

PURSE SEINE BEST PRACTICES WITH SPECIAL CONSIDERATION TO FAD MANAGEMENT

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Based on the main principles used by the MSC sustainability certification, we would like to make a summary of the best practices that the purse seine fishery should follow in order to achieve a sustainable fishery, as a whole, with due consideration to the management of Fish Aggregating Devices (FADs). This summary is mainly based on the reports of the PEW Global FAD Science Symposium held in Santa Monica (20-23 March 2017), the Joint Tuna RFMO meeting held in Madrid (19-21 April, 2017) and Restrepo and Justell (ISSF, 2018).

1.1 SUMMARY OF RECOMMENDED PRACTICES

1.2 Principle 1 (Sustainable Fish Stocks)

1.2.1 General

Stock status of the target tuna stocks ultimately depends on the impacts of fishing by all gears and fleets. There are various activities that a fishery should support (with the flag states, coastal states in whose EEZs they are licensed to operate, and in the relevant RFMO) which, once adopted and implemented, will ensure healthy stock status:

1.2.2 Support Research and Capacity Building:

- Support Management Strategy Evaluation research, to account for the effects of all fishing gears contributing to fishing mortality and other analyses that support RFMO management objectives (e.g. reduce the catch of small individuals through time/area closures). (ISSF 2012a)
- Support research into stock structure and productivity if it is not already available.
- Ensure that flag state authorities know the composition of the fishery in detail and support an equal level of monitoring for all other fisheries and gear types.

1.2.3 Promote the adoption of measures by the RFMOs:

- The adoption of harvest strategies (including monitoring mechanisms) that are consistent with the MSC requirements. (IO-Skipjack HCR infographic, ISSF 2013a)
- Promote the adoption of management measures for the purse seine fishery and other major gear types that will allow the stocks to fluctuate around levels consistent with target reference points, as agreed by each RFMO.
- Promote the adoption at RFMOs of science-based capacity limits for all the components of the fishery and modes of fishing, including limits on the number of FADs or FAD sets.
- If a target stock is overfished, support the adoption of a rebuilding plan that is consistent with the MSC rebuilding timeframes.

1.2.4 Evaluate and assist Compliance with RFMO requirements:

- Comply with flag state and RFMO requirements for fisheries statistics. This should include species composition and catch by size and set type in order to feed the information into stock assessments.
- In case data gaps from the purse seine fishery are identified as a source of uncertainty in the stock assessments, the fishery should facilitate such data to the flag state and RFMO (RFMO science body).

1.2.5 Additional FAD reporting for assessment purposes

All RFMOs have some type of requirement for vessel operators to report data on the number of FADs used, usually in aggregated fashion (e.g. by geographic quadrant and monthly or quarterly). The fishery obviously must comply with these requirements.

In addition, scores for PIs 1.2.3 and 1.2.4 could be improved if the quality of the stock assessments improved, and the purse seine fishery can contribute to this by reporting monthly summaries with spatial information, type of buoy, and estimates of biomass beneath each FAD. Such data are not necessarily required by RFMOs, but they could be useful in the future to scientifically analyse the impact of FAD fisheries, particularly in terms of FAD densities in a particular area and time of the year.

1.3 Principle 2 (Minimizing Environmental Impact)

1.3.1 General

For Primary and Secondary species, the fishery should have a policy on bycatch management that includes:

- Reporting of catches and discards.
- Promoting retention and utilization, unless retention is prohibited by management. (Lewis 2014, 2016; ISSF CM 3.3)
- Following best practices to release unwanted catch alive (e.g. as in the ISSF Skippers Guidebooks). This includes sorting practices that allow for quick live release after sorting, and the use of non-entangling FADs.
- Supporting research on bycatch mitigation. (Restrepo *et al.* 2016a; ISSF CM 3.1-3.6 infographic)
- Participate in research that can lead to more selective fishing. (ISSF guide for non-entangling FADs; Restrepo *et al.* 2016a)
- Prohibiting shark finning. (ISSF CM 3.1.a, b, c).
- Reporting all catches of minor primary species so that they can be monitored.
- Implementing 100% observer coverage (human or electronic) to support management. (ISSF 2012b, 2016; Ruiz *et al.* 2016; ISSF CM 4.3)
- Promote research on primary and secondary species so as the contribution of each fishery to overall fishing mortality of each stock is estimated.
- Supporting any efforts (by the RFMO and at the national level) to assess and manage the species so that they are maintained at healthy levels of abundance.
- Demonstrating compliance with any such management measures. (ISSF CM 1.2, 2.2)

1.3.2 For Endangered, Threatened and Protected (ETP) species,

- Prohibit the use of entangling FADs. (ISSF guide for non-entangling FADs; Murua *et al.* 2017; ISSF CM 3.5).
- Follow best-practice live release methods to minimize mortality and document their use. This applies to whale sharks and cetaceans inadvertently encircled in the net, as

well as to rays, turtles and ETP sharks brought onboard. The fishery should support mandatory adoption of these practices by the flag state and RFMO. (ISSF Skipper Guidebooks, Murua *et al.* 2018, ISSF CM 3.4).

- Report interactions and fate of any releases (e.g. released alive; discarded dead).
- For ETP species whose catch in the purse seine fishery is not negligible compared to the total catch (e.g. silky sharks), implement further mitigation efforts such as avoiding sets on FADs with small tuna aggregations and releasing sharks alive from the net. (Restrepo *et al.* 2016b; shark bycatch mitigation infographic)
- Facilitate research that addresses mitigation of ETP species bycatch and voluntarily adopt best practices when these become known.

1.3.3 For Habitats:

Currently, a proportion of the FADs used in all purse seine fisheries end up in coral reefs which can be considered VMEs (vulnerable marine ecosystems). The overall impact of this has not been quantified, but stakeholders have expressed concern that it is a problematic issue. The fishery should:

- Support efforts to assess the impact of beaching events on VMEs, especially coral reefs in the different ocean regions.
- Promote research on the use of biodegradable FADs. (Moreno *et al.* 2016, 2017)
- Set up arrangements with governments and NGOs coastal countries to alert them of FADs drifting in determined VMEs in their EEZ.
- Develop a policy to recover FADs before they drift out of the fishing area and to take FADs out of the water at the end of the fishing season.
- Support limits on the overall number of FADs used by purse seine fisheries in each RFMO.
- Support efforts to improve FAD fishing at the RFMO and national level (e.g. in testing of biodegradable FAD designs, FAD impact studies, etc.)
- Report any information necessary to monitor whether the risk to coral reefs will increase in the future (e.g., number of FADs being used; changes in FAD use strategy).

1.3.4 For Ecosystems

Some management measures for tuna stocks adopted by RFMOs indirectly serve as a partial strategy to limit the impact of tuna fisheries on ecosystems (e.g. limit on vessel capacity, number of FADs, banning of entangling FADs, etc.). The main issues that need further research are the potential of FADs to act as so-called "ecological traps", and the actual level of impact of FAD fisheries on coral reefs (see Habitats, above).

The fishery should:

- Support that the implementation of management measures that affect the ecosystem is closely monitored. All the risks are linked to fishing effort, so it is essential that the fishery provides the required information on fishing effort (both free-swimming school and FAD sets) to the flag state and the RFMO.
- Report any other data identified as relevant as a result of research of FADs as ecological traps and FAD impacts on VMEs.

1.4 Principle 3 (Effective Management)

The management system for the fishery needs to be viewed in three levels: The flag state(s), the RFMO where it operates, and the countries in whose EEZs it is licensed to fish.

1.4.1 General

As with P1, there are many actions that the fishery must broadly support that would ensure effective management for all fisheries targeting tropical tunas, such as:

- Support a transparent mechanism for the resolution of legal disputes.
- Support the adoption by RFMO of a mechanism to evaluate compliance with the management measures adopted.
- Support the correct implementation of the relevant RFMO management measures.
- Support explicitly defined and well understood enforcement functions, roles and responsibilities at both the national and RFMO levels. The flag state should be an active member of the relevant RFMO. (ISSF 2013b; Koehler 2016; ISSF CM 1.2)
- Support that management objectives for both P1 and P2 in terms of sustainable use, MSY/target and limit reference points, and the precautionary approach, become part of the flag state fisheries legislation.
- Support timely decisions by the RFMO to demonstrate that it takes action when one or more of the target stocks are being overfished, or to address data gaps, etc.
- Support transparency and effectiveness in the decision-making process. Advocate that the national and RFMO management systems includes such a participatory consultation process (Koehler 2016).
- Support efforts for periodic review the flag state and RFMO management systems.

1.4.2 Specific to the fishery

- The vessels must be flagged to a country that is effectively a member of the RFMO, which provides the basis for international cooperation.
- If the fishery has faced legal challenges at the RFMO level, flag state level, or in countries in whose EEZ it is licensed to fish, it should demonstrate how it has worked to comply with judicial decisions.
- The MCS system should work for the flag state, the RFMO and to ensure the laws of the countries where the fishery is licensed to operate are in line with RFMO and international requirements (e.g. PSMA) and, if it is the case, they are respected. MCS tools include vessel licensing and registration, VMS, electronic logbooks, observer coverage and the monitoring of landings or in-port transshipments. (Koehler 2016, ISSF CM 4.1-4.4)

Electronic Monitoring systems are a good tool to complement or augment MCS capabilities. (Ruiz *et al.* 2016; ISSF CM 4.3)

- The fishery should instruct skippers about regulations at the RFMO and flag state in addition to countries in whose EEZ the vessels are licensed to fish. Some VMS and EMS can be programmed to warn the vessel and managers when approaching an area where the vessel cannot legally fish.