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# Comparative Analysis and Recommendations for the Management of Pelagic and Bottom Fisheries in SIOFA

Delegation of China

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<b>Abstract</b>	<p>The current framework for the fisheries management largely follows the logic centered on demersal fisheries and seamount resources, failing to adequately distinguish the fundamental differences between pelagic and demersal fisheries regarding ecological impacts, stock assessment technologies, and bycatch risk distribution. This "one-size-fits-all" approach increases the administrative burden on Contracting Parties (CCPs) and leads to resource misallocation during Scientific Committee (SC) evaluations, particularly concerning the scientifically unsubstantiated requirement for pelagic fisheries.</p> <p>Based on the principles of "best scientific evidence" and the "precautionary approach" stipulated in Article 4 of the Agreement, this proposal argues for a differentiated management system to satisfied with the actual needs of different types of fisheries and better manage various fishery resources.</p>

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<sup>2</sup> Documents available only to members invited to closed sessions.

### Recommendations

It is recommended that the SIOFA SC:

- **Consider** adopting the advice from this proposal.
- **Reconsider** the differences between pelagic and bottom fisheries.

# Comparative Analysis and Recommendations for the Management of Pelagic and Bottom Fisheries in SIOFA

## Introduction

Since SIOFA entered into force in 2012, its management focus has been on deep-sea demersal species, such as the long-lived and low-productivity Patagonian toothfish, Orange roughy, and Alfonsino. Consequently, management measures like CMM 01 (Bottom Fishing) and CMM 17 (Exploratory Fisheries) were designed to integrate the protection of Vulnerable Marine Ecosystems (VMEs).

However, a shift in global fishing focus has led to an increase in pelagic exploratory fishery applications within the SIOFA Area, including squid jigging, mid-water trawling, and surface longlining for oilfish. These fisheries operate in the three-dimensional water column, often thousands of meters above the seabed; their ecological risks primarily involve the bycatch of seabirds, turtles, and marine mammals rather than physical damage to benthic habitats.

The active CMM is still lacks the related pelagic fisheries, or mixed with bottom fisheries and pelagic fisheries.

## Methods

This work mainly addresses the existing issues pertaining to SIOFA and the potential oversight within the current CMM regarding the unique characteristics of pelagic fisheries. Additionally, it offers pertinent recommendations for the workplan of the Scientific Committee.

## Results

The distinction between **Pelagic** and **Bottom** fisheries is fundamental to marine biology and international fisheries management. These two categories differ not just in where the fish live, but in their evolutionary strategies, the technology used to harvest them, and the regulatory frameworks required to sustain them.

### 1. Habitat and Vertical Distribution

- **Pelagic Fisheries:** Target species that inhabit the **water column**, away from the seafloor. This ranges from the sunlit surface (epipelagic) to the twilight zone (mesopelagic).
- **Demersal Fisheries:** Target species that live on or near the **ocean floor** (benthic or benthopelagic zones). These fisheries often focus on continental shelves or deep-sea features like seamounts.

### 2. Biological and Evolutionary Characteristics

The environmental pressures of the open ocean versus the seafloor have shaped distinct life-history traits:

Feature	Pelagic Species (e.g., Squid)	Demersal Species (e.g., Orange Roughy)
Metabolic Rate	Generally higher; built for sustained cruising or rapid bursts.	Often lower; adapted for "sit-and-wait" predation or scavenging.
Growth & Longevity	Faster growth, earlier maturity, and shorter lifespans.	Slower growth, late maturity, and extreme longevity (up to 100+ years).
Reproduction	High fecundity; often produce millions of small eggs.	Lower reproductive output; survival depends on stable benthic conditions.
Resilience	More resilient to high fishing pressure due to fast turnover.	Highly vulnerable; populations can take decades to recover from depletion.

### 3. Fishing Gear and Operational Modes

The technology reflects the physical environment of the target species:

- **Pelagic Gear:** Designed to be buoyant or suspended. Common tools include **squid jigging**, **pelagic longline** and **mid-water trawls**. These methods rarely touch the seabed, meaning they have a negligible impact on physical benthic habitats.
- **Demersal Gear:** Designed to maintain contact with the seafloor. The most common is the **bottom trawl**, which uses heavy "doors" and "rollers" to keep the net open and on the ground. Other methods include **bottom-set longlines** and **pots/traps**.

### 4. Ecological Impact and Risks

**Habitat Destruction:** This is the primary concern for demersal fisheries. Bottom trawling can destroy Vulnerable Marine Ecosystems (VMEs) like cold-water corals and sponges, which provide essential nursery grounds. Pelagic fisheries have almost zero habitat impact.

**Bycatch Profile:** Pelagic fisheries often struggle with bycatch of charismatic megafauna (sharks, sea turtles, and seabirds). Demersal fisheries often have high rates of unmarketable fish bycatch and "ghost fishing" if gear is lost on the rugged seafloor.

### 5. Management and Policy Challenges

From a regulatory perspective (within RFMOs), the two require very different "philosophies":

- **Pelagic Management:** Often focuses on **highly migratory/mobile species**. Management is dynamic, frequently involving real-time adjustments based on oceanographic conditions (e.g., El Niño/La Niña) and large-scale stock assessments.
- **Demersal Management:** Requires a **precautionary, spatial approach**. Because seafloor species are often sedentary and long-lived, management usually involves permanent or seasonal closed areas (Marine Protected Areas) and strict gear technical specifications to minimize benthic damage.

**Critical Risk:** A major management risk occurs when "Pelagic" licenses are used to mask "Demersal" activity. For example, a vessel might claim to be mid-water trawling while actually allowing its gear to "touch" and scrape the bottom to catch high-value benthic species.

## Recommendations

To address the potential issues mentioned above, it is recommended that the Scientific Committee incorporate targeted measures regarding pelagic fisheries in its future work plans, such as:

The Secretariat should continue collecting historical data on pelagic fisheries within the SIOFA Convention Area, and all CCPs should provide relevant materials to the extent possible.

Given the distinct characteristics of pelagic fisheries, the data format and content should be refined, and data transparency should be further enhanced to ensure all parties have a comprehensive understanding of pelagic fisheries within SIOFA.

The Scientific Committee should thoroughly consider subsequent management issues, engaging in detailed discussions on certain aspects (e.g., observer coverage, requirements for new fisheries) and proposing corresponding amendments.

Considering the current underdevelopment of pelagic fisheries in SIOFA, reasonable pelagic fishery activities within the SIOFA area could be appropriately facilitated after thorough evaluation.

## Conclusions

The Southern Indian Ocean Fisheries Agreement (SIOFA) is currently at a critical regulatory crossroads. As fishing efforts shift from traditional deep-sea demersal targets to the three-dimensional water column, the existing management framework—originally designed to protect benthic habitats—must evolve to address the unique biological and operational realities of **pelagic fisheries**.

The fundamental differences in life-history traits, gear impact, and ecological risks between pelagic and demersal species render a "one-size-fits-all" approach ineffective. Maintaining the current conflation of these fisheries not only risks the potential management failure, but also overlooking the potential significance of pelagic fisheries and the interconnections among various fisheries sectors.

To ensure the long-term sustainability of the SIOFA Area, it is imperative that the Scientific Committee moves to **decouple pelagic and bottom fishery regulations**. By implementing the proposed recommendations—specifically the refinement of data transparency, the establishment of targeted observer requirements, and the creation of specialized CMMs—SIOFA can facilitate the responsible development of pelagic resources while maintaining its robust protection of the deep-sea floor.