CONSEIL CONSULTATIF POUR LES EAUX OCCIDENTALES SEPTENTRIONALES
NORTH WESTERN WATERS ADVISORY COUNCIL
CONSEJO CONSULTIVO PARA LAS AGUAS NOROCCIDENTALES

Isabel Artime García
Directora General de Recursos Pesqueros
Secretaría General de Pesca
Ministerio de Agricultura, Pesca y Alimentación
C/ Velázquez, 144. 5ª Planta.
28006 Madrid, Spain

Dublin, 01 May 2020

Dear Ms García,

Re: Advice on best practice measures for the management of skates and rays in the North Western Waters

In June 2019 the North Western Waters Advisory Council (NWWAC) submitted its advice on the Programme of Measures for Skates and Rays to the North Western Waters Member States Group. At the same time, the North Sea Advisory Council (NSAC) submitted guidelines for best practice for handling catches of skates and rays and to increase their survivability building on existing knowledge to the Scheveningen Group.

In October 2019 the Scheveningen Group requested NSAC to provide advice on harmonised guidelines for best practice when handling catches of skates and rays throughout the North Sea, North Western Waters and South Western Waters, building on existing knowledge on e.g. identification of the different species and their vulnerability/survivability.

In response, the NWWAC together with the NSAC established a joint Focus Group Skates & Rays which collected and collated all available information on best practice measures currently in use, which ones the Advisory Councils recommend could be implemented in the future, as well as an overview of ongoing trials and proposed research.

This information is presented in the tables on the following pages.

Yours sincerely,

Emiel Brouckaert, Chairman Executive Committee

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1 Glossary

JR Best Practices	Avoidance	Spatial methods to avoid catching individuals and/or aggregations
	Selectivity	Technical measures to prevent individuals being caught in the net
	Handling on board	Methods to increase survival on board
	Training / Communication	Ways to increase knowledge of skate and ray species and their ecological role in the ecosystem, throughout the supply chain
Approach	Measure	1 line description aligned with the exemption text - can be general (e.g. improving ID-skills)
	Projects	Description of the project, can add links to web content here
	Applicable metier/species	For which species or metier has the measure been trialled or is being implemented
	Applied in country	Where is the measure or project being carried out
	Comments	Extra information relevant for reporting on progress in the implementation of best practices
Categories	Currently in use	What methods/measures are being implemented by the fishing industry
	Could be implemented	What information/method/protocol is available that is not currently being used
	Trials ongoing	What is currently being trialled or tested in fisheries
	Proposed research	Potential measures that could be trialled but no research projects have been formulated
	Survival studies	Overview of studies being carried out to determine survival of skates and rays in fisheries

2 Best practice measures currently in use

Organisation		Measure	Projects	Applicable in metier/species	Applied in country	Comments
SUMARiS/ From Nord/ / Rederscentrale/ CNPMEM	Avoidance	1. Avoid known spawning/nursery areas (nearby coast of France and England, Thames estuary) 2. Fee of 4 euro for the landing of ray size class 4 (less than 1 kg) 3. 1€ tax for each kilo of ray sold during the year. If the individual quotas is respected, all these taxes are reimbursed to the vessel. Otherwhile it's kept proportionally to be given to those who hadn't been able to fish their "part" of the quota before closing.	1. It is natural behaviour enhanced by the fishermen in order to be able to fish and land rays throughout the year. 2. PO measures in Belgium 3. PO measures in France	ALL metiers and species	BE/FR/UK	Due to quota limitations (day limits), fishermen avoid spawning/nursery areas and ray hotspots.
	Selectivity	1. Flip up rope & Benthos Release Panel 2. Flemish panel 3. Large meshes in the back of the net.	1. In the willingness to obtain and preserve the survival exemption in a Discard ban context improving selectivity might have been a solution. 2. Belgian project 'netaanpassingen II' in 2015 with selectivity tests on board of commercial fishing vessels. Objective: avoidance of new born specimens/juveniles. 3. Belgian project 'netaanpassingen I' in 2014. Objective: avoidance of new born specimens/juveniles.	1. Beam trawlers 2. Beam trawlers 3. Beam trawlers and Otter trawlers.	BE	
	Handling on board	Development of ID Guides - Same tool for potentially all European fishermen. Guide of good practices on board is unique and available in 3 languages.	SUMARiS project: https://www.interreg2seas.eu/nl/sumaris Harokit project: https://www.ilvo.vlaanderen.be/language/nl-BE/NL/Diensten-en-producten/Harokit	ALL metiers and species (especially those in the Eastern Channel and North Sea).	BE / FR/ UK	
	Training / Communication	Training sessions for fishermen, fish auction staff and students in maritime schools. A presentation available in 3 languages and some afterwards quiz are also currently used. Another tool for good recognition of species and thus better recording in the logbook is mugs presenting lookalikes species with the corresponding FAO code that have been distributed to all fishermen in the SUMARiS consortium	SUMARiS project: https://www.interreg2seas.eu/nl/sumaris Harokit project: https://www.ilvo.vlaanderen.be/language/nl-BE/NL/Diensten-en-producten/Harokit	ALL metiers and species	BE / FR/ UK	
Bord Iascaigh Mhara			Under Article 13 of Council Regulation (EU) 2020/123 (link)from 1 June 2020, fishers have the option to use a fishing gear (a raised fishing line trawl) that is constructed with a minimum of one meter spacing between the fishing line and ground gear. While this gear is under the remedial measures for cod and whiting in the Celtic Sea, work completed by BIM shows this gear to reduce skate and ray catches by up to ~80%. The two studies are McHugh et al. 2017 "Raising the fishing line to reduce cod catches in demersal trawls targeting fish species" (link) and McHugh et al. 2019 "Staggering the fishing line: a key bycatch reduction option for whitefish trawlers" (link)		Celtic Sea	

3 Best practice measures that could be implemented

Organisation		Measure	Projects	Applicable in metier/species	Applied in country	Comments
SUMARiS/ From Nord/ Rederscentrale/ CNPMEM	Handling on board	Development of ID Guides - Same tool for potentially all European fishermen. Guide on good practices on board is unique and available in 3 languages.	SUMARiS project	ALL metiers and species	BE/FR/UK	These tools are actually only onboard of vessels in the SUMARiS consortium. But it could be more widely distributed if wanted
	Training / Communication	Another tool for good recognition of species and thus better recording in the logbook is mugs presenting lookalikes species with the corresponding FAO code that have been distributed to all fishermen in the SUMARiS consortium	SUMARiS project	ALL metiers and species	BE/FR/UK	These tools are actually only onboard of vessels in the SUMARiS consortium. But it could be more widely distributed if wanted
NWWAC	Selectivity		A permanent working group should be established at MS level in which the fishing industry actively participates.		BE/FR/UK/ IE/ES/NL	
	Training / Communication	Use of new communication technologies	Best available technological modifications should be identified and exchanged by means of, for example, stakeholder meetings. To increase uptake of the technical modifications measures, improved communication, involvement of the industry and funding availability are essential.		BE/FR/UK/ IE/ES/NL	EMFF funding is made available for modifications.
		Stadardise ID-guides	Practical identification guides should consist of a single page, which is robust and waterproof. Guides should be standardised across all Member States, regionalised (e.g. Channel, Celtic Sea, West of Scotland and Ireland, North Sea) to reduce confusion with species that do not occur in specific areas and available to download online in different languages. Efforts should be made to actively engage with fishermen to increase the uptake of available identification tools.		BE/FR/UK/ IE/ES/NL	
		Regular training sessions	Training of both scientific observers and crew should be organised on a regular basis to guarantee uptake and illustrate and quantify improvement.		BE/FR/UK/ IE/ES/NL	
		Distribute ID-guides	Fishing plans should be distributed to the fishing industry and information posters should be made available to display onboard vessels. In addition, disseminating information on best practice via video and/or training workshops increases fishers knowledge on the bycatch issue, improves their ability to remain alert, and increase buy-in. Fishermen's knowledge should be integrated into the design of a best practice guide.		BE/FR/UK/ IE/ES/NL	
			Taking into account that several tagging programmes are being conducted as part of survivability studies, manuals should include information on the different types of tags, their position and actions to be taken in case a tag is discovered. The fishing industry should return tags when discovered.		BE/FR/UK/ IE/ES/NL	
	Data Collection		National data collection programmes should be standardised and harmonised. Fishing industry should actively participate in self-sampling and observer programmes to increase data availability and quality.		BE/FR/UK/ IE/ES/NL	

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Bord Iascaigh Mhara			Under Article 13 of Council Regulation (EU) 2020/123 (link)from 1 June 2020, fishers have the option to use a fishing gear (a raised fishing line trawl) that is constructed with a minimum of one meter spacing between the fishing line and ground gear. While this gear is under the remedial measures for cod and whiting in the Celtic Sea, work completed by BIM shows this gear to reduce skate and ray catches by up to ~80%. The two studies are McHugh et al. 2017 "Raising the fishing line to reduce cod catches in demersal trawls targeting fish species" (link) and McHugh et al. 2019 "Staggering the fishing line: a key bycatch reduction option for whitefish trawlers" (link)		Currently in use in Celtic sea, but could be tested elsewhere	

4 Trials ongoing

Organisation		Measure	Projects	Applicable in metier/species	Applied in country	Comments
VisNed	Avoidance	Avoid known spawning/ nursery areas	Life-IP project to map the presence, abundance and use of the Dutch coastal area by skates and rays. This research will start in 2020 and conclude in 2022; genetic study INNORAYS to study population structure and size	all / thornback, blond	NL	
	Avoidance		Project INNORAYS aiming to: 1) study population structure and size using state-of-the-art genetic close-kin mark-recapture methods; 2) develop and validate a sorting belt camera monitoring protocol of ray catches on demersal trawlers; 3) pilot machine vision to automate the detection and classification of ray catches.	all / thornback, blond	NL	
	Avoidance		EU project Probyfish (Brunel T.) in which cluster analyses and spatial distribution of fish are modelled, rays can be part of this	all / no species selected		
SUMARiS/ From Nord/ Rederscentrale/ CNPMEM	Selectivity	1) Avoiding discards with a Benthos Release Panel (BRP) in combination with led. Led strips are placed in the BRP in the back of the net. 2) Data collection (discards, survival) in terms of achieving scientific evidence for a survival exception for the discard ban. Integration of this new information into scientific population dynamics models improve the management rays for Belgian fisheries.	1) Combituig (EMFF project by ILVO) 2) Raywatch (EMFF project by ILVO)	1) Beam trawl 2) Beam trawl	1) BE 2) BE	1) First tests with plaice are successful (20% loss of discards). Later on tests with other species will be performed. 2) Project proposition is approved. The project will start soon. This project, in contrast to SUMARiS, focuses more on areas in the Western Waters.

5 Proposed research

Organisation		Measure	Projects	Applicable in metier/species	Applied in country	Comments
SUMARiS/ From Nord/ Rederscentrale/ CNPMEM	Selectivity	Work on new minimum sizes more than mesh size or gear modification - potentially two different sizes for "well known and stable biomass" species and for "potentially endangered" ones	SUMARiS - or future project	All metiers - may be focused on trawl at first	All potentially and ideally	
NWWAC	Avoidance	Effectiveness of MPAs	A wider study should be conducted to evaluate the effectiveness of closures in the control of mortality of skates and rays and the economic viability. The NWWAC recommends the evaluation of the current MPA network established for other purposes with regards to their impact on skates and rays. The fishing industry should actively participate in this study.		All	
NSAC	Selectivity	Behaviour of rays in and around the net	Lights as deterrents		All	

6 Survival studies

<table>
<tr><th>Organisation</th><th>Project description</th><th>Species</th><th>Gear</th><th colspan="3">Results</th></tr>
<tr><td rowspan="13">VisNed</td><td>"Survivability of discarded flatfish, rays, and Norway lobster", 2016 - 2019, the Netherlands. On-board fish were kept in individual holding containers and survival monitoring was continued in a shore-based climate-controlled facility until stabilisation of mortality (approx. two weeks).</td><td>Thornback ray (Raja clavata) and spotted ray (Raja montagui)</td><td>BT (pulse)</td><td colspan="3">Thornback ray: 53% (95%CI 40-65%) survival. Spotted ray: two trips sampled, with 21% and 67% survival.</td></tr>
<tr><td rowspan="12">SUMARiS, 2017-2020. Belgium, France, Britain; Eastern English Channel and Southern North Sea.</td><td rowspan="12">thornback ray (Raja clavata, RJC), blonde ray (Raja brachyura, RJH), spotted ray (Raja montagui, RJM) and undulate ray (Raja undulata, RJU)</td><td rowspan="12">Beam trawl (TBB), otter trawls (OTB), trammel nets (GTR)</td><td>FAO-code</td><td>Gear</td><td>Total survival (%)</td></tr>
<tr><td rowspan="3">RJC</td><td>GTR</td><td>99.34</td></tr>
<tr><td>OTB</td><td>71.56</td></tr>
<tr><td>TBB</td><td>54.46</td></tr>
<tr><td rowspan="3">RJH</td><td>GTR</td><td>100.00*</td></tr>
<tr><td>OTB</td><td>86.36</td></tr>
<tr><td>TBB</td><td>66.58</td></tr>
<tr><td rowspan="3">RJM</td><td>GTR</td><td>100.00*</td></tr>
<tr><td>OTB</td><td>100.00*</td></tr>
<tr><td>TBB</td><td>26.55</td></tr>
<tr><td rowspan="3">RJU</td><td>GTR</td><td>100.00*</td></tr>
<tr><td>OTB</td><td>92.64*</td></tr>
<tr><td>TBB</td><td>57.86</td></tr>
<tr><td rowspan="3">SUMARiS/ From Nord/ Rederscentrale/ CNPMEM</td><td>SUMARiS PROJECT
30 survival sea trips for rays on board of commercial Belgian, French and English fishing vessels based on the RAMP-method.</td><td>Mostly thornback rays and blonde rays, but also some spotted, small-eyed and undulate rays.</td><td>Gill netters, Trammel Netters, Beam trawlers and Otter trawlers</td><td colspan="3">Preliminary results show a pretty high survival rate for almost all species More detailed results are expected soon (before the end of the project, July 2020).</td></tr>
<tr><td>PRE SURF (2019)
https://www.aglia.fr/surf/
50 fishing operations of 2 trawlers (100mm) sampled during 2 fishing trips in the spring. Vitality has been assessed using 2indicators: ISQ and RAMP score</td><td>Cuckoo Ray</td><td>TR in area 7 and 8</td><td colspan="3">RAMP: 0.43. Immediate survival rate of 88,1% considering all the fishing operation sampled</td></tr>
<tr><td>SURF (2020)
https://www.aglia.fr/surf/
Study of vitality and long term survival rate
Study of vitality and long term survival rate</td><td>Cuckoo Ray</td><td>TR in area 7 and 8</td><td colspan="3">Trials postponed due to Coronavirus</td></tr>
<tr><td>Bord Iascaigh Mhara</td><td>Post capture condition of cuckoo ray in an Irish otter trawl fishery, Bord Iascagh Mhara, March 2019 (link)</td><td>Cuckoo Ray</td><td>Otter trawl</td><td colspan="3">1 Two condition indices were used to assess post capture condition of four ray species: reflex and injury; vitality.
2 Cuckoo and blonde rays performed best under the reflex and injury index.
3 Research on correlations between similar reflex and injury indices, and ultimate species survivability, suggests cuckoo rays are likely to survive the capture process well in the observed fishery.
4 Cuckoo ray performed best under the vitality index with 84% categorised in excellent condition.
5 Research demonstrating that ray species in excellent or good vitality condition have the highest survival probabilities suggests that cuckoo rays are likely to survive the capture process well in the observed fishery.
6 Post-capture condition of cuckoo rays compared very well with other better studied species such as thornback rays, providing further qualitative information on survivability.
7 Qualitative assessments of cuckoo ray condition and survival are important given potential difficulties in achieving sufficient sample size in other gears and areas.</td></tr>
<tr><td>Survival trial for cuckoo ray</td><td>Cuckoo Ray</td><td></td><td colspan="3">proposed for summer/autumn 2020 due to COVID-19</td></tr>
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