing to 5 of the 11 UKMS descriptors of most immediate concern:

- D1 biodiversity
- D3 commercial fish and shellfish
- D4 food webs
- D6 seafloor integrity
- D10 marine litter

The main risks arising from queen scallop fishing to UKMS descriptors are summarised below.

There is a moderate risk associated with otter trawls to D1 and D4 cetaceans, D1 and D4 seals, and D1 and D4 birds.

There is a high risk to D1, D6 seafloor integrity due to benthic disturbance caused by scallop dredges and otter trawls.

There is a moderate risk that the queen scallop fishery contributes to marine litter (D10) through part or whole gear loss.

Bycatch of protected mobile species for MPAs

In English waters, the MMO and IFCAs assess the impacts of fisheries in MPAs and bring in management where required. However, there remains the potential for fishing activity occurring outside of an MPA to have impacts on designated features.

As Cefas does not undertake surveys specifically for queen scallops, it does not hold data on the catch composition and subsequent bycatch for the queen scallop fishery. Howarth and Stewart (2014) studied the efficiency and environmental impacts of otter trawls, dredges and modified queen scallop dredges, and determined that queen scallop skid dredges and otter trawls have similar target catch efficiency, but varied in their bycatch species (otter trawl bycatch comprised fish, and queen scallop dredge bycatch comprised invertebrates). Both have comparatively lower incidence of bycatch than the traditional dredge.

There is a moderate risk of bycatch of mobile species that are designated features of MPAs in otter trawls in queen scallop fisheries. This UKMS descriptor rating is considered precautionary due to the significant gaps in the available evidence, especially regarding designated fish and seabird bycatch in otter trawls. An improved monitoring regime on benthic trawlers will help fill the current data gaps and therefore reduce the uncertainties. This could potentially be done by adapting or expanding existing observer programmes, or through the appropriate use of REM. These actions are incorporated in Objective 3.

Marine litter

Marine litter is described as any persistent, manufactured or processed solid material discarded, disposed or abandoned in the marine and coastal environment. Marine litter consists of any items that have been:

- made or used by people and deliberately discarded into the sea or rivers or on beaches
- brought indirectly to the sea by rivers, sewage, storm water or winds
- accidentally lost, including material lost at sea in bad weather (fishing gear, cargo)
- deliberately left by people on beaches and shores

Due to the nature of the gear used, which is largely metal, scallop dredging is considered unlikely to be a major contributor to marine litter (UKMS descriptor 10). As a result of this, it is considered a low risk at this stage.

Actions set out in Objective 3 include reviewing evidence being generated through existing monitoring programmes over the next two years. An evidence plan will be set out in a future iteration of the FMP to assess the scale of impact generated by scallop dredge and otter trawl litter, along with any required research to support mitigating any risks identified.

Seafloor integrity

The fishing methods primarily used to target queen scallops are trawling (IOM waters) and dredging. Of all fishing gears, dredging is considered to cause the most damage to non-target benthic communities and seafloor habitats. The level of damage caused varies greatly between different types of seabed and groups of organisms, with biogenic reefs and benthic epifauna being the most vulnerable. This damage can have severe consequences for biodiversity, due to removing structurally complex species like hydroids, and negatively impact recruitment, including for scallops. This is because these habitats are key nursery and feeding areas for a wide range of species. There can also be physical impacts to the seabed, such as homogenisation and resuspension of sediments, causing alterations in seabed topography and nutrient cycling.

Understanding the efficiency of scallop dredges is important for understanding the impact of dredging on the seabed, as it has been shown that dredges with a catch efficiency higher than the benthic depletion rate would cause a greater environmental impact.

Objective 3 of the FMP sets out actions to assess the interactions with the marine environment and potential impacts associated with king scallop fisheries, and to develop an action plan setting out appropriate measures to reduce damaging impacts. This will contribute to addressing the issue of seabed disturbance associated with the queen scallop fishery and will positively contribute to achieving GES for UKMS descriptor 1 (biological diversity) and descriptor 6 (seafloor integrity) in English waters.

Actions for mitigating risks to seafloor integrity

Seafloor integrity in this context refers to the extent of physical disturbance due to human activity. The risk to seafloor integrity as a result of scallop dredging is considered

high, due to the benthic pressure and disturbances associated with the towed dredge and otter trawls.

This FMP recognises the need for its strong engagement in a strategic approach to:

- reduce the impacts of fishing on the seafloor
- identify actions that will help to reduce the impacts of fishing on seafloor integrity, including through a Benthic Impact Working Group

In the update to UK Marine Strategy Part 1 (2019) Defra made a commitment to assess the feasibility of setting up a partnership working group, referred to as the Benthic Impact Working Group. The group will involve key stakeholders working together to identify solutions for reducing the impacts of fishing on seafloor integrity. Once convened, this group should provide strategic oversight and direction for delivering future advice. This will include identifying, developing and trialling possible mitigation or management options, in partnership. This FMP will make a significant contribution to the creation and coordination of the Benthic Impact Working Group.

This FMP will facilitate work across queen scallop fisheries to support the scale of the action required to mitigate the seafloor integrity impacts. This will include working in partnership to map current fished areas alongside areas where queen scallop fishing is not permitted or feasible, such as in some MPAs and offshore windfarms. This will improve understanding of the overall footprint of the fishery. The work of the group will also consider where further changes to queen scallop fishing grounds may occur in the future, for example new offshore developments, or an increased MPA network. Detailed aims and objectives of the group are set out in management measure 4.

An evidence-based assessment of the interactions between the queen scallop fishery and the marine environment will be carried out to:

- inform the development of an action plan for reducing damaging impacts (as set out in FMP objective 5) and in the published king scallop FMP and environmental report
- consider these aspects within the wider context of spatial pressure from other marine activities.

Further details on additional environmental risks are set out in the environmental report of the strategic environmental assessment (SEA) consulted on alongside this draft FMP.

Climate change

To support the transition towards climate smart fisheries in England (and the UK) there is a need to ensure climate change risks, opportunities and adaptative measures are incorporated into all fisheries management and sustainability measures, policies and negotiations. Enhancing the evidence base to inform climate adaptive management measures is a priority.

Objective 5 of the FMP sets out the actions to:

- improve understanding of the impact that queen scallop vessels have on the marine environment (including the seabed, blue carbon and CO2 emissions) through collaborative studies
- consider evidence generated by existing research programmes and the work undertaken to deliver mitigations through the king scallop FMP

Implementation, monitoring and review

Implementation

The English queen scallop FMP sets out a vision and goals for queen scallop fisheries, together with the policies and management interventions necessary to achieve these goals. This FMP proposes a new management framework. The measures developed under this framework will undergo a subsequent implementation phase where appropriate mechanisms will be required to deliver them. Such mechanisms could include:

- voluntary measures
- licence conditions
- national and regional byelaws
- statutory instruments

This implementation phase will build on:

- the existing evidence base
- any action taken throughout the development of the FMP
- the options discussed with stakeholders

This will be subject to regular monitoring and review to ensure progress. The queen scallop FMP is subject to a statutory review process at a maximum of 6 years after publication. After this point it will be necessary to evidence what has been achieved through the implementation of those actions and measures. This review process will also build in monitoring for potential environmental effects, to help establish whether any changes are needed in the management of queen scallop fisheries.

Monitoring performance

This is the first version of this FMP, which sets out the first steps and longer-term vision necessary for sustainable management of this fishery. These plans will take time to develop and implement. They are intended to allow an adaptive approach, and will be reviewed and improved over time as we collect more evidence and collaborate with the fishing sector and wider interests on the sustainable management of these fisheries.

Delivery of the actions and measures for the queen scallop FMP will be monitored. At present, there is insufficient evidence to determine MSY, or a proxy for MSY, for queen scallop stocks in English waters.

This FMP sets out the proposed steps to begin developing an evidence base for these data limited stocks to support progress towards defining and measuring stock status and reporting on stock sustainability. Identification of the available evidence to define and measure stock status and key evidence gaps will be an indicator of the effectiveness of this plan for these stocks.

Other indicators to measure the effectiveness of the policies for restoring or maintaining queen scallop stock at sustainable levels will include completed reviews of:

- existing measures, within and outside of the FMP area, and opportunities for strengthening and aligning the measures identified

- an overarching management framework based on input and output controls, which will develop fisheries management measures that are responsive to signals and trends in stock levels, as well as contribute to the evidence base for the queen scallop fishery

Review and revision of the queen scallop FMP

The queen scallop FMP must be reviewed when appropriate, and at least every 6 years. This formal review will assess how the FMP has performed in terms of meeting the objectives of the Act.

The findings of these reviews will inform the development of subsequent versions of the queen scallop FMP. The FMP will also be assessed as part of the process to report on the contribution of FMPs in meeting the objectives of the JFS. The Act requires fisheries policy authorities to:

- report on the JFS every 3 years
- review the JFS whenever deemed appropriate, or at least within 6 years of publication

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