SFACT submission to 3rd IOTC ad hoc Working Group on FADs (WGFAD03)

Evidence that shows that biodegradability of FADs is achievable

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Context

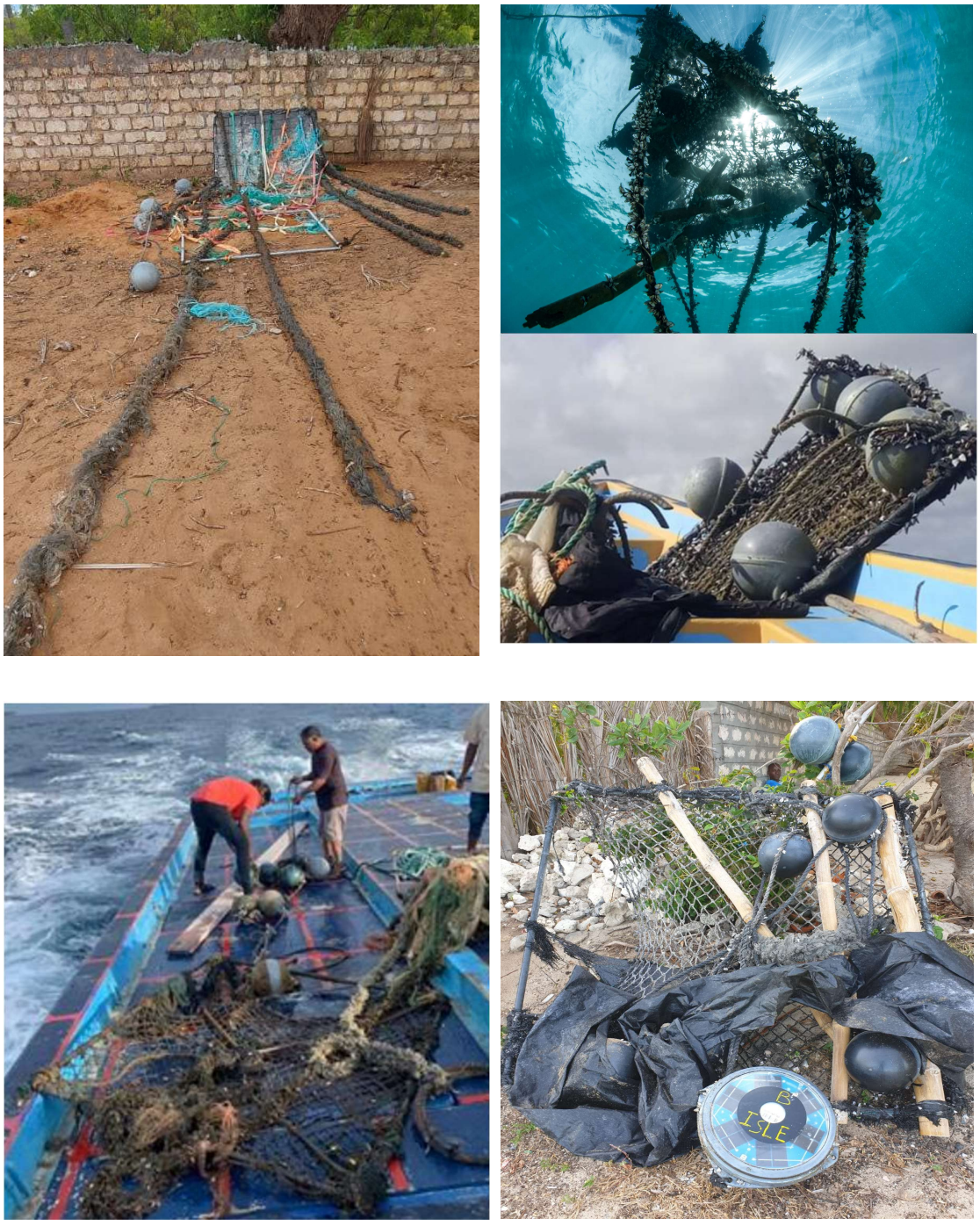
Through this paper, SFACT summarizes the opportunity for purse seine fleets to reduce the impacts that their drifting Fish Aggregating Devices (dFADs) are having on marine ecosystems by constructing these devices using biodegradable materials. Fishers operating in open ocean areas have long known that fish congregate around natural debris and flotsam, such as tree stumps and other natural materials. Natural flotsam historically served the role of dFADs before the purse seine tuna fishing industry commercialized dFAD production and deployment to improve the efficiency of their fishing operations. In doing so, they started using more synthetic materials in dFAD designs as a means of minimizing dFAD costs, promoting their durability and providing a means of reusing their old nets.

Fishing gears represent some of the most dangerous forms of plastic pollution. For example, ghost fishing impacts, caused largely by synthetic netting used in dFAD designs, has previously been estimated to globally kill over two million silky sharks per year (Filmalter *et al* 2013). Back in 2015, a study suggested that over 120,000 dFADs were being deployed annually (Uishoda *et al.,* 2015). The authors regarded that number to likely be an underestimate, and the use of dFADs has likely increased globally since. Of this 120,000, very few are estimated to be recovered. In the WCPFC region, the only region where such assessments have been done (Banks and Zaharia, 2020), dFAD recovery rates are predicted to be as low as 9.1%, highlighting how frequently these satellite tracked devices are lost, discarded or abandoned. The individual beached weight of each of these devices is estimated to be over one tonne and the high cost of cleaning up this pollution, dominated by such fishing materials (Burt *et al.*, 2020), is often left to developing coastal states. The legality of current dFAD operations has also now been questioned by multiple peer reviewed publications (Gomez *et al.* 2020; Churchill, 2021) and this is driving global calls to only permit fully biodegradable and non-entangling dFAD designs and, within the IOTC, to adopt a Polluter Pays Principle (Purves *et al.,* 2021).

Recent submissions to the IOTC Compliance Committee, such as IOTC-2022-CoC19-INF04 (IOTC, 2022a) and IOTC-2022-CoC19-INF03_Rev2 (IOTC, 2022b) suggest that the proportion of biodegradable materials currently used in the construction of dFADs in the Indian Ocean remains low, despite 15 years of research into biodegradable dFAD designs (Moreno et al., 2017). This is not only a concern in the Indian Ocean, but seems to be a trend in all regions where purse seiners deploy dFADs. In the WCPFC area, less than 2% of dFADs are made of entirely natural materials (Escalle et al., 2018; Hanich

et al., 2019). Pairing the many plastics now used in dFAD design with the below findings emphasizes the scale of pollution concerns around current dFAD use.

Figure 1: *Photographs of dFADs recently recovered within the Indian Ocean region with harmful non-biodegradable components in their designs*



Evidencing the opportunity

Biodegradable materials have been used by fisheries and other maritime industries for centuries. These materials have also proven their ability to exceed the longevity requirement of around one year expected of dFADs by the purse seine industry, with biodegradable dFADs deployed in the Indian Ocean actually lasting up to 483 days (Basurko *et al.* 2020). The results of multiple at sea tests have also evidenced that the use of biodegradable materials does not reduce the fish aggregation effectiveness of dFADs, or the catch made around them within the Indian Ocean and elsewhere (Basurko *et al.* 2020 ; Zudaire *et al.* 2020; IATTC, 2020). Biodegradable rope designs have also proven their applicability to dFAD designs in multiple instances, which can also reduce the length of time during which the ropes attached to dFADs can remain an entanglement risk as they loosen over time at sea.

Only using biodegradable materials in dFAD design will also deal with concerns that the current use of dFADs constitutes illegal dumping under international marine pollution laws such as MARPOL V and the London Convention. Removing synthetic polluting and entangling materials from dFAD designs would also align with obligations under the UNFSA, UNCLOS and position statements made by the EU with regards to mitigating the impacts of FADs.

The use of 100% biodegradable dFADs has been successfully tested in the Eastern Pacific Ocean through efforts of TUNACONS since 2017. Their designs use locally available materials as much as possible and continue refining their designs and treatments of materials. Their successes provide clear evidence that 100% biodegradable dFAD construction is totally possible and these designs function well. The main requirement to achieve such successes is commitments from the industry to make the overdue conversion to 100% biodegradable dFAD designs.

While there are current initiatives proposing solutions to the pollution and other issues related to current dFAD designs, in fact the greatest evidence of biodegradable dFAD opportunities still comes from the past. Many natural materials have been replaced by synthetics over the years across a myriad of industries, while converting back to biodegradable options is a common trend as the world population becomes increasingly aware of, and concerned by, pollution issues. There is a broad selection of natural fibers that are already used to make ropes and sacks, the strength and durability of which can be remarkable. Blends of cotton and sisal rope have also proven their applicability in dFAD designs resulting in a suitable lifetime durability (Moreno *et al.* 2017). Buoys used to be made of glass and then lasted multiple lifetimes while wood and bamboo are proven materials for constructing boats and other maritime structures. Considering that wooden boats sailed the global seas for centuries there is no reason such natural and biodegradable materials cannot be used to keep dFADs in operation for a year or more.

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