Marine Stewardship Council (MSC) 3rd Surveillance Audit Report

Scottish Fisheries Sustainable Accreditation Group (SFSAG) Northern Demersal Stocks

On behalf of

Scottish Fisheries Sustainable Accreditation Group (SFSAG)

Prepared by

Control Union Pesca Ltd

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QA

Role	Signature and date
Originator:	HJ 03/02/2020
Reviewer:	HE 04/02/2020
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Glossary

Acronym	Definition
AIS	Automatic Identification System
AUV	Automated Underwater Vehicle
Bpa	Precautionary reference point for spawning stock biomass (SSB)
CFP	Common Fisheries Policy
DEFRA	Department for Environment, Food & Rural Affairs
EEZ	Exclusive Economic Zone
ETP	Endangered, Threatened and Protected (species)
F	Fishing mortality
FAM	Fishery Assessment Methodology
FAO	Food and Agriculture Organization
FCR 2.0	Fisheries Certification Requirements v2.0 (MSC Scheme Document)
FMAC	Fisheries Management and Conservation Group
FMSY	Fishing mortality consistent with achieving Maximum Sustainable Yield (MSY)
GITAG	Gear Innovation and Technology Advisory Group
HCR	Harvest Control Rule(s)
ICES	The International Council for the Exploration of the Sea
ICJ	International Court of Justice
IFMAC	Inshore Fisheries Management and Conservation Group
ITLOS	International Tribunal for the Law of the Sea
LO	Landing Obligation
MCRS	Minimum Conservation Reference Size
MCS	Monitoring Control and Surveillance
MCZ	Marine Conservation Zones
MEC	ME Certification Ltd
MMO	Marine Management Organisation
MS	Member State(s) (EU)
MSE	Management Strategy Evaluation
MSS	Marine Scotland Science
MSY	Maximum Sustainable Yield
NSAC	North Sea Advisory Council
NWWAC	North Western Waters Advisory Council
PA	Precautionary approach
PCA	Permanent Court of Arbitration
PCDR	Public Comment Draft Report
PCR	Public Certification Report

Acronym	Definition
PET	Protected, Endangered and Threatened (species)
PI	Performance Indicator
PMF	Priority Marine Features
PO	Producer Organisations
RBF	Risk Based Framework
ROV	Remote Operated Vehicle
SAC	Special Area of Conservation
SFF	Scottish Fishermen's Federation
SFO	Scottish Fishermen's Organisation
SFPA	Scottish Fisheries Protection Agency
SFSAG	Scottish Fisheries Sustainable Accreditation Group
SI	Scoring Issue
SIDI	Scottish Industry Discard Initiative
SPA	Special Protected Area
SSB	Spawning Stock Biomass
SSIs	Scottish Statutory Instruments
SWFPA	Scottish White Fish Producers Association Ltd
TAC	Total Allowable Catch
TR1	Mesh size with >= 100 mm codend mesh
TR2	Mesh size with 70 mm – 99 mm codend mesh
UNCLOS	UN Convention on the Law of the Sea
UoA	Unit of Assessment
VME	Vulnerable Marine Habitat

1 Executive Summary

This report is the third surveillance audit of the SFSAG Northern Demersal Stocks fishery undertaken by CU Pesca against the MSC standard (v2.01) and Process (V2.1). The certificate comprises of five stocks in five separate UoAs.

The fishery was certified as sustainable on the 12th May 2016 for North Sea haddock with an expedited assessment extending the range and target species scope published on 27th July 2018. The on-site audit was carried out on the 7th November 2019 by Hugh Jones (Team Leader and Principle 2), Sophie des Clers (Principle 3), Robin Cook (Principle 1) and Mathias Deleau (Traceability).

Following the expedited audit of UoA 5 – North Sea whiting in 2019 this UoA has been suspended and remains so after this audit as there have been no significant updates.

UoAs 1 to 4 remain compatible with an overall score of 80 for Principle 1 following this audit. For the hake and plaice UoAs conditions related to harvest control rules have been closed and the relevant Performance Indicators updated.

For Principle 2 changes in the stock status of North Sea cod and the addition of North Sea whiting as main retained species led to redrafting of PIs 2.1.1 – 2.1.3. and new conditions related to cod on PI 2.1.1 and 2.1.2. This resulted in a down score for UoAs 3 and 5 on this PI. New evidence of ETP interactions with three additional species led to redrafting of PIs for this component but no change in score. Updates on the conditions related to ETP found the client action plan was on target.

For Principle 3 it has been necessary to rescore PI 3.2.3 in order to harmonise with the recent MSC certification of the Joint demersal fisheries in the North Sea and adjacent waters. A new condition is drafted, for the MCS system to demonstrate an ability to enforce the Landing Obligation (LO) and demonstrate that systematic non-compliance does not occur.

Following consideration of all stakeholders' inputs and new information provided by the client and the relevant stock assessments the fishery assessment team concludes that the fishery can remain certified against the MSC standard.

2 Report Details

2.1 Surveillance information

1	**Fishery name**	
	Scottish Fisheries Sustainable Accreditation Group (SFSAG) Northern Demersal Stocks	
2	**Surveillance level and type**	
	Level 6 Year 3 surveillance audit. The anniversary for the fishery is the 12th May. As per the stakeholder email sent 24th May 2019 the year 3 surveillance audit has been planned to be delayed until November 2019. This is to align with key dates in the fishery management cycle; November ICES Advice and EU management meetings.	
3	**Surveillance number**	
	1st Surveillance	
	2nd Surveillance	
	3rd Surveillance	X
	4th Surveillance	
	Other (expedited etc)	
4	**Proposed team leader**	

Name	Dr Hugh Jones
Areas of responsibility	Team Leader
Competency criteria (Annex PC)	Dr Hugh Jones has a PhD in Ecotoxicology and strong background in marine research including publications and reports on ecotoxicology, environmental risk assessments and fisheries research. Prior to joining CU Pesca he was employed as a fisheries scientist in the development of an empirical harvest strategy for commercial abalone fisheries and fisheries assessments of estuarine bivalves. This included work on population metrics (recruitment, growth), harvest dynamics (catch rates, market selectivity), and the use of fine scale geospatial techniques as performance measures to assess stock sustainability. Dr Jones has completed the required Fishery Team Leader MSC training modules for the new V2.01 Fisheries Certification and V2.1 process requirements. Hugh Jones has >8 years' experience of fishing impact on ecosystem dynamics, including ecosystem surveys and in addition has 3 years' experience as P2 assessor with MSC projects. Hugh has published peer review works on the trophic pathways of pelagic food webs and zooplankton abundance in relation to environmental conditions. His work includes

	analysis of water column abiotic and biotic attributes which determine the functional ecology of fish species. He has secured research funding for ecological studies of fish populations in relation to climate change, which consider the coupling between demersal and pelagic pathways.
Conflict of interest in relation to this fishery	CU Pesca have reviewed Hugh's information and found no conflict of interest.
On-site or off-site	On-site It is proposed that Dr Hugh Jones will act as team leader and Principle 2 assessor for this audit and will be responsible for bringing together the work.
CV	Available on request

5 Proposed team members

Name	Dr Robin Cook
Areas of responsibility	Principle 1
Competency criteria (Annex PC)	Dr Cook meets the following requirements in Table PC3: 1. Fish stock assessment and Table PC3 2. Fish stock biology / ecology. In a career spanning over 40 years, Robin has gained experience with the following stock assessment techniques: Bayesian age structured assessment models, Bayesian state-space models applied to demersal stocks that include marine mammal predation interactions, Surplus production modelling of mixed species, Extended Survivors Analysis (XSA), Time Series Analysis (TSA), Stock Synthesis, BAM, ADAPT, SAM and related methods. 30 plus years' experience working with the biology and population dynamics of the target or species with similar biology: Robin is an expert in demersal fisheries population dynamics. His expertise has focused on North Atlantic systems, in particular the North Sea gadoid populations. Based on the information above and Robin's CV CU Pesca are confident Robin meets the requirements of Table PC3 for 1. Fish stock assessment and 2. Fish stock biology / ecology.
Conflict of interest in relation to this fishery	CU Pesca have reviewed Robin's information and found no conflict of interest.
On-site or off-site	Off-site
CV	Available on request

Name	Dr Sophie des Clers

Areas of responsibility	Principle 3
Competency criteria (Annex PC)	Dr Des Clers is an experienced P3 assessor and worked on similar projects including: UK Fisheries/DFFU/Doggerbank saithe, Normandy and Jersey lobster, Scapêche and Compagnie de Pêche de St. Malo – saithe, SARPC Kerguelen & Crozet Toothfish fishery. - 2012: midterm evaluation and Phase II formulation of SmartFish, an EDF project to support an integrated fisheries regional strategy in the 20 member states of the Eastern and Southern Africa and Indian Ocean ACP region - 2012: supporting the formulation of a fisheries and aquaculture policy for the Commonwealth – strengthening fisheries management in ACP states. Caribbean - 2009/10: Socio-economic appraisal of the coastal fisheries sector – team leader in charge of survey design, data analysis, and report. - 2006-07: team leader in a project to strengthen Fisheries Management capacity in ACP countries, as team leader, in charge of both social and environmental aspects. Senegal, Gabon, Mozambique, Uganda, Fiji and New Caledonia. - 2000: Consultant - Integrating Biodiversity and European Fisheries Policy: Rebuilding a healthy and productive ecosystem. EU, FAO. Based on the information above and Sophie's CV CU Pesca are confident she meets the requirements of Table PC3 4. Fishery management and operations
Conflict of interest in relation to this fishery	CU Pesca have reviewed Sophie's information and found no conflict of interest.
On-site or off-site	on-site
CV	Available on request

Name	Dr Mathias Deleau
Areas of responsibility	Traceability
Competency criteria (Annex PC)	Mathias obtained his PhD from the University of Southampton looking at the "impacts of anthropogenic sounds on fish behaviour" following an MSc in Marine Ecology and Environmental Management (Queen Mary University of London) and an MSc in Applied Ethology and Animal Behaviour (Linkoping Universitet – Sweden). A French citizen, he also spent 3 years at the University of Toulouse where he obtained the French equivalent of a BSc in "Biologie des Organismes, Populations and Ecosystemes" (Universite Paul Sabatier – Toulouse).Mathias has a broad knowledge of both freshwater and marine ecosystems and he has been involved in several projects dealing with the conservation and management of various species in addition to fish. For example, he worked on: the Parc Marin International des Bouches de Bonifacio (Corsica - FR) as a field researcher; the Centro Ricerca Delfini (Caprera - IT) on monitoring bottlenose dolphin populations, and finally as a field researcher for Birdlife Malta on storm petrels and shearwaters populations management. He has completed his MSC online training for CoC (2019 version) and Fisheries (v2.0 and v2.1) including Traceability v2.0 and v2.1 module. Based

		on the information above and Mathias CV CU Pesca are confident he meets the requirements of Table PC3 4. Fishery management and operations
	Conflict of interest in relation to this fishery	CU Pesca have reviewed Mathias's information and found no conflict of interest.
	On-site or off-site	on-site
	CV	Available on request
6	**Audit/review time and location**	
	The audit on 7th November 2019 took place in Aberdeen at the offices of the Scottish Fishermen's Federation (SFF). Email contact was available for assessors and the client and conference facilities were utilised as required on the day.	
7	**Assessment and review activities**	
	During the audit, CU Pesca will communicate with the client and any relevant stakeholders and use any available up to date information to assess and review; • Any changes to the scientific base of information such as stock assessments and its impact on Principle 1 scoring. • Any changes to the fishery and its management including those to management systems, regulation and relevant personnel assessments; • Any changes to the scientific base of information such as stock; • Any developments or changes within the fishery impact may impact on traceability and the ability to segregate MSC from non-MSC products; • Will review progress against the conditions associated with this fishery. • Harmonization against the other fisheries certified on the MSC program • Any other significant changes in the fishery.	

3 Background

3.1 Version details

Table 1. Fisheries programme documents versions

Document	Version number
MSC Fisheries Certification Process	Version 2.1
MSC Fisheries Standard	Version 2.01
MSC General Certification Requirements	Version 2.4.1
MSC Reporting Template	Version 1.0

3.2 Unit(s) of Assessment (UoA)

CU Pesca confirms that the fishery under audit remains within in the scope of the MSC Fisheries Standard (7.4 of the MSC Fisheries Certification Process v2.1):

- The target species is not an amphibian, reptile, bird or mammal;

- The fishery does not use poisons or explosives;
- The fishery is not conducted under a controversial unilateral exemption to an international agreement;
- The client or client group does not include an entity that has been successfully prosecuted for a forced or child labour violation in the last 2 years;
- The fishery has in place a mechanism for resolving disputes, and disputes do not overwhelm the fishery;
- The fishery is not an enhanced fishery as per the MSC FCP 7.4.6; and
- The fishery is not an introduced species-based fishery as per the MSC FCP 7.4.7.

CU Pesca confirms that the client group has submitted the completed 'Certificate Holder Forced and Child Labour Policies, Practices and Measures Template' prior to the start of this assessment.

The current Units of Assessment (UoA) are given in Table 2.

Table 2. Unit(s) of Assessment (UoA)

UoA 1:

Species	Haddock (*Melanogrammus aeglefinus*)
Stock	ICES - Haddock (*Melanogrammus aeglefinus*) in Subarea 4, Division 6.a, and Subdivision 3.a.20 (North Sea, West of Scotland, Skagerrak)
Geographical range of fishery	Subarea 4, Division 6.a, 2a and Subdivision 3.a.20 (North Sea, West of Scotland, Skagerrak)
Harvest method / gear	Single Nephrops trawl Twin Nephrops trawl Demersal trawl Twin demersal trawl Danish seine Pair seine–trawl Pair trawl
Client group	Scottish Fisheries Sustainable Accreditation Group (SFSAG) member vessels
Other eligible fishers	None

UoA 2:

Species	Saithe (*Pollachius virens*)
Stock	ICES - Saithe (*Pollachius virens*) in Subareas 4 and 6 and Division 3.a (North Sea, Rockall and West of Scotland, Skagerrak and Kattegat)
Geographical range of fishery	Subareas 4 and 6 subdivision 2a and Division 3.a (North Sea, Rockall and West of Scotland, Skagerrak and Kattegat)
Harvest method / gear	Single Nephrops trawl Twin Nephrops trawl Demersal trawl

	Twin demersal trawl Danish seine Pair seine–trawl Pair trawl
Client group	Scottish Fisheries Sustainable Accreditation Group (SFSAG) member vessels
Other eligible fishers	None

UoA 3:

Species	Plaice (*Pleuronectes platessa*)
Stock	Subarea 4 (North Sea) and subdivision 3.a.20 (Skagerrak)
Geographical range of fishery	Subarea 4 (North Sea) and subdivision 3.a and 2a
Harvest method / gear	Single Nephrops trawl Twin Nephrops trawl Demersal trawl Twin demersal trawl Danish seine Pair seine–trawl Pair trawl
Client group	Scottish Fisheries Sustainable Accreditation Group (SFSAG) member vessels
Other eligible fishers	None

UoA 4:

Species	Hake (*Merluccius merluccius*)
Stock	ICES - Hake (Merluccius merluccius) in Subareas 4, 6, and 7 and divisions 3.a, 8.a–b, and 8.d, Northern stock (Greater North Sea, Celtic Seas, and the northern Bay of Biscay)
Geographical range of fishery	Subareas 4, 6a and subdivisions 2a and 3a.
Harvest method / gear	Single Nephrops trawl Twin Nephrops trawl Demersal trawl Twin demersal trawl Danish seine Pair seine–trawl Pair trawl
Client group	Scottish Fisheries Sustainable Accreditation Group (SFSAG) member vessels
Other eligible fishers	None

UoA 5:

Species	Whiting (*Merlangius merlangus*)
Stock	ICES - Whiting (*Merlangius merlangus*) in Subarea 4 and Division 7.d (North Sea and eastern English Channel)
Geographical range of fishery	Subarea 4 and subdivision 2a
Harvest method / gear	Single Nephrops trawl Twin Nephrops trawl Demersal trawl Twin demersal trawl Danish seine Pair seine–trawl Pair trawl
Client group	Scottish Fisheries Sustainable Accreditation Group (SFSAG) member vessels
Other eligible fishers	None

3.3 Vessel list

Current list is available at http://scottishfsag.org/wp-content/uploads/2017/07/MSC-Saithe-and-haddock-Master-250717xlsx.pdf

3.4 Principle 1

3.4.1 UoA 1 – Haddock

The spawning stock biomass remains greater than $MSYB_{trigger}$ in 2019 with a large recruitment pulse entering the fishery in 2019 (Figure 1). The stock continues to appear to fluctuate around B_{MSY} as per the expedited assessment in 2018 (Jones et al. 2018) B_{MSY} proxy based on $B_{35\text{-}40\%}$ (Punt et al. 2014) was estimated at 248,000 t -283,000 t. Although the SSB in 2019 is 236,941 t a confidence interval range 203,324 t to 270,559 t provides overlap into the B_{MSY} range. The current SSB is also nearly double $MSYB_{trigger}$ (132,000 t). The apparently large 2019 year class will further increase SSB through 2020-2021.

Fishing mortality has fluctuated around Fpa since 2002 . Currently it is greater than F_{MSY} but below F_{pa} (Figure 1, Table 3).

According to ICES landings of fish below the minimum conservation reference size (MCRS) are very low and discarding still takes place. The estimated discard amount is 4,895 tonnes in 2018 (12.4%), based on observer data (ICES 2019d).

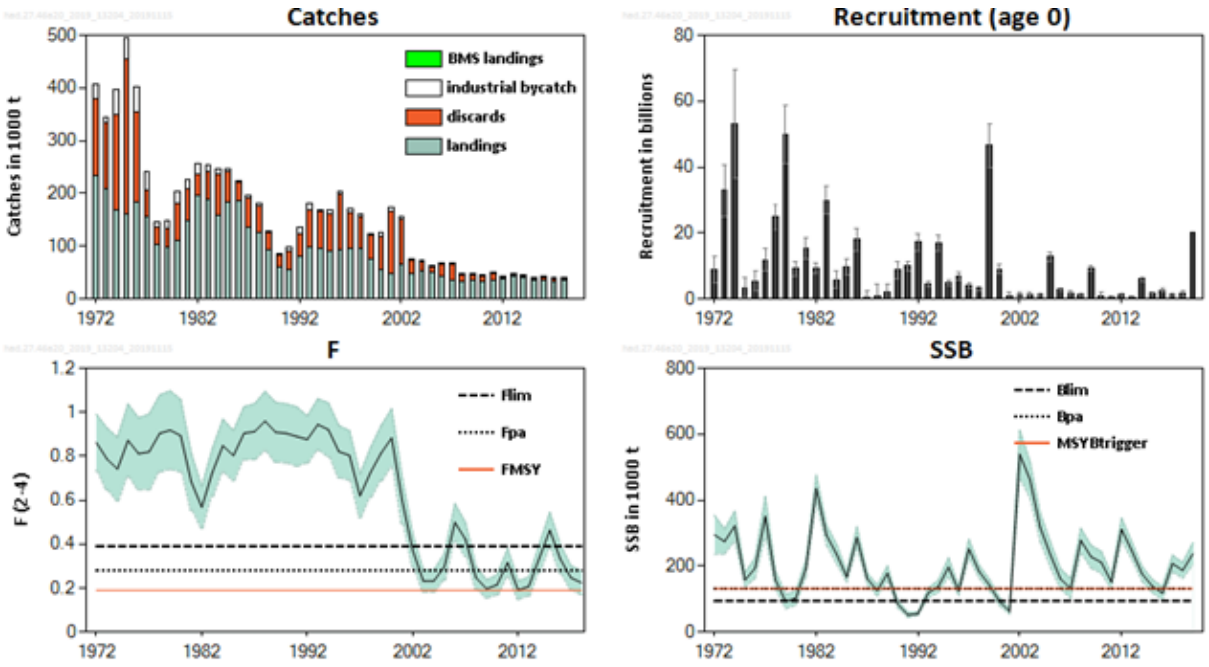

Figure 1. Catch, fishing mortality, recruitment and spawning stock biomass for haddock (*Melanogrammus aeglefinus*) in Subarea 4, Division 6.a, and Subdivision 20 (North Sea, West of Scotland, Skagerrak). Source: (ICES 2019d)**.**

Table 3. Stock status. Source: (ICES 2019d)

	Fishing pressure				Stock size			
		2016	2017	2018		2017	2018	2019
Maximum sustainable yield	F_{MSY}	✗	✗	✗	Above	MSY $B_{trigger}$	✓	✓	✓ Above trigger
Precautionary approach	F_{pa},F_{lim}	○	✓	✓	Harvested sustainably	B_{pa},B_{lim}	✓	✓	✓ Full reproductive capacity
Management plan	F_{MGT}	–	–	–	Not applicable	B_{MGT}	–	–	– Not applicable

3.4.2 UoA 2 – Saithe

Spawning-stock biomass (SSB) has fluctuated without trend above $MSYB_{trigger}$ since 1996 (Figure 2). Fishing mortality (F) has decreased and stabilized at or below F_{MSY} since 2014 (5 years) (Figure 2). Recruitment (R) has shown an overall decreasing trend over time with lowest levels in the past 10 years. All indicators suggest sustainable exploitation of the resource (Table 4). With respect to the current F and revised SSB from the 2019 benchmark. The assessment team evaluated whether the stock could still be considered to fluctuating around B_{MSY}. As background the Generation Time (GT) for saithe is 10 years. Following GSA2.2.3.1 and MSC interpretation on ICES assessments, fisheries with $B>BMSY_{trigger}$ may be regarded as "fluctuating around BMSY" (thereby achieving an 80 score), if there is evidence to support this and that the stock is not recovering towards MSY. For saithe

- B has been above $MSYB_{trigger}$ 149,098 since 1996.
- B exceed 2 x B_{pa} in years 2004 – 2009
- B was below 2 x B_{pa} and decreasing in years 2010-2013
- B has been increasing towards 2 x B_{pa} in year 2014-2018.

This is considered evidence of fluctuating around B_{MSY} with the past two GT of the stock (20 years) and not a recovery trend thus the team (and in harmonisation with other fisheries) concluded that no rescoring was required.

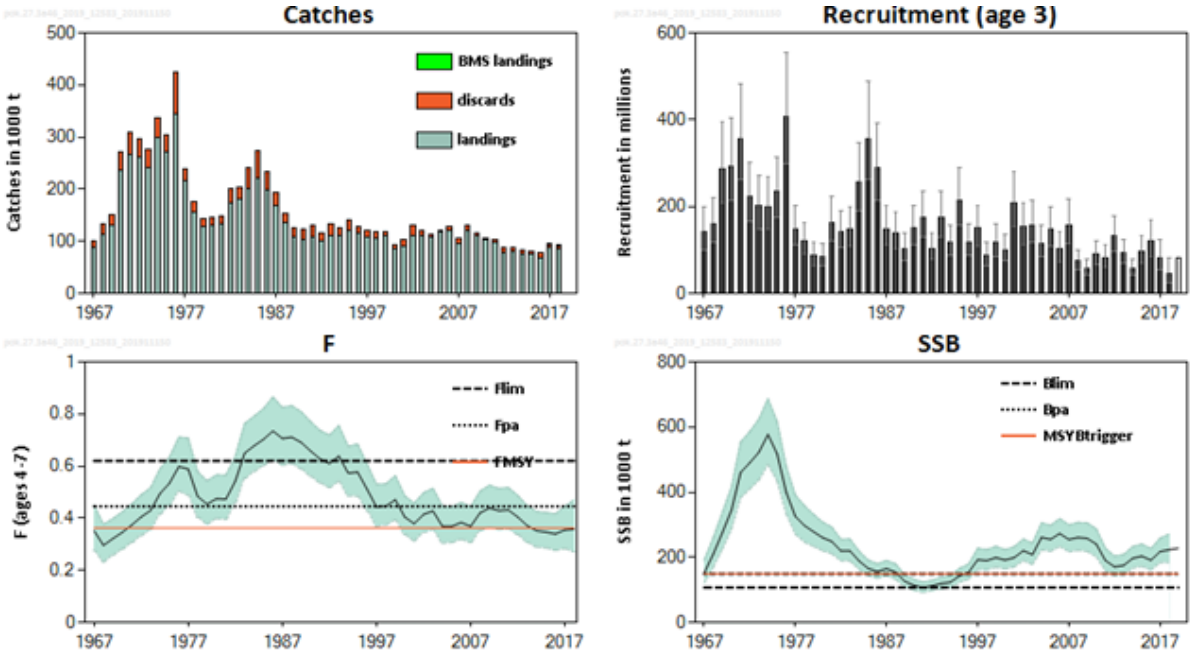

Figure 2. Catch, fishing mortality, recruitment and spawning stock biomass for saithe (*Pollachius virens*) in subareas 4, 6 and Division 3.a (North Sea, Rockall and West of Scotland, Skagerrak and Kattegat). Source: ICES (2019l)**.**

Table 4. Stock status. Source ICES (2019l)**.**

	Fishing pressure				Stock size			
		2016	2017	2018		2017	2018	2019
Maximum sustainable yield	F_{MSY}	✓	✓	✓ At FMSY	MSY $B_{trigger}$	✓	✓	✓ Above trigger
Precautionary approach	F_{pa},F_{lim}	✓	✓	✓ Harvested sustainably	B_{pa},B_{lim}	✓	✓	✓ Full reproductive capacity
Management plan	F_{MGT}	–	–	– Not applicable	B_{MGT}	–	–	– Not applicable

Assessment of the stock assessment against the EU landing obligation for this stock is complicated by the following; In 2018, saithe catches in all EU fleets of Subarea 4 and Division 3.a were subject to the EU landing obligation, but a de minimis exemption exists for saithe caught in crustacean fisheries (TR2). In Subarea 6, saithe was only subject to the landing obligation in fisheries targeting saithe (not this UoA, where it is a bycatch). As a result, substantial discarding is evident based on observations from sampling programmes with an estimated unwanted catch across all fisheries for 2018 at 7,649 tonnes in Subarea 4 and Division 3.a, i.e. 8.7 % of the total catch). Below minimum size (BMS) landings reported to ICES in 2016–2018 were low.

3.4.3 UoA 3 – Plaice

The spawning-stock biomass (SSB) is well above MSY $B_{trigger}$ and has markedly increased since 2008, following a substantial reduction in fishing mortality (F) since 1999 (Figure 3). Recruitment in 2019 is estimated to be the second highest in the time-series. Since 2009, fishing mortality has been estimated

below F_{MSY} (Figure 3). All indicators suggest sustainable exploitation of the resource (Table 5 and Table 4).

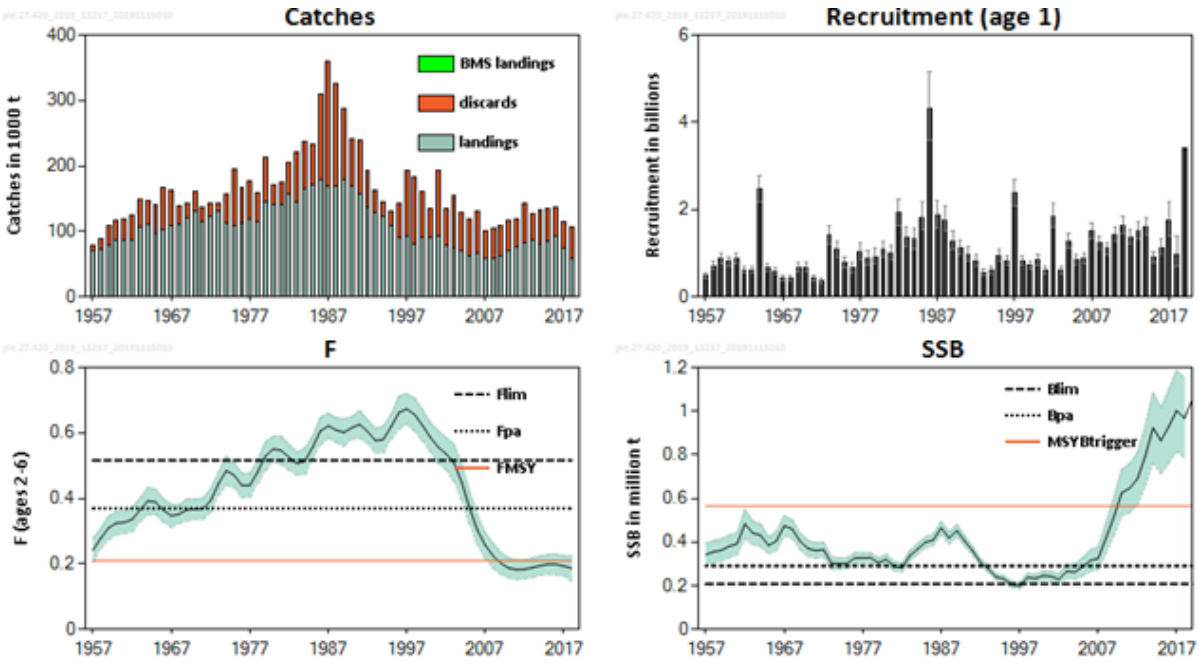

Figure 3. Catch, fishing mortality, recruitment and spawning stock biomass for Plaice (*Pleuronectes platessa*) in Subarea 4 (North Sea) and Subdivision 20 (Skagerrak). Source: ICES (2019k).

Assessment of the stock assessment against the EU landing obligation for this stock is complicated by the following; Across the entire set of fleets large mesh trawlers (TR1 and BT1) have been under the landing obligation in Subarea 4 since 2016. However only in 2019, are the fleets (BT2 and TR2) that contribute most to the total discards under the landing obligation in Subarea 4, with de minimis exemptions in certain fisheries also in place. In 2018, 52 % of the total catch in Subarea 4 and 19 % in Subdivision 20 was discarded. The reported BMS landings for fleets that are under the landing obligation in Subarea 4 are currently much lower than the estimates of unwanted catch from catch monitoring programmes (ICES 2019k).

Table 5. Stock status. Source: ICES (2019k).

	Fishing pressure				Stock size			
	2016	2017	2018		2017	2018	2019	
Maximum sustainable yield	F_{MSY}	✓	✓	✓	Below	MSY $B_{trigger}$	✓	✓	✓	Above trigger
Precautionary approach	F_{pa},F_{lim}	✓	✓	✓	Harvested sustainably	B_{pa},B_{lim}	✓	✓	✓	Full reproductive capacity
Management plan	F_{MGT}	–	–	–	Not applicable	B_{MGT}	–	–	–	Not applicable

3.4.4 UoA 4 – Hake

The spawning-stock biomass (SSB) has increased substantially since 2006. In 2016 it reached the maximum in the time series, and since then it has declined slightly (Figure 4). Fishing mortality (F) decreased markedly between 2005 and 2012 and has been stable below F_{MSY} since then (Figure 4). Recruitment is variable without trend. Recent recruitment is uncertain. All indicators suggest sustainable exploitation of the resource (Table 6).

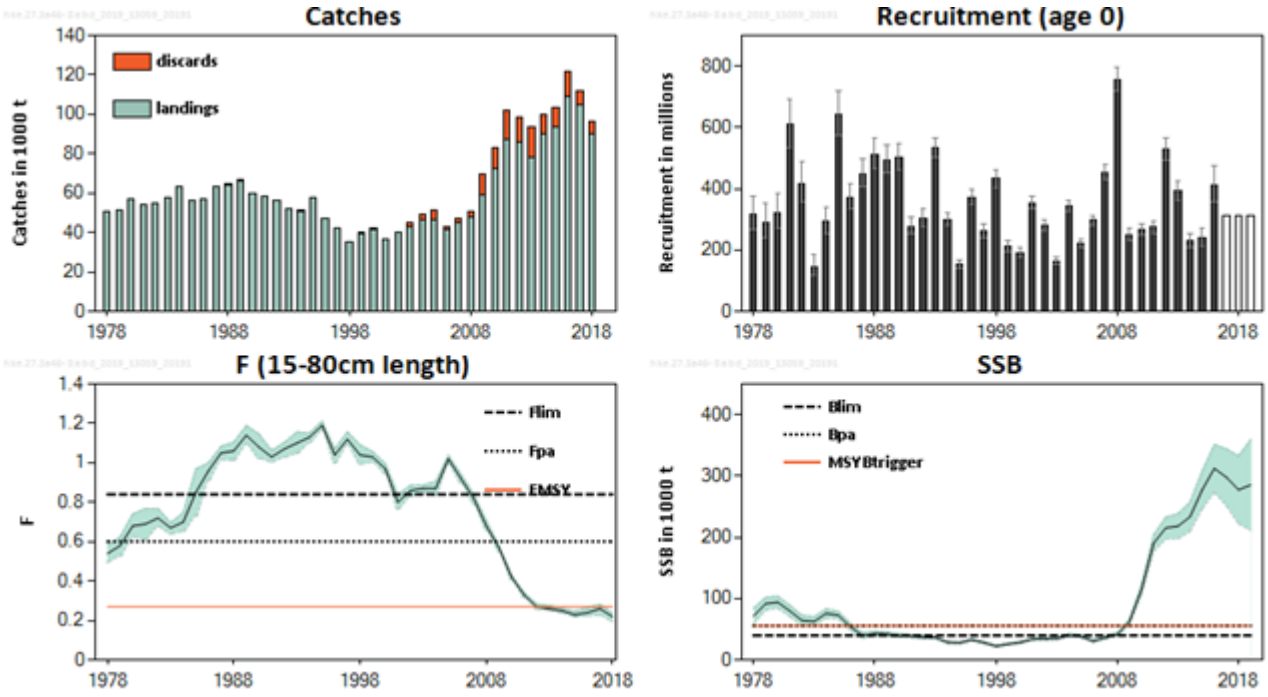

Figure 4. Catch, fishing mortality, recruitment and spawning stock biomass for hake (*Merluccius merluccius*) in subareas 4, 6, and 7, and in divisions 3.a, 8.a–b, and 8.d, Northern stock (Greater North Sea, Celtic Seas, and the northern Bay of Biscay). Source: ICES (2019e).

Table 6. Stock status. Source: ICES (2019e)

	Fishing pressure				Stock size			
	2016	2017	2018		2017	2018	2019	
Maximum sustainable yield	F_{MSY}	✓	✓	✓	Appropriate	MSY $B_{trigger}$	✓	✓	✓	Above trigger
Precautionary approach	F_{pa},F_{lim}	✓	✓	✓	Harvested sustainably	B_{pa},B_{lim}	✓	✓	✓	Full reproductive capacity
Management plan	F_{MGT}	–	–	–	Not applicable	B_{MGT}	–	–	–	Not applicable

3.4.5 UoA 5 - Whiting

This UoA was suspended in October 2019 (Jones & Cook 2019) resultant of the change in stock status in June 2019 (ICES 2019m). At this surveillance audit there are no substantial changes from the expedited report.

3.4.6 North Sea MAP

Regulation establishing a North Sea Multi Annual Management Plan (MAP) was implemented by the EU in July 2018 (EU 2018). This is now the basis for determining fishery removals, rather than a Long-Term Management Plan (LTMP) for the plaice stock and the hake stock. At the time of PCR (Jones et al. 2018) the MAP was not implemented and scores for Harvest Control Rules (HCR) for plaice and hake reflected it not being in place. A review of these scores at this audit has taken place and rescoring of these Performance Indicators is presented in section 4.5.

3.4.7 Principle 1 overall conclusion

Stock outcomes remain the same as previous reports PCR (Jones et al. 2018) for UoA 1-4 with UoA 5 suspended from September 2019 (Jones & Cook 2019).

Implications of the Landing Obligation (LO) on some stocks and stock management remains unclear due to exceptions for some fleets and areas. Overall compliance with the LO is covered under Principle 3.

3.5 Principle 2

3.5.1 Marine Scotland Observer Program

As part of the surveillance audit the assessment team interviewed Elena Balestri, the Scottish Fishermen's Federation (SFF) science policy officer. The observer scheme is an SFF and Marine Scotland joint scheme, with SFF observer scheme now providing 60 % of the observer coverage. All observers are trained using the same documentation and there are currently 10 working within the scheme. The training manual is being updated in 2020. Currently the observer coverage overall for the fleet is equal to ~ 2 %. Whilst observers are on board every haul is sampled with 1 or 2 baskets analysed per haul, as well as background information such as vessel position, gear type, haul length etc. In addition to the baskets that are sampled there are 2 further levels of measurements. Baskets of discards are recorded and counted (discarding being allowed for non-TAC species) and if ETP species are identified on the hopper these are recorded but at present they cannot be raised to trip level. Mortality levels of ETP are not routinely recorded.

3.5.2 Retained and discard species

Marine Scotland provided landings and catch estimate data for the client group for the period 2016 – 2018 as part of this audit (Table 7, Table 8). The data was sub-settable by ICES subarea and gear type (TR1 / TR2). Catch estimates come from the Marine Scotland observer program described above.

Key changes related to retained species for the UoAs are the updates to the stock status of North Sea whiting and North Sea cod resultant of downgraded stock status estimates in 2019. The rescoring of these two scoring elements is shown in Section 4.5. Summaries of all stocks, status and management for all species with greater than 2 % landings separated by stock or functional unit (*Nephrops*) are

shown in Table 9. With the exception of North Sea whiting and North Sea cod there is no updates to scoring required.

Table 7. Client landings and discard estimates for North Sea (subarea 4) fish between 2016-2018 in tonnes. Source Marine Scotland Science. MCRS = Minimum Conservation Reference Size.

Species	Gear type	Landings	Discards Estimate	% MCRS	Catch Estimate	% Landings	% Catch	Species designation "main", "minor" or "target"
Anglerfish	TR1	39,033.8	1,429.0	NA	40,462.8	8.3	8.2	main
Black Scabbardfish	TR1	0.1	12.0	NA	12.1	0.0	0.0	minor
Black Scabbardfish	TR2	0.0	9.0	NA	9.0	0.0	0.0	minor
Blue ling	TR1	14.8	19.0	NA	33.8	0.0	0.0	minor
Blue ling	TR2	0.0	9.0	NA	9.0	0.0	0.0	minor
Brill	TR2	1.9	406.0	NA	407.9	0.0	1.8	minor
Brill	TR1	66.6	69.0	NA	134.6	0.0	0.0	minor
Cod	TR1	91,317.3	2,208.0	1,321.0	93,525.3	19.4	18.9	main
Cod	TR2	446.3	720.0	696.0	1,166.3	5.3	5.0	main
Common Dab	TR2	9.5	1,230.0	NA	1,239.5	0.1	5.3	main
Common Dab	TR1	250.3	1,176.0	NA	1,426.3	0.1	0.3	minor
Flounder	TR2	0.0	795.0	NA	795.0	0.0	3.4	minor
Flounder	TR1	0.0	452.0	NA	452.0	0.0	0.1	minor
Grey Gurnards	TR2	54.7	977.0	NA	1,031.7	0.6	4.4	minor
Grey Gurnards	TR1	948.8	1,472.0	NA	2,420.8	0.2	0.5	minor
Haddock	TR1	160,781.0	1,739.0	690.0	162,520.0	34.2	32.8	target
Haddock	TR2	2,545.0	861.0	294.0	3,406.0	30.1	14.6	target
Hake	TR2	61.8	1,007.0	797.0	1,068.8	0.7	4.6	target
Hake	TR1	20,652.4	1,535.0	915.0	22,187.4	4.4	4.5	target
Lemon sole	TR2	247.8	1,047.0	NA	1,294.8	2.9	5.6	main
Lemon sole	TR1	4,391.0	1,630.0	NA	6,021.0	0.9	1.2	minor
Ling	TR2	85.7	653.0	NA	738.7	1.0	3.2	minor
Ling	TR1	11,298.8	1,726.0	NA	13,024.8	2.4	2.6	minor
Megrim	TR2	32.1	787.0	847.0	819.1	0.4	3.5	minor
Megrim	TR1	8,195.7	1,591.0	911.0	9,786.7	1.7	2.0	minor
Plaice	TR2	279.7	1,261.0	172.0	1,540.7	3.3	6.6	target
Plaice	TR1	25,557.7	1,772.0	1,131.0	27,329.7	5.4	5.5	target

Species	Gear type	Landings	Discards Estimate	% MCRS	Catch Estimate	% Landings	% Catch	Species designation "main", "minor" or "target"
Pollock	TR1	2,505.5	607.0	68.0	3,112.5	0.5	0.6	minor
Pollock	TR2	0.2	18.0	NA	18.2	0.0	0.1	minor
Red mullet	TR2	2.4	429.0	NA	431.4	0.0	1.9	minor
Red mullet	TR1	17.9	516.0	NA	533.9	0.0	0.1	minor
Saithe	TR1	47,398.4	2,752.0	1,362.0	50,150.4	10.1	10.1	target
Saithe	TR2	437.6	785.0	895.0	1,222.6	5.2	5.3	target
Sole	TR2	0.2	275.0	70.0	275.2	0.0	1.2	minor
Sole	TR1	39.8	257.0	NA	296.8	0.0	0.1	minor
Torsk	TR2	0.2	409.0	NA	409.2	0.0	1.8	minor
Torsk	TR1	121.7	1,110.0	NA	1,231.7	0.0	0.2	minor
Turbot	TR2	14.8	191.0	NA	205.8	0.2	0.9	minor
Turbot	TR1	469.1	53.0	NA	522.1	0.1	0.1	minor
Whiting	TR2	2,268.0	742.0	578.0	3,010.0	26.8	12.9	Target
Whiting	TR1	53,034.2	1,657.0	1,347.0	54,691.2	11.3	11.0	Target
Witch Flounder	TR2	389.0	1,537.0	NA	1,926.0	4.6	8.3	main
Witch Flounder	TR1	3,745.4	1,830.0	NA	5,575.4	0.8	1.1	minor

Table 8. Client landings and discard estimates for West of Scotland (subarea 6a) fish between 2016-2018 in tonnes. Source Marine Scotland Science.

Species	Gear type	Landings	Discards Estimate	% MCRS	Catch Estimate	% Landings	% Catch	Species designation "main", "minor" or "target"
Anglerfish	TR1	9,393.5	1,350.0	NA	10,743.5	15.4	14.2	main
Anglerfish	TR2	402.7	1,151.0	NA	1,553.7	31.5	9.8	main
Black Scabbardfish	TR1	262.0	19.0	NA	281.0	0.4	0.4	minor
Black Scabbardfish	TR2	0.0	9.0	NA	9.0	0.0	0.1	minor
Blue ling	TR1	2,017.7	18.0	NA	2,035.7	3.3	2.7	minor
Blue ling	TR2	0.0	9.0	NA	9.0	0.0	0.1	minor
Brill	TR2	0.6	303.0	NA	303.6	0.0	1.9	minor
Brill	TR1	6.3	12.0	NA	17.3	0.0	0.0	minor
Cod	TR2	29.3	1,317.0	603.0	1,346.3	2.3	8.5	main
Cod	TR1	969.5	1,220.0	1,078.0	2,189.5	1.6	2.9	minor
Common Dab	TR2	0.0	873.0	NA	873.0	0.0	5.5	main
Common Dab	TR1	0.3	581.0	NA	581.3	0.0	0.8	minor
Flounder	TR2	0.0	609.0	NA	609.0	0.0	3.8	minor
Flounder	TR1	0.0	13.0	NA	13.0	0.0	0.0	minor
Grey Gurnard	TR2	2.7	752.0	NA	754.7	0.2	4.8	minor
Grey Gurnard	TR1	150.9	807.0	NA	957.9	0.2	1.3	minor
Haddock	TR1	18,462.3	780.0	581.0	19,242.3	30.4	25.5	target
Haddock	TR2	531.5	1,004.0	312.0	1,535.5	41.5	9.7	target
Hake	TR2	31.7	1,195.0	369.0	1,226.7	2.5	7.7	target
Hake	TR1	2,288.0	839.0	830.0	3,127.0	3.8	4.1	target
Lemon sole	TR2	8.4	1,060.0	NA	1,068.4	0.7	6.7	main
Lemon sole	TR1	244.3	1,382.0	NA	1,626.3	0.4	2.2	minor
Ling	TR1	5,132.6	1,467.0	322.0	6,599.6	8.4	8.7	main
Ling	TR2	15.8	722.0	376.0	737.8	1.2	4.7	minor
Megrim	TR1	3,301.8	1,188.0	1,101.0	4,489.8	5.4	5.9	main
Megrim	TR2	57.7	611.0	889.0	668.7	4.5	4.2	minor
Plaice	TR2	11.0	759.0	432.0	770.0	0.9	4.9	minor
Plaice	TR1	597.1	1,024.0	705.0	1,621.1	1.0	2.1	minor

Species	Gear type	Landings	Discards Estimate	% MCRS	Catch Estimate	% Landings	% Catch	Species designation "main", "minor" or "target"
Pollock	TR2	0.3	315.0	NA	315.3	0.0	2.0	minor
Pollock	TR1	128.8	33.0	NA	161.8	0.2	0.2	minor
Red mullet	TR2	0.0	153.0	NA	153.0	0.0	1.0	minor
Red mullet	TR1	0.1	21.0	NA	21.1	0.0	0.0	minor
Saithe	TR1	16,850.0	1,114.0	839.0	17,964.0	27.7	23.8	target
Saithe	TR2	10.0	473.0	348.0	483.0	0.8	3.1	target
Sole	TR2	3.4	124.0	121.0	127.4	0.3	0.8	minor
Sole	TR1	8.7	40.0	19.0	48.7	0.0	0.1	minor
Torsk	TR1	164.7	634.0	NA	798.7	0.3	1.1	minor
Torsk	TR2	0.0	9.0	NA	9.0	0.0	0.1	minor
Turbot	TR2	3.9	499.0	NA	502.9	0.3	3.2	minor
Turbot	TR1	63.4	18.0	NA	81.4	0.1	0.1	minor
Whiting	TR2	33.8	1,334.0	133.0	1,367.8	2.6	8.6	main
Whiting	TR1	581.1	1,003.0	799.0	1,584.1	1.0	2.1	minor
Witch Flounder	TR2	137.2	1,273.0	NA	1,410.2	10.7	8.9	main
Witch Flounder	TR1	191.6	1,084.0	NA	1,275.6	0.3	1.7	minor

Table 9. Stocks, status and management for all species with greater than 2 % landings separated by stock or functional unit (*Nephrops*).

Stock	Status	Management	Ref.
Cod 3a, 20, 4, 7d	$B<MSYB_{trigger}$; $F>F_{MSY}$	EU Norway long-term management plan	(ICES 2019b)
Cod 6a	$B<B_{lim}$, $F>F_{MSY}$	MSY approach	(ICES 2019a)
Whiting 4, 7.d	$B>B_{MSYtrigger}$, $F>F_{MSY}$, $<F_{pa}$	EU-Norway management strategy (fixed F without $B_{trigger}$ and with TAC constraints	(ICES 2019m)
Anglerfish 3a, 4, 6	Biomass index increasing since 2011	Precautionary framework for category 3 data limited stocks; change in biomass index over time used to determine change in precautionary TAC	(ICES 2016a)
Megrim 4a, 6a	$B>>MSYB_{trigger}$, $F<<F_{MSY}$	MSY approach (target is F_{MSY})	ICES (2017f)
Lemon sole	Spawning-stock biomass (SSB) increased from 2007 to 2012, and has remained	MSY approach	(ICES 2019f)

Stock	Status	Management	Ref.
	stable since, albeit with a small decline in 2018		
Ling NE Atlantic and Arctic	Biomass index increasing since 2001	Precautionary framework for category 3 data limited stocks; change in biomass index over time used to determine change in precautionary TAC	(ICES 2019g)
Witch 3a, 4, 7d	B estimated at ~=B_{MSY}; >$MSYB_{trigger}$	Precautionary TAC for 3a and 4 combined with lemon sole; no TAC in 6a; not part of LO as yet	ICES (2017n)
Nephrops Functional Units			
FU7 – Fladen Ground	B>$MSYB_{trigger}$, F<<F_{MSY} proxy	MSY approach: Proxy F_{MSY} estimated at harvest rate (including discards) of 7.5 %, estimated from UWTV surveys	(ICES 2019h)
FU8 – Firth of Forth	B>>$MSYB_{trigger}$, F<F_{MSY} proxy	MSY approach: Proxy F_{MSY} estimated at harvest rate of 16.3 %	(ICES 2019i)
FU9 – Moray Firth	B>$MSYB_{trigger}$, F~= F_{MSY} proxy	MSY approach: Proxy F_{MSY} estimated at harvest rate of 11.8 %	(ICES 2019j)
FU11 – North Minch	B>$MSYB_{trigger}$, F<F_{MSY} proxy	MSY approach: Proxy F_{MSY} estimated at harvest rate of 10.8 %	(ICES 2016e)
FU12 – South Minch	B>$MSYB_{trigger}$, F<F_{MSY} proxy	MSY approach: Proxy F_{MSY} estimated at harvest rate of 11.7 %	(ICES 2016f)
FU13 – Firth of Clyde / Sound of Jura	B>>$MSYB_{trigger}$, F variable, fluctuating around F_{MSY} proxy	MSY approach: Proxy F_{MSY} estimated at harvest rate of 15.1 % (FoC) and 12.0 % (SoJ)	(ICES 2016g)
FU15 – Irish Sea West	B>$MSYB_{trigger}$, F>F_{MSY} proxy	MSY approach: Proxy F_{MSY} estimated at harvest rate of 18.2 %	(ICES 2016h)

3.5.3 Endangered Threatened and Protected (ETP) species.

Protected, Endangered and Threatened (PET) species data from 2017-2018 was provided by Marine Scotland science from the observer program described in 3.5.1 (Table 10).

The PET data from 2017-2018 (Table 10) includes the following species previously identified in the PCR for this fishery (Jones et al. 2018): Starry ray, common skate complex (inc. blue skate and flapper skate), Norway skate (W. Scotland), spurdog, seals (common and grey) and gannet. No longer present in the data are porbeagle shark, Atlantic salmon, Greenland shark, basking shark and guillemot although as they were present in the previous years', they remain active scoring elements. New species identified in the most recent data are twaite shad (*Alosa fallax*) (Council Directive 92/43/EEC - Hab Dir App II), short snouted seahorse (*Hippocampus hippocampus*) (Schedule 5 of the Wildlife and Countryside Act 1981) and harbour porpoise (ASCOBAN). These new species have been scored under ETP rationale in section 4.5.

Birdbeak dogfish (*Deania calcea*) caught in area 6a is not ETP as it is only ETP in area 4 (EU Art 14. 2019/124).

As per the fishery at last assessment (Jones et al. 2018) interactions with Starry ray (*Amblyraja radiata*), blue skate (*Dipturus batis*) and flapper skate (*Dipturus intermedius*) remain the principal area

of concern for the fishery. Conditions on Performance Indicators 2.3.1, 2.3.2 and 2.3.3 related to these interactions and progress against these is detailed in section 0 please refer to Table 17, Table 18 and Table 19.

Table 10. Protected, Endangered and Threatened (PET) species data 2017-2018, from Marine Scotland and Scottish Fisherman's Federation observer program.

Year	Area	Domain	Species Code	Species Common name	Species Scientific name	Number of Individuals	Number of Trips	Observer Trips Total
2017	27.4.a	TR1	TSD	Twaite shad	*Alosa fallax*	1	1	110
2017	27.4.a	TR1	RJR	Starry ray	*Amblyraja radiata*	2725	52	110
2017	27.4.a	TR1	RJB	Blue skate	*Dipturus batis*	61	9	110
2017	27.4.a	TR1	DRJ	Flapper skate	*Dipturus intermedius*	25	5	110
2017	27.4.a	TR1	MVB	Northern gannet	*Morus bassanus*	16	6	110
2017	27.4.a	TR1	SXX	Seals and sea lions nei	*Otariidae*	1	1	110
2017	27.4.b	TR1	TSD	Twaite shad	*Alosa fallax*	2	1	16
2017	27.4.b	TR1	RJR	Starry ray	*Amblyraja radiata*	79	4	16
2017	27.6.a	TR1	RJB	Blue skate	*Dipturus batis*	7	2	18
2017	27.6.a	TR1	JAD	Norwegian skate	*Dipturus nidarosiensis*	7	1	18
2017	27.6.a	TR1	SXX	Seals and sea lions nei	*Otariidae*	1	1	18
2017	27.6.a	TR2	RJR	Starry ray	*Amblyraja radiata*	3	2	78
2017	27.6.a	TR2	RJB	Blue skate	*Dipturus batis*	26	3	78
2017	27.6.a	TR2	LHZ	Herring gull	*Larus argentatus*	1	1	78
2018	27.4.a	TR1	TSD	Twaite shads	*Alosa fallax*	6	1	101
2018	27.4.a	TR1	RJR	Starry ray	*Amblyraja radiata*	5253	57	101
2018	27.4.a	TR1	RJB	Blue skate	*Dipturus batis*	12	2	101
2018	27.4.a	TR1	DRJ	Flapper skate	*Dipturus intermedius*	4	1	101
2018	27.4.a	TR1	MVB	Northern gannet	*Morus bassanus*	8	2	101
2018	27.4.a	TR1	SXX	Seals and sea lions nei	*Otariidae*	1	1	101

Year	Area	Domain	Species Code	Species Common name	Species Scientific name	Number of Individuals	Number of Trips	Observer Trips Total
2018	27.4.a	TR2	RJR	Starry ray	*Amblyraja radiata*	123	2	6
2018	27.4.a	TR2	HPH	Short snouted seahorse	*Hippocampus hippocampus*	2	1	6
2018	27.4.a	TR2	PHR	Harbour porpoise	*Phocoena phocoena*	1	1	6
2018	27.4.b	TR1	RJR	Starry ray	*Amblyraja radiata*	1	1	17
2018	27.4.b	TR2	RJR	Starry ray	*Amblyraja radiata*	1	1	40
2018	27.4.b	TR2	PHR	Harbour porpoise	*Phocoena phocoena*	1	1	40
2018	27.6.a	TR1	DCA	Birdbeak dogfish	*Deania calcea*	3	1	20
2018	27.6.a	TR2	RJR	Starry ray	*Amblyraja radiata*	22	5	61
2018	27.6.a	TR2	RJB	Blue skate	*Dipturus batis*	1	1	61

3.5.3.1 Blue skate and flapper skate

In 2019 ICES produced advice for blue (Common) skate (*Dipturus batis*) and Flapper skate (*Dipturus intermedius*) but could not assess the stock and exploitation status relative to the maximum sustainable yield (MSY) and precautionary approach (PA) reference points (ICES 2019c). They note that the available information does not change the previous perception that the common skate complex is depleted in the North Sea. Available information suggests that flapper skate occurs in the northern parts of the stock area, where it likely merges with the neighbouring population in subareas 6 and 2.

However, whilst catch rates in the surveys are too low to provide a stock size indicator, the consistent occurrence of this species in surveys (NS–IBTS–Q1 and NS–IBTS–Q3) in recent years, 0.054 n h−1 (2011–2018) compared to the 1990s, 0.005 n h−1 (1991–1998) could be indicative of a gradually improving stock status (ICES 2019c). this impression is inline by SFSAG perception that qualitatively note that numbers of interactions would appear to be increasing.

No landings of these species is permitted (since 2009). Article 14 1 prohibits retaining on board, transhipment or landing of these species and 14 .2 requires prompt release (COUNCIL REGULATION (EU) 2019/124). ICES are aware therefore that discarding takes place but cannot quantify the corresponding catch. In addition, discard survival, which is likely, has not been estimated.

3.5.3.2 Starry ray

For starry ray (*Amblyraja radiata)*, the 2019 advice continues to show a stock size decline (Figure 5). A zero TAC has been implemented since 2015. In 2015 the species was included in the list of prohibited

species for fishing, retaining on board, transhipping, or landing (EU) 2019/124), however since 2018 it is no longer considered a prohibited species in Subarea 6 (article 14[1]) and so in this area is no longer ETP.

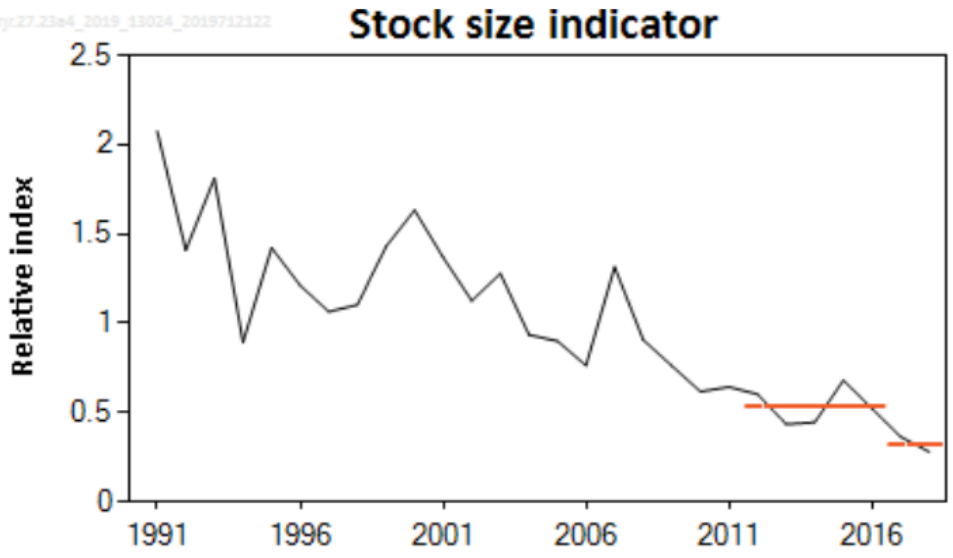

Figure 5. Starry ray in Subareas 2 and 4 and Division 3.a. Average of survey indices of abundance (n h−1, relative to the timeseries mean) from trawl surveys (NS–IBTS–Q1, NS–IBTS–Q3). The horizontal lines show the mean stock indicators for 2017–2018 and 2012–2016. Source

A reconstructed distribution and abundance paper on North Sea skates and sharks, suggest that regime shifts from large skates (common skate) to smaller species (starry ray) may be attributed to (i) fishing, including mechanised beam trawling introduced in the 1960s–1970s, and historical target fisheries for elasmobranchs; (ii) climate change, currently favouring warm-water above cold-water species; and (iii) habitat loss, including potential degradation of coastal and outer estuarine nursery habitats (Sguotti et al. 2016).

The North Sea Advisory Council (NSAC) published a joint paper showcasing a list of collected measures that are currently being applied or considered by organisations in the North Sea (NSAC 2019). Although not directly referencing efforts in Scotland there is a number of similarities between approaches including avoidance of aggregations, spawning areas and gear selectivity.

At a fishery level a current master project is underway to investigate ETP species interactions with the fleet, but no results are yet available. In addition through the Gear Innovation and Technology Advisory Group (GITAG) a member of the Client group is trialling skate exclusion device on nets.

The client group has for the past couple of years been trialling a voluntary recording scheme with members, but the overall response has not been particularly successful. The client group is now considering a more formal scheme.

At an ICES level and ICES working group on discard survival is forthcoming in 2020.

[1] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R0124&from=EN

3.5.3.3 Starry ray and blue / flapper skate analysis

Analysis undertaken by the client group as part of the condition milestones related to starry ray and blue / flapper skate was undertaken in 2019 (Appendix 4 Skates and rays analysis). This report comprised of analysis of ICES and Marine Scotland Science (MSS) data and concluded the following:

With five full years of bycatch data from the PETS and bycatch sampling programme (2014-18), 2019 was the first year in which MSS felt that sample sizes might be appropriate to attempt some global analysis of the dataset in relation to skates. The purpose of this analysis was to evaluate whether the data contain information which might help Marine Scotland and/or SFSAG to put in place additional measures to reduce skate bycatch.

In relation to starry ray, the main conclusions of the analyses by ICES and MSS are as follows:

- Survey catch rates remain in decline in the North Sea, having increased throughout the 1980s. The reasons for the increase and subsequent decline are unclear.

- The spatial analysis of starry ray bycatch data do not reveal any clear bycatch hotpots which could form the basis of a protected area. Biomass seems to be highest over a relatively large area in the northern North Sea (east of Shetland) which is not the centre of effort for SFSAG towed gear, although according to ICES the species remains present throughout the North Sea.

- The analysis of starry ray bycatch by season likewise does not reveal any clear pattern that could form the basis of a temporal management measure, although there are some general trends.

- Overall, because catch rates are low and patchy, there are not sufficient data as yet for further analysis of this bycatch data based on other parameters. The data set will continue to improve year by year, but this situation will probably not change over the timeframe of an MSC assessment cycle (5 years). ICES base their analysis on a long survey time series, and therefore the best approach to ongoing management of starry ray would seem to be to take account of ICES' evaluations and follow their recommendations.

In relation to common skate, the main conclusions of the analyses by ICES and MSS, are as follows:

- For the North Sea, although a quantitative analysis of trends is not possible, survey catch rates have increased substantially since the 1990s. For W. Scotland, ICES was not able to present an analysis, although trends in the Celtic Seas region more widely are likewise encouraging.

- The spatial analysis of common skate bycatch data suggests that common skate bycatch in the SFSAG fishery takes place almost entirely around the north and west coasts. Observed bycatch in the North Sea is minimal.

- The species appears to be distributed more widely than originally thought, including in inshore areas. As for starry ray, no spatial or seasonal patterns could be discerned which would support additional robust management measures.

3.5.3.4 Twaite shad

Twaite shad (*Alosa fallax*) is a member of the Clupeidae family and are very difficult to tell apart from the closely related *Alosa alosa* based on external features. Both are listed under Annex II of the EC Habitats & Species Directive meaning that areas are protected to aid their conservation. These areas

are rivers beyond the geographical area of the fishery and none of these area exist in Scotland the nearest being in West Wales[2].

At sea, both species are pelagic and allis shad may occur at depths to 300 m. Both species return to rivers to spawn. Once widely distributed throughout Europe, their populations declined rapidly in the early part of the 20th century due to a combination of overfishing, pollution and habitat fragmentation (ICES 2005; Freyhof 2008; Freyhof & Kottelat 2008).

Twaite shad are listed as 'Least Concern' but populations are reported to be increasing in the North Sea and the Baltic (Freyhof & Kottelat 2008). Generally twaite shad occur more frequently in commercial catches (ICES 2005). In Germany, spawning populations exist in the Elbe and Weser and juveniles are recorded from the Wadden Sea. Although increasing numbers of the species occur in areas of the southern North Sea, detailed quantitative analyses have not been published on spawning stocks of specific North Sea estuaries (Magath & Thiel 2013).

3.5.3.5 Harbour porpoise

The harbour porpoise (*Phocoena phocoena*) is a small cetacean inhabiting continental shelf waters and frequenting shallow bays, estuaries, and tidal channels less than ~200 m depth; it is the dominant marine mammal species in the North Sea, Skagerrak and Kattegat.

The harbour porpoise is a CITES Appendix II species and is listed in Annex II and IV of the Habitats Directive (92/43/EEC), Annex II of the Bern convention and Annex II of the Bonn convention. Furthermore, it is the flagship species in the "Agreement on the conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas" (ASCOBANS). The agreement seeks to formalise and coordinate conservation efforts for small cetacean species shared between member countries in the ASCOBANS Area through threat management, e.g. bycatch, habitat deterioration, or other anthropogenic disturbances. Given the highly migratory nature of the harbour porpoise, such co-ordinated efforts are necessary to form an effective conservation and management plan (CMP). The CMP formed under ASCOBANS requires all signatories to engage in habitat conservation and management programmes, surveys and research, pollution mitigation and public engagement. Denmark, Germany the Netherlands and Sweden are signatories to the ASCOBANS agreement, which was concluded in 1991 under the auspices of the Convention on Migratory Species (CMS or Bonn Convention) and entered into force in 1994. A number of Natura 2000 sites are designated on account of significant use of the areas by harbour porpoise within the North Sea, Kattegat and Skagerrak (see Figure 6). An additional and extensive pSAC is proposed for designation specifically for harbour porpoise in the Southern North Sea between the Kent and Northumberland coasts in UK inshore and offshore waters covering ~37,000 km^2 in depths of 10 m - 75 m (JNCC 2017).

[2] https://sac.jncc.gov.uk/species/S1103/

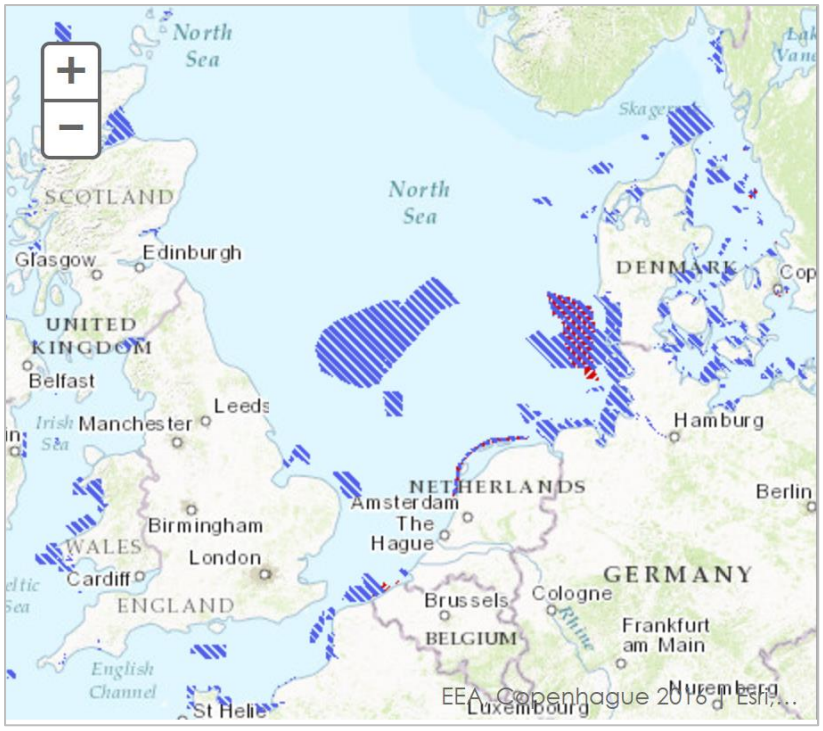

Figure 6. Natura2000 sites within which harbour porpoise is listed as a qualifying designated species. Source: European Environment Agency.

The Small Cetaceans in the European Atlantic and North Seas projects (SCANS I, II and III) have aimed to map distributions in the northeast Atlantic, often focusing on the North Sea (Figure 7 and Figure 8) (Hammond et al. 2017; Hammond 2006). The latest preliminary findings demonstrate a similar distribution to that observed in 2005 although with a continued and increased spread of harbour porpoise into the Channel, initially from the western end and now encompasses the entire Channel, at least in summer (Hammond et al. 2017). The most recent populations estimates for harbour porpoise from the 2016 SCANS III surveys are 345,000 in the North Sea; separate new estimates were not provided for the Channel or the Skagerrak at the time of writing although the report concluded there was no evidence of any change in population size since the initial surveys in 1994 (Hammond et al. 2017).

In 2008, ICES was asked to evaluate the bycatch of harbour porpoises in the Greater North Sea Ecoregion. At the Third Meeting of Parties to ASCOBANS in 2000, a resolution addressed the issue of porpoise bycatch. Resolution No. 3, set a definite limit for incidental bycatch based on advice from the International Whaling Commission (IWC) / ASCOBANS Working Group on harbour porpoises. This defined “unacceptable interactions” as being a total anthropogenic removal >1.7% of the best available population estimate and set an objective of reducing bycatch to <1% of the best available population estimate (ASCOBANS 2000). In 2010 in response to an EC request for advice, ICES stated it was unable to assess the population-level effects of fisheries bycatch for any cetacean species due to insufficient information (ICES 2010). Subsequently, using the SCANS II population estimates, ICES (2015d; 2015f) evaluated that the annual bycatch of harbour porpoises within the North Sea (including the Skagerrak and Eastern Channel) was at 0.88% and in the Kattegat and Belt Seas is at 0.55%. Both figures are below the limit considered to be unsustainable (1.7%) but ICES states that unknown amounts of bias exist in the assessments. Furthermore, a lack of reports from some major fishing nations (not specified) was cited as compromising the ability of ICES to assess the overall impact.

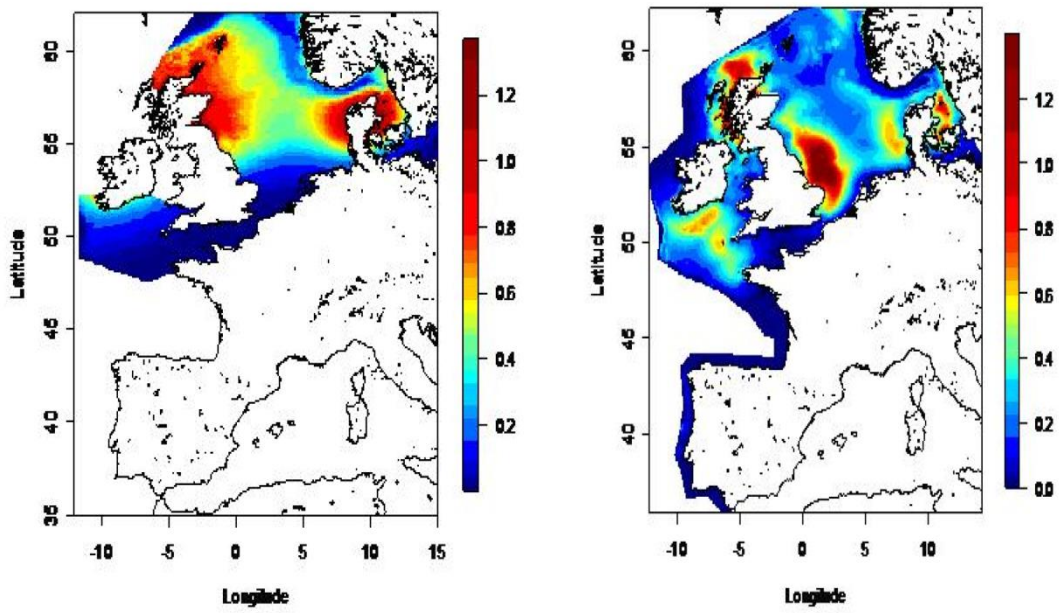

Figure 7: Surface density modelling of harbour porpoise (animals / km^2) in 1995 and 2004 from the SCANS and SCANS II projects respectively. Source: Hammond et al. (2006)**.**

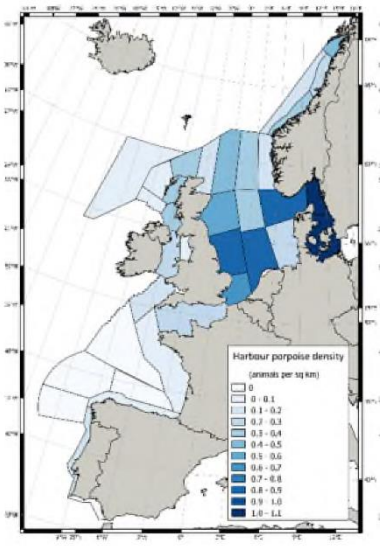

Figure 8: Preliminary results from the SCANS III project of harbour porpoise density (animals / km^2) in 2016. Source: Hammond et al. (2017)**.**

3.5.4 Habitats

Marine Scotland have published a useful recommended Priority Marine Features (PMF) and existing designations summary table for consultation (Appendix 4

Skates and rays analysis

Skates: Update on status and work to address conditions on MSC northern demersals certificate

3 January 2020

1. Introduction

The SFSAG haddock fishery was first certified in October 2010 and recertified in May 2016, with additional target species added in July 2018 after a scope extension (CUPesca 2016, 2018a). At re-certification, the fishery acquired three new conditions relating to bycatch of two species of skate: common skate (*Dipturus batis/intermedia* species complex) in all areas and starry ray (*Amblyraja radiata*) in the North Sea, following changes in perception of stock status, EU regulation and availability of bycatch data. The conditions relate to PIs 2.3.1 (ETP species outcome), 2.3.2 (ETP species management) and 2.3.3 (ETP species information).

At the most recent surveillance audit (Year 2, June 2018; CUPesca 2018b) all three conditions were audited as 'on target' with the Client Action Plan and CAB milestones. This report presents progress made in Year 3 of the conditions, with the objective of providing the necessary information to the CAB for the Year 3 audit, which is currently underway.

2. Year 3 milestones and Client Action Plan

The condition milestones set by the CAB, and the relevant parts of the Client Action Plan for Year 3, are summarised in Table 40.

Table 40. Milestones and Client Action Plan for Year 3, for conditions raised on common skate and starry ray (North Sea) in the re-assessment of SFSAG haddock (CUPesca 2016)

Condition	PI	Y3 milestones	Y3 CAP
2	2.3.1	Evaluate species bycatch data in relation to management targets to ensure that there is an objective basis that the strategy will work and adjust strategy as appropriate.	Data collection and assessment of fishery impact. Review of management options to reduce fishery impact on starry ray and common skate as required. Determine which management options can provide objective basis for confidence that the strategy – if required - will work.
3	2.3.2	Review options for management strategy for starry ray and common skate bycatch reduction (noting that it should provide an objective basis for confidence that it will work).	Data collection and assessment of fishery impact. Review of management options to reduce fishery impact on starry ray and common skate as required. Determine which management options can provide objective basis for confidence that the strategy – if required - will work.
4	2.3.3	Analysis of bycatch data demonstrates that the fishery does not pose a threat to the recovery of the common skate complex.	Data collection and assessment of fishery impact. Review of management options to reduce fishery impact on starry ray and common skate as required. Determine which management options can provide objective basis for confidence that the strategy – if required - will work.

3. Most recent available data on stock status

In 2019, ICES provided advice on both species for the North Sea, but no advice on common skate in Subarea 6. Common skate was, however, considered in the ICES Working Group report (WGEF) in 2018 (the most recent report available) in the chapter on the Celtic Seas. All the information evaluated by ICES (2019 advice and 2018 WGEF; ICES 2019a, 2019b, 2018) on stock status is summarised below.

3.1 Starry ray – North Sea

ICES advice for 2019 notes that the stock size indicator (taken from the North Sea ITBS Q1 and Q3 surveys) has declined continuously since 1991 and recommends zero landings on a precautionary basis. The regulations apply this advice, since landing starry ray from the North Sea is forbidden.

WGEF evaluated a longer time series of abundance indices taken from the IBTS surveys, North Sea beam trawl surveys (BTS) and Channel groundfish surveys (CGFS). The IBTS, which has the longest time series starting in

~1980, suggests that the decline from the early 1990s was preceded by a large increase in biomass during the 1980s, and current biomass may be approximately similar to that seen at the start of this time series in ~1980. The drivers behind these trends are unclear, since overall demersal fishing effort in the North Sea reached its peak in the mid-1980s (Daan et al. 2005); the same time as the biomass of starry ray was apparently increasing sharply. WGEF put forward a range of hypotheses, including environmental conditions, multi-species and fisheries interactions and improved species identification – noting that a similar pattern is seen in some other skate species in the North Sea (cuckoo ray and spotted ray) (ICES 2018). They wisely decline, however, to draw any conclusions.

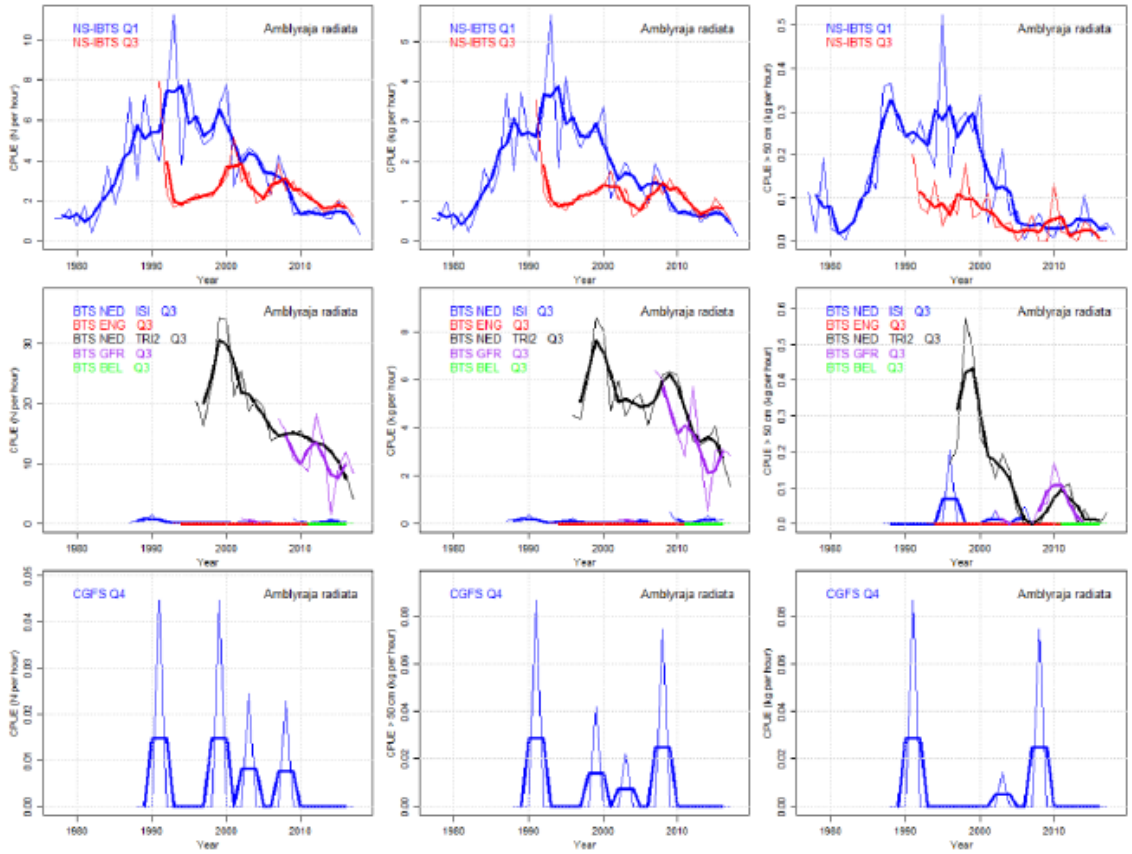

Figure 9. Starry ray North Sea: Left column: abundance index (number/hr); Middle column: biomass index (kg/hr); Right column: exploitable biomass (kg/hr). Top line: ITBS survey – blue=Q1, red=Q3; Middle line: BTS – black=Netherlands, purple=Germany (other surveys less relevant); Bottom line: CGFS (intermittant). Thin lines=annual data, thicker lines=3-year running means. Figure 15.6.1 in WGEF report, ICES 2018.

3.2 Common skate – North Sea

NB: While it was previously thought that the common skate species complex was made up of three species (*Dipturus batis, D. intermedia* and *D. flossada*) it now seems that ICES consider that there are only two species: *D. batis* and *D. intermedia*; *D. flossada* is considered a synonym for *D. batis*. According to WGEF, while the species distributions are uncertain, the species in the NW North Sea and NW Scotland is thought to be *D. intermedia*. The distribution of *D. batis* is 'unclear'; this may have been the species which was common in the southern North Sea historically and is now largely extirpated, it also seems to occur at Rockall (with *D. intermedia*) and in the Celtic Sea and further south (ICES 2018 p.372, p.453, p.465). So in practice, this fishery may only interact with one species of common skate. However, the Marine Scotland PETS data continues to record interactions with both species. It is clear that species discrimination remains a work in progress and on this basis it makes sense to continue to consider this bycatch as 'common skate' for management purposes for the moment.

ICES advice for common skate in the North Sea (ICES 2019b) states the following:

Fishery-independent trawl surveys provide the longest time-series of species-specific information. Whilst catch rates in the surveys are too low to provide a stock size indicator, the consistent occurrence of this species in surveys (NS–IBTS–Q1 and NS–IBTS–Q3) in recent years, 0.054 n h^{-1} (2011–2018) compared to the 1990s, 0.005 n h^{-1} (1991–1998) could be indicative of a gradually improving stock status.

ICES are understandably cautious given that survey catch rates are too low for quantitative analysis, but it is worth emphasising that catch rates have increased by an order of magnitude in the 2010s relative to the 1990s. The data (time series from 1980-date) are shown in Figure 10.

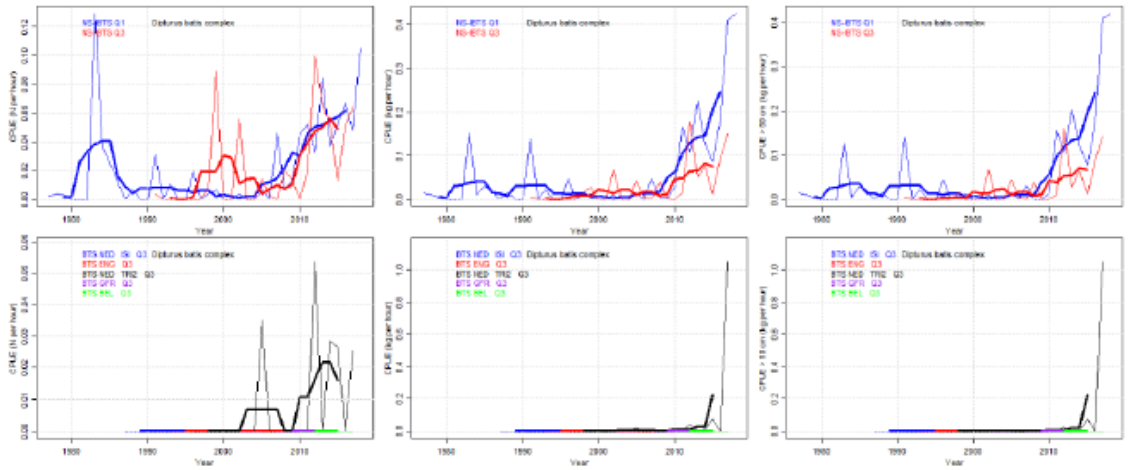

Figure 10. Common skate North Sea: Left column: abundance index (number/hr); Middle column: biomass index (kg/hr); Right column: exploitable biomass (kg/hr). Top line: ITBS survey – blue=Q1, red=Q3; Bottom line: BTS – black=Netherlands (other surveys less relevant). Thin lines=annual data, thicker lines=3-year running means. Figure 15.6.5 in WGEF report, ICES 2018.

3.3 Common skate – W. Scotland

The information provided in ICES (2018) for Celtic Seas common skate suggests a gradual recovery in the wider Celtic Seas area (e.g. Irish Groundfish Survey, Spanish Porcupine Bank Groundfish Survey); however, no data are presented covering Division 6a specifically. There is a Scottish West Coast Groundfish Survey which covers the relevant area, but since there were no WGEF / Celtic Sea participants from Scotland, these data were not analysed for skates.

4. Spatial analysis of bycatch

Note: This and the following section evaluate a series of plots produced by Marine Scotland Science from their PETS and bycatch sampling data. Where the figures are small, they are pasted in here. Where the figures are very large (e.g. comprising several plots), they are provided as a separate file, labelled with their figure number and caption.

4.1 Starry ray – TR1

The overall mapping of starry ray bycatch per trip for TR1 gear (2014-18 all years combined) is shown in Figure 11. The species appears to be distributed largely in the northern North Sea, between Shetland and Norway, with the exception of a few apparent hotspots elsewhere. Inspection of the maps by year (Figure 12 – see separate file), however, suggest that these 'hotspots' are probably not real – for example the apparent high density in rectangle 50E6 is driven by one sampled trip in 2014 with high catch; other years show low catch or zero sampling in this rectangle. Even the apparent core area for high bycatch rates (E. of Shetland) is driven largely by sampling from 2015 (and to a lesser extent 2016), although there is consistently some starry ray bycatch observed in this area.

A comparison with a plot of total TR1 fishing effort (trips) over the same time period (Figure 13) suggests that there is limited overlap between the areas of highest TR1 effort and the area of highest starry ray bycatch rates. It is possible, therefore, that the current distribution of starry ray is influenced by past TR1 fishing effort (particularly since effort was higher in the past) – although as noted by WGEF, the dynamics of this species in the North Sea are not open to easy interpretation. Nowadays, however, it appears as if the apparent main core area of population in the northern North Sea is not subject to such high levels of fishing effort as elsewhere in the North Sea.

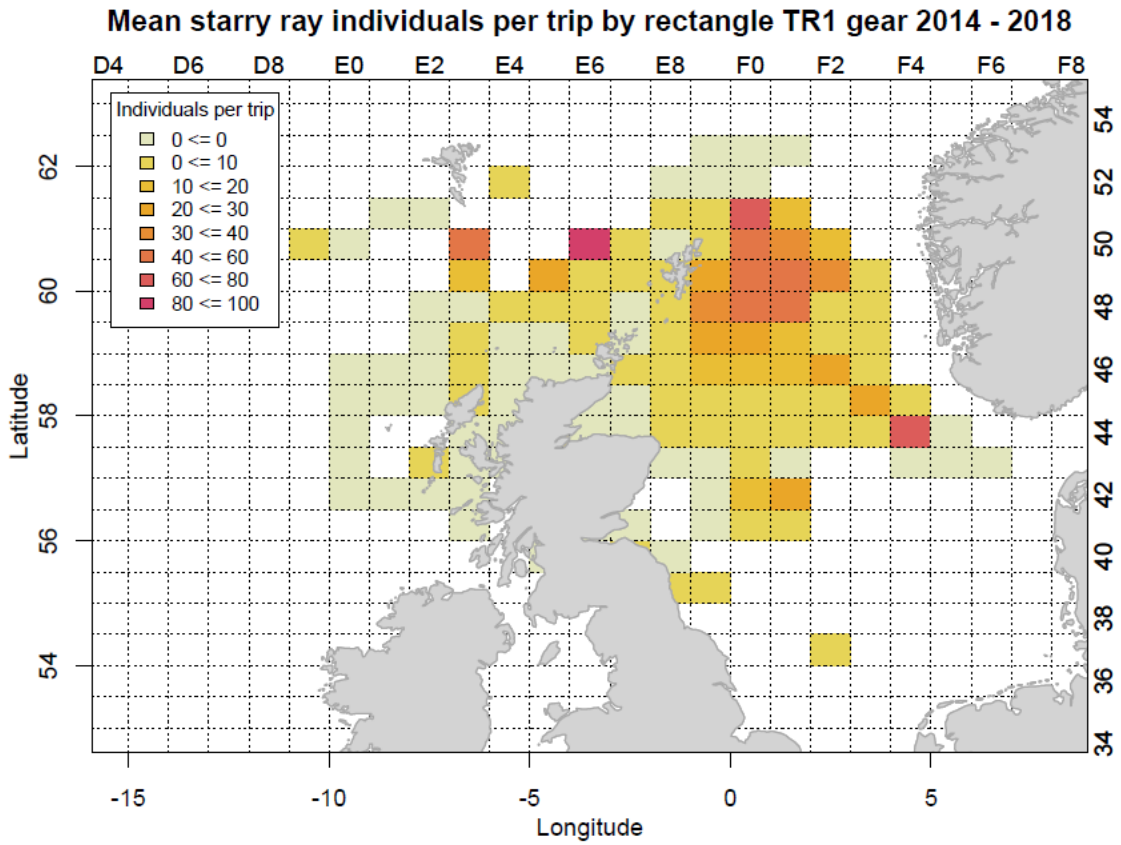

Figure 11. Bycatch of starry ray in TR1 gear, 2014-18, by ICES rectangle. Figure provided by Marine Scotland Science.

Figure 12. Starry ray individuals observed in TR1 gear, 2014-2018 (each year individually) – see appendix

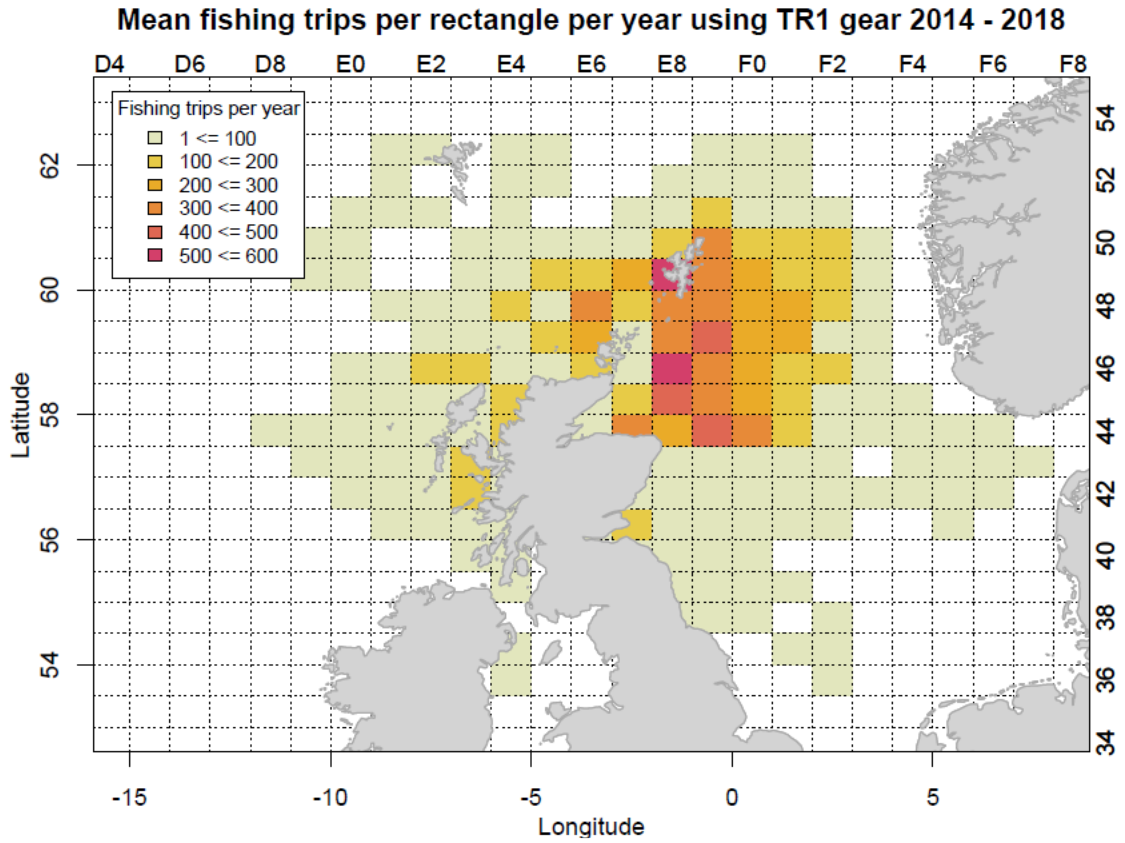

Figure 13. Fishing effort (fishing trips) by TR1 gear, 2014-18. Figure provided by Marine Scotland Science.

4.2 Starry ray – TR2

A similar exercise for TR2 gears is less informative, because both fishing and sampling effort is more patchy for these gears. The map of bycatch per trip for all years combined (Figure 14) is a composite of the individual years (Figure 15 – see separate file) since sampling has by chance concentrated in different areas in different years. As far as it is possible to draw conclusions, it appears that while TR2 effort (Figure 16) is concentrated around the coast, bycatch rates are higher offshore.

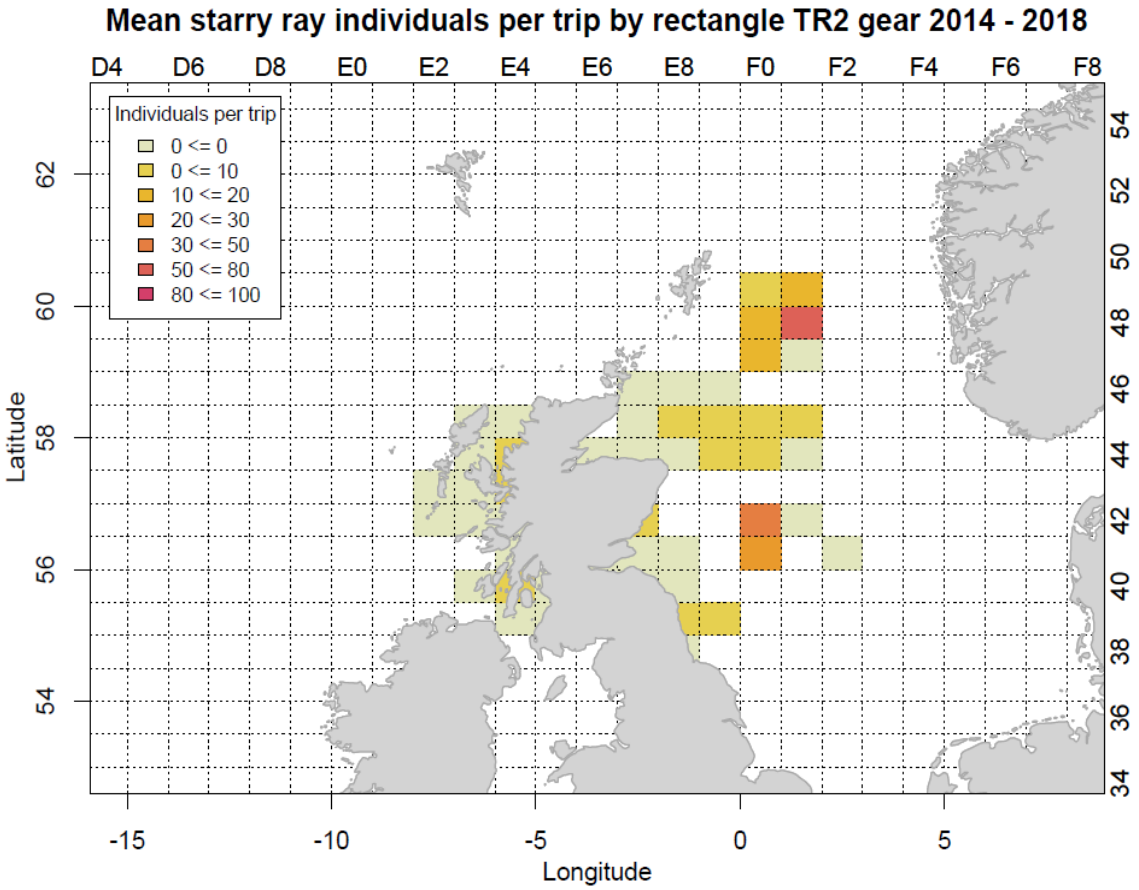

Figure 14. Bycatch of starry ray in TR2 gear, 2014-18, by ICES rectangle. Figure provided by Marine Scotland Science.

Figure 15. Starry ray individuals observed in TR2 gear, 2014-2018 (each year individually) – see appendix

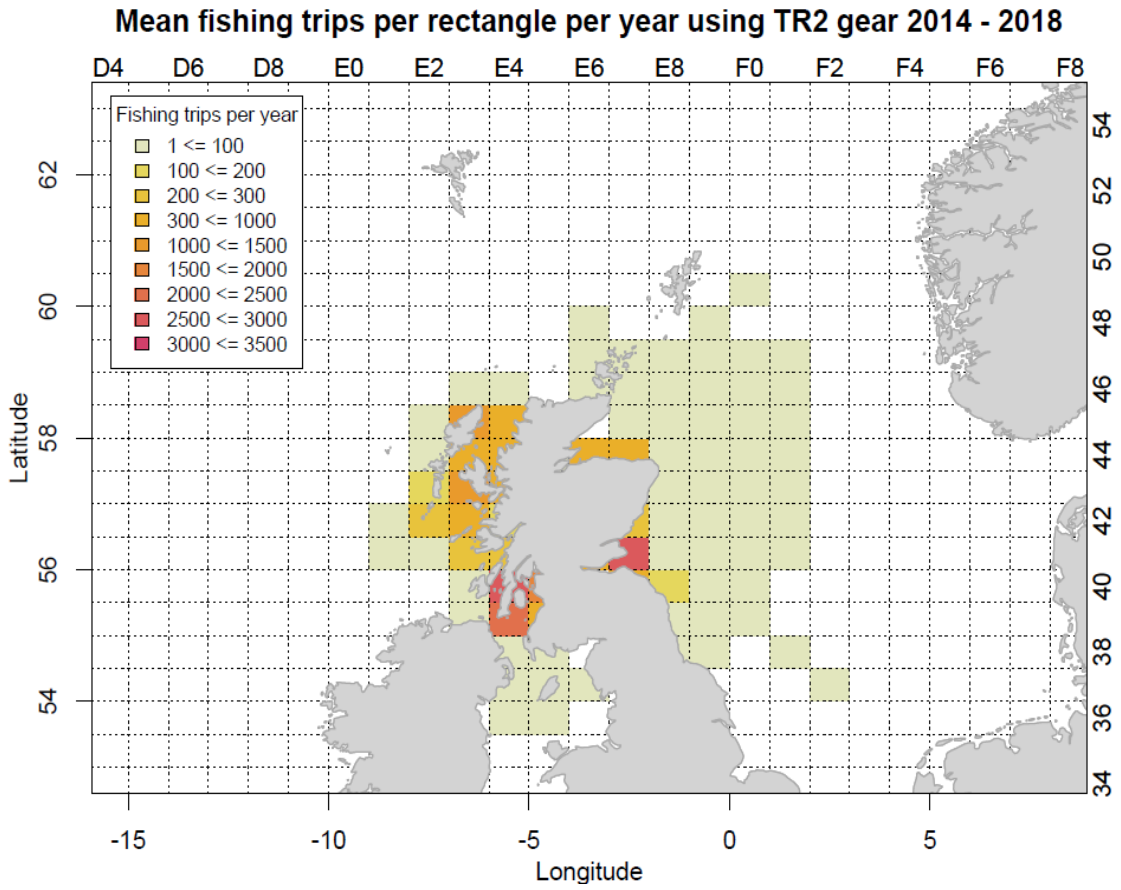

Figure 16. Fishing effort (fishing trips) by TR2 gear, 2014-18. Figure provided by Marine Scotland Science.

4.3 Common skate – TR1

The overall mapping for common skate bycatch rates for TR1 gear (2014-18, all years combined) is shown in Figure 17. Again, it is important to be cautious in the interpretation of apparent 'hotspots' of bycatch. The mapping for individual years (Figure 18 – see separate file) shows that the 'hotspot' to the west of St. Kilda (column E0) is a function of a trip with high bycatch in 2014, while the 'hotspot' on the south coast of Mull (41E1) comes from one sample only, in 2015. These are therefore most likely a function of sampling rather than genuine hotspots. There does seem to be an area of consistent bycatch off the north coast (west of Orkney). A comparison of the spatial pattern of bycatch with overall TR1 fishing effort (Figure 13 above) suggests that the main centre of fishing effort is displaced from the area of highest common skate bycatch. There is, surprisingly, not particularly good evidence that common skate has been extirpated from coastal areas in favour of deeper areas which are less heavily fished – which has been the common narrative. Although some years (2014) potentially show this pattern, other years do not, and the species is still clearly present in coastal areas on the west coast (Figure 17, Figure 18 – see separate file).

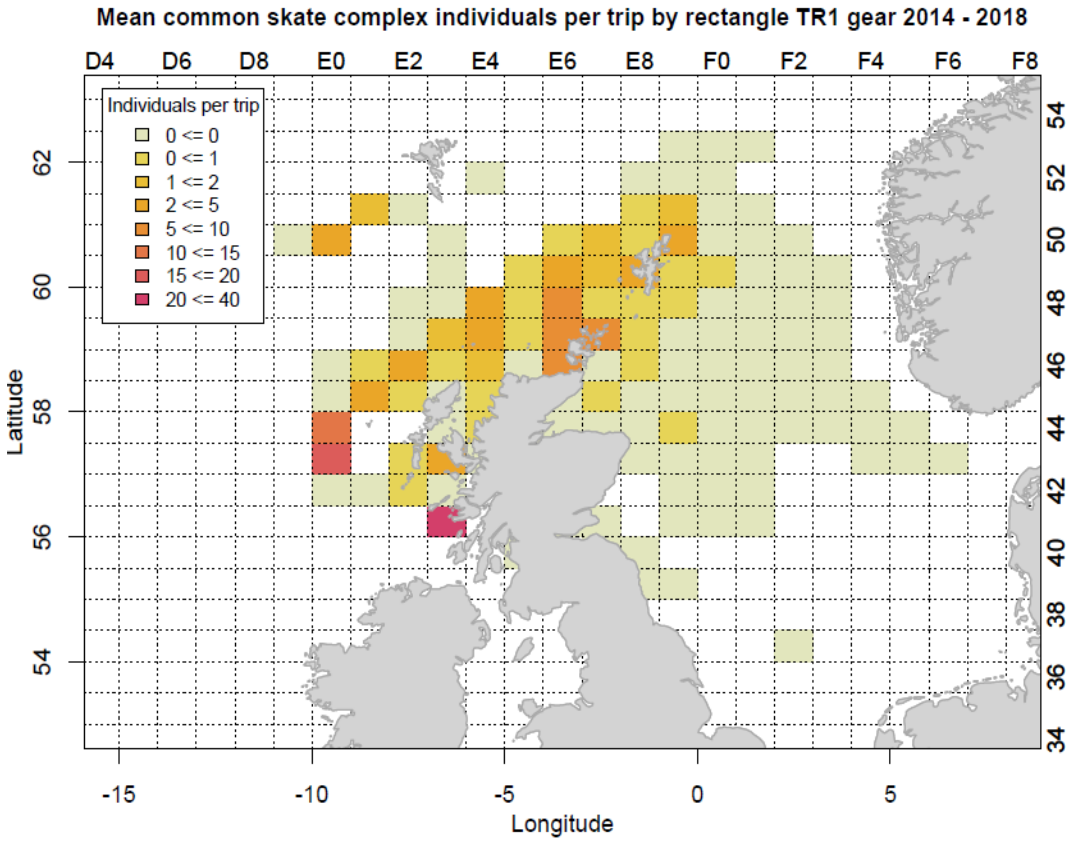

Figure 17. Bycatch of common skate in TR1 gear, 2014-18, by ICES rectangle. Figure provided by Marine Scotland Science.

Figure 18. Common skate individuals observed in TR1 gear, 2014-2018 (each year individually) – see appendix.

Common skate – TR2

The overall mapping for common skate bycatch rates for TR2 gear (2014-18, all years combined) is shown in Figure 19. The only functional units concerned by common skate bycatch are on the west coast (this is confirmed by the inspection of each year individually; see Figure 20 in separate file). It is again not possible to identify any particular hotspots – the species appears to be present throughout the west coast in coastal waters. It may be more present further north than in the area of highest TR2 effort (around Kintyre; Figure 16).

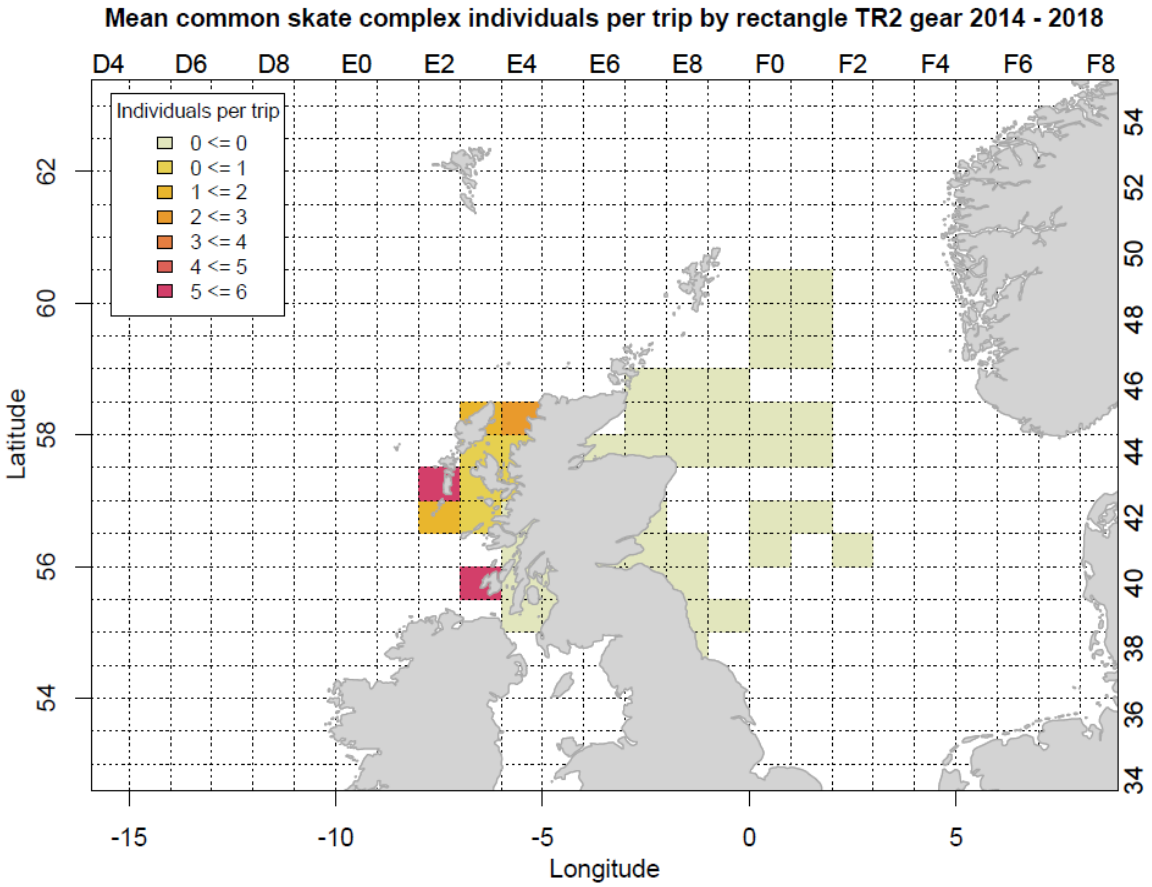

Figure 19. Bycatch of common skate in TR2 gear, 2014-18, by ICES rectangle. Figure provided by Marine Scotland Science.

Figure 20. Common skate individuals observed in TR2 gear, 2014-2018 (each year individually) – see appendix

5. Analysis by trip parameters

Marine Scotland has also evaluated the bycatch data by month and by vessel size, for the two species and gear types separately.

5.1 Monthly bycatch patterns

For starry ray bycatch in TR1 gear (Figure 21), there is some evidence of a seasonal pattern, with a dip in winter and a peak in spring and (possibly) late autumn (note however that the apparent dip in bycatch in January is associated with low sample size). The individual annual patterns are roughly consistent (Figure 22 – see separate file). For common skate bycatch in TR1 gear (Figure 23) there is no evidence of any seasonal pattern (the monthly data by individual year are not included as they are not any more informative). For bycatch of both species for TR2 gear, there is not a large enough sample size to break down the data by month meaningfully.

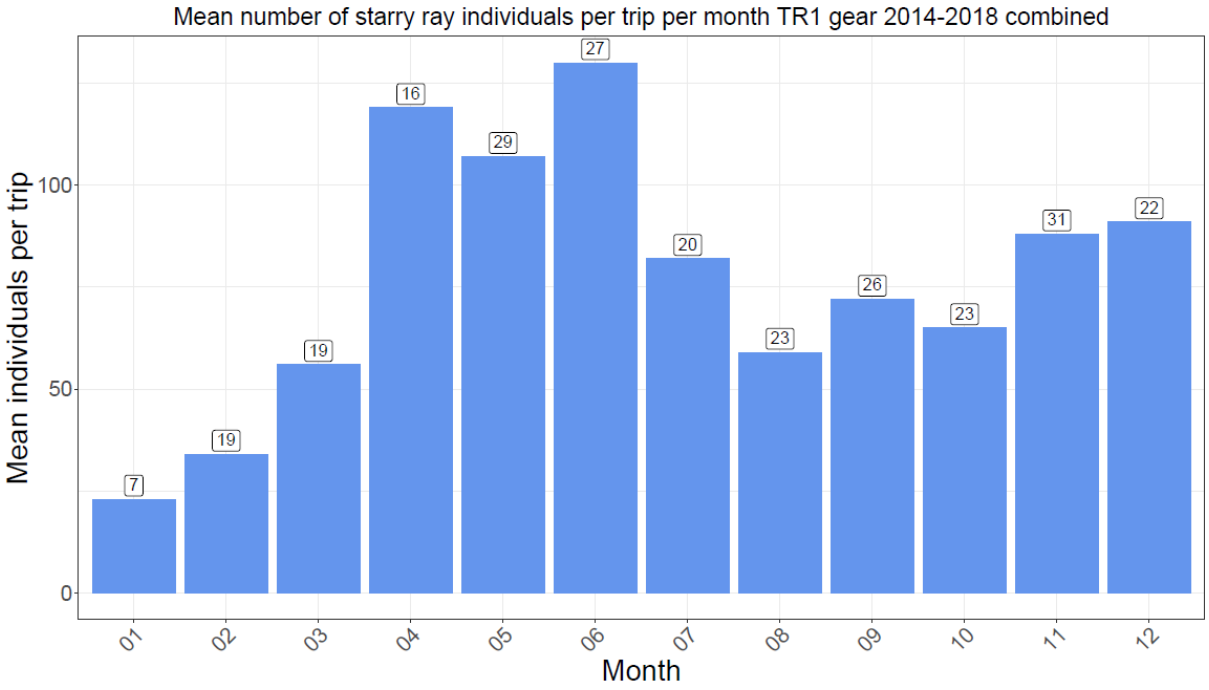

Figure 21. Bycatch per trip for starry ray in TR1 gear, 2014-18 (all years combined). Figure prepared by Marine Scotland Science.

Figure 22. Bycatch per trip for starry ray in TR1 gear, 2014-18 (years individually) – see appendix

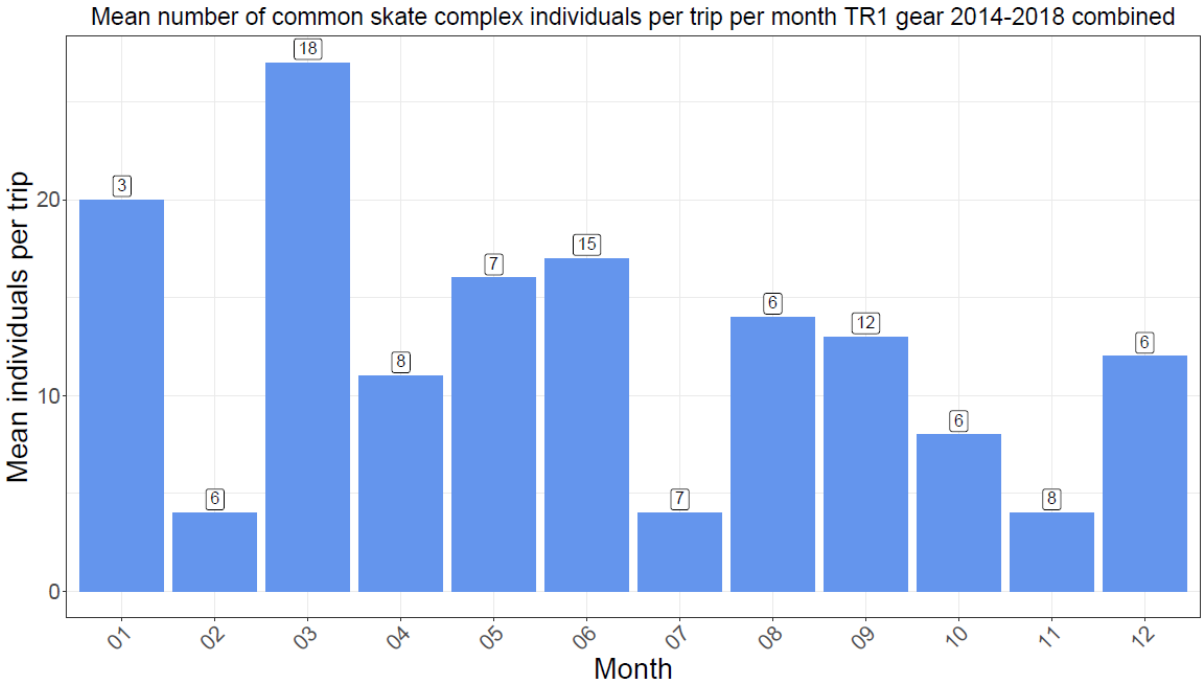

Figure 23. Bycatch per trip for starry ray in TR1 gear, 2014-18 (all years combined). Figure prepared by Marine Scotland Science.

5.2 Bycatch by vessel size

The vessels were broken down by MSS into 5 size categories. However, there is no data in the middle category (20-30m) and the sample size in the small and large categories (<12m, >40m) is small. Overall, therefore, this analysis is not informative.

6. Conclusions of the data analysis

With five full years of bycatch data from the PETS and bycatch sampling programme (2014-18), 2019 was the first year in which MSS felt that sample sizes might be appropriate to attempt some global analysis of the dataset in relation to skates. The purpose of this analysis was to evaluate whether the data contain information which might help Marine Scotland and/or SFSAG to put in place additional measures to reduce skate bycatch.

In relation to starry ray, the main conclusions of the analyses by ICES and MSS, summarised above, are as follows:

- Survey catch rates remain in decline in the North Sea, having increased throughout the 1980s. The reasons for the increase and subsequent decline are unclear.
- The spatial analysis of starry ray bycatch data do not reveal any clear bycatch hotpots which could form the basis of a protected area. Biomass seems to be highest over a relatively large area in the northern North Sea (east of Shetland) which is not the centre of effort for SFSAG towed gear, although according to ICES the species remains present throughout the North Sea.
- The analysis of starry ray bycatch by season likewise does not reveal any clear pattern that could form the basis of a temporal management measure, although there are some general trends.
- Overall, because catch rates are low and patchy, there are not sufficient data as yet for further analysis of this bycatch data based on other parameters. The data set will continue to improve year by year, but this situation will probably not change over the timeframe of an MSC assessment cycle (5 years). ICES base their analysis on a long survey time series, and therefore the best approach to ongoing management of starry ray would seem to be to take account of ICES' evaluations and follow their recommendations.

In relation to common skate, the main conclusions of the analyses by ICES and MSS, summarised above, are as follows:

- For the North Sea, although a quantitative analysis of trends is not possible, survey catch rates have increased substantially since the 1990s. For W. Scotland, ICES was not able to present an analysis, although trends in the Celtic Seas region more widely are likewise encouraging.
- The spatial analysis of common skate bycatch data suggests that common skate bycatch in the SFSAG fishery takes place almost entirely around the north and west coasts. Observed bycatch in the North Sea is minimal.
- The species appears to be distributed more widely than thought, including in inshore areas. As for starry ray, no spatial or seasonal patterns could be discerned which would support additional robust management measures.
- In terms of future action, it is critical to try and establish what are the trends in the population on the west coast, and it is clear that the bycatch data from this fishery is not a long enough time series to be able to answer this question in the near future. ICES WGEF (2018) regrets that Scottish participants were not available to support an analysis of data from the Scottish West Coast Groundfish Survey, and it is recommended that for their next steps, SFSAG liaise with MSS to establish whether these data might help in establishing whether trends in Subarea 6a mirror those elsewhere.

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Control Union Pesca (formerly MacAlister Elliott Certification) 2018a. Marine Stewardship Council (MSC) Expedited Assessment Public Certification Report. SFSAG North Sea haddock. Hugh Jones, Robin Cook, Jo Gascoigne and Geir Hønneland. July 2018. https://fisheries.msc.org/en/fisheries/sfsag-northern-demersal-stocks/@@assessments

Control Union Pesca (formerly MacAlister Elliott Certification) 2018b. Marine Stewardship Council (MSC) Second Annual Surveillance Report. SFSAG North Sea haddock. Hugh Jones and Geir Hønneland. June 2018. https://fisheries.msc.org/en/fisheries/sfsag-northern-demersal-stocks/@@assessments

Daan N., Gislason H., Pope J.G. and Rice J.C. 2005. Changes in the North Sea fish community: evidence of indirect effects of fishing? ICES Journal of Marine Science 62, 177-188.

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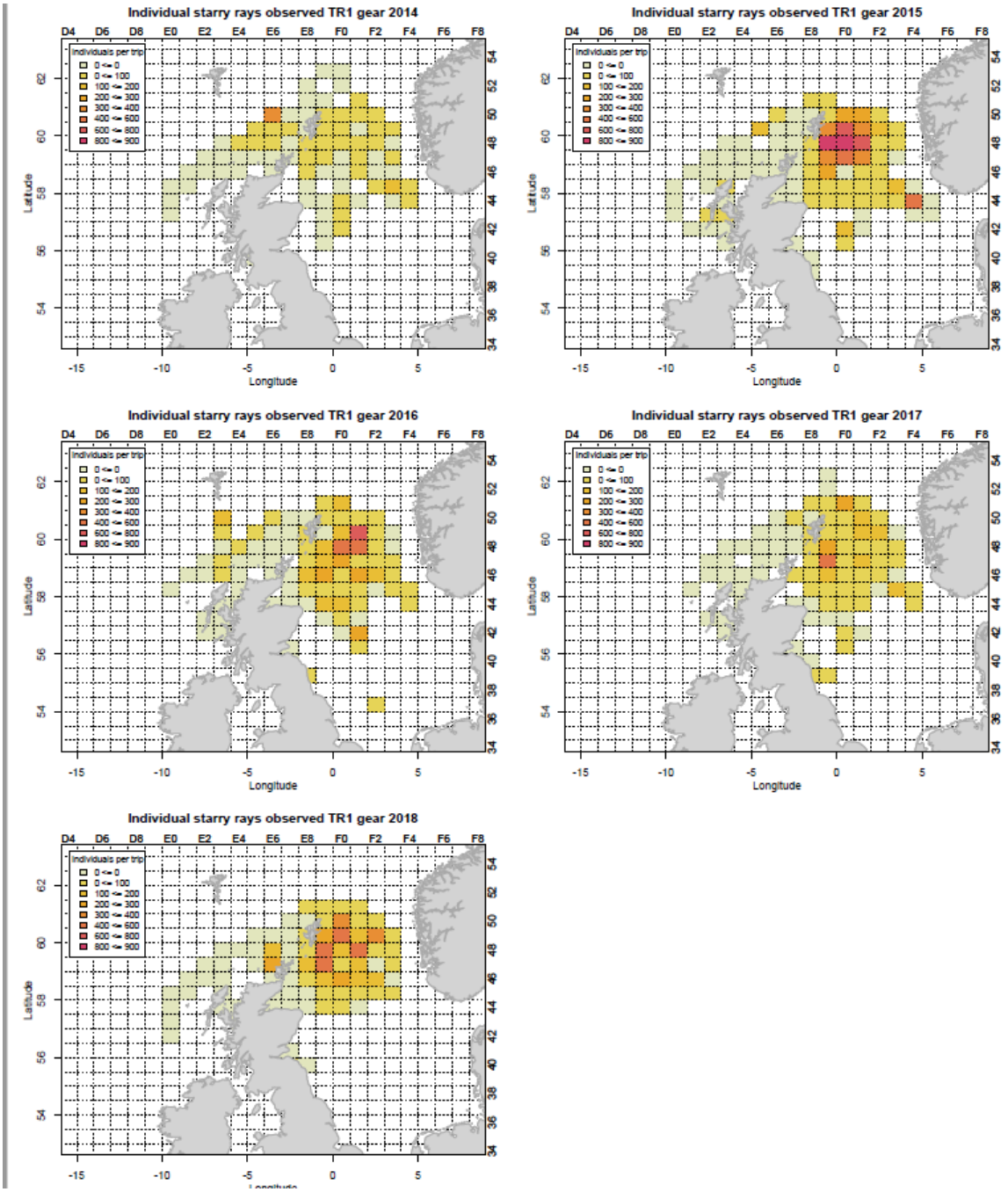
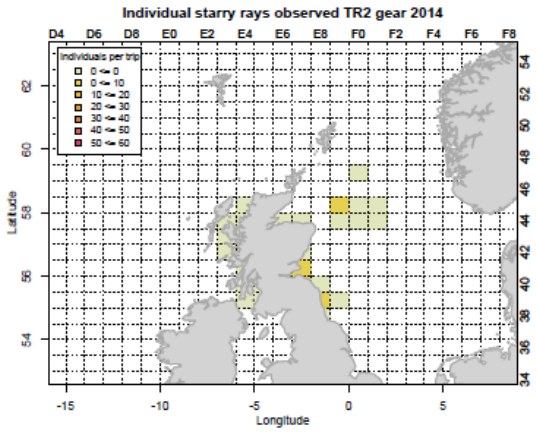
ICES 2019a. Starry ray (*Amblyraja radiata*) in subareas 2 and 4, and Division 3.a (Norwegian Sea, North Sea, Skagerrak and Kattegat). *In* Report of the ICES Advisory Committee, 2019. ICES Advice 2019, rjr.27.23a4, https://doi.org/10.17895/ices.advice.4841.

ICES 2019b. Common skate complex (Blue skate (*Dipturus batis*) and flapper skate (*Dipturus intermedius*) in Subarea 4 and Division 3.a (North Sea, Skagerrak and Kattegat). *In* Report of the ICES Advisory Committee, 2019. ICES Advice 2019, rjb.27.3a4, https://doi.org/10.17895/ices.advice.4835.

Appendix – figures 4, 7, 10 12, 14.

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50 <= 60
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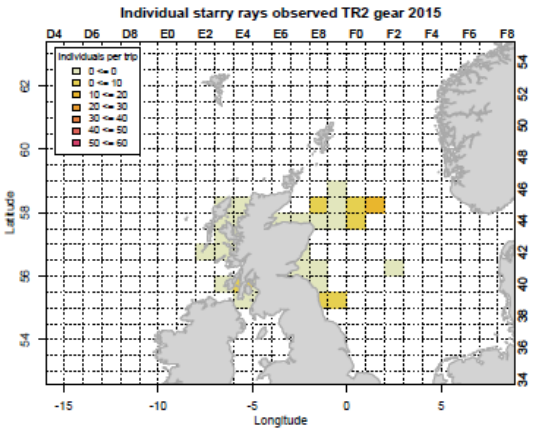
Longitude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Latitude
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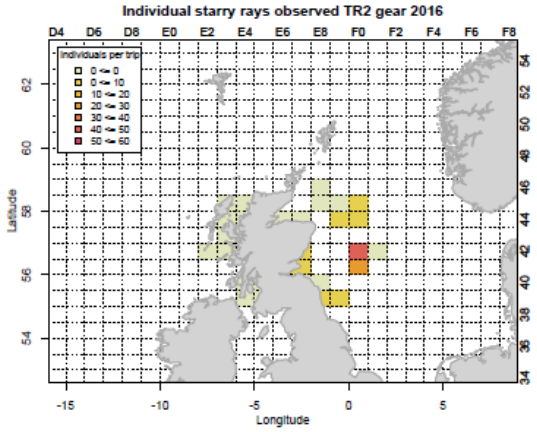
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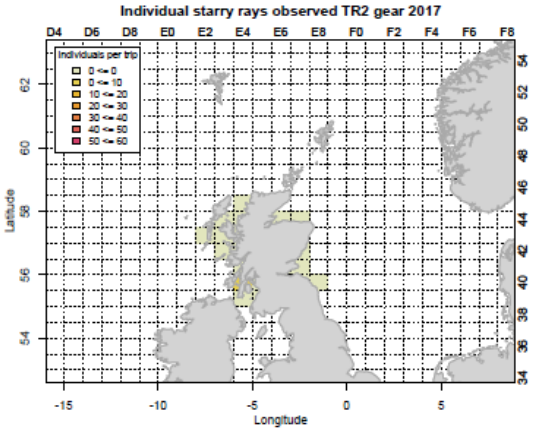
Latitude
Longitude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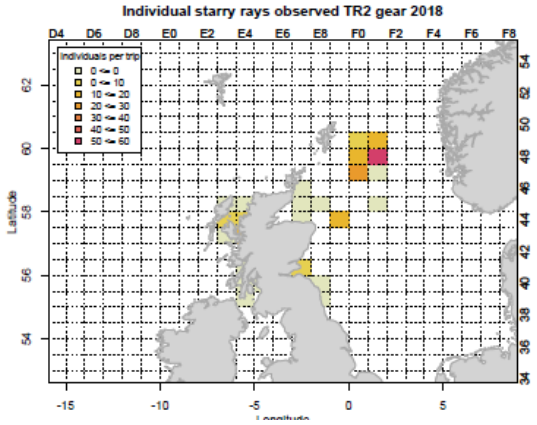
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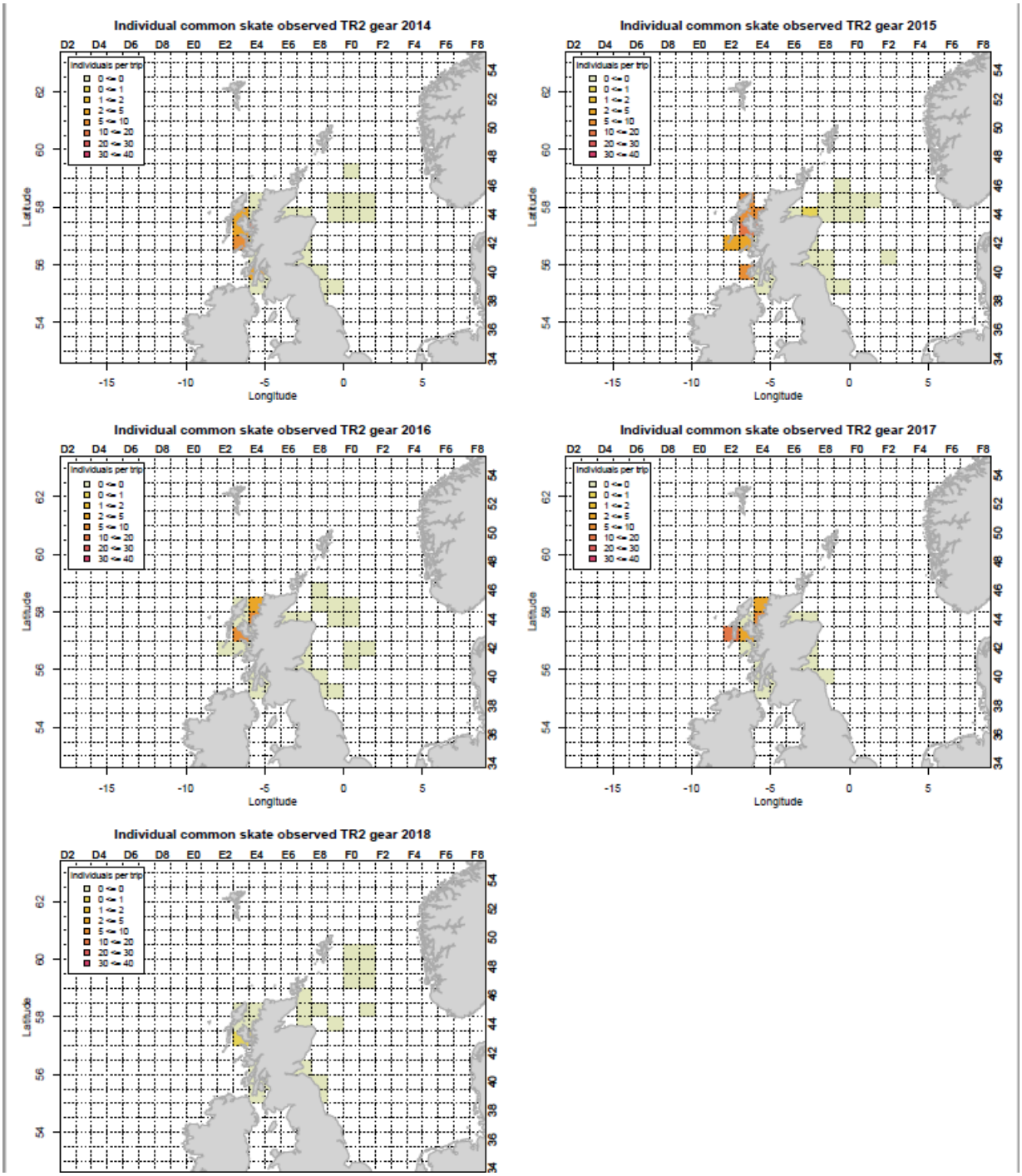
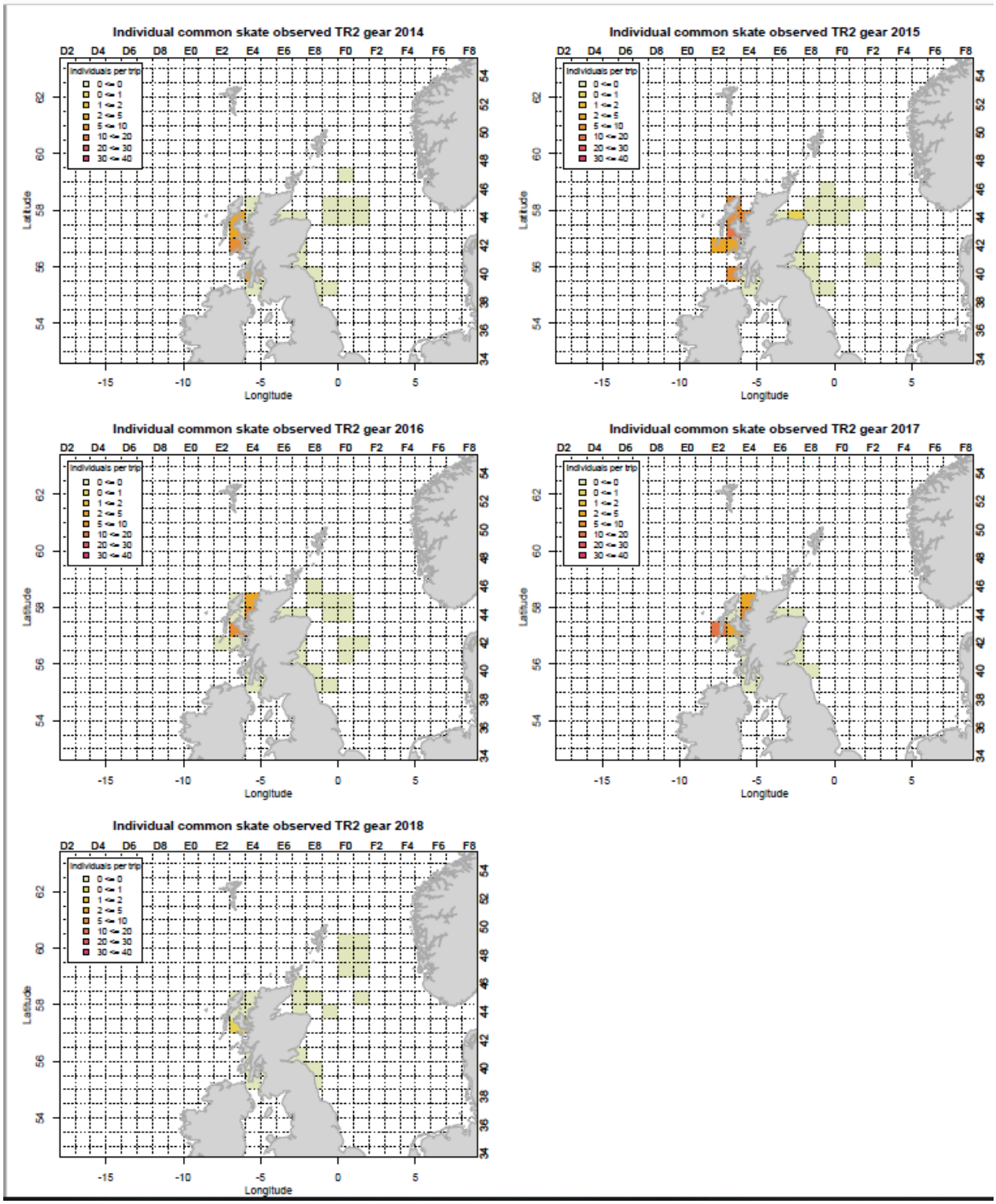
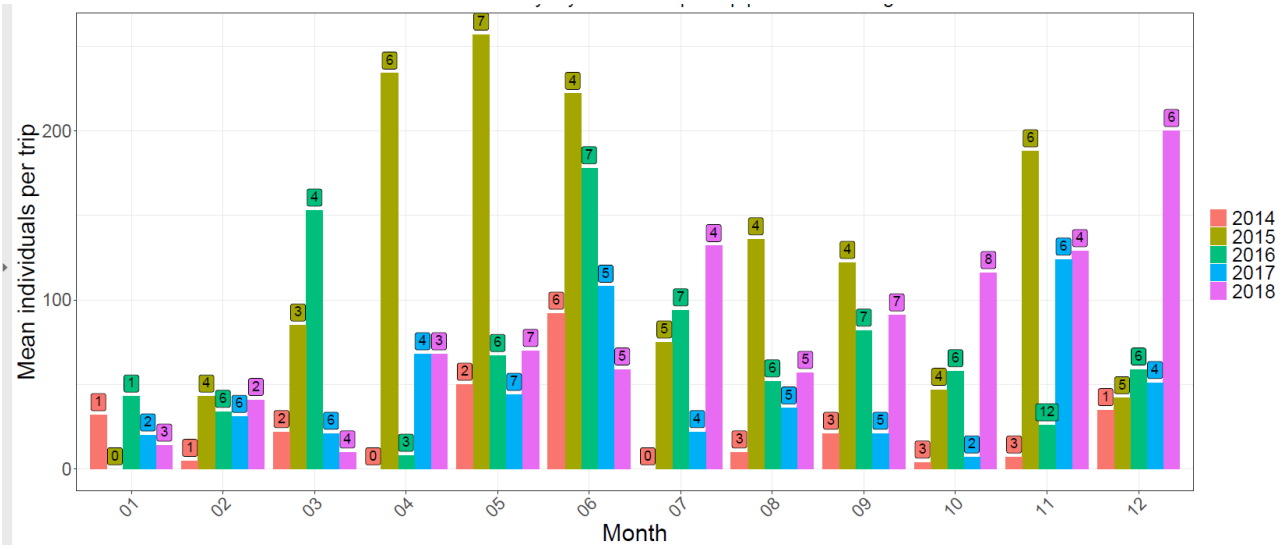
Latitude
Longitude


Individual common skate observed TR2 gear 2014
Individual common skate observed TR2 gear 2015
Individual common skate observed TR2 gear 2016
Individual common skate observed TR2 gear 2017
Individual common skate observed TR2 gear 2018
Individuals per trip
0 <= 0
0 <= 1
1 <= 2
2 <= 5
5 <= 10
10 <= 20
20 <= 30
30 <= 40
Latitude
Longitude


Individual common skate observed TR2 gear 2014
Individual common skate observed TR2 gear 2015
Individual common skate observed TR2 gear 2016
Individual common skate observed TR2 gear 2017
Individual common skate observed TR2 gear 2018
Individuals per trip
0 <= 0
0 <= 1
1 <= 2
2 <= 5
5 <= 10
10 <= 20
20 <= 30
30 <= 40
Latitude
Longitude
D2 D4 D6 D8 E0 E2 E4 E6 E8 F0 F2 F4 F6 F8
-15 -10 -5 0 5


Mean individuals per trip
0
100
200
Month
01
02
03
04
05
06
07
08
09
10
11
12
2014
2015
2016
2017
2018

Appendix 5 Marine Scotland PMF). A public scoping consultation took place in summer 2018 on 11 PMFs selected (below) by the government from an original list of ~80.

- Blue mussel beds
- Cold water coral reefs
- Fan mussel aggregations
- Flame shell beds
- Horse mussel beds
- Maerl beds
- Maerl or coarse shell gravel with burrowing sea cucumbers
- Native oysters
- Northern sea fan and sponge communities
- Seagrass beds
- Serpulid aggregations

The primary focus of this consultation was on the management of fisheries in relation to these habitats/ species, however the document did result in the addition of new records to the management zones under the listed PMFs (see Annex 1 (MS 2019b)). Following the public scoping consultation, on 24 Jul 2019, the government released three approaches selected for the Sustainability Appraisal[3]:

- Prohibition of bottom contacting mobile fishing gears within specific zones around records of the 11 PMFs (This is the current preferred policy approach).
- Prohibition of bottom contacting mobile fishing gears within 0.5 nautical miles of land.
- Prohibition of bottom contacting mobile fishing gears within 0.5 nautical miles of land plus any specific zones from approach 1 that are outside the limit.

Consultation with the government by the team as part of the audit process revealed that the sustainability appraisal had been drafted and was being readied for a second public consultation to help determine management measures (pers. Comm. Helen Downie). The timeframe for consulting on management measures for PMFs has not been adhered to and the government have decided to combine this work with Phase 2 of proposed inshore fishery management measures for MPAs. They expect to consult on both sets of measures simultaneously in the near future (2020). There remain no legislated management measures for 16 of the inshore MPAs & SACs, or for the 14 offshore MPAs.

Review of the Technical Conservation Regulation 850/98 resulted in the closed area known as the windsock being removed. Whilst there is no legislated management measures in the area a voluntary agreement has been actioned between the mobile gear sector and their counterparts in the static gear sector (not part of the UoAs). The agreement contains four distinctly different levels;

i. Areas of exclusive use for both mobile and static gears,

[3] https://consult.gov.scot/marine-scotland/priority-marine-features/

ii. an area of shared access subject to communication at the vessel level,

iii. increased VMS pings from vessels operating within close proximity to the MPA (Possibly 10 miles),

iv. and ring-fenced monitoring by MSC (Marine Scotland Compliance) of the area currently designated as creel only.

Full details of the agreement can be found in Appendix 6 Windsock Voluntary Agreement.

The client reported that the voluntary agreement for Windsock was presented to North Western Waters Advisory Council (NWWAC) (September 2019) and participants (from other Member States) were invited to support this initiative, but have not yet been signed off by the NWWAC.

3.5.5 Principle 2 overall conclusion

Rescoring of bycatch species outcome and management (PI 2.1.1 and PI 2.1.2) was determined to be required as a result of the change in stock status of North Sea cod and whiting. There were existing conditions on these PIs and therefore an overall change in score is not evident except for UoA 3 Plaice.

For ETP there is revised rationale based on the species identified in section 3.5.3 but no change in score. Updates on the condition milestones are provided in section 4.2 based on the evidence submitted by the client reviewed in section 3.5.3.

For habitats there is no new management measures in place for MPAs or PMFs as yet and these will be addressed as and when they come into force.

3.6 Principle 3

One major change since the previous surveillance audit has been the adoption of Regulation (EU) 2019/1241 of the European Parliament and of the Council of 20 June 2019 on the conservation of fisheries resources and the protection of marine ecosystems through technical measures. This new regulation has been long overdue since the revision of the Common Fisheries Policy (CFP) in 2013 and lays down the technical measures concerning the taking and landing of fisheries resources, as well as the operation of fishing gears and the interaction of fishing activities with marine ecosystems (www.europeansources.info). It aims at enabling achievement of the key objectives of the CFP, including the landing obligation, by facilitating regionalised approaches and by simplifying rules; overall however, there are few changes to fishing practices, particularly for the UoA fleet, which had already been implementing some of the new simplified measures (such as a baseline mesh size of at least 120 mm).

As foreseen during the previous annual surveillance audit (Jones & Honneland 2018), as it was coming into full force in 2019, the Landing Obligation (LO) has posed new challenges for the management of the fishery. In order to harmonise the scores with the recently MSC-certified Joint EU demersal fisheries in the North Sea (Sieben et al. 2019), it has been necessary to rescore PI 3.2.3. A condition is introduced, that concerns both SI 3.2.3a and SI 3.2.3d.

Regarding SI 3.2.3a, although a monitoring, control and surveillance (MCS) system is in place, which is expected to be effective in its ability to enforce relevant management measures, strategies and/or rules, it appears that it has been severely challenged by the LO, which has resulted in continued discards at sea despite the provision of additional landing quota.

This would amount to some systematic non-compliance (SI 3.2.3d) with the LO. The risk and extent of non-compliance in the fishery was discussed at length with representatives of Marine Scotland Compliance during the site visit. Marine Scotland Compliance is presently undertaking a comprehensive analysis of their evidence base regarding demersal fisheries. Until this analysis is available and taking into account the European management system's inability to effectively monitor this measure, the team considered that the evidence base available is currently too weak to assume a different level of compliance in this fishery.

Finally, in preparation for Brexit, Marine Scotland issued a Fisheries Management Policy discussion paper (MS 2019a), that paves the way to a transition from the CFP.

3.6.1 Principle 3 overall conclusion

While there has been a reduction in the scores of SI 3.2.3a and SI 3.2.3d (noted above), Principle 3 remains in conformity with the MSC Principles and Criteria at present.

3.7 Traceability

No changes to the systems in place from Jones et al. (2018).

4 Results

4.1 Surveillance results overview

4.1.1 Total Allowable Catch (TAC) and Catch Data

The TAC and catch data in tonnes for each UoA are shown in Table 11 to Table 15.

Table 11. TAC and Catch Data UoA 1 - HAD

TAC	Year	2019	Amount	32,176
UoC share of total TAC	Year	2019	Amount	21,527
Total green weight catch by UoC	Year (most recent)	2019	Amount	24,639
	Year (second most recent)	2018	Amount	28,419

Table 12. TAC and Catch Data UoA 2 - POK

TAC	Year	2019	Amount	132,557
UoC share of total TAC	Year	2019	Amount	11,760
Total green weight catch by UoC	Year (most recent)	2019	Amount	14,618
	Year (second most recent)	2018	Amount	15,062

Table 13. TAC and Catch Data UoA 3 - PLE

TAC	Year	2019	Amount	125,435
UoC share of total TAC	Year	2019	Amount	26,336
Total green weight catch by UoC	Year (most recent)	2019	Amount	7,285
	Year (second most recent)	2018	Amount	9,646

Table 14. TAC and Catch Data UoA 4 - HKE

TAC	Year	2019	Amount	84,756

UoC share of total TAC	Year	2019	Amount	15,233
Total green weight catch by UoC	Year (most recent)	2019	Amount	5,016
	Year (second most recent)	2018	Amount	5,240

Table 15. TAC and Catch Data UoA 5 - WHG

TAC	Year	2019	Amount	17,191
UoA share of TAC	Year	2019	Amount	10,554
Total green weight catch by UoC	Year (most recent)	2019	Amount	11,884
	Year (second most recent)	2018	Amount	10,597

4.1.2 Summary of conditions

Table 16. Summary of conditions

Condition number	Condition	PI	Status	PI original score	PI revised score
1	It needs to be clear that direct effects of the fishery are highly unlikely to create unacceptable impacts on starry ray and common skate	2.3.1	On Target	75	75
2	There should be an objective basis for confidence that the strategy for common skate and starry ray will work, based on information directly about the fishery and/or the species involved.	2.3.2	On target	75	75
3	There needs to be sufficient information available such that the impact of this fishery on common skate can be quantitatively estimated, and hence it can be determined whether the fishery may be a threat to the recovery of the common skate complex. This requires, as a minimum, a fleet-wide estimate of bycatch of common skate, as well as some basis by which population-level trends can be evaluated (noting that ICES considers that existing data are insufficient for this purpose).	2.3.3	On Target	75	75
4	WHG - Evaluate and adopt a new harvest strategy that is responsive to the state of the stock and provide evidence that it is achieving its management objectives.	1.2.1	Non-binding - on target	70	<60
5	Develop and adopt well-defined harvest control rules that are consistent with the harvest strategy and ensure that exploitation rates are	1.2.2	Closed	70	80

Condition number	Condition	PI	Status	PI original score	PI revised score
	reduced as limit reference points are approached. The HCR should be contained within a new management plan				
6	HKE- Support work to develop and adopt well-defined harvest control rules that are consistent with the harvest strategy and ensure that exploitation rates are reduced as limit reference points are approached. The HCR should be contained within a long-term management plan.	1.2.2	Closed	75	80
7	WHG - The fishery must provide evidence indicating that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rule.	1.2.2	Non-binding on target	65	65
8	Within 4 years of the condition setting* the partial strategy for W. Scotland cod must be demonstrably effective at achieving recovery and rebuilding of the stock to appropriate and realistic rebuilding target levels defined by the relevant stock model.	2.1.1	On Target	75	75
9	Within 4 years of the condition* there needs to be an objective basis for confidence that the strategy for rebuilding the W. Scotland cod stock will work, based on information about the stock and/or fishery.	2.1.2	On target	75	75
10	The fishery within 4 years* should show that it is highly unlikely to reduce structure and function of burrowed mud with seapen habitat on the west coast (as defined by records of the tall seapen *Funiculina quadrangularis*) to a point where there would be serious or irreversible harm. Serious or irreversible harm is defined as a reduction in habitat distribution of 20 % or more relative to baseline (currently-defined) levels.	2.4.1	On target	75	75
11	Within 4 years the fishery should show that there is an objective basis for confidence that the partial strategy in place for seapens (*Funiculina quadrangularis*) on the W. coast is likely to work, in terms of achieving outcome score 80 or above for 2.4.1.	2.4.2	On Target	75	75
12	Within 4 years* provide evidence there is a partial strategy of demonstrably effective management measures in place such that the fishery does not hinder recovery and rebuilding of cod (*Gadus morhua*) in the North Sea (Subarea 4, Division 7.d, and Subdivision 20).	2.1.1	NEW	75	75
13	Within 4 years* provide evidence there is a objective basis for confidence that the partial strategy will work for NS cod. Further provide some evidence that the partial strategy is being	2.1.2	NEW	75	75

Condition number	Condition	PI	Status	PI original score	PI revised score
	implemented successfully for NS cod and NS whiting.				
14	Within 4 years* provide evidence that the MCS-system has demonstrated an ability to enforce relevant the Landing Obligation (LO). It should also be demonstrated that systematic non-compliance does not occur.	3.2.3	NEW	95	65

4.1.3 Recommendations

N/A

4.2 Conditions

Table 17. Condition 1

Performance Indicator	PI 2.3.1: The UoA meets national and international requirements for the protection of ETP species. The UoA does not hinder recovery of ETP species
Score	75
Justification	Starry ray: ICES notes that although the species is widespread in the central and northern North Sea, the survey abundance index has been decreasing continuously since the 1990s (ICES 2015h). ICES advise no targeted fishery and measures to reduce bycatch. In terms of the regulatory requirements, the species is always discarded (according to ICES, recorded landings in total for the whole area of IIa, IIIa and IV are ~300 kg), but according to the PETS data, individuals are usually dead or injured on arrival on board, so it is not clear that the requirement to discard promptly has much effect for this species. Both data sets suggest that interactions are patchy in space and time. The team concluded that since regulatory requirements are being met following ICES advice, direct impacts could be evaluated (qualitatively) as 'unlikely' to hinder recovery (SG60 met). It is possible, however, that the fishery could do more, perhaps by evaluating the areas or conditions under which large quantities of the species are caught together, and/or the circumstances in which the individuals are brought on board in good or bad condition – i.e. it was possible to do more to avoid fishing or killing these individuals. On this basis, the team considered that SG80 was not fully met. Common skate: ICES evaluates the whole species complex together (Dipturus batis, D. flossada and D. intermedia). For Subarea 4, ICES considers that the species (complex) is depleted, although stock abundance and trends are unknown (survey catch rates are too low to allow an abundance index); advice is the same as for starry ray (ICES 2015b). For Subareas 6 and 7, according to ICES, there are no robust stock size indicators, but the 'stock' is above possible F reference points and below possible B reference points (ICES 2016c). Nevertheless, analyses of Scottish survey data indicate a possible increase in the proportion of survey hauls catching some common-skate-complex species, although confidence intervals are wide. ICES note that further measures to reduce bycatch would be possible, such as spatial closures, but propose that this should be done as part of a rebuilding plan that takes into account the mixed fisheries context. The trend appears to be in the right direction, at least in Subarea 6 which has the majority of interactions (see Table 24). On this basis, the team concluded that it is not likely that the fishery is having major impacts on common skate complex; SG60 is met. There is, however, insufficient information for the moment to say that SG80 is met.

Performance Indicator	PI 2.3.1: The UoA meets national and international requirements for the protection of ETP species. The UoA does not hinder recovery of ETP species
Condition	It needs to be clear that direct effects of the fishery are highly unlikely to create unacceptable impacts on starry ray and common skate
Milestones	**UoA 1 (haddock)** and **UoA 3-5** NOTE this assessment is equal to Year 2 of the milestones: Year 1: Ensure that data collection plan (condition 4) is sufficient to provide an objective basis for evaluating whether bycatch in this fishery leads to 'unacceptable' impacts (Score: 75) Year 2: Data collection (Score: 75) Year 3: Review options for management strategy for starry ray and common skate bycatch reduction (noting that it should provide an objective basis for confidence that it will work). (Score: 75) Year 4: Implement management strategy (Score: 75) Years 5: Demonstrate that there is an objective basis for confidence that the strategy for reducing bycatch of starry ray and common skate from the fishery will work to reduce the bycatch to a level which can be considered to be 'highly unlikely' to create unacceptable impacts. (Score: 80) **UoA 2 (saithe)** NOTE this assessment is equal to Year 4 of the milestones set at time of the SFSAG saithe assessment: Initiate discussion with other organisations e.g. Seafish, with a view to identifying the most appropriate project management method. Distribute identification cards and user manuals. Year 2 - Data collection. Year 3 – Data collection and provisional analysis of Year 2 data Year 4 – Data collection and provisional review of fishery impact Year 5 – Final review of impacts, identification and implementation of actions required.
Consultation on condition	See Appendix 2.3 – Marine Scotland letter of support in Jones et al. (2018)
Progress on Condition (Year 3)	The skates and ray report (appendix 4) details the provisional review of fishery impact on both species. For starry ray: There is no evidence that the North Sea stock is recovering, but it is also unclear that direct fishing effort is the main problem. It is clear that the North Sea ecosystem is changing fast and unpredictably in response to a range of drivers, including fluctuating fishing effort and climate change. A spatial analysis of bycatch suggests that the core area of starry ray population in the northern North Sea is away from the centre of SFSAG fishing effort for both TR1 and TR2 vessels – for TR2 vessels in particular the overlap is minimal. Spatial and seasonal analysis do not point to additional management measures that SFSAG could put in place. Because of low and patchy bycatch rates, a long and comprehensive time series is likely required to evaluate whether further management is needed and if so what; this analysis is best carried out via participation of MSS in ICES, with the fishing following ICES recommendations. For common skate: The spatial analysis suggests that bycatch of common skate is not an issue for the North Sea UoCs. For the UoCs covering both NS and WC areas, the centre of effort tends to be more in the North Sea, so for these UoCs also, more effort would be directed in areas

Performance Indicator	PI 2.3.1: The UoA meets national and international requirements for the protection of ETP species. The UoA does not hinder recovery of ETP species
	where common skate does not occur (although this needs to be verified for individual UoCs). For the west coast, there is no direct information about population trends, although a wider analysis of trends around the UK is tentatively encouraging. There may be Scottish survey data not yet integrated into ICES' analysis which could help with this (unclear at present). The spatial analysis also suggests that common skate is relatively widely distributed around the north and west of Scotland, and is not extirpated in inshore areas in this region (unlike elsewhere in the UK). The data do not suggest any new management measures, and the best approach most likely is to continue to follow ICES recommendations.
Status	On Target
Additional information	N/A

Table 18. Condition 2

Performance Indicator	**2.3.2 The fishery has in place precautionary management strategies designed to:** • **Meet national and international requirements;** • **Ensure the fishery does not pose a risk of serious harm to ETP species;** • **Ensure the fishery does not hinder recovery of ETP species; and** • **Minimise mortality of ETP species.**
Score	75
Justification	For the common skate complex and starry ray species, since the measures are aligned with ICES advice, they can be considered 'likely to work' (ICES 2015b; ICES 2015h; ICES 2016c). However, the team did not consider, that there is currently an objective basis for confidence that they will work. This is problematic, in as much as a reduction in bycatch rates could be attributed either to the measures working, or to a reduction in the population. For starry ray, however, the survey index suggests that the overall situation with the population remains of concern, and ICES state that the common skate species are depleted (although they do not provide data). On this basis, SG80 is not met for these species.
Condition	There should be an objective basis for confidence that the strategy for common skate and starry ray will work, based on information directly about the fishery and/or the species involved.
Milestones	UoA 1 (haddock) and UoA 3-5 NOTE this assessment is equal to Year 2 of the milestones: Year 1: Ensure that data collection plan (condition 4) is sufficient to provide an objective basis for evaluating whether bycatch in this fishery leads to 'unacceptable' impacts (Score: 75) Year 2: Data collection (Score: 75) Year 3: Review options for management strategy for starry ray and common skate bycatch reduction (noting that it should provide an objective basis for confidence that it will work). (Score: 75) Year 4: Implement management strategy (Score: 75) Years 5: Demonstrate that there is an objective basis for confidence that the strategy for reducing bycatch of starry ray and common skate from the fishery will work to reduce the bycatch to a level which can be considered to be 'highly unlikely' to create unacceptable impacts. (Score: 80) UoA 2 (saithe) NOTE this assessment is equal to Year 4 of the milestones set at time of the SFSAG saithe assessment: Initiate discussion with other organisations e.g. Seafish, with a view to identifying the most appropriate project management method. Distribute identification cards and user manuals. Year 2 - Data collection. Year 3 – Data collection and provisional analysis of Year 2 data Year 4 – Data collection and provisional review of fishery impact

Performance Indicator	**2.3.2 The fishery has in place precautionary management strategies designed to:** • **Meet national and international requirements;** • **Ensure the fishery does not pose a risk of serious harm to ETP species;** • **Ensure the fishery does not hinder recovery of ETP species; and** • **Minimise mortality of ETP species.**
	Year 5 – Final review of impacts, identification and implementation of actions required.
Consultation on condition	See Appendix 2.3 – Marine Scotland letter of support in Jones et al. (2018)
Progress on Condition (Year 3)	The skates and ray report (appendix 4) details the provisional review of fishery impact on both species. For starry ray: There is no evidence that the North Sea stock is recovering, but it is also unclear that direct fishing effort is the main problem. It is clear that the North Sea ecosystem is changing fast and unpredictably in response to a range of drivers, including fluctuating fishing effort and climate change. A spatial analysis of bycatch suggests that the core area of starry ray population in the northern North Sea is away from the centre of SFSAG fishing effort for both TR1 and TR2 vessels – for TR2 vessels in particular the overlap is minimal. Spatial and seasonal analysis do not point to additional management measures that SFSAG could put in place. Because of low and patchy bycatch rates, a long and comprehensive time series is likely required to evaluate whether further management is needed and if so what; this analysis is best carried out via participation of MSS in ICES, with the fishing following ICES recommendations. For common skate: The spatial analysis suggests that bycatch of common skate is not an issue for the North Sea UoCs. For the UoCs covering both NS and WC areas, the centre of effort tends to be more in the North Sea, so for these UoCs also, more effort would be directed in areas where common skate does not occur (although this needs to be verified for individual UoCs). For the west coast, there is no direct information about population trends, although a wider analysis of trends around the UK is tentatively encouraging. There may be Scottish survey data not yet integrated into ICES' analysis which could help with this (unclear at present). The spatial analysis also suggests that common skate is relatively widely distributed around the north and west of Scotland, and is not extirpated in inshore areas in this region (unlike elsewhere in the UK). The data do not suggest any new management measures, and the best approach most likely is to continue to follow ICES recommendations.
Status	On target
Additional information	N/A

Table 19. Condition 3

Performance Indicator	**2.3.3 Relevant information is collected to support the management of fishery impacts on ETP species, including:** • **Information for the development of the management strategy;** • **Information to assess the effectiveness of the management strategy; and** • **Information to determine the outcome status of ETP species.**
Score	75
Justification	Information about interactions with this fishery comes from observer discard estimates and the PET scheme (see Table 24 and Table 25). Quantitative estimation of impact by gear type (TR1 and TR2 (mean catch per trip) observer data in Table 24 are provided.. Mortality rate information is provided in Table 25 from the PET data, and the PET data for 2016 provides quantitative evidence of impact by gear metier within region by trip quantity. SG60 is met (qualitative estimate of fishery-related mortality from PET and MSS observer data) for all species. For the common skate species and starry ray SG80 is not met because the PET data shows large spatiotemporal variation in catch which would lead to uncertainty in the quantitative estimate when scaled up to the whole fleet. There is not a high degree of confidence which allow SG100 to be met for any species.
Condition	There needs to be sufficient information available such that the impact of this fishery on common skate can be quantitatively estimated, and hence it can be determined whether the fishery may be a threat to the recovery of the common skate complex. This requires, as a minimum, a fleet-wide estimate of bycatch of common skate, as well as some basis by which population-level trends can be evaluated (noting that ICES considers that existing data are insufficient for this purpose).
Milestones	UoA 1 (haddock) and UoA 3-5 NOTE this assessment is equal to Year 2 of the milestones and was harmonised against the condition on SFSAG saithe therefore only has three years of milestones: To be implemented alongside conditions on 2.3.1 and 2.3.2 Year 1 and 2: data collection (Score: 75) Year 3: Analysis of bycatch data demonstrates that the fishery does not pose a threat to the recovery of the common skate complex (Score: 80) UoA 2 (saithe) NOTE this assessment is equal to Year 4 of the milestones set at time of the SFSAG saithe assessment: To be implemented alongside conditions on 2.3.1 and 2.3.2 Year 1 – Assessment of data gaps, data collection strategy Year 2 – Start of data collection Years 3 and on – Ongoing data collection, data analysis
Consultation on condition	See Appendix 2.3 – Marine Scotland letter of support in Jones et al. (2018)
Progress on Condition (Year 3)	The skates and ray report (appendix 4) details the provisional review of fishery impact on both species. Data on skate bycatch has now been collected by MSS since 2014, under the PETS programme and also as part of their general bycatch sampling by observers. In 2019, there were therefore 5 full years of data available, and MSS felt for the first time that it might be appropriate to attempt some wider analysis of these data in relation to skates. The analysis has not revealed any clear management options which are not already in place. It also shows that MSS was correct in their caution about drawing interpretations from these data too early, since when data are broken down by vessel size, gear type or time period, sample sizes in some categories remain low resulting in very wide error bars. Although increasing observer coverage is a challenge with the resources available, the problem is not only scientific effort but also the extremely patchy distribution of

Performance Indicator	2.3.3 Relevant information is collected to support the management of fishery impacts on ETP species, including: • Information for the development of the management strategy; • Information to assess the effectiveness of the management strategy; and • Information to determine the outcome status of ETP species.
	bycatch in space and time, which results in a low signal to noise ratio and low statistical power. Based on feasible levels of sampling, it will be a longer timeframe than an MSC assessment cycle before these data can be used for management of skates in a way that is sufficiently useful to rival the long time series now available from surveys.
Status	On Target
Additional information	N/A

Table 20. Condition 4 – UoA 5 (whiting) – currently suspended condition is now non-binding.

Performance Indicator	PI 1.2.1 There is a robust and precautionary harvest strategy in place
Score	70
Justification	Scoring issue 1.2.1b (SG80) The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives. **UoA 5 (whiting)** The EU-Norway agreement aims to fish the stock at or below F=0.15. F has reduced from 0.69 in 1990 and fluctuated around 0.2 since 2002 showing that the strategy is likely to work and SG60 is met. ICES revised its estimates of natural mortality and this has changed reference points. ICES evaluated the EU-Norway plan with the revised M values as not consistent with the Precautionary Approach unless the plan reduced F when the projected biomass fell below Bpa and therefore SG80 is not met. ICES (2016) advise that further management strategies should be evaluated in view of the uncertainties surrounding the assessment.
Condition	Evaluate and adopt a new harvest strategy that is responsive to the state of the stock and provide evidence that it is achieving its management objectives. * MSC interpretation - Scope extension - setting conditions longer than life of certificate (FCR v2.0 - 7.22.5)'. is relevant here. The condition was set at the scope extension (Jones et al. 2018) and therefore Year 1 of the condition is not the same as year 1 of the current certificate. Year 1 relates to Year 3 of the certificate. For clarity we have included the milestone year in **bold** with the certificate year after. This condition can be transferred into the next reassessment.
Milestones	Meeting this condition will require the client to encourage the EU and Norway to obtain advice from ICES on an appropriate harvest strategy and control rule for the revised reference points. Managers will need to agree a management plan based on this advice. The anticipated milestones are set out below: **Milestone Year 1 -** Year 3: Evidence that the client is working with ICES, the UK authorities, and the EU to obtain relevant scientific advice on which to base a management plan. Score: 70 **Milestone Year 2 -** Year 4: Evidence that a new management plan has been developed and tested. Score: 70

	Milestone Year 3 - Year 1 (reassessment): Evidence that the plan has been implemented. Likely resulting PI score SG 80.
Consultation on condition	See Appendix 2.3 – Marine Scotland letter of support in Jones et al. (2018)
Progress on Condition (Year 3)	As per the Expedited audit published in Autumn 2019 Jones & Cook (2019) a scoring decrease was provided for this condition to <60. The rationale is provided below: An EU multiannual management plan (MAP) has been agreed by the EU for this stock (EU, 2018). This plan is not adopted by Norway; thus, it is not used as the basis of the advice for this shared stock. ICES was requested by the EC to provide advice based on the MSY approach and to include the MAP as a catch option. However, the current assessment shows that the fishing mortality has typically been above F_{MSY} and that the biomass is not consistent above MSYBtrigger and there is thus evidence that the strategy is not working. SG60 is not met At the surveillance audit the client provided the CAB with evidence that they were working with industry partners on a corrective action plan for NS cod and whiting. The industry are preparing a joint paper with industry agreement between DNK, NOR SWE, BEL FR, NL, GE advocating spawning seasonal closures in the North Sea. Measures proposed include: • Managing quota away from seasonal closures, e.g. catch the fish later in the year. • Selectivity via spatial and temporal avoidance. At time of writing the Scheveningen group has been presented with the proposal as has the EU commission and Norwegian government. The AC meeting will also be presented in mid-November. Move on provisions and precautionary areas are still wanted by the group. Individual measures such as gears and selectivity have been evaluated by government but as a complete plan it hasn't been evaluated as yet. All measures appear to offer marginal gains but overall objective has not yet been evaluated. Based on this set of actions the assessment team concluded that the client had been working with relevant authorities and entities to develop methods to reduce F and develop a management plan, suitable to meet the Year 1 milestone
Status	On target
Additional information	N/A

Table 21. Condition 5 - UoA 3 (plaice)

Performance Indicator	**PI 1.2.2 The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing**
Score	70
Justification	Scoring issue 1.2.2a (SG80) Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached. **UoA 3 (plaice)**

	A multiannual plan (EU 2007) has been in place for some time and has been used to adjust fishing mortality rates in response the size of the stock. The stock is well in excess of $MSYB_{trigger}$ and has fluctuated above it for many years. Although the stock assessment area has been revised, F is below FMSY for the combined area. ICES advice now follows their conventional HCR based on the MSY approach. Managers moved towards the new MSY HCR that scales F in response to biomass if it falls below MSYBtrigger. However, while it is expected that a well defined HCR will be in place, this currently does not exist and SG 80 is not met.
Condition	Develop and adopt well-defined harvest control rules that are consistent with the harvest strategy and ensure that exploitation rates are reduced as limit reference points are approached. The HCR should be contained within a new management plan. * MSC interpretation - Scope extension - setting conditions longer than life of certificate (FCR v2.0 - 7.22.5)'. is relevant here. The condition was set at the scope extension (Jones et al. 2018) and therefore Year 1 of the condition is not the same as year 1 of the current certificate. Year 1 relates to Year 3 of the certificate. For clarity we have included the milestone year in **bold** with the certificate year after. This condition can be transferred into the next reassessment.
Milestones	Meeting this condition will require the client to encourage the EU and Norway to obtain advice from ICES on an appropriate harvest strategy and control rule for the expanded assessment area. Managers will need to agree a management plan based on this advice. The anticipated milestones are set out below: **Milestone Year 1 -** (years 3 of current assessment): Evidence that the client is working with ICES, the UK authorities, and the EU to obtain relevant scientific advice on which to base a management plan. Score: 75 **Milestone Year 2 -** (year 4 of certificate): Evidence that a new management plan has been developed and tested. Score: 75 **Milestone Year 3 -** (Year 1 reassessment): Evidence that the plan has been implemented. Likely resulting PI score SG 80.
Consultation on condition	See Appendix 2.3 – Marine Scotland letter of support in Jones et al. (2018)
Progress on Condition (Year 3)	On the 4th July 2018, the European Union adopted Regulation 2018/973 establishing a multi annual management plan for demersal stocks in the North Sea, which came into force on the 24th July 2018 (EU 2018). This Regulation applies, inter alia, to plaice stocks in the North Sea and Skagerrak. Article 4 of Regulation 2018/973 requires that fishing mortality is set in the lower range of ICES F_{MSY} advice for any stock that has a biomass below MSY $B_{trigger}$. The procedure for determining F when B is below $MSYB_{trigger}$ is formally set out in the ICES Advice Basis (ICES 2018), as follows: - MSY Btrigger is considered the lower bound of spawning–stock biomass fluctuation when fished at F_{MSY} and is used in ICES advice rule to trigger a cautious response. The cautious response, in cases where the spawning–stock falls below $MSYB_{trigger}$, is to reduce fishing mortality to allow a stock to rebuild to levels capable of producing MSY. The reduction in fishing mortality is proportional to the ratio between the size of the spawning–stock and $MSYB_{trigger}$. The advice rule leads to catch advice corresponding to a fishing mortality of: 1. F = F_{MSY} when the spawning–stock biomass is at or above MSY Btrigger; and 2. F = F_{MSY}× spawning–stock biomass/$MSYB_{trigger}$ when the stock is below $MSYB_{trigger}$ and above B_{lim};

	3. If the F following from applying rule 2 is insufficient to bring the stock above B_{lim} in the short-term ICES advice will be based on bringing the stock above B_{lim} in the short term. This may result in advice of zero catch. It is therefore evident that the North Sea Multi Annual Management Plan (MAP) requires that fishing mortality is set in the range consistent with ICES advice on F_{MSY} (Article 5(2)); and that this value is reduced linearly by ICES whenever stock biomass falls below MSY $B_{trigger}$. The MAP also requires in any event that F is set at a level that there is less than a 5 % probability of the SSB falling below B_{lim}. These harvest control rules are very well defined, are consistent with the harvest strategy established by the CFP and ensure that the exploitation rate is reduced as the limit reference. As a result of the above The scoring is presented in section 4.5 of this report. A new score of 80 has been awarded for this PI.
Status	Closed - The revised scoring is presented in section 4.5 of this report.
Additional information	N/A

Table 22. Condition 6 – UoA 4 (hake)

Performance Indicator	**PI 1.2.2 The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing**
Score	75
Justification	Scoring issue 1.2.2a (SG80) Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached. **UoA 4 (hake)** A recovery plan (EU 2004) has been in place for some time and has been used to set fishing mortality rates in response the size of the stock. The stock has recovered both in terms of SSB and F and therefore meets SG60. The harvest rule now followed by ICES to give advice is based on FMSY as the maximum F. This should be reduced linearly when the biomass falls below MSYBtrigger and is zero below Blim (ICES 2016d) however as it has not been formally adopted by managers there is uncertainty about the implementation of the rule so SG80 is not met.
Condition	Support work to develop and adopt well-defined harvest control rules that are consistent with the harvest strategy and ensure that exploitation rates are reduced as limit reference points are approached. The HCR should be contained within a long-term management plan. * MSC interpretation - Scope extension - setting conditions longer than life of certificate (FCR v2.0 - 7.22.5)'. is relevant here. The condition was set at the scope extension (Jones et al. 2018) and therefore Year 1 of the condition is not the same as year 1 of the current certificate. Year 1 relates to Year 3 of the certificate. For clarity we have included the milestone year in **bold** with the certificate year after. This condition can be transferred into the next reassessment.
Milestones	**Milestone Year 1 and 2 -** years 3-4 of current assessment: Support the adoption of well-defined harvest control rules which are consistent with the harvest strategy and ensure that the exploitation rates are reduced as limit reference points are approached. Resulting score: 75

	Milestone Year 3 - reassessment year 1: Evidence shall be presented that a harvest control rule is being implemented that is consistent with the harvest strategy (i.e. the objective of attaining MSY specified in the EU Common Fisheries Policy or equivalent international agreements) and that would ensure that the exploitation rate is reduced as limit reference points are approached. Resulting score: 80
Consultation on condition	See Appendix 2.3 – Marine Scotland letter of support in Jones et al. (2018)
Progress on Condition (Year 3)	Although no formal HCR has been adopted, the harvest rule now followed by ICES is to give advice is based on F_{MSY} as the maximum F. This is reduced linearly when the biomass falls below $MSYB_{trigger}$ and is zero below B_{lim}. The rule is well defined and consistent with the Precautionary and MSY Approaches. In recent years the agreed TAC has usually followed or been below the ICES MSY HCR advice (except 2015):

Year	ICES advice	Agreed TAC	% of Advice
2014	81,846	81,846	100.0
2015	78,457	90,948	115.9
2016	109,592	108,764	99.2
2017	123,777	119,765	96.8
2018	115,335	104,190	90.3
2019	142,240	142,240	100.0

Since 2016 managers have followed ICES advice, including the TAC for 2019.
In response to this evidence, the assessment team has re-scored the relevant Performance Indicator (PI 1.2.2). The scoring is presented in section 4.5 of this report. A new score of 80 has been awarded for this PI.

Status	Closed see rescoring of section 4.5 of this report.
Additional information	N/A

Table 23. Condition 7 – UoA 5 (whiting) – currently suspended condition is now non-binding.

Performance Indicator	**PI 1.2.2 - there are well defined and effective harvest control rules in place**
Score	65
Justification	Scoring issue 1.2.2c (SG80) Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules. **UoA 5 (Whiting)** The main tools for controlling exploitation are catch limits and restrictions on fleet capacity. In addition there are minimum mesh sizes for the principal fleets (TR1) of 120mm. During the period when the EU-Norway management plan was in operation the fishing mortality was reduced from 0.69 to approximately 0.2. This shows the tools had some success during that period. In the most recent years the management plan has been made obsolete by the revision of the natural mortality values and reference points so there is insufficient evidence available to evaluate SG80 or SG100 until further stock assessments have been carried out.

	* MSC interpretation - Scope extension - setting conditions longer than life of certificate (FCR v2.0 - 7.22.5)'. is relevant here. The condition was set at the scope extension (Jones et al. 2018) and therefore Year 1 of the condition is not the same as year 1 of the current certificate. Year 1 relates to Year 3 of the certificate. For clarity we have included the milestone year in **bold** with the certificate year after. This condition can be transferred into the next reassessment.
Condition	The fishery must provide evidence indicating that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rule.
Milestones	Meeting this condition will require that Condition 3 is achieved and that there is progress towards reducing F towards this strategy. The anticipated milestones are set out below: **Milestone Year 3 –** Year 1 (Reassessment): Evidence that the plan in Condition 3 has been implemented. Likely resulting PI score: 65 **Milestone Year 4 -** Year 2 (Reassessment): Evidence from stock assessment that F is at or below the FMSY reference point. Likely resulting PI score: 80
Consultation on condition	See Appendix 2.3 – Marine Scotland letter of support in Jones et al. (2018)
Progress on Condition (Year 3)	There is no milestone at Year 1 However following the suspension of the fishery the following information on management is relevant. At the surveillance audit the client provided the CAB with evidence that they were working with industry partners on a corrective action plan for NS cod and whiting. The industry are preparing a joint paper with industry agreement between DNK, NOR SWE, BEL FR, NL, GE advocating spawning seasonal closures in the North Sea. Measures proposed include: • Managing quota away from seasonal closures, e.g. catch the fish later in the year. • Selectivity via spatial and temporal avoidance. At time of writing the Scheveningen group has been presented with the proposal as has the EU commission and Norwegian government. The North Sea Advisory Council meeting will also be presented in mid-November. Move on provisions and precautionary areas are still wanted by the group. Individual measures such as gears and selectivity have been evaluated by government but as a complete plan it hasn't been evaluated as yet. All measures appear to offer marginal gains but overall objective has not yet been evaluated. Based on this set of actions the assessment team concluded that the client had been working with relevant authorities and entities to develop methods to reduce F and develop a management plan, suitable to meet the Year 1 milestone
Status	On target
Additional information	N/A

Table 24. Condition 8 – UoA 1,2 and 4 (haddock, saithe and hake)

Performance Indicator	PI 2.1.1. The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species
Score	75
Justification	Scoring Issue c (SG80): If main retained species are outside the limits there is a partial strategy of demonstrably effective management measures in place such that the fishery does not hinder recovery and rebuilding. For W. Scotland cod: W. Scotland cod: This is managed under a long-term management plan (EU 2008a) modified in 2016 (EU 2016c). The TAC is set to zero, there are limits on landing bycatch (maximum 1.5% live weight of landings) and limits on effort. Most of the catch is discarded, and considerable efforts have been made in recent years to reduce discards by improving selectivity (e.g. under the Conservation Credits Scheme and subsequently as a consequence of the Landing Obligation). The issues around evaluating sources of mortality on this stock are reviewed in detail in Section 3.4.2. Whatever the source of mortality, an analysis by Cook & Trijoulet (2016) suggest that at current (2013) mortality levels, the stock has a reasonable (~85%) chance of increasing in the next five years (Section 3.4.2, Figure 12), but also that relatively small proportional increases in mortality (from whatever source) increase the chances of further decline. ICES, unfortunately, has not attempted any short-term projections of stock status in recent years (ICES 2016w; ICES 2015g; ICES 2015f). Grey seals may be an important source of mortality (ICES 2017a; Cook et al. 2015; Cook & Trijoulet 2016) but grey seal biomass on the W. coast appears to be relatively stable (see 3.4.2). It is therefore important that fishing mortality on the stock does not increase. ICES estimate that it is high but stable or declining (Figure 9), while Cook and Trijoulet (2015) estimate that it is lower (seals providing the 'missing' mortality) but potentially increasing (Figure 11). ICES account for the 'missing' mortality by assuming systematic area misreporting (Section 3.4.2), but Marine Scotland Compliance do not consider area misreporting to be a major source of error in the catch figures, and do not accept the way that compliance data have been used by ICES (Section 3.4.2). The team noted the Marine Scotland Compliance argument that fishing mortality is actually a lower proportion of total mortality than estimated by ICES. Given the EU technical measures in place for this stock (gear size regulations, TAC and minimum conservation reference sizes), coupled with the low but stable SSB and the uncertainty in natural mortality contribution the team concluded that there was sufficient evidence that the measures in place are expected to ensure that the fishery does not hinder recovery and rebuilding of the depleted species therefore SG60 is met. Management is not, however, so far 'demonstrably effective' – SG80 is not met.
Condition	Within 4 years of the condition setting* the partial strategy for W. Scotland cod must be demonstrably effective at achieving recovery and rebuilding of the stock to appropriate and realistic rebuilding target levels defined by the relevant stock model. * MSC interpretation - Scope extension - setting conditions longer than life of certificate (FCR v2.0 - 7.22.5)'. is relevant here. The condition was set at the scope extension (Jones et al. 2018) and therefore Year 1 of the condition is not the same as year 1 of the current certificate. Year 1 relates to Year 3 of the certificate. For clarity we have included the milestone year in **bold** with the certificate year after. This condition can be transferred into the next reassessment.
Milestones	**Milestone Year 1 -** Year 3 – Work with Marine Scotland to re-evaluate appropriate reference points and fishing mortality rates for W. Scotland cod, as required. Score 75 **Milestone Year 2 -** Year 4 – Evaluate fishing mortality in relation to levels required to meet targets; if required, set out options for reduction. Score 75

	Milestone Year 3 - Year 1 (reassessment) – Review and agree options for reduction of fishing mortality if required. Score 75 **Milestone Year 4 -** Year 2 (reassessment) – Implement reductions in fishing mortality; fishing mortality at appropriate levels to allow rebuilding of the stock to agreed target levels. Score 80 * MSC interpretation - Scope extension - setting conditions longer than life of certificate (FCR v2.0 - 7.22.5)'. is relevant here. The condition was set at the scope extension (Jones et al. 2018) and therefore Year 1 of the condition is not the same as year 1 of the current certificate. Year 1 relates to Year 3 of the certificate. For clarity we have included the milestone year in **bold** with the certificate year after. This condition can be transferred into the next reassessment.
Consultation on condition	See Appendix 2.3 – Marine Scotland letter of support in Jones et al. (2018)
Progress on Condition (Year 3)	The stock remains below Blim and F greater than FMSY and Fpa. The assessment was interbenchmarked in 2019. Estimates of F and SSB from the new assessment are robust to assumptions about fishery selectivity, survey catchability, the time-series of data included, and the relative uncertainty of survey and landings data. The downward revision of fishing mortality in the new assessment is largely the result of the changes in the assessment assumptions. The uncertainty of the estimates of area-misreported landings (which account for > 60% of total landings) is unknown and not included in the assessment. The uncertainty estimates from the final assessment are therefore unlikely to adequately reflect the true uncertainty in the estimates of stock biomass and fishing mortality for this stock. The client group and Marine Scotland were present for the interbenchmark in 2019 and will send representation a preliminary meeting for a new complete benchmarking of the stock in 2020 which starts in December 2019 with the WKDEM meeting scheduled for Feb 2020. This benchmark will cover the following: 1. Stock identity and migration issues 2. Life-history data 3. Review of current sampling methods 4. Alternative assessment models 5. Impacts of fleet tuning 6. Environmental driver and ecosystem dynamics on the stock 7. Mixed fishery interactions 8. Re-examine reference points and update. At the industry level the fleet report less cod encounters in the past couple of years , resultant they believe from spatial avoidance measures, avoidance of night fishing for *Nephrops* (fuel-saving reasons) and sharing of information on catches via social media.
Status	On target
Additional information	N/A

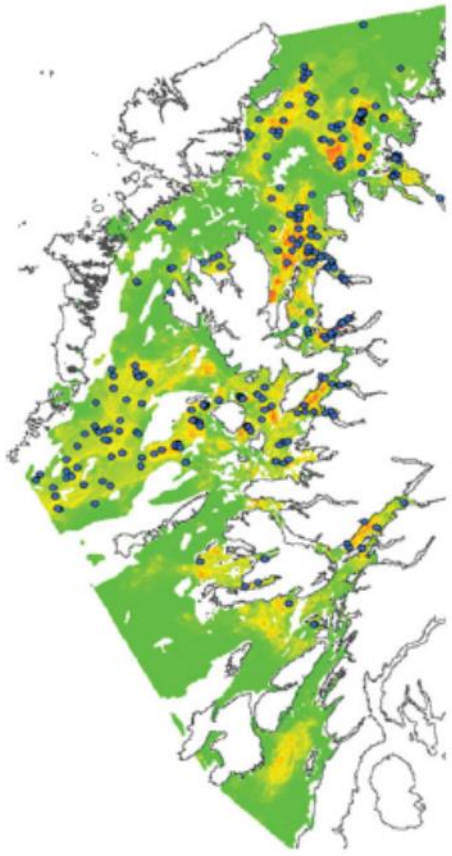
Table 25. Condition 9 – UoA 1,2 and 4 (haddock, saithe and hake)

Performance Indicator	**2.1.2 There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species**
Score	75

Justification	Scoring Issue b (SG80): There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved. W. Scotland cod: A detailed analysis of the stock status and projections for WS cod is given in Section 2.4.2, as well as in the rationale for 2.1.1. Further comments are given in the response to peer reviewer 1. There is evidence of stock rebuilding, giving an objective basis for confidence that the strategy is working. For W. Scotland cod, the strategy is not working to rebuild the stock, but projections indicate that they have a reasonable probability of doing so; see 2.1.1c. SG60 is met. There is, however, so far no evidence of rebuilding, and considerable uncertainties remain as to the key sources of mortality on the stock (see Section 2.4.2). Furthermore, Trijoulet et al. (2017) suggests that based on the hypothesis of significant seal predation, MSY reference points will need to be reconsidered, with both FMSY and MSY estimates too high at present (i.e. rebuilding targets may not be realistic based on current seal populations). SG80 is not met.
Condition	Within 4 years of the condition* there needs to be an objective basis for confidence that the strategy for rebuilding the W. Scotland cod stock will work, based on information about the stock and/or fishery. * MSC interpretation - Scope extension - setting conditions longer than life of certificate (FCR v2.0 - 7.22.5)'. is relevant here. The condition was set at the scope extension (Jones et al. 2018) and therefore Year 1 of the condition is not the same as year 1 of the current certificate. Year 1 relates to Year 3 of the certificate. For clarity we have included the milestone year in **bold** with the certificate year after. This condition can be transferred into the next reassessment.
Milestones	**Milestone Year 1 -** Year 3 – Work with Marine Scotland to re-evaluate appropriate reference points and fishing mortality rates for W. Scotland cod, as required. Score 75 **Milestone Year 2 -** Year 4 – Evaluate fishing mortality in relation to levels required to meet targets; if required, set out options for reduction. Score 75 **Milestone Year 3 -** Year 1 (reassessment) – Review and agree options for reduction of fishing mortality if required. Score 75 **Milestone Year 4 -** Year 2 (reassessment) – Implement reductions in fishing mortality; levels of fishing mortality provide an objective basis for concluding that the strategy will allow the stock to recover. Score 80
Consultation on condition	See Appendix 2.3 – Marine Scotland letter of support in Jones et al. (2018)
Progress on Condition (Year 3)	See comments for condition 8
Status	On target
Additional information	N/A

Table 26. Condition 10 – UoA 1,2 and 4 (haddock, saithe and hake)

Performance Indicator	**PI 2.4.1a The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function**
Score	75

Justification	Scoring Issue a (SG80): The fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm. **ALL UoA** Burrowed mud: Burrowed mud is typical *Nephrops* habitat, of which the largest areas overlapping this fishery are the *Nephrops* FUs. The key feature of this habitat potentially at risk from demersal fishing is seapens. The most abundant seapen species in these areas are *Pennatula phosphorea* and *Virgulana mirabilis*, both of which can retract as a response to disturbance and hence are not considered particularly vulnerable to demersal fisheries (MS 2017b), but the rare tall seapen (*Funiculina quadrangularis*) also occurs – this species cannot retract so is more vulnerable. We take this species as a proxy for the vulnerable element of this habitat. The only records from the North Sea are from the Fladen Ground (although it may have been more widespread in the past). The area with *F. quadrangularis* records in the Fladen Ground is proposed by Marine Scotland to be closed to demersal mobile gears (management proposal for Northern North Sea MPAs and SACs; (MS 2017b; MS 2017a) and in the meantime, SFSAG has in place a voluntary closure, monitored by Marine Scotland Compliance this has been extracted from Sieben et al. (2017)). The species seems to be relatively extensive on the west coast (see figure below). From the west coast, It is particularly extensive most records are from in sealochs; it is abundant in particularly Loch Sunart, Loch Teacuis, Loch Duich, Loch A Chairn Bhain and Loch Seaforth; these are not areas where this fishery would operate, and in any case several are closed to demersal mobile gears (e.g. Loch Sunart, Loch Duich and others). There are reportedly 'scattered records' from the Firth of Clyde. Further oOffshore it is also known from the Hatton Bank, which is not part of the UoA. It is thought to occur down to ~2000m (Ager 2003); if this is the case its distribution would presumably extent well offshore on the west coast, away from areas which are trawled (maximum trawling depth ~~800m, max. depth of this fishery ~~400m). ***Funiculina quadrangularis*** 

	Presence of F. quadrangularis on the west coast from surveys (dots), in relation to modelled habitat suitability (colour coding). Source Greathead et al. (2015). *Direct information about any impacts on seapens from the UoA is limited. Marine Scotland have an online database cross-referencing the impact of all kinds of activities on all the various habitat features; based apparently on a literature review (see* http://www.marine.scotland.gov.uk/FEAST/FeatureReport.aspx#0*). In relation to towed demersal gear (select 'search by feature' → 'habitats' → burrowed mud → select all types of activities and scroll down to 'surface abrasion'), Marine Scotland state the following [MEC comments in square brackets]:Damage to seapen species is likely to take place as a result of greater sediment disturbance as a result of towed demersal gear. However, experimental studies have shown that all three species of seapen can re-anchor themselves in the sediment if dislodged by fishing gear* (Eno et al. 1996). *Eno et al. (1996) found that even if damaged Funiculina quadrangularis appeared to remain functional and this could also be true of the other sea pens. However, the apparent absence of Funiculina from open-coast Nephrops grounds may be a consequence of its susceptibility to trawl damage (D.W. Connor, pers. comm. In* Hughes (1998)*)* [it does not specify where these are]. *In long term experimental trawling* Tuck et al. (1998) *found no effect on* Virgularia mirabilis *populations and* Kinnear et al. (1996) *found that sea pens were quite resilient to being smothered, dragged or uprooted by creels. Trawling disturbance resulted in reduced species diversity and a disproportionate increase in the abundance of a few dominant species. The short term effects on epifauna recovered 6 months after trawling fishing ceased. No long-term effects on the total number of species or individuals were detected, but individual species did show effects, notably an increase in the density of* Ophiura *sp. and a decrease in numbers of the fish Hippoglossoides platessoides* [American plaice] *and the whelk Buccinum undatum. Other authors have also suggested that increases in echinoderm populations in the North Sea are associated with fishing disturbance* (Lindley et al. 1995). On the west coast, a percentage of the populations are in sea lochs; i.e. not in areas typically used by vessels in the UoA; some of them are closed to demersal towed gears in SACs and/or MPAs, while some are not (although the team has not investigated areas closed to towed gears in arrangements for allowing potting and creeling). The population also extends significantly deeper than the maximum depth of trawling, but the size of this deep-water population component is not known. The sealoch populations appear to be healthy (they are reported as 'dense' in many areas), the offshore population is unimpacted, but populations in the Minch and Firth of Clyde may be impacted by fishing. Fishing does not appear to extirpate populations, according to the information above, but presumably causes some damage. Estimating that one third of *F. quadrangularis* populations are in untrawled areas (sealochs and closed areas), one third are deep and one third are vulnerable to trawling, and that trawling causes ~20% damage in the short term and 50% in the long term, this would lead to an overall estimate of damage of ~~7% in the short term and 17% in the long term. Several of the offshore MPAs aim to protect this habitat among others (e.g. NE Faroe-Shetland Channel, Geikie Slide and Hebridean Slope, Barra Fan and Hebridean Terrace Seamount); they are designated and management has been proposed which protects most of the burrowed mud areas from mobile demersal but is not yet in place. In the North Sea, the only known records of *Funiculina* (in the Fladen Ground MPA) are covered by a voluntary closure this has been extracted from Sieben et al. (2017)). On this basis then the team concluded that it is 'unlikely' that the UoA will reduce the structure and function of this element to the point of serious or irreversible harm (defined as damage of 20% or greater) but not 'highly unlikely'. SG60 is met. SG80 will be met by the implementation of the proposed management measures on the W. coast.
Condition	The fishery within 4 years* should show that it is highly unlikely to reduce structure and function of burrowed mud with seapen habitat on the west coast (as defined by records of the tall seapen *Funiculina quadrangularis*) to a point where there would be serious or

	irreversible harm. Serious or irreversible harm is defined as a reduction in habitat distribution of 20 % or more relative to baseline (currently-defined) levels. * MSC interpretation - Scope extension - setting conditions longer than life of certificate (FCR v2.0 - 7.22.5)'. is relevant here. The condition was set at the scope extension (Jones et al. 2018) and therefore Year 1 of the condition is not the same as year 1 of the current certificate. Year 1 relates to Year 3 of the certificate. For clarity we have included the milestone year in **bold** with the certificate year after. This condition can be transferred into the next reassessment.
Milestones	**Milestone Year 1 -** Year 3 – Collaborate with the relevant authority for the development of the western waters MPAs management plan. **Milestone Year 2 -** Year 4 – Finalise and agree management measures for western waters MPAs, or evaluate options for other protected measures for tall seapens. Score 75 **Milestone Year 4 -** Year 1 (reassessment) – Implement management of MPAs, or other management options. Score 80
Consultation on condition	See Appendix 2.3 – Marine Scotland letter of support in Jones et al. (2018)
Progress on Condition (Year 3)	The client group has had active involvement in the continued development of the Western Waters management plan, although progress is behind schedule. The client report that *'As Marine Scotland developed fisheries management proposals for Offshore Areas (including western waters), we played an active part and indeed added our support when these plans were presented to the NWWAC in order to seek support for a Joint Recommendation under the requirements of the CFP. These plans have been delayed due to the fact that some countries have effectively timed out the process. Clearly, timing issue relating to Brexit had an influence on this process.'* The assessment team found evidence of submissions by the client groups into the Priority Marine Features (PMF) consultation https://consult.gov.scot/marine-scotland/priority-marine-features/consultation/published_select_respondent as suitable evidence of collaboration with relevant authorities. Consultation with the relevant authorities at the site visit shows that the sustainability appraisal for the management plan has been drafted and is currently being readied for a second public consultation determine the relevant management measures. The authorities report that the timeframe for consulting on management measures for PMFs has slipped due to competing work pressures and therefore they have combined this work with Phase 2 of proposed inshore fishery management measures for MPAs, and expect to consult on both sets of measures simultaneously in the near future (early 2020) (per comm H. Downie, Scottish Government).
Status	On target.
Additional information	None

Table 27. Condition 11 – UoA 1,2 and 4 (haddock, saithe and hake)

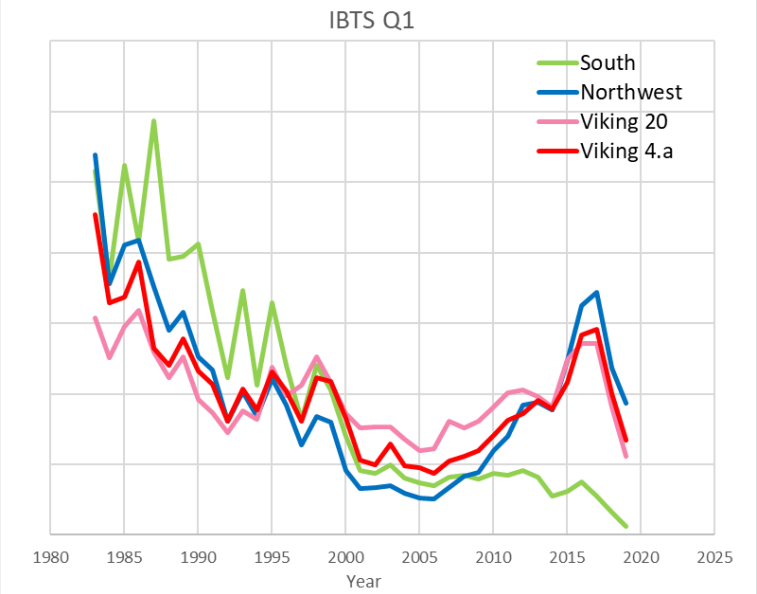
Performance Indicator	PI 2.4.2. There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types
Score	75
Justification	Scoring Issue b SG80: There is some objective basis for confidence that the partial strategy will work, based on information directly about the fishery and/or habitats involved. It is estimated that overall ~30 % of the seapen habitat area remains open to fishing. These open areas are near to proposed MPAs and given this distribution of the habitat patches around the MPAs, the potential for the re-population of impacted areas is high as sea pens are fecund and their larvae are likely to be highly dispersive (Greathead et al. 2015). On this basis its plausible that the measures in place likely to work in preventing serious and irreversible harm and should be considered a partial strategy. However, MSC sets a limit of 20% for 'serious or irreversible harm' so if there were heavy impacts in the areas open to fishing, this limit could be exceeded so there is not a clear guarantee (an objective basis for confidence). On this basis, SG60 is met but SG80 is not met.
Condition	Within 4 years the fishery should show that there is an objective basis for confidence that the partial strategy in place for seapens (*Funiculina quadrangularis*) on the W. coast is likely to work, in terms of achieving outcome score 80 or above for 2.4.1. * MSC interpretation - Scope extension - setting conditions longer than life of certificate (FCR v2.0 - 7.22.5)'. is relevant here. The condition was set at the scope extension (Jones et al. 2018) and therefore Year 1 of the condition is not the same as year 1 of the current certificate. Year 1 relates to Year 3 of the certificate. For clarity we have included the milestone year in **bold** with the certificate year after. This condition can be transferred into the next reassessment.
Milestones	**Milestone Year 1 -** Year 3 – Collaborate with the relevant authority for the development of the western waters MPAs management plan. **Milestone Year 2** - Year 4 – Finalise and agree management measures for western waters MPAs, or evaluate options for other protected measures for tall seapens. Score 75 **Milestone Year 3 -** Year 1 (reassessment) – Implement management of MPAs, or other management options. Score 80
Consultation on condition	See Appendix 2.3 – Marine Scotland letter of support in Jones et al. (2018)
Progress on Condition (Year 3)	The client group has had active involvement in the continued development of the Western Waters management plan, although progress is behind schedule. The client report that '*As Marine Scotland developed fisheries management proposals for Offshore Areas (including western waters), we played an active part and indeed added our support when these plans were presented to the NWWAC in order to seek support for a Joint Recommendation under the requirements of the CFP. These plans have been delayed due to the fact that some countries have effectively timed out the process. Clearly, timing issue relating to Brexit had an influence on this process.'* The assessment team found evidence of submissions by the client groups into the Priority Marine Features (PMF) consultation https://consult.gov.scot/marine-scotland/priority-marine-features/consultation/published_select_respondent as suitable evidence of collaboration with relevant authorities.

Performance Indicator	PI 2.4.2. There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types
	Consultation with the relevant authorities at the site visit shows that the sustainability appraisal for the management plan has been drafted and is currently being readied for a second public consultation determine the relevant management measures. The authorities report that the timeframe for consulting on management measures for PMFs has slipped due to competing work pressures and therefore they have combined this work with Phase 2 of proposed inshore fishery management measures for MPAs, and expect to consult on both sets of measures simultaneously in the near future (early 2020) (per comm H. Downie, Scottish Government).
Status	On Target
Additional information	None

4.3 New conditions

Table 28. Condition 12.

Performance Indicator	PI 2.1.1. The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species
Score	75
Justification	N.S Cod Scoring: All the main North Sea demersal stocks, including cod, are managed at EU-Norway level via a system which meets the MSC definition of a partial strategy (and a strategy): i.e. an agreed scientific approach (the MSY approach in most cases), incorporating reference points, a TAC and quotas allocated via agreed allocation keys at several levels (EU/Norway, within the EU, within the UK, within Scotland), aimed directly at managing the stock in question. Management measures default within the MSY approach also include minimum mesh size regulations (Technical regulations), restrictions on discarding (the EU landing obligation) and measures to limit fleet capacity through licensing systems. In 2018 the EU approved a MAP for North Sea demersal stocks which fixes a range for F_{MSY} rather than using a single point estimate (with the aim of allowing more flexible quotas and hence reducing the need for discarding/landing unwanted catch). For North Sea cod, ICES (ICES 2019a) notes that because the MAP is not formally accepted by Norway they will continue to use the previous point estimate – but the MAP range (F_{MSY} upper and F_{MSY} lower) is included as a catch option in the advice. For this stock, F_{MSY} point estimate is 0.31, F_{MSY} upper in the MAP is 0.46, and F_{MSY} lower in the MAP is 0.198. These values are the highest / lowest that result in a reduction in long-term yield of <5% relative to fishing at F_{MSY}. The stock was previously thought to have been on a recovery trajectory (which indeed it was, from ~2006-2015) and biomass increased briefly above B_{lim}. Previous ICES assessments gave a more optimistic picture of the stock, with biomass estimated to have been close to $B_{trigger}$. For this reason, the Cod Recovery Plan was replaced by a long-term management plan, and some of the main elements (notably restrictions on days at sea) were scrapped in 2017. ICES notes that it is unclear whether this has had any impact on the stock, and if so what. They also provide a striking evaluation of biomass by area within the North Sea (Figure 1), showing that in the southern North Sea, there was never any recovery trend at all, while in the other areas, the trend was strong, but reversed abruptly after 2017. ICES suggest that this pattern may be driven by climate change,

Performance Indicator	PI 2.1.1. The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species
	biological or fisheries effects, or a mixture, with further work needed to establish the main drivers of these trends.  IBTS Q1 cod biomass trends in the four areas of the North Sea: southern (green), Northwest (Scotland, blue), Viking 20 (Skaggerak, pink) and Viking 4a (Norway, red). (The Q3 survey biomass trends look similar.) ICES recently evaluated the current MSY approach (based on point estimate of F_{MSY} and current B*trigger*) as well as a range of alternatives proposed by the EU. They concluded that while all the management scenarios were precautionary in the long term, the optimum scenario was to continue using the existing ICES MSY advice rule (i.e. Ftarget = FMSY = 0.31 and MSYBtrigger = 150,000 t), although additional stability elements could be included. They found that this current advice rule was the only one of the strategies tested that was precautionary across all the analyses. This analysis of ICES provides evidence that the management strategy is 'demonstrably effective', but there is also the problems with the stock assessment and associated year-on-year adjustment in the perception of stock status to consider. For the purposes of this audit (evaluating a worst-case scenario), and using a precautionary scoring SG60 is met (measures in place which are expected to allow stock recovery) but SG80 is not met.
Condition	Within 4 years* provide evidence there is a partial strategy of demonstrably effective management measures in place such that the fishery does not hinder recovery and rebuilding of cod (*Gadus morhua*) in the North Sea (Subarea 4, Division 7.d, and Subdivision 20). *This deadline is after the end of the current period of certification (2021). CU Pesca consider that attaining the SG80 standard will take at least 4 years. This time period is consistent with that set for the other fisheries this certificate is being harmonised with. This situation therefore meets the "exceptional circumstances" anticipated in FCP v2.1 at 7.18.1.5b.i 7.11.1.3.a.i
Milestones	Year 4 – Work with relevant industry and scientific / management partners to establish the relevant management measures required to begin rebuilding the stock. Client to provide a report of activities to the CAB. Score 75

Performance Indicator	PI 2.1.1. The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species
	Year 1 (reassessment) – Evidence that a management measures / strategy is being developed (Overall score: 75, scoring element cod at 60). Year 2 (reassessment) – Evidence that the (measures) strategy has been implemented and that UoA impact on the stock is estimated not to be impacting the recovery of the stock. (Overall score: 75, scoring element cod at 75) Year 3 (reassessment) - Evidence that the (partial) strategy has been implemented and that the stock has rebuilt to a level that is highly likely to be above the PRI. (Overall score: 80, scoring element cod at 80)
Client action plan	The client has developed a FIP action plan for the NS cod fishery. The full details of which are provided in section 4.4.1
Consultation on condition	**From:** Elaine.Douse@gov.scot <Elaine.Douse@gov.scot> on behalf of Allan.Gibb@gov.scot <Allan.Gibb@gov.scot> **Sent:** Wednesday, January 22, 2020 2:49:22 PM **To:** Mike Park <mike@swfpa.com> **Cc:** Allan.Gibb@gov.scot <Allan.Gibb@gov.scot> **Subject:** Scottish industry action plan - North Sea Cod and Whiting Mike This email is by way of confirmation that Marine Scotland, is fully supportive of all efforts being made around ensuring sustainable catch levels for North Sea cod and whiting. We are happy to work with industry and support this initiative as closely as we can to aid in successful delivery of objectives. Regards Allan Gibb Head of Sea Fisheries Division marine scotland: Fisheries Policy Scottish Government 1B (South) Mail Point 2 Victoria Quay. Edinburgh, EH6 6QQ Tel : 0044 (0)131 244 4981 Fax: 0044 (0)131 244 6474 Mobile: 0044 (0)7920477514 Email : Allan.Gibb@gov.scot gov.scot
Progress on Condition (Year X)	N/a
Status	N/A
Additional information	N/A

Table 29. Condition 13.

Performance Indicator	PI 2.1.2. There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species.
Score	75
Justification	SIb: NS cod - The analysis by ICES of different options for a long-term management strategy for North Sea cod, in response to a request by the EU and Norway, provides a basis for thinking that the strategy will work (i.e. it is precautionary in the long term). SG60 is met. However, this analysis is based on the stock assessment model which over the last 3 years has not proved to be robust or reliable, and this to some extent undermines this analysis. Overall, SG80 is not met because there is not sufficient confidence that the strategy will work. SIc: NS cod - ICES has been basing its advice on the MSY approach since 2016. For 2016-2018 (the last year for which catch data are available), for Subarea 4, ICES estimated landings plus discards (unwanted catch) are always below the catch corresponding to ICES advice under the MSY approach. For 2019, ICES recommended a large cut in landings to 28,204 t; the TAC across the three areas (North Sea, Skagerrak, Eastern Channel) was set at 35,357 t; which is ~20% above the recommended level. Presumably the logic for this was to apply a limit on the % inter-annual change in the TAC, since this represents a one third cut in TAC from 2018 levels (rather than 45% as recommended by ICES). The North Sea MAP does not state this TAC constraint specifically, although it does allow for using the upper value in the FMSY range (Fupper) to 'limit the year-to-year variation in fishing opportunities' (para. 17). However, since the stock is most likely below Blim, this should not really apply. Although the logic behind limiting the % reduction in the TAC is understandable (in terms of damage to the industry and issues around the LO), it is not part of the management strategy. Hence these figures provide evidence that the strategy is not being implemented successfully. SG80 is not met. NS whiting - An EU multiannual management plan (MAP) has been agreed by the EU for this stock (EU, 2018). This plan is not adopted by Norway; thus, it is not used as the basis of the advice for this shared stock. ICES was requested by the EC to provide advice based on the MSY approach and to include the MAP as a catch option. However, the current assessment shows that the fishing mortality has typically been above FMSY and that the biomass is not consistent above MSYBtrigger and there is thus evidence that the strategy is not working. SG80 is not met
Condition	Within 4 years* provide evidence there is a objective basis for confidence that the partial strategy will work for NS cod. Further provide some evidence that the partial strategy is being implemented successfully for NS cod and NS whiting. *This deadline is after the end of the current period of certification (2021). CU Pesca consider that attaining the SG80 standard will take at least 4 years. This time period is consistent with that set for the other fisheries this certificate is being harmonised with. This situation therefore meets the "exceptional circumstances" anticipated in FCP v2.1 at 7.18.1.5b.i 7.11.1.3.a.i
Milestones	Year 4 – Work with relevant industry and scientific / management partners to establish the relevant management measures required to begin rebuilding the stock. Client to provide a report of activities to the CAB. Score 75 Year 1 (reassessment) – Evidence that a management measures / strategy is being developed (Overall score: 75, scoring element cod at 60). Year 2 (reassessment) – Evidence that the (measures) strategy has been implemented and that UoA impact on the stock is estimated not to be impacting the recovery of the stock. (Overall score: 75, scoring element cod at 75)

Performance Indicator	PI 2.1.2. There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species.
	Year 3 (reassessment) - Evidence that the (partial) strategy has been implemented and that the stock has rebuilt to a level that is highly likely to be above the PRI. (Overall score: 80, scoring element cod at 80)
Client action plan	The client has developed a FIP action plan for the NS cod fishery. The full details of which are provided in section 4.4.1
Consultation on condition	**From:** Elaine.Douse@gov.scot <Elaine.Douse@gov.scot> on behalf of Allan.Gibb@gov.scot <Allan.Gibb@gov.scot> **Sent:** Wednesday, January 22, 2020 2:49:22 PM **To:** Mike Park <mike@swfpa.com> **Cc:** Allan.Gibb@gov.scot <Allan.Gibb@gov.scot> **Subject:** Scottish industry action plan - North Sea Cod and Whiting Mike This email is by way of confirmation that Marine Scotland, is fully supportive of all efforts being made around ensuring sustainable catch levels for North Sea cod and whiting. We are happy to work with industry and support this initiative as closely as we can to aid in successful delivery of objectives. Regards Allan Gibb Head of Sea Fisheries Division marine scotland: Fisheries Policy Scottish Government 1B (South) Mail Point 2 Victoria Quay. Edinburgh, EH6 6QQ Tel : 0044 (0)131 244 4981 Fax: 0044 (0)131 244 6474 Mobile: 0044 (0)7920477514 Email : Allan.Gibb@gov.scot gov.scot
Progress on Condition (Year X)	N/a
Status	N/A

Table 30. Condition 14.

Performance Indicator	PI 3.2.3 Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.
Score	65
Rationale	Scoring issue 3.2.3a (SG80) A monitoring, control and surveillance **system** has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.

Performance Indicator	PI 3.2.3 Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.
	Evaluation Table for PI 3.2.3 – Compliance and enforcement for the full rationale. An extract is provided below: A monitoring, control and surveillance system has been implemented in the fishery. However, it cannot be concluded that the system has demonstrated a ability to enforce relevant management measures, strategies and rules. With the introduction of the LO, it can no longer be concluded that the enforcement system is sufficiently comprehensive for the context of the fishery. The implementation of the LO poses a major challenge to the control authorities of the member states. The team therefore concludes that SG80 is not met. Given that monitoring, control and surveillance systems exist, that they are implemented in the fishery and there is a reasonable expectation that they are effective, the team has agreed on SG60. Scoring issue 3.2.3c (SG80) **Some evidence exists** to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery. The fishery has in place a system for monitoring, control and surveillance, including physical checks of fishing operations, catch and gear, as well as a sanctioning system. While the enforcement system as a whole is considered to be somewhat comprehensive, the prioritization of landing control comes at the expense of at-sea inspections. Not only is the number of at-sea inspections considerably lower than the number of landing controls; anecdotal evidence from the site visit also suggests that the at-sea inspections are less thorough. Specifically, with regards to the implementation of the Landing Obligation there is concern about ongoing non-compliance, although the assessment team could find no evidence that this is indeed the case. Taking into account the management system's inability to effectively monitor this measure, the team considered that the evidence base available is currently too weak for SG80 to be met. Therefore, the team concludes that only SG60 is met. Scoring issue 3.2.3d (SG80) There is no evidence of systematic non-compliance. The intent behind the phrase 'no evidence of systematic non-compliance' is that there is simultaneously adequate evidence to assess the compliance of the fishery and no evidence of infringements that occur regularly (MSC interpretations log). Although the team would like to point out that the issues with the Landing Obligation to date are indicate a high or very high risk of widespread systemic non-compliance with the LO, there is no concrete evidence so far that there is in fact widespread systemic non-compliance with the LO. However, given a precautionary outlook, we have concluded that this guidepost is not met.
Condition	Evidence should be provided that the MCS system has demonstrated an ability to enforce relevant management measures, strategies and rules, key among which is the Landing Obligation (LO). It should also be evident that fishers comply with the management system under assessment, by providing information of importance to the effective management of the fishery and compliance with the LO, thereby demonstrating that systematic non-compliance does not occur*. *This deadline is after the end of the current period of certification (2021). CU Pesca consider that attaining the SG80 standard will take at least 4 years. This time period is consistent with that set for the other fisheries this certificate is being harmonised with. This situation therefore meets the "exceptional circumstances" anticipated in FCP v2.1 at 7.18.1.5b.i 7.11.1.3.a.i
Milestones	Year 4: The client group must present a detailed plan to: 1) Demonstrate that the monitoring, control and surveillance mechanisms work together to enforce relevant management measures, strategies and/or rules, key amongst which is the LO; 2) Provide evidence that the relevant management measures, strategies and/or rules (key amongst which is the LO) are complied with, or if necessary, that compliance with will be improved within the certification period. (**Score: 70**) Year 1 (reassessment): The implemented the plan should be analysed for a meaningful segment of the fleet collected, demonstrating both compliance and the MCS system's ability to enforce measures, strategies and/or rules (key amongst which is the LO). The client will provide evidence from national authorities of monitoring, control and surveillance mechanisms, particularly with a

Performance Indicator	PI 3.2.3 Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.
	focus on the implementation of the LO, and provide evidence of discussions on approaches to implementation and improvement of the MCS mechanisms pertaining to the LO (**Score: 75**). Year 2 (reassessment): The client group has implemented the plan for a significant portion of the fleet and analysed the data collected. The client will provide evidence from national authorities of monitoring, control and surveillance mechanisms, particularly with a focus on the implementation of the LO and provide evidence of discussions on approaches to on implementation and improvement of the MCS mechanisms pertaining to the LO. Where compliance has been deemed inadequate previously, the fleet has shown improved compliance with the LO. (**Score: 75**). Year 3 (reassessment): At the surveillance audit, the client group has implemented the plan fully and is judged to be compliant with the requirements of the LO, based on implementation of the plan and evidence from national authorities of monitoring, control and surveillance mechanisms. (**Score: 80**).
Client action plan	Action plan is given by years from 2019. Year 1: The client will present a plan describing how the relevant MCS mechanisms work together to enforce relevant management measures, strategies and/or rules, particularly with a focus on the LO. We will work actively with Marine Scotland and DEFRA and will provide evidence of these activities and meetings at yearly audits to show progress. Further to this the client will seek to ensure a party from either MS or DEFRA can be available (either in person or remotely), so the audit team can raise any specific concerns and be assured that the MCS mechanisms are working together to enforce the LO. Further to national discussions, we will continue to work with the NSAC, and, through it, the Scheveningen Group. Any discussions on MCS and the LO in these forums will also be presented at the audit. The client will provide evidence of compliance with the relevant management measures, strategies and/or rules and improvements, if relevant, throughout the certification period. The clients will seek to provide an overview on the number of infringements and sanctions of the LO from the Unit of Certification. Further to this, the clients will include any general national control reports from authorities and explore methods to further show the extent of (non)compliance. Independent observers and REM are already used within the fishery, and, if possible and relevant, we will report on any indications of lack of compliance that these provide. The client will investigate the feasibility of the use of logged discards to illustrate compliance and report on this in, the plan. Furthermore, current and planned projects on monitoring and reducing discards in general will be explored and reported upon, for example: any relevant gear development projects and/or measures; charging a dedicated discard consultant with gathering data or helping fishermen with ways to reduce unwanted bycatch and discards (for example GITAG, The Discard Action Group, FMAC and the LO Forum)review the progress and results from the REM fleet. All of these considerations for the different methods will be reviewed and presented in the information put forward by the clients. Further to this, the plan will include a specific section on measures taken, should any general non-compliance for the LO be detected for a member vessel. One approach to be considered is reviewing and amending the client Code of Conduct and including a sanction annex in relation to serious infringements. SFSAG already have Codes in place for example relating to the Fladens area and further Codes could be considered. Year 2: As for year 1, the client will describe how MCS mechanisms work together to enforce the LO, and we will work actively with Marine Scotland and DEFRA and provide evidence of these activities and meetings at yearly audits to show progress. As described in year 1, the clients will seek to ensure

Performance Indicator	PI 3.2.3 Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.
	participation from Marine Scotland at the annual audit. We will also continue to discuss the MCS of the LO in international fora. At the audit, the client will show progress of the plan as described in year 1, detailing how these data have been obtained and analysed. Both through cooperation with the authorities, and the data analysis, we will demonstrate both compliance and the MCS system's ability to enforce measures, strategies and/or rules Year 3: As for the previous years, the client will describe how MCS mechanisms work together to enforce the LO, and we will work actively with Marine Scotland and DEFRA and provide evidence of these activities and meetings at yearly audits to show progress. As described in year 1, the clients will seek to ensure participation from Marine Scotland at the annual audit. We will also continue to discuss the MCS of the LO in international fora. If compliance has been deemed inadequate previously, the fleet will show improved compliance with the LO and reporting on any necessary measures by the organisations within the client group themselves and/or further discussions with authorities will be given. Year 4: As for the previous years, the client will describe how MCS mechanisms work together to enforce the LO, and we will work actively with Marine Scotland and DEFRA and provide evidence of these activities and meetings at yearly audits to show progress. As described in year 1, the clients will seek to ensure participation from Marine Scotland at the annual audit. We will also continue to discuss the MCS of the LO in international fora. At the audit, the clients will describe how the actions described in year 1 have been implemented and how the clients are judged to be compliant with the requirements of the LO. Both through cooperation with the authorities, and data analysis, we will be demonstrating both compliance and the MCS system's ability to enforce measures, strategies and/or rules of the LO. To this end, the client will provide evidence from Marine Scotland of MCS mechanisms, particularly with a focus on the implementation of the LO. If compliance has been deemed inadequate previously, the fleet will show improved compliance with the LO and reporting on any necessary measures by the organisations within the client group themselves and/or further discussions with authorities to ensure that any general non(compliance) is not within the Units of Certification.

Performance Indicator	PI 3.2.3 Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.
Consultation on condition	**From:** Elaine.Douse@gov.scot <Elaine.Douse@gov.scot> on behalf of Allan.Gibb@gov.scot <Allan.Gibb@gov.scot> **Sent:** Wednesday, January 22, 2020 2:49:22 PM **To:** Mike Park <mike@swfpa.com> **Cc:** Allan.Gibb@gov.scot <Allan.Gibb@gov.scot> **Subject:** Scottish industry action plan - North Sea Cod and Whiting Mike This email is by way of confirmation that Marine Scotland, is fully supportive of all efforts being made around ensuring sustainable catch levels for North Sea cod and whiting. We are happy to work with industry and support this initiative as closely as we can to aid in successful delivery of objectives. Regards Allan Gibb Head of Sea Fisheries Division marine scotland: Fisheries Policy Scottish Government 1B (South) Mail Point 2 Victoria Quay. Edinburgh, EH6 6QQ Tel : 0044 (0)131 244 4981 Fax: 0044 (0)131 244 6474 Mobile: 0044 (0)7920477514 Email : Allan.Gibb@gov.scot gov.scot
Additional information	NOTE: this condition formed part of the FIP for North sea Cod and whiting hence the reference provided by Allan Gibb above. Details are in section 4.4.1

4.4 Client action plan

4.4.1 FIP Action Plan for NS cod, whiting, Principle 2 and 3 conditions.

Action #	ACTION 1 – Rebuild the cod stock above the PRI
Stock	North Sea cod
MSC PI	1.1.1a – The stock has a low probability of recruitment overfishing 1.1.2 – Where the stock is reduced, there is evidence of rebuilding within a specified timeframe
IPG (FIP objectives):	• An interim rebuilding timeframe for North Sea cod is specified which brings the stock above the PRI in the shortest feasible timeframe. • Evidence such as stock assessment projections suggest that the agreed harvest strategy will be able to rebuild the stock within the rebuilding timeframe.
Background and notes:	• Action 1 focuses on short-term emergency action to recover the stock above the PRI, before the stock assessment is benchmarked (which has a fixed timetable). Action 2 below focuses on putting in place a robust harvest strategy in the longer term to maintain the stock at a level consistent with MSY. • Milestones are consistent with ICES' timetable for benchmarking of the North Sea cod stock assessment (i.e. data preparation late 2020, benchmarking early 2021). • For Action 1, the rebuilding timeframe refers to short-term rebuilding to the PRI (Blim) and hence it is an interim rebuilding timeframe.
Priority	high
Milestones:	
Year 1 (Dec. 2020)	Key stakeholders (EU, Norway, UK if not EU) have agreed and implemented a reduction in the TAC consistent with scientific advice, and discussions on other measures to protect the stock are underway.
Year 2 (Dec. 2021)	Additional measures to protect the stock are agreed and implemented (e.g. time/area closures, selectivity measures or other). Stock assessment is benchmarked and rebuilding projections under different scenarios are available (see Action 3).
Year 3 (Dec. 2022)	Decisions on the TAC and other measures are consistent with scientific advice on rebuilding to MSY within the required timeframe.
Year 4 (Dec. 2023)	Decisions are taken following the agreed long-term management plan (see Action 2).

Actions and sub-actions		Lead organisation	Other organisations involved	End date
1.1	Work with European and UK partners to influence EU/Norway decision-making on TAC for 2020			
1.1.1	Work with Marine Scotland and DEFRA to provide input into the Scheveningen Group submission to the Commission on the 2020 TAC.	Marine Scotland / DEFRA	SFSAG member organisations	31 Dec. 2019
1.1.2	Work with industry partners in Europe to put forward a joint proposal on the TAC for 2020.	SFSAG members	European cross-industry cod group	31 Dec. 2019
1.1.3	Work with Scottish stakeholders to put forward a joint proposal on the TAC for 2020, based on projections provided by MSS.	FMAC	Marine Scotland / DEFRA	31 Dec. 2019
1.2	Work with European and UK partners to agree additional measures for 2020			
1.2.1	Evaluate options for additional measures with SFSAG members (e.g. seasonal closures, juvenile closures, RTCs, move-on rules, identification of sensitive areas, selectivity measures, other as appropriate), considering effectiveness and enforceability	SFSAG	SFSAG member organisations, Marine Scotland	Feb. 2020
1.2.2	Work with Scottish stakeholders to put forward joint proposals for options on additional measures (as above).	FMAC	Marine Scotland / DEFRA	Feb. 2020
1.2.3	Work with industry partners in Europe to put forward a joint proposal on additional measures for 2020.	SFSAG members	European cross-industry cod group	March 2020
1.2.4	Work with Marine Scotland and DEFRA to provide input into the Schveningen Group submission to the Commission on additional measures for 2020.	Marine Scotland / DEFRA	SFSAG member organisations	March 2020
1.3	Work with European and UK partners to ensure that an appropriate interim rebuilding timeframe to bring stock above Blim / PRI is agreed			
1.3.1	Work with Marine Scotland and DEFRA to provide input to the Scheveningen Group on interim rebuilding target (interim because prior to benchmarking of stock assessment and because objective is PRI not MSY).	Marine Scotland / DEFRA	SFSAG member organisations	31 Jan. 2020

1.3.2	Work with EU industry partners to put forward a joint submission to the Commission on interim rebuilding target.	SFSAG members	European cross-industry cod group	31 Jan. 2020
1.3.3	Work with Scottish stakeholders to put forward a joint proposal on interim rebuilding target, based on projections provided by MSS.	FMAC	Marine Scotland / DEFRA	31 Jan. 2020
1.4	Work with European and UK partners to agree TAC and additional measures for 2021 consistent with the interim rebuilding target			
1.4.1	Work with Marine Scotland and DEFRA to provide input into the Scheveningen Group submission to the Commission on the 2021 TAC and additional measures, as in 1.1.1 and 1.2.4 above.	SFSAG, FMAC, Marine Scotland, DEFRA	EU cross-industry cod group, other industry partners, NGOs	Y2 Q1
1.4.2	Work with industry partners in Europe to put forward a joint proposal on the TAC and additional measures for 2021, as in 1.1.2 and 1.2.3 above.	SFSAG members	European cross-industry cod group	Y2 Q1
1.4.3	Work with Scottish stakeholders and DEFRA to put forward a joint proposal on the TAC and additional measures for 2021, based on projections provided by MSS.	Marine Scotland, DEFRA	SFSAG member organisations	Y2 Q1
1.5	Evaluate based on the revised stock assessment whether the agreed TAC and additional measures are sufficient to rebuild the stock above the PRI; if not, put forward proposals for further short-term action			
1.5.1	Evaluate based on revised stock assessment and projections whether the TACs and additional measures to date are consistent with the agreed rebuilding target	MSS	SFSAG, FMAC, Marine Scotland	Y2 Q2 or when stock assessment available
1.5.2	Repeat process in 1.4 as required for 2022, depending on process with long-term management plan (Action 2 below), ensuring that TACs and additional measures are consistent with the agreed rebuilding target under the new stock assessment and projections	SFSAG, FMAC, Marine Scotland, DEFRA	EU cross-industry cod group, other industry partners, MSS, NGOs	Y3 Q1

Action #	**ACTION 2 – Long-term management plan for North Sea cod**
Stock	North Sea cod
MSC PI	1.1.1b – The stock is at a level which maintains high productivity

	1.1.2 – Where the stock is reduced, there is evidence of rebuilding within a specified timeframe 1.2.1 – There is a robust and precautionary harvest strategy in place 1.2.2 – There are well defined and effective harvest control rules (HCRs) in place
IPG (FIP objectives):	• A rebuilding timeframe for North Sea cod is specified which rebuilds the stock to a level consistent with MSY within a maximum of 14 years. • A harvest strategy is in place in which the elements work together to achieve management goals (consistent with MSY). • Evidence suggests that the strategy is achieving or able to achieve these management goals. • There is a well-defined HCR in place which is implemented in full. • The HCR has been evaluated with respect to uncertainty and found to be robust. • The tools used to implement the HCR are able to achieve the intended exploitation rates.
Background and notes:	• Action 1 above addresses the short-term requirements to rebuild the stock above the PRI. Action 2 addresses the broader long-term harvest strategy. This division is required because a long-term harvest strategy requires benchmarking of the stock assessment (see Action 3), which is not due to take place until 2021. Since this is a pre-requisite for Action 2, there are no milestones in Year 1. • MSC does not require a formal management plan (i.e. a document called 'plan') – an agreed management approach such as the MSY approach is also consistent with MSC requirements. • For Action 2, the rebuilding timeframe refers to rebuilding to a level consistent with MSY (above Btrigger), consistent with MSC requirements as specified in PI 1.1.2.
Priority	high
Milestones:	
Year 1	No milestones – see Action 1 and Action 3
Year 2	Improved stock assessment available, projections show rebuilding time under difference scenarios
Year 3	Long-term management plan agreed which provides for stock rebuilding to the MSY level within a maximum of 14 years
Year 4	Tools in place to implement long-term plan; data or projections show they are able to achieve the intended exploitation rates

Activities and sub-activities		**Lead organisation**	**Other organisations involved**	**End date**
2.1	Work with European and UK partners to agree an appropriate rebuilding timeframe to bring stock to a level consistent with MSY			

2.1.1	Work with MSS to evaluate timeframes of rebuilding to above Btrigger under different management scenarios, to inform decision-making about long-term stock rebuilding	MSS	SFSAG, Marine Scotland, ICES	Y2 Q2
2.1.2	Work with Marine Scotland and DEFRA to provide input to the Scheveningen Group on a rebuilding timeframe to MSY (above Btrigger), consistent with MSC requirements.	Marine Scotland / DEFRA	SFSAG member organisations	Y2 Q3
2.1.3	Work with EU industry partners to put forward a joint submission to the Commission on the rebuilding timeframe.	SFSAG members	European cross-industry cod group	Y2 Q3
2.1.4	Work with Scottish stakeholders to put forward a joint proposal on the rebuilding timeframe, based on projections provided by MSS.	FMAC	Marine Scotland / DEFRA	Y2 Q3
2.2	Work with partners to push for a review of long-term management plan based on the revised stock assessment when available			
2.2.1	Work with Marine Scotland and DEFRA to ask Scheveningen Group and Commission to request review of long-term management plan for cod, based on revised stock assessment when available; ensuring that reference points, TAC calculations, TAC constraints and other measures are consistent with the rebuilding target	Marine Scotland, DEFRA	SFSAG and member organisations, ICES	Y2 Q4
2.2.2	Work with EU industry partners and Scottish and UK stakeholders to put forward joint submissions on the long-term management plan for cod, if required.	Cross-industry cod group, FMAC	SFSAG member organisations, Marine Scotland, DEFRA, ICES	Y2 Q4
2.3	Work with partners to support changes to the management plan (reference points, approach to TAC, additional measures or other) to ensure that the stock able to rebuild on the agreed timeframe			
2.3.1	Depending on the outcome of the review work with partners as in 2.2 above to put forward proposals for revision of the long-term management plan to be consistent with the agreed rebuilding timeframe	As 2.2	As 2.2	Y3 Q1
2.4	Ensure that decision-making follows the long-term management plan as revised above			
2.4.1	Continue from Y3 to work with partners as in 2.2 above to ensure that management decision-making (within the UK, within the EU and EU/Norway or EU/Norway/UK) follows the revised long-term management plan and is consistent with the rebuilding timeframe.	As 2.2	As 2.2	Y3 ongoing

2.5	Continue to work on the development and evaluation of additional measures for cod management			
2.5.1	Continue research work on selectivity with Scottish industry via GITAG	GITAG	SFSAG members, Marine Scotland	Y1 ongoing
2.5.2	Continue other research work on selectivity with UK industry, via Fishery-Science Partnerships	SFSAG members, CEFAS	Marine Scotland, MMO	Y1 ongoing
2.5.3	Continue support for data collection (observers and other as required) and other support to MSS as required to evaluate implementation of management measures	SFF, MSS	SFSAG	Y1 ongoing

Action #	**ACTION 3 – Improve the stock assessment for North Sea cod**			
Stock	North Sea cod			
MSC PI	1.2.4 – There is an adequate assessment of the stock status			
IPG (FIP objectives):	The stock assessment has been revised such that it no longer shows strong retrospective bias providing a strong source of uncertainty; the stock assessment and estimates of reference points are robust and provide a basis for a long-term management plan.			
Background and notes:	The benchmarking of the stock assessment is a pre-requisite for Action 2 (long-term management plan; above), since previously estimates of stock status and trends were biased, and the reference points need to be re-estimated for a robust long-term management plan.			
Priority	high			
Milestones:				
Year 1	Planning / data preparation meeting held			
Year 2	Benchmarking completed, retrospective bias eliminated / improved, reference points re-estimated			
Year 3	Proposed long-term management plan evaluated for consistency with precautionary approach			
Activities and sub-activities		**Lead organisation**	**Other organisations involved**	**End date**
3.1	Support the process of data preparation and benchmarking			

3.1.1	Continue providing support to data collection on discards via SFF observer programme	SFF	MSS, SFSAG members	Y1 ongoing
3.1.2	Support MSS with supplementary data collection from the fishery as required to ensure that the data required for the stock assessment is available	MSS	SFSAG	Y2 Q1
3.2	Work with partners to ensure that the benchmarking takes place as scheduled at latest			
3.2.1	Work with Marine Scotland and DEFRA to ask the Scheveningen Group to underline the importance of benchmarking the cod stock assessment in their submissions to the Commission	Marine Scotland, DEFRA	other Scheveningen Group members, ICES	Y1 Q4
3.2.2	Continue to liaise with MSS to emphasise importance of benchmarking and timetable	SFSAG	MSS, ICES	Y1 Q4
3.3	Ensure that stock rebuilding projections are available which show rebuilding time to a level consistent with MSY under various management scenarios			
3.3.1	Request projections from ICES or MSS once revised stock assessment model is available	SFSAG	MSS, ICES	Y2 Q2
3.3.2	Use projections to inform work on rebuilding timetable and revision of long-term management plan (see Action 2)	See Action 2	See Action 2	See Action 2
3.4	Ensure that ICES is requested to evaluate the proposed long-term management plan for consistency with the rebuilding timeframe			
3.4.1	See Action 2 – 2.2	See Action 2	See Action 2	See Action 2

Action #	ACTION 3 – Improve the stock assessment for North Sea cod			
Stock	North Sea cod			
MSC PI	1.2.4 – There is an adequate assessment of the stock status			
IPG (FIP objectives):	The stock assessment has been revised such that it no longer shows strong retrospective bias providing a strong source of uncertainty; the stock assessment and estimates of reference points are robust and provide a basis for a long-term management plan.			
Background and notes:	The benchmarking of the stock assessment is a pre-requisite for Action 2 (long-term management plan; above), since previously estimates of stock status and trends were biased, and the reference points need to be re-estimated for a robust long-term management plan.			
Priority	high			
Milestones:				
Year 1	Planning / data preparation meeting held			
Year 2	Benchmarking completed, retrospective bias eliminated / improved, reference points re-estimated			
Year 3	Proposed long-term management plan evaluated for consistency with precautionary approach			
Activities and sub-activities		**Lead organisation**	**Other organisations involved**	**End date**
3.1	Support the process of data preparation and benchmarking			
3.1.1	Continue providing support to data collection on discards via SFF observer programme	SFF	MSS, SFSAG members	Y1 ongoing
3.1.2	Support MSS with supplementary data collection from the fishery as required to ensure that the data required for the stock assessment is available	MSS	SFSAG	Y2 Q1
3.2	Work with partners to ensure that the benchmarking takes place as scheduled at latest			
3.2.1	Work with Marine Scotland and DEFRA to ask the Scheveningen Group to underline the importance of benchmarking the cod stock assessment in their submissions to the Commission	Marine Scotland, DEFRA	other Scheveningen Group members, ICES	Y1 Q4

3.2.2	Continue to liaise with MSS to emphasise importance of benchmarking and timetable	SFSAG	MSS, ICES	Y1 Q4
3.3	Ensure that stock rebuilding projections are available which show rebuilding time to a level consistent with MSY under various management scenarios			
3.3.1	Request projections from ICES or MSS once revised stock assessment model is available	SFSAG	MSS, ICES	Y2 Q2
3.3.2	Use projections to inform work on rebuilding timetable and revision of long-term management plan (see Action 2)	See Action 2	See Action 2	See Action 2
3.4	Ensure that ICES is requested to evaluate the proposed long-term management plan for consistency with the rebuilding timeframe			
3.4.1	See Action 2 – 2.2	See Action 2	See Action 2	See Action 2

Action #	**ACTION 4 – Put in place a robust harvest strategy for North Sea whiting**
Stock	North Sea whiting
MSC PI	1.1.1b – The stock is at a level which maintains high productivity 1.1.2 – Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe 1.2.1 – There is a robust and precautionary harvest strategy in place 1.2.2 – There are well-defined and effective HCRs in place
IPG (FIP objectives):	• The stock is fluctuating around a level consistent with MSY • Reference points for defining the PRI and a level consistent with MSY are clearly and appropriately defined and consistent with the precautionary approach • A harvest strategy is in place in which the elements work together to achieve management goals (consistent with MSY). • Evidence suggests that the strategy is achieving or able to achieve these management goals • The tools used to implement the HCR are able to achieve the intended exploitation rates
Background and notes:	The issue with whiting is that while F is estimated to be above F_{MSY}, the reference points need re-estimating; hence the stock status is unclear and the harvest strategy needs revision based on improved estimates of reference points. The approach taken is the same as for cod, except that because the stock biomass is estimated to be above the PRI (Blim) with a high degree of certainty, there is no

	requirement for short-term measures to rebuild the stock above the PRI, before the reference points are re-estimated (cf Action 1). Unfortunately, a benchmarking of the stock assessment for North Sea whiting is not planned by ICES in the near future. For this reason, the milestones have been set later than they would otherwise be. (It also allows the FIP to focus on the cod activities, in particular Action 1, in the first year, since these are critical for the stock which is in much worse condition than the whiting stock.)
Priority	high
Milestones:	
Year 1	Re-estimate of reference points and review of long-term management plan for North Sea whiting requested
Year 2	Reference points and management plan reviewed by ICES
Year 3	Stock status evaluated based on revised reference points
Year 4	Revised management plan agreed based on revised reference points
Year 5	Management consistent with revised management plan

Activities and sub-activities		**Lead organisation**	**Other organisations involved**	**End date**
4.1	Work with partners to request review by ICES of reference points and long-term management plan for whiting			
4.1.1	Work with Marine Scotland and DEFRA to provide input into a Scheveningen Group submission to the Commission on the need for a formal request to ICES for review of reference points and management plan for North Sea whiting.	Marine Scotland, DEFRA	SFSAG, ICES	Y1 ongoing
4.1.2	Work with MSS to push within ICES for a review of reference points and the management plan for North Sea whiting.	SFSAG	MSS, ICES	Y1 ongoing
4.2	Work with partners to support scientific work on whiting reference points and management plan			
4.2.1	Continue to work with MSS to support data collection on whiting, particularly on discards	SFF, SFSAG	MSS	Y1 ongoing
4.2.2	Support MSS with other data collection requirements for whiting as requested	MSS	SFSAG	Y1 ongoing
4.3	Depending on the outcome of the stock assessment based on revised reference points, work with partners to support changes to the management plan to ensure that the stock can be maintained at a level consistent with MSY			

4.3.1	Work with partners as in 4.1 above to put forward proposals for revision of the long-term management plan to be consistent with the agreed rebuilding timeframe	As 4.1	As 4.1	Y4 Q1
4.4	Ensure that decision-making follows the long-term management plan as revised above			
4.4.1	Continue to work with partners as in 4.1 above to ensure that management decision-making (within the UK, within the EU and EU/Norway or EU/Norway/UK) follows the revised long-term management plan	As 4.1	As 4.1	Y4 ongoing
4.5	Continue to work on the development and evaluation of additional measures for whiting management			
4.5.1	Continue research work on selectivity with Scottish industry via GITAG	GITAG	SFSAG members, Marine Scotland	Y2 ongoing
4.5.2	Continue other research work on selectivity with UK industry, via Fishery-Science Partnerships	SFSAG members, CEFAS	Marine Scotland, MMO	Y2 ongoing
4.5.3	Continue support for data collection (observers and other as required) and other support to MSS as required to evaluate implementation of management measures	SFF, MSS	SFSAG	Y1 ongoing

Action #	**ACTION 5 – Ensuring that bycatch of starry ray and common skate is not having an impact on recovery of the stocks**		
Stock	North Sea cod, North Sea whiting		
MSC PI	2.3.1 – The UoA does not hinder recovery of starry ray and common skate 2.3.2 – The UoA has in place precautionary management strategies designed to ensure the UoA does not hinder recovery of starry ray and common skate. The UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of starry ray and common skate. 2.3.3 – Relevant information is collected to support the management of UoA impacts on starry ray and common skate.		
IPG (FIP objectives):	• The UoA is highly unlikely to hinder recovery of starry ray and common skate • Available information suggests that the management measures in place are able to ensure that the UoA is not having an unsustainable impact on starry ray or common skate • Sufficient quantitative information is available to evaluate the impact of the UoA on starry ray and common skate and inform decisions about additional management measures to reduce impacts if required		
Background and notes:	• Common skate is a species complex of three species (*Dipturus batis, D. flossada* and *D. intermedia*); they are retained here as one species group because scientific advice remains for 'common skate'. • This Action was a condition on the North Sea cod fishery prior to suspension and remains a condition on the Northern demersals fishery (both fisheries being in practice part of the same mixed fishery). The FIP activities below are taken from the Client Action Plans for these fisheries. The timeline for the FIP Action 5 is taken from the Northern demersals fishery, which at time of writing is undergoing the Year 3 surveillance audit. Year 4 of the Client Action Plan is Year 1 for the FIP, and the FIP actions run for 2 years or until the condition is closed out by the CAB for the Northern demersals fishery.		
Priority	medium		
Milestones:			
Year 1	Data on skate bycatch is being collected; a provisional analysis shows spatial and temporal distribution of bycatch.		
Year 2	Data on skate bycatch is being collected; full data analysis is available to evaluate whether additional management measures are available and if so to inform decision-making.		
Year 3	Additional management measures are put in place, if required.		
Activities and sub-activities		**Lead organisation**	**Other organisations involved**	**End date**

5.1	Support bycatch data collection			
5.1.1	Continue support for observer programme (SFF observers), integrated with MSS data collection programmes	SFF	SFSAG members, MSS	Y1 ongoing
5.1.2	Ensure that skate identification cards are available for all SFSAG member vessels	SFSAG	SeaFish	Y1 ongoing
5.1.3	Support MSS with other data collection requirements for skates as requested (e.g. self-reporting, size measurements, other)	SFSAG	MSS	Y1 ongoing
5.2	Analyse bycatch data for information to inform management if required			
5.2.1	Preliminary spatial analysis of available data for any evidence of bycatch hotspots or information about bycatch by area or depth stratum	MSS	SFSAG	Y1 Q1
5.2.2	Complete spatial analysis of available data for any evidence of bycatch hotspots or information about bycatch by area or depth stratum	MSS	SFSAG	Y2 Q1
5.2.3	Preliminary analysis of data for seasonal or temporal patterns	MSS	SFSAG	Y1 Q1
5.2.4	Complete analysis of data for seasonal or temporal patterns	MSS	SFSAG	Y2 Q1
5.2.5	Preliminary analysis of data by gear type or vessel type, as possible consistent with legal requirements for confidentiality	MSS	SFSAG	Y1 Q1
5.2.6	Complete analysis of data by gear type or vessel type	MSS	SFSAG	Y2 Q1
5.3	Evaluate available information on status and trends in starry ray and common skate stocks			
5.3.1	Review ICES analyses and advice on trends in starry ray and common skate stocks and evaluate based on information about trends whether there is evidence that stocks are recovering or declining	SFSAG	MSS	Y1 Q1, Y1 Q4 (advice in Nov.)
5.4	Put in place additional management measures if required			
5.4.1	Based on the review of data on stock trends, evaluate whether the stocks are recovering, or whether additional management measures are required, taking advice from MSS as required	SFSAG	MSS	Y2 Q1
5.4.2	If additional measures are required, evaluate the bycatch data to inform options for spatial or temporal management, and/or if management should focus on particular groups of gears or vessels	SFSAG	MSS	Y2 Q1

5.4.3	Discuss a range of management options with stakeholders	SFSAG	SFSAG members, MSS, Marine Scotland, any other interested stakeholders	Y2 Q2
5.4.4	Discuss enforceability of different management options	SFSAG	Marine Scotland Compliance	Y2 Q2
5.4.5	Agree and implement supplementary management measures for starry ray and common skate, which might be i) voluntary measures for SFSAG members; ii) Scotland or UK measures or iii) EU measures – or any other approach as appropriate. (Note that if an EU-wide approach is selected, the process for implementation of the measures will most likely extend into Year 3; this is fine as it is still within the FIP timeframe.)	SFSAG	Others depending on selected approach	Y2 Q4 or longer depending on approach

Action #	**ACTION 6 – Ensuring that the fishery is not having a serious or irreversible impact on seapens in the Fladen Ground**			
Stock	North Sea cod, North Sea whiting			
MSC PI	2.4.2 – There is a strategy in place to ensure that the UoA does not pose a risk of serious or irreversible harm to seapens			
IPG (FIP objectives):	There is evidence that the UoA complies with the voluntary closure for seapens in the Fladen Ground			
Background and notes:	• This Action was a condition on the North Sea cod fishery prior to suspension, and remains a condition on the Northern demersals fishery (both fisheries being in practice part of the same mixed fishery). The FIP activities below are taken from the Client Action Plans for these fisheries. The timeline for the FIP Action 6 is taken from the Northern demersals fishery, which at time of writing is undergoing the Year 3 surveillance audit. This condition was imposed at the end of Year 2 of the certificate for that fishery, so Year 2 of the Client Action Plan is Year 1 for the FIP. • The condition does not relate to the relevant management measure itself (a voluntary closure by SFSAG of an area known to contain seapens) but instead to the enforcement of the measure.			
Priority	medium			
Milestones:				
Year 1	All incursions at fishing speed into the Voluntary Closed Area are recorded and there is evidence of contact with each vessel.			
Year 2	All incursions at fishing speed into the Voluntary Closed Area are recorded and there is clear evidence of how any incident of non-compliance is dealt with.			
Activities and sub-activities		**Lead organisation**	**Other organisations involved**	**End date**
6.1	Continue to work with Marine Scotland Compliance to flag up incursions into the Voluntary Closed Area at fishing speed			
6.1.1	Incursions within agreed boundaries of area at fishing speed are reported to SFSAG by Marine Scotland Compliance VMS monitoring division, following agreed protocol	Marine Scotland Compliance	SFSAG	Y1 ongoing
6.1.2	SFSAG records all such contacts from Marine Scotland Compliance	SFSAG	Marine Scotland Compliance	Y1 ongoing
6.2	Contact relevant vessels and deal with any incidents of non-compliance			

6.2.1	SFSAG contacts relevant vessels, following SFSAG's agreed policy and procedures	SFSAG		Y1 ongoing
6.2.2	If non-compliance is established, SFSAG follows the agreed enforcement procedure with the vessel, recording the process at each step	SFSAG		Y1 ongoing

Action #	ACTION 7 – The fishery complies with the Landing Obligation (LO)
Stock	North Sea cod, North Sea whiting
MSC PI	2.3.2 – Monitoring, control and surveillance mechanisms ensure that the management system is enforced and complied with
IPG (FIP objectives):	• The MCS system operated by Marine Scotland Compliance can demonstrate an ability to enforce the requirements of the Landing Obligation • The available evidence suggests that fishers comply with the Landing Obligation
Background and notes:	• This Action relates to a condition that will be applied to the Northern demersals fishery at the Year 3 audit (currently underway) (and to North Sea cod as a non-binding condition for the duration of suspension). The condition arose as a consequence of an objection procedure on an overlapping fishery, followed by a process of harmonisation across all North Sea demersal certificates. The milestones given below are those provided by the CAB and are an outcome of the harmonisation process. • Because the condition has not yet (at time of writing) been applied, there is not yet a Client Action Plan available. It is not guaranteed that at the end of the process of developing the Client Action Plan (which may involve discussion with stakeholders and other fisheries) it will align with the FIP activities set out below. This means that the FIP Action Plan may need to be changed during Year 1 to align with the agreed Client Action Plan for this new condition.
Priority	medium
Milestones: Note: These milestones are still under discussion for the certified fisheries. If they are changed, the FIP workplan will be revised accordingly.	
Year 1	See P3 LO Condition
Year 2	See P3 LO Condition
Year 3	See p3 LO Condition
Year 4	See P3 LO Condition

The client action plan for the new condition 14 on PI 3.2.3 is included in Table 30 above.

4.5 Rescoring Performance Indicators

Evaluation Table for PI 1.2.2.

NOTE: Only the UoA 4 for Hake is rescored in the table below. Original text is ~~struck through~~ and new text is in italics

<table>
<tr><td colspan="2">PI 1.2.2</td><td colspan="3">There are well defined and effective harvest control rules in place</td></tr>
<tr><td colspan="2">Scoring Issue</td><td>SG 60</td><td>SG 80</td><td>SG 100</td></tr>
<tr><td rowspan="3">a</td><td>Guidepost</td><td>Generally understood harvest rules are in place that are consistent with the harvest strategy and which act to reduce the exploitation rate as limit reference points are approached.</td><td>Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.</td><td></td></tr>
<tr><td>Met?</td><td><table><tr><td>UoA 1 – Haddock</td><td>Y</td></tr><tr><td>UoA 2 – Saithe</td><td>Y</td></tr><tr><td>UoA 3 – Plaice</td><td>Y</td></tr><tr><td>UoA 4 – Hake</td><td>Y</td></tr><tr><td>UoA 5 - Whiting</td><td>Y</td></tr></table></td><td><table><tr><td>UoA 1 – Haddock</td><td>Y</td></tr><tr><td>UoA 2 – Saithe</td><td>Y</td></tr><tr><td>UoA 3 – Plaice</td><td><s>N</s> Y</td></tr><tr><td>UoA 4 – Hake</td><td>N Y</td></tr><tr><td>UoA 5 - Whiting</td><td>N</td></tr></table></td><td></td></tr>
<tr><td>Justification</td><td colspan="3">UoA 1 – Haddock - Advice provided by ICES is based on a standard HCR that reduces fishing mortality when the SSB falls below B_{pa}. The rule assumes F_{MSY} is the maximum fishing mortality rate. Hence SG60 is met. The stock area been changed and ICES revised the reference points which has prevented managers from following the agreed EU-Norway management plan for the North Sea. However, TACs are based on the Agreed record of 1 December 2017 for 2018. According to this agreement the ICES MSY HCR has been adopted and the distribution of catches between 6a and subarea 4 is defined in the agreed record, hence SG80 is met.

UoA 2 – Saithe - The EU-Norway agreement sets a maximum F = 0.3 and minimum SSB = 200,000 t. If the biomass falls below 200,000 t F is reduced. ICES has developed a generic HCR for MSY which reduces F linearly when F falls below B_{pa} and has evaluated this for saithe. The EU-Norway plan has more conservative limit reference points and is therefore consistent with the ICES generic HCR. SG80 is met

UoA 3 – Plaice - On the 4th July 2018, the European Union adopted Regulation 2018/973 establishing a multi annual management plan for demersal stocks in the North Sea, which came into force on the 24th July 2018 (EU 2018). This Regulation applies, inter alia, to plaice stocks in the North Sea and Skagerrak.</td></tr>
</table>

Article 4 of Regulation 2018/973 requires that fishing mortality is set in the lower range of ICES F_{MSY} advice for any stock that has a biomass below MSY $B_{trigger}$.

The procedure for determining F when B is below $MSYB_{trigger}$ is formally set out in the ICES Advice Basis (ICES 2018), as follows: -

MSY Btrigger is considered the lower bound of spawning–stock biomass fluctuation when fished at F_{MSY} and is used in ICES advice rule to trigger a cautious response. The cautious response, in cases where the spawning–stock falls below $MSYB_{trigger}$, is to reduce fishing mortality to allow a stock to rebuild to levels capable of producing MSY. The reduction in fishing mortality is proportional to the ratio between the size of the spawning–stock and $MSYB_{trigger}$.

The advice rule leads to catch advice corresponding to a fishing mortality of:

1. F = F_{MSY} when the spawning–stock biomass is at or above MSY Btrigger; and

2. F = F_{MSY}× spawning–stock biomass/$MSYB_{trigger}$ when the stock is below $MSYB_{trigger}$ and above B_{lim};

3. If the F following from applying rule 2 is insufficient to bring the stock above B_{lim} in the short-term ICES advice will be based on bringing the stock above B_{lim} in the short term. This may result in advice of zero catch.

It is therefore evident that the North Sea Multi Annual Management Plan (MAP) requires that fishing mortality is set in the range consistent with ICES advice on F_{MSY} (Article 5(2)); and that this value is reduced linearly by ICES whenever stock biomass falls below MSY $B_{trigger}$. The MAP also requires in any event that F is set at a level that there is less than a 5 % probability of the SSB falling below B_{lim}. These harvest control rules are very well defined, are consistent with the harvest strategy established by the CFP and ensure that the exploitation rate is reduced as the limit reference. SG60 and SG80 are met.

~~**UoA 3 – Plaice** - A multiannual plan (EU 2007) has been in place for some time and has been used to adjust fishing mortality rates in response the size of the stock. The stock is well in excess of $MSYB_{trigger}$ and has fluctuated above it in recent years. Although the stock assessment area has been revised, F is below F_{MSY} for the combined area. ICES advice now follows their conventional HCR based on the MSY approach. Managers moved towards the new MSY HCR that scales F in response to biomass if it falls below $MSYB_{trigger}$. However, while it is expected that a well-defined HCR will be in place, this currently does not exist, and SG 80 is not met.~~

UoA – Hake - *A recovery plan (EU, 2004) has been in place for some time and has been used to set fishing mortality rates in response to the size of the stock. The plan had a target F=0.25 (less than F_{MSY}) and a built-in decision rule to increase the SSB (EU, 2004) based on the current stock size. As a result the stock has recovered both in terms of SSB and F.*

The harvest rule now followed by ICES is to give advice is based on F_{MSY} as the maximum F. This is reduced linearly when the biomass falls below MSY $B_{trigger}$ and is zero below B_{lim}. The rule is well defined and consistent with the Precautionary and MSY Approaches. In recent years the agreed TAC has usually followed the ICES MSY HCR advice:

Year	*ICES advice*	*Agreed TAC*	*% of Advice*
2014	*81,846*	*81,846*	*100.0*
2015	*78,457*	*90,948*	*115.9*

		2016	*109,592*	*108,764*	*99.2*
		2017	*123,777*	*119,765*	*96.8*
		2018	*115,335*	*104,190*	*90.3*
		2019	*142,240*	*142,240*	*100.0*

Since 2016 managers have followed ICES advice, including the TAC for 2019 so SG60 and SG80 are met.

~~**UoA 4 – Hake** – A recovery plan (EU 2004) has been in place for some time and has been used to set fishing mortality rates in response the size of the stock. The stock has recovered both in terms of SSB and F and therefore meets SG60. The harvest rule now followed by ICES to give advice is based on F_{MSY} as the maximum F. This should be reduced linearly when the biomass falls below $MSYB_{trigger}$ and is zero below B_{lim} (ICES 2016c) however as it has not been formally adopted by managers there is uncertainty about the implementation of the rule so SG80 is not met.~~

UoA 5 – Whiting - Advice provided by ICES is based on standard HCR that reduces fishing mortality when the SSB falls below B_{pa}. The rule assumes F = 0.15 is the maximum fishing mortality rate. Hence SG60 is met. The EU-Norway management plan uses the same F but does not reduce F when biomass falls below B_{pa} (ICES 2013). Following a revision of the M values used in the assessment ICES evaluated the plan as not consistent with the Precautionary Approach (ICES 2017m). Hence SG80 is not met.

b	**Guidepost**		The selection of the harvest control rules takes into account the main uncertainties.	The design of the harvest control rules takes into account a wide range of uncertainties.
	Met?		UoA 1 – Haddock: Y UoA 2 – Saithe: Y UoA 3 – Plaice: Y UoA 4 – Hake: Y UoA 5 - Whiting: Y	UoA 1 – Haddock: Y UoA 2 – Saithe: Y UoA 3 – Plaice: N UoA 4 – Hake: N UoA 5 - Whiting: Y
	Justification	**UoA 1 – Haddock** The HCR is based on a generic rule that reduces F in response to the SSB falling below B_{pa}. B_{pa} is an estimate of the minimum SSB required to produce a good year class taking into account measurement error. F_{MSY} takes into account recruitment variability, assumes low average recruitment and the probability of falling below B_{pa} when accounting for assessment and advice error (ICES 2016j). In addition, the adoption of MSY as a framework for single species management is based on the observation that when fishing at MSY the stock will produce sufficient biomass to sustain the species role in ecological function. Hence a wide range of sources of uncertainty are considered and SG100 is met. **UoA 2 – Saithe -** The HCR is based on a generic rule that reduces F in response to the SSB falling below B_{pa}. B_{pa} is an estimate the B_{loss} taking into account measurement error. F_{MSY} takes into account recruitment variability, recruitment and the probability of falling below B_{pa} when accounting for assessment and advice error (ICES 2017l). In addition, the adoption of MSY as a framework for single species management is based on the observation that when		

<table>
<tr><td></td><td></td><td colspan="3">fishing at MSY the stock will produce sufficient biomass to sustain the species role in ecological function. Hence a wide range of sources of uncertainty are considered and SG100 is met.

UoA 3 – Plaice - The previous management plan (EU 2007) and the proposed Multiannual plan for the North Sea (EU 2016) contain the main elements of an HCR where limit reference points are defined and which identify when management action to reduce fishing mortality in response to the biomass is required. These reference points are incorporated into the ICES advisory HCR and take into account the principal sources of uncertainty. Hence SG80 is met. At present there is no formally agreed HCR which meets SG100

UoA 4 – Hake - As there is a detailed stock assessment using both fishery-dependent and fishery independent data the generally understood HCR is likely to be robust to the main uncertainties and SG80 is met. An HCR has been developed and tested, (ICES 2016c), and is used for advice. It takes into account a wide range of uncertainties including assessment error and implementation error. In addition, the adoption of MSY as a framework for single species management is based on the observation that when fishing at MSY the stock will produce sufficient biomass to sustain the species role in ecological function. As it has not been formally adopted by managers there is uncertainty about the implementation of the rule and SG100 is not met

UoA 5 – Whiting - The HCR used for advice is based on a generic rule that reduces F in response to the SSB falling below B_{pa}. B_{pa} is an estimate the lowest observed SSB taking into account measurement error. F_{MSY} takes into account recruitment variability, and the probability of falling below B_{pa} when accounting for assessment and advice error (ICES 2016k). Hence a wide range of sources of uncertainty are considered and SG100 is met.</td></tr>
<tr><td rowspan="3">c</td><td>Guidepost</td><td>There is some evidence that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.</td><td>Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.</td><td>Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.</td></tr>
<tr><td>Met?</td><td><table><tr><td>UoA 1 – Haddock</td><td>Y</td></tr><tr><td>UoA 2 – Saithe</td><td>Y</td></tr><tr><td>UoA 3 – Plaice</td><td>Y</td></tr><tr><td>UoA 4 – Hake</td><td>Y</td></tr><tr><td>UoA 5 - Whiting</td><td>Y</td></tr></table></td><td><table><tr><td>UoA 1 – Haddock</td><td>Y</td></tr><tr><td>UoA 2 – Saithe</td><td>Y</td></tr><tr><td>UoA 3 – Plaice</td><td>Y</td></tr><tr><td>UoA 4 – Hake</td><td>Y</td></tr><tr><td>UoA 5 - Whiting</td><td>N</td></tr></table></td><td><table><tr><td>UoA 1 – Haddock</td><td>N</td></tr><tr><td>UoA 2 – Saithe</td><td>Y</td></tr><tr><td>UoA 3 – Plaice</td><td>N</td></tr><tr><td>UoA 4 – Hake</td><td>N</td></tr><tr><td>UoA 5 - Whiting</td><td>N</td></tr></table></td></tr>
<tr><td>Justification</td><td colspan="3">UoA 1 – Haddock - The main tools for controlling exploitation are catch limits and restrictions on fleet capacity. In addition there are minimum mesh sizes for the principal fleets (TR1) of 100 mm. During the period when the EU-Norway management plan was in operation the fishing mortality was reduce below the then F_{MSY} value for several years. This shows the tools did work during that period and SG80 is met. In the most recent years the management plan has been made obsolete by the revision of the stock area and reference points so there is insufficient evidence available to consider SG100 as met until further stock assessments have been carried out.

UoA 2 – Saithe - The principal tool for implementing the HCR is a limit on total catches. In more recent years TACs have been set in line with advice and landings have been close to these limits. SSB has increased since the lowest values in the mid-1990s and has typically been close to or above B_{pa} =</td></tr>
</table>

		200,000 t. Fishing mortality tended to be higher than the F = 0.3 target value until 2014 but is now at 0.28 following a steady decline from 0.44 in 2009, hence SG100 is met **UoA 3 – Plaice -** The principal annual tool used to implement HCRs is a Total Allowable Catch. The fishery is also managed using closed areas, minimum mesh sizes and fleet capacity limits. This has been effective during the previous management plan and current F and SSB satisfy MSY reference points, hence SG80 is met. However, as no formal HCR has been adopted for the combined area it is not possible to assess the effectiveness of current measures and SG100 is not met. **UoA 4 – Hake -** The principal tool used to implement HCRs is a Total Allowable Catch. This has been effective during the recovery plan and current F and SSB satisfy MSY reference points, hence SG80 is met. Although no formal HCR has been adopted ICES provides using a candidate HCR and is followed by managers to some degree. Recent ICES advice suggests this control of discards may not be effective (ICES 2017d). **UoA 5 – Whiting -** The main tools for controlling exploitation are catch limits and restrictions on fleet capacity. In addition there are minimum mesh sizes for the principal fleets (TR1) of 100 mm. During the period when the EU-Norway management plan was in operation the fishing mortality was reduced from 0.69 to approximately 0.2. This shows the tools had some success during that period. In the most recent years the management plan has been made obsolete by the revision of the natural mortality values and reference points so there is insufficient evidence available to evaluate SG80 or SG100 until further stock assessments have been carried out. For all UoAs, the procedure of topping up the TAC to allow compliance with the Landing Obligation may undermine the control of catches unless there is adequate enforcement of the landing obligation. There is insufficient data at present to evaluate this issue, but currently the quantities involved in top ups are small.
References		ICES (2016j) ICES (2017l; 2016m), EU (2016; 2007), ICES (2017j) EU (2004) and ICES (2016c), ICES (2016k; 2017m; 2013) EU (2018) and ICES (2018)

UoA 1 – Haddock	**85**
UoA 2 – Saithe	**100**
UoA 3 – Plaice	**~~75~~ 80**
UoA 4 – Hake	**~~75~~ 80**

UoA 5 - Whiting	**65**
CONDITION NUMBER (if relevant):	**UoA 3 – Plaice = 5** **~~UoA 4 – Hake = 6~~** **UoA 5 – Whiting = 7**

Evaluation Table for PI 2.1.1

This PI is rescored on the basis of the changes to North Sea Cod status and management and the addition of NS whiting as a principle 2 species following its suspended status as target within its UoA 5. New text added at this audit is shown in underlined script all other text remains as per the PCR (Jones et al. 2018)**.**

PI 2.1.1		**The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Main retained species are likely to be within biologically based limits (if not, go to scoring issue c below).	Main retained species are highly likely to be within biologically based limits (if not, go to scoring issue c below).	There is a high degree of certainty that retained species are within biologically based limits and fluctuating around their target reference points.
	Met?	N – W.C cod , N.S cod and W.C whiting (go to 2.1.1c) Y – other stocks	N – W.C cod, N.S cod and W.C whiting (go to 2.1.1c) Y – other stocks	Y –megrim, *Nephrops* FUs except FU15 N – other stocks
	Justification	Main retained stocks, the relevant gears and their status in relation to biologically-based limits and targets are given below; see also Table 7, Table 8 and Table 9 in Section Principle 2. Definitions: For this PI, likely: >=70%, highly likely: >=80%, high degree of certainty: >=90% (Table SA9). Within biologically-based limits is interpreted as above the PRI (Table SA8). Where a Blim is estimated, this is usually taken as a proxy for the PRI. For three stocks, SG80 is not met (i.e. it is not highly likely that the stock is above biologically-based limits; defined here as B_{lim}) – North Sea cod, W. Scotland cod and W. Scotland whiting. North Sea Cod: The latest ICES assessment (ICES 2019b) estimates that the biomass has fallen below Blim, with approximately 95 % probability. Recruitment (age 1 animals) has been low since ~2000, and very low for the last two years. On this basis, the stock is not within biologically-based limits; SG60 is not met (go to Scoring Issue c). For North Sea whiting, since the biomass is increasing, we can infer that recruitment is improving; i.e. the stock is 'likely' to be above biologically-based limits (SG60 is met) but for cod this is not the case, so SG60 is not met (go to scoring issue c).		

A summary of the main retained stocks and their scores relative to status are provided in the tables below:

Stocks	Main for which gears?	Highly likely to be above biologically-based limits?	Fluctuating around target ref. points?	Score
W. Scotland whiting	all	No biomass is below B_{LIM} therefore scoring issue 2.1.1c is required.	n/a	go to 2.1.1c
North Sea whiting	All	B~BMSYtrigger	No F>FMSY	80
N. Sea cod	all	B <Blim therefore scoring issue 2.1.1c is required.	F>F_{MSY}; not met	go to 2.1.1c
W. Scotland cod	all	go to 2.1.1c	n/a	go to 2.1.1c
Anglerfish	single/twin trawls TR1/TR2	Biomass index increasing since 2011.	Stock biomass in 2015 is estimated to be 1.04 times above the estimated B_{MSY}. Met	80
Nephrops	single/twin trawls TR1/TR2	see below		
Ling	twin trawl TR1	Biomass index increasing since 2001 – met	F_{MSY} approximates M. A proxy based on equilibrium mean length in the population at F_{MSY} is used. This is smaller than current mean length in population. met	80
Lemon sole	TR2	Spawning-stock biomass (SSB) increased from 2007 to 2012, and has remained stable since, albeit with a small decline in 2018	Not estimated cannot be met	80
Megrim	twin trawl TR1		B>>$MSYB_{trigger}$, F<<F_{MSY}; met	100
Witch	all TR2 trawls	B ~=B_{MSY}; >$MSYB_{trigger}$; met	No F > FMSY	80

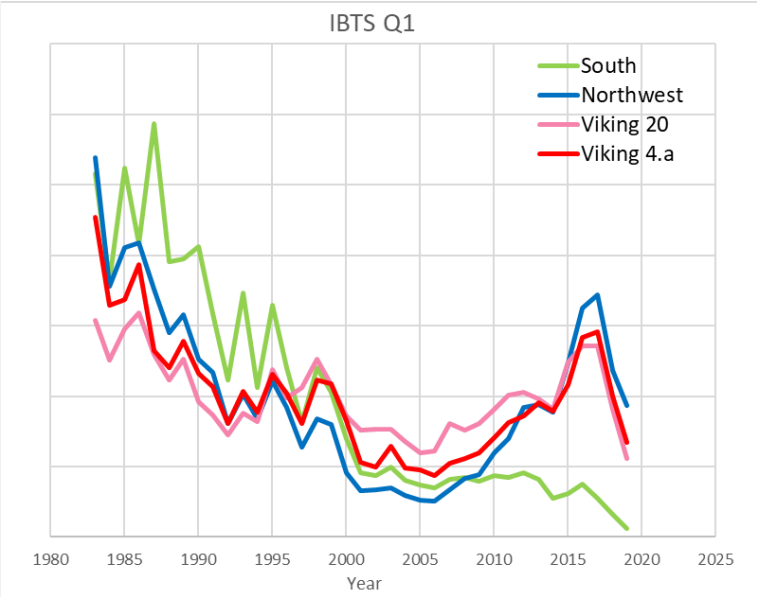
Nephrops functional units (FU)

FU	Highly likely to be above biologically-based limits?	Fluctuating around target ref. points?	Score
FU7	B>MSYB$_{trigger}$,	B>MSYB$_{trigger}$, F<<F$_{MSY}$ proxy	100
FU8	B>>MSYB$_{trigger}$,	B>>MSYB$_{trigger}$, F<F$_{MSY}$ proxy	100
FU9	B>MSYB$_{trigger}$,	B>MSYB$_{trigger}$, F<F$_{MSY}$ proxy	100
FU11	B>MSYB$_{trigger}$,	B>MSYB$_{trigger}$, F<F$_{MSY}$ proxy	100
FU12	B>MSYB$_{trigger}$,	B>MSYB$_{trigger}$, F<F$_{MSY}$ proxy	100
FU13	B>>MSYB$_{trigger}$,	B>>MSYB$_{trigger}$, F variable, fluctuating around F$_{MSY}$ proxy	100
FU15	B>MSYB$_{trigger}$; met	F>F$_{MSY}$ proxy; not met	80

b	**Guidepost**			Target reference points are defined for retained species.
	Met?			N
	Justification	Target reference points are defined for all main retained species, but not for most minor retained species (see SIa, Table 7, Table 8, Table 9 for catch list). SG 100 is not met in full.		
c	**Guidepost**	If main retained species are outside the limits there are measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding of the depleted species.	If main retained species are outside the limits there is a partial strategy of demonstrably effective management measures in place such that the fishery does not hinder recovery and rebuilding.	
	Met?	Y	Y – WS whiting N – WS cod and NS cod	
	Justification	This applies to North Sea cod, W. Scotland cod and whiting (see SIa). The text for W. Scotland cod and whiting remain as per the PCR (Jones et al. 2018).		

		Definitions: "**Measures**" are actions or tools in place that either explicitly manage impacts on the component or indirectly contribute to management of the component under assessment having been designed to manage impacts elsewhere. A "**partial strategy**" represents a cohesive arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and an awareness of the need to change the measures should they cease to be effective. It may not have been designed to manage the impact on that component specifically. A "**strategy**" represents a cohesive and strategic arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome, and which should be designed to manage impact on that component specifically. A strategy needs to be appropriate to the scale, intensity and cultural context of the fishery and should contain mechanisms for the modification of fishing practices in the light of the identification of unacceptable impacts [not used in this SI but see under 2.1.2 further down]. **North Sea cod** Scoring: All the main North Sea demersal stocks, including cod, are managed at EU-Norway level via a system which meets the MSC definition of a partial strategy (and a strategy): i.e. an agreed scientific approach (the MSY approach in most cases), incorporating reference points, a TAC and quotas allocated via agreed allocation keys at several levels (EU/Norway, within the EU, within the UK, within Scotland), aimed directly at managing the stock in question. Management measures default within the MSY approach also include minimum mesh size regulations (Technical regulations), restrictions on discarding (the EU landing obligation) and measures to limit fleet capacity through licensing systems. In 2018 the EU approved a MAP for North Sea demersal stocks which fixes a range for F_{MSY} rather than using a single point estimate (with the aim of allowing more flexible quotas and hence reducing the need for discarding/landing unwanted catch). For North Sea cod, ICES (ICES 2019a) notes that because the MAP is not formally accepted by Norway they will continue to use the previous point estimate – but the MAP range (F_{MSY} upper and F_{MSY} lower) is included as a catch option in the advice. For this stock, F_{MSY} point estimate is 0.31, F_{MSY} upper in the MAP is 0.46, and F_{MSY} lower in the MAP is 0.198. These values are the highest / lowest that result in a reduction in long-term yield of <5% relative to fishing at F_{MSY}. The stock was previously thought to have been on a recovery trajectory (which indeed it was, from ~2006-2015) and biomass increased briefly above B_{lim}. Previous ICES assessments gave a more optimistic picture of the stock, with biomass estimated to have been close to $B_{trigger}$. For this reason, the Cod Recovery Plan was replaced by a long-term management plan, and some of the main elements (notably restrictions on days at sea) were scrapped in 2017. ICES notes that it is unclear whether this has had any impact on the stock, and if so what. They also provide a striking evaluation of biomass by area within the North Sea (Figure 1), showing that in the southern North Sea, there was never any recovery trend at all, while in the other areas, the

trend was strong, but reversed abruptly after 2017. ICES suggest that this pattern may be driven by climate change, biological or fisheries effects, or a mixture, with further work needed to establish the main drivers of these trends.



IBTS Q1 cod biomass trends in the four areas of the North Sea: southern (green), Northwest (Scotland, blue), Viking 20 (Skaggerak, pink) and Viking 4a (Norway, red). (The Q3 survey biomass trends look similar.)

ICES recently evaluated the current MSY approach (based on point estimate of F_{MSY} and current B*trigger*) as well as a range of alternatives proposed by the EU. They concluded that while all the management scenarios were precautionary in the long term, the optimum scenario was to continue using the existing ICES MSY advice rule (i.e. Ftarget = FMSY = 0.31 and MSYBtrigger = 150,000 t), although additional stability elements could be included. They found that this current advice rule was the only one of the strategies tested that was precautionary across all the analyses.

This analysis of ICES provides evidence that the management strategy is 'demonstrably effective', (TAC for 2020 is set inline with ICES advice with a reduction of 50 % (EU-Nor 2020)) but there is also the problems with the stock assessment and associated year-on-year adjustment in the perception of stock status to consider. For the purposes of this audit (evaluating a worst-case scenario), and using a precautionary scoring SG60 is met (measures in place which are expected to allow stock recovery) but SG80 is not met.

W. Scotland cod (unchanged from PCR): This is managed under a long-term management plan (EU 2008) modified in 2016 (EU 2016). The TAC is set to zero, there are limits on landing bycatch (maximum 1.5 % live weight of landings) and limits on effort. Most of the catch is discarded, and considerable efforts have been made in recent years to reduce discards by improving selectivity (e.g. under the Conservation Credits Scheme and because of the Landing Obligation). From 2019 all vessels will need to land all catches of all quota species unless an exemption applies in north west waters. The issues around evaluating sources of mortality on this stock are reviewed in detail in Jones et al. (2018).

Whatever the source of mortality, an analysis by Cook & Trijoulet (2016) suggest that at current (2013) mortality levels, the stock has a reasonable (~85 %) chance of increasing in the next five years (Jones et al. (2018).), but also that relatively small proportional increases in mortality (from whatever source) increase the chances of further decline. ICES short-term projections of stock status for 2018 suggest ~no change in biomass with F at 2017 levels, while reducing F to F_{MSY} is projected to increase SSB significantly (64 %). Given the tendency of the stock assessment to over-estimate F in the terminal year, which is recognised by ICES this is likely achievable (ICES, 2017b). In WGCSE (2017) (ICES 2017k), Section 5.3.5: Mean F in that year [terminal year – 2016] is estimated at 0.69 which is a significant downward revision compared to the previous year's assessment (0.88). The mean F in 2014 has also been revised downwards. Short-term forecasts of SSB conducted at previous WGs have not shown particularly good consistency with estimates of SSB in assessments conducted in successive years (ICES 2015g).

This downward revision of F is evident in the retrospective analysis of F (ICES 2017k):

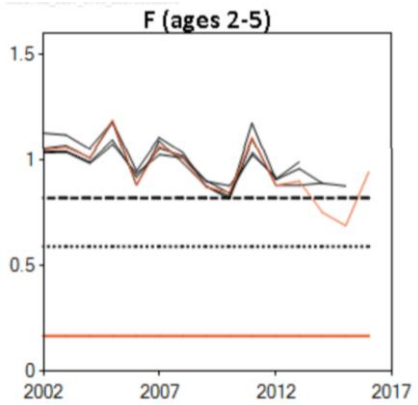


Figure: Cod in Division 6.a. Comparison of mean F (2–5) estimates produced by final run assessments between this year's assessment and previous four assessments. Source (ICES 2017k).

		These analyses, clearly show each additional year of assessment has resulted in a revision downwards of the previous year's terminal F and therefore there is uncertainty in the modelled increase in F in the terminal year of the most recent assessment; the more since there is no good external explanation for it in the fishery dynamics. More generally, it is strange, given that the gadoid fishery in this area is a mixed fishery with management measures that impact across all four main species, that the pattern in F is so different in cod from that seen in haddock, whiting and saithe. For all of these species, F has declined significantly since the introduction of the CRP and related measures. ICES account for the 'missing' mortality by assuming systematic area misreporting but Marine Scotland Compliance do not consider area misreporting to be a major source of error in the catch figures, and do not accept the way that compliance data which underpins the ICES misreporting have been used by ICES. Conversely, the analysis incorporating seal predation suggests grey seals may be an important source of mortality (ICES 2017a; Cook et al. 2015; Cook & Trijoulet 2016). The declining F is consistent with trends in the other species in the fishery, as well as consistent with the decline in the size of the fleet and the amount of fishing effort. (ICES WGCSE note their intention to evaluate the sensitivity of the model to seal predation data – new data has been provided to them but not in time to include in the 2017 assessment; see WGCSE 2017 Section 5.3.) In reviewing the above information, the team concluded that fishing mortality is actually likely a lower proportion of total mortality than estimated by ICES but note that there is great importance that fishing mortality on the stock does not increase. Given the EU technical measures in place for this stock (gear size regulations, TAC and minimum conservation reference sizes), coupled with the low but stable SSB and the uncertainty in natural mortality contribution and terminal F values in each stock assessment the team concluded that there was sufficient evidence that the measures in place are expected to ensure that the fishery does not hinder recovery and rebuilding of the depleted species therefore SG60 is met. Management is not, however, so far 'demonstrably effective' – SG80 is not met. **W. Scotland whiting (unchanged from PCR):** This is managed using the MSY approach, with a zero TAC. Unlike the cod stock, there is evidence that this stock is recovering, hence management measures are apparently effective. SG80 is met.		
d	**Guidepost**	If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the retained species to be outside biologically based limits or hindering recovery.		
	Met?	Y		
	Justification	There are no main stocks where status is poorly known, SG60 is met.		

References	See ICES advice references in **Table 9**, catch estimates in Table 7 and **Table 8** Jones et al. (2018). Marine Scotland Gordon Hart (pers. comm.), (ICES 2016l; ICES 2015g; ICES 2015e) (Cook et al. 2015; Cook & Trijoulet 2016) https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/2020-norway-fisheries-consultations-north-sea_en.pdf

UoAs 1, 2 and 4 - haddock, saithe and hake. West Coast Scotland and North Sea

Gear type	Scoring elements	Scores
OT TR1	W. Scotland whiting, N. Sea cod, W. Scotland cod, anglerfish, *Nephrops*, ling, megrim,	**75**
OTT TR1	W. Scotland whiting, N. Sea cod, W. Scotland cod, anglerfish, *Nephrops*, ling, megrim	**75**
OTP TR1	W. Scotland whiting, N. Sea cod, W. Scotland cod, anglerfish, *Nephrops*, ling, megrim	**75**
OT TR2	W. Scotland whiting, W. Scotland cod, anglerfish, *Nephrops*, witch, lemon sole	**75**
OTT TR1	W. Scotland whiting, N. Sea cod, W. Scotland cod, anglerfish, *Nephrops*, ling, megrim	**75**
SS	W. Scotland whiting, N. Sea cod, W. Scotland cod, ling, megrim	**75**
DS	W. Scotland whiting, N. Sea cod, W. Scotland cod, ling, megrim	**75**

UoAs 3 and 5 – plaice and whiting. North Sea only

Gear type	Scoring elements	Scores
OT TR1	N. Sea cod, anglerfish, *Nephrops*, ling, megrim, whiting	**75**
OTT TR1	N. Sea cod, anglerfish, *Nephrops*, ling, megrim, whiting	**75**
OTP TR1	N. Sea cod, anglerfish, *Nephrops*, ling, megrim, whiting	**75**
OT TR2	N. Sea cod, anglerfish, *Nephrops*, witch.	**75**
OTT TR1	N. Sea cod, anglerfish, *Nephrops*, ling, megrim	**75**
SS	N. Sea cod, ling, megrim	**75**
DS	N. Sea cod, ling, megrim	**75**
OVERALL PERFORMANCE INDICATOR SCORE UoAs 1, 2 and 4 - haddock, saithe and hake.:		**75**
OVERALL PERFORMANCE INDICATOR SCORE UoAs 3 and 5 – plaice and whiting.:		**75**
CONDITION NUMBER:		**8 (existing WC cod)** **12 (new NS cod)**

Evaluation Table for PI 2.1.2

This PI is rescored on the basis of the changes to North Sea Cod status and management and the addition of NS whiting as a principle 2 species following its suspended UoA. New text added at this audit is shown in underlined script all other text remains as per the PCR (Jones et al. 2018)**.**

PI 2.1.2		**There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are measures in place, if necessary, that are expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a partial strategy in place, if necessary, that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a strategy in place for managing retained species.
	Met?	Y - all elements	Y - all elements	Y* – whiting, WC cod, NS cod, anglerfish, ling N – *Nephrops*, megrim, witch, minor species
	Justification	All scoring elements Useful definitions: "**Measures**" are actions or tools in place that either explicitly manage impacts on the component or indirectly contribute to management of the component under assessment having been designed to manage impacts elsewhere. A "**partial strategy**" represents a cohesive arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and an awareness of the need to change the measures should they cease to be effective. It may not have been designed to manage the impact on that component specifically. A "**strategy**" represents a cohesive and strategic arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome, and which should be designed to manage impact on that component specifically. A strategy needs to be appropriate to the scale, intensity and cultural context of the fishery and should contain mechanisms for the modification of fishing practices in the light of the identification of unacceptable impacts All the main retained species are managed at EU-Norway level via an agreed scientific approach (the MSY approach in most cases; details in Table 21), incorporating reference points, a TAC and quotas allocated via agreed allocation keys at several levels (EU/Norway, within the EU, within the UK, within Scotland). Where data are not sufficient to put in place reference points, the precautionary framework for data-limited stocks is used as the basis for providing advice, which is then used to set TACs. **Scoring elements:** W. Scotland whiting, N. Sea cod, W. Scotland cod, anglerfish, *Nephrops* (7 FUs), ling, megrim, witch		

		W. Scotland whiting: A TAC is set for Divisions 6a+6b with a MCRS of 27cm. Most of the catch is discarded and selectivity measures such as mandatory SMPs for the *Nephrops* fleet aim to reduce unwanted catch. The success or otherwise of the approach is monitored via stock assessment, and the evidence from this suggests that the SSB is recovering (see 2.1.1). The measures constitute a strategy, so SG100 is met. N. Sea cod: All the main North Sea demersal stocks are managed at EU-Norway level via a system which meets the MSC definition of a strategy: i.e. an agreed scientific approach (the MSY approach in most cases), incorporating reference points, a TAC and quotas allocated via agreed allocation keys at several levels (EU/Norway, within the EU, within the UK, within Scotland), minimum mesh size regulations (Technical regulations), restrictions on discarding (the EU landing obligation) and measures to limit fleet capacity through licensing systems all aimed directly at managing the stock in question. In 2018 the EU approved a MAP for North Sea demersal stocks which fixes a range for FMSY rather than using a single point estimate (with the aim of allowing more flexible quotas and hence reducing the need for discarding/landing unwanted catch). For North Sea cod, however, the management strategy remains the previous MSY approach (although other approaches are included under catch scenarios), and ICES have evaluated this approach to be the most suitable. SG100 is met. W. Scotland cod: The TAC for 6a is set to zero, with an allowance for landing bycatch up to 1.5 % live weight retained catch per trip; except for fisheries subject to the LO. The MCRS is 35 cm. Advice and management is based on EU Regulation 2016/2094 which amends the previous long-term plan (the Cod Recovery Plan) as a transition to a multi-species plan for the area (although with Brexit this may change). An analysis in relation to the recovery and rebuilding of the stock is provided in 2.1.1 above. SG100 is met. Anglerfish: The framework for data-deficient stock is used to provide advice (based on biomass index trends) and a TAC is set on this basis. The biomass index is increasing. SG100 is met. *Nephrops*: Management is by TAC, which is set based on ICES advice for each FU (based on survey trends which can be used to estimate biomass directly). However, the TACs cover several FUs (TAC for the North Sea, TAC for 6 and EU waters of 5b). The biomass in all cases is at or above target levels (see 2.1.1). This constitutes a 'partial strategy' but not a 'strategy' because it is not designed for each FU specifically. SG80 is met but SG100 is not met. Ling: Same as anglerfish; biomass increasing since 2001. SG100 is met. Megrim: Same as anglerfish. ICES also note that 'management measures for other species have constrained the fishery and reduced effort and fishing mortality on megrim' (ICES 2017f). The TAC, however, covers two species of megrim. On this basis, the requirements of a 'partial strategy' are met, but not a 'strategy' because it is not specific to the element (stock). SG80 is met but SG100 is not met. Witch: A precautionary TAC is set for 3a and 4, combined with lemon sole. In 6a, reduction in fishing effort have constrained F on the stocks. On this basis, the requirements of a 'partial strategy' are met, but not a 'strategy' because it is not specific to the element (stock). SG80 is met but SG100 is not met. Minor species (SG100 only): For some minor species, such as grey gurnard, there is no management aside from general measures to constrain effort, and no monitoring. SG100 is not met. *The fishery appears to meet the SG100 level of performance here but this is not taken in to account in scoring at this time because not all SIs were met at SG80 (FR1.3 27.10.5.2). This high level of performance would, though, be considered in scoring in future at the point at which the condition is met

b	**Guidepost**	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.
	Met?	Y - all elements	N – WS cod, NS cod Y – other species	N – WC and NS whiting, anglerfish, *Nephrops*, ling, witch, megrim, minor species
	Justification	The stock assessment provides objective evidence of the success or otherwise of the management strategy. 'Testing' could be via short-term projections and/or evaluation of other management and model scenarios and uncertainty. NS cod - The analysis by ICES of different options for a long-term management strategy for North Sea cod, in response to a request by the EU and Norway, provides a basis for thinking that the strategy will work (i.e. it is precautionary in the long term). SG60 is met. However, this analysis is based on the stock assessment model which over the last 3 years has not proved to be robust or reliable, and this to some extent undermines this analysis. Overall, SG80 is not met because there is not sufficient confidence that the strategy will work. NS whiting - The harvest strategy is to fish to stock at or below FMSY. This is achieved through a variety of management tools that include TACs, minimum mesh size regulations, restrictions on discarding, technical measures to reduce industrial bycatch and measures to limit fleet capacity through licensing systems. Reference points have been calculated for the stock corresponding to F with a low (5 %) probability of falling below Blim. Annual stock assessments provide an estimate of stock status relative to reference points and advice is given on a catch limit that corresponds to the harvest strategy. There is an implicit harvest control rule that reduces fishing mortality when the SSB falls below Bpa. An area on the East coast of the UK is closed to industrial fishing that limits the bycatch of whiting in the Norway pout fisheries. Hence SG80 is met, SG100 is not met as testing has not been carried out in full. W. Scotland whiting: There is evidence of stock rebuilding, giving an objective basis for confidence that the strategy is working. SG80 is met. There is not, however, 'high confidence'; recruitment remains low (although apparently increasing) and short-term projections suggest a fall in SSB in 2018, even under a zero-fishing scenario (presumably this is a consequence of recruitment estimates). SG100 is not met. N. Sea cod: The stock assessment gives high confidence that the strategy is working, with the SSB at an appropriate level. Stock projections suggest very little biomass change in 2019 based on fishing at the current level or the management target (ICES 2017b). SG100 is met. W. Scotland cod: A detailed analysis of the stock status and projections for WS cod is given in the rationale for 2.1.1. For W. Scotland cod, the strategy is not working to rebuild the stock, but projections indicate that they have a reasonable probability of doing so given the arguments provided in 2.1.1c. SG60 is met. There is, however, so far, no evidence of rebuilding, and considerable uncertainty remains as to the key sources of mortality. Furthermore, Trijoulet et al. (2017) suggests that based on the hypothesis of significant seal predation, MSY reference points will need to be reconsidered, with both F_{MSY} and MSY estimates too high at present (i.e. rebuilding targets may not be realistic based on current seal populations). SG80 is not met. Anglerfish: The biomass index has been increasing since 2011, providing an objective basis for confidence that management is working, however the assessment is empirical; there is no formal stock assessment and no projections. SG80 is met but SG100 is not met. Nephrops: The stock biomass for each relevant FU is at an appropriate level (see 2.1.1a) providing an objective basis for confidence that management is working, however the assessments are empirical; there are no projections. SG80 is met but SG100 is not met.		

		Ling: Biomass increasing since 2001, the assessment is empirical; there is no formal stock assessment and no projections. SG80 is met but SG100 is not met. Megrim: SSB>>$B_{trigger}$ and F<<F_{MSY} (ICES 2017f). Projections evaluate the probability of SB2019<$B_{trigger}$ as <2 % for all scenarios*. SG80 is met. Under SIa, however, it has been concluded that the management measures do not constitute a strategy, so SG100 is not met. Witch: Biomass fluctuating without trend above likely reference levels, the assessment is empirical; there is no formal stock assessment and no projections. SG80 is met but SG100 is not met. Minor species (SG100 only): No strategy – SG100 not met. * There may be typo mistake in the 2017 ICES advice for megrim relating to these projections, because the p B<B_{lim} is higher than the p B<$B_{trigger}$, even though B_{lim}<$B_{trigger}$. Possibly the columns are incorrectly allocated. For the purposes of scoring the team have taken the largest value across both columns.		
c	**Guidepost**		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		N - NS whiting, NS cod Y - other stocks	Y – anglerfish N – other stocks
	Justification	A series of overlapping changes to the assessment and TACs (changes to many of the ICES assessments in additional to changes in TAC setting as stocks come under the Landing Obligation) plus a mismatch between stock assessment areas and TAC areas make it difficult at present to match ICES advice to TACs directly in many cases. Nevertheless, the stock assessments (summarised in ICES' advice) demonstrate that the stock objectives are being attained (i.e. B > $MSYB_{trigger}$) except for W. Scotland whiting and cod. Each scoring element is considered below. Note that only stocks considered to have a 'strategy' at SIa are eligible to score 100 here (i.e. whiting, cod stocks and anglerfish). NS cod - ICES has been basing its advice on the MSY approach since 2016. For 2016-2018 (the last year for which catch data are available), for Subarea 4, ICES estimated landings plus discards (unwanted catch) are always below the catch corresponding to ICES advice under the MSY approach. For 2019, ICES recommended a large cut in landings to 28,204 t; the TAC across the three areas (North Sea, Skagerrak, Eastern Channel) was set at 35,357 t; which is ~20% above the recommended level. Presumably the logic for this was to apply a limit on the percentage of inter-annual change in the TAC, since this represents a one third cut in TAC from 2018 levels (rather than 45 % as recommended by ICES). The North Sea MAP does not state this TAC constraint specifically, although it does allow for using the upper value in the FMSY range (Fupper) to 'limit the year-to-year variation in fishing opportunities' (para. 17). However, since the stock is most likely below Blim, this should not apply. Although the logic behind limiting the percentage reduction in the TAC was understandable (in terms of damage to the industry and the social requirements of the CFP and issues around the LO), it is not part of the management strategy. Hence these figures provide evidence that the strategy was not implemented successfully in 2019. For 2020, the EU-Norway agreement set the TAC at 50 % of that set in 2019 to a total of 14,718 t for Subarea 4 and 2,103 t for subdivision 20. This is more than the ICES advice of 13,686 t set using the MSY approach, but does meet the percentage advice change under the MSY approach (51 %), the difference being the increased TAC above advice in 2019. In addition to the reduced TAC the delegates agreed joint additional measures to protect juveniles and		

		spawning grounds that should be introduced in 2020 and seasonal closure measures for all gears except purse seine and pelagic trawl (not part of the UoAs here). Given the information above there currently insufficient evidence that the partial strategy is being applied successfully and SG80 is not met. NS whiting - An EU multiannual management plan (MAP) has been agreed by the EU for this stock (EU, 2018). This plan is not adopted by Norway; thus, it is not used as the basis of the advice for this shared stock. ICES was requested by the EC to provide advice based on the MSY approach and to include the MAP as a catch option. However, the current assessment shows that the fishing mortality has typically been above FMSY and that the biomass is not consistent above MSYBtrigger and there is thus evidence that the strategy is not working. SG80 is not met W. Scotland whiting: ICES advise no directed fishing, and this is implemented via a very small bycatch TAC (for the whole of Subarea 6). Based on the evaluation provided by ICES, it seems that the TAC (bycatch limit) is successfully implemented. However, most of the catch is discarded. Discards have also reduced considerably over the last two decades (2000-2004 average 3100 t/yr vs. 2011-15 average 700 t/yr). Efforts are ongoing to reduce discards further (e.g. via SMPs for the *Nephrops* fleet, as well as other selectivity initiatives such as via GITAG); it is not clear how much impact these are having according to ICES – discards remain high but this could be expected given that biomass and recruitment are increasing (ICES 2016o). The stock assessment shows an ongoing improvement in stock status since 2010. On this basis, SG80 is met, but SG100 is not met. N. Sea cod: Since the start of the CRP, the strategy has recovered the stock to ~target level. TACs are consistent with advice and landings with TACs; ICES estimate that discards are declining. SG100 is met. W. Scotland cod: Although ICES use area misreporting to account for 'missing' mortality in their analysis, Marine Scotland Compliance do not accept their analysis which is based on their data (see PI 2.2.1). Other than this issue, the strategy is being implemented, i.e. catch (landings + discards) has reduced dramatically in recent years (ICES 2017a). SG80 is met. Because of various issues (mismatch of TAC and stock assessment areas, questions around misreporting, estimates of discards), SG100 is not met in full. Anglerfish: The biomass index has been increasing; TACs are consistent with advice and landings with TACs; ICES estimate that discards are very low. SG100 is met. *Nephrops*: The overall TAC for each area is consistent with ICES advice in that it does not sum up to more than the total advice, but it does leave scope for overfishing at the FU level. Nevertheless, the biomass of each FU is at or above target level (see PI 2.1.1). SG80 is met. Ling: Landings add up to <TAC but more than ICES advice, which is constrained by the precautionary framework (limit on interannual increases); nevertheless, the biomass index has been increasing since 2001, during which time catches have remained fairly constant. SG80 is met. Megrim*: TACs are consistent with advice, landings are lower, discards are very low. SG80 is met. Witch: TACs are for megrim and lemon sole combined, so cannot be compared with advice. However, F has been $F<F_{MSY}$ proxy since 2009, so on that basis we can consider that there is some evidence that the strategy is being implemented appropriately. SG80 is met. Minor species (SG100 only): No strategy – not met.

		* There may be typo mistake in the 2017 ICES advice for megrim relating to these projections, because the p($B<B_{lim}$) is higher than the p($B<B_{trigger}$), even though $B_{lim}<B_{trigger}$. Possibly the columns are incorrectly allocated. For the purposes of scoring we have taken the largest (i.e. most precautionary) value across both columns.		
d	**Guidepost**			There is some evidence that the strategy is achieving its overall objective.
	Met?			N – W. Scotland cod, NS cod, NS whiting. Y – all the others
	Justification	For all the stocks except W. Scotland cod, NS cod and both whiting stocks, biomass are at target levels or (where there is no target) increasing – met. For W. Scotland whiting, biomass is rebuilding – met. For W. Scotland cod, not met. NS cod - It is not (see SI c above). SG 100 not met NS whiting – it is not, F has been above FMSY for all but one year since 1978. SG 100 not met		
e	**Guidepost**	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Y	Y	Y
	Justification	There is only a very small bycatch of sharks (i.e. a small bycatch of spurdog, porbeagle and tope, all discarded, considered under ETP species scoring). Shark finning is forbidden in EU fisheries (EU Regulation 605/2013 (EU 2013)) and there is no evidence that it happens or has ever happened in Scotland.		
References		See ICES advice references in Table 9, catch evidence in Table 7 and Table 8 Marine Scotland Gordon Hart (pers. comm.), (ICES 2016o; ICES 2017e; ICES 2016a; ICES 2017f; ICES 2017g; ICES 2016d; ICES 2017h; ICES 2017i; ICES 2017c; ICES 2015g; ICES 2017n; ICES 2016e; ICES 2016f; ICES 2016g; ICES 2016h; ICES 2017a; ICES 2015e; EU 2013; ICES 2017b) (Cook et al. 2015; Cook & Trijoulet 2016; Trijoulet et al. 2017), (ICES 2017k) (ICES 2019m)		

West Scotland Whiting - UoAs 1, 2 and 4 only	**95**
North Sea whiting	**75**

North Sea Cod	**65**
West Scotland Cod - UoAs 1, 2 and 4 only	**75**
Anglerfish	**95**
Nephrops	**85**
Megrim	**85**
Witch	**85**
Ling	**95**
Minor Species	**80**
OVERALL PERFORMANCE INDICATOR SCORE UoAs 1, 2 and 4 - haddock, saithe and hake:	**75**
OVERALL PERFORMANCE INDICATOR SCORE UoAs 3 and 5 – plaice and whiting:	**75**
CONDITION NUMBER:	**UoA 1, 2 and 4 (haddock, saithe and hake) = 9** **All UoA = 13 (NS cod and NS whiting)**

Evaluation Table for PI 2.3.1

This PI is redrafed on the basis of the changes to ETP records and the recording of new species following the latest data. New text added at this audit is shown in underlined script all other text remains as per the PCR (Jones et al. 2018)**.**

PI 2.3.1		The fishery meets national and international requirements for the protection of ETP species The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Known effects of the fishery are likely to be within limits of national and international requirements for protection of ETP species.	The effects of the fishery are known and are highly likely to be within limits of national and international requirements for protection of ETP species.	There is a high degree of certainty that the effects of the fishery are within limits of national and international requirements for protection of ETP species.
	Met?	Y	Y	N
	Justification	ETP species interacting with this fishery have been identified as follows based on PET data and MSS observer data. The data are available for both regions of the fishery (North Sea and W. Scotland): Starry ray (North Sea), common skate complex (inc. blue skate and flapper skate), Norway skate (W. Scotland), spurdog, porbeagle, salmon, seals (common and grey), Greenland shark, basking shark, gannet and guillemot. Elasmobranchs are protected by case EU fisheries regulations (EU 2017a) in which they are either classed as forbidden to land or as zero TAC species; (Table 23). Basking shark is protected by UK law (UK 2008). Seals (common and grey seals) are protected under the Marine (Scotland) Act 2010 (they may not be killed except by licence or to relieve suffering) (UK 2010); Bird species identified (gannets and guillemots) are protected under the EC Birds Directive for migratory species (EU 2009). The regulations state that the species may not be landed (elasmobranchs) or deliberately killed (the other species; except under licence in the case of seals; but this licence has no bearing on the fishery). The team discussed whether this constitutes 'limits' for these species (i.e. limits of zero). Essentially, in this case, the PI is asking whether the fishery is likely to be acting within the requirements of the law as far as these species are concerned. The PET data suggest that interactions with these species are rare (more details given below); training is provided in handling and identification of species to vessels. On this basis, the effects of this fishery were considered to be highly likely to be within the limits of the law. There is not, however, a high degree of certainty (based on small sample size within the PET data). Harbour Porpoise: ICES cites set nets as the biggest risk to regional porpoise populations. The number of interactions with the SFSAG fleet is limited to two individuals (in 2018 – TR2 gear) from 5 years worth of observer data at approximately 2 % of all trips. ICES states the percentage fishing mortality over the Greater North Sea Ecoregion for porpoise is <1.7 % as a level stipulated by ASCOBANS as the maximum acceptable total mortality from all activities above which a management response would be required to limit the mortality to which the population is subjected. ICES (2015e, 2015f) evaluated that the annual bycatch of harbour porpoises within the North Sea (including the Skagerrak and Eastern Channel) (all fisheries) was at 0.88		

		% even accounting for some potential bias the assessment team considers it highly unlikely that this estimate would increase by 100 % and exceed the 1.7% limit. SG60 and SG80 are met. Due to uncertainty in the estimate and date of the assessment by ICES 2015 SG100 is not met. Twaite shad: CB3.11.4 Where there are no requirements for protection and rebuilding, provided through national legislation or binding international agreements defined in CB3.11.1, the team shall not score the first element in SG 2.3.1, which refers to such requirements. Seahorse: CB3.11.4 Where there are no requirements for protection and rebuilding, provided through national legislation or binding international agreements defined in CB3.11.1, the team shall not score the first element in SG 2.3.1, which refers to such requirements.		
b	**Guidepost**	Known direct effects are unlikely to create unacceptable impacts to ETP species.	Direct effects are highly unlikely to create unacceptable impacts to ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the fishery on ETP species.
	Met?	Y	N – starry ray (North Sea), common skate, Y – other species	Y – porbeagle, seals, birds, salmon N – other species
	Justification	Starry ray: ICES notes that although the species is widespread in the central and northern North Sea, the survey abundance index has been decreasing continuously since the 1990s (ICES 2015h). ICES advise no targeted fishery and measures to reduce bycatch. In terms of the regulatory requirements, the species is always discarded (according to ICES, recorded landings in total for the whole area of IIa, IIIa and IV are ~300 kg), but according to the PETS data, individuals are usually dead or injured on arrival on board, so it is not clear that the requirement to discard promptly has much effect for this species. Both datasets presented for the fishery suggest that interactions are patchy in space and time. The team concluded that since regulatory requirements are being met following ICES advice, direct impacts could be evaluated (qualitatively) as 'unlikely' to hinder recovery (SG60 met). It is possible, however, that the fishery could do more, perhaps by evaluating the areas or conditions under which large quantities of the species are caught together, and/or the circumstances in which the individuals are brought on board in good or bad condition – i.e. it was possible to do more to avoid fishing or killing these individuals. On this basis, the team considered that SG80 was not fully met. Common skate: ICES evaluates the whole species complex together (*Dipturus batis*, *D. flossada* and *D. intermedia*). For Subarea 4, ICES considers that the species (complex) is depleted, although stock abundance and trends are unknown (survey catch rates are too low to allow an abundance index); advice is the same as for starry ray (ICES 2015b). For Subareas 6 and 7, according to ICES, there are no robust stock size indicators, but the 'stock' is above possible F reference points and below possible B reference points (ICES 2016b). Nevertheless, analyses of Scottish survey data indicate a possible increase in the proportion of survey hauls catching some common-skate-complex species, although confidence intervals are wide. ICES note that further measures to reduce bycatch would be possible, such as spatial closures, but propose that this should be done as part of a rebuilding plan that takes into account the mixed fisheries context. The trend appears to be in the right direction, at least in Subarea 6 which has the majority of interactions ((Jones et al. 2018)). On this basis, the team concluded that it is not likely that the fishery is having major impacts on common skate complex; SG60 is met. There is, however, insufficient information for the moment to say that it is highly likely that this is the case. SG80 is not met. Norway skate (W. Coast Scotland only): Norway skate is a species (or species complex) with a depth range of 200 m - 1000 m and hence a relatively peripheral interaction with fisheries in most areas, although its life history potentially makes it vulnerable (IUCN 2017). Estimated interactions with		

		this fishery in W. Scotland are <1 per trip based on observer data (0.6 in TR1 gear), and the team concluded that this is highly unlikely to create unacceptable impacts. SG80 is met. There is not a 'high degree of confidence', however, so SG100 is not met. Spurdog: Although the stock is still well below $MSYB_{trigger}$, the harvest rate has dropped to well below the proxy MSY level and ICES considers that there are signs of recovery of the biomass in recent years. Since the overall fishing mortality is apparently at an appropriate level, the fishery is highly unlikely to hinder recovery of this stock (ICES 2016n). SG80 is met. There is not, however, a high degree of confidence, since the stock biomass is still low, and recovery has only just started. SG100 is not met. Porbeagle: ICES considers that porbeagle stock status is unknown (ICES 2015c). The advice is the fishing mortality should be minimised and no targeted fisheries permitted. Recent landings are negligible, so discard mortality is the main fishery-related impact. The PETS data record three interactions with porbeagle, one alive and two dead, all from 2016. While the Marine Scotland observer data do not record any. On this basis, the team considered that there is a 'high degree of confidence' that that the fishery is not having significant detrimental effects on porbeagle – SG100 is met for this species. Seals: The PET data record one interaction with a common seal; and four with grey seals over the three years. Seals are protected under the Marine (Scotland) Act 2010, and may not be killed, except with a licence or to alleviate suffering. Scientific advice on seal populations in the UK is provided by the Special Committee on Seals, which is hosted by the Sea Mammal Research Unit at St. Andrews University. The most recent population estimates (composite from 2011-15 surveys) for Scotland are 25,399 common seals and 23,353 grey seals. According to previous estimates in 1996-7 (29,514 / 21,602) and 2007-9 (20,430 / 18,968), both populations declined then recovered to approximate previous levels. Since the previous survey, common seals have increased around the west coast but declined in the north and east, while grey seals have increased or remained stable everywhere. The reason for the decline in common seal on the North Sea coast of Scotland is not clear, but fisheries bycatch is not thought to be to blame in Scotland although it might be elsewhere (Duck 2016). The PET figures support this view. On this basis, the team considered that although total mortality for the whole fleet cannot be estimated from the data available, there is a high degree of confidence that it will have no impact on seal populations; SG100 is met. Greenland shark: Greenland shark are one of the largest species of shark and the longest living known vertebrate (~400 years; http://science.sciencemag.org/content/353/6300/702). It has been recorded at >2000 m depth. It was formerly targeted for oil but is now taken only as a bycatch. It is only occasionally encountered in Scottish fisheries (see **Error! Reference source not found.**). Given the likely low encounter rate, the team considered that impacts from this fishery are highly unlikely, but limited information and the species singular life history preclude a high degree of confidence – SG80 is met but SG100 is not met. Basking shark: The stock is thought to have declined historically following target fisheries. Fishing for basking shark has been forbidden in much of the EU since 2001, and in Norway since 2006. The species has been on the EU Prohibited species list since 2007 and in Uk waters as well under the wildlife act 1981. No new information is available to inform on current stock status (ICES 2015a). Given the low encounter rate, the team considered that impacts from this fishery are highly unlikely, but limited information and the species singular life history preclude a high degree of confidence – SG80 is met but SG100 is not met. Gannet and guillemot: Encounter rates with birds in this fishery are low – 2 gannets and one guillemot in 311 observer trips. On this basis, direct effects on the populations are not likely. Scotland has ~quarter of a million breeding pairs of gannets; 46 % of the world's population and an increase of ~a third since 2003-4 (Murray et al. 2015). Likewise for guillemots (~950,000 pairs), Scotland's population is large and increasing (see http://jncc.defra.gov.uk/page-2898). There is a high degree of confidence of no impacts – SG100 is met.

		Salmon: It is not known whether the salmon (one sole interaction recorded in the PET data) was a wild Atlantic salmon or a fish-farm escapee. Either way, interactions rates are sufficiently low that there is a high degree of confidence of no impacts – SG100 is met. Harbour porpoise: As mentioned above in SI(a) for harbour porpoise, the estimate of fishing related mortality in the Greater North Sea Ecoregion is 0.88% which is well below <1.7% as stipulated by ASCOBANS and suggests the UoAs are highly unlikely to hinder ETP recovery. As ICES acknowledges there are some data reliability issues with the estimates there is not a high degree of confidence in the estimate so whilst SG80 is met, SG100 is not met. Twaite shad: Observer data show low catches no other available data sets record the species as present. The shad population is increasing in the region so it is highly unlikely the fisheries will hinder population recovery, therefore SG60 and SG80 is met. SG100 is not met as a lack of recent stock assessments means there cannot be a high degree of confidence in this assertion although data available (STECF and catch data) do also show zero encounters. Seahorse: Observer data show low catches (1 trip record, 2 interactions in 5 years). The population is widespread down to the English Channel and Bay of Biscay, (based on genetics, (Woodall et al. 2011) and predominately based in nearshore seagrass beds (Woodall et al. 2017) where the fishery does not operate therefore it is highly unlikely the UoAs will hinder population recovery, SG60 and SG80 is met. SG100 is not met as a lack of stock assessments means there cannot be a high degree of confidence in this assertion although data available (STECF and catch data) do also show zero encounters.		
c	**Guidepost**		Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species.
	Met?		Y	N
	Justification	The team considered that indirect effects are unlikely (e.g. ghost fishing, noise disturbance etc.). Gear loss is a highly unlikely event given that gears represent huge cost outlay by the owners and vessels avoid foul ground. In addition the fleet use catch control systems on their gear which provide real time feedback to the captain about net position, depth and spread, which can be cross referenced against sonar. The ETP species identified do not include cetaceans which are most likely to be affected by noise and the fishery takes place in the North Sea which has one of the highest volume marine traffic seas in the world. The team considered that SG80 was met. SG100 is not met because there is not a 'high degree of confidence' about indirect effects as this hasn't been researched for this fleet.		
References		http://science.sciencemag.org/content/353/6300/702 http://jncc.defra.gov.uk/page-2898 Murray et al. 2015, (ICES 2015c), (ICES 2015h), (ICES 2015b), Duck (2016)		
Starry Ray				**75**

Common Skate Complex	**75**
Norway Skate (West Scotland only) - UoAs 1, 2 and 4 only	**80**
Spurdog	**80**
Porbeagle	**85**
Greenland shark	**80**
Basking Shark	**80**
Atlantic salmon	**85**
Seals	**85**
Birds (gannet and guillemot)	**85**
Harbour porpoise	**80**
Twaite shad	**80**
Seahorse	**80**
OVERALL PERFORMANCE INDICATOR SCORE:	**75**
CONDITION NUMBER (if relevant):	**1 - existing**

Evaluation Table for PI 2.3.2

PI 2.3.2		The fishery has in place precautionary management strategies designed to: • Meet national and international requirements; • Ensure the fishery does not pose a risk of serious harm to ETP species; • Ensure the fishery does not hinder recovery of ETP species; and • Minimise mortality of ETP species.		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are measures in place that minimise mortality of ETP species, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a comprehensive strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, which is designed to achieve above national and international requirements for the protection of ETP species.
	Met?	Y	Y	N
	Justification	As summarised in PI 3.2.1 above, ICES provide advice on the elasmobranch species (except for Greenland shark), which aims to avoid catching where possible. The requirements, as set out in EU (2017) are i) not to target, have on board or land; and ii) if brought on board alive to handle following best practice and to discard as soon as possible (or in the case of spurdog, a zero TAC – i.e. do not land). On this basis, the team considered that this constitutes a strategy for managing the impact of fisheries (in general, including this one) on these stocks. They include measures to minimise mortality (no targeting, avoid bycatch, carefully handling if taken alive), and are designed to reduce the fishery impact to the lowest practicable level. Hence SG80 is met. In relation to SG100, the team did not consider that these measures constitute a 'comprehensive strategy' as additional measures are possible and could be explored, at least for the skates and rays. In relation to seals, the Marine (Scotland) Act 2010 bans the killing of seals without a licence, as well as the disturbance of seals at haul-out sites. Interactions with seals in the fishery are reported to be rare and the fishery is not having a detrimental impact on the population (see 2.3.1b). The team considered that on this basis, that the Scottish / UK strategy for protecting seals was the most appropriate level at which to have a strategy (rather than in the fishery directly), hence SG80 is met. Since there are no formal measures in the fishery directly, however, SG100 is not met. For harbour porpoise, a draft management plan in development through the HELCOM agreement and pinger trials are regularly undertaken to try to reduce bycatch levels. On a regional level, ASCOBANS has a harbour porpoise recovery plan with a set limit for human-induced mortality (which includes fishing mortality, among other causes) of 1.7% of the population estimate; under the plan a management response must be triggered if total mortality is estimated to be above this threshold. Details of the SCANS surveys and ASCOBANS recovery plans for harbour porpoise are described in section 3.5.3.5 Germany has also protected an important harbour porpoise breeding area.		

		For the other ETP species (birds, salmon, twaite shad, seahorses, harbour porpoise), encounters are very rare, and the fishing technique and/or geographic / depth overlap with the ETP stocks, along with the monitoring (PET and discard data collection) can be considered a strategy which is being successful in avoiding impacts. SG80 is met. This is not, however, a formal 'comprehensive strategy' – SG100 is not met.		
b	**Guidepost**	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is an objective basis for confidence that the strategy will work, based on information directly about the fishery and/or the species involved.	The strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work.
	Met?	Y	N – starry ray, common skate Y – others	N
	Justification	For porbeagle sharks, seals, Greenland sharks, basking sharks, birds, twaite shad, seahorse, harbour porpoise and salmon, quantitative data (PET data) give an objective basis for confidence that interactions with this fishery are very low. SG80 is met. For spurdog, interactions are more significant, but ICES advice shows that fishing mortality is $<<F_{MSY}$ (proxy), and that biomass is starting to recover (ICES 2016n). There is therefore an objective basis for confidence that the strategy for spurdog is working. SG80 is met. As noted, above, although there is a 'quantitative analysis' as required for SG100, the biomass needs to make more progress towards the trigger reference point before there is 'high confidence' that it is working – SG100 is not met. For Norway skate, low encounter rates provide an objective basis for confidence that fishery impacts are low; SG80 is met. For the common skate complex and starry ray species, since the measures are aligned with ICES advice, they can be considered 'likely to work' (ICES 2015b; ICES 2015h; ICES 2016b). However, the team did not consider, that there is currently an objective basis for confidence that they will work. This is problematic, in as much as a reduction in bycatch rates could be attributed either to the measures working, or to a reduction in the population. For starry ray, however, the survey index suggests that the overall situation with the population remains of concern, and ICES state that the common skate species are depleted (although they do not provide data). On this basis, SG80 is not met for these species.		
c	**Guidepost**		There is evidence that the strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		Y	N

	Justification	For the skates and rays, the regulatory requirements are being implemented in this fishery (no targeting, no landings, good handling practices when alive). SFF have reportedly provided ray identification charts and code of conduct which is reviewed independently by 'The Shark Trust' (https://www.sharktrust.org/) and training in handling, although some identification issues appear to remain; distinguishing the ray species is not always easy. SG80 is therefore met. For the other species, the 'strategy' in relation to this fishery is the fishing method, which results in interactions being rare – the PET data provide evidence of this, so SG80 is met. SG100 is not met for any of the species because there is only direct information about discard rates and mortality from a subset of trips (those with observers), and for the elasmobranchs, discard mortality is not quantified, although it is assumed to be high.		
d	**Guidepost**			There is evidence that the strategy is achieving its objective.
	Met?			N – skates and rays Y – other species
	Justification	For the skates and rays, the team did not have enough data to say yet whether there is a trend in bycatch rates, and even if there were, whether it is attributable to changes in fishing practice or changes in the populations. For the other species, low/negligible encounter rates is a reasonable objective and this is being met.		
References		EU (2017), Marine (Scotland) Act 2010, SFF identification cards, ICES (2015b; 2015h; 2016n; 2016b), Marine Scotland PET data and Observer data. (ICES 2015a)		

Starry ray (North Sea only)	**75**
Common skate complex	**75**
All others (Spurdog, porbeagle, Greenland shark, basking shark, Atlantic salmon, seals, twaite shad, seahorse, harbour porpoise and birds (gannet and guillemot)	**85**
OVERALL PERFORMANCE INDICATOR SCORE:	**75**
CONDITION NUMBER (if relevant):	**2 - existing**

Evaluation Table for PI 2.3.3

PI 2.3.3		**Relevant information is collected to support the management of fishery impacts on ETP species, including:** • **Information for the development of the management strategy;** • **Information to assess the effectiveness of the management strategy; and** • **Information to determine the outcome status of ETP species.**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Information is sufficient to qualitatively estimate the fishery related mortality of ETP species.	Sufficient information is available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species.	Information is sufficient to quantitatively estimate outcome status of ETP species with a high degree of certainty.
	Met?	Y	Y – others N – starry ray and common skate complex	N
	Justification	Information about interactions with this fishery comes from observer discard estimates and the PET scheme (see Table 24 and Table 25). Quantitative estimation of impact by gear type (TR1 and TR2 (mean catch per trip)) observer data in Table 24 are provided. Mortality rate information is provided in Table 25 from the PET data, and the PET data for 2016 provides quantitative evidence of impact by gear metier within region by trip quantity. SG60 is met (qualitative estimate of fishery-related mortality from PET and MSS observer data) for all species. Quantitatively, MSS state that the data cannot be raised to fleet level, this is due to the patchy nature of ETP bycatch meaning the confidence intervals around the 'raised' estimates would be unacceptable. However, the low interaction rate of porbeagle sharks, spurdog, seals, Greenland sharks, basking sharks, Norway skate, twaite shad, seahorse, harbour porpoise, birds and salmon, give an objective basis for confidence that sufficient information is available to quantitatively assess fishery related mortality and the interactions with this fishery would be very low. SG80 is met. The lack of raised estimates at fleet level is resultant in part of the patchy nature of the ETP interactions. This can be seen for common skate complex where the majority of captures in one year of observer data was taken in a single observer trip out of a total of 201 ((Jones et al. 2018)). For the common skate species and starry ray SG80 is not met because the PET data shows large spatiotemporal variation in catch which would lead to uncertainty in the quantitative estimate when scaled up to the whole fleet. There is not a high degree of confidence which allow SG100 to be met for any species.		
b	**Guidepost**	Information is adequate to broadly understand the impact of the fishery on ETP species.	Information is sufficient to determine whether the fishery may be a threat to protection and recovery of the ETP species.	Accurate and verifiable information is available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of ETP species.

	Met?	Y	N – starry ray and common skate complex Y - others	N
	Justification	An analysis as to whether the fishery is a potential threat to protection and recovery of these species is provided in PI 2.3.1b based on stock survey data for all species (except Greenland shark where no stock status is available). The low interaction rate of porbeagle sharks, spurdog, seals, Greenland shark, basking shark, Norway skate, birds, twaite shad, seahorse, harbour porpoise and salmon, give an objective basis for confidence that sufficient information is available to suggest that the fishery would not be a threat to the protection and recovery of these species; SG80 is met. SG100 is not met (e.g. no information on post-discard or post-interaction mortality). For common skate in Subarea 4, ICES consider that the species (complex) is depleted and stock abundance and trends are unknown. For Subareas 6 and 7, according to ICES, there are no robust stock size indicators, but the 'stock' is above possible F reference points and below possible B reference points (ICES 2016c). Nevertheless, analyses of Scottish survey data indicate a possible increase in the proportion of survey hauls catching some common-skate-complex species, although confidence intervals are wide. ICES note that further measures to reduce bycatch would be possible, such as spatial closures. There is insufficient information for the moment to say that SG80 is met. For starry ray, survey abundance index has been decreasing continuously since the 1990s and as the data has not been scaled to fleet it is difficult to evaluate the consequences for the population of the fishery impact. SG80 is not met.		
c	**Guidepost**	Information is adequate to support measures to manage the impacts on ETP species.	Information is sufficient to measure trends and support a full strategy to manage impacts on ETP species.	Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.
	Met?	Y	Y	N
	Justification	As argued in PI 2.3.2 scoring issue a) there is a strategy in place for all the ETP species. The strategy does not particularly rely on gathering information – rather on minimising any fisheries impacts. Trends to manage the fishery for ETP are available can be measured at least qualitatively from the discard and PET data, as well as via population estimates in most cases (greenland shark being the exception). On this basis, SG80 is met. However, there the team are not aware of any recent attempts to raise the ETP to fleet level which could be argued to be a 'comprehensive strategy' for any of the species (see PI 2.3.2a) it cannot be met.		
References		EU (2017), Duck (2016), Marine (Scotland) Act 2010, SFF identification cards, ICES (2015b; 2015h; 2016n; 2016b), Marine Scotland PET data and Observer data.		
Starry Ray (North Sea only)				**65**

Common Skate Complex	**65**
All others (Spurdog, Porbeagle, Greenland shark, Basking Shark, Atlantic salmon, Seals, twaite shad, seahorse, harbour porpoise, birds (gannet and guillemot)	**80**
OVERALL PERFORMANCE INDICATOR SCORE:	**65**
CONDITION NUMBER (if relevant):	**3 - existing**

Evaluation Table for PI 3.2.3 – Compliance and enforcement

This PI is rescored on the basis of the changes to information on the landing obligation, to harmonise scores with the Joint demersal fisheries in the North Sea and adjacent waters (Sieben et al. 2019)**. New text from this audit is shown in underlined script whilst the original PCR text is not** (Jones et al. 2018)**.**

PI 3.2.3		**Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.**		
Scoring Issue		SG 60	SG 80	SG 100
a	MCS implementation			
	Guidepost	Monitoring, control and surveillance **mechanisms** exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance **system** has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A **comprehensive** monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	Y	N	N
	Justification	Monitoring, control and surveillance (MCS) in the fishery is taken care of by Marine Scotland Compliance, in collaboration with enforcement authorities at UK and EU level (including the European Fisheries Control Agency) and exchange of information with relevant authorities in other states, including the Norwegian Directorate of Fisheries. All these agencies operate on the basis of a risk-based framework, identifying where enforcement resources can be best put to use at any time in order to optimize compliance. The EU system for fisheries control is laid out in the Control Regulation, which entered into force on 1 January 2010. The Regulation applies to all activities covered by the CFP carried out on the territory of member states or in EU waters, and by EU fishing vessels or nationals of a member state (Art. 2). It requires all member states to adopt appropriate measures, allocate adequate financial, human and technical resources and set up all administrative and technical structures necessary for ensuring control, inspection and enforcement of activities under the CFP (Art. 5). The Regulation contains Titles ('sections' above chapter level) on, among other things, access to waters and resources (Title III), control of fisheries (Title IV), control of marketing (Title V), surveillance (Title VI), inspections and proceedings (Title VII), enforcement (Title VIII) and common control programmes (Title IX). Among the substantial requirements are that member states operate a vessel monitoring system (VMS) and an automatic identification system (AIS), to be generally applied by vessels above 12 and 15 meters, respectively (Art. 9, 10), and that they make the use of fishing logbooks mandatory for all vessels above 10 meters (Art. 14) and electronic logbook for all vessels above 12 meters (Art. 15). The Regulation also introduces an obligation of member states to employ real-time closure of fisheries (Art. 51-54). Further, member states are obliged to carry out monitoring of fishing activities by inspection vessels or surveillance aircraft (Art. 71) and physical inspections of fishing vessels (Art. 74-77); in addition to national inspectors, a pool of Community inspectors shall also be set up (Art. 79). Procedures are established for situations where infringements are detected (Art. 82-88),		

		including enhanced follow-up when infringements are serious, such as mis recording of catches of more than 500 kg or 10 % of what is reported in the logbook (Art. 84). Further, provisions are given for proceedings (Art. 85-88) and sanctions (Art. 90-93) (see PI 3.2.3 b) below). The EU adopted the EU Regulation to prevent, deter and eliminate illegal, unreported and unregulated fishing (IUU) (Council Regulation (EC) No 1005/2008), which entered into force on 1 January 2010. It requires that "Each Member State shall take appropriate measures, in accordance with Community law, to ensure the effectiveness of that system". The MCS North Sea Joint Deployment Plan (JDP) has been in operation since 2007 with the participation of Belgium, Denmark, France, Germany, Ireland, the Netherlands, Sweden and the UK, who collaborate through activities that are carried out each year, on a permanent basis (EFCA 2019b). In addition, Scotland has its own Fisheries patrol vessels and aircrafts, deployed according to its specific real-time MCS risk-assessments (confidential documents), which take full account of the risks specific to the LO implementation (Marine Scotland Compliance, site visit pers. comm.) Marine Scotland Compliance carries out the UK's EU responsibilities for fisheries monitoring, control and surveillance in Scotland. It has 19 offices across the country and operates three surveillance vessels and two aircraft. In accordance with EU legislation, it takes care of information gathering through VMS (through the Marine Monitoring Centre) and electronic logbooks, and carries out all other obligations conferred upon Scotland, according the detailed reporting and control requirements in EU legislation to prevent, deter and eliminate illegal, unreported and unregulated fishing (IUU fishing). A Registration of Buyers and Sellers (RBS) Scheme has been fully operational in Scotland since 2005 and requires all buyers and sellers of first sale fish to be registered, and all auction sites of first sale fish and shellfish to be designated. All relevant regulations and information on enforcement activities are available on Marine Scotland's website. A landing obligation was introduced in the fishery in 2017. Marine Scotland has a strategy for the use of marine patrol vessel and surveillance aircraft to monitor the discard ban. The enforcement body has also announced that it will initially be pragmatic in its enforcement, recognizing that there needs to be a period of learning and adjustment when the ban takes effect. It is too early to evaluate whether the enforcement system will be comprehensive enough to generally detect violations of the discard ban, and it is the opinion of the assessment team that the fishery cannot be 'penalized' in the form of reduced scoring at this point for any lacking ability in the future to enforce the discard ban. Part of the UoA fishery takes place in the Norwegian EEZ, where MCS is a shared responsibility between the Directorate of Fisheries, the Coast Guard and regional sales organizations. The Directorate of Fisheries keeps track of how much fish is taken of the quotas of different vessels, vessel groups or other states at any given time, based on reports from the fishing fleet. Fishing vessels are required to have VMS and electronic logbooks, and real-time data are forwarded to the Directorate of Fisheries. The self-reported catch data can be checked at sales operations through the sales organizations, which have monopoly on first-hand sale of fish in Norway, and through physical checks performed by the sales organizations and the Directorate of Fisheries in port, and by the Coast Guard at sea. When Scottish vessels land in other European ports, they are subject to the NEAFC port state control scheme, which requires that the port state checks whether the landed fish is covered by a legal quota, and physically inspect a certain percentage of the catch. There is also an extensive exchange of information (including inspection and landing data) among the national enforcement authorities around the Northeast Atlantic. Hence, the fishery has a comprehensive and transparent system for monitoring, control and surveillance, and there are a number of possibilities for enforcement authorities to physically check whether the data provided by fishers through self-reporting are indeed correct. In addition, VMS data enables control of whether area restrictions are observed. SG100 is met. A monitoring, control and surveillance system has been implemented in the fishery. However, despite the efforts made within EU to establish a comprehensive MCS system with clearly identified high and very high risks (EFCA 2019a), the present control density in EU waters appears not

		dissuasive enough to conclude that the system has demonstrated an ability to enforce LO-specific management measures, strategies and rules; see also SI 3.2.3c below. With regards to discards and the landing obligation (LO), Regulation (EU) 2015/812 mentions the following: As discards constitute a substantial waste and affect negatively the sustainable exploitation of marine organisms and marine ecosystems, and as compliance by operators with the landing obligation is essential for its success, infringements of the landing obligation should be categorised as serious under Regulation (EC) No 1224/2009. The landing obligation represents a fundamental change for operators. Accordingly, it is appropriate to postpone for 2 years the application of the rules on serious infringements as regards infringements of that type. With the introduction of the LO, it can no longer be concluded that the enforcement system is sufficiently comprehensive for the context of the fishery. The implementation of the LO poses a major challenge to the control authorities of all member states. With the introduction of the final LO provisions, and until information is available that demonstrate otherwise, it can no longer be concluded that the enforcement system is sufficiently comprehensive for the context of the fishery. The team therefore concludes that SG80 is not met. Given that monitoring, control and surveillance systems exist, that they are implemented in the fishery and there is a reasonable expectation that they are effective, the team has agreed on SG60.		
b	Sanctions			
	Guidepost	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, **are consistently applied** and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and **demonstrably** provide effective deterrence.
	Met?	Y	Y	Y
	Justification	In accordance with the EU Control Regulation, member States are required to ensure that appropriate measures are systematically taken when violations of fishing regulations are detected, including administrative action or criminal proceedings, in order to provide effective deterrence (Art. 89). For serious infringements, a point system is to be applied (Art. 92), whereby fishermen are given a specified number of points for different kinds of violations. When a specific number of points is reached, the fishing licence shall be automatically suspended for a period of at least two months, increasing with repeated violations. In addition to the point system, a graduated system of penalties is used at national level in Scotland, ranging from oral advice to advisory letter, official written warning, various forms of statutory notices (such as revocation and suspension notices), financial administrative penalties (up to £10,000), other material enforcement measures (such as seizure and disposal of fish) and formal prosecution. Fixed penalty levels for different types of offences are publicly available; e.g. the lowest level of infringements leads to a penalty of £250 for a first-time offence and £500 the second time, while the case is referred to prosecution if the violation is repeated a second time. In Norway, statutory authority for the use of sanctions in the event of infringements of fisheries regulations is given in Chapters 11 and 12 of the Marine Resources Act. Intentional or negligent violations are punished with fines or prison up to one year (§§ 60–63), while infringements committed with gross intent or negligence may be punished with prison up to six years. In the judgment of the seriousness of the infringement, the economic gain of the violation, among other things, is to be taken into consideration (§ 64). Alternatively, catch, gear, vessels or other properties can be confiscated (§ 65).		

		The Norwegian enforcement agencies use a graduated sanctioning system, with sanctions ranging from oral warnings, written warnings and administrative fines to formal prosecution. If the fishers do not accept the fines issued by the enforcement or prosecution authority, the case goes to court. The decision of a lower-level court can then be appealed to higher-level courts. The comprehensive enforcement system (see PI 3.2.3 a)) combined with the high level of compliance (see PI 3.2.3 c)) makes it reasonable to conclude that the system provides effective deterrence. SG100 is met.		
c	Compliance			
	Guidepost	Fishers are **generally thought** to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.	**Some evidence exists** to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.	There is a **high degree of confidence** that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.
	Met?	Y	N	N
	Justification	According to Marine Scotland Compliance, the level of compliance is high in the fishery under assessment. In correspondence with the assessment team, they report that there were no enforcement issues with Scottish and UK administered fishing vessels the last couple of years concerning the fisheries under assessment specifically. They have given priority to the fishing areas where catches have been highest, and last-haul analysis inspections have regularly been carried out. All prosecuted cases for the last decade are listed on the website of Marine Scotland Compliance. An average of eight cases have been prosecuted each year for the entire Scottish fisheries sector. The total number of inspections in 2016 was 4,588, so the share of inspections resulting in prosecution is miniscule. Few infringements are of a serious nature. The five cases prosecuted in 2015 were related to the failure to comply with e-log requirements (fined £2,000), failure to submit sales notes (fined £350), retention of skate after a closure (admonished), retention of ling after a closure (fined £4,000) and retention of mackerel after a closure (fined £3,000). As mentioned under SI 3.2.3 a) above, a landing obligation was introduced in the fishery in 2017, and Marine Scotland has a strategy for the use of marine patrol vessel and surveillance aircraft to monitor the discard ban. The enforcement body has also announced that it will initially be pragmatic in its enforcement, recognizing that there needs to be a period of learning and adjustment when the ban takes effect. It is too early to evaluate whether the discard ban will generally will complied with, and it is the opinion of the assessment team that the fishery cannot be 'penalized' in the form of reduced scoring at this point for any future reduction in the general level of compliance. The level of compliance is reported to be high also in Norwegian waters. In 2016, the Norwegian Coast Guard carried out 1569 inspections at sea. 74 inspections (4.7 %) resulted in a fine or prosecution. Under the data exchange arrangements with other states, bilaterally and under the NEAFC control and enforcement scheme, Scottish enforcement authorities have not been informed of any violations committed by the UoA fishers in waters outside EU jurisdiction. As follows from PI 3.2.3 a) and b) above, the fishery has in place a comprehensive system for monitoring, control and surveillance, including physical checks of fishing operations, catch and gear, as well as a fine-meshed sanctioning system. In addition to these coercive compliance mechanism, various		

		forms of norm-, legitimacy- and communication-related mechanisms have proved effective to deliver compliance in other fisheries. In the fishery under assessment, there might be a degree of social control in the relatively small Scottish fishing communities, and the high level of user-group involvement (see PI 3.1.2 above) may provide regulations with a degree of legitimacy that increases fishermen's inclination to comply with them. The same applies to the relationship between fishermen and enforcement officers, which is reported to be good. Inspectors are trained to approach the fishermen in as forthcoming a manner as possible – starting from the position that they are in compliance with regulations – and interfering with the fishing activities as little as possible (see codes of conduct and strategies referenced below). Importantly, they perceive themselves as having a guidance-providing and not only a policing role towards the fishing fleet. The MSC Fisheries Standard does not give any specific guidance as to what level of compliance is required to conclude that fishers 'comply with the management system under assessment'. Nor would that be reasonable since the absence of infringements in inspection statistics might as well imply that inspectors are not competent (or willing) enough to detect non-compliance, or that they focus attention on those parts of the fishery where compliance is highest; cf. the note on risk-based control under SI 3.2.3 a). Hence, compliance statistics can only give an indication, and must be seen in relation to other factors, such as the comprehensiveness of the enforcement system, the legitimacy of the management system as such, assumptions on the reliability of data provided by the enforcement authorities and other anecdotal evidence of compliance. It is the qualitative judgment of the assessment team that the requirement that fishers 'comply with the management system' is met in this fishery – this does not imply that infringements never take place (which is probably not the case in any fishery), but that most rules are generally respected. The requirement that fishers provide information of importance to the effective management of the fishery is also met. So the question remains whether fishers are 'generally thought to comply' (required for a 60 score), whether 'some evidence exists' that they comply (required for an 80 score), or whether there is 'a high degree of confidence' that they comply (required for a 100 score). Clearly *some evidence exists*, through statements by Marine Scotland Compliance, so SG 80 is met. However, ICES' assumption about misreporting of cod West of Scotland, and seal predation issues mentioned in section 2.4.2 of the report, raises a level of doubt that leads to the conclusion that there is not necessarily *a high degree of confidence* that fishers generally comply, so SG 100 is not met. Specifically, with regards to the implementation of the Landing Obligation concern has been expressed in e.g. recent STECF reports and by stakeholders about ongoing non-compliance, resulting in demersal fisheries being identified as the "EU's fisheries with the highest risk of non-compliance" in 2018 (EFCA 2019a), albeit with a higher risk in the North Sea than in Western Waters (ICES Division VIb) where this fishery operates. Marine Scotland Compliance is presently undertaking a comprehensive analysis of their evidence base regarding demersal fisheries. Until this analysis is available and taking into account the European management system's inability to effectively monitor this measure, the team considered that the evidence base available is currently too weak for SG80 to be met. Therefore, the team concludes that only SG60 is met.	
d	Systematic non-compliance			
	Guidepost		There is no evidence of systematic non-compliance.	
	Met?		N	

	Justification	According to Marine Scotland Compliance and the Norwegian Coast Guard, there is no evidence of systematic non-compliance in the fishery. It is worth noting when asked specifically about the potential area misreporting and seal predation issues mentioned under SI 3.2.3 c) above, MS compliance opinion on claims of misreporting are given in **Error! Reference source not found.**. The intent behind the phrase 'no evidence of systematic non-compliance' is that there is simultaneously adequate evidence to assess the compliance of the fishery and no evidence of infringements that occur regularly (MSC interpretations log). Although the team would like to point out that the issues with the Landing Obligation to date indicate a high or very high risk of widespread systemic non-compliance with the LO, there is no concrete evidence so far that there is in fact widespread systemic non-compliance with the LO. However, given a precautionary outlook, we have concluded that this guidepost is not met.
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	STECF website: https://stecf.jrc.ec.europa.eu/reports Website of Marine Scotland Compliance (http://www.gov.scot/Topics/marine/Compliance and http://www.gov.scot/Topics/marine/Sea-Fisheries/discards/demersal). **Error! Reference source not found.** email
OVERALL PERFORMANCE INDICATOR SCORE:	**65**
CONDITION NUMBER (if relevant):	**14**

4.6 Principle level scores

Green colour indicates new improved score at this audit.

Red colour indicates a fail against the MSC standard

Yellow colour indicates a new lower score at this audit.

Table 31. Principle level scores

Principle	UoA 1 - HAD	UoA 2 - POK	UoA 3 - PLE	UoA 4 - HKE	UoA 5 - WHG
Principle 1 – Target Species	92.4	95.0	94.4	93.1	<60
Principle 2 – Ecosystem	80.0	80.0	80.0	80.0	80.0
Principle 3 – Management System	91.6	91.6	91.6	93.5	91.6

Table 32. Performance Indicator scores

Principle	Component	PI No.	Performance Indicator (PI)	UoA 1 - HAD	UoA 2 - POK	UoA 3 - PLE	UoA 4 - HKE	UoA 5 - WHG
One	Outcome	1.1.1	Stock status	90	90	100	100	70
		1.1.2	Reference points	90	90	90	90	75
		1.1.3	Stock rebuilding	N/A	N/A	N/A	N/A	<60
	Management	1.2.1	Harvest strategy	90	100	95	85	<60
		1.2.2	Harvest control rules & tools	85	100	80	80	65
		1.2.3	Information & monitoring	100	100	100	100	100
		1.2.4	Assessment of stock status	100	100	100	100	100
Two	Retained species	2.1.1	Outcome	75	75	75	75	75
		2.1.2	Management	75	75	75	75	75
		2.1.3	Information	80	80	80	80	80
	Bycatch species	2.2.1	Outcome	80	80	80	80	80
		2.2.2	Management	80	80	80	80	80
		2.2.3	Information	80	80	80	80	80
	ETP species	2.3.1	Outcome	75	75	75	75	75
		2.3.2	Management	75	75	75	75	75
		2.3.3	Information	65	65	65	65	65
	Habitats	2.4.1	Outcome	75	75	80	75	80
		2.4.2	Management	75	75	75	75	75
		2.4.3	Information	80	80	80	80	80
	Ecosystem	2.5.1	Outcome	90	90	90	90	90

Principle	Component	PI No.	Performance Indicator (PI)	UoA 1 - HAD	UoA 2 - POK	UoA 3 - PLE	UoA 4 - HKE	UoA 5 - WHG
		2.5.2	Management	100	100	100	100	100
		2.5.3	Information	95	95	95	95	95
Three	Governance and policy	3.1.1	Legal & customary framework	85	85	85	100	85
		3.1.2	Consultation, roles & responsibilities	100	100	100	100	100
		3.1.3	Long term objectives	100	100	100	100	100
		3.1.4	Incentives for sustainable fishing	100	100	100	100	100
	Fishery specific management system	3.2.1	Fishery specific objectives	90	90	90	90	90
		3.2.2	Decision making processes	100	100	100	100	100
		3.2.3	Compliance & enforcement	65	65	65	65	65
		3.2.4	Research plan	90	90	90	90	90
		3.2.5	Management performance evaluation	90	90	90	90	90

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6 Appendices

Appendix 1 Evaluation processes and techniques

Appendix 1.1 Site visits

The audit on 7th November 2019 took place in Aberdeen at the offices of the Scottish Fishermen's Federation (SFF). Email contact was available for assessors and the client and conference facilities were utilised as required on the day as required. The individuals met during the site visit and their roles in the fishery are listed in Table 33.

Table 33. List of attendees at the site visit.

Name	Position	Type of consultation
Hugh Jones	Team Leader, P2 expert	Meeting chair
Sophie des Clers	P3 expert	NA
Robin Cook	P1 expert	NA
Mathias Deleau	Traceability	NA
Jennifer Mouat	Client Representative	Overall progress of the fishery
Mike Park	SFSAG chair	Overall progress of the fishery
Elena Balestri	SFF science policy officer	Observer program
Gordon Hart	Marine Scotland Compliance	Current status of the fishery with regard to compliance.
John Mills	Marine Scotland Compliance	Current status of the fishery with regard to compliance.
Jane MacPherson	Marine Scotland Compliance	Current status of the fishery with regard to compliance.

Appendix 1.2 Stakeholder participation

Updates on Priority Marine Features from Scottish Government.

From: Helen.Downie@gov.scot <Helen.Downie@gov.scot>

Sent: 17 October 2019 16:36

To: Hugh Jones <hjones@controlunion.com>

Subject: RE: 3045_2932_3143_STAKEHODLER_Updates on Priority Marine Features

Hi Hugh

Thanks for getting in touch. The sustainability appraisal has been drafted and is currently being readied for a second public consultation to help us determine management measures. Unfortunately the timeframe for consulting on management measures for PMFs has slipped due to competing work

pressures. We have combined this work with Phase 2 of proposed inshore fishery management measures for MPAs, and expect to consult on both sets of measures simultaneously in the near future.

Feel free to get in touch if you require any further information.

Regards

Helen

Appendix 2 Stakeholder Input

Appendix 3 Revised Surveillance Program

Table 34. Fishery surveillance programme

Surveillance level	Year 1	Year 2	Year 3	Year 4
Level 6	On site	On site	On site	On-site surveillance audit & re-certification site visit

Table 35. Timing of surveillance audit

Year	Anniversary date of certificate	Proposed date of surveillance audit	Rationale
4	12th May	May 2020	On-site surveillance audit & re-certification site visit

Appendix 4 Harmonised fishery assessments

Table 36. Overlapping fisheries

Fishery name	Principle	Species	ICES areas	Date certified	Status	CAB
SFSAG cod	P2, P3	Cod	4a and 3a/b	July 2017	Certified	CUP
SFSAG Rockall Haddock	P3	Haddock	6b	July 2017	Certified	CUP
Joint demersal fisheries in the North Sea and adjacent waters	P1, P3	Plaice, Haddock, Saithe, Whiting, Hake	3, 4 6a and 7d	Oct 2019	Certified	CUP
Scapeche, Euronor and Compagnie des Peches St Malo saithe	P1	Saithe	4 and 7d	Mar 2010	Certified	CUP
UK Fisheries/ DFFU/Doggerbank Group saithe	P1	Saithe	4 and 6a	January 2011	Certified	CUP
Norway North Sea Demersals	P1	Saithe, haddock, hake	4	June 2018	Certified	DNV-GL
Cornish Hake gillnet	P1	Hake	4, 6, and 7 and divisions 3.a, 8.a–b, and 8.d	June 2015	Certified	LR
Ekofish Group-North Sea twin rigged otter trawl plaice	P1	Plaice	4 and 3a	June 2009	Certified	LR
Osprey Trawlers North Sea twin-rigged plaice	P1	Plaice	4 and 3	September 2010	Certified	LR
Germany North Sea saithe trawl	P1	Saithe	4 and 6a	October 2008	Certified	LR

Table 37. Overlapping fisheries

Supporting information	
P1 - Harmonisation activities for this audit were started by CU Pesca on 09/10/19. Responses from LR were received on 10/10/19 and from DNV-GL on 18/11/19. LR informed CU Pesca of updated scores for HKE and PLE as per Harmonisation discussion in June 2019 and provided the updated scores. DNV-GL noted that they had announced surveillance audits on their fisheries to take place on 2nd and 3rd December 2019. As a result of the harmonisation meetings in June CU Pesca have updated conditions and rationales for the relevant PIs under Principle 1 for HKE and PLE (see sections N/A Conditions and Rescoring Performance Indicators). P3 - Following the publication of the PCR for Joint Demersal Fishery in Autumn 2019, CU Pesca conducted internal and external harmonisation discussions and agreed that the score of PI 3.2.3 needed harmonisation for fisheries where inspection and observer coverage was insufficient to rule out conformity with the Landing Obligation. As MCS and application of the LO is directed at the Member State level and the level of MCS on a fleet is fleet dependent complete harmonisation on the scoring of PI 3.2.3 is not warranted and should be considered on a case by case level at the next audit of the fishery in question. This was also conveyed to each of the other CABs with relevant fisheries and agreed. Exceptional circumstances apply (PB1.3.6.1).	
Was either FCP v2.1 Annex PB1.3.3.4 or PB1.3.4.5 applied when harmonising?	No
Date of harmonisation meeting	N/A all harmonisation completed by email as per above
If applicable, describe the meeting outcome	
Agreement found among teams	

Table 38. Scoring differences

See below for why Principle 3 PI 3.2.3 is not listed here.

HADDOCK

Fishery	certified	V1.3	1.1.1	1.1.2 (Reference points)	1.1.3 (Rebuilding)	1.2.1	1.2.2	1.2.3	1.2.4
		V2.0	1.1.1	1.1.2 (Rebuilding)		1.2.1	1.2.2	1.2.3	1.2.4
SFSAG Northern Demersal Stocks	27/07/2018	1.3	90	90		90	85	100	100
No NS Demersal	11/06/2018	1.3	90	100		95	90	100	100
Joint Demersal	13/10/2019	2.0	90	N/A		85	80	100	100

SAITHE

Fishery	certified	V1.3	1.1.1	1.1.2 (Reference points)	1.1.3 (Rebuilding)	1.2.1	1.2.2	1.2.3	1.2.4
		V2.0	1.1.1	1.1.2 (Rebuilding)		1.2.1	1.2.2	1.2.3	1.2.4
SFSAG Northern Demersal Stocks	27/07/2018	1.3	90	90		100	100	100	100
Scap., Euro. & CDPSM	22/09/2016	1.3	90	90		100	90	90	95
UK/DFFU/Dog.Group	19/04/2016	1.3	80	90		100	90	90	95
No NS Demersal	11/06/2018	1.3	100	100		100	90	100	100
Germany NS	08/10/2018	1.3	100	100		100	90	100	100

PLAICE

Fishery	certified	V1.3	1.1.1	1.1.2 (Reference points)	1.1.3 (Rebuilding)	1.2.1	1.2.2	1.2.3	1.2.4
		V2.0	1.1.1	1.1.2 (Rebuilding)		1.2.1	1.2.2	1.2.3	1.2.4
SFSAG Northern Demersal Stocks	27/07/2018	1.3	100	90		90	80	100	100
Ekofish NS	31/03/2016	1.3	90	80		95	80	90	90
Osprey NS	17/03/2016	1.3	90	80		95	80	90	90
Joint Demersal	13/10/2019	2	100			90	75	100	100

HAKE

Fishery	certified	V1.3	1.1.1	1.1.2 (Reference points)	1.1.3 (Rebuilding)	1.2.1	1.2.2	1.2.3	1.2.4
		V2.0	1.1.1	1.1.2 (Rebuilding)		1.2.1	1.2.2	1.2.3	1.2.4
SFSAG Northern Demersal Stocks	27/07/2018	1.3	100	100		85	80	100	100
Joint Demersal	13/10/2019	2	100			85	80	100	100
Nor NS Demersal	11/06/2018	1.3	100	100		95	75	100	95
Cornish Gillnet	11/06/2015	1.3	100	90		90	80	80	90

Table 39. Rationale for scoring differences

If applicable, explain and justify any difference in scoring and rationale for the relevant Performance Indicators (FCP v2.1 Annex PB1.3.6)
There are no material different (7.20.6.c.) in scores between any UoA and this fishery. Exceptions - Hake in Nor NS demersal this fishery is under audit and scores have been agreed but not yet published. For Plaice – JDF the surveillance audit and rescore is yet to take place (November 2020).
If exceptional circumstances apply, outline the situation and whether there is agreement between or among teams on this determination
As per PB1.3.6.1 - Differences in outcomes with respect to evaluation, scoring, and conditions of the overlapping assessments shall only occur when a team has identified exceptional circumstances, such as the UoAs being demonstrably different. For PI 3.2.3 and the application of the Landing Obligation there is demonstrably different approaches applied by Member States in the implementation and provision of the LO within their jurisdiction. Monitoring Control Surveillance, sanctions and assessment of risk by fishery, with respect to the LO, is directed at the Member State level and is not governed by the EU directly. Further the level of enforcement / risk and level of compliance of a fleet (UoA) is variable within a Member State dependent on a large number of factors (observer rates, at sea boardings, gear types, areas of operation etc). Complete harmonisation on the scoring of PI 3.2.3 is not therefore possible or warranted. These jurisdictional differences and fishery specific differences will result in different outcomes with respect to PI 3.2.3 and scoring of this PI can only be considered on a case by case level.

Appendix 4 Skates and rays analysis

Skates: Update on status and work to address conditions on MSC northern demersals certificate

3 January 2020

7. Introduction

The SFSAG haddock fishery was first certified in October 2010 and recertified in May 2016, with additional target species added in July 2018 after a scope extension (CUPesca 2016, 2018a). At re-certification, the fishery acquired three new conditions relating to bycatch of two species of skate: common skate (*Dipturus batis/intermedia* species complex) in all areas and starry ray (*Amblyraja radiata*) in the North Sea, following changes in perception of stock status, EU regulation and availability of bycatch data. The conditions relate to PIs 2.3.1 (ETP species outcome), 2.3.2 (ETP species management) and 2.3.3 (ETP species information).

At the most recent surveillance audit (Year 2, June 2018; CUPesca 2018b) all three conditions were audited as 'on target' with the Client Action Plan and CAB milestones. This report presents progress made in Year 3 of the conditions, with the objective of providing the necessary information to the CAB for the Year 3 audit, which is currently underway.

8. Year 3 milestones and Client Action Plan

The condition milestones set by the CAB, and the relevant parts of the Client Action Plan for Year 3, are summarised in Table 40.

Table 40. Milestones and Client Action Plan for Year 3, for conditions raised on common skate and starry ray (North Sea) in the re-assessment of SFSAG haddock (CUPesca 2016)

Condition	PI	Y3 milestones	Y3 CAP
2	2.3.1	Evaluate species bycatch data in relation to management targets to ensure that there is an objective basis that the strategy will work and adjust strategy as appropriate.	Data collection and assessment of fishery impact. Review of management options to reduce fishery impact on starry ray and common skate as required. Determine which management options can provide objective basis for confidence that the strategy – if required - will work.
3	2.3.2	Review options for management strategy for starry ray and common skate bycatch reduction (noting that it should provide an objective basis for confidence that it will work).	Data collection and assessment of fishery impact. Review of management options to reduce fishery impact on starry ray and common skate as required. Determine which management options can provide objective basis for confidence that the strategy – if required - will work.
4	2.3.3	Analysis of bycatch data demonstrates that the fishery does not pose a threat to the recovery of the common skate complex.	Data collection and assessment of fishery impact. Review of management options to reduce fishery impact on starry ray and common skate as required. Determine which management options can provide objective basis for confidence that the strategy – if required - will work.

9. Most recent available data on stock status

In 2019, ICES provided advice on both species for the North Sea, but no advice on common skate in Subarea 6. Common skate was, however, considered in the ICES Working Group report (WGEF) in 2018 (the most recent report available) in the chapter on the Celtic Seas. All the information evaluated by ICES (2019 advice and 2018 WGEF; ICES 2019a, 2019b, 2018) on stock status is summarised below.

9.1 Starry ray – North Sea

ICES advice for 2019 notes that the stock size indicator (taken from the North Sea ITBS Q1 and Q3 surveys) has declined continuously since 1991 and recommends zero landings on a precautionary basis. The regulations apply this advice, since landing starry ray from the North Sea is forbidden.

WGEF evaluated a longer time series of abundance indices taken from the IBTS surveys, North Sea beam trawl surveys (BTS) and Channel groundfish surveys (CGFS). The IBTS, which has the longest time series starting in ~1980, suggests that the decline from the early 1990s was preceded by a large increase in biomass during the 1980s, and current biomass may be approximately similar to that seen at the start of this time series in ~1980. The drivers behind these trends are unclear, since overall demersal fishing effort in the North Sea reached its peak in the mid-1980s (Daan et al. 2005); the same time as the biomass of starry ray was apparently increasing sharply. WGEF put forward a range of hypotheses, including environmental conditions, multi-species and fisheries interactions and improved species identification – noting that a similar pattern is seen in some other skate species in the North Sea (cuckoo ray and spotted ray) (ICES 2018). They wisely decline, however, to draw any conclusions.

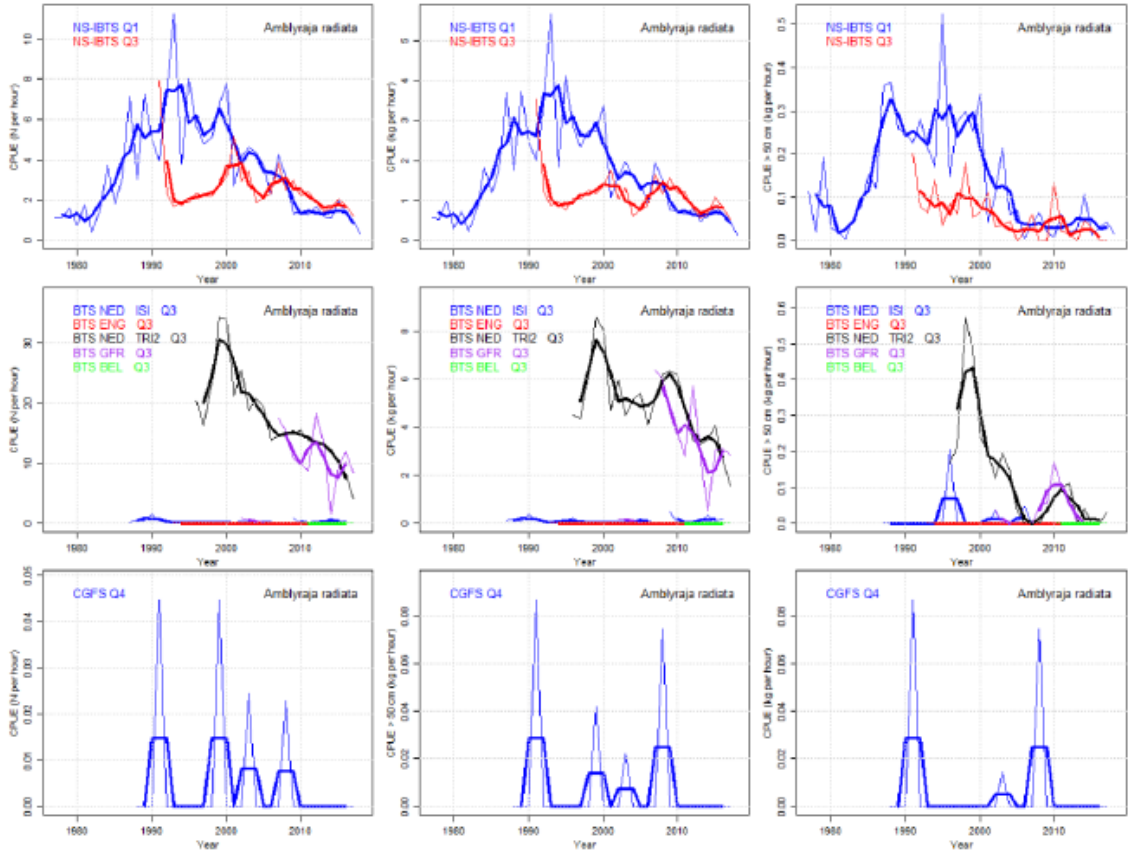

Figure 9. Starry ray North Sea: Left column: abundance index (number/hr); Middle column: biomass index (kg/hr); Right column: exploitable biomass (kg/hr). Top line: ITBS survey – blue=Q1, red=Q3; Middle line: BTS – black=Netherlands, purple=Germany (other surveys less relevant); Bottom line: CGFS (intermittant). Thin lines=annual data, thicker lines=3-year running means. Figure 15.6.1 in WGEF report, ICES 2018.

9.2 Common skate – North Sea

NB: While it was previously thought that the common skate species complex was made up of three species (*Dipturus batis, D. intermedia*[4] and *D. flossada*) it now seems that ICES consider that there are only two species: *D. batis* and *D. intermedia*; *D. flossada* is considered a synonym for *D. batis*. According to WGEF, while the species distributions are uncertain, the species in the NW North Sea and NW Scotland is thought to be *D. intermedia*. The distribution of *D. batis* is 'unclear'; this may have been the species which was common in the southern North Sea historically and is now largely extirpated, it also seems to occur at Rockall (with *D. intermedia*) and in the Celtic Sea and further south (ICES 2018 p.372, p.453, p.465). So in practice, this fishery may only interact with one species of common skate. However, the Marine Scotland PETS data continues to record interactions with both species. It is clear that species discrimination remains a work in progress and on this basis it makes sense to continue to consider this bycatch as 'common skate' for management purposes for the moment.

ICES advice for common skate in the North Sea (ICES 2019b) states the following:

Fishery-independent trawl surveys provide the longest time-series of species-specific information. Whilst catch rates in the surveys are too low to provide a stock size indicator, the consistent occurrence of this species in surveys (NS–IBTS–Q1 and NS–IBTS–Q3) in recent years, 0.054 n h^{-1} (2011–2018) compared to the 1990s, 0.005 n h^{-1} (1991–1998) could be indicative of a gradually improving stock status.

ICES are understandably cautious given that survey catch rates are too low for quantitative analysis, but it is worth emphasising that catch rates have increased by an order of magnitude in the 2010s relative to the 1990s. The data (time series from 1980-date) are shown in Figure 10.

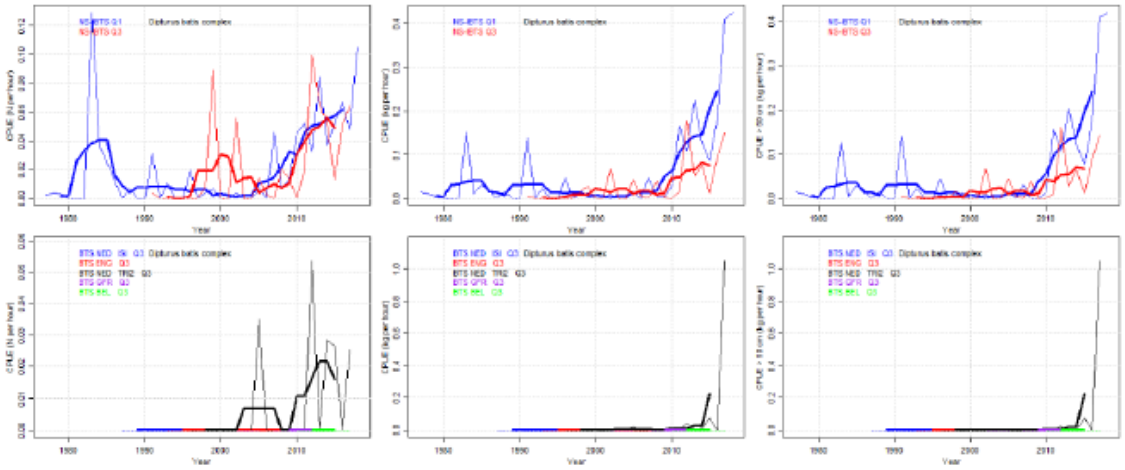

Figure 10. Common skate North Sea: Left column: abundance index (number/hr); Middle column: biomass index (kg/hr); Right column: exploitable biomass (kg/hr). Top line: ITBS survey – blue=Q1, red=Q3; Bottom line: BTS – black=Netherlands (other surveys less relevant). Thin lines=annual data, thicker lines=3-year running means. Figure 15.6.5 in WGEF report, ICES 2018.

9.3 Common skate – W. Scotland

The information provided in ICES (2018) for Celtic Seas common skate suggests a gradual recovery in the wider Celtic Seas area (e.g. Irish Groundfish Survey, Spanish Porcupine Bank Groundfish Survey); however, no data are presented covering Division 6a specifically. There is a Scottish West Coast Groundfish Survey which covers the

[4] It also seems that no-one (including ICES) can agree on whether it is 'intermedius' or 'intermedia' – WGEF uses *D. intermedius* in the North Sea chapter of their report and *D. intermedia* in the Celtic Sea chapter. Ask a latin scholar or take your pick.

relevant area, but since there were no WGEF / Celtic Sea participants from Scotland, these data were not analysed for skates.

10. Spatial analysis of bycatch

Note: This and the following section evaluate a series of plots produced by Marine Scotland Science from their PETS and bycatch sampling data. Where the figures are small, they are pasted in here. Where the figures are very large (e.g. comprising several plots), they are provided as a separate file, labelled with their figure number and caption.

10.1Starry ray – TR1

The overall mapping of starry ray bycatch per trip for TR1 gear (2014-18 all years combined) is shown in Figure 11. The species appears to be distributed largely in the northern North Sea, between Shetland and Norway, with the exception of a few apparent hotspots elsewhere. Inspection of the maps by year (Figure 12 – see separate file), however, suggest that these 'hotspots' are probably not real – for example the apparent high density in rectangle 50E6 is driven by one sampled trip in 2014 with high catch; other years show low catch or zero sampling in this rectangle. Even the apparent core area for high bycatch rates (E. of Shetland) is driven largely by sampling from 2015 (and to a lesser extent 2016), although there is consistently some starry ray bycatch observed in this area.

A comparison with a plot of total TR1 fishing effort (trips) over the same time period (Figure 13) suggests that there is limited overlap between the areas of highest TR1 effort and the area of highest starry ray bycatch rates. It is possible, therefore, that the current distribution of starry ray is influenced by past TR1 fishing effort (particularly since effort was higher in the past) – although as noted by WGEF, the dynamics of this species in the North Sea are not open to easy interpretation. Nowadays, however, it appears as if the apparent main core area of population in the northern North Sea is not subject to such high levels of fishing effort as elsewhere in the North Sea.

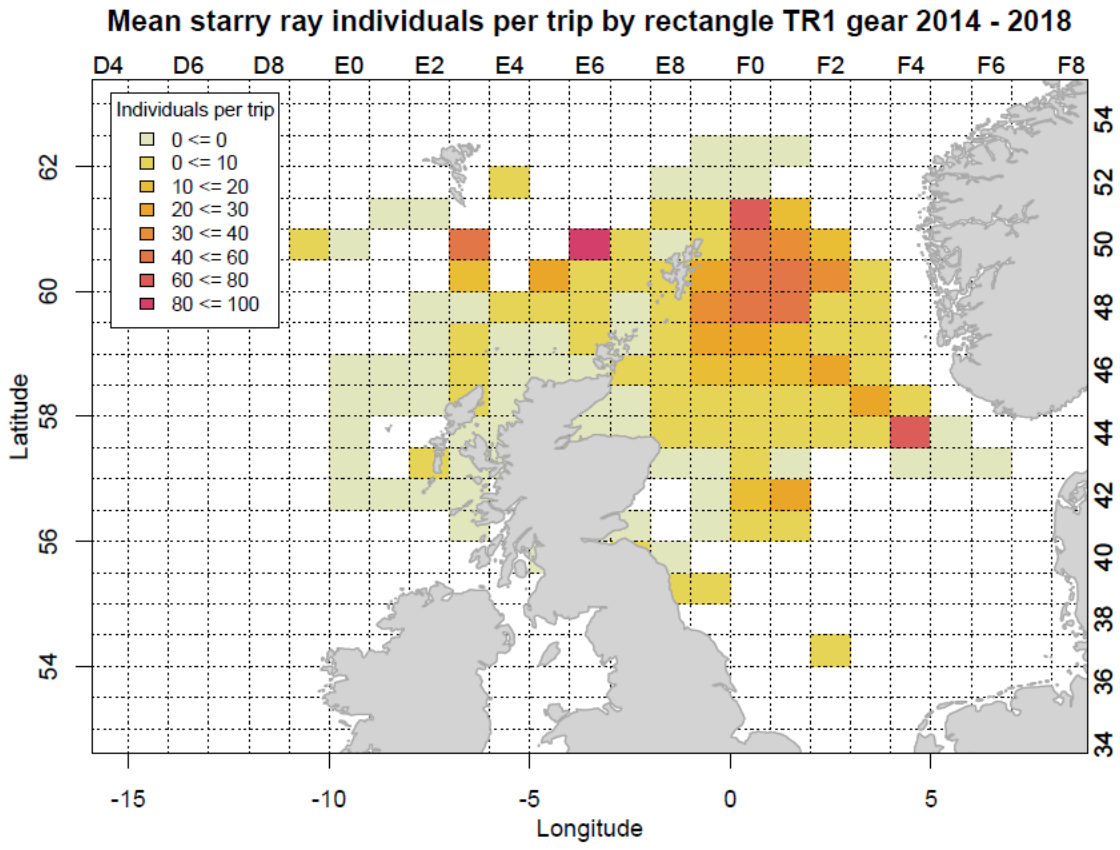

Figure 11. Bycatch of starry ray in TR1 gear, 2014-18, by ICES rectangle. Figure provided by Marine Scotland Science.

Figure 12. Starry ray individuals observed in TR1 gear, 2014-2018 (each year individually) – see appendix

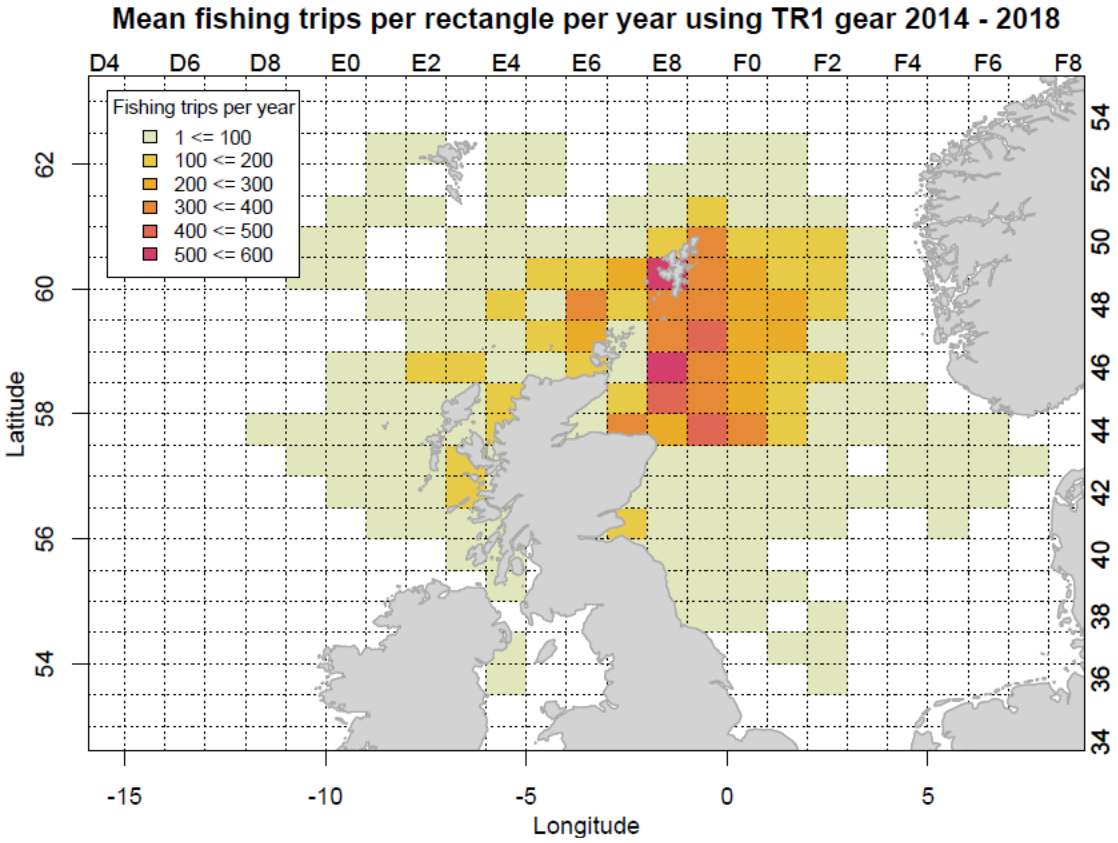

Figure 13. Fishing effort (fishing trips) by TR1 gear, 2014-18. Figure provided by Marine Scotland Science.

10.2Starry ray – TR2

A similar exercise for TR2 gears is less informative, because both fishing and sampling effort is more patchy for these gears. The map of bycatch per trip for all years combined (Figure 14) is a composite of the individual years (Figure 15 – see separate file) since sampling has by chance concentrated in different areas in different years. As far as it is possible to draw conclusions, it appears that while TR2 effort (Figure 16) is concentrated around the coast, bycatch rates are higher offshore.

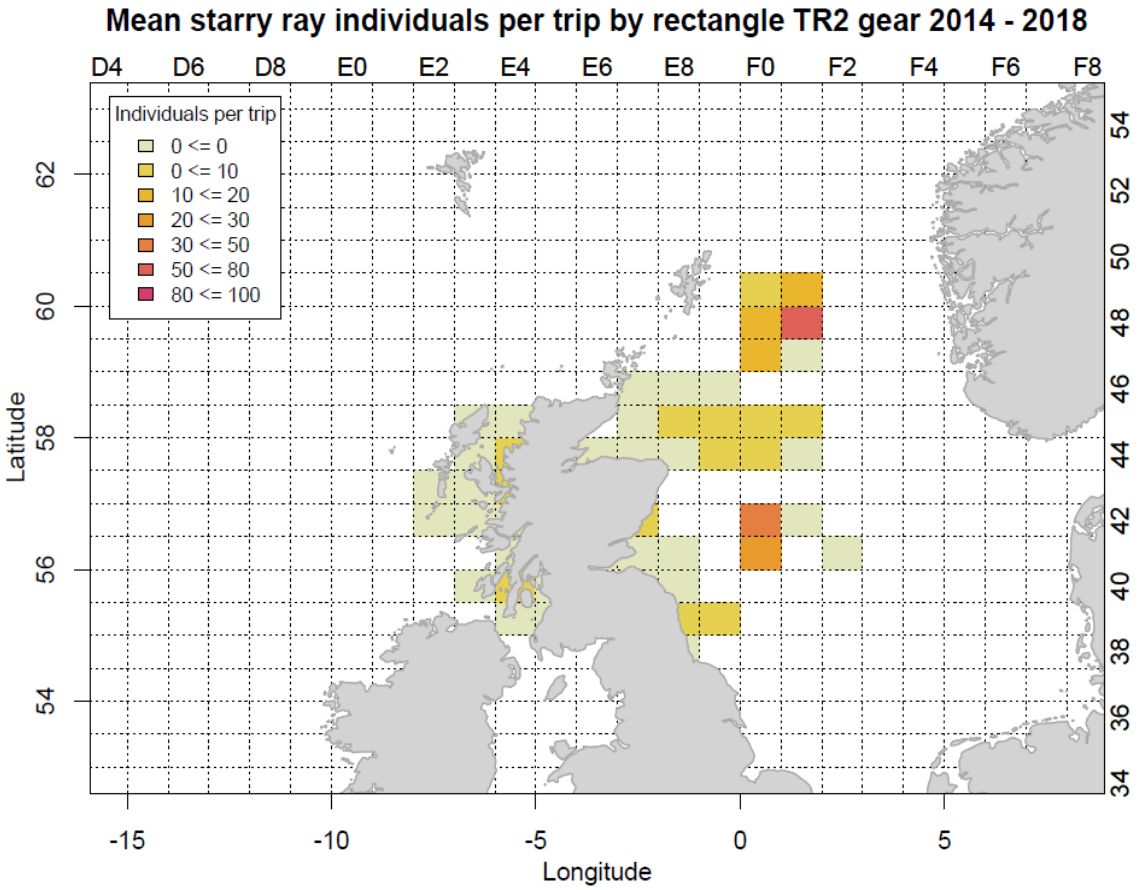

Figure 14. Bycatch of starry ray in TR2 gear, 2014-18, by ICES rectangle. Figure provided by Marine Scotland Science.

Figure 15. Starry ray individuals observed in TR2 gear, 2014-2018 (each year individually) – see appendix

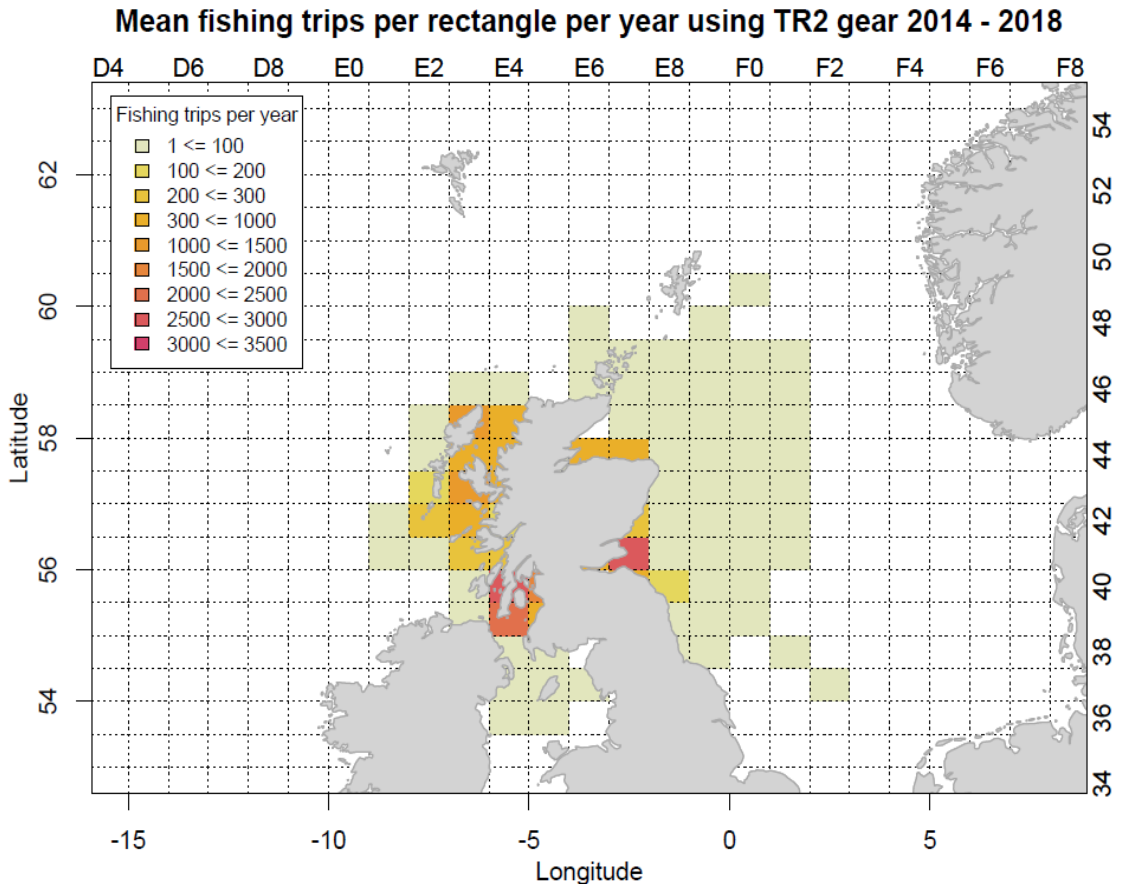

Figure 16. Fishing effort (fishing trips) by TR2 gear, 2014-18. Figure provided by Marine Scotland Science.

10.3Common skate – TR1

The overall mapping for common skate bycatch rates for TR1 gear (2014-18, all years combined) is shown in Figure 17. Again, it is important to be cautious in the interpretation of apparent 'hotspots' of bycatch. The mapping for individual years (Figure 18 – see separate file) shows that the 'hotspot' to the west of St. Kilda (column E0) is a function of a trip with high bycatch in 2014, while the 'hotspot' on the south coast of Mull (41E1) comes from one sample only, in 2015. These are therefore most likely a function of sampling rather than genuine hotspots. There does seem to be an area of consistent bycatch off the north coast (west of Orkney). A comparison of the spatial pattern of bycatch with overall TR1 fishing effort (Figure 13 above) suggests that the main centre of fishing effort is displaced from the area of highest common skate bycatch. There is, surprisingly, not particularly good evidence that common skate has been extirpated from coastal areas in favour of deeper areas which are less heavily fished – which has been the common narrative. Although some years (2014) potentially show this pattern, other years do not, and the species is still clearly present in coastal areas on the west coast (Figure 17, Figure 18 – see separate file).

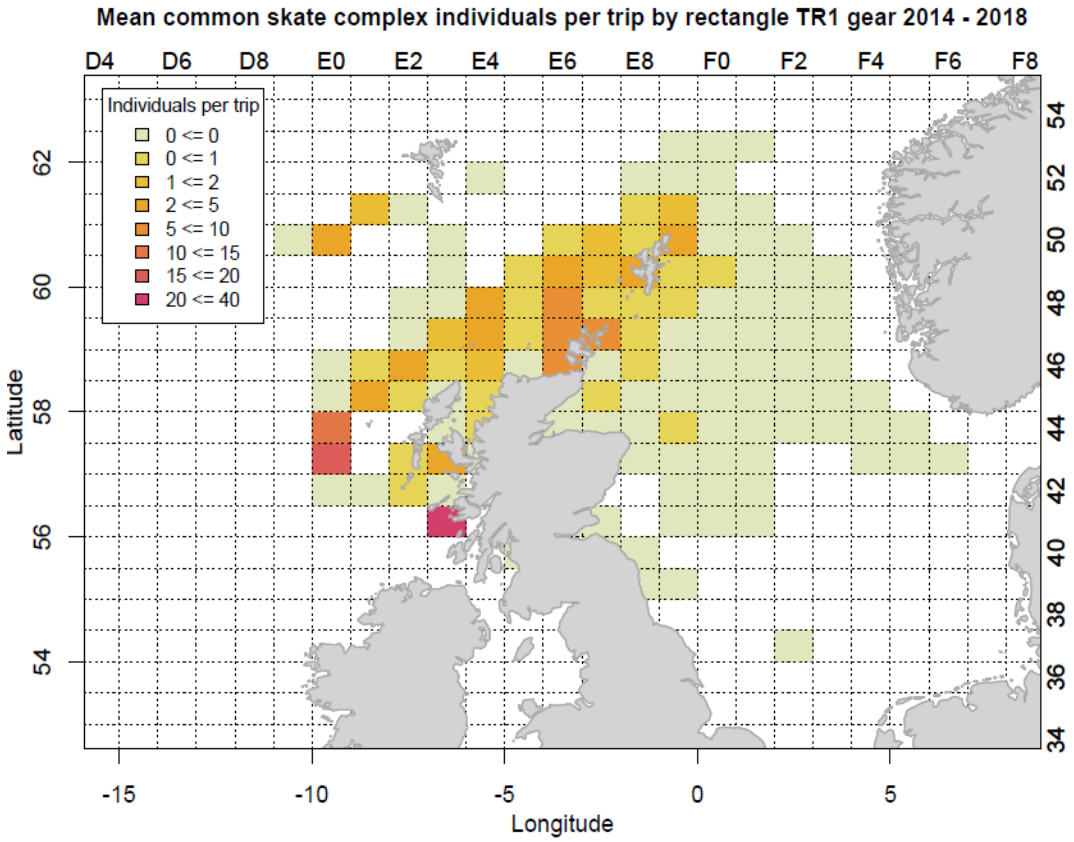

Figure 17. Bycatch of common skate in TR1 gear, 2014-18, by ICES rectangle. Figure provided by Marine Scotland Science.

Figure 18. Common skate individuals observed in TR1 gear, 2014-2018 (each year individually) – see appendix.

Common skate – TR2

The overall mapping for common skate bycatch rates for TR2 gear (2014-18, all years combined) is shown in Figure 19. The only functional units concerned by common skate bycatch are on the west coast (this is confirmed by the inspection of each year individually; see Figure 20 in separate file). It is again not possible to identify any particular hotspots – the species appears to be present throughout the west coast in coastal waters. It may be more present further north than in the area of highest TR2 effort (around Kintyre; Figure 16).

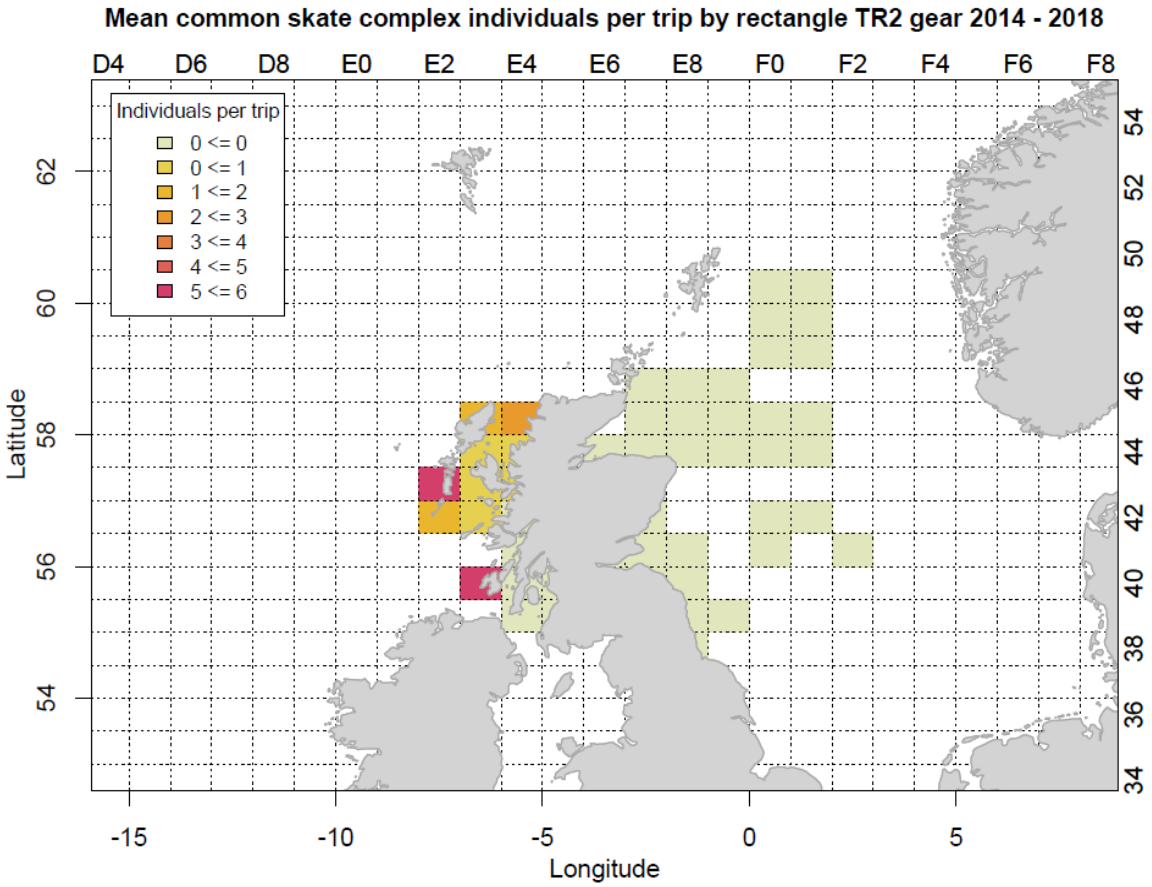

Figure 19. Bycatch of common skate in TR2 gear, 2014-18, by ICES rectangle. Figure provided by Marine Scotland Science.

Figure 20. Common skate individuals observed in TR2 gear, 2014-2018 (each year individually) – see appendix

11. Analysis by trip parameters

Marine Scotland has also evaluated the bycatch data by month and by vessel size, for the two species and gear types separately.

11.1Monthly bycatch patterns

For starry ray bycatch in TR1 gear (Figure 21), there is some evidence of a seasonal pattern, with a dip in winter and a peak in spring and (possibly) late autumn (note however that the apparent dip in bycatch in January is associated with low sample size). The individual annual patterns are roughly consistent (Figure 22 – see separate file). For common skate bycatch in TR1 gear (Figure 23) there is no evidence of any seasonal pattern (the monthly data by individual year are not included as they are not any more informative). For bycatch of both species for TR2 gear, there is not a large enough sample size to break down the data by month meaningfully.

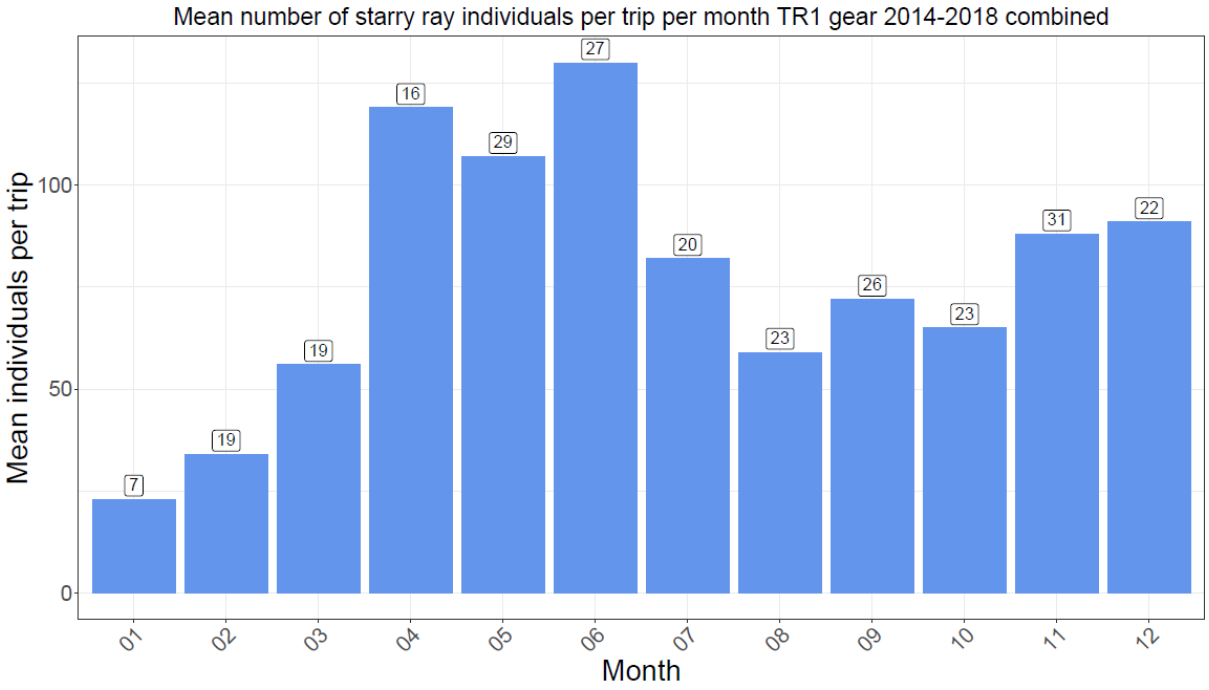

Figure 21. Bycatch per trip for starry ray in TR1 gear, 2014-18 (all years combined). Figure prepared by Marine Scotland Science.

Figure 22. Bycatch per trip for starry ray in TR1 gear, 2014-18 (years individually) – see appendix

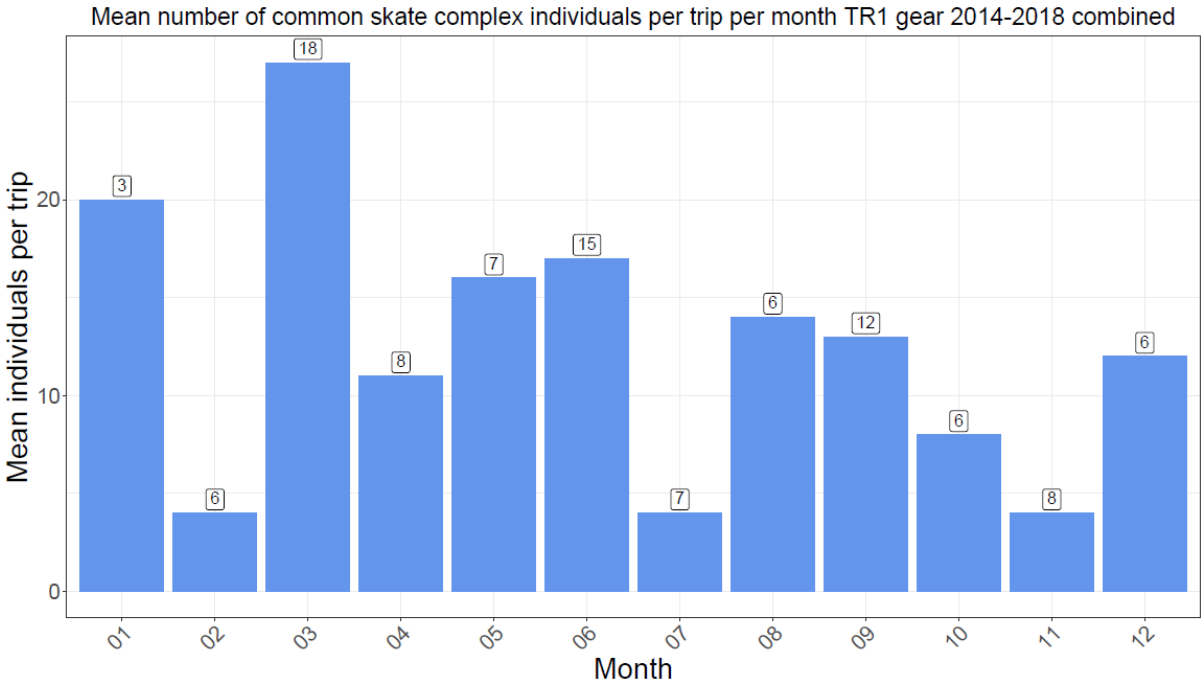

Figure 23. Bycatch per trip for starry ray in TR1 gear, 2014-18 (all years combined). Figure prepared by Marine Scotland Science.

11.2Bycatch by vessel size

The vessels were broken down by MSS into 5 size categories. However, there is no data in the middle category (20-30m) and the sample size in the small and large categories (<12m, >40m) is small. Overall, therefore, this analysis is not informative.

12. Conclusions of the data analysis

With five full years of bycatch data from the PETS and bycatch sampling programme (2014-18), 2019 was the first year in which MSS felt that sample sizes might be appropriate to attempt some global analysis of the dataset in relation to skates. The purpose of this analysis was to evaluate whether the data contain information which might help Marine Scotland and/or SFSAG to put in place additional measures to reduce skate bycatch.

In relation to starry ray, the main conclusions of the analyses by ICES and MSS, summarised above, are as follows:

- Survey catch rates remain in decline in the North Sea, having increased throughout the 1980s. The reasons for the increase and subsequent decline are unclear.
- The spatial analysis of starry ray bycatch data do not reveal any clear bycatch hotpots which could form the basis of a protected area. Biomass seems to be highest over a relatively large area in the northern North Sea (east of Shetland) which is not the centre of effort for SFSAG towed gear, although according to ICES the species remains present throughout the North Sea.
- The analysis of starry ray bycatch by season likewise does not reveal any clear pattern that could form the basis of a temporal management measure, although there are some general trends.
- Overall, because catch rates are low and patchy, there are not sufficient data as yet for further analysis of this bycatch data based on other parameters. The data set will continue to improve year by year, but this situation will probably not change over the timeframe of an MSC assessment cycle (5 years). ICES base their analysis on a long survey time series, and therefore the best approach to ongoing management of starry ray would seem to be to take account of ICES' evaluations and follow their recommendations.

In relation to common skate, the main conclusions of the analyses by ICES and MSS, summarised above, are as follows:

- For the North Sea, although a quantitative analysis of trends is not possible, survey catch rates have increased substantially since the 1990s. For W. Scotland, ICES was not able to present an analysis, although trends in the Celtic Seas region more widely are likewise encouraging.
- The spatial analysis of common skate bycatch data suggests that common skate bycatch in the SFSAG fishery takes place almost entirely around the north and west coasts. Observed bycatch in the North Sea is minimal.
- The species appears to be distributed more widely than thought, including in inshore areas. As for starry ray, no spatial or seasonal patterns could be discerned which would support additional robust management measures.
- In terms of future action, it is critical to try and establish what are the trends in the population on the west coast, and it is clear that the bycatch data from this fishery is not a long enough time series to be able to answer this question in the near future. ICES WGEF (2018) regrets that Scottish participants were not available to support an analysis of data from the Scottish West Coast Groundfish Survey, and it is recommended that for their next steps, SFSAG liaise with MSS to establish whether these data might help in establishing whether trends in Subarea 6a mirror those elsewhere.

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Control Union Pesca (formerly MacAlister Elliott Certification) 2018b. Marine Stewardship Council (MSC) Second Annual Surveillance Report. SFSAG North Sea haddock. Hugh Jones and Geir Hønneland. June 2018. https://fisheries.msc.org/en/fisheries/sfsag-northern-demersal-stocks/@@assessments

Daan N., Gislason H., Pope J.G. and Rice J.C. 2005. Changes in the North Sea fish community: evidence of indirect effects of fishing? ICES Journal of Marine Science 62, 177-188.

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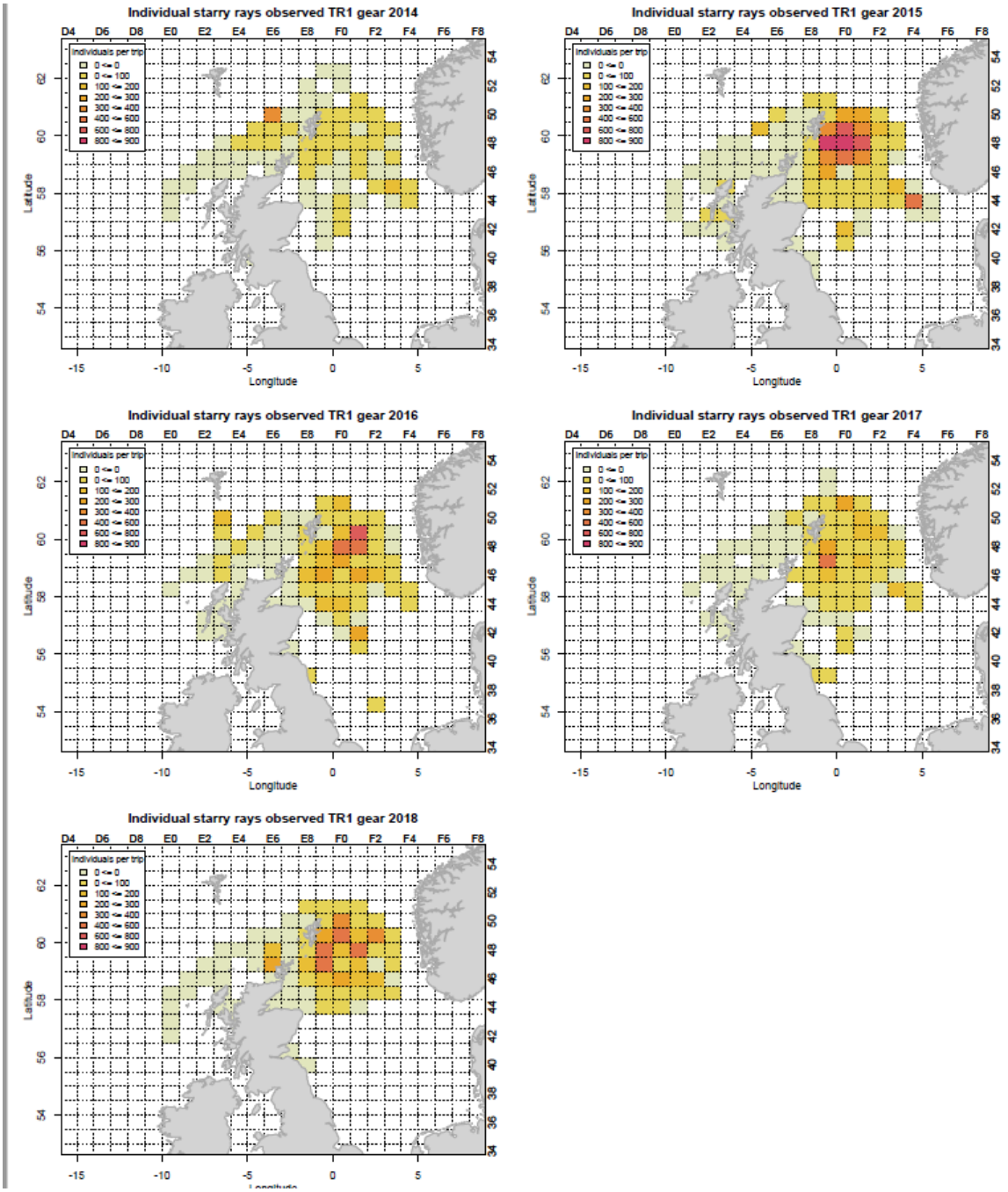
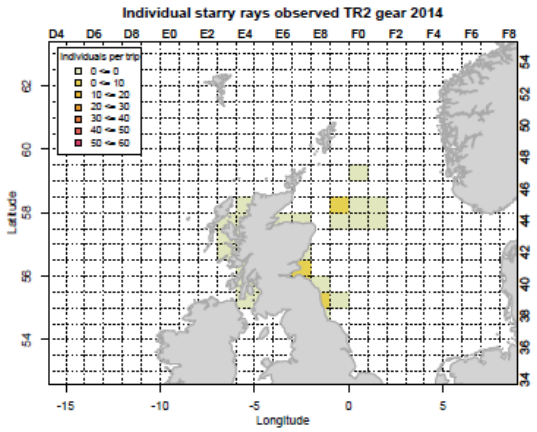
ICES 2019a. Starry ray (*Amblyraja radiata*) in subareas 2 and 4, and Division 3.a (Norwegian Sea, North Sea, Skagerrak and Kattegat). *In* Report of the ICES Advisory Committee, 2019. ICES Advice 2019, rjr.27.23a4, https://doi.org/10.17895/ices.advice.4841.

ICES 2019b. Common skate complex (Blue skate (*Dipturus batis*) and flapper skate (*Dipturus intermedius*) in Subarea 4 and Division 3.a (North Sea, Skagerrak and Kattegat). *In* Report of the ICES Advisory Committee, 2019. ICES Advice 2019, rjb.27.3a4, https://doi.org/10.17895/ices.advice.4835.

Appendix – figures 4, 7, 10 12, 14.




Individual starry rays observed TR2 gear 2014
Individuals per trip
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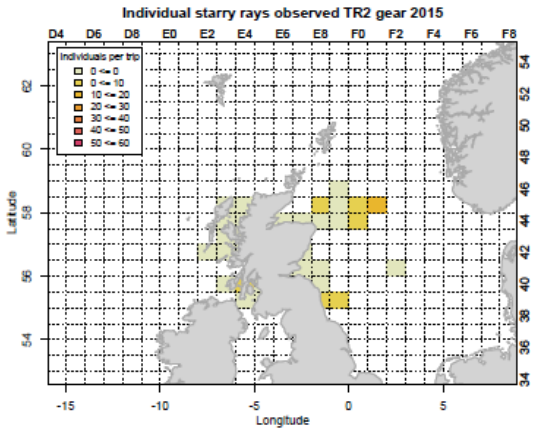
0 <= 10
10 <= 20
20 <= 30
30 <= 40
40 <= 50
50 <= 60
Latitude
Longitude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Individuals per trip
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10 <= 20
20 <= 30
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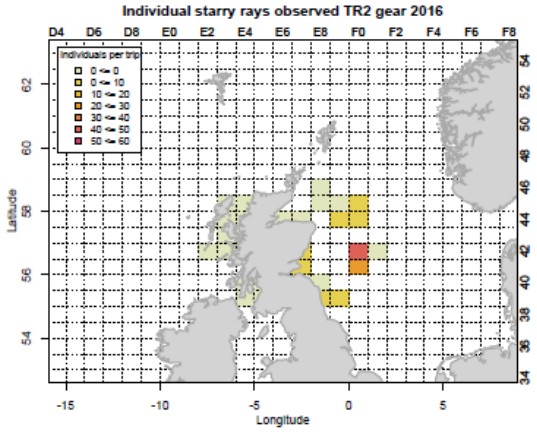
Latitude
Longitude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40 <= 50
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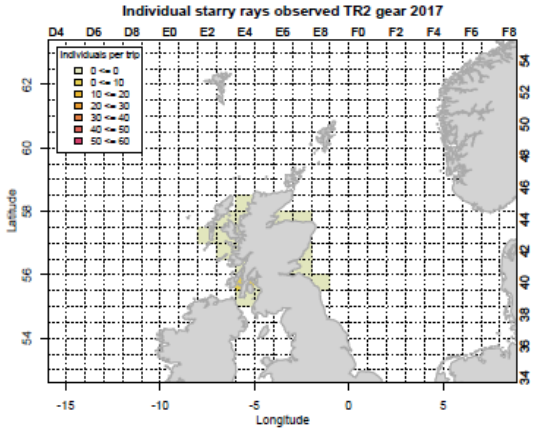
Latitude
Longitude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Individuals per trip
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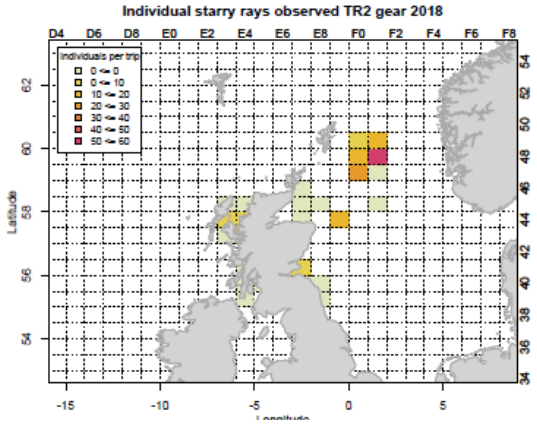
20 <= 30
30 <= 40
40 <= 50
50 <= 60
Latitude
Longitude


Individual starry rays observed TR2 gear 2018
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20 <= 30
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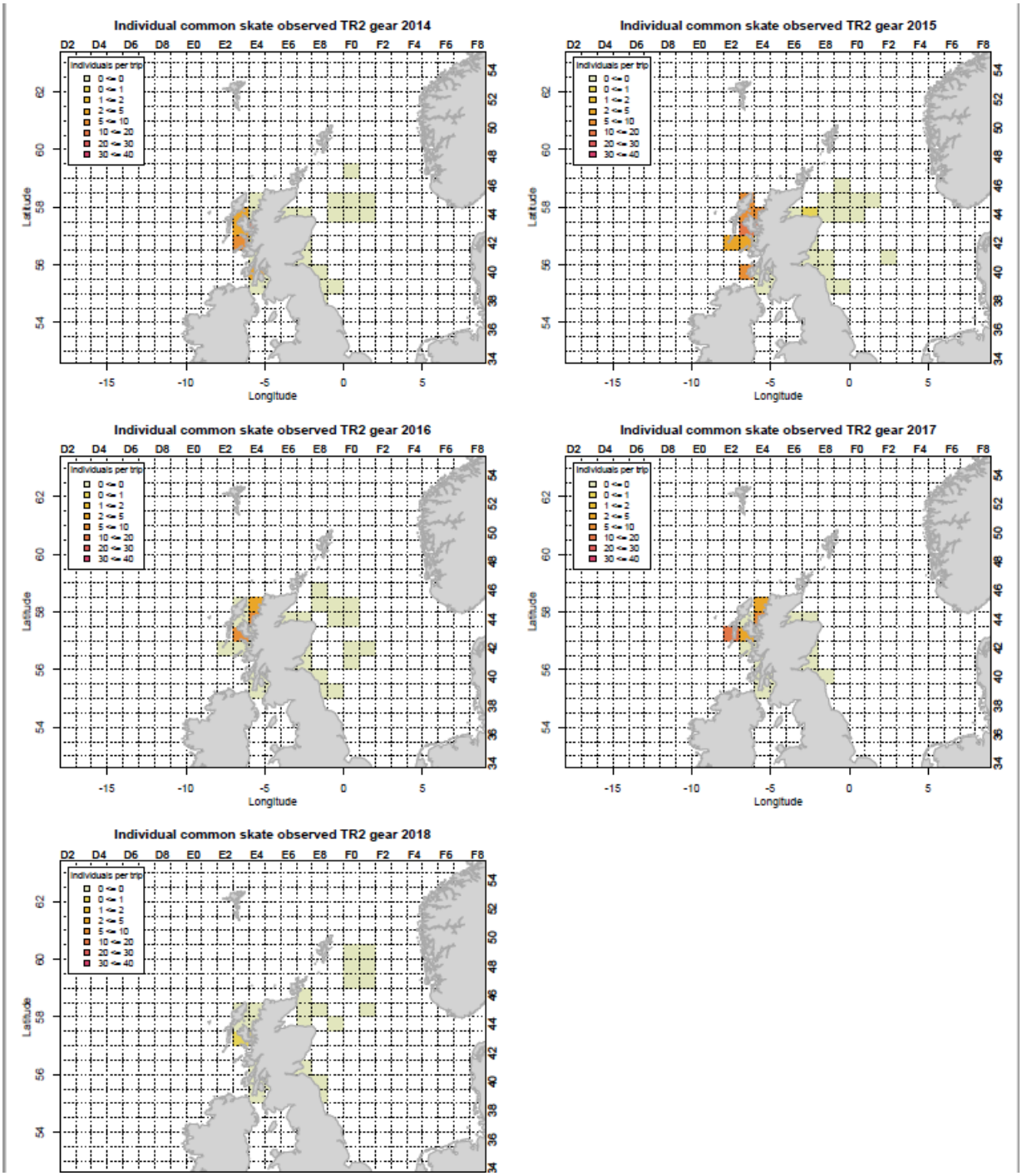
40 <= 50
50 <= 60
Latitude
Longitude


Individual common skate observed TR2 gear 2014
Individual common skate observed TR2 gear 2015
Individual common skate observed TR2 gear 2016
Individual common skate observed TR2 gear 2017
Individual common skate observed TR2 gear 2018
Individuals per trip
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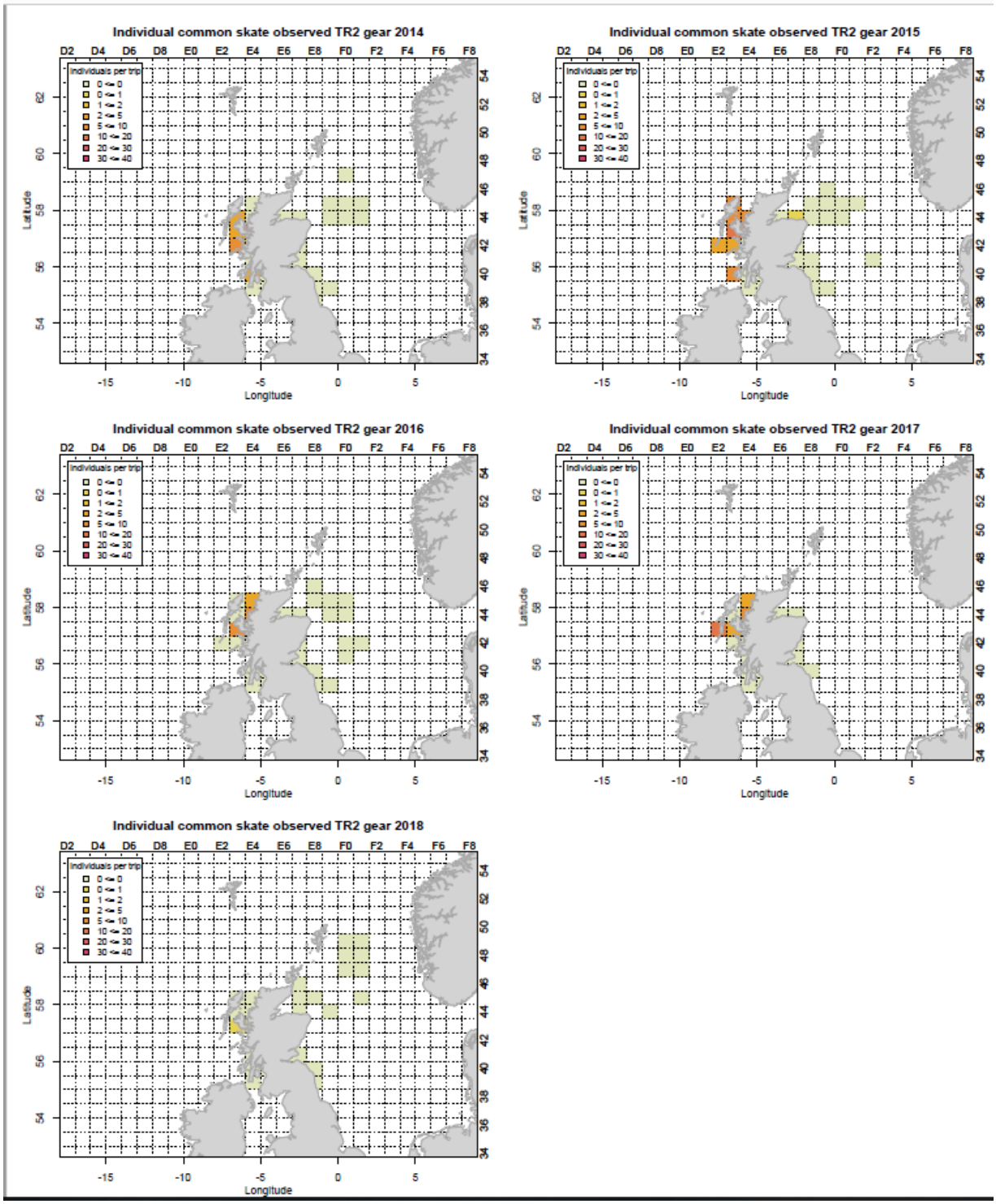
0 <= 1
1 <= 2
2 <= 5
5 <= 10
10 <= 20
20 <= 30
30 <= 40
Latitude
Longitude


Individual common skate observed TR2 gear 2014
Individual common skate observed TR2 gear 2015
Individual common skate observed TR2 gear 2016
Individual common skate observed TR2 gear 2017
Individual common skate observed TR2 gear 2018
Individuals per trip
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Latitude
Longitude
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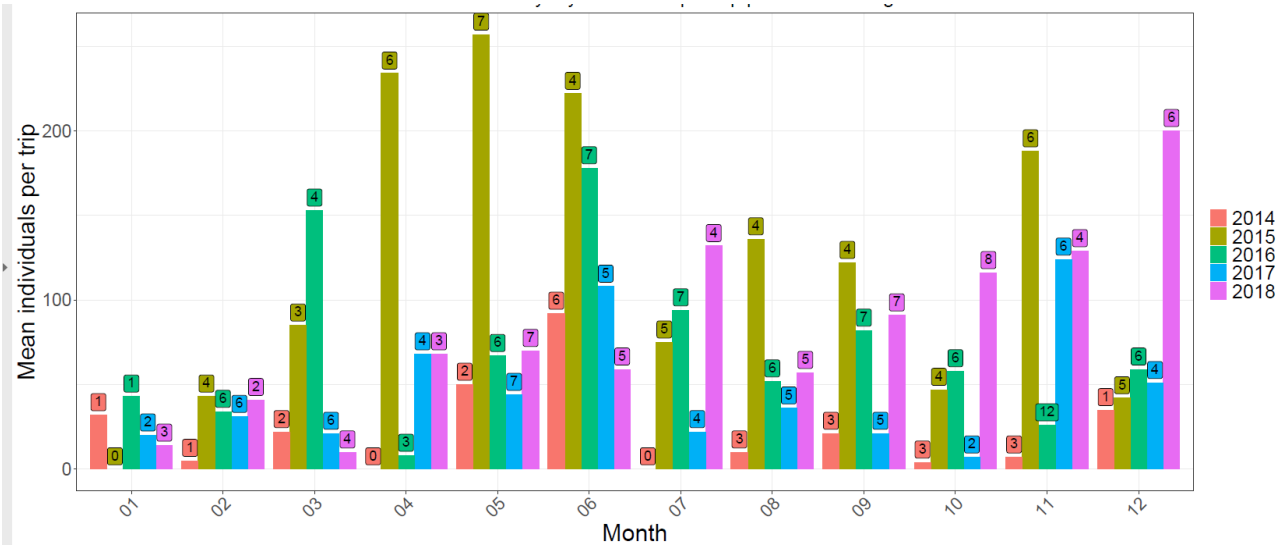
54 56 58 60 62


Mean individuals per trip
0
100
200
01
02
03
04
05
06
07
08
09
10
11
12
Month
2014
2015
2016
2017
2018

Appendix 5 Marine Scotland PMF

Priority Marine Feature (PMF)	Scottish marine area important for PMF	Habitats Directive	Wildlife & Countryside Act	CITES	OSPAR threatened and/or declining habitats and species	BAP priority habitat/ species	IUCN Global Red list status	MPA search feature (offshore/territorial)	Proposed MPA protected feature (offshore/territorial)
Blue mussel beds	Territorial waters	Annex I			Regions II,III (LS.LBR.LMus.Myt.Sa & LS.LBR.LMus.Myt.Mx only)	√ (except IR.LIR.IFaVS.MytRS)		Territorial waters	
Burrowed mud	Both				Regions I, II, III, IV (habitat components only)	√ (except *Maera loveni*)		Both (not *Maera loveni*)	Both (not *Maera loveni*)
Carbonate mound communities	Offshore waters				Region V	√ (related to Carbonate Mounds)		Offshore waters	
Cold-water coral reefs	Both	Annex I		Appendix II	All regions where they occur	√			
Coral gardens	Offshore waters	Annex I			All regions where they occur			Offshore waters	Offshore waters
Deep sea sponge aggregations	Offshore waters	Annex I			All regions where they occur	√		Offshore waters	Offshore waters
Flame shell beds	Territorial waters					√		Territorial waters	Territorial waters
Horse mussel beds	Territorial waters	Annex I			All regions where they occur	√		Territorial waters	Territorial waters
Inshore deep mud with burrowing heart urchins	Territorial waters					√		Territorial waters	
Intertidal mudflats	Territorial waters	Annex I			All regions where they occur	√			
Kelp and seaweed communities on sublittoral sediment	Territorial waters					√ (Subtype SS.SMp.KSwSS.LsacR .CbPb only)		Territorial waters	Territorial waters
Low or variable salinity habitats	Territorial waters	Annex I (habitat components only)	Schedule 8 (*Lamprothamnium papulosum* only)			√ (except IR.LIR.IFaVS and *Hydrobia acuta neglecta)*		Territorial waters	
Maerl beds	Territorial waters	Annex I			Region III	√		Territorial waters	Territorial waters
Maerl or coarse shell gravel with burrowing sea cucumbers	Territorial waters	Annex I				√		Territorial waters	Territorial waters
Native oysters	Territorial waters				All regions where they occur (habitat), Region II (species)	√		Territorial waters	Territorial waters
Northern sea fan and sponge communities	Territorial waters	Annex I (habitat components only)				√		Both (habitat components in territorial waters only)	Territorial waters
Offshore deep sea	Offshore waters							Offshore waters	Offshore waters

Offshore deep sea muds	Offshore waters					√		Offshore waters	Offshore waters
Offshore subtidal sands and gravels	Offshore waters	Annex I (if in <20m of water)				√		Offshore waters	Offshore waters
Seagrass beds	Territorial waters	Annex I			All regions where they occur (LS.LMp.LSgr.Znol and SS.SMp.SSgr.Zmar only)	√		Territorial waters	Territorial waters
Sea loch egg wrack beds	Territorial waters	Annex I				√		Territorial waters	
Seamount communities	Offshore waters				All regions where they occur	√		Offshore waters	Offshore waters
Serpulid aggregations	Territorial waters	Annex I				√			
Submarine structures made by leaking gases	Both	Annex I							
Tide-swept algal communities	Territorial waters	Annex I				√		Territorial waters	
Tide-swept coarse sands with burrowing bivalves	Territorial waters	Annex I				√		Territorial waters	Territorial waters
Burrowing sea anemone	Territorial waters					√		Territorial waters (aggregations)	Insufficient information to identify MPA proposal
Pink sea fingers*	Territorial waters								
White cluster anemone*	Territorial waters								Territorial waters
Northern feather star*	Both							Both (aggregations on mixed substrata)	Territorial waters (aggregations on mixed substrata)

Appendix 6 Windsock Voluntary Agreement

Windsock Opening

Agreement Between Mobile and Static Gear Vessels

Review of the Technical Conservation Regulation 850/98 has resulted in the closed area known as the windsock being removed as of the 14th August 2014. Whilst the mobile gear sector view this as a welcome shift in approach it does provide a significant problem with regard to shared use of the space.

To address this issue representatives of both sectors met with a view to agreeing upon a joint approach. The following agreement is understood to be a social contract between organisations and by extension the operators.

Over two meetings and one conference call which included representatives from Orkney, Clyde, and Shetland Fishermen's Association and the Scottish White Fish Producers Association (SWFPA) agreement was reached on a number of levels. Those are:

1. Shared use of an area that has been designated as the West Shetland Shelf MPA,

2. The agreement contains four distinctly different levels;

    i. Areas of exclusive use for both mobile and static gears,
    ii. an area of shared access subject to communication at the vessel level,
    iii. increased VMS pings from vessels operating within close proximity to the MPA (Possibly 10 miles),
    iv. and ring-fenced monitoring by MSC (Marine Scotland Compliance) of the area currently designated as creel only.

3. The areas of exclusive use will be in place from 14th August 2019 to 14th February 2020 although the situation will be revisited after three months.

4. **Areas of exclusive use**
   In the map below the area shaded orange enclosed by joining way points Z1, Z2, J, L and A will be exclusively for creel operations. The remaining area shared green enclosed by joining way points B, C, D, E, F, G, H, I, J, Z2, and Z1 is for exclusive use of mobile gears.

5. **Area of shared access**
   The area shaded yellow formed by joining waypoints J, K and L is an area of joint access where skippers operating mobile gear are expected to communicate with creel vessels. Mobile vessels will deploy gear in the area only when it is confirmed that conflict will not occur.

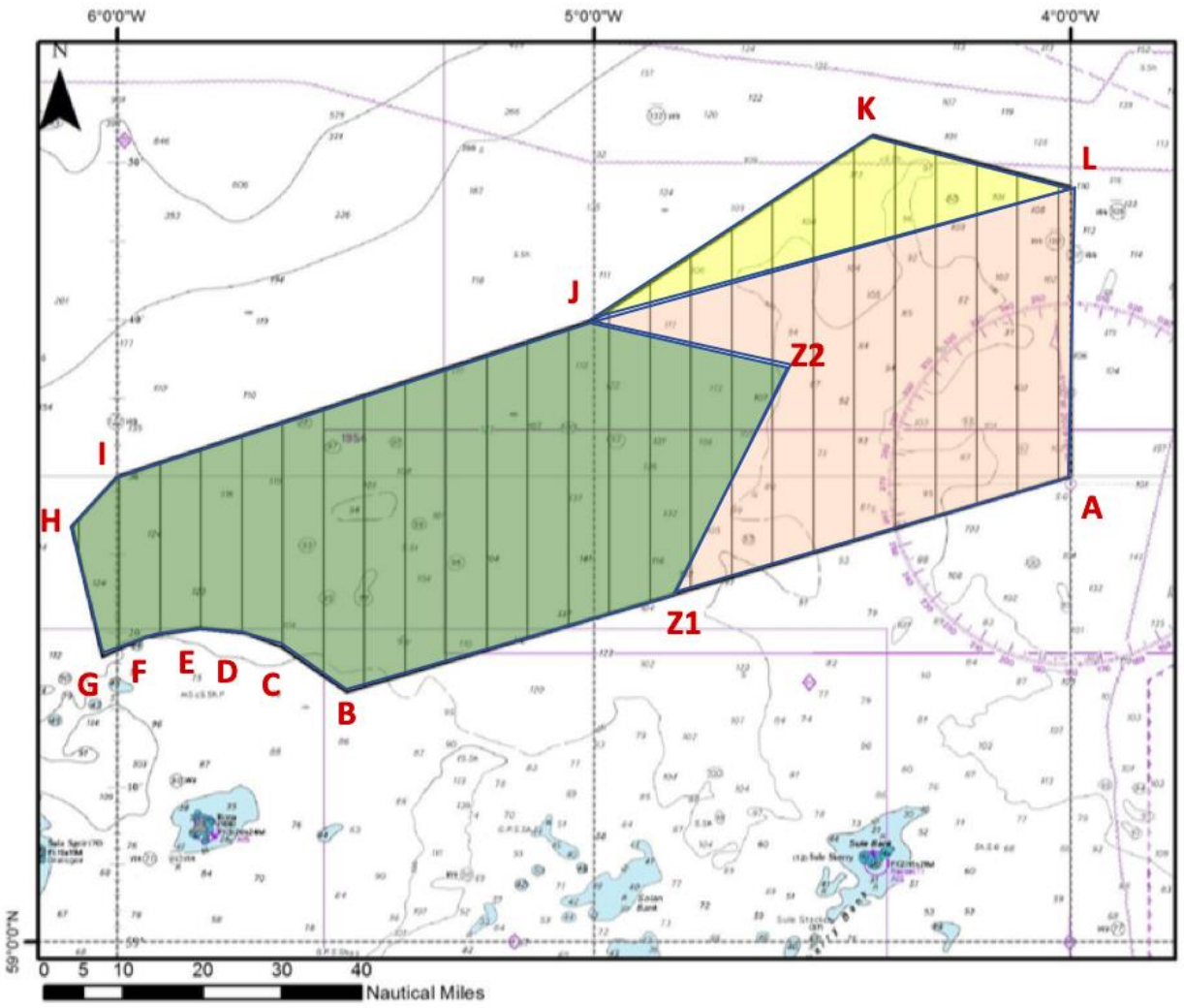
6. **Increased VMS pings**
   Mobile vessels will be encouraged to increase the frequency of VMS pings when operating within 10 miles of the MPA on the premise that it provides a higher degree of transparency and accountability. Guidance is requested from Marine Scotland with regard to the required procedure.

7. **Monitoring and notifications**
   There is an expectation that Marine Scotland will support this agreement by monitoring and informing on incursions into the exclusive creel activity area. It is expected that such monitoring will be similar in approach to that applied to the voluntary closed area within the Fladen Grounds. Incursions should be communicated to both Orkney FA and SWFPA. There is a responsibility on these Associations to contact the vessels concerned.

Creel only

Trawl only

Joint Access



Position points for WSS MPA and proposed management areas

"A" is 59° 30.0′ N, 004° 00.0′ W;
"B" is 59° 16.2′ N, 005° 31.2′ W;
"C" is 59° 19.1′ N, 005° 39.4′ W;
"D" is 59° 20.0′ N, 005° 43.9′ W;
"E" is 59° 20.3′ N, 005° 49.8′ W;
"F" is 59° 19.7′N, 005° 56.5′ W;
"G" is 59° 18.4′N, 006° 01.9′ W;
"H" is 59° 26.8′ N, 006° 05.8′ W;
"I" is 59° 30.0′ N, 006° 00.0′ W;
"J" is 59° 40.0′ N, 005° 00.0′ W;
"K" is 59° 51.7′ N, 004° 24.9′ W;
"L" is 59° 48.5′ N, 004° 00.0′ W.

"Z1" is 59° 22.5′ N, 004° 52.2′ W.
"Z2" is 59° 34.5′ N, 004° 37.7′ W.