TECHNICAL AND COMPLIANCE COMMITTEE
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GUIDELINES FOR NON-ENTANGLING AND BIODEGRADABLE FAD MATERIALS (FADMO-IWG-04-2020-WP-02)

WCPFC-TCC17-2021-19
6 September 2021

Paper prepared by the Secretariat and the FAD-IWG Chair

I. BACKGROUND

1. In November 2020, the FAD Management Options Intersessional Working Group (FAD-IWG) finalized a draft *Guidelines for non-entangling and biodegradable FADs* in **Attachment A**, which was forwarded to the Commission. The WCPFC17 in December 2020 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.*

2. As requested by the Commission, the draft was considered at SC17 through the Online Discussion Forum (Topic 21), and the SC17 noted the following review comments by SC17 participants (Paragraphs 34 – 37, Summary of SC17 Online Discussion Forum[1]).

> 34. **Tokelau, on behalf of PNA members**, supported strengthening the existing provisions to reduce entanglement along the lines proposed by the FAD IWG, stating that as the PNA understands it, this would involve tightening up the text of para. 19 of the Tropical Tuna CMM to ban the use of any mesh net on FADs. However, PNA consider more work is needed before further requirements are put in place for the use of biodegradable materials in FADs. PNA note that research on the use of biodegradable materials has been set back by the effects of COVID. In addition, we are concerned that

[1] https://meetings.wcpfc.int/node/13212

domestic vessels may be disadvantaged by the extra costs of shipping biodegradable materials to ports in the region, and would like to see more work on the use of locally available materials for FAD construction.

35. **The USA** supported the efforts of the FAD IWG that aims to strengthen existing provisions to reduce entanglements of incidentally-caught species, including seabirds, sharks and marine mammals. Ideally there will be more ideas regarding design and materials used in the FAD structures for discussion during SC18.

36. **SPREP** stated that the risk to sharks and sea turtles of entanglement in dFADs is well recognized but it is important to also recognise the potential risk to whales presented by dFADs. At recent online meetings (July and August 2021) bringing together SPREP member states, partners and NGOs and Signatories to the Pacific Cetacean MOU, participants heard from an IWC expert about evidence of entanglement of whales in dFADs as part of a discussion on disentanglement response. The issue is both an animal welfare issue as well as a conservation issue. Whales have been detected as entangled in dFADs in other oceans for example off Gabon, Guadeloupe and South Africa, where a whale had dragged the FAD from the Seychelles. Advice is that observer programmes are unlikely to witness these entanglements as large whales drag gear away from locations of deployment. Abandoned FADs may present more of a risk for coastal species as they drift close to shore, such as humpback whales while sperm whales may be more at risk in open ocean. The Pacific Islands region is home to half the world's species of whales and dolphins (37+). Some such as the Baleen whales are highly migratory migrating thousands of kilometers each year between winter tropical breeding grounds and summer feeding grounds. Many other species remain in the region. The high numbers of dFADs deployed in the WCPO resulting in their close proximity to each other (20km) as well as the high rates of abandonment presents a significant unquantified risk to the high diversity and numbers of whales and dolphins which live in WCPO. Rapid movement to non-entangling FADs and biodegradable FADs is important. Lower entanglement risk FADs are not ideal in the situation where loss or abandonment is likely. Although initially tightly wrapped netting can become unwrapped over time presenting a risk to marine species and to sensitive coral reef habitat. Banning use of mesh is highly desirable. Recovery of FADs also remains an important goal to protect the marine ecosystem and species as although biodegradable materials will break down eventually until that happens abandoned FADs which retain ropes and other attachments could still present a risk to marine species.

37. **ISSF** stated that lower entanglement risk FADs were considered as a transitional step. Moving to fully non-entangling FADs is feasible and highly desirable. IOTC already requires them.

38. **The World Bank** stated that tracking weights of dFADs is also important. It would be useful to use standardized construction plans for FADs that collect information on weights of materials, material properties (PA, PP, PE etc.) in order to estimate the trends in plastic use in dFADs over time. Some standards vis a vis acceptable biodegradable material should also be considered as not all biodegradables have the same breakdown characteristics.

II. PURPOSE

3. The purpose of this paper is to present the draft *Guidelines for Non-Entangling and Biodegradable FAD Materials* for consideration by TCC17, seeking any input from TCC17 and any additional technical information on non-entangling and bio-degradable FADs.

4. Based on the WCPFC17 recommendation above, TCC17 is requested to:

i. review the annexed *Guidelines for non-entangling and biodegradable FADs*;

ii. provide technical 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

iii. support and endorse the *Guidelines for non-entangling and biodegradable FADs* prepared by the FAD Management Options IWG, if no additional advice/input is provided by TCC17.

Attachment A

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

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" (Filmalter 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 km^2 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

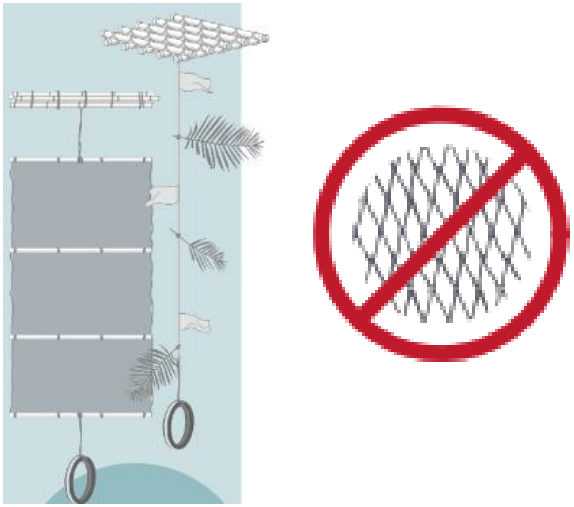
Moreno, G., Salvador, J., Murua, J., Phillip, N.B., Murua, H., Escalle, L., et al. 2020. A multidisciplinary approach to build new designs of biodegradable Fish Aggregating Devices (FADs). WCPFC-SC16-2020/EB-IP-08. https://www.wcpfc.int/node/46707

ISSF. 2019. Non-Entangling and Biodegradable FADs Guide. International Seafood Sustainability Foundation, Washington, D.C., USA.

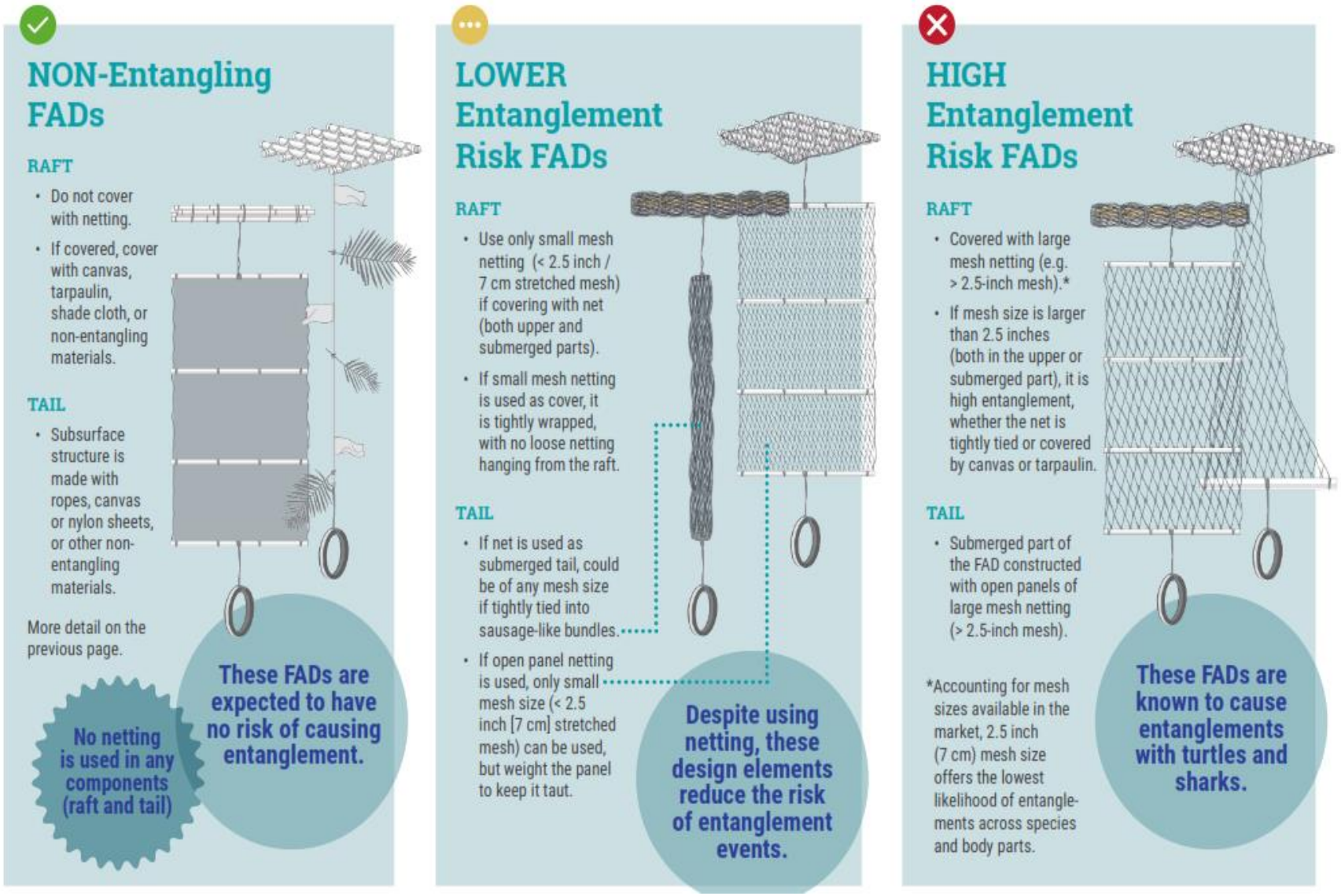
GUIDELINES FOR NON-ENTANGLING AND BIODEGRADABLE FAD MATERIALS[2]

FAD Structure	NON-ENTANGLING	BIODEGRADABLE
General:	✓ 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	✓ To the extent of possible, the surface structure should not be covered with netting or meshed materials (to reduce entanglement of turtles). 	✓ 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.  ✓ 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. 

[2] 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 are highly encouraged*