

UPDATE ON BYCATCH MANAGEMENT AND ECOSYSTEM-BASED FISHERIES MANAGEMENT IN MADAGASCAR FISHERIES (CASE OF SHARK AND RAY IN SMALL-SCALE FISHERIES SECTOR)

AUTHOR: TANTELY ANDRIAMAHARO NY AINA – MINISTRY OF FISHERIES AND BLUE ECONOMY, MADAGASCAR

Purpose, expectation and action intended:

The paper is to inform meeting participants of recent developments in Madagascar regarding bycatch monitoring, conservation of vulnerable marine species in small-scale fisheries sector.

Discussions (for information and open discussion):

The paper is to inform meeting members that Fisheries sector in Madagascar comprises industrial, semi-industrial and artisanal. Tuna and tuna-like species fisheries operating within Madagascar EEZ interact with a variety of non-target species, including sharks, rays, other pelagic species.

Information regarding the species composition of these elasmobranchs remains limited, particularly in relation to catches from small-scale sectors. The most effective method of gathering information and data would be to conduct a market survey in the main fish market in the city.

Feedback (to collect input and suggestions)

This proposal enabled the highlighting of the existence of an active shark and ray trade network supplying the urban market, and demonstrated the challenges associated with species-level monitoring in market chains. The finding emphasises the necessity for enhanced monitoring and improved species identification, with the objective of optimising management strategies for elasmobranch resources in Madagascar especially for the small-scale fisheries sector

Conclusion

The purpose of this paper is to seek confirmation of the method used to gather data and information on these species from the small-scale fisheries sector.

Madagascar remains committed to improving ecosystem-based fisheries management and reducing the impacts of fishing activities on vulnerable marine species. Continued support from IOTC members and partners will be essential to strengthen monitoring systems, improve scientific information and implement effective bycatch mitigation measures.

Recommendation

The paper is to seek endorsement of enhanced regional collaboration and capacity-building initiatives to improve ecosystem monitoring and bycatch mitigation in the Western Indian Ocean.

The following actions are required:

1. It is important to note the progress achieved by Madagascar.
2. It is recommended that efforts are made to encourage continued capacity building on bycatch monitoring.
3. It is vital that we provide our full support for regional cooperation on the conservation of vulnerable species.
4. Promote the sharing of best practices for bycatch mitigation in order to improve efficiency and reduce environmental impact.
5. It is recommended that initiatives be supported which are aimed at improving data collection in small-scale fisheries.

Decisions (to request formal approval of actions)

The objective of the present document is to obtain the requisite authorisation for the proposed methodology to be employed in the collection of data on bycatch (i.e. sharks and rays) from the small-scale fisheries sector.



Abstract

Madagascar possesses a large Exclusive Economic Zones in the Western Indian Ocean and hosts important populations of sharks, rays, sea turtles, marine mammals and seabirds. Madagascar's fisheries sector comprises industrial, semi-industrial, artisanal fisheries. Fisheries play a critical role in food security, employment and livelihoods, particularly for the coastal community (small-scale fisheries sector).

The Ministry of Fisheries and Blue Economy continues to strengthen the implementation of ecosystem-based fisheries management through improved governance, fisheries monitoring and conservation measures. Particular attention is given to the conservation of vulnerable species commonly associated with tuna fisheries and other pelagic fisheries operating in the Malagasy EEZ.

Current status of bycatch monitoring:

The available information on bycatch is derived from a variety of sources, including industrial fisheries monitoring programs, observer programs, research projects and fisheries administration records. The main bycatch groups reported include sharks and rays (for the tuna and tuna-like fisheries)

Information and data from small-scale fisheries remain limited and requires further strengthening.

National Measures Implemented:

- Implementation of the Fisheries Code and associated regulations
- Protection measures for selected vulnerable marine species
- Strengthening Monitoring, Control and Surveillance (MCS)
- Promotion of ecosystem-based fisheries management
- Capacity building for fisheries officers and fishing communities
- Participation in regional fisheries initiatives in the Western Indian Ocean

Challenges:

- Insufficient species-specific bycatch data
 - Limited monitoring of small-scale fisheries
 - Financial and logistical constraints
 - Need for enhanced scientific research on vulnerable species
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Update on Bycatch Management and Ecosystem-Based Fisheries Management in Madagascar

A focus on sharks and rays in the small-scale fisheries sector

Madagascar's large maritime region in the Indian Ocean is not only an important ecological resource but also the basis of livelihoods for people living along the coast. To conserve its marine species while at the same time maintaining productive fisheries, Madagascar needs better information, effective governance and genuine participation by the people who rely on the sea.

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Madagascar's marine wealth and fisheries economy

Madagascar has a large Exclusive Economic Zone in the Western Indian Ocean. The productive pelagic waters support tuna and tuna-like fisheries and many marine species. Sharks, rays, sea turtles, marine mammals and seabirds are all found in this area, showing that fisheries should be managed not for target species but also for the wider ecosystem in which fishing occurs.

Madagascar's fisheries sector includes industrial, semi-industrial and artisanal fisheries. Across these segments, fisheries contribute to food security, employment and household income. This role is especially pronounced in communities, where small-scale fishing may be one of the few dependable sources of animal protein and cash income. Sustainable management must therefore balance conservation objectives with the economic realities of fishing communities.

Ecosystem-based fisheries management provides a framework for achieving that balance. Rather than focusing only on the volume of target species landed, it considers the effects of fishing on habitats, food webs and non-target species. For Madagascar, this perspective is particularly relevant in fisheries that interact with shark and ray species that can be vulnerable to relatively low levels of fishing mortality.

Why Bycatch requires great attention

Bycatch refers to animals caught unintentionally during fishing operations. In Madagascar's tuna and tuna-like fisheries, sharks and rays are among the reported bycatch groups. These interactions do not necessarily occur in the same way across all fleets or fishing areas. Still, they highlight a management challenge: the need to understand which species are being encountered, where and when they are caught and what happens to them after capture.

Reliable species-specific information is essential because sharks and rays do not all face the same level of risk. Some species may be more resilient to fishing pressure than others, while many have life-history characteristics that make recovery slow when populations decline. Recording catches in broad categories can therefore obscure important differences and limit the effectiveness of conservation measures.

The available information on bycatch in Madagascar comes from industrial fisheries monitoring, observer programme, research projects and fisheries administration records. These sources provide a starting point. However, they do not yet offer a picture, especially for the small-scale fisheries sector, where routine observation and catch documentation remain limited.

Small-scale fisheries: critical data gap

The data gap in small-scale fisheries is one of the important issues identified in the Madagascar fisheries sector. Small-scale fisheries are diverse, geographically dispersed and closely connected to markets. Their catches may pass through landing sites and trading networks before reaching consumers, making systematic monitoring more difficult than in larger centrally managed fleets.

At the time, preliminary experience has revealed an active shark and ray trade network supplying urban markets. This finding matters because market chains can offer a point of observation where catches from multiple fishers become visible. Market surveys in urban fish markets could help document the species being traded, the quantities observed and the pathways through which shark and ray products move.

Such surveys are not a substitute for information collected at sea or at landing sites. They are, however, a complement where direct observation is difficult. Combining market-based monitoring with landing-site data, fisher engagement and stronger species identification can progressively build a more accurate picture of elasmobranch catches in the small-scale sector.

National progress and the foundations for action

Madagascar has already established foundations to improve fisheries management. These include implementation of the Fisheries Code and associated regulations, protection measures for selected marine species and efforts to strengthen Monitoring, Control and Surveillance. Together, these measures create a governance framework through which conservation commitments can be translated into practice.

The Ministry of Fisheries and Blue Economy is also advancing ecosystem-based management through improved fisheries monitoring and conservation measures. Capacity building for fisheries officers and fishing communities is a part of this work. Monitoring systems can only be effective when staff have the skills to identify species, record information consistently and communicate the purpose of conservation measures to fishing communities.

Regional participation is equally important. Many pelagic species move across boundaries in the Western Indian Ocean, and the pressures affecting them cannot be addressed by one country alone. Regional initiatives create opportunities to share methods, compare information and promote approaches to monitoring and mitigation.

Challenges that must be addressed

Several obstacles continue to limit progress. The first is species-specific bycatch data. Without identification and reporting, managers cannot confidently assess which species are most affected or

determine whether existing measures are reducing risk. This challenge is closely linked to the monitoring coverage of small-scale fisheries.

Financial and logistical constraints also affect the ability to deploy observers, carry out surveys and maintain equipment across a large maritime and coastal area. Strengthening research on marine species is therefore not simply an academic priority; it is necessary for building practical management measures that can be applied with the resources available.

The response should be gradual and locally appropriate. A monitoring system that is too complex or costly to sustain will not produce information. By contrast, a coordinated approach that starts with surveys, standardised species-identification tools and targeted training can generate useful data while creating a platform for future expansion.

Practical path forward

A priority should be to validate and strengthen the proposed methodology for collecting information on sharks and rays in the small-scale fisheries sector. Market surveys in fish markets should be designed with clear sampling procedures, simple data forms and practical species-identification support. The results should be reviewed alongside information from landing sites, fisheries officers and relevant research initiatives.

Capacity building should accompany every stage of this work. Fisheries officers, enumerators and community partners need training not only in data collection but also in safe handling, species recognition and the value of accurate records. Regular feedback to participating communities can help ensure that monitoring is understood as a shared effort to sustain fisheries rather than as an external administrative requirement.

Madagascar can also benefit from continued collaboration. Sharing practices for bycatch mitigation, exchanging identification materials and aligning monitoring approaches across the Western Indian Ocean would improve efficiency and help build a stronger regional evidence base. Support from partners and regional fisheries bodies can contribute technical expertise, training opportunities and sustained investment in monitoring systems.

Conclusion

Madagascar has decided to manage its fisheries in an ecosystem-based way. This gives us a chance to protect vulnerable marine species and also keep fishery jobs and food supply safe for coastal communities. Madagascar has made progress in governance, conservation measures, surveillance and regional cooperation. This gives Madagascar a foundation.

The next step for Madagascar is to strengthen the evidence base for sharks and rays that small-scale fishermen catch. Better market surveys, clearer species identification, ongoing training and closer regional cooperation can turn data into real management action for Madagascar.

By investing in these measures, Madagascar can lower the harm that fishing does to vulnerable species and help build a resilient, fair and sustainable blue economy for Madagascar.