




PROJECT UK

DELIVERING FISHERY IMPROVEMENTS IN THE NORTH EAST ATLANTIC

Project UK: Round 1
UK South West of England & Celtic Sea crustacean pot fishery

Year 5 report

May 2022

POSEIDON

AQUATIC RESOURCE MANAGEMENT

Report Information

Client: Project UK, facilitated by the Marine Stewardship Council

Version: v2

Status: Draft

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Report Ref: GBR-1721

Date Issued: May 2022

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AQUATIC RESOURCE MANAGEMENT

Contents

1. Introduction

1.1 Introduction

Project UK includes 12 fisheries, through eight FIPs. These fisheries were selected by the supply chain because they bring commercial, economic, and cultural benefits to UK communities. As part of Project UK, these FIPs address 61 individual actions. These actions address multiple milestones across a five-year period, representing best practice in working towards an environmentally sustainable future.

The first round of FIPs[1] to participate in Project UK (Channel scallop, monkfish, plaice & lemon sole, and crab & lobster) were launched in 2017. So far, these fisheries have made demonstrable progress against their Action Plans, focusing on developing and documenting robust stock management and mitigating environmental impacts.

With these five year FIPs coming to their end in April 2022, there is a need to review their overall progress to date and agree on the next steps to be taken. In the case of this crab and lobster FIP, the stakeholders have agreed to extend the FIP by one more year to April 2023. As a result these next steps will be embedded into a new Action Plan for Year 6 of the FIP. It should be noted that the review will not only look at Performance Indicators (PIs) covered by the FIP actions but will review all 22 PIs in the current (version 2.1) MSC Fisheries Standard to determine whether anything has changed since the pre-assessments were conducted in 2016.

The **Marine Stewardship Council** (MSC) has contracted **Poseidon Aquatic Resource Management Ltd to** provide technical advice to the FIPS and conduct annual benchmarking of progress against the action plans. This contract also covers this final review and action plan update.

1.2 Structure of the report

This report has been divided into three main parts:

1. **Annual review and benchmarking**: this assesses what progress has been made over the past year in addressing the actions in this FIP up to the end of the original five year FIP timescale.
2. **Revised pre-assessment**: this section acknowledges that there may have been stock-related, fisheries-dependent or external changes (e.g. Brexit) that may impact the original pre-assessment scoring, especially for those PIs that might have scored above 80 and therefore were exclude from the FIP action plan. This part of the review conducts a rapid pre-assessment of the full assessment tree to ensure that these changes are detected and new actions, if necessary, raised.
3. **Action plan extension**: this provides a revised action plan that (i) extends any remaining unclosed actions over the extension period and (ii) introduced new actions, if necessary, that have resulted in changes to the fishery since the pre-assessments in 2016.

[1] Following the success of Round 1, the UK scallop and Nephrops FIPs were launched in 2019. Each includes three fishery areas around the UK (North Sea, West of Scotland, and Irish Sea), and so operate on a larger scale than Round 1 FIPs.

2. Annual Review and Benchmark

2.1 Annual Review

<table>
<tr><td colspan="2">Fishery name: UK South West England and Celtic Sea crustacean pot fishery: Brown crab (Cancer pagurus) and lobster (Homarus gammarus)</td><td>Start date: March 2017</td></tr>
<tr><td>Fishery location:
Western Channel (VIIe) and Bristol Channel (VIIf) (brown crab & lobster) and part of Celtic Sea North (VIIg) (lobster only)</td><td>Fishing methods:
Pots and traps</td><td>Annual reviews:
End Year 1: March 2018 Completed March 2018
End Year 2: March 2019 Completed March 2019
End Year 3: March 2020 Completed April 2020
End Year 4: March 2021 Completed April 2021
End Year 5: March 2022 Completed April 2022
End Year 6: March 2023 To be completed April 2023</td></tr>
<tr><td colspan="2">Project leaders:
Project UK Fisheries Improvements – Stage 1</td><td>Improvements recommended by: POSEIDON AQUATIC RESOURCE MANAGEMENT</td></tr>
<tr><td colspan="3">Overview of the Action Plan:
Potting for brown crab and lobster is mainly, but not exclusively, an inshore fishing activity undertaken throughout the SW of England. The pre-assessment considered that, whilst there are a number of management measures already in place, including the availability of stock status reference points, these do not form a coherent, integrated harvest strategy. The main P1 actions therefore seek to address this, and further develop adaptive management mechanisms that makes management more responsive to the status of the stock.
Whilst no PIs failed under the P2 assessment, many would likely attract conditions. The Action Plan addresses this through a review of alternative management measures to minimise UoA-related mortality of all non-target primary and secondary species caught by this fishery, as well as bolstering current monitoring and research to ensure there is sufficient information on which to base management changes. Although it is unlikely that this fishery will have a significant impact on ETPs, it is suggested that appropriate management measures need to be considered where necessary. This needs to be embedded in an on-going, risk-based ETP impact monitoring system.
The governance and fisheries-specific management under P3 scored well in the pre-assessment. The only action proposed is the wider discussion and agreement of management needs and objectives with trans-boundary management authorities e.g. across IFCAs and (in the case of lobster), with the French and Irish MAs.
Colour code in tables below: Principle 1 | Principle 2 | Principle 3</td></tr>
</table>

Summary Report (End Year 5)

Introduction

his report marks the finish of five year Fisheries Improvement Project (FIP) for the UK Western Channel and Celtic Sea crustacean pot fishery for brown crab and lobster (see previous page). The report provides a review of the progress made to date and what further actions need to be taken over the one year FIP extension agreed by stakeholders. **It is important to note that the benchmark scoring is based on the new pre-assessment and therefore masks some of the progress made under the FIP.** This report has been prepared by Tim Huntington of Poseidon.

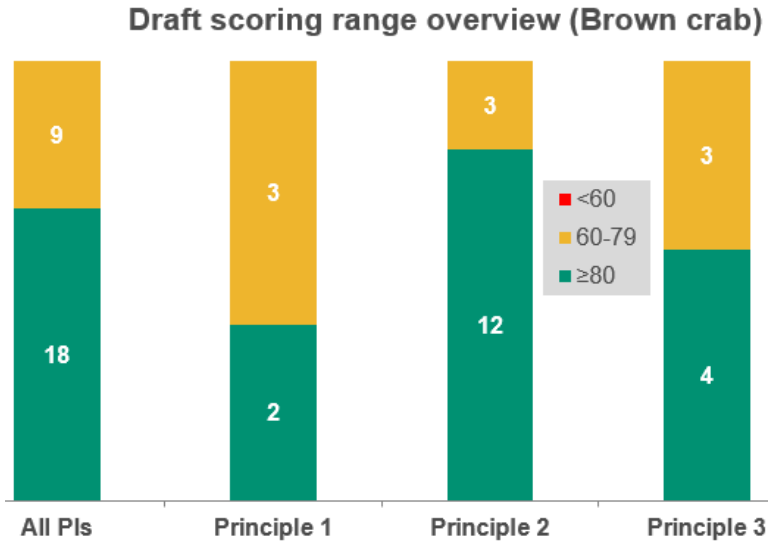
Main Findings

Principle 1: The most recent (2019) stock assessments find the two crab and one lobster stocks in reasonable condition and moderately exploited. A preliminary harvest strategy has been drawn up but does not yet provide any definitive strategic approach of how the fishery will be managed. This will need to be addressed for both IFCA management areas as well as offshore waters before we can move onto formalising current harvest control rules (HCRs) and where necessary introducing adaptive management measures where needed. Until these two steps are completed the fishery cannot go into full assessment and should be the main focus of the proposed extension. This should be progressed ahead of, but in synergy with, national fisheries management planning efforts by the CMG / CMG.

Principle 2: The new pre-assessment is appropriately precautionary in nature and shows that whilst some progress has been made (e.g. closing out Action 3 on secondary species management, two ETP (2.3.2 ETP management and 2.3.3 (ETP information) and one habitat (2.4.3 Habitat management) have been reduced from ≥80 to 60-79 and will therefore incur two actions in the one year extension. The ETP actions will revolve around better managing rope gear to minimize entanglements with marine mammals and to ensure that trends in such entanglements are recorded and publicly available. The habitat's action will depend upon iVMS data being available to provide reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.

Principle 3: The fishery-specific management also incurs two new actions as a result of post-Brexit changes since the old pre-assessment. This includes a need to include short-term fishery specific objectives into the harvest strategy and fisheries management plan (FMP), as well as ensuring the occasional external review of the management systems for outside of the 6 nm line.

The **pre-assessment findings** (see **Section 3**) suggest that nine actions will need to be undertaken over the next year (see Action Plan in **Section 4)**. It should be noted that these actions build upon the substantive work conducted by the FIP to date but are more detailed and reflect the individual Scoring Issue (SI) scores in the new pre-assessment.



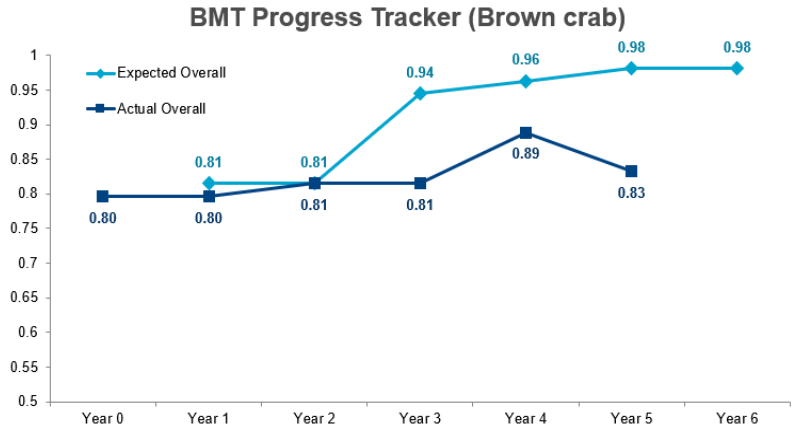


Table 1: Action Plan

<table>
<tr><th>Standard requirement</th><th>Lead & partners</th><th>Timescale / milestones</th><th>Progress / outcome</th><th>Revised milestone</th></tr>
<tr>
<td>Action 1: Harvest strategy

Overview
The current management measures and stock reference points need to be formulated into a coherent harvest strategy that include adaptive management measures where appropriate. This strategy would cover the UoA, thus spanning the inshore (<6 nm) IFCA managed areas and offshore areas under national management.
Performance indicator
1.2.1 Harvest strategy
60 - 79
<u>Requirement at SG80:</u>
The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80.
The harvest strategy is achieving its objectives (although may not be fully tested).
There is a regular review of alternative measures of minimising mortality of unwanted catch.</td>
<td><u>Action leads</u>: Management Working Group (WG) (lead Martyn Youell)

Industry as represented by Beshlie Pool

MSC & Seafish to work on finding funding if required

<u>Partners</u>: Industry, IFCAs (hereafter refers to Cornwall, Devon & Severn, Scilly Isles & Southern), Defra, MMO

<u>Stakeholders</u>: WG CRAB

<u>Resources</u>: Fisheries management expertise</td>
<td>1a. Yr 1 (6 months): Position paper produced, inc. identification of effort distribution by different fleets around the UoA, & identifying current harvest strategies, gaps and potential conflicts.</td>
<td>Initially this paper was to be produced by CEFAS, but they declined due to potential conflict of interest with their statutory duties. This element was then over-seen by a Management Working Group (WG) within the FIP. The task of the Management WG was to (i) agree hierarchical harvest strategy (FIP / regional levels), then to agree pre-emptory reference point areas for adaptive management. Defra involved as well as SD&CS, and IFCAs (Chloe Smith as link). Available stock assessments are from 2019 (Cefas, Oct 2020). These show that:
<table>
<tr><th>Parameter</th><th>Brown crab</th><th>European lobster</th></tr>
<tr><td>Date and results of last stock assessment</td><td><u>Western Channel</u> (2019): Stock size high (around the target level required to achieve MSY for female). Exploitation rate moderate (around target level required to achieve MSY for females).
<u>Celtic Sea</u> (2019): Stock size below MSY level but above minimum reference point limit for females.
Exploitation rate moderate (close to target level generating MSY). Essentially fishing mortality is stable & SSB decreasing, but close to target. Only data for females (male landings very low).</td><td><u>Southwest</u> (2019): Stock size above minimum reference point limit but below MSY target for males and females.
Exploitation rate is moderate, above rates consistent with MSY but below maximum reference point limit for males and females.</td></tr>
<tr><td>Stock reference points</td><td colspan="2"><u>MSY proxy reference point</u>: 35% of virgin spawner per recruit (SpR)

<u>Limit reference point</u>: 15% of virgin spawner per recruit</td></tr>
<tr><td>Key uncertainties in the stock assessment</td><td colspan="2">Understanding of growth and mortality rates; representativeness and spatial distribution of landings data; assumptions within assessment model- population at equilibrium and spatial coverage of population is constant. It is believed that pot numbers are increasing, and the fishery is moving further offshore, but that cannot be accounted for in the model. The results from the assessment are useful but should be used with caution.</td></tr>
<tr><td>Sufficiency of information on the stock / stock removals to support the stock assessment?</td><td colspan="2">Yes. Note that with lobster the <u>stock unit</u> is for SW which covers Lyme Bay to the Bristol Channel. For crab the assessment units are the <u>Western channel</u> which covers ICES divisions VIIe, VIIh, VIIIa and VIId west of 1°W (East of the Isle of Wight to Mounts Bay), and the <u>Celtic Sea</u> covers ICES divisions VIIf and VIIg (Mounts Bay to Cardigan Bay), although Welsh data are not included. Insufficient data were available to run an assessment on male crabs in the Celtic Sea, as it is predominantly a female fishery.</td></tr>
</table>
CEFAS is looking at ways to improve stock assessment criteria, to take in local management measures. Any management changes have to be based on good scientific data and they are still looking at additional data needs, (no timelines as yet). 2 new data collection systems, (i) mounting of cameras in pots for real time animal movement to assist stock assessment and is currently being trialled (no results as yet) and a (ii) longer-term Bluetooth calliper system also introduced to send real-time data back to CEFAS (GPS linked).
So far, the Management WG have prepared a matrix of harvest strategies and rules based on different inshore and offshore jurisdictions. Only D&S IFCA have adaptive management to date.</td>
<td></td>
</tr>
</table>

Standard requirement	Lead & partners	Timescale / milestones	Progress / outcome	Revised milestone
		1b. Yr 3 (M4-6): Proposals for a holistic harvest strategy. **1c.** Yr 3 - 5: Further consultation and formal acceptance of agreed strategy.	**Behind target (target ≥80, actual 60 – 79)** A preliminary harvest strategy has been drawn up but does not yet provide any definitive strategic approach of how the fishery will be managed. In early 2020 the UK-wide 'Shellfish Industry Advisory Group (CMG)' was formed. Based on 13 May 2020 SG meeting, it was decided to progress with the FIP' Harvest Strategy, irrespective of CMG progress. This would be done in full liaison with the CMG (a number of FIP SG members are also on CMG). As the Harvest Strategy elements in the FMP are developed, these would be shared with the CMG and revised as necessary as the wider CMG position becomes clearer. The Cornwall, D&S & Isle of Scilly IFCAs all pretty much harmonised. Southern IFCA reviewing potting measures, conservation reference sizes (industry pushing for harmonisation with other IFCAs). It is possible that IFCA management measures could be extended out to 12 nm (Helen Hunter) National FMP development is being driven by the Defra shellfish policy group (Matt Johnson, pers. comm.). A draft Joint Fisheries Statement was published in January 2022 and provides high level objectives and a list of prospective FMPs. This suggests that a Crabs and Lobsters FMP will be published over 2021 - 2023 for English waters. Will align with Project UK. Will help develop fisheries-specific objectives, and linkages across different fisheries. In summary: • The FIP continues to develop HS and HCRs specific to the FIP area • This aligns with the CMG work, which is at a UK level. CMG will produce draft objectives, to be published Q1 / G2 2023. • This also aligns with the Defra FMP process. Highlight that those leading the FIP, CMG and Defra FMP process are aware of the developments of each group. **Documentation**: HCR matrix. Cefas (2020). Edible crab (*Cancer pagurus*). Cefas Stock Status Report 2019 18 pp. Cefas (2020). Lobster (*Homarus gammarus*). Cefas Stock Status Report 2019 18 pp. Defra (2022). Consultation on the draft Joint Fisheries Statement. 82 pp. **Actions**: • Best not to wait for CMG but need to work closely with them. FMP HS will be high level and will develop as the CMG develops. Will have to be a short-term strategy, recognising it might change over the longer-term as the national approach changes. • Need positivity from government. Is lack of coordination of different initiatives and consultations e.g. WW, CMG. Need better definition of inshore and offshore vessels. Needs better spatial zoning, inc. for foreign vessels. • FIP has produced a matrix of management measures across the UoA that can be used to formulate a 'strawman' harvest strategy, with pros and cons across the N & S coasts, inshore and offshore waters. Need to avoid / mitigate conflict of interest e.g. between larger / smaller fleets. Ross, would like to quantify this. Could include combinations e.g. zoning / pot limits. >15 m boats want to get together and make views. Industry only but needs facilitation.	Regional harvest strategy to be developed by June 2022.

Standard requirement	Lead & partners	Timescale / milestones	Progress / outcome	Revised milestone
Action 2: Harvest Control Rules (HCRs) & Tools (1.2.2) and Information & monitoring (1.2.3) **Overview** Based on the harvest strategy developed in Action #1, further development and formalisation of harvest control rules for that are both adaptive and where	Action leads: Management WG Partners: IFCAs, Defra, MMO Stakeholders: Industry, WG CRAB Resources: Fisheries management expertise	**2a.** Yr 3: Develop proposals for harvest control rules, based on the strategies identified in Action #1 above.	**Behind target (target 60 – 79, actual <60)** 1. Lack of reliable pot effort data: Only reliable data is days fished. But don't know actual effort. IFCAs might have this inside the 6 nm. SC D&S and C has number of pots via permitting. Might not all be working. Southern IFCA – only via monthly shellfish returns (now electronic). Able to work out total effort in <6 nm. Outside 6 nm have kwh and total landings. **New milestone introduced.** 2. CPUE dropping due to over-exploitation, indicating need for accurate effort data and adaptive management.	Effort information: **new milestone**. Input-based HCRs will depend upon reliable effort data both >6 nm and < 6 nm. Need to check potting effort data in MMO and IFCA waters to ensure that this can be monitored and linked to the implementation and effectiveness of HCRs.
		2b. Yr 3: Proposals put out for consultation and finalised.	**Behind target (target 60 – 79, actual <60)** See 2a above.	

appropriate, precautionary. This would span the IFCA areas and include offshore (>6 nm) areas of the UoA. **Performance indicator** 1.2.2: **60 - 79** 1.2.3: **60 - 79** Requirement at SG80: 1.2.2: Well-defined HCRs are in place that ensure exploitation rate is reduced as PRI is approached and stock is expected to be consistent or above MSY. HCRs are likely to be robust to the main uncertainties. Available evidence indicates that tools in use are effective in achieving exploitation rates required under HCR. 1.2.3: Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data are available to support the harvest strategy.		**2c.** Yr 4: Improved harvest control regime embedded in management processes. **2d.** Yr 5: Review and finalisation of harvest control rules.	**On target (target 60 – 79, actual 60 – 79)** Note from R3 Southern North Sea pre-assessment (Poseidon, 2022): *The overall harvest strategy is underpinned by Defra and the MMO, who are responsible for managing crab fisheries beyond 6 nautical miles, whereas from the coast out to 6 nautical miles, responsibility lies with the Inshore Fisheries and Conservation Authorities (IFCAs). The HS includes implementing effective assessment methodologies for fishing at Maximum Sustainable Yield (MSY), and the aim is "to continue to maintain sustainable and well managed shellfish fisheries operating within a healthy marine environment."* *The key elements of the HS are data collection, estimates of stock status, carried out by CEFAS, and management measures as effort control and MLS. A significant component of CEFAS assessment is the evaluation of the stock against pre-determined reference points which are good MSY proxies. Therefore, it expected that the management authorities would implement measures to achieve stock management objectives reflected in PI 1.1.1 SG80, meeting SG 60. However, the implementation of harvest control rules (HCRs) if the reference points are exceeded is not clearly established. Therefore, it is not possible to conclude that elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80. Thus SG 80 is not met.* Awaiting finalisation of harvest strategies (e.g. with CMG). The next step might be to let the CMG agree with Government what reduced effort would look like, then bring details back to this FIP to work on implementing regionally with local fishermen. The timelines need to be considered as the FIP only has one year left (inc. extension), and it may take the CMG and government longer than that to legislate for the necessary management. Hopefully through the CMG co-management process, the consultation actions for the FIP will be addressed, which should mean that the FIP Yr 6 aligns with the progress being made by both groups, although there is a strong risk of slippage. The FIP provides updates at each CMG meeting, and the CMG members are providing updates at the PUK meetings. The CMG will inform the FIP on the results of various reports commissioned to determine the best approach for management in place of the Western Waters regime Actions: • Need to move forward when the Harvest Strategy is agreed. • Need to better understand the monitoring and compiling of potting effort data both in and out of the 6 nm limit. Current understanding is that: ○ Cornwall IFCA collecting detailed potting data (effort / soak times). D&S have a good idea from <12 m shellfish returns but is some gaps. Southern IFCA Southern IFCA do not hold this data but will begin to collection data in future (new byelaw) ○ Current MMO monitoring e.g. e-logbooks, sales notes and ERS can quantify data but is not compiled and thus there is no ability to quantify effort. Would be difficult to required but could be requested unofficially. Could be done if anonymised and on a sample basis. Shellfish permits do not limit catch or effort. It is noted that >14.99 m vivier vessels completely different to smaller vessels, esp. in the inshore vessels. Need to be covered by the effort data collection and as a separate entity ° Catch app now mandatory for smaller vessels from March 2022 but no. of pots is reported but is not enforced. Copies to MMO, Cefas & IFCA. Need to prepare section for FMP with effort monitoring approaches by area / metier, with gaps analysis.	

<table>
<tr><th>Standard requirement</th><th>Lead & partners</th><th>Timescale / milestones</th><th>Progress / outcome</th><th>Revised milestone</th></tr>
<tr><td rowspan="2">Action 3: Primary & Secondary Species Management Strategies

Overview
There is a need to review alternative management measures to minimise UoA-related mortality of all non-target primary and secondary species caught by this fishery

Performance indicators
2.1.2: 80
2.2.2: 60-79
<u>Requirement at SG80:</u>
There is a partial strategy in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary and secondary species at/to levels which are highly likely to be above the PRI</td><td rowspan="2"><u>Action leads</u>: Management WG (was Seafish)

<u>Partners</u>: CEFAS, IFCAs, Industry – SD&CS

<u>Stakeholders</u>: MMO, Defra

<u>Resources</u>: Expertise to undertake the review and identify potential mitigation measures</td><td>3a. Yr. 1 (6 months): Conduct review of alternative management measures for non-target species.</td><td>Complete (target 60 – 79, actual 60 – 79)
Initial review of alternative management measures completed (Caslake, 2018). Escape gaps have their downside (e.g. escape of valuable bycatch e.g. velvets, as well as escape of legal size lobsters. Hence medium cost element in matrix (also buying & fitting escape gap). But are still the best option. Parlour pots have a longer possible soak time (inkwells lose legal size animals), so need to be hauled more regularly. Mesh size very expensive. It is noted that EMFF-funded pots have escape gaps and have given up the velvet fishery.</td><td></td></tr>
<tr><td>3b. Yr. 2-5: Mainstreaming of alternative measures into management.</td><td>Complete (target ≥80, actual 60 – 79)
<u>Y3</u>: Gus Caslake (Caslake, 2019) and Matt Voller's (Voller, 2018) work demonstrates the need to consider different target fisheries in different areas (e.g. Southern catch smaller lobsters, so escape gaps are not liked). Southern IFCA do periodic review of their management measures.
<u>Y4</u>: The alternative measures have been added into the FMP.
Spencer et al (2021) re-examined the catch composition of these fisheries and produced a definitive list of primary / secondary, main and minor species. The only main primary species is mackerel which should reach SG 80 under P2.1. For those species with limited stock information productivity - susceptibility analysis (PSA) was conducted as follows:
<table>
<tr><th>PI</th><th>Species</th><th>Category</th><th colspan="2">PSA score</th></tr>
<tr><td>2.2.1</td><td>Red gurnard Aspitrigla cuculus</td><td>Main</td><td>Low</td><td>≥80</td></tr>
<tr><td>2.2.1</td><td>Nursehound Scyliorhinus stellaris</td><td>Minor</td><td>Med</td><td>60-79</td></tr>
<tr><td>2.2.1</td><td>Lesser spotted catshark Scyliorhinus canicula</td><td>Minor</td><td>Low</td><td>≥80</td></tr>
<tr><td>2.2.1</td><td>Starry smooth-hound Mustelus asterias</td><td>Minor</td><td>Med</td><td>60-79</td></tr>
<tr><td>2.2.1</td><td>Common smooth-hound Mustelus mustelus</td><td>Minor</td><td>Med</td><td>60-79</td></tr>
</table>
<u>New documents</u>:
• Spencer, M., G. Caslake & T. Huntington (2021). Crab and Lobster FIP: Catch composition, bait use and Endangered, Threatened and Protected species review. Report to Project UK.
• Spencer, M (2021). Crab and lobster FIP: Productivity, Susceptibility Analysis (PSA). 2 pp.
<u>Actions:</u>
• The FIP examined the management of red gurnard e.g. are red gurnard destined for use as bait included in fishing mortality estimates for this species? Is it having an impact on their status and if so, are additional management measures necessary. SG determined that red gurnard and dogfish are unmarketable by-catch, mainly from beam / bottom trawls and are not driving these fisheries but responding to the LO. Need to add statement to these effect in FMP and close off.</td><td>To be done by July 2020.</td></tr>
</table>

Standard requirement	Lead & partners	Timescale / milestones	Progress / outcome	Revised milestone
Action 4: Secondary Species **Overview** Information available on secondary species caught by the fisheries quantified and made available to managers. This would form a more coherent, coordinated approach to monitoring of bycatch by the IFCAs **Performance indicators** 2.2.1 Status: **80** 2.2.3 Information: **80** <u>Requirements at SG80:</u> 2.2.1 <u>Status</u>: Main secondary species are highly likely to be above biologically based limits 2.2.2 <u>Management</u>: see Action 3. 2.2.3 <u>Information</u>: adequacy for assessment of impact on main and minor secondary species, and for a management strategy.	<u>Action leads</u>: Devon & Severn IFCA <u>Partners</u>: IFCAs, CEFAS, Industry, Seafish <u>Stakeholders</u>: MMO, Defra <u>Resources</u>: Observer / other monitoring programmes	**4a.** Yr. 1: Risk assessment carried out.	**Complete (target 60 – 79, actual 60 – 79)** A risk assessment was undertaken by Matt Voller, a Master's student at Plymouth University, comparing Isle of Man, Inshore Potting Agreement (IPA) and Lyme Bay seasonal bycatch patterns. Sampling protocol reviewed by CEFAS.	
		4b. Yr. 2: Based on the risk assessment, further data collection (1° or 2°) as required.	**Complete (target 60 – 79, actual 60 – 79)** Voller study completed in September 2018. There were some issues over some data e.g. Lyme Bay catches of velvet crab which, according to industry sources, is very unlikely. There were also concerns about data presented in some graphs. Sam Davis did a lot of work on bycatch assessment in Cornwall.	
		4c. Yr. 3: Report published.	**2.2.1 Completed (target ≥80, actual ≥80)** **2.2.3 Completed (target ≥80, ≥80)** **Y3**: Agreed the need to include a formal review of bycatch status, management and information in the FMP in order to reconsider catch composition based on FIP and other reports to date. Essential to include bait species and allocate to primary, secondary and ETP species. **Y4**: Matt Spencer led a review of the catch composition (inc. bait spp.) of crab & lobster pots (see Spencer *et al*, 2021). The initial results were reviewed in July 2020 and the final results in January 2021. The following 'main' (e.g. >5% total catch volume) species were identified: 1. Mackerel (bait) *Scomber scomberus* – primary / main. 2. Spider crab *Maja squinado* – secondary / main 3. Red gurnard *Aspitrigla cuculus* – secondary / main In addition some small sharks e.g. small spotted cat sharks *Scyliorhinus canicula*, common-smooth hounds *Mustelus mustelus* & starry dogfish *M. asterias* may be used for bait, and collectively are >5% of the catch. Although individually minor, they were subjected to the PSA (see Action 3 above). Spurdog / spiny dogfish *Squalus acanthias* were excluded as they cannot be landed and are released alive. Is was noted that there are now many small sharks caught on the ground (John Balls, pers. comm.) and are an increasingly important economic component of the catch. Any restrictions on the use of small sharks as bait would be resisted by industry. It is noted that synthetic bait is now being trialled in Ireland and could be an option in this fishery. <u>New documents</u>: • Spencer, M., G. Caslake & T. Huntington (2021). Crab and Lobster FIP: Catch composition, bait use and Endangered, Threatened and Protected species review. Report to Project UK. • Spencer, M (2021). Crab and lobster FIP: Productivity, Susceptibility Analysis (PSA). 2 pp.	.

Standard requirement	Lead & partners	Timescale / milestones	Progress / outcome	Revised milestone
Action 5: ETP species **Overview** Information on the nature and scale of impacts on ETPs by these fisheries needs to be assessed. Based on this, appropriate management measures need to be developed, if required. This needs to be embedded in an on-going, risk-based ETP impact monitoring system. **Performance indicators** 2.3.1: **80** 2.3.2: **80** 2.3.3: **80** Requirement at SG80: 2.3.1. Outcome status: Known direct effects of the UoA are highly likely to not hinder recovery of ETP species. 2.3.2. Management: There is a strategy in place, with objective basis for confidence that it will work and regular review of	Action lead: Beshlie Poole representing SD&CS Partners: JNCC, IFCAs, Defra, CEFAS, Industry Stakeholders: Natural England Resource: Expertise to assess fisheries-related impacts on ETP populations, and to develop both alternative management measures to combat these and a long-term risk-monitoring program	**5a.** Yr. 1: GIS-based risk assessment. Listing of potential ETPs interacting with UoAs, and then mapping of ETP distribution overlap with UoA potting effort.	**2.3.1: Complete (target 60 – 79, actual 60 – 79)** **2.3.2: Complete (target 60 – 79, actual 60 – 79)** **2.3.3: Complete (target 60 – 79, actual 60 – 79)** An ETP risk assessment was conducted by CEFAS (Wynne, 2018) . It has a useful analysis of the possible risks of pots with ETP species potentially likely to be encountered in the Channel, but the final report lacked any spatial mapping of ETP distribution overlap with UoA potting effort.	
		5b. Yr. 2: Based on the risk assessment, further data collection (1° or 2°) as required (possibly via FSP funding).	**2.3.1: Complete (target 60 – 79, actual 60 – 79)** **2.3.2: Complete (target 60 – 79, actual 60 – 79)** **2.3.3: Complete (target 60 – 79, actual 60 – 79)** Two potential ETP issues were identified by Wynne (2018): (i) whale entanglement (need spatial / observer data) and (ii) giant goby bycatch (is returned alive, so agreed as a non-issue). • Whales: Very low level interactions. Mostly limited to NW Scotland. No specific channels for whale migration / movement. 'Floaty ropes' are not permitted, so some management measures are already in place (2.3.2). SD&CS (Beshlie Poole) to lead response, including the development of an industry whale reporting system. Maybe work with the Defra and Whale & Dolphin Conservation to demonstrate good intent. Aim to get pilot system in place by the end of the year. See Poole (2019). It was noted that the Defra Cetacean Consultation group, inc. a bycatch group with a SW sub-group. SMRU observers on other fisheries e.g. sardines, produce annual reports and may have some data on whale sightings / interactions. The SG agreed that no new primary information needed but do need to examine published data on whale migration routes – embedded in the FMP. • John Balls mentioned the need to use longer lengths of rope in high current areas. Rocky ground needs less rope length, so very ground specific. Mostly use leaded rope, which sinks. Reports he has only caught two animals (basking shark that was released alive and a dead thresher) since fishing from the early 1970s ……. Aug 19 update: See Shell fishermen's reporting page. Is an issue with recreational fishermen – this guidance could be used to advise recreational permit holders. But Southern no permitting ….	

Standard requirement	Lead & partners	Timescale / milestones	Progress / outcome	Revised milestone
potential effectiveness and practicality of alternative measures to minimise mortality 2.3.3. Information: Some quantitative information is adequate to assess UoA related mortality of ETP species		**5c.** Yr. 3: Based on the ETP risk assessment and additional data, identification of interactions with ETPs and consequences for ETP populations and the development of possible management approaches for reducing ETP interactions and impacts	**2.3.1: Behind target (target ≥80, actual 60 – 79)** **2.3.2: Behind target (target 60 – 79, actual 60 – 79)** **2.3.3: Behind target (target ≥80, actual 60 – 79)** The MCS brown crab and lobster Fisheries Improvement Project (FIP) used the expertise of CEFAS to identify endangered threatened and protected (ETP) species for further investigation; their findings can be found in report C4788. Only ETP species that were known to occur within potting areas were considered – those which do not – such as those which frequent deeper, offshore waters were not considered necessary to include. The recommendation from CEFAS in terms of "sinking the excess or otherwise reducing the amount of unused vertical line slack is no more than general best practice" is currently the most appropriate way to avoid entanglement of marine mammals and sharks in potting gear and the SW FIP is well placed to encourage further adoption of best practice gear setting techniques across the South West fleet. In relation to the giant goby, through the South West MSC FIP, we are able to encourage the wider adoption of escape gaps across the fleet, which enable small animals to escape without human interference, as well as encouraging reports of sightings and releases through a specifically designed web reporting tool available on the SD&CS website in order to increase scientific understanding of giant goby distribution.	
		5d. Yr. 4 - 5: Mainstreaming of ETP management approaches and introduction of the risk-monitoring system.	**2.3.1: Complete (target ≥80, actual ≥80)** **2.3.2: Complete (target ≥80, actual ≥80)** **2.3.3: Complete (target ≥80, actual ≥80)** Matt Spencer produced a new ETP risk assessment (Spencer *et al*, 2021). This has been embedded into the FMP. While the ETP PIs now all reach **≥80,** some actions remain for continual monitoring and improvement, including: Actions (recommendations) • Need to review SD&CS code of practice and if necessary, update it. Need to expand reporting system to cover all of the UoA and to ensure under-reporting is minimised. Need to publish details of interactions , inc. fate, annually to be added to the FMP in future years. • It is noted that a detailed 'interaction log' is being trialled by the Round 2 FIPs to ensure that encounters with ETPs and habitat features (inc. those included in the new Scottish Priority Marine Features listing). • Natural England developing a cetacean bycatch decision-making tool (Sarah Clark). Would be useful to mention on FMP. See folder in crab background docs. • Cefas CleanCatch program. Has an app. In final development . https://www.cleancatchuk.com/clean-catch-uk-launches-new-wildlife-bycatch-reporting-app/ • Southern IFCA have an interaction Y/N column in logbook – could be expanded to other IFCAs and MMO Hubert will find out).	

Standard requirement	Lead & partners	Timescale / milestones	Progress / outcome	Revised milestone
Action 6: Fishery-Specific Objectives (3.2.1) **Overview** Wider discussion and agreement of management needs and objectives with trans-boundary management authorities e.g. across UK inshore and offshore areas, and with French and Irish MAs **Performance indicator** 3.2.1 Fishery-specific objectives **60-79** Requirement at SG80: Short and long term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery-specific management system.	Action lead: Management WG Action partners: Defra, MMO, IFCAs, NWWAC Resources: Facilitation of trans-boundary discussions and agreements	**6a.** Yr 1: Each SG Meeting: Review and where necessary, promote improvements to UK and non-UK consultation and joint management processes. Have a standing annual agenda item to communicate with the Irish FIP and any other crab & lobster FIPs, about shared objectives - especially when creating stock management objectives.	**Yr 1: Complete (target 60 – 79, actual 60 – 79)** Discussions with Irish brown crab FIPs (Oct 2017) and French interests via MSC. There is still no formal international crab stock assessment in the Channel (there is an ICES biology group but this does not do stock assessment). In general there is a desire amongst fisheries research institutes to do 'joined science', but this will need greater political will to achieve. NWWAC the only the joint management forum for crustaceans but is focused on brown crab and does not include lobster. Until Brexit is concluded, there will be considerable uncertainty over transboundary management arrangements for these fisheries. **Yr 2: Complete (target 60 – 79, actual 60 – 79)** Spoke again with Irish FIP (Frank Fleming, 30-04-19). This is an open access fishery with too much effort They have three core areas of work: • Working with Australian fisheries who have a fisher-owned electronic data hub which can be shared with the authorities. Developed a pilot programme to measure effort by individual vessels, inc. vessel tracks, hauling times / locations, etc. Can put sensors on buoys / dhans. • Working on HCRs with Ollie Tully, esp. on data needs. Confident about stock assessment, but under pressure from high prices. Also working on pot bait e.g. semi-artificial substitutes. Now at 67% of traditional catch levels and aiming at 80%. Mackerel, gurnard, scad, ray backs, fish frames (farmed salmon frames).	
			Yr 3: On target (target 60 – 79, actual 60 – 79) Management WG to include transboundary management linkages and mechanisms in FMP. The Welsh Government has already contributed to the harvest strategy / HCR for the northern Bristol Channel. Still awaiting MMO and Defra input to the FMP.	
			Yr 4-5: On target (target 60 – 79, actual 60 – 79) Although still on target, no real movement. Crab FMP will be part of the shellfish FMP (with whelks and scallops). Will include species-specific objectives, inc. HCRs/ with FMO objectives 5 & 6. Will reflect WWER changes. Interim approach for effort management. Expected to be completed by 2023 (Ella Brock ella.brock@seafish.co.uk Seafish is part of the Science Partnership working with the CMG and CMG Science Research Group). Action: Secretariat to seek MMO and Defra input to the FMP. G developing objectives. Will send SG copy and will then need to adopt / amend for the FMP.	

2.2 Benchmarking tool

Figure 1: BMT (Brown crab)

Principle	Component	Performance Indicator	Pre-Assessment Year 0	Actual Year 1	Actual Year 2	Actual Year 3	Actual Year 4	Actual Year 5	Actual Year 6	Expected Year 1	Expected Year 2	Expected Year 3	Expected Year 4	Expected Year 5	Expected Year 6
1	Outcome	1.1.1 Stock status	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
		1.1.2 Stock rebuilding	---	---	---	---	---	---	---	---	---	---	---	---	---
	Management	1.2.1 Harvest Strategy **(Action 1)**	<60	<60	60-79	60-79	60-79	60-79	---	60-79	60-79	≥80	≥80	≥80	≥80
		1.2.2 Harvest control rules and tools **(Action 2)**	<60	<60	<60	<60	<60	60-79	---	<60	<60	60-79	60-79	60-79	60-79
		1.2.3 Information and monitoring	≥80	≥80	≥80	≥80	60-79	60-79	---	≥80	≥80	≥80	≥80	≥80	≥80
		1.2.4 Assessment of stock status	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
2	Primary species	2.1.1 Outcome	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
		2.1.2 Management **(Action 3)**	60-79	60-79	60-79	60-79	≥80	≥80	---	60-79	60-79	≥80	≥80	≥80	≥80
		2.1.3 Information	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
	Secondary species	2.2.1 Outcome	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
		2.2.2 Management **(Action 3)**	60-79	60-79	60-79	60-79	60-79	≥80	---	60-79	60-79	≥80	≥80	≥80	≥80
		2.2.3 Information **(Action 4)**	60-79	60-79	60-79	60-79	≥80	≥80	---	60-79	60-79	≥80	≥80	≥80	≥80
	ETP species	2.3.1 Outcome **(Action 5)**	60-79	60-79	60-79	60-79	≥80	≥80	---	60-79	60-79	≥80	≥80	≥80	≥80
		2.3.2 Management **(Action 5)**	60-79	60-79	60-79	60-79	≥80	60-79	---	60-79	60-79	60-79	≥80	≥80	≥80
		2.3.3 Information **(Action 5)**	60-79	60-79	60-79	60-79	≥80	60-79	---	60-79	60-79	≥80	≥80	≥80	≥80
	Habitats	2.4.1 Outcome	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
		2.4.2 Management	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
		2.4.3 Information	≥80	≥80	≥80	≥80	≥80	60-79	---	≥80	≥80	≥80	≥80	≥80	≥80
	Ecosystem	2.5.1 Outcome	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
		2.5.2 Management	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
		2.5.3 Information	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
3	Governance and Policy	3.1.1 Legal and customary framework	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
		3.1.2 Consultation, roles and responsibilities	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
		3.1.3 Long term objectives	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
	Fishery specific management system	3.2.1 Fishery specific objectives	60-79	60-79	60-79	60-79	60-79	60-79	---	60-79	60-79	60-79	60-79	≥80	≥80
		3.2.2 Decision making processes	≥80	≥80	≥80	≥80	≥80	60-79	---	≥80	≥80	≥80	≥80	≥80	≥80
		3.2.3 Compliance and enforcement	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
		3.2.4 Management performance evaluation	≥80	≥80	≥80	≥80	≥80	60-79	---	≥80	≥80	≥80	≥80	≥80	≥80
Total number of PIs equal to or greater than 80			18	18	18	18	22	18		18	18	24	25	26	26
Total number of PIs 60-79			7	7	8	8	4	9		8	8	3	2	1	1
Total number of PIs less than 60			2	2	1	1	1			1	1				
Overall BMT Index			0.80	0.80	0.81	0.81	0.89	0.83		0.81	0.81	0.94	0.96	0.98	0.98

Note: based on new pre-assessment scores and revised Action Plan targets

Figure 2: BMT (Lobster)

Principle	Component	Performance Indicator	Pre-Assessment Year 0	Actual Year 1	Actual Year 2	Actual Year 3	Actual Year 4	Actual Year 5	Actual Year 6	Expected Year 1	Expected Year 2	Expected Year 3	Expected Year 4	Expected Year 5	Expected Year 6
1	Outcome	1.1.1 Stock status	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
		1.1.2 Stock rebuilding	---	---	---	---	---	---	---	---	---	---	---	---	---
	Management	1.2.1 Harvest Strategy (Action 1)	<60	<60	60-79	60-79	60-79	60-79	---	60-79	60-79	≥80	≥80	≥80	≥80
		1.2.2 Harvest control rules and tools (Action 2)	<60	<60	<60	<60	<60	60-79	---	<60	<60	60-79	60-79	60-79	-79
		1.2.3 Information and monitoring	≥80	≥80	≥80	≥80	60-79	60-79	---	≥80	≥80	≥80	≥80	≥80	≥80
		1.2.4 Assessment of stock status	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
2	Primary species	2.1.1 Outcome	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
		2.1.2 Management (Action 3)	60-79	60-79	60-79	60-79	≥80	≥80	---	60-79	60-79	≥80	≥80	≥80	≥80
		2.1.3 Information	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
	Secondary species	2.2.1 Outcome	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
		2.2.2 Management (Action 3)	60-79	60-79	60-79	60-79	60-79	≥80	---	60-79	60-79	≥80	≥80	≥80	≥80
		2.2.3 Information (Action 4)	60-79	60-79	60-79	60-79	≥80	≥80	---	60-79	60-79	≥80	≥80	≥80	≥80
	ETP species	2.3.1 Outcome (Action 5)	60-79	60-79	60-79	60-79	≥80	≥80	---	60-79	60-79	≥80	≥80	≥80	≥80
		2.3.2 Management (Action 5)	60-79	60-79	60-79	60-79	≥80	60-79	---	60-79	60-79	≥80	≥80	≥80	≥80
		2.3.3 Information (Action 5)	60-79	60-79	60-79	60-79	≥80	60-79	---	60-79	60-79	≥80	≥80	≥80	≥80
	Habitats	2.4.1 Outcome	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
		2.4.2 Management	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
		2.4.3 Information	≥80	≥80	≥80	≥80	≥80	60-79	---	≥80	≥80	≥80	≥80	≥80	≥80
	Ecosystem	2.5.1 Outcome	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
		2.5.2 Management	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
		2.5.3 Information	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
3	Governance and Policy	3.1.1 Legal and customary framework	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
		3.1.2 Consultation, roles and responsibilities	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
		3.1.3 Long term objectives	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
	Fishery specific management system	3.2.1 Fishery specific objectives	60-79	60-79	60-79	60-79	60-79	60-79	---	60-79	60-79	60-79	60-79	≥80	≥80
		3.2.2 Decision making processes	≥80	≥80	≥80	≥80	≥80	60-79	---	≥80	≥80	≥80	≥80	≥80	≥80
		3.2.3 Compliance and enforcement	≥80	≥80	≥80	≥80	≥80	≥80	---	≥80	≥80	≥80	≥80	≥80	≥80
		3.2.4 Management performance evaluation	≥80	≥80	≥80	≥80	≥80	60-79	---	≥80	≥80	≥80	≥80	≥80	≥80
Total number of PIs equal to or greater than 80			18	18	18	18	22	18		18	18	25	25	26	26
Total number of PIs 60-79			7	7	8	8	4	9		8	8	2	2	1	1
Total number of PIs less than 60			2	2	1	1	1			1	1				
Overall BMT Index			**0.80**	**0.80**	**0.81**	**0.81**	**0.89**	**0.83**		**0.81**	**0.81**	**0.96**	**0.96**	**0.98**	**0.98**

Note: based on new pre-assessment scores and revised Action Plan targets

3. Revised pre-assessment

3.1 Summary of Performance Indicator level scores

3.1.1 Principle 1

Performance Indicator	Draft scoring range	Data deficient?	Issue	SG60	SG80
1.1.1 – Stock status [brown crab]	**≥80**	No	a	✓	✓
			b	-	✓

Rationale:

Parameter	Brown crab
Date and results of last stock assessment	Western Channel (2019): **Stock size high** (around the target level required to achieve MSY for female). E**xploitation rate moderate** (around target level required to achieve MSY for females). Celtic Sea (2019): **Stock size below MSY level** but above minimum reference point limit for females. **Exploitation rate moderate** (close to target level generating MSY). Essentially fishing mortality is stable & SSB decreasing, but close to target. Only data for females (male landings very low).
Stock reference points	MSY proxy reference point: 35% of virgin spawner per recruit (SpR) Limit reference point: 15% of virgin spawner per recruit
Key uncertainties in the stock assessment	Understanding of growth and mortality rates; representativeness and spatial distribution of landings data; assumptions within assessment model- population at equilibrium and spatial coverage of population is constant. It is believed that pot numbers are increasing, and the fishery is moving further offshore, but that cannot be accounted for in the model. The results from the assessment are useful but should be used with caution.
Sufficiency of information on the stock / stock removals to support the stock assessment?	Yes. For crab the assessment units are the Western channel which covers ICES divisions VIIe, VIIh, VIIIa and VIId west of 1°W (East of the Isle of Wight to Mounts Bay), and the Celtic Sea covers ICES divisions VIIf and VIIg (Mounts Bay to Cardigan Bay), although Welsh data are not included. Insufficient data were available to run an assessment on male crabs in the Celtic Sea, as it is predominantly a female fishery.

A new assessment model for brown crab is being developed by CEFAS (Roslyn MacIntyre CEFAS, pers. comm.)

1.1.1 – Stock status [Lobster]	**≥80**	No	a	✓	✓
			b	-	✓

Rationale:

Parameter	European lobster
Date and results of last stock assessment	Southwest (2019): **Stock size above minimum reference point limit but below MSY target** for males and females. **Exploitation rate is moderate**, above rates consistent with MSY but below maximum reference point limit for males and females.
Stock reference points	MSY proxy reference point: 35% of virgin spawner per recruit (SpR) Limit reference point: 15% of virgin spawner per recruit
Key uncertainties in the stock assessment	Understanding of growth and mortality rates; representativeness and spatial distribution of landings data; assumptions within assessment model- population at equilibrium and spatial coverage of population is constant. It is believed that pot numbers are increasing, and the fishery is moving further offshore, but that cannot be accounted for in the model. The results from the assessment are useful but should be used with caution.
Sufficiency of information on the stock / stock removals to support the stock assessment?	Yes. Note that with lobster the stock unit is for SW which covers Lyme Bay to the Bristol Channel.

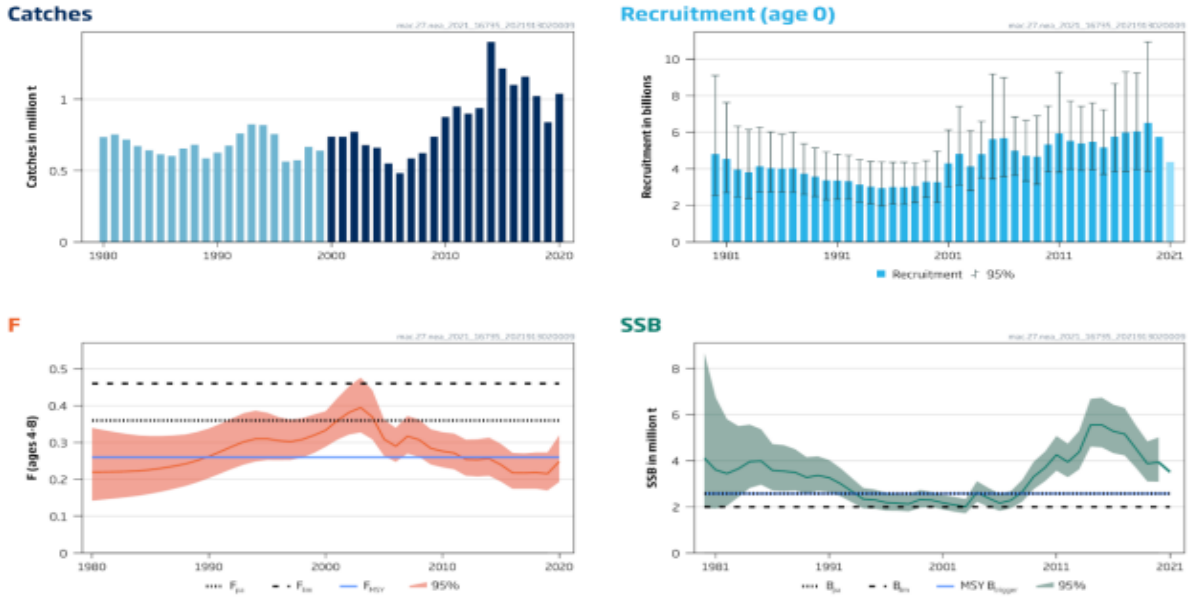
A new assessment model for lobster is being developed by CEFAS (Roslyn MacIntyre CEFAS, pers. comm.)

Performance Indicator	Draft scoring range	Data deficient?	Issue	SG60	SG80
1.1.2 – Stock rebuilding	**NA**	No	a	NA	NA
			b	NA	NA
Rationale:					
1.2.1 – Harvest Strategy	**60 – 79**	No	a	✓	×
			b	✓	×
			c	✓	-
			d	-	-
			e	N/A	N/A
			f	N/A	N/A
Rationale: There is currently a wide range of management measures across the different IFCAs (< 6 nm) and in offshore waters (>6 nm to the median line / EEZ limit) that together provide an informal harvest strategy. Together these are expected to achieve the stock management objectives for both species (see PI 1.1.1) and so reach SG 60 for SIa. However these are not adaptive to the state of the two stocks and thus fails to reach SG 80. Given the past stability of fishing mortality this is likely to meet SG 60 of SIb, but the fall in CPUE, and the lack of adaptive management suggests this will not meet SG 80. The existence of intermittent stock assessments suggest that this meets SG 60 of SIc. Given that under-size / unmarketable crabs and lobsters are returned to the sea alive, SIf is not scored.					
1.2.2 – Harvest control rules and tools	**60 – 79**	No	a	✓	×
			b	-	×
			c	✓	×
Rationale: As noted above, there is not a responsive harvest control rule in place in term of reduction of fishing effort or TAC implementation. When scoring at the SG60 level there is now also scope within the standard to consider and give credit where HCRs may be 'available'. This is applicable in cases such as this where, there is no evidence of recruitment impairment or the stock. In this case, although there is no defined HCR, the fact that HCRs are effectively used in other crab fisheries (e.g. SSMO Shetland Shellfish Management Organisation, see: www.ssmo.co.uk) is an evidence that also for the present stock HCRs are expected to reduce the exploitation rate should the stocks show a depleted status, meeting SG 60. However, it is clear that the HCRs are not available in some written form that has been agreed by the management agency, ideally with stakeholders, and clearly state what actions will be taken at what specific trigger reference point levels. Therefore, SG 80 is not met. Although there is no defined HCR, the fact that HCRs are effectively used in other crab fisheries, means that there is the availability of tools to effectively control the rate of exploitation. There is some evidence, that such tools used or available to implement HCRs are appropriate and effective in controlling exploitation. The evidence are the stability of fishing mortalities by sex in line with the limit reference point, meeting SG60. However, there is no evidence indicating that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs and SG80 is not met.					

Performance Indicator	Draft scoring range	Data deficient?	Issue	SG60	SG80
1.2.3 – Information and monitoring	**60 – 79**	No	a	✓	✓
			b	✓	✗
			c	✓	✓
Rationale: There is sufficient information on the stock structure, stock productivity and fleet composition to meet SG 80 (SIa). Cornwall IFCA collecting detailed potting data (effort / soak times). D&S have a good idea from <12 m shellfish returns but is some gaps. Southern IFCA Southern IFCA do not hold this data but will begin to collection data in future (new byelaw). Current MMO monitoring e.g. e-logbooks, sales notes and ERS can quantify data but is not compiled and thus there is no ability to quantify effort. Catch app now mandatory for smaller vessels from March 2022 but no. of pots is reported (with copies to MMO, Cefas & the IFCA) but is not enforced. Need to prepare section for FMP with effort monitoring approaches by area / metier, with gaps analysis. Whilst stock abundance and UoA removals are monitored, thus meeting SG 60 on SIb. there is insufficient monitoring of actual effort, esp. in waters >6 nm and for the larger (>14.99 m vivier) vessels to meet SG 80. There is good information on all other fishery removals from the stock (e.g. via landings data, so SIc meets SG 80.					
1.2.4 – Assessment of stock status	**≥80**	No	a	-	✓
			b	✓	✓
			c	✓	✓
			d	-	-
			e	-	✓
Rationale: The 2019 stock assessments for both crab and lobster are appropriate for the stock and for the harvest control rules in place, and thus this meets SG 80 for SIa. These estimate stock status relative to reference points that are appropriate to the stock, thus meeting SG 80 for SIb and the assessment takes uncertainty into account, thus meeting SG 80 in SIc. The assessment is published on the Cefas website and is subject to peer review, meeting SG 80 in Sie.					

3.1.2 Principle 2

Performance Indicator	Draft scoring range	Data deficient?	Issue	SG60	SG80
2.1.1 – Primary Outcome	**≥80**	Yes	a	✓	✓
			b	-	-
Rationale: A recent FIP-funded study (Spencer et al, 2021) has provided greater certainty of the catch composition, inc. bait use, of crab and lobster-directed pots. The only primary main species (other than crab / lobster in the respective UoAs) is mackerel, which is used as bait. Mackerel (*Scomber scombrus*) is fished in ICES subareas 1–8 and 14. Fishing pressure on the stock is below F_{MSY}, F_{pa}, and F_{lim} and spawning-stock size is above MSY $B_{trigger}$, B_{pa}, and B_{lim} (ICES, 2001). The advised catch for 2022 is 7% lower than the advice for 2021 because of the continued decline in stock					

Performance Indicator	Draft scoring range	Data deficient?	Issue	SG60	SG80
size, though this was partly offset by the upward revision of the perception of stock size. In 2021, there has been an upwards revision of SSB and a downwards revision of fishing mortality in recent years. Based on these data (see figure overleaf), despite a recent downward trend in SSB, there is a high degree of certainty that mackerel are above PRI and are fluctuating around a level consistent with MSY and so reaches SG 100. 					
2.1.2 – Primary Management	**≥80**	No	a	✓	✓
			b	✓	✓
			c	-	✓
			d	N/A	N/A
			e	✓	✓
Rationale: ICES Scientific advice uses an analytical assessment to advise on a long-term management strategy, which is agreed by some, but not all, of the parties exploiting the stock. Not all the catches from this stock are managed under the Coastal States' international management arrangements, and there is a risk that this could result in catches higher than advised by science. Therefore, an agreement covering the management of the whole of the stock's catches is needed. However this stock is likely to meet SG 80 for all SIs under this PI.					
2.1.3 – Primary Information	**≥80**	No	a	✓	✓
			b	-	-
			c	✓	✓
Rationale: An age-based analytical model (SAM) that uses catches in the model and in the ICES forecast. Catch data, tagging data and RFID tagging data (2014–2020), and three survey indices: SSB index from the triennial egg survey 1992–2019), abundance indices from the IBTS survey (combined Q1 and Q4; age 0, 1998–2020), and from the IESSNS survey ages 3–11, 2010, 2012–2021). Catches prior					

<table>
<tr><th>Performance Indicator</th><th>Draft scoring range</th><th>Data deficient?</th><th>Issue</th><th>SG60</th><th>SG80</th></tr>
<tr><td colspan="6">to 2000 are given a very low weight in the assessment. Natural mortality (= 0.15 for all ages and years) is based on tagging studies from the early 1980s. Discarding is known to take place (0.9% of the total catch in weight in 2020) but is only quantified for part of the fisheries; the proportion of the landings covered cannot be calculated. Partial discard estimates are included in the assessment and overall discarding in recent years is assumed negligible. SG 80 is likely to be be met for all SIs.</td></tr>
<tr><td rowspan="2">2.2.1 – Secondary Outcome</td><td rowspan="2">≥80</td><td rowspan="2">Yes</td><td>a</td><td>✓</td><td>✓</td></tr>
<tr><td>b</td><td>✓</td><td>✓</td></tr>
<tr><td colspan="6">Rationale: Spencer et al (2021) re-examined the catch composition of these fisheries and produced a definitive list of primary / secondary, main and minor species. Five likely secondary species (1 main & 3 minor) were identified (all bait species) and a productivity – susceptibility analysis (PSA) was conducted:
<table>
<tr><th>Species</th><th>Category</th><th colspan="2">PSA score</th></tr>
<tr><td>Red gurnard Aspitrigla cuculus</td><td>Main</td><td>Low</td><td>≥80</td></tr>
<tr><td>Nursehound Scyliorhinus stellaris</td><td>Minor</td><td>Med</td><td>60-79</td></tr>
<tr><td>Lesser spotted catshark Scyliorhinus canicula</td><td>Minor</td><td>Low</td><td>≥80</td></tr>
<tr><td>Starry smooth-hound Mustelus asterias</td><td>Minor</td><td>Med</td><td>60-79</td></tr>
</table>
The FIP noted that lesser spotted catshark Scyliorhinus canicula is becoming more common on other fisheries in the UoA and must be landed under the Landing Obligation. It was also noted that a separate PSA scored this species > 80 (Ribeiro Santos, 2019). Ribeiro Santos also scored red gurnard > 80. Based this, it is considered SIa (for red gurnard) & SIb (for other minor species) is likely to meet SG 80.</td></tr>
<tr><td rowspan="3">2.2.2 – Secondary Management</td><td rowspan="3">≥80</td><td rowspan="3">No</td><td>a</td><td>✓</td><td>✓</td></tr>
<tr><td>b</td><td>✓</td><td>✓</td></tr>
<tr><td>c</td><td>-</td><td>✓</td></tr>
<tr><td colspan="6">Rationale: there are no secondary spies caught directly by the fishery. All are bait species that are unwanted bycatch from other fisheries that have to be landed due to the Landings Obligation. The FIP stakeholders are of the opinion that bait requirements for this fishery are not driving effort or otherwise increasing bycatch levels in these other fisheries, and therefore meet SG 80 for all SIs in this PI.</td></tr>
<tr><td rowspan="3">2.2.3 – Secondary Information</td><td rowspan="3">≥80</td><td rowspan="3">No</td><td>a</td><td>✓</td><td>✓</td></tr>
<tr><td>b</td><td>-</td><td>-</td></tr>
<tr><td>c</td><td>✓</td><td>✓</td></tr>
<tr><td colspan="6">Rationale: PSA’s have been conducted for all secondary main species, both by Ribeiro Santos (2019) and the current project team. These PSAs included the use of quantitative information to assess both productivity and susceptibility scores. As such this should meet SG 80 for SIa. Given these are bait species and are not driving effort or otherwise increasing bycatch levels in these other fisheries, and therefore meet SG 80 for SIc.</td></tr>
<tr><td rowspan="3">2.3.1 – ETP Outcome</td><td rowspan="3">≥80</td><td rowspan="3">No</td><td>a</td><td>N/A</td><td>N/A</td></tr>
<tr><td>b</td><td>✓</td><td>✓</td></tr>
<tr><td>c</td><td>-</td><td>✓</td></tr>
</table>

Performance Indicator	Draft scoring range	Data deficient?	Issue	SG60	SG80
Rationale: This is a static fishery, traps/pots, with little bycatch. Available catch profile estimates indicate that interaction with ETP species occurs, albeit in small numbers. These will be discarded alive with a high likelihood of post-discard survival. The key risks are associated with entanglement of marine mammals and possibly marine turtles with ropes. However there is no indication that this is impact ETP populations, directly or indirectly.					
2.3.2 – ETP Management	**60 – 79**	No	a	N/A	N/A
			b	✓	×
			c	✓	×
			d	-	×
			e	✓	×
Rationale: This is a static fishery, traps/pots, with little bycatch. Available catch profile estimates indicate that interaction with ETP species occurs, albeit in small numbers. The key risks are associated with entanglement of marine mammals and possibly marine turtles with ropes. The recommendation from CEFAS in terms of *"sinking the excess or otherwise reducing the amount of unused vertical line slack is no more than general best practice"* is currently the most appropriate way to avoid entanglement of marine mammals and sharks in potting gear and the SW FIP is well placed to encourage further adoption of best practice gear setting techniques across the South West fleet. ONE POSSIBLE ACTION WOULD BE TO FORMALISE BEST PRACTICE TO AVOID EXCESSIVE SLACK ROPE AND TO AVOID ENTANGLEMENT, ESP. GIVEN THE FORTHCOMING SI ON FISHING GEAR MANAGEMENT TO AVOID ENTANGLEMENT AND ALDFG.					
2.3.3 – ETP Information	**60 – 79**	No	a	✓	✓
			b	✓	×
Rationale: Natural England is developing a cetacean bycatch decision-making tool that has been included in the FMP. The Cefas Clean Catch program has developed a smartphone application that is in final development (see https://www.cleancatchuk.com/clean-catch-uk-launches-new-wildlife-bycatch-reporting-app/). The Southern IFCA have an interaction Y/N column in logbook – could be expanded to other IFCAs and MMO. A detailed 'interaction log' is being trialled by the Round 2 FIPs to ensure that encounters with ETPs and habitat features (inc. those included in the new Scottish Priority Marine Features listing). Whilst the necessary information gathering systems seem to be in place, or nearly in place and is already is adequate to assess the UoA related mortality and impact (thus meeting SG 80 of SIa), there is insufficient published trend data to support a strategy and thus fails to meet SG 80 for SIb.					
2.4.1 – Habitats Outcome	**≥80**	No	a	✓	✓
			b	✓	✓
			c	✓	-
Rationale: The commonly encountered habitat for the pots/ trap fishery is that favoured by the target species. Brown crab is found on all coasts around the UK from the intertidal zone down to 100m. They inhabit rocky ground, particularly under boulders, mixed coarse ground and muddy sand offshore. There are a number of protected areas in the UoA and fishing activities should be spatially managed within					

Performance Indicator	Draft scoring range	Data deficient?	Issue	SG60	SG80
those protected areas. The spatial distribution of all the relevant crab fishing vessels is not necessarily known, in particular for small vessels which are not required to carry VMS (<12m). iVMS is apparently due to be rolled out across the inshore fleet. All SIs meet SG 80.					
2.4.2 – Habitats Management	**≥80**	No	a	✓	✓
			b	✓	✓
			c	-	✓
			d	✓	✓
Rationale: Whilst there has been some concern over the chalk beds in the southern North Sea and Eastern Channel, they are less prevalent in the Western Channel and Celtic Seas. All SIs meet SG 80.					
2.4.3 – Habitats Information	**60-79**	No	a	✓	✓
			b	✓	X
			c	✓	✓
Rationale: There are detailed habitat type distribution maps available for the Western Channel and Celtic Seas as well as habitat descriptor substrate types. The spatial distribution of all the relevant crab fishing vessels is not necessarily known, in particular for small vessels which are not required to carry VMS (<12m). Although iVMS is apparently due to be rolled out across the inshore fleet there is insufficient reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear to meet SG 80 for SIb. Adequate information continues to be collected to detect any increase in risk to the main habitats, so this meets SG 80 for SIc.					
2.5.1 – Ecosystems Outcome	**≥80**	No	a	✓	✓
Rationale: Trap gear is static and has been shown to have relatively limited impact on benthic habitat. The target species is not a key low trophic species and its removal is managed through fisheries technical measures such as minimum size and byelaws such as temporary closure. There are relatively small amounts of bycatch, due to the type of fishing gear; few ETP interactions have been recorded in the bycatch. The crab fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be serious or irreversible harm					
2.5.2 – Ecosystems Management	**≥80**	No	a	✓	✓
			b	✓	✓
			c	-	✓
Rationale: Given the nature of the gear and its impacts on the ecosystem, this meets all SIs at SG 80.					
2.5.3 – Ecosystems Information	**≥80**	No	a	✓	✓
			b	✓	✓
			c	-	✓
			d	-	✓

Performance Indicator	Draft scoring range	Data deficient?	Issue	SG60	SG80
			e	-	✓
Rationale: Given the nature of the gear and its impacts on the ecosystem, this meets all SIs at SG 80.					

3.1.3 Principle 3

Performance Indicator	Draft scoring range	Data deficient?	Issue	SG60	SG80
3.1.1 – Legal and customary framework	**≥80**	No	a	✓	✓
			b	✓	✓
			c	✓	✓
Rationale: The UK has exited the EU with resulting amendments to UK legislation, but retains a robust framework in relation to P1, mainly based on the Marine & Coastal Access Act (2009) and the Fisheries Act (2020), and in relation to P2 through several pieces of legislation that where necessary have been updated to reflect the UK's new position as an independent coastal state. Co-operative roles with the EU are defined in the Trade & Cooperation Agreement and are now established with the Partnership Council and Specialised Committees becoming operational (first meeting in July 2021 set out how the SCF would be organised and operate; second meeting in October 2021 set out a work plan and procedures). This illustrates organised and effective cooperation between devolved administrations for UK stocks – SG80 is met for SIa. In English waters the MMO is the main fisheries management authority established under the Marine and Coastal Access Act (2009) which also sets out an independent appeals mechanism in relation to MMO licensing decisions. The MMO also operates a transparent complaints procedure for complaints against itself or IFCAs. For English inshore waters within 6 nautical miles, Inshore Fisheries and Conservation Authorities (IFCAs) make bylaws, which are also subject to a transparent dispute resolution mechanism with right to appeal. SG80 is met for SIb. The UK Fisheries Act (2020) allows SIc to be met at SG 80.					
3.1.2 – Consultation, roles and responsibilities	**≥80**	No	a	✓	✓
			b	✓	✓
			c	-	✓
Rationale: Defra sets fisheries policy for UK and English waters with the MMO & IFCAs implementing that policy as management authorities. Scientific advice is provided by Cefas on various fisheries matters; by the Joint Nature Conservancy Council (JNCC) for UK offshore waters and by Natural England as statutory consultee on wildlife and habitat conservation matters including protected sites & species. Meets SG8 for SIa. Scientific advice and international collaboration on fisheries science continues with the UK's MoU signed with ICES (UK was always an independent member of ICES) in which Cefas, England's scientific advisory body on fisheries, remains an active participant. Changes to legislation and the development of fishery management plans are subject to UK government consultation processes which provides opportunity for interested parties to be involved Consultation on Joint Fisheries Statements and Fisheries Management Plans, so meets SG 80 for SIb. As described above and evidenced by the ongoing JFS consultation, interested and affected parties are invited to respond to					

legislative changes, which are then reviewed and considered by the authorities before it can be finalised. SG80 is met for SIc.					
3.1.3 – Long term objectives	**≥80**	No	a	✓	✓
Rationale: The Fisheries Act 2020 has MSY and precautionary objectives in line with the MSC criteria. The JFS (draft currently out for consultation) sets out the fishery policy authorities interpretation of the eight objectives set out in the Act and how they will deliver them. SIa is met at SG 80.					
3.2.1 – Fishery specific objectives	**60 – 79**	No	a	✓	×
Rationale: The Fisheries Act and Marine Strategy set environmental objectives that are consistent with achieving P2 outcomes. The (draft) JFS suggests that fishery-specific management for Channel crab is currently framed by the Fisheries Act (SG60 is met), which explicitly states objectives that are consistent with achieving Principles 1 & 2. But short-term P1 objectives are currently lacking for this fishery and so SG80 is only partially met, so does not meet SG 80.					
3.2.2 – Decision making processes	**60 – 79**	No	a	✓	×
			b	✓	×
			c	-	✓
			d	✓	×
			e	✓	✓
Rationale: The decision-making processes to achieve fishery-specific objectives are not currently clear (the draft JFS suggests it will 'prioritise the development of management approaches domestically', but there may also be involvement of the UK/EU Specialised Committee on Fisheries), so SG 80 is not met for SIa. For IFCAs, the ability to introduce emergency byelaws shows that they can be responsive to serious and other important issues in a timely and adaptive manner. However, whilst the general fishery management arrangements do respond to serious issues identified for the fishery as a whole these are not responsive to 'serious and other important issues' so SG80 is not met for SIb. The UK Fisheries Act is precautionary, so meets SG 80 for SIc. Information is available through the Cefas stock assessment publication, IFCA reporting and MMO fisheries statistics, which are available on their respective websites. However, there is no evidence that explanations are provided for actions or a lack of action in relation to the fishery and so SG80 is not met for SId. There is no evidence that the fishery or management system is subject to any legal challenges so SG80 is met for SIe.					
3.2.3 – Compliance and enforcement	**≥80**	No	a	✓	✓
			b	✓	✓
			c	✓	✓
			d	-	✓

Rationale: The MMO recently revised and updated its Compliance and Enforcement Strategy (MMO, 2020), which sets out its approach to monitoring and enforcement via a risk-based enforcement process. The IFCAs also operate a risk-based enforcement system. SG80 is met for SIa.

Section 19 of the Fisheries Act (UK Government, 2020) gives the powers to fisheries authorities to apply penalties (including disqualification of holding a license) and fines to those committing offences under the Act. Due legal process is followed to ensure sanctions are consistently applied. SG 80 is met for SIb.

There is some evidence available from the MMO (submission of logbooks, sales notes with corroboration through VMS & inspection) and IFCAs to demonstrate compliance with the management system and the provision of information important to the effective management of the fishery. SG 80 is met for SIc. There has been no evidence provided or identified of systematic non-compliance within these fisheries, so SG80 is met for SId.

3.2.4 – Management performance evaluation	**60 – 79**	No	a	✓	✓
			b	✓	×

Rationale: Defra and the IFCAs evaluate key parts of the management system on an ongoing basis, such as effort controls and enforcement measures. SG80 is met for SIa.

The IFCAs evaluate the effectiveness of measures as part of their management cycle. They are also subject to regular review by Defra and as required under the MCA Act (2009) which established the IFCAs, they are subject to occasional independent review, e.g. the Quality Assurance Review of IFCA byelaws (MRAG, 2018). SG80 is met for the IFCA UoAs, but not for the offshore UoA, so SG 80 is not met for SIb.

4. Action Plan Extension

Standard requirement	Lead & partners	Timescale / milestones	Progress / outcome	Revised milestone
Action 1: Harvest strategy **Overview** The current management measures and stock reference points need to be formulated into a coherent harvest strategy that include adaptive management measures where appropriate. This strategy would cover the UoA, thus spanning the inshore (<6 nm) IFCA managed areas and offshore areas under national management. **Performance indicator** 1.2.1 Harvest strategy **60 - 79** Requirement at SG80: SIa: The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80. SIb: The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives	Action leads: Management Working Group (WG) Industry as represented by Beshlie Pool MSC & Seafish to work on finding funding if required Partners: Industry, IFCAs (hereafter refers to Cornwall, Devon & Severn, Scilly Isles & Southern), Defra, MMO Stakeholders: CMG Resources: Fisheries management expertise	**1a**. Yr 6 (6 months): Draft harvest Strategy approved by Steering Group	**Target ≥80** **Actions**: • Prepare draft Harvest Strategy for crab and lobster crustacean fisheries in the UoAs that is responsive to the state of the stocks and the elements of the harvest strategy work together towards achieving stock management objectives. Consult with CMG as required. This harvest strategy requires: ○ Clear objectives for stock management e.g. related to stock reference points ○ Procedures how these will be achieved e.g. probabilities / timelines. ○ Management procedures that will allow these objectives to be reached if required e.g. individual / combinations of restricted licensing, pot limits, days at sea, quota, bag limits, MLS, closed areas, etc harmonised across all the UoA. See Excel 'Crab management options' ○ Details of monitoring systems to allow monitoring and evaluation of management procedure implementation. **Progress**: • To be determined.	
		1b. Yr 6 (7-12 months): Draft harvest Strategy approved by Steering Group	**Target ≥80** **Actions:** • Finalise Harvest Strategy for crab and lobster crustacean fisheries in the UoAs that is responsive to the state of the stocks and the elements of the harvest strategy work together towards achieving stock management objectives. Agree Harvest Strategy with CMG as a component of the wider English crabs and lobster fisheries management plan. **Progress**: • To be determined.	

Standard requirement	Lead & partners	Timescale / milestones	Progress / outcome	Revised milestone
Action 2: Harvest control rules and tools **Overview** Based on the harvest strategy developed in Action #1, further development and formalisation of harvest control rules for that are both adaptive and where appropriate, precautionary. This would span the IFCA areas and include offshore (>6 nm) areas of the UoA. **Performance indicator** 1.2.2 Harvest control rules and tools **60 - 79** Requirement at SG80: SIa: Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs. SIb: The HCRs are likely to be robust to the main uncertainties. SIc. Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	Action leads: Management Working Group (WG) Industry as represented by Beshlie Pool MSC & Seafish to work on finding funding if required Partners: Industry, IFCAs (hereafter refers to Cornwall, Devon & Severn, Scilly Isles & Southern), Defra, MMO Stakeholders: WG CRAB Resources: Fisheries management expertise	**2a**. Yr 6 (7-12 months): Cohesive framework of HCRs suitable to implement the agreed draft Harvest Strategy formalised for the different jurisdictional areas.	**Target ≥80** **Actions**: • For each management area (e.g. the four IFCAs) agree a harvest control rule framework that will implement the harvest strategy that will allow adaptive management actions that are response to stock status within the UoA (SIa). • Test the framework to ensure it is robust to current and potential uncertainties (SIb). • It is noted that SIc (Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs) may not be feasible within the timeline of the FIP. **Progress**: • To be determined.	

Standard requirement	Lead & partners	Timescale / milestones	Progress / outcome	Revised milestone
Action 3: Information and monitoring **Overview** Relevant information is collected to support the harvest strategy. In particular there is a need to ensure there is sufficient understanding of potting effort throughout the UoA to enable controls, if necessary and applicable. **Performance indicator** 1.2.3 Information and monitoring **60 - 79** Requirement at SG80: SIb: Stock abundance and UoA removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	Action leads: Management Working Group (WG) Industry as represented by Beshlie Pool MSC & Seafish to work on finding funding if required Partners: Industry, IFCAs (hereafter refers to Cornwall, Devon & Severn, Scilly Isles & Southern), Defra, MMO Stakeholders: WG CRAB Resources: Fisheries management expertise	**3a**. Yr 6: Potting effort system in place throughout the UoA sufficient to allow effort management regimes to be implemented if appropriate.	**Target ≥80** **Actions**: • Ensure that all potting effort can be monitored within the UoA to a sufficient level that spatial or temporal input controls can be applied in a measured way so that fishing mortality can be reduced as part of an adaptive management system. This must be robust, especially for larger (e.g. ≥14.99 m) vessels operating vivier fisheries. **Progress**: • To be determined	

Standard requirement	Lead & partners	Timescale / milestones	Progress / outcome	Revised milestone
Action 4: ETP management **Overview** This is a static fishery with little bycatch. The catch profile estimates indicate that interaction with ETP species occurs in small numbers. Key risks are entanglement of marine mammals / marine turtles with ropes. The recommendation from CEFAS in terms of *"sinking the excess or otherwise reducing the amount of unused vertical line slack is no more than general best practice"* is the most appropriate way to avoid entanglement in potting gear and the SW FIP is well placed to encourage further adoption of best practice gear setting techniques across the South West fleet. **Performance indicator** 2.3.2 ETP management **60 - 79** Requirement at SG80: SIb: There is a strategy in place that is expected to ensure the UoA does not hinder the recovery of ETP species. SIc. There is an objective basis for confidence that the partial strategy/ strategy will work, based on information directly about the UoA and/or the species involved SId. There is some evidence that the measures / strategy is being implemented successfully SIe. There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	Action lead: Beshlie Poole representing SD&CS Partners: JNCC, IFCAs, Defra, CEFAS, Industry Stakeholders: Natural England Resource: Expertise to assess fisheries-related impacts on ETP populations, and to develop both alternative management measures to combat these and a long-term risk-monitoring program	**4a**. Yr 6: Strategy to management and mitigate entanglement of potting gear with marine megafauna in place and being implemented effectively.	**Target ≥80** **Actions to address SIb+c (months 1-6)**: • Conduct a risk assessment of potting gear at different operational scales and locations to entangle megafauna and other ETPs. Evaluate different management and mitigation options form within and outside the UoA and prepare a brief, practical set of best practises to implement these in the UoA. • Prepare a formal strategy for inclusion in the FMP that includes the risk assessment and allows implementation of the resulting best practices. **Actions to address SIe+f (months 7-12)**: • Roll out best practices amongst different segments (vessel size / locations) and obtain operational feedback via surveys. • Agree a review program of the effectiveness of the best practices and update as necessary. Embed this programme into the FMP and ensure its implementation. **Progress**: To be determined	

Standard requirement	Lead & partners	Timescale / milestones	Progress / outcome	Revised milestone
Action 5: ETP information **Overview** Natural England is developing a cetacean bycatch decision-making tool that has been included in the FMP. The Cefas Clean Catch program has developed a smartphone application that is in final development (see https://www.cleancatchuk.com/clean-catch-uk-launches-new-wildlife-bycatch-reporting-app/). The Southern IFCA have an interaction Y/N column in logbook – could be expanded to other IFCAs and MMO. A detailed 'interaction log' is being trialled by the Round 2 FIPs to ensure that encounters with ETPs and habitat features (inc. those included in the new Scottish Priority Marine Features listing). Whilst the necessary information gathering systems seem to be in place, or nearly in place and is already is adequate to assess the UoA related mortality and impact (thus meeting SG 80 of SIa), there is insufficient published trend data to support a strategy and thus fails to meet SG 80 for SIb. **Performance indicator** 2.3.3 ETP information **60 - 79** Requirement at SG80: SIb: Information is adequate to measure trends and support a strategy to manage impacts on ETP species.	Action lead: Beshlie Poole representing SD&CS Partners: JNCC, IFCAs, Defra, CEFAS, Industry Stakeholders: Natural England Resource: Expertise to assess fisheries-related impacts on ETP populations, and to develop both alternative management measures to combat these and a long-term risk-monitoring program	**5a**. Yr 6: Information on the frequency, nature and outcome of interactions of potting gear with marine megafauna is available and adequate to measure trends and support a strategy to manage impacts on ETP species.	**Target ≥80** **Actions to address SIb**: • Review of different cetacean and other megafauna reporting programs conducted to determine reporting coverage and assess informational spatial / metier gaps. • Client body to propose a system that complies data on the frequency, nature and outcome of interactions of potting gear with marine megafauna from different sources and addresses any gaps. These data should be compiled on a regular basis and made readily available to any interested stakeholder. **Progress**: To be determined	

Standard requirement	Lead & partners	Timescale / milestones	Progress / outcome	Revised milestone
Action 6: Habitats information **Overview** There are detailed habitat type distribution maps available for the Western Channel and Celtic Seas as well as habitat descriptor substrate types. The spatial distribution of all the relevant crab fishing vessels is not necessarily known, in particular for small vessels which are not required to carry VMS (<12m). Although iVMS is apparently due to be rolled out across the inshore fleet there is insufficient reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear to meet SG 80 for SIb. **Performance indicator** 2.4.3 Habitat information **60 - 79** Requirement at SG80: SIb: Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.	Action lead: Beshlie Poole representing SD&CS Partners: JNCC, IFCAs, Defra, CEFAS, Industry Stakeholders: Natural England Resource: Expertise to assess fisheries-related impacts on habitats and to develop both alternative management measures to combat these and a long-term risk-monitoring program	**6a**. Yr 6: Spatial data made on the spatial extent of habitat interaction and on the timing and location of use of the fishing gear.	**Target ≥80** **Actions to address SIb**: • As iVMS is rolled out over the UoA, adequate information is made available on the spatial extent of habitat interaction and on the timing and location of use of the fishing gear within the UoA. **Progress**: To be determined	

Standard requirement	Lead & partners	Timescale / milestones	Progress / outcome	Revised milestone
Action 7: Fishery specific objectives **Overview** The Fisheries Act and Marine Strategy set environmental objectives that are consistent with achieving P2 outcomes. The (draft) JFS suggests that fishery-specific management for North Sea crab is currently framed by the Fisheries Act (SG60 is met), which explicitly states objectives that are consistent with achieving Principles 1 & 2. But short-term P1 objectives are currently lacking for this fishery and so SG80 is only partially met, so does not meet SG 80. **Performance indicator** 3.2.1 Fishery-specific information **60 - 79** Requirement at SG80: SIa: Short and long term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery-specific management system.	Action lead: Management WG Action partners: Defra, MMO, IFCAs, NWWAC Resources: Facilitation of trans-boundary discussions and agreements	**7a**. Yr 6: Agreement of short-term management measures for the different jurisdictions within the UoA.	**Target ≥80** **Actions to address SIb**: • In tandem with Action 1 (development of a harvest strategy), agree short-term objectives for the fishery that will allow both stock and ecosystem objectives to be met. These objectives should be formally embedded into the FMP in Section 2.2.2. **Progress**: To be determined	

Standard requirement	Lead & partners	Timescale / milestones	Progress / outcome	Revised milestone
Action 8: Decision-making processes **Overview** The decision-making processes to achieve fishery-specific objectives are not currently clear so SG 80 is not met for SIa. For IFCAs, the ability to introduce emergency byelaws shows that they can be responsive to serious and other important issues in a timely and adaptive manner. However, whilst the general fishery management arrangements do respond to serious issues identified for the fishery as a whole these are not responsive to 'serious and other important issues' so SG80 is not met for SIb. Information is available through the Cefas stock assessment publication, IFCA reporting and MMO fisheries statistics. However, there is no evidence that explanations are provided for actions or a lack of action in relation to the fishery and so SG80 is not met for SId. **Performance indicator** 3.2.2 Decision-making processes. **60 - 79** Requirement at SG80: SIa: There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives. SIb: Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions. SId: Information on the fishery's performance and management action is available on request, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring evaluation and review activity.	Action lead: Management WG Action partners: Defra, MMO, IFCAs, NWWAC Resources: Facilitation of trans-boundary discussions and agreements	**8a**. Yr 6: Decision-making processes agreed and embedded into the FMP.	**Target ≥80** **Actions to address SIb**: • In tandem with Action 1 (development of a harvest strategy) and 2 (HCRs) agree the decision-making processes that will allow implementation of the harvest strategy and associated HCRs. These will need to be developed across the different jurisdictional areas within the UoA. • These decision-making processes will have to demonstrate that they respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions • A system is put in place so that Information on the fishery's performance and management action is available on request, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring evaluation and review activity. • The above should be formally embedded into the FMP. **Progress**: To be determined	

Standard requirement	Lead & partners	Timescale / milestones	Progress / outcome	Revised milestone
Action 9: Monitoring and management performance evaluation **Overview** The IFCAs evaluate the effectiveness of measures as part of their management cycle. They are also subject to regular review by Defra and as required under the MCA Act (2009) which established the IFCAs, they are subject to occasional independent review, e.g. the Quality Assurance Review of IFCA byelaws (MRAG, 2018). SG80 is met for the IFCA UoAs, but not for the offshore UoA, so SG 80 is not met for SIb.. **Performance indicator** 3.2.4 Management performance evaluation **60 - 79** Requirement at SG80: SIb: The fishery-specific management system is subject to regular internal and occasional external review.	Action lead: Management WG Action partners: Defra, MMO, NWWAC Resources: Access to MMO decision-makers.	**9a**. Yr 6: A regular and occasional external review process for MMO management of the crab and lobster fisheries in England are agreed.	**Target ≥80** **Actions to address SIb**: • MMO to ensure that the crab and lobster FMP (inc. the UoA) subject to regular internal and occasional external review. **Progress**: To be determined	

References

Caslake (2019). Alternative management & gear measures, P2 Reducing Bycatch. 7 pp + appendices

Cefas (2020a). Edible crab (*Cancer pagurus*). Cefas Stock Status Report 2019 18 pp.

Cefas (2020b). Lobster (*Homarus gammarus*). Cefas Stock Status Report 2019 18 pp.

Defra (2022). Consultation on the draft Joint Fisheries Statement. 82 pp.

ICES (2021). Mackerel (*Scomber scombrus*) in subareas 1-8 and 14 and division 9.a (the Northeast Atlantic and adjacent waters). In Report of the ICES Advisory Committee, 2021. ICES Advice 2021, mac.27.nea. https://doi.org/10.17895/ices.advice.7789.

Met Office (2020). Past Weather Events. 2016 & 2017. Available at https://www.metoffice.gov.uk/weather/learn-about/past-uk-weather-events Accessed 12/06/2020.

Poole, B. (2019). Avoidance of and mitigation against negative interactions between crab and lobster pot fishing gear and endangered, threatened and protected species in South Western Waters. South Devon & Channel Shellfishermen Ltd. Report C4788 14 pp

Pearson, E. (2017). A collaborative study to develop and facilitate a fisher-directed stock assessment of *Cancer pagurus* in the inshore potting area, South Devon. thesis data.

Spencer, M (2021). Crab and lobster FIP: Productivity, Susceptibility Analysis (PSA). 2 pp

Spencer, M., G. Caslake & T. Huntington (2021). Crab and Lobster FIP: Catch composition, bait use and Endangered, Threatened and Protected species review. Report to Project UK.

Voller (2018). Bycatch in the UK Common Lobster (*Homarus gammarus*) & Brown Crab (*Cancer pagurus*) Potting Industry and the difficulties in the assessment of bycatch with current data

Wynne (2018). Task 3 - interactions between Endangered Threatened or Protected species (ETP) and crab/lobster static fishing gear. Prepared by CEFAS. 9 pp + appendices

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