

UK North Sea, West of Scotland and Irish Sea Nephrops (*Nephrops norvegicus*) Three-Year Audit Report

Version 1.2, September 2021

FIP Information

Target species scientific name(s) and common name(s) [state target stock(s), if relevant]	Norway lobster (<i>Nephrops norvegicus</i>)
Fishery location	North Sea Functional Units (FUs): 5 Botney Gut - Silver Pit, 6 Farn Deep, 7 Fladen Ground, 8 Firth of Forth, 9 Moray Firth, 10 Noup, 34 Devil's Hole. West of Scotland FUs: 11 North Minch, 12 South Minch, 13 Firth of Clyde + Sound of Jura. Irish Sea FUs: 14 Irish Sea East, 15 Irish Sea West FAO Area 27 (Atlantic, Northeast)
Gear type(s)	Demersal trawl Creel
Estimated FIP Landings (weight in tons)	31,757t (2021)
Vessel type(s) and size(s)	All UK vessels
Number of vessels	>700
Management authority	Marine Scotland, Department for Environment, Food & Rural Affairs, Department of Agriculture, Environment and Rural Affairs
Auditor name(s)	Fiona Nimmo and Rod Cappell

Auditor Organization/Affiliation	Poseidon
Date of report completion	05/08/2022

Stakeholder Consultation & Meetings

Name	Affiliation	Date and Subjects Discussed	
Mathieu Lundy	AFBI	04/03/2019 Minutes: Steering Group Meeting. <ul style="list-style-type: none"> • FIP structure, function and timeline • Update on Multi-Annual Plan • Changes to Pre Assessment and Action Plan • Principle 1,2 and 3 Action run through 	
Eva Middleton Smith	Aldi		
Alan McCulla	Anifpo		
Sheona McCormack	ASL		
Steph Davidson	ASL		
Victor West	ASL		
Ewen Bell	Cefas		
Elaine Whyte	CIFA (communities inshore fisheries alliance)		
Kenny McNab	CIFA (communities inshore fisheries alliance)		
Aisla Jones	COOP		
Roy Griffin	DAERA	17/06/2019 Minutes: Steering Group Meeting. <ul style="list-style-type: none"> • Recap of FIP structure, function and timeline • Update on the Landing Obligation • Principle 1,2 and 3 Action run through • Governance 	
Helen hunter	DEFRA		
Iain Glasgow	DEFRA		
Jen Mouat	East and central IFG		
Claire Moore	Hilton Seafoods		
Rachel Hanbury	Hilton Seafoods		
Teresa Fernandez	Hilton Seafoods		
Peter Duncan	IoM		
Amali Bunter	Lidl		
Amelia	Lidl		
Calum Duncan	LINK	30/09/2019 Minutes: Environmental Sub-Group. <ul style="list-style-type: none"> • Principle 1,2 and 3 Action run through • Plan to conduct a SICA analysis • PhD pre-launch 	
Linda Wood	M&S		
Andrew Brown	Macduff		
Claire Pescod	Macduff		
Jim Watson	Marine Scotland		
Stuart Bell	Marine Scotland		
Joe Prosho	Morrisons		
			07/11/2019 Minutes: Environmental Sub-Group. <ul style="list-style-type: none"> • Catch composition of <i>Nephrops</i> and scallops • <i>Nephrops</i> and scallops ETP • <i>Nephrops</i> and scallops habitat • SICA update

Anne McLay	MSS	<ul style="list-style-type: none"> • Governance update • Principle 1,2 and 3 Action run through • Open Seas presentation to Steering Group <p>06/05/2020 Minutes: Round 2 Environmental Focus Group.</p> <ul style="list-style-type: none"> • Scallop: secondary species, bycatch and catch data., • Update on alternative measures report that reviews scallop bycatch and discards. • Scallop data gaps and ICES request; habitats action adoption by Heriot-Watt university PhD. • Scallop MSc project on Endangered, threatened and protected species • Nephrops - primary and secondary species. • Nephrops Habitat action undertaken by UoYork MSc student on habitat impact of the fishery (Fishmongers Hall funded). • Discussion: the status of burrowed mud was as either a vulnerable marine ecosystem (VME) or a commonly encountered habitat <p>19/05/2020 Minutes: Round 2 Management Sub-Group.</p> <ul style="list-style-type: none"> • Nephrops action: Harvest strategy and Landing Obligation compliance. • Feasibility study into adopting the SICG management approach • Scallop - Fishery management plan review <p>25/08/2020 Minutes: Nephrops Habitats</p> <ul style="list-style-type: none"> • MSc Habitat impact on fishery report presentation <p>19/10/2020 Minutes: P1 & P3 Steering Group Meeting</p> <ul style="list-style-type: none"> • P1 & P3 Action update • Management working group approaches • Marine Protected Areas: exploring opportunities for engagement with Marine Protected Area Management and Monitoring Project (MarPAMM) • Fishery Management Plan lead assigned <p>21/10/2020 Minutes: P2 Steering Group Meeting</p>
Carlos Mesquita	MSS	
Helen Dobby	MSS	
David Donnan	NatureScot	
Ben Collier	NI gear trials	
Harry Wick	NIFPO	
Esther Brooker	ScotLINK	
Dave Parker TBC	Sainsburys	
Bill Lart	SEAFISH	
Ella Brock	Seafish	
Sally Stewart-Moore	Seafish	
Stuart McLanaghan	SEAFISH	
Adam Holland	Seasource	
Malcolm Morrison	SFF	
Jimmy Buchan	SSA	
Kenny Coull	SWFPA	
Mike Park	SWFPA	
Helena Delgado Nordmann	Tesco	
Annika Clements	Ulster Wildlife Trust	
Andy Boulton	Waitrose	
Melissa Tillotson	Waitrose	
Simon Macdonald	West Coast RFIG	
Barry Harland	Whitby	
Daniel Whittle	Whitby	
Giles Bartlett	Whitby	
Clarus Chu	WWF	
Hayley Swanlund	WWF	
Lief Hendrikz	WWF	
Cameron Moffat	Youngs	
Mike Mitchell	Youngs	
Fiona Nimmo	Poseidon - consultant	

- Action 6 & 7: Primary and secondary species: Stock status updates for whiting and cod
- Catch composition discussion
- Alternative measures report update
- Endangered, threatened and protected species: MSc project report and results
- Habitats: status and definition of burrowed mud discussion

09/03/2021

Minutes: Nephrops SICA.

- This workshop was to provide qualitative analysis from experts, in the absence of quantitative evidence, to justify selection of scoring guideposts in the SICA

20/04/2021

Minutes: Principle 1 and 3.

- MSC commercial update
- Progress summary ahead of annual review
- Membership and engagement
- Fishery Management Plan document progress update
- Regional management groups development
- Government update on post-Brexit legislation for their respective Fisheries Administrations.

28/04/2021

Minutes: Principle 2

- Scottish Fisheries Sustainable Accreditation Group's MSC recertification – their vessels and gear types overlap with the FIP
- Alternative measures report update
- Annual Review update from Poseidon
- Presentation of a draft ETP interaction log
- Results presentation of a Productivity, Susceptibility Analysis (PSA) on all secondary species
- Habitats: Development of an interactive tool to map marine protected area (MPA) management measures and fishing restrictions for fishermen
- Inshore VMS update

02/09/2021

Minutes: Principle 2

- Review of this year's main action points
- FisheryProgress.org social policy
- Primary species stock status update
- ETP: developing the Interaction log and Clean Catch App initiative with industry trials. Proposal for wheelhouse guide that supports ETP reporting requirements
- Update on MPA mapping for fishermen project conducted by Kingfisher

16/09/2021

Minutes: Principle 1 and 3.

- Update on Irish Nephrops FIP
- Review of this year's main action points
- Fishery Management Plan update
- Harvest strategy: initiation and dissemination regional management groups
- Harvest control rules: use of proxy reference points
- Stock status: FU's with a harvest ratio above a proxy
- Update on the ICES scientific surveys
- MarPAMM presentation
- iVMS and Marine Scotland self-sampling schemes

23/02/2022

Minutes: Steering Group P2

- Reminder of intended Year 3 score changes
- Review of SFSAG draft Principle 2 scores
- Primary and Secondary Species alternative measures report for both gear
- Update: wheelhouse guide that supports ETP reporting requirements
- Introduction: PhD research on '*Determining habitat impact in Nephrops fisheries*'
- Feedback call from SICA report

24/02/2022

Minutes: Steering Group P1 & P3

- Reminder of intended Year 3 score changes
- Stock status: update on ICES advice for each functional unit
- HS/ HCR update on the regional management group (RMG) discussions t
- Update: Fishery Management Plan (FMP)
- Clarifications on FisheryProgress.org social policy

Summary of Findings and Recommendations

Year 1 (July 2019 – July 2020):

- The FIP for the UK nephrops fisheries has made progress in year 1; the FIP remains on target for all PIs. At the end of year 1, three MSC PIs fail to reach SG60 and 13 do not meet SG80. During year 1 a Harvest Development Project reviewed the options for managing nephrops stocks at functional unit level. It has been agreed by the SG that the following management approaches are not workable: TACs at FU level; and effort control at FU level (i.e. days at sea per FU). The direction of the Harvest Strategy and harvest control rules and tools is therefore focused on development of technical measures (Action 2 & 3).
- The SG Environment sub-group has progressed a comprehensive ETP list, including Scottish priority marine features and assessment of species likely to interact with demersal trawl gear and creels (Action 7a). A masters student has begun supporting the task of mapping potential ETP interactions and documenting the risk posed by dredge gear (Action 7b). A second masters student is examining.
- The current Covid-19 crisis, as well as uncertainties related to Brexit are likely to impact progress in year 2.

Year 2 (August 2020 – July 2021):

- The FIP for the UK nephrops fisheries has made progress in year 2; and there has been an increase in score across all trawl UoAs for one PI (2.2.2) from 60-79 to ≥ 80 within the Principle 2 component (for 2.2.2 secondary species management). There has been an increase in score for North Sea trawl UoAs for cod management (2.1.2 primary species management) and for creel secondary species outcome status (2.2.1), both from 60-79 to ≥ 80 . At the end of year 2, three PIs fail to reach SG60 and 15 are within the 60-79 category.
- The establishment of Nephrops Management Groups for the North Sea, West of Scotland and Irish Sea has progressed through the initial identification of members for each group. Work is also ongoing for documenting current Functional Unit (FU) specific management measures within the Fisheries Management Plan (FMP).
- Substantial work has progressed for Principle 2, with a comprehensive review and assessment of alternative measures to minimize unwanted catch (increasing 2.2.2 PI score). Catch data that distinguish gear to TR1 and TR2 level, as well as for creel, has been assessed to more accurately profile the species to be considered under P2.
- The Scottish Fisheries Sustainable Accreditation Group (SFSAG) implemented management plan for cod in the North Sea has been recognised as a precautionary plan by ICES and considered to meet SG80 for North Sea cod management (increasing 2.1.2 PI score). Stock status has been monitored for West of Scotland and Irish Sea cod and whiting, with no improvements for these stocks which remain at <60 for outcome status.
- Other progress for P2 actions included a PSA undertaken for secondary species; an ETP Masters project to assess the risk of interaction with ETP species; the development of an ETP protocol in excel format; and further work identified to improve the understanding of demersal trawl gear interactions with commonly encountered habitats and VMEs

Year 3 (August 2021 – July 2022):

- Significant progress includes the establishment of Nephrops Management Groups for the North Sea, West of Scotland and Irish Sea, which have all begun the process of discussing potential approaches to developing harvest control rules from a toolbox of technical measures. Work also continues to progress in documenting current Functional Unit (FU) specific management measures within the Fisheries Management Plan (FMP).
- Harmonization with the Joint Demersal Fishery has led to an increase in the habitats outcome score, although the scores remain unaligned with the FIP being more precautionary (JDF at ≥ 80 and nephrops FIP at 60-79). A habitat post-doctoral study began in February 2022 to inform this assessment of habitat outcome status, with results expected in October 2022. This post-doctoral habitat work will utilise Relative Benthic Status to determine the impact of the trawl and creel UoAs on commonly encountered habitats and VMEs. It is expected to provide further confidence in the 60-79 assessment and inform habitat management requirements.
- Looking forward to year 4:
 - Principle 1 will focus on developing a nephrops harvest strategy that is responsive to the status of stocks, and defining harvest control rules applicable to each FU. This will be delivered through the Nephrops Management Groups for the North Sea, West of Scotland and Irish Sea.
 - Principle 2 will undertake further harmonisation with the Joint Demersal Fishery to understand the discrepancy within the ETP assessment (based on which species are included on the ETP list and related to pmf invertebrates); the post-doctoral habitat work will improve the level of information and also greatly inform the requirements for habitat management. Information improvements are also anticipated on the spatial footprint of the fishery based on iVMS being implemented in 2022, although the extent of this data availability in amalgamated form is unknown.
 - Principle 3 will continue to address Fisheries-Specific Management, through development of a FIP level Fisheries Management Plan (FMP). Drafting is underway with individual Steering Group members responsible for relevant sections of the FMP.

Summary of MSC Performance Indicator Scores

Principle	Component	Performance Indicator	Previous Score 2021	Current Score 2022	Rationale or Key Points
1	Outcome	1.1.1 Stock status	60-79	60-79	
		1.1.2 Stock rebuilding	≥ 80	≥ 80	
	Management	1.2.1 Harvest Strategy	< 60	< 60	
		1.2.2 Harvest control rules and tools	60-79	60-79	
		1.2.3 Information and monitoring	60-79	60-79	
		1.2.4 Assessment of stock status	60-79	60-79	
2	Primary species	2.1.1 Outcome	< 60	< 60	
		2.1.2 Management strategy	< 60	60-79	Score increase for FU 11 (North Minch), FU 12 (South Minch) and FU 13 (Clyde & Jura) from <60 to 60-79 due

						to the improved status of whiting stock in the West of Scotland. Summary of scores for whiting and cod as of 08/02/2022 can be found on page 20 of <i>2022 04 14 v4.1 Project UK R2 Nephrops Action Plan</i>
	2.1.3	Information	≥80	≥80		
Secondary species	2.2.1	Outcome	≥80	≥80		
	2.2.2	Management strategy	60-79	≥80	Score increase for all UoAs from 60-79 to ≥ 80 due to completion of alternative measures reports and documentation of the management in place for secondary species. See pg 22 of <i>2022 04 14 v4.1 Project UK R2 Nephrops Action Plan</i>	
	2.2.3	Information	≥80	≥80		
ETP species	2.3.1	Outcome	< 60	< 60		
	2.3.2	Management strategy	60-79	60-79		
	2.3.3	Information	60-79	60-79		
Habitats	2.4.1	Outcome	< 60	< 60		
	2.4.2	Management strategy	60-79	60-79		
	2.4.3	Information	60-79	60-79		
Ecosystem	2.5.1	Outcome	60-79	60-79		
	2.5.2	Management strategy	60-79	60-79		
	2.5.3	Information	≥80	≥80		

3	Governance and Policy	3.1.1	Legal and customary framework	≥80	≥80	
		3.1.2	Consultation, roles and responsibilities	≥80	≥80	
		3.1.3	Long term objectives	≥80	≥80	
	Fishery specific management system	3.2.1	Fishery specific objectives	80+	60-79	Score change reduced to 60-79. Reduction due to uncertainty during the development of the Governmental Fisheries Management Plan. There was a lack of information in the Fisheries Act. This will be addressed in the national Fishery Management Plans, due to be published in 2023-2024.
		3.2.2	Decision making processes	80+	60-79	Score change reduced to 60-79. Reduction due to uncertainty during the development of the Governmental Fisheries Management Plan. There was a lack of information in the Fisheries Act. This will be addressed in the national Fishery Management Plans, due to be published in 2023-2024.
		3.2.3	Compliance and enforcement	60-79	60-79	
		3.2.4	Management performance evaluation	≥80	≥80	

Environmental Workplan Results

Result	Related Action on Fishery Progress	Related MSC Performance Indicator	Explanation
Reduction in fishing mortality in FU6 and FU34 due to improved management.	Action 1	1.1.1	<p>Action lead: Steering Group (SG)</p> <p>ICES stock assessment and advice published in Nov 2020 show the following harvest ratios (HR) for FU34 and FU6:</p> <ul style="list-style-type: none"> FU 34 HR₂₀₁₉ = 4.9% FU 6 HR₂₀₂₀ = 9.1%

			<p>The harvest rate (HR) in FU6 has reduced significantly from 16.1% to 9.1%, although remains above the EU MAP FMSY of 8.12%. The stock abundance in FU6 (982 million individuals) remains above the $MSYB_{trigger}$ (858 million).</p> <p>HR in FU34 remains below 7.5%, although the catches in 2019 were over double the ICES advice for this functional unit.</p> <p>This milestone has been met for FU34, but has not been met for FU 6. There are no score changes for either FU.</p>
Establishment of regional management groups to discuss HS	Action 2: Harvest Strategy	1.2.1	<p>Action lead: Scottish White Fish Producers Association Ltd (SWFPA)</p> <p>In year 1 the Harvest Strategy Development (HSD) project highlighted three key issues: B limit reference points need to be defined; annual TACs are set at ICES division level, not by FU; and lack of evidence that requirements on discarding have been implemented.</p> <p>Recommendations adopted were the establishment of regional management groups to discuss and agree technical measures (that would be implemented if trigger points are reached).</p> <p>2021 update: Regional Management Groups have been held for stakeholders in North Sea, Irish Sea and West of Scotland. Discussions were had over modelling CPUE data to provide proxy reference points. The group has also begun discussions with ICES to understand if there is data missing for them to provide reference points with the stock assessment advice.</p>
Alternative measures report	Action 2: Harvest Strategy	1.2.1, 2.1.1, 2.1.2	<p>Action lead: Marine Scotland Science, partnering with Poseidon</p> <p>Seafish have undertaken a thorough review of alternative measures, including both an excel database of studies and comprehensive written report. This process included significant input from the steering group on recent /current trials and studies, as well as technical measures & national legislation (for example, regulations on square mesh panels). This process aligned with the work undertaken by the lemon sole and plaice FIP.</p> <p>A process for regular review of alternative measures and the associated effectiveness and practicality of such measures has been established.</p>

<p>Regular TV surveys instigated in FU10 and in FU34</p>	<p>Action 4: Information</p>	<p>1.2.3</p>	<p>Action lead: Marine Scotland Science, partnering with Cefas</p> <p>For FU's 5 (Botney Gut), 10 (Noup) and 34 (Devil's Hole) 1.2.3 scoring issue b was not met in the pre-assessments due to a lack of annual UWTV survey to monitor abundance</p> <p>Year 3 Marine Scotland Science confirmed that they will survey FU 10 and 34 this year (although these FU's are the lowest priority due to catch rates and may be missed if surveys are delayed due to weather etc).</p>
<p>Bait species used in the creel fishery identified</p>	<p>Action 6: Primary spp</p>	<p>2.1.1 creel</p>	<p>Action lead: West of Scotland Producers Organisation, Communities Inshore Fisheries Alliance</p> <p>The most commonly cited bait used by the creel sector targeting nephrops is herring (main), gurnard (minor) and plaice (minor).</p>
<p>Catch composition analysis</p>	<p>Action 7: Secondary species</p>	<p>2.2.1, 2.1.1</p>	<p>Action lead: Marine Scotland Science, partnering with Poseidon</p> <p>Cefas have provided total catch data, including landings (based on iFISH database) and discards (based on observer coverage) at Functional Unit level for the following gear: demersal trawl TR2 (70-99mm); demersal trawl TR 1 (≥100mm); and pots & creels.</p> <p>This dataset has allowed accurate profiling of main and minor primary and secondary species</p>
<p>Annual review of whiting and cod in 4, 6a and 7a</p>	<p>Action 6: Primary species</p>	<p>2.1.1 (Trawl) 2.1.2</p>	<p>Action lead: Steering Group, partnered with Poseidon</p> <p>The SG reviewed effectiveness and practicality of current and alternative measures to minimize mortality of unwanted catch, including undersize fish. For Whiting west of Scotland, an increase in mesh size (100mm to 120mm and large square mesh panels in nephrops fishery highlighted. This will result in a change of score from <60 to SG80.</p> <p>It is agreed that the Steering Group will table an annual agenda item to review alternative measures and practicality of implementation.</p> <p>Whiting west of Scotland (6a) June 2021: Revised catch & survey data, updated biological parameters, accounts for changes in fishery selectivity, reference points revised. More reliable assessment and change in stock status. Increase in mesh size (100mm to 120mm and large square mesh panels in</p>

			nephrops fishery highlighted. This will result in a change of score from <60 to SG80.
Productivity and Susceptibility Analysis (PSA) completed	Action 7: Secondary species	2.2.1, 2.2.2, 2.2.3	<p>Action lead: Marine Scotland Policy, Partnered with Poseidon. Stakeholder: Scottish Creel Fishermen's Federation (SCFF)</p> <p>A table of management measures for primary and secondary species that interact with the Nephrops fishery has been developed, based on the list of species provided by Poseidon. This demonstrates that there is partial management strategy in place.</p>
Evidence of ETP interaction with the fishery	Action 8: ETP species	2.3.1, 2.3.2	<p>Action lead: Seafish Partners: Marine Scotland Science, Scottish Natural Heritage, Stakeholder: Poseidon</p> <p>The environmental sub-group has progressed this action. The list of ETPs provided in the pre-assessment has been reviewed and expanded by WWF, who then circulated to DAERA, SNH and JNCC. Good feedback on the comprehensive list and also which ETP species might interact with the fishery.</p> <p>This task is being informed by a Masters student project with funding support from Fishmongers' Hall.</p> <p>Poseidon developed an ETP interaction log, based on reviewing existing recording protocols in practice for the SFSAG MSC certified fisheries and the Danish Fisheries Producer Organization Vessel Diary (designed specifically to record ETP species interactions).</p>
A review of habitat interactions and habitat management approaches	Action 9: Habitats	2.4.1, 2.4.2, 2.4.3	<p>Action lead: Steering Group, Resources: Academia</p> <p>A Masters conducted an assessment of nephrops trawl impact on habitats, including analysis via Bangor University habitat assessment tool.</p> <p>Kingfisher conducted a mapping and logging exercise of all protected areas in the UK and their designated management measures. The Seafish Kingfisher fishing restriction map is available here.</p> <p>A new Post Doc research project has commenced at Bangor University, 'Determining habitat impact in Nephrops fisheries', with the aim is to estimate</p>

			the relative benthic status (RBS) and recovery of benthic communities across the UK. Data required to achieve this includes calculating fishing intensity of trawl and creel gear; depletion of fauna per trawl, and fauna recovery rate. Habitat data, VMEs and PMFs will also be mapped.
Scale Intensity Consequence Analysis (SICA) analysis	Action 10: Ecosystem	2.5.1	<p>Action lead: Seafish, partnered with Scottish Environment LINK, Scottish Natural Heritage, WWF. Stakeholders: Poseidon</p> <p>A SICA workshop with an expert group on nephrops demersal trawl ecosystem impacts was held through a virtual, interactive workshop. The findings will inform action 10c.</p> <p>The SICA concluded that “Overall, the SICA for ecosystem outcome status (2.5.1) meets SG60 requirements for TR1 and TR2 trawl gear targeting nephrops in the Western region and Greater North Sea, which aligns with the pre-assessment findings</p>

Supporting References

- 2020 04 14 Project UK Round 2 Nephrops Action Plan v2.1.pdf – published by Poseidon
- 2021 05 21 Project UK Round 2 Nephrops Action Plan v3.1 - published by Poseidon
- 2022 04 14 Project UK Round 2 Nephrops Action Plan v4.1 - published by Poseidon