

IOTC – 3rd AD HOC WORKING GROUP ON FAD
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Update on BIODEGRADABLE dFADS: CURRENT STATUS AND PROSPECTS

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 - ☐ **Classification**



ICCAT – Rec. 21-01

- When designing dFADs the use of biodegradable materials should be prioritized.
- Endeavour that as of January 2022 all dFADs deployed are non-entangling, and constructed from biodegradable materials, including non-plastics, with the exception of materials used in the construction of dFAD tracking buoys



IOTC – Res 19/02:

- The use of natural or biodegradable materials in dFAD construction should be promoted.
- Transitioning to the use of biodegradable dFADs, with the exception of materials used for the instrumented buoys, by their flag vessel is proposed from 1 January 2022.
- Non-meshed material is permitted for surface/sub-surface constructions.



IATTC – C-19-01 / C-21-04

- To reduce the amount of synthetic marine debris, the use of natural or biodegradable materials (such as hessian canvas, hemp ropes, etc.) for drifting dFADs should be promoted.
- The use of biodegradable materials in new and improved dFADs and the gradual phasing out of FAD designs that do not mitigate the entanglement



WCPFC – CMM 21-01

- To reduce the amount of synthetic marine debris, the use of natural or biodegradable materials for dFADs should be promoted.
- The use of non-plastic and biodegradable materials in the construction of dFADs is encouraged.
- Non-meshed material is permitted for surface/sub-surface constructions from 1 January 2024.

Biodegradable dFADs: current status and prospects

Biodegradable dFADs definition

IOTC FAD WG02 - Biodegradable dFAD definition (Zudaire et al., 2020):

“A biodegradable dFAD would be composed of non-netting form renewable lignocellulosic materials (i.e., plant dry matter - here describe as natural material) and/or bio-based biodegradable plastic compounds, prioritizing those materials that comply with international relevant standards or certification labels for plastic compostability in marine environments. In addition, the substances resulting from the degradation of these materials should not be toxic for the marine and coastal ecosystems or include heavy metals in their composition. This definition does not apply to electronic buoys attached to dFADs to track them.”

IATTC 6th FAD Working group produced definition:

“Non-synthetic materials¹ and/or bio-based alternatives that are consistent with international standards² for materials that are biodegradable in marine environments. The components resulting from the degradation of these materials should not be damaging to the marine and coastal ecosystems or include heavy metals or plastics in their composition.”

¹For example, plant-based materials such as cotton, jute, manila hemp (abaca), bamboo, or animal-based such as leather, wool, lard.

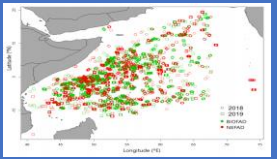
²International standards such as ASTM D6691, D7881, TUV Austria, European or any such standards approved by the Members of the IATTC

IATTC staff recommended definition to the SAC (SAC-13-14 CORR.):

“A biodegradable FAD is composed of non-netting from organic materials and/or bio-based alternatives certified by international standards as biodegradable in marine environments”.

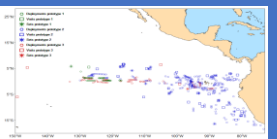
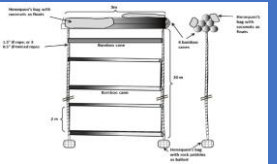
PAST LARGE-SCALE TRIALS

BIOFAD – IO (2017-2019)



- 771 BIOFAD deployed
- 3 tested models
- Raft and ropes biodegradable (except floats & weight)
- 40-81% less synthetic material.
- 1-50% weight reduction
- Lifespan > 365 days

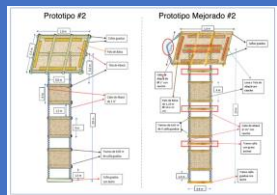
NEDs – EPO (2018-2021)



- 715 NEDs deployed
- 3 tested models
- FAD all biodegradable
- Lifespan > 244 days

[FAD-06-02 - Biodegradable FADs project report and staff's recommendations](#)

Eco-FADs – EPO (2018-2021)



- > 1400 Eco-FADs deployed
- TUNACONS fleet
- 2 tested models
- FAD all biodegradable
- Lifespan > 100 days
- TUNACONS deploying 20% Eco-FADs

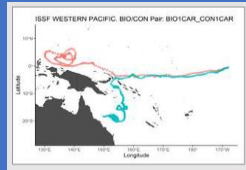
[INF-C. Implementation of biodegradable FADs in the Eastern Pacific Ocean](#)

Biodegradable dFADs: current status and prospects

Past, present and future actions

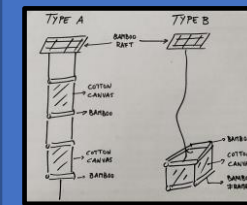
ONGOING LARGE-SCALE TRIALS

JellyFAD – WCPO (2020-2022)



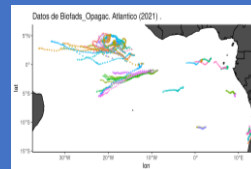
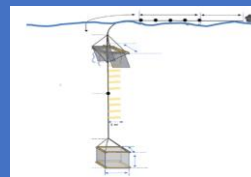
- 100 JellyFAD deployed
- CFC fleet
- 2 tested models of JellyFAD
- Tail all biodegradable
- Lifespan > 331 days

JellyFAD – AO (2018-2021)



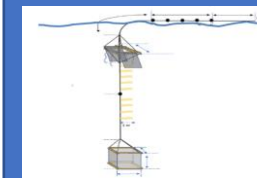
- 130 JellyFAD deployed
- Ghanaian fleet
- 2 models of JellyFAD
- Raft and ropes biodegradable (except floats & weight)
- Lifespan > ?? days

JellyFAD – AO (2021-2022)



- 350 BIOFAD to deploy
- OPAGAC fleet
- 1 model of JellyFAD
- Raft and ropes biodegradable (except floats & weight)
- Lifespan > ?? días

JellyFAD – EPO (2020-2022)



- 500 JellyFADs deployed
- UGAVI fleet
- 1 tested model
- Raft and ropes biodegradable (except floats & weight)
- Lifespan > 180 days

More information on ongoing project on JellyFAD in Moreno et al., 2022 ([INF-B. Jelly-FAD A paradigm shift in bio-FAD design](#))

Biodegradable dFADs: current status and prospects

Biodegradable dFAD implementation: approach

- ❑ Agreed biodegradable definition by t-RFMOs.
- ❑ Further research on natural and synthetic materials that meet the biodegradable definition is required.
- ❑ Different levels/categories of biodegradability of biodegradable dFADs,
- ❑ A stepwise process, including a timeline, towards the implementation of fully biodegradable dFADs should be considered:
 - ❑ As a first step, use of a minimum proportion (i.e., determined by the percent of total weight or surface) of biodegradable material or the requirement of biodegradable materials for the construction of certain dFAD parts.
 - ❑ Progressively, as soon as materials become available, the % of biodegradability should be increased for the construction of other parts of the dFADs targeting 100% biodegradability for the dFAD as per biodegradable definition above.
- ❑ Gradual modification of current dFAD design at a short term.

Biodegradable dFADs: current status and prospects

Biodegradable dFAD implementation: approach

IATTC 6th FAD Working group produced recommendation on biodegradable dFAD categories:

The different categories to be considered in this gradual implementation process are (These definitions do not apply to electronic buoys attached to FADs to track them):

- ✓ Category I. The FAD is made of 100% biodegradable materials.
- ✓ Category II. The FAD is made of 100% biodegradable materials except for plastic-based flotation components (e.g., plastic buoys, foam, purse-seine corks).
- ✓ Category III. The subsurface part of the FAD is made of 100% biodegradable materials, whereas the surface part and any flotation components contain non-biodegradable materials (e.g., synthetic raffia, metallic frame, plastic floats, nylon ropes).
- ✓ Category IV. The subsurface part of the FAD contains non-biodegradable materials, whereas the surface part is made of 100% biodegradable materials, except for, possibly, flotation components.
- ✓ Category V. The surface and subsurface parts of the FAD contain non-biodegradable materials.