



**SCIENTIFIC COMMITTEE SEVENTEENTH
REGULAR SESSION**

ELECTRONIC MEETING
11 – 19 August 2021

Guidelines for Non-entangling and Biodegradable FAD Materials

WCPFC-SC17-2021/EB-IP-07

FAD Management Options Intersessional Working Group Chair

BACKGROUND

In November 2020, the FAD Management Options Intersessional Working Group (FAD-IWG) developed Guidelines for non-entangling and biodegradable FADs, which was forwarded to the Commission. WCPFC17 provided the following recommendation (Paragraph 349, WCPFC17 Summary Report):

349. Noting that the SC16 and TCC16 could not complete the task in paragraph 22 of CMM 2018-01 due to the limited agenda resulting from COVID-19, the Commission tasked SC17 and TCC17 to review the draft guidelines for non-entangling and biodegradable FADs prepared by the FAD Management Options IWG (Attachment K). The FAD Management Options IWG should revisit the draft guidelines based on input from those bodies as well as any additional scientific and technical information on non-entangling and bio-degradable FADs.

Based on the above recommendation from the Commission, SC17 is requested to:

1. review the annexed *Guidelines for non-entangling and biodegradable FADs*;
2. provide scientific advice/input to the FAD-IWG to improve the *Guidelines for non-entangling and biodegradable FADs* with regards to the following:
 - a. design and materials used in the FAD structures (raft and/or tail),
 - b. format of the guidelines, including timeline for implementation,
 - c. other aspects that might be useful to develop practical and implementable guidelines; and
3. support and endorse the *Guidelines for non-entangling and biodegradable FADs* prepared by the FAD Management Options IWG, if no additional scientific advice/input is provided by SC17.



**THE FAD MANAGEMENT OPTIONS
INTERSESSIONAL WORKING GROUP
FOURTH SESSION**

EMAIL CORRESPONDENCE

1 October – 17 November 2020

Guidelines for Non-entangling and Biodegradable FAD Materials

FADMO-IWG-04-2020/WP-02_Final

FAD Management Options Intersessional Working Group

Background

The fourth FAD Management Options Intersessional Working Group (FAD-IWG) is requested to develop specific guidelines on the implementation of non-entangling and/or biodegradable material on FADs, and this document is prepared to seek comments and suggestions to address paragraph 22 of CMM 2018-01 (CMM for bigeye, yellowfin and skipjack tuna in the WCPO):

22. The Commission at its 2020 annual session, based on specific guidelines defined by the FAD Management Options Intersessional Working Group and advice from SC16 and TCC16 shall consider the adoption of measures on the implementation of non-entangling and/or biodegradable material on FADs.

Some specifications are described for non-entangling FADs in paragraph 19 of the CMM, where CCMs need to comply with to reduce the risk of entanglement of sharks, sea turtles or any other species. Paragraph 20 of the CMM encourages CCMs to use non-plastic and biodegradable materials in the construction of FADs to reduce the amount of synthetic marine debris.

(CMM 2018-01)

19. To reduce the risk of entanglement of sharks, sea turtles or any other species, as from 1st January 2020, CCMs shall ensure that the design and construction of any FAD to be deployed in, or that drifts into, the WCPFC Convention Area shall comply with the following specifications:

- The floating or raft part (flat or rolled structure) of the FAD can be covered or not. To the extent possible the use of mesh net should be avoided. If the FAD is covered with mesh net, it must have a stretched mesh size less than 7 cm (2.5 inches) and the mesh net must be well wrapped around the whole raft so that there is no netting hanging below the FAD when it is deployed.*
- The design of the underwater or hanging part (tail) of the FAD should avoid the use of mesh net. If mesh net is used, it must have a stretched mesh size of less than 7 cm (2.5 inches) or tied tightly in bundles or “sausages” with enough weight at the end to keep the netting taut down in the water column. Alternatively, a single weighted panel (less than 7 cm (2.5 inches) stretched mesh size net or solid sheet such as canvas or nylon) can be used.*

20. To reduce the amount of synthetic marine debris, the use of natural or biodegradable materials for FADs should be promoted. The use of non-plastic and biodegradable materials in the construction of FADs is encouraged.

The Commission has adopted the report of the 3rd meeting of the FAD Management Options Intersessional Working Group (WCPFC15-2018-FADMO-IWG03) which includes some existing guidelines and best practices described as lower entanglement risk FADs (detailed in the ISSF Guide for Non-Entangling FADs, 2019). The report also recognized the use of eco-friendly, reusable, non-plastic and biodegradable materials for FAD construction.

We do recognize that the main impacts of FAD structures on marine ecosystems are i) shark and sea turtle entanglements, ii) marine pollution, and iii) damage to marine ecosystems such as coral reefs. Some of these shark and sea turtle entanglements may not be observed and this can be attributed to “ghost fishing” (Filmlalter et al. 2013). A study in the Atlantic and Indian Oceans has estimated that 10% of the

deployed FADs end up stranded (Maufroy et al. 2015). In the western and central Pacific Ocean, about 79% of all FADs presented unknowns fate (51% outside fishing areas and 28% within fishing areas), with most of them likely drifting deactivated (without any owner tracking their trajectories) and ultimately either sinking, being recovered, beaching or disintegrating at sea (Escalle et al. 2020). These lost and abandoned FAD structures impact on marine ecosystem, which damages coastal areas such as the coral reefs and contributes to marine pollution due to plastic components used to build FAD structures. In PNA EEZs, the currently assessed number of beached dFADs (i.e. 7%) could affect 4 to 6 km² of coral reef habitat per year (Banks and Zaharia, 2020). The deactivation of drifting FADs, and subsequent loss, may breach MARPOL regulations as this practice raises serious questions regarding the application of MARPOL exemptions on fishing gears. A recent study has also found that drifting FADs are legally 'fishing' throughout all stages of use, with resulting obligations on member States to ensure that they are effectively managed and monitored throughout all stages of use (Hanich et al. 2019).

Based on new available information on non-entangling and biodegradable FADs like the 2019 ISSF Guide on Non-Entangling and Biodegradable FADs and the recent paper submitted to SC16, WCPFC-SC16-2020/EB-IP-08, some specific guidelines are attached below attempt to update the existing guidelines available for the Commission's consideration.

References

- Banks, R. and Zaharia, M., 2020. Characterization of the costs and benefits related to lost and/or abandoned Fish Aggregating Devices in the Western and Central Pacific Ocean. Report produced by Poseidon Aquatic Resources Management Ltd for The Pew Charitable Trusts.
- Escalle, L., B. Muller, S. Hare, P. Hamer, G. Pilling, and the PNA Office. 2020. Report on analyses of the 2016/2020 PNA FAD tracking programme. Document WCPFC-SC16-2020/MI-IP-14.
- Filmalter, J.D., M. Capello, J-L. Deneubourg, P.D. Cowley and L. Dagorn. 2013. Looking behind the curtain: quantifying massive shark mortality in fish aggregating devices. *Frontiers in Ecology and Environment*, 11(6): 291-296.
- Hanich, Q., R. Davis, G. Holmes, E-R. Amidjogbe and B. Campbell. 2019. Drifting Fish Aggregating Devices (FADs): Deploying, Soaking and Setting – When is a FAD ‘Fishing’? *Intl. J. Mar. Coast. Law* 34: 731-754
- Maufroy, A., E. Chassot, R. Joo and D.M. Kaplan. 2015. Large-Scale Examination of Spatio-Temporal Patterns of Drifting Fish Aggregating Devices (dFADs) from Tropical Tuna Fisheries of the Indian and Atlantic Oceans. *Plos One* <https://doi.org/10.1371/journal.pone.0128023>
- Moreno, G., Salvador, J., Murua, J., Phillip, N.B., Murua, H., Escalle, L., et al. 2020. A multidisciplinary approach to build new designs of biodegradable Fish Aggregating Devices (FADs). WCPFC-SC16-2020/EB-IP-08. <https://www.wcpfc.int/node/46707>
- ISSF. 2019. [Non-Entangling and Biodegradable FADs Guide](#). International Seafood Sustainability Foundation, Washington, D.C., USA.

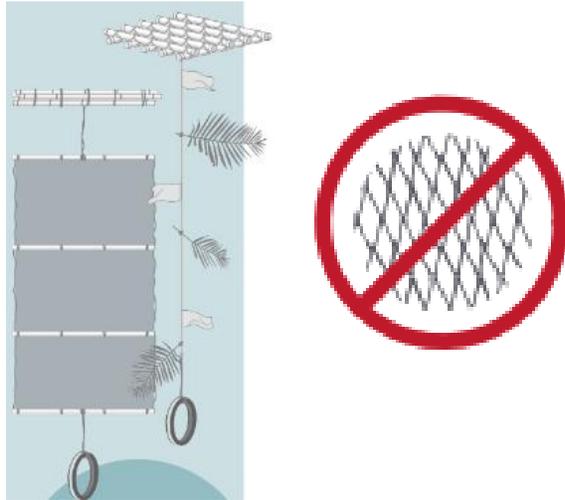
GUIDELINES FOR NON-ENTANGLING AND BIODEGRADABLE FAD MATERIALS¹

FAD Structure	NON-ENTANGLING	BIODEGRADABLE
General:	<ul style="list-style-type: none"> ✓ Non-entangling biodegradable FADs are the FAD design with the least possible impact on the ecosystem. ✓ New FAD designs should also focus on to mitigating impact when beaching or sinking. ✓ FAD recovery activities are encouraged to reduce FAD loss and abandonment. 	
Raft	<ul style="list-style-type: none"> ✓ To the extent of possible, the surface structure should not be covered with netting or meshed materials (to reduce entanglement of turtles). <div style="text-align: center; margin-top: 20px;">  </div>	<ul style="list-style-type: none"> ✓ To the extent of possible, construct with bamboo, balsa wood, other natural materials or in their absence, use of bio-based and biodegradable compounds complying with international standards that degrade without causing impact on the ecosystem. <div style="text-align: center; margin-top: 10px;">  </div> <ul style="list-style-type: none"> ✓ Use of plastic buoys [and containers] for flotation should be reduced as much as possible; for instance, reduce the weight and volume of the FAD structure. <div style="text-align: center; margin-top: 20px;">  </div>

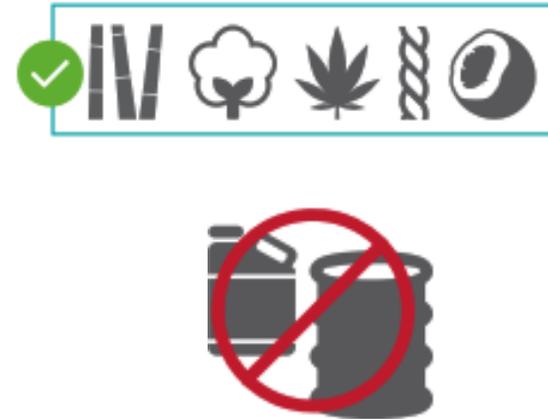
¹ Attachment K, WCPFC17 Summary Report

Tail

- ✓ FADs constructed without netting can eliminate the entanglement of turtles, sharks and finfish species. This will also reduce chances of FAD structures becoming enmeshed in coral reefs and other sensitive substrates, and research on the impacts of tail depth, width and size on substrates may be considered in the future.



- ✓ Encourage to use natural and/or biodegradable materials such as cotton ropes and canvas, manila hemp, sisal, coconut fiber, other natural materials. In the absence of such materials, encourage to use bio-based and biodegradable compounds complying with international standards.



Based on the 2019 ISSF Guide there are **three (3) categories of FADs from lowest to highest entanglement risk** that are described below. *Considering the variety of designs and materials used worldwide to construct FADs, these designs are just examples, but the important elements are the net type and its configuration.*



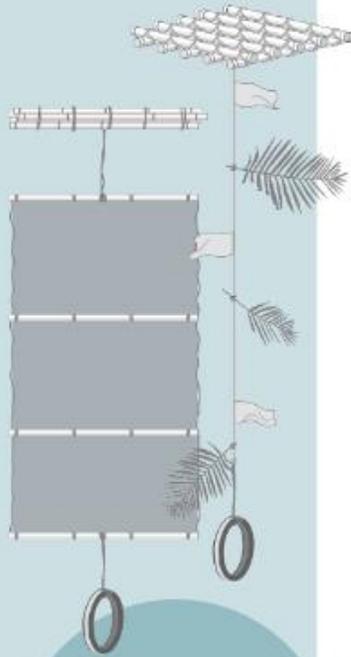
NON-Entangling FADs

RAFT

- Do not cover with netting.
- If covered, cover with canvas, tarpaulin, shade cloth, or non-entangling materials.

TAIL

- Subsurface structure is made with ropes, canvas or nylon sheets, or other non-entangling materials.



More detail on the previous page.

No netting is used in any components (raft and tail)

These FADs are expected to have no risk of causing entanglement.



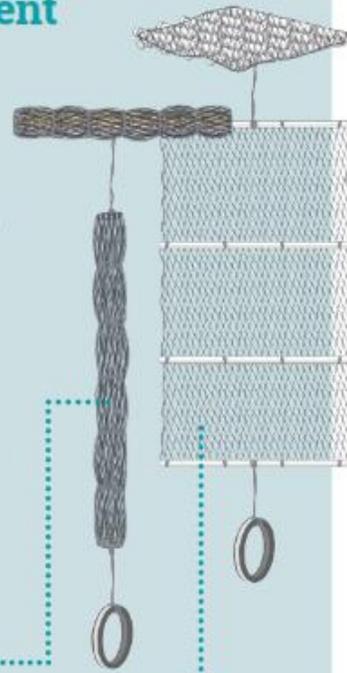
LOWER Entanglement Risk FADs

RAFT

- Use only small mesh netting (< 2.5 inch / 7 cm stretched mesh) if covering with net (both upper and submerged parts).
- If small mesh netting is used as cover, it is tightly wrapped, with no loose netting hanging from the raft.

TAIL

- If net is used as submerged tail, could be of any mesh size if tightly tied into sausage-like bundles.
- If open panel netting is used, only small mesh size (< 2.5 inch [7 cm] stretched mesh) can be used, but weight the panel to keep it taut.



Despite using netting, these design elements reduce the risk of entanglement events.



HIGH Entanglement Risk FADs

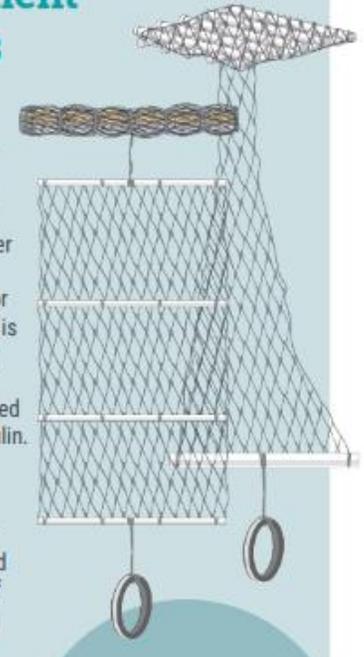
RAFT

- Covered with large mesh netting (e.g. > 2.5-inch mesh).*
- If mesh size is larger than 2.5 inches (both in the upper or submerged part), it is high entanglement, whether the net is tightly tied or covered by canvas or tarpaulin.

TAIL

- Submerged part of the FAD constructed with open panels of large mesh netting (> 2.5-inch mesh).

*Accounting for mesh sizes available in the market, 2.5 inch (7 cm) mesh size offers the lowest likelihood of entanglements across species and body parts.



These FADs are known to cause entanglements with turtles and sharks.

* Non-Entangling FADs are highly encouraged