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Advancing marine biodiversity protection through regional fisheries management: A review of bottom fisheries closures in areas beyond national jurisdiction

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ABSTRACT

Fishing is a significant threat to marine biodiversity in areas beyond national jurisdiction (ABNJ). Bottom fishing in particular can impact deep-sea ecosystems, and the UN General Assembly has called on regional fisheries management organisations and arrangements (RFMO/As) to take actions to regulate bottom fisheries, including to close areas to bottom fishing activities where there is likely to be significant adverse impacts to vulnerable marine ecosystems (VMEs). This paper provides an update on the current status of closures, suggesting that RFMO/A biodiversity conservation efforts continue to advance slowly. RFMO/As have been slow to implement additional closures and to act in a precautionary manner based on available scientific evidence. Existing powers are not being fully utilised and best practice is not always followed. Closures have often been temporary or representative, or have not in fact restricted ongoing fishing activity. Some positive outcomes provide examples of good practice, though RFMO/As will need to fully utilise their powers and follow best practice before authorising bottom fishing to proceed in ABNJ.

1. Introduction

Ocean regions that do not fall under the jurisdiction of any State, areas beyond national jurisdiction (ABNJ)[2] represent almost half of the planet's surface and a significant portion of its biodiversity. The high seas are increasingly under threat from human activities, including seabed mining, navigation and fishing. The international community has called on regional fisheries management organisations and arrangements (RFMO/As) to take a number of actions to protect vulnerable marine ecosystems (VMEs) in ABNJ including closing areas to bottom fishing.

The aim of this paper is to review the efforts made by RFMO/As to implement high seas bottom fisheries closures and suggest options for improving the protection of VMEs within this framework. This will provide a basis for future research into how fisheries and RFMO/As may be addressed through any new international agreement on high seas biodiversity.[3]

Section 2 outlines the global context, including an overview of bottom fishing and its impacts, while Section 3 details the context and process for fisheries closures. Section 4 provides an assessment of RFMO/A performance in the Atlantic, Pacific, Southern and Indian oceans. Section 4 considers the role RFMO/As in biodiversity conservation in light of their performance in relation to

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[2] ABNJ include both the Area and the high seas. According to Article 1.1(1) of UNCLOS, the Area is the *"seabed and ocean floor and subsoil thereof beyond the limits of national jurisdiction"*. Article 86 defines the high seas as *"all parts of the sea that are not included in the exclusive economic zone, in the territorial sea or in the internal waters of a State (…)"*.

[3] The United Nations General Assembly has now formally launched a process to develop a new legally binding instrument on the conservation and sustainable use of marine biodiversity beyond national jurisdiction. A Preparatory Commission is to meet twice a year for a period of 10 days in 2016 and 2017 (UNGA A/RES/69/292. The new legal instrument will be informed by the work of the *Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction*, created in 2004 by UNGA resolution 59/24. See Druel et al. [13] and [53] for background and context.

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high seas bottom fisheries closures, and highlights some pathways for strengthening their role. Section 6 concludes by summarising the issues at stake and the possible ways forward.

2. Context

Areas beyond national jurisdction were once thought to be relatively devoid of life, and maritime activities were mostly confined to coastal waters. However, scientific and technological advancements, coupled with an ever-expanding global appetite for resources, have increased interest in these areas. As well as new activities, such as seabed mining and bioprospecting, existing activities are intensifying.

Seamounts, underwater mountains commonly found near the boundaries of Earth's tectonic plates and hotspots,[4] are being specifically targeted for seabed mining and fishing: minerals often collect as a result of hydrothermal activity, while the prominent features attract an abundance of marine life. Deep-sea corals on and around seamounts host more than 1300 different species of animals. Until their discovery in 2000, these ecosystems were largely unknown, and scientists have only begun to learn about their characteristics and their importance.[5]

Fishing activities have further expanded into ABNJ as demand has increased and fisheries have collapsed [28,6]).[6] Bottom fishing in particular can cause significant impacts on deep-sea ecosystems [36], damaging or destroying long-lived species, reducing the complexity of the seabed, and decreasing species diversity and faunal biomass [2,37,48]. Bottom trawling is generally considered to be the most destructive method as it involves dragging heavy fishing gear across the seabed, but harm can result from all bottom-contact fishing methods [17,23]. While fishing depths vary depending on the fishery in question, fishing is currently not technologically feasible at depths greater than 2000 m, with the majority of fishing taking place at depths of less than 1500 m, and most commonly at less than 1000 m [38].

The ability of deep-sea ecosystems to recover from these impacts is limited due to the age and slow growth rates of deep-sea bottom species [31]. Some corals grow at a rate of 0.004–0.035 mm per year, and 4550 year old coral bycatch has been documented [21,39]. The impacts are therefore long lasting or irreversible [2]; full recovery may take decades, even centuries [47]. Serious impacts have now been widely reported in all oceans [42].

The management of fisheries has long been the subject of intensive debate, though in recent years deep-sea fisheries in ABNJ has been a particular focus at the United Nations General Assembly (UNGA) and other forums.[7] In 2004, the UNGA called for urgent action and to consider on a case-by-case basis the interim prohibition of destructive fishing practices in areas falling under their mandate,, until appropriate conservation and management measures had been adopted.[8] In 2006, the UNGA adopted a more detailed resolution to ensure the long-term sustainability of deep-sea fish stocks that required specific measures to protect VMEs from the significant adverse impacts (SAIs) of bottom fisheries.[9] This Resolution 61/105 (2006) specifically calls for:

Impact assessments to assess whether individual bottom fishing activities would have SAIs on VMEs, and to ensure that activities are either managed to prevent SAIs, or not authorised to proceed[10]

The improvement of scientific research and data collection and sharing, and specific regulation of new and exploratory fisheries[11]

'Move-on' rules requiring vessels to cease bottom fishing in areas where VMEs are encountered, and to report the encounter so that appropriate measures can be adopted[12] and

Closure of certain areas to bottom fishing: *"In respect of areas where vulnerable marine ecosystems (…) are known to occur or are likely to occur based on the best available scientific information, to close such areas to bottom fishing and ensure that such activities do not proceed unless conservation and management measures have been established to prevent significant adverse impacts on vulnerable marine ecosystems".*[13]

Following a review of progress, the UNGA adopted resolution 64/72,[14] which recalled the importance of resolution 61/105[15] and further called upon States to take immediate action to protect VMEs, in the 2008 International Guidelines for the Management of Deep-sea Fisheries in the High Seas of the Food and Agriculture Organization of the United Nations (discussed below).[16]

RFMO/As are the preferred vehicle for fisheries regulation at the regional level, and the United Nations Fish Stocks Agreement (UNFSA) imposes an obligation on contracting parties to cooperate with and through RFMO/As.[17] The UNFSA places an obligation on States to establish RFMO/As where they do not exist in relation to straddling and highly migratory fish stocks.[18] Despite this requirement, deep-sea bottom fisheries were allowed to develop without the establishment of a RFMO/A, in part due to the earlier failure of the UNFSA to directly cover discrete high seas bottom fisheries (Gianni 2005).[19] After the 2006 UNGA resolution 61/105,

[4] i.e., Isolated areas within tectonic plates where plumes of magma rise through the crust and erupt at the seafloor.

[5] Woods Hole Institute, *Seamounts*. http://www.whoi.edu/main/topic/seamounts.

[6] Mainly to target highly migratory fish stocks such as tunas, and deep-sea fish stocks.

[7] For example, the issue has also been raised at meetings of the Conference of the Parties to the Convention on Biological Diversity (CBD), beginning in 2004 at CBD COP-7. In 2010, COP-10 adopted Decision X/29 that called on States and RFMO/As to comply with the relevant international instruments (paragraph 54). See also the Plan of Implementation of the World Summit on Sustainable Development, A/CONF.199/20, Chapter 1, Resolution 2, Johannesburg, September 2002 ("Johannesburg Plan of Implementation"); Rio+20 outcome document (UN. The future we want, Pub. L. No. A/CONF.216/L.1. 2012).

[8] UN. Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments A/RES/59/25 (2004).

[9] UN. Resolution 61/105: Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments, A/RES/61/105 (2006).

[10] Section 83(a).

[11] Section 83(b).

[12] Section 83(d).

[13] Section 83(c).

[14] UN. Resolution 64/72: Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments, A/RES/64/72 (2009).

[15] Section 114.

[16] Section 113.

[17] Art. 8(3). RFMO/As are one type of Regional fisheries bodies (RFB), i.e. a mechanism through which States or entities cooperate on the management of fisheries. See http://www.fao.org/fishery/topic/16800/en. In contrast to other RFBs, RFMO/As have a mandate to establish legally binding measures. Some RFMO/As focus on the management of particular highly migratory species, most notably tuna, while others manage all fish stocks in a particular fishery. RFMO/As usually comprise coastal States from the region, as well as countries with interests in the fisheries concerned, such as distant-fishing nations.

[18] Art. 8(5).

[19] This gap was later closed at the UN fisheries review conference, where it was agreed that the resolutions do, in fact, apply to discrete fish stocks. See Review Conference on the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory