9th MEETING OF THE SCIENTIFIC COMMITTEE

Held virtually, 27 September to 2 October 2021

SC9-DW13

Development of a Framework for Providing Advice on Species of Concern Captures

New Zealand

South Pacific Regional Fisheries Management Organisation

9th Meeting of the Scientific Committee

Held virtually, 27 September to 2 October 2021

Development of a framework for providing advice related to fisheries captures of marine mammals, seabirds, reptiles and other species of concern

Marco Milardi[1], Igor Debski[2], Tiffany Bock[1]

28 August 2021

1 – Fisheries New Zealand - Tini a Tangaroa, Ministry for Primary Industries - Manatū Ahu Matua, Wellington, New Zealand

2 – Department of Conservation – Te Papa Atawhai, Wellington, New Zealand

Contents

1. Purpose

The SPRFMO Scientific Committee (SC), at their eighth meeting, noted that captures of marine mammals, seabirds, reptiles and other species of concern are rare in midwater trawl for bentho-pelagic species and bottom trawl fisheries and appear to be rare in bottom line fisheries. However, the SC requested bottom fishing Members to collaborate to develop a framework for providing precautionary advice on such captures. This paper proposes such a framework for the consideration of the Scientific Committee.

2. Background

The SPRFMO Bottom Fishery Impact Assessment Standard (BFIAS) was last updated in 2019 and requires that impacts of bottom fisheries on marine mammals, seabirds, reptiles, and other species of concern be addressed. The joint Australia and New Zealand Bottom Fishery Impact Assessment (BFIA) presented at SC8 in 2020 (SC8-DW07_Rev1) described captures of marine mammals, seabirds, reptiles and other species of concern as rare in SPRFMO bottom fisheries, and considered through an expert assessment that the risk to affected populations appears to be low for most species. At the same meeting, New Zealand presented paper SC8-DW14, providing a summary of information available on interactions with marine mammals, seabirds, reptiles, and other species of concern in bottom fisheries. The European Union noted that the BFIA listed captures of marine mammals, seabirds, reptiles, and other species of concern and underlined how uncertain the information on interactions with those species was, and as a result suggested that further consideration might be warranted.

SC8 agreed that captures of marine mammals, seabirds, reptiles and other species of concern are rare in midwater trawl for bentho-pelagic species and bottom trawl fisheries and appear to be rare in SPRFMO bottom line fisheries (SC8-Report). However, the small number of reported and observed captures does not necessarily mean that the captures are inconsequential. Some marine mammals, seabirds, reptiles and other species of concern face a risk of extinction in the wild, and even a low number of captures can present a substantial species level threat. Therefore, the SC requested bottom fishing Members to collaborate to develop a framework for providing precautionary advice on such captures (SC8-Report).

3. Data sources relevant to the capture of species of concern

Scientific advice on the capture, or likelihood of capture, of seabirds, marine mammals, turtles and other species of concern can be formed from a range of data sources. The adequacy of each data source will vary according to the nature of advice being provided, for example whether the advice concerns the quantification of captures, the known occurrence of captures, or the likelihood of (potential) captures.

3.1 Observer/EM data on captures

Refer to SC6-Doc30 regarding observer coverage levels regarding captures.

The deployment of independent fisheries observers is widely recognised as a key component of best practice fisheries management (e.g., FAO 1995). In addition to supporting the management of target

catch, observer data is fundamental to assessments of the effects of fishing on non-target species, including seabirds (e.g., FAO 2009).

The proportion of fishing events monitored by observers, the spread of observer coverage across vessels in a fleet, and the geographical and temporal spread of observer coverage across the fishing effort all have direct bearing on the robustness of any resultant data and understanding of bycatch patterns, including estimates of the extent of bycatch (SC6-Doc30).

Relatively recent developments in electronic monitoring allow to collect information on captures through the use of cameras. Cameras on board can allow for a higher coverage of fishing operations at a fraction of the cost of human observers, but cameras are limited in the type of information that can be retrieved, and footage needs to be reviewed on land to collect the data, which can be extremely time consuming thus offsetting part of the advantages. Paired trials with cameras and observers on board are also usually needed to measure consistency across different observation methods. Currently, there are no standards in place for electronic monitoring in SPRFMO, and electronic monitoring is still being trialled at the national level in many countries.

A limitation of both electronic monitoring and human observers is the challenge to collect information on post-release or unobservable mortality (i.e., cryptic mortality). For example, a proportion of seabird interactions with trawl vessels are warp strikes, where birds are hit by or fly into the trawl warps, or seabirds caught on longline hooks and drowned during the set may also come off the hook before or during the haul. This type of mortality is not accounted for in bycatch records and estimates of cryptic mortality rates are usually retrieved through fisheries independent processes, or through expert estimation.

3.2 Fishery collected data on captures

Fishers report information on marine mammals, seabirds, reptiles and other species of concern. The main strength of this type of data is the theoretical full coverage of the fisheries, but the unknown and variable reporting rates pose a serious challenge to the use of this data. Another challenge is posed by the generally low reliability of taxonomic determinations. The latter could be addressed if additional material (e.g., photo or video evidence) is provided alongside fisher reports and is of sufficient quality to be used in expert verifications at a later stage, although this has considerable resourcing implications.

As for observer-reported data, information on post-release or unobservable mortality (i.e., cryptic mortality) is equally challenging to obtain for fisher-reported data.

3.3 Observations from fishing vessels

Fishing vessels can be used as platforms to make observations at sea. To inform wider scale analyses these observations should follow set protocols and may require specific training to undertake, so are usually performed by trained observers. The type of information collected is variable, but often includes, for example, bird counts around the vessel or marine mammal sightings.

These observations could be used as a proxy to inform estimates of capture risk but standardizing the data can be challenging.

3.4 Fisheries data

A key element for species captures risk assessment is the collection of fisheries data, particularly those on fishing gear and operation, the use of capture mitigation devices and of course the spatial

distribution of fishing effort. Traditional logbooks have been replaced by electronic reporting of vessel movements, but human observers still play a big role data in fisheries data collection.

3.5 Fishery independent data

A range of fishery independent data is also useful for assessing the likelihood, or consequence, of capture of species of concern. In particular, such data can be used to develop distribution maps for species using different methods, from modelling of satellite tracking data to expert assessment based on sightings. Other relevant fishery independent data includes threat classification systems assessments (e.g., International Union for Conservation of Nature, IUCN) or the inclusion of species in convention listings (e.g., Convention on Migratory Species, CMS, or Agreement on the Conservation of Albatrosses and Petrels, ACAP). Finally, all other relevant information on species susceptibility (e.g., population size, natural mortality, productivity) is often derived from specific studies, literature reviews or expert opinion.

4. Use of data sources for advice

Table 1 summarises the relevant data sources, proposed minimum criteria and methodological approaches for the key questions that are required to assess the risk to a species from fisheries captures. We propose this guidance be used by the SC when providing advice to the Commission on the capture of seabirds, marine mammals, turtles and other species of concern in bottom fisheries.

Table 1. Relevant data sources, minimum criteria and appropriate analysis methods for each type of scientific advice that could be sought by managers on the capture of seabirds, marine mammals, turtles and other species of concern. Items in the table are in increasing order of data requirements

Type of scientific advice	Relevant data sources	Minimum criteria	Appropriate analysis methods
Which species are known to be captured?	Observer collected capture data	See SC6-Doc30 for appropriate observer coverage levels Requires accurate species identification	None needed
	OR Fisher-collected capture data	Requires verification and accurate species identification	
Which species are at risk of capture?	Distribution maps	Based on global tracking data sets or IUCN range maps	Overlap-based assessment, considering all susceptible species of concern, prioritised by threat status
	Fishing effort data	Ideally by relevant spatial areas	
How many captures of a species are occurring?	Observer collected capture data	See SC6-Doc30 for appropriate observer coverage levels Requires accurate species identification and consideration of unobserved or cryptic mortality	Model-based or stratified ratio estimates, or quantitative or semi-quantitative risk assessment.
	OR Fisher collected capture data	Requires verification, accurate species identification and consideration of unobserved or cryptic mortality	
	AND Fishing effort data	Complete data, ideally by relevant spatial areas	
What are the consequences of captures on populations?	Observer collected capture data	See SC6-Doc30 for appropriate observer coverage levels Requires accurate species identification and consideration of unobserved or cryptic mortality	Quantitative or semi-quantitative risk assessment, preferably spatially explicit
	OR Fishery collected capture data	Requires verification, accurate species identification and consideration of unobserved or cryptic mortality	
	AND Fishing effort data	Complete data, ideally by relevant spatial areas	
	AND Fisheries independent data (susceptibility of capture species)	Population size, survival rate and fecundity data required (proxy data for similar species may be used)	

5. Recommendations

It is recommended that the Scientific Committee:

- **Adopts** the proposed set of guidance as a framework for providing scientific advice on the capture of seabirds, marine mammals, reptiles and other species of concern
- **Recommends** the Commission considers the type of advice that is sought from SC on the capture of species of concern, noting the resourcing and other implications associated with the data required to provide different types of scientific advice, as outlined in this framework.

6. References

FAO. 1995. Code of Conduct for Responsible Fisheries. Food and Agriculture Organization of the United Nations, Rome. Available at: http://www.fao.org/3/a-v9878e.htm.

FAO. 2009. FAO Technical Guidelines for Responsible Fisheries 1. Supplement 2. Fishing Operations 2. Best practices to reduce incidental catch of seabirds in capture fisheries. Food and Agriculture Organization of the United Nations, Rome. Available at: http://www.fao.org/docrep/012/i1145e/i1145e00.pdf.