A review of FAD management measures implemented in other RFMOs

20th September 2022

Submission to third IOTC ad hoc Working Group on FADs (WGFAD03)

Executive Summary

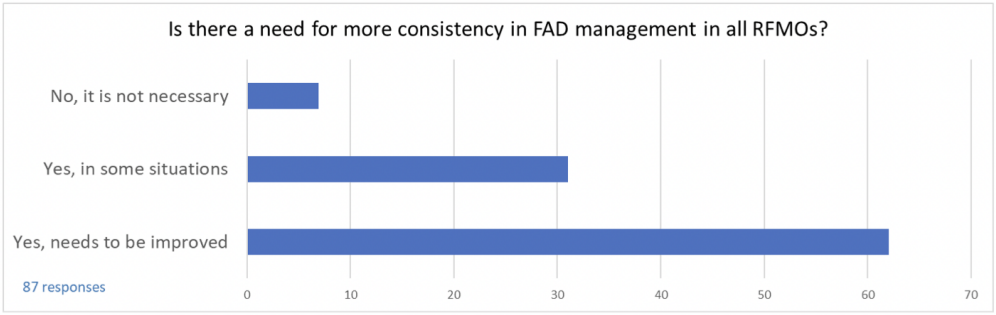
All tRFMOs now apply a suite of management measures to mitigate stock and ecosystem impacts resulting from the use of drifting fish aggregating devices (dFADs). All but the IOTC have a regionwide dFAD closure period in place, and wherever sufficient data is available these are proving to have a positive impact upon stock conditions. The success of FAD closures comes results largely from mitigating the growth overfishing driven by large proportions of dFAD catch of yellowfin and bigeye tunas being juveniles. A suite of measures is required to achieve sustainable management though, so based on experiences and results from other tRFMOs we suggest that the IOTC implements the following management measures as a matter of priority:

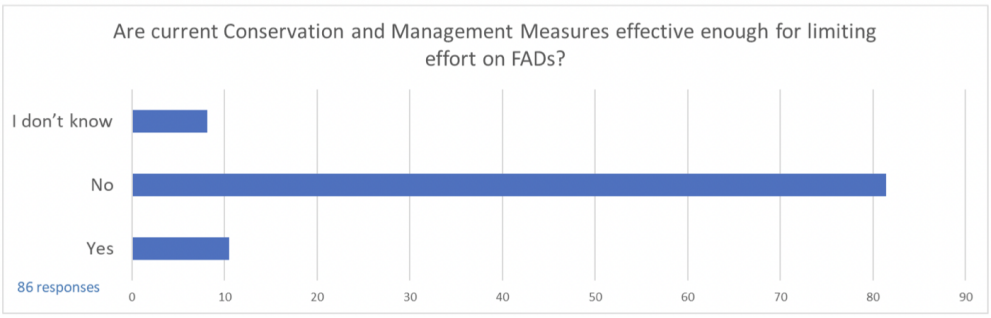
1. Apply an oceanwide dFAD closure period of at least 3 months during peak period(s) of juvenile yellowfin tuna catch, covering all purse seine vessels and paired with a 15 day period before the closure in which dFAD deployments are prohibited and any dFADs fished should be retained by the responsible vessel to minimize the likelihood of dFAD loss during the closure period.
2. Implement a dFAD Register in which each dFAD is associated to a single purse seine vessel before deployment, which is responsible for that device throughout its lifecycle.
3. Ensure third party monitoring of dFAD use and verification of information entered into the dFAD Register while ensuring all that information is made publicly available on the IOTC website, similar to how the IOTC Vessel Register and IUU vessel list are maintained to promote monitoring and accountability of vessels.
4. Apply the precautionary approach when implementing new, or refining current, dFAD management measures, as is the norm when data is lacking to inform science-based management.
5. Immediately prohibit the deployment of any dFADs that are not fully biodegradable (except the operational buoy) and of fully non-entangling designs with no netting or other meshed materials. Before activation and deployment of each dFAD, its designs alignment with this regulation should be confirmed by an onboard observer, and a resultant photograph of that dFAD prior to deployment should be added to the dFAD Register to enable compliance monitoring from recovered or beached dFADs.
6. Require dFAD components to be labeled according, at minimum, to the requirements submitted by Kenya in Resolution 22/XX, so lost or abandoned dFADs can be reunited with the vessel responsible for them without any data confidentiality barriers.
7. Require purse seine fleets using dFADs to evidence compliance with international marine pollution laws (e.g. MARPOL V and London Convention) and to make public all data received from their dFAD operational buoys to enable sustainable fisheries management guiding research and compliance monitoring.

8. Apply precautionary limits explicitly on the number of dFADs that can be deployed per vessel, while declining suggestions to only limit how many "active" FADs can be "followed at any one time", or how many "FAD Sets" can be made. Without explicitly limiting dFAD deployments and designs the impacts of both active and abandoned dFADs will not be suitably mitigated. The Joint tRFMO FAD Working Group previously noted that current FAD limits are the results of negotiations and fundamentally arbitrary in respect of data input[1], so lacking data should no longer delay management improvements.

Introduction

Meetings of the Joint t-RFMO FAD Working Group have consistently highlighted, since 2017, that FAD management is currently ineffective at limiting fishing effort, and that more consistency should be applied across all RFMO's for FAD management, as shown in the below poll results from that groups 2019 meeting.





Commercialized construction and deployment of drifting FADs (dFADs) started in the mid seventies. Once these purpose built aggregated structures were paired with ongoing technological advances in satellite tracking, echosounder and communication technologies, the use of dFADs drove alarming increases to tuna purse seine harvests, juvenile removals from tuna stocks and parallel ecosystem impacts. The sustainability of fleets using dFADs on an industrial scale, which can harvest in excess of 90% juveniles from larger tropical tunas= (yellowfin & bigeye) stocks when using dFADs is in question, but answers are not forthcoming while purse seine fleets maintain a lack of transparency regarding their use of dFADs.

Without vessels having transparency in their operations or providing consistent data on their use of dFADs, sustainable management is compromised, especially when claims of commercial confidentiality enable the purse seine industry to continue withholding the data their commercial operations benefit from in near real time via satellite communications with their dFADs. Science-based management has been compromised for too long and research into dFAD sustainability has been unable to keep up with the explosion of additional harvests enabled by dFAD use. In such data-poor and uncertain circumstances, RFMOs should adopt a precautionary and ecosystem-based approach to fisheries management, and incentivize fisheries to proactively evidence sustainability to enable the refinement of management measures. Unfortunately, industrial purse seine tuna fishing fleets are continuing to operate with minimal oversight and accountability for their impacts on internationally shared tuna stocks, broader ecosystems and the millions of poor coastal communities in developing countries that rely upon

[1] Joint Working Group on FADs (2019)
https://www.iccat.int/Documents/Meetings/Docs/2019/REPORTS/JWGFAD-02_ENG.pdf

these marine resources to meet their daily needs. There are many lessons to be learnt from the successes and challenges of dFAD management in other RFMOs. Shark Guardian, therefore, provides this paper to summarize dFAD management elsewhere, to highlight and prioritize the options which are available to the IOTC, and which should be implemented as a matter of urgency if we are to achieve yellowfin tuna stock recovery within a reasonable timeframe. If we do not deal with overcapacity seen among purse seine fleets using dFADs in the Indian Ocean, it is only a matter of time before the bigeye tuna stock and others follow the yellowfin tuna stock in being overfished with ongoing overfishing as a result of management failures. [DE1]

Summary of measures per RFMO

1 Inter-American Tropical Tuna Commission (IATTC)

Temporal closures for purse seine vessels and catch limits for longline vessels are the main tools used over the past decade to manage tropical tunas in the IATTC Convention Area[2]. Other measures such as capacity limits, full retention, active FAD limits, and spatial closures are also in place for some fleet components.

1.1 FAD Closure

The IATTC has a closure for all purse-seine vessels of 72 days and an extra 30 days in the Corralito Area. The closures are to be observed in one of two periods, as follows: from 00:00 hours on 29 July to 24:00 hours on 8 October, or from 00:00 hours on 9 November to 24:00 hours on 19 January of the following year and shall be closed from 00:00 hours on 9 October to 24:00 hours on 8 November for Corralito Area. In addition, and depending on the compliance of a CPC with the IATTC Resolution C-21-04, additional measures may be applied. There is a period in advance of the closures when vessels are encouraged to remove the FADs they fish on from the water. This helps reduce the number of dFADs that are lost or abandoned due to drifting out of the main fishing area during the closure period.

1.2 FAD Limitations

Depending on the size and class of the vessel, the number of FADs a vessel can have in 2022 ranges between 400 and 66 FADs, in 2023 between 340 and 64 FADs and in 2024 between 340 and 50 FADs.

1.3 Reporting requirements

CPCs shall report, or require their vessels to report, daily information on all active FADs to the IATTC Secretariat.

1.4 Effectiveness of the FAD Measures

A combination of capacity reduction, temporal closures, and catch limits, led to substantial reductions in yellowfin catch to the benefit of that regional stocks health. Some spatial closures that include the western part of the East Pacific Ocean (EPO) region also appear to have been effective in protecting bigeye tuna stocks from overexploitation, especially as juveniles.

2 International Commission for the Conservation of Atlantic Tunas (ICCAT)

An ocean wide dFAD closure period, limiting the number of FADs deployed by each purse seine vessel and catch limits for purse seine vessels are the main tools used to manage tropical tunas in the ICCAT Convention Area (ICCAT Rec 21-01)[3].

2.1 FAD Closure

The ICCAT has an oceanwide closure for all purse-seine vessels of 72 days in both the high seas and EEZs, which increases annually until sustainability is achieved. The closures are observed from 1 January to 13 March 2022. In addition, vessels cannot deploy drifting FADs during a period of 15 days prior to the start of the closure period, as a means of mitigating the risk of dFADs deployed in that period becoming lost or abandoned due to drifting beyond the fishing area during the closure period.

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[2] Maunder et al. 2021. Review of alternative conservation measures for the purse seine fishery for tropical tunas in the EPO. DOC SAC-12 INF-B. Inter-American Tropical Tuna Commission.

[3] ICCAT Recommendation 21/01 - https://www.iccat.int/Documents/Recs/compendiopdf-e/2021-01-e.pdf

2.2 FAD Limitations

The number of FADs a vessel can have in 2022 is limited to 300 FADs, irrespective of the size and class of a vessel. CPCs with purse seine fishing vessels are encouraged not to increase their total fishing effort on FADs from 2018 levels.

2.3 Reporting requirements

CPCs with purse seine vessels shall urgently undertake to report to the SCRS by 31 July 2022 the required historical FAD set data. Furthermore, submission of Management Plans for the use of aggregating devices by vessels flying their flag are expected to be received by the Commission by 31 January each year including:

i. the number of FADs actually deployed on a monthly basis per 1°x1° statistical grid, by FAD type, indicating the presence or absence of a beacon/buoy or of an echo-sounder associated to the FAD and specifying the number of FADs deployed by associated support vessels, irrespective of their flag;

ii. the number and type of beacons/buoys (e.g. radio, sonar only, sonar with echo-sounder) deployed on a monthly basis per 1°x1° statistical rectangles;

iii. the average numbers of beacons/buoys activated and deactivated on a monthly basis that have been followed by each vessel;

iv. average numbers of lost FADs with active buoys on a monthly basis;

v. for each support vessel, the number of days spent at sea, per 1° grid area, month and flag State; and

vi. purse seine and baitboat catches, efforts and number of sets (for purse seines) by fishing mode (floating-object associated schools and free school fisheries), i.e. per 1°x1° statistical rectangles and per month.

2.4 Effectiveness of the FAD Measures

Despite a significant decline in bigeye tuna (BET) and skipjack tuna (SKJ) catches in 2020, the ICCAT's Standing Committee on Research and Statistics (SCRS) concluded in its report that the effects of the FAD fishing closure in the ICCAT Recommendation 19-02 implemented in 2020 and 2021 cannot yet be evaluated, although the closure remains likely to have contributed to the lower catches of BET estimated for 2020. This can be expected to support rebuilding of the overfished bigeye tuna stock while also providing stock health benefits for yellowfin and skipjack tuna stocks, while also mitigating other damage done to Atlantic marine ecosystems by dFADs that are in use, lost or abandoned.

3 Western and Central Pacific Fisheries Commission (WCPFC)

The Western and Central Pacific Fisheries Commission (WCPFC) was the first tRFMO to implement FAD directed Conservation Management Measures (CMMs).

The WCPFC has adopted a number of restrictions for the purse seine fishery. The input or effort-based restrictions used by the WCPFC to manage the purse seine catch of bigeye tuna have included prohibiting the use of FADs during certain time periods, and limiting the number of FAD sets by each of the Members, Cooperating Non-Members and Participating Territories of the WCPFC (CCM) over a year. These effort-based restrictions (process standards) are all examples of command-and-control policies (regulatory measures that mandate specific vessel behavior through limits or standards on technology, process of production, or the catch and bycatch – performance) and the FAD limits have primarily been flag-based (counting against the limit of the CCM to which the vessel is flagged or chartered) though there have been some zone-based exemptions in some years for Small Island Developing States (SIDS).

3.1 FAD Closure

The primary mechanism for constraining bigeye catch has been a seasonal region-wide FAD fishing/setting prohibition period where vessels are not allowed to set on FADs. The period has increased from 2 months in 2009, to 3 months from 2010 - 2012. Between 2013 and 2017 CCMs had the option to use an additional 4-month of FAD closure, or reduce their total FAD set number below a threshold. From 2018–2020, CCMs have a 3-month FAD closure as well as a 2-month FAD closure on the high seas.

Currently, there's a three (3) months (July, August and September) prohibition of deploying, servicing or setting on FADs. This is observed between 0001 hours UTC on 1 July and 2359 hours UTC on 30 September each year for all purse seine vessels, tender vessels, and any other vessels operating in support of purse seine vessels fishing both in exclusive economic zones and the high seas. In addition to the three-month FAD closure, there's an additional two sequential months of the year that CCMs are prohibited to deploy, service or set on FADs in the high seas except for vessels flying the Kiribati flag when fishing in the high seas adjacent to the Kiribati exclusive economic zone, and Philippines' vessels operating in area HSP1.

3.2 FAD and Effort Limitations

The number of FADs a vessel can have in 2022 is limited to 350 FADs, irrespective of the size and class of a vessel.

Zone-based purse seine effort control: Coastal CCMs within the Convention Area shall restrict purse seine effort and/or catch of skipjack, yellowfin and bigeye tuna within their Exclusive Economic Zones (EEZs).

High seas purse seine effort control: CCMs that are not SIDS shall restrict the level of purse seine effort on the high seas in the area.

3.3 Effectiveness of the FAD Measures

3.3.1 Skipjack tuna

While the overall catch of skipjack by the purse seine fleet in the WCPFC was found to be sensitive to the composition of set-by-set effort (FAD, or associated sets versus free-school or unassociated sets), it will take time before the stock status shows improvements purely from FAD restrictions. Total catch at equilibrium ranged from 1,019,000mt with 0% associated sets to 1,000,000 mt with 100% associated sets and the differences were attributed to the effects of growth overfishing (i.e., higher yield-per-recruit gains by increasing size at capture - i.e. reducing juvenile harvests driven by FAD use). However, the skipjack stock status already showed a positive difference (7% increase in SB/SBMSY and 12% decrease in F/FMSY) when effort composition was 100% FAD unassociated sets[4].

Conclusion and dFAD management advice to the IOTC

The suites of dFAD management measures implemented by other tRFMOs have proven their worth in protecting tuna stocks from overfishing, especially growth overfishing, and have not overly compromised cannery companies harvest supplies either. Learning from the implementation of dFAD management measures used in all other tRFMOs, the IOTC should implement its own suite of proven measures to mitigate the stock and habitat damage caused by dFAD use as a matter of priority.

It is important to note that the commencement of all dFAD measures in all tRFMOs was based on recognition of the need for precautionary fisheries management. This fact runs contrary to many ongoing requests for "science-based management" and more data before improved management measures may be imposed. This is especially true noting the ongoing lack of data provision and operational transparency which continues to be maintained by the industrial purse seine industry on a global scale. Better data on dFAD use is important for various research activities to guide management, including better estimates of fishing effort and capacity of the dFAD fishery[5]; purse seine catch-per-unit-effort (CPUE) standardization[6]; and tuna school behavior[7,8]. Precautionary dFAD number limits that restrict the number dFADs permitted to be deployed and registered to each vessel are a key measure that already have a history of application in all tRFMOs. To ensure this measure is effective, the IOTC

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4 Hampton, J. and Pilling G. 2014. Relative impacts of FAD and free-school purse seine fishing on yellowfin tuna stock status. WCPFC-SC10-2014/MI-WP-05.

5 Fonteneau, A., Chassot, E., and Gaertner, D. 2015. Managing tropical tuna purse seine fisheries through limiting the number of drifting fish aggregating devices in the Atlantic: food for thought. Collective Volume of Scientific Papers ICCAT, 71: 460–475.

6 Vidal et al. 2020. Examining indicators of technological and effort creep in the WCPO purse seine fishery. WCPFC Scientific Committee WCPFC-SC16- 2020/MI-IP-15.

7 Leroy et al. 2013. A critique of the ecosystem impacts of drifting and anchored FADs use by purse-seine tuna fisheries in the Western and Central Pacific Ocean. Aquatic Living Resources, 26: 49– 61. EDP Science.

8 Scutt Phillips et al. 2019b. Regional connectivity and spatial densities of drifting fish aggregating devices, simulated from fishing events in the Western and Central Pacific Ocean. Environmental Research Communications, 1: 055001. IOP Publishing.5

should explicitly limit the number of dFADs deployed and registered to each vessel within a public dFAD Register, while not entertaining suggestions to only limit the number of “active” FADs, “FAD Sets” or how many FADs can be “followed at any one time”. This is because only limiting the number of “active” dFADs, number of “FAD Sets” or how many FADs can be “followed at any one time” is far more complicated to achieve and does not necessarily mitigate the pollution, ghost fishing and habitat impacts of dFADs. This is because the total number deployed or as a result lost/abandoned is not explicitly limited by such caveated measures. In addition, such dFAD number limits per vessel should be precautionary until sufficient data flow justifies the sustainability of potential increases to permitted dFAD numbers per vessel. Such dFAD limits should also apply to all purse seiners and all their support vessels, regardless of their size or capacity. The “followed at any one time” clause has already compromised the intent of conservation measures elsewhere, through enabling fleets to have more dFADs in the water than is permitted, but only following the nearest ones to the vessel, up to the limit number, “at any one time”. To help address this issue, dFADs must only be activated on the vessel

allocated as responsible for that dFAD prior to deployment, and the deactivation of dFAD operational buoys should only be permitted once that dFAD has been recovered and returned to a port for deactivation and maintenance. Only after reactivation in port may be re-registered and deployed again in future.

Noting that all other tRFMOs already have FAD closures in place, which are providing benefits to tuna stocks and ecosystems, an oceanwide dFAD closure of at least 3 months should be applied as a priority measure by the IOTC. The application of two closures according to flag state development status over the two peak periods of highest juvenile yellowfin tuna harvests, as discussed during IOTC 26, is an appropriate option that should also address concerns raised about regional cannery supply consistency. It is worth re-emphasizing here that free school fishing, which achieves a greater yield per unit with lower stock and environmental impact, is allowed to continue during the FAD closure period to mitigate supply consistent concerns of canneries anyway. A fifteen day period before the FAD closures should also be applied; during which, no additional dFADs may be deployed, and any FADs fished during that period should be retained by the responsible vessel to mitigate the risk of those dFADs being lost or abandoned (through drifting beyond the fishing area) during the upcoming closure period.

Data from dFADs should be regularly reported to the IOTC Secretariat and should include all information already received from dFADs by the fleets via satellite (location, echo-sounder biomass estimates etc). Such information should be received and tracked by an independent third party and fed into a publicly available dFAD Register. Received data should be made open to the public on the IOTC website - similar to the IOTC vessel registers and IUU vessel list. This FAD Register represents a streamlined and urgent means of improving the transparency of dFAD operations to support scientific studies that can inform sustainable management, and it will increase vessels accountability for the dFADs they deploy and have registered to them. This can also form the monitoring foundation for applying a polluter pays mechanism, a principle that already has precedent and support within EU legislation.

The deployment of any dFADs that are not fully biodegradable (except the operational buoy) and of fully non-entangling design with no netting or other meshed materials, should be immediately prohibited. Before activation and deployment of each dFAD, its alignment with this regulation should be confirmed by an onboard observer and information sent to the dFAD Register to enable compliance monitoring from recovered or beached dFADs.