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SC-01-10 (02)

Large-scale pelagic driftnets and deepwater gillnets in the SIOFA Convention Area: Background information and recommendations.

Relates to agenda item: 10 Working paper ☒ info paper ☐

Delegation of Australia

Abstract

The negative impact of large-scale pelagic driftnets (drift gillnets) and deepwater gillnets on fishery resources, bycatch species and deep sea habitats has been raised as a management issue for SIOFA. This paper provides background information that may assist the SIOFA Scientific Committee with recommendations for the next Meeting of the Parties on a binding measure that prohibits the use of large-scale pelagic driftnets and deepwater gillnets. The main issues of concern in relation to large-scale pelagic driftnets are the gear's highly non-selective nature, lack of data to estimate mortality of bycatch and negative impacts resulting from nets or net fragments lost or abandoned (i.e. ghost fishing). Issues of concern in relation to deepwater gillnets are risks to deepwater shark populations due to their life history traits (i.e. slow growth, high longevity, late maturity and low fecundity), lack of data and ghost fishing. A ban on the use of large scale pelagic driftnets and deepwater gillnets in the SIOFA area would be consistent with current UNGA Resolutions, the FAO International Plan of Action (IPOA) on Sharks and conservation and management measures taken by other Regional Fisheries Management Organizations (RFMOs).

Recommendations

That the Scientific Committee consider the background information contained in the paper as well as the recommendations relating to a prohibition of fishing using:

1. Large-scale pelagic driftnets
2. Deepwater gillnets

Australian Government
Department of Agriculture and Water Resources
ABARES

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Contents

Abstract

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1 Introduction

The negative impact of large-scale pelagic driftnets and deepwater gillnets on fishery resources, bycatch species and deep sea habitats has been raised as a management issue for the Southern Indian Ocean Fisheries Agreement (SIOFA). At the 1st Extraordinary Meeting of the Parties to SIOFA, the Australian Government offered to put forward a draft of a new Conservation and Management Measure (CMM) on the use of large-scale pelagic driftnets and deepwater gillnets to aid the development of work towards a binding permanent measure(s) on the basis of the best scientific information available.

An interim conservation and management measure to ban the use of deepwater gillnets was adopted at the 2nd Meeting of the Parties to SIOFA in 2015. The interim measure recommends that Contracting Parties do not permit deepwater gillnets to be used in the SIOFA Area. The interim measure expires on the last day of the 2016 Meeting of the Parties.

In this paper we provide background information that may assist the SIOFA Scientific Committee with recommendations for the next Meeting of the Parties on a binding measure that prohibits the use of large-scale pelagic driftnets and deepwater gillnets.

Definitions

For the purposes of this work, large-scale pelagic driftnets are defined as a gillnet or other net or a combination of nets which is more than 2.5 kilometres in total length the purpose of which is to enmesh, entrap or entangle fish by drifting on the surface or in the water.

Deepwater gillnets (trammel net, set nets, anchored nets, sink nets) are defined as strings of single, double or triple netting walls, held vertically, on or near the bottom, in which fish will gill, entangle or enmesh. Deepwater gillnets consist of single or, less commonly, double or triple netting mounted together on the same frame ropes. Several types of nets may be combined in one gear. These nets can be used either alone or, as is more usual, in large numbers placed in line ('fleets' of nets). The gear can be set, anchored to the bottom or left drifting, free or connected with the vessel.

The above definitions are consistent with those adopted by the South Pacific Regional Fisheries Management Organisation (SPRFMO) (SPRFMO, 2013).

Deepwater is here defined as setting on seabed greater than 400 m depth. This is consistent with accepted definitions of 'deep sea species' (Koslow et al. 2000) which display traits that make them particularly susceptible to fishing impacts. An alternative definition of deepwater is greater than 200m, which would be consistent with NEAFC (NEAFC 2006) and the European Marine Board (Rogers et al. 2015).

History of the fishery in the SIOFA area

The dominant bottom fishery in the high seas of the South West Indian Ocean since the late 1990s has been the mid-water and bottom trawl fishery on or around seamounts for alfonsino (*Beryx splendens*) and orange roughy (Gianni 2004). A demersal longline fishery on the high seas developed over the last decade targeting primarily flame snapper (*Etelis coruscans*) (Bensch et al. 2009).

There is a documented history of the use of large-scale pelagic driftnets in the SIOFA area during 1982 to 1992, however recent usage is poorly documented (IOTC, 2015). Targeted catch and bycatch quantities for this fishing are poorly estimated.

Anecdotal information, including observation of vessels, suggests that fishing with deepwater gillnets may be occurring on the high seas of the South Indian Ocean, primarily targeting deepsea sharks (G. Patchell, SIODFA, personal communication, 2007; Hareide et al., 2006; Shotton 2006; Bensch et al. 2009). However, no data have been reported to FAO (Bensch et al. 2009).

2 Large–scale pelagic driftnets

Issues with the use of large-scale pelagic driftnets

In 1990, the Food and Agriculture Organization of the United Nations (FAO) convened an expert consultation to examine the use of large-scale pelagic drift nets and the status of scientific and technical knowledge on the impact of these gears on living marine resources (FAO 1990). The consultation highlighted the many issues associated with the use of such methods, including biological impacts (capture of juvenile fish and high levels of bycatch), economic impacts (flow of benefits between users) and impact on non-fishery users (interference with navigation safety). While the FAO consultation was wide ranging, much of the criticism surrounding the use of large-scale driftnet fishing relates to their detrimental impact on non-commercial species and the marine environment due to their indiscriminate capture of a wide variety of species, both target and non-target (FAO 1990; Northridge 1991). Driftnets often catch species which are valued by other fisheries, and which are not the main target of the driftnet fishery, leading to high levels of wastage and discarding (FAO 1990; Northridge 1991).

Within the Indian Ocean Tuna Commission (IOTC) Area (which in part overlaps the SIOFA Area) the technical characteristics of drifting gillnets may vary between fleets and as a function of vessel sizes, however some of this fishing is considered to comprise large scale driftnets according to the definition above (Fonteneau 2011). Most offshore drifting gillnet reach a depth of about 10 to 20 meters or more (Fonteneau 2011). This method would be expected to pose a significant threat to air-breathing species, such as dolphins, whales and turtles. Other species, such as sharks and billfishes, may also be easily caught in these drifting gillnet nets, but catch data related to these fisheries remain widely unknown in the IOTC statistics (Fonteneau 2011).

The large scale pelagic driftnetting in the southern Indian Ocean from 1982 to 1992 took large quantities of pelagic sharks during this period (IOTC 2015).

International resolutions and obligations

In recognition of the impact of driftnet fishing, the United Nations General Assembly (UNGA) issued resolutions (Resolutions 44/225 and 45/197) calling for international cooperation and instituting moratoria on large-scale pelagic driftnet fishing in the absence of effective management. Moreover, the impact of driftnet fishing became the subject of intense study by UN agencies such as the FAO. As a result, the UNGA subsequently agreed to a global moratorium on large-scale pelagic drift-net fishing on the high seas with full compliance from 31 December 1992 (UNGA resolution 46/215). The resolution noted that members of the international community had reviewed the best available science on the impact of large-scale pelagic driftnet fishing and evidence failed to show the unacceptable impact of driftnet fishing could be prevented.

Prior to the UNGA Resolution 46/215, large-scale pelagic driftnet fishing had been expanding and nets were reported to reach lengths of up to 60 km (Hey, 1991). The moratorium grew out of a combination of factors in the late 1980s. In the North Pacific, the United States' desire to stop other nations fishing for salmon of North American origin on the high seas converged with the developing concerns over the impact of driftnet fishing to marine ecosystems and to non-target species, in particular marine mammals (Rayfuse 2004). In addition, South Pacific island coastal states were concerned that high seas driftnet fishing was targeting juvenile albacore

tuna, thereby threatening the long term viability of the stock and dependant domestic fisheries (Wright and Doulman 1991; Rayfuse 2004).

In addition to global processes, there has been some movement to prohibit the use of large-scale pelagic driftnets at a regional level. The multilateral *Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific* (Wellington Convention 1989) creates port-State measures, restricting of access to the ports and use of facilities in the ports of parties of vessels participating in driftnet fishing (FAO 2007).

Conservation Measures in other RFMOs and their reasoning

Following UNGA Resolution 46/215 many fisheries management organisations have acted by prohibiting (or recommending a ban of) the use of large scale pelagic driftnets in their areas of competence (Table 1).

Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)

The CCAMLR Scientific Committee agreed that gillnets (near surface, midwater or on the bottom) are non-selective fishing devices and, if not utilized correctly, could take mobile species indiscriminately, cause adverse impacts if dragged along the bottom and have the potential for ghost fishing. Following this advice, CCAMLR adopted a measure that prohibits the use of gillnets for purposes other than scientific research (CCAMLR CMM 22-04). CCAMLR defines gillnets as:

> Strings of single, double or triple netting walls, vertical, near the surface, in midwater or on the bottom, in which fish will gill, entangle or enmesh. Gillnets have floats on the upper line (headrope) and, in general, weights on the ground-line (footrope). Gillnets consist of single or, less commonly, double or triple netting (known as 'trammel net') mounted together on the same frame ropes. Several types of nets may be combined in one gear (for example, trammel net combined with gillnet). These nets can be used either alone or, as is more usual, in large numbers placed in line ('fleets' of nets). The gear can be set, anchored to the bottom or left drifting, free or connected with the vessel.

Indian Ocean Tuna Commission (IOTC)

The described detrimental impacts of large-scale pelagic driftnets on bycatch coupled the effects of "ghost fishing" and the absence of observer data (Fonteneau 2011) resulted in the IOTC banning the use of large-scale pelagic driftnets in 2012 (IOTC Resolution 12/12).

South East Atlantic Fisheries Organisation (SEAFO)

Due to a lack of information about gillnet fishing in the SEAFO Area, in 2009 the SEAFO Commission recommended the use of all gillnetting be banned until such time that more information becomes available (SEAFO Recommendation 1/2010). This ban was recommended to reduce the impact of abandoned, lost or otherwise discarded fishing gear on habitats and biodiversity (by ghost fishing; Large et al. 2013). However, this recommendation has not been reflected in a conservation measure (SEAFO 2015).

The SEAFO recommendation does not differentiate between gillnets and large-scale pelagic driftnets. The SEAFO Scientific Committee utilises the definition provided by Potter & Pawson (1991), who do not differentiate between the two methods, instead describing driftnetting as a subset of the gillnetting method as a whole (SEAFO 2009).

South Pacific Regional Fisheries Management Organisation (SPRFMO)

The SPRFMO prohibits the use of large-scale pelagic driftnets (SPRFMO CMM 1.02) (SPRFMO, 2013). The measure refers to UNGA Resolution 46/215 and expresses concern about the possible impact of large-scale pelagic gillnets on fishery resources and bycatch species (including the impact of lost and/or abandoned gillnets).

Western and Central Pacific Fisheries Commission (WCPFC)

In prohibiting the use of large-scale pelagic driftnets (WCPFC CMM 2008-04), WCPFC refers to UNGA Resolution 46/215 and expresses concern about reports of more frequent interaction between vessels using large-scale pelagic driftnets and highly migratory species, such as tunas, swordfish, sharks, and other species covered by that Convention. The WCPFC measure further notes that associated 'ghost fishing' by lost or discarded driftnets have serious detrimental effects on these species of concern and the marine environment.

Table 1 Conservation measures adopted by other regional bodies in relation to large-scale pelagic driftnets

Name	Year	Conservation measure	Conditions
CCAMLR	2010	CMM 22-04	The use of gillnets in the Convention Area, for purposes other than scientific research, is prohibited until such time as the Scientific Committee has investigated and reported on the potential impacts of this gear and the Commission has agreed on the basis of advice from the Scientific Committee that such a method may be used in the Convention Area.
IOTC	2012	Resolution 12/12	The use of large-scale driftnets on the high seas within the IOTC area of competence shall be prohibited.
SEAFO	2010	Recommendation 1/2010	Recommendation to ban gillnets until such time that more information becomes available.
SPRFMO	2013	CMM1.02	Prohibit the use of large-scale pelagic driftnets and all deepwater gillnets in the Convention Area.
WCPFC	2008	CMM 2008-04	The use of large-scale driftnets on the high seas within the Convention Area shall be prohibited and such nets shall be considered prohibited fishing gear, the use of which shall constitute a serious violation in accordance with Article 25 of the Convention.

Recommendation

That the Scientific Committee consider the background information contained in this paper and recommend that the Meeting of the Parties prohibit the use of large scale pelagic driftnets in the SIOFA Area due to the destructive impact of the gear on the marine environment. Noting that a draft measure will be presented at the first Scientific Committee meeting (SC-01-10 (03)). The rationale for this is as follows:

- Large scale pelagic driftnets are indiscriminate and catch of a wide variety of species caught in addition to those targeted. The use of this gear poses a risk to a large number of bycatch species such as sharks, seabirds, marine mammals and marine reptiles.
- There are very little data (and no observer data available) to estimate accidental mortality from large scale pelagic driftnets.
- There are negative impacts when nets or net-fragments of large scale pelagic driftnets are lost or abandoned and continue to fish (i.e. ghost fishing).
- A prohibition on the use of large scale pelagic driftnets in the SIOFA area would be consistent with UNGA Resolution 46/215 and actions taken in CCAMLR, IOTC, SEAFO, SPFMO and WCPFC.

3 Deepwater gillnets

Issues with the use of deepwater gillnets

Deepwater gillnets are non-selective fishing devices and, if not utilized correctly, have the potential to catch mobile species indiscriminately. Deepwater gillnets may also have adverse impacts on sessile species and habitats if dragged along the bottom (CCAMLR 2006). Nets that are lost, discarded, or abandoned, can have a harmful effect on the marine environment by continuing to 'ghost fish,' defined here as causing mortality of fish and other taxa after all control of the fishing gear is lost (Matsuoka et al. 2005; Large et al. 2009). No detailed long-term research has been conducted on the effect of ghost fishing in deeper water (Davies et al. 2007), but there is a possibility that such nets may continue to "fish" for periods of at least 2–3 years, and perhaps even longer, largely as a result of lesser rates of biofouling and tidal scouring in deep water (Large et al. 2009; Humborstad et al. 2003). A contributor to net loss is the interaction with other fishing vessels, particularly trawlers.

Many deepwater marine living resources are characterised by slow maturation, slow growth, long life expectancies, low natural mortality rates, intermittent successful recruitment and spawning that may not occur every year (FAO, 2009). These features result in lower resilience to exploitation (Merrett & Haedrich 1997; Koslow et al. 2000). In the case of deepwater sharks, species are further characterised by low fecundity (Hoenig and Gruber 1990; Musick 1999; Kyne and Simpfendorfer 2007). Deepwater sharks are particularly prone to overexploitation and localised depletion (Musick et al. 2000; Stevens et al. 2000; Morato et al. 2006).

International resolutions and obligations

UNGA Resolution 61/105 (adopted in December 2006), and subsequent UNGA Resolution 64/72, call on states and RFMOs to regulate bottom fisheries and implement measures in accordance with the precautionary approach and ecosystem approaches to fisheries management. The UNGA Resolutions call upon all members of the international community to take action in high seas areas. Regional bodies such as SPRFMO, CCAMLR and NEAFC have given effect to the UNGA Resolutions by prohibiting the use deepwater gillnets in their areas of competence (Table 2).

In addition to the UNGA Resolutions, SIOFA should consider international instruments arising from FAO Committee on Fisheries (COFI) processes. In recognition of the expanding global catch of sharks and potential negative impacts on shark populations, in 1999 COFI adopted an International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks; FAO 1999). While a voluntary international instrument, the IPOA-Sharks calls on States to take positive action to ensure the conservation and management of sharks. Further, the instrument cites the increasing importance of international cooperation and highlights the role international management bodies in this task. In response, some RFMOs have initiated data collection programs and developed risk assessment processes (for example, in IOTC and WCPFC). Given the understood risks associated with deepwater gillnets relating to their indiscriminate catch of high-risk, deepwater sharks, a ban on deepwater gillnets would be consistent with IPOA-Sharks.

Conservation Measures in other RFMOs and their reasoning

A number of RFMOs have banned the use of deepwater gillnets or gillnets more broadly, based on their negative impact on deepwater sharks, bycatch species and vulnerable marine ecosystems (Table 2).

CCAMLR
The CCAMLR Scientific Committee agreed that gillnets (near surface, midwater or on the bottom) are non-selective fishing devices and, if not utilized correctly, could take mobile species indiscriminately, cause adverse impacts if dragged along the bottom and have the potential of ghost fishing. Following this advice, the CCAMLR Commission adopted a measure (CCAMLR CMM 22-04) that prohibits the use of gillnets for purposes other than scientific research.

NEAFC
The North East Atlantic Fisheries Commission (NEAFC) determined that until measures were adopted to regulate fisheries using deepwater gillnets, the use of these gears in waters deeper than 200 metres, should be banned. The NEAFC measure (NEAFC Recommendation 03 2006) stated that the unregulated use of gillnets in deep water is potentially damaging to deepwater stocks due to excessive soak times and consequent high discard levels, and due to the long-term impact of lost or abandoned gears (NEAFC Recommendation 03 2006).

SEAFO
Due to a lack of information about gillnet fishing in the SEAFO Area, in 2009 the SEAFO Commission recommended the use of all gillnetting be banned until such time that more information becomes available (SEAFO Recommendation 1/2010). This ban was recommended to reduce the impact of abandoned, lost or otherwise discarded fishing gear on habitats and biodiversity (by ghost fishing; Large et al. 2013). However, this recommendation has not been reflected in a conservation measure (SEAFO 2015).

Additionally, the SEAFO Scientific Committee has recommended a ban on gillnets and fisheries directed at deepwater sharks until information becomes available to identify sustainable harvesting levels (SEAFO Recommendation 1/2008).

SPRFMO
SPRFMO prohibited the use of deepwater gillnets (SPRFMO CCM 1.02) noting UNGA Resolution 61/105 that calls on states and regional fisheries management organisations to regulate bottom fisheries and implement measures in accordance with the precautionary approach and ecosystem approaches to fisheries management (SPRFMO 2013). SPRFMO also expressed concern over the possible impact of deepwater gillnets on fishery resources, bycatch species and deep sea habitats, including the impact of lost and/or abandoned gillnets (SPRFMO 2013). This built on advice from the Scientific Working Group that noted the likely impacts on vulnerable marine ecosystems and potentially significant adverse impacts on likely bycatch (SPRFMO 2009).

Table 2. Conservation measures adopted by other regional bodies in relation to deepwater gillnets

Name	Year	Conservation measure	Conditions
CCAMLR	2010	CMM 22-04	The use of all gillnets in the Convention Area, for purposes other than scientific research, is prohibited until such time as the Scientific Committee has investigated and reported on the potential impacts of this gear and the Commission has agreed on the basis of advice from the Scientific Committee that such a method may be used in the Convention Area.
NEAFC	2006	Rec 03 2006: Gill Nets 2006	Temporary prohibition on the use of gillnets in the regulatory area.
SEAFO	2009	Recommendation 1/2010	Recommendation to ban gillnets until such time that more information becomes available.
SPRFMO	2013	CMM1.02	Prohibit the use of deepwater gillnets in the Convention Area.

Recommendation

That the Scientific Committee consider the background information contained in this paper and recommend that the Meeting of the Parties prohibit the use of deepwater gillnets in the SIOFA area due to the gear's negative impact on the marine environment. Noting that a draft measure will be presented at the first Scientific Committee meeting (SC-01-10 (03)). The rationale for this is as follows:

- Deepwater gillnets pose a risk to deepwater shark populations which are characterised by slow growth, high longevity, late maturity and low fecundity. As a result, deepwater sharks are prone to overexploitation and localised depletion.
- There are little fisheries and biological data available on deepwater sharks occurring in the SIOFA area (e.g. relative abundance, critical habitats, reproduction, age structure and growth rates).
- Deepwater gillnets may have adverse impacts on sessile species and habitats if dragged along the bottom. This may impact vulnerable marine ecosystems.
- Deepwater gillnets have negative impacts when nets or net-fragments are lost or abandoned and continue to fish (i.e. ghost fishing).
- A prohibition on the use of deepwater gillnets in the SIOFA area is consistent with UNGA resolutions 61/105 and 64/72, FAO IPOA-Sharks and conservations measures adopted by CCAMLR, NEAFC, SEAFO and SPRFMO.

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