AUGUST 2021

FISH AGGREGATING DEVICES (FADs) IN RESPONSIBLE TUNA FISHERIES

BLUE MARINE FOUNDATION

INTRODUCTION

6 MAY 2021

14 EXPERT SPEAKERS

HOSTED BY THE BLUE MARINE FOUNDATION

Fish Aggregating Devices, or FADs, are a fishing tool used primarily by purse seine tuna fisheries. A FAD constitutes a quantity of floating material that is set out at sea, around which marine species such as tuna congregate. Fish attracted to FADs can become easy targets for encircling purse seine nets. FADs can be drifting (dFADs) or anchored (aFADs).

The use of FADs, especially dFADs, has increased rapidly in the last three decades. It is estimated that well over a hundred thousand dFADs are deployed in purse seine tuna fisheries around the world each year. These dFADs generally consist of a floating raft, submerged materials that can extend to depths of 100 metres, and a satellite buoy that allows fishing vessels to monitor the FAD from afar. These days, many dFADs are tracked by satellites, allowing the fishing vessels that deploy them to return at a later date to retrieve their FADs and gather the fish that have accumulated beneath them.

However, the use of FADs is controversial. There are legal uncertainties surrounding liability for dFADs, especially if they drift into restricted waters or damage ecosystems. The use of dFADs is coming under increasing scrutiny for its effects on ecosystems, including high levels of bycatch of endangered and protected marine species, the harvesting of large volumes of juvenile fish, and the contribution to ocean pollution and the associated threats to sensitive coastal habitats. There are also issues surrounding transparency, and how to track and certify the use of dFADs in a responsible manner. This leads to implications for how markets respond to catches from FAD or FAD-free fisheries.

This report details the main points of an online symposium, hosted by the Blue Marine Foundation, that took place on 6 May 2021 and featured presentations from 14 expert speakers. Speakers outlined the issues and challenges surrounding FADs in tuna fisheries, as well as possible solutions for the future.

SECTION ONE

ARE FADs LEGAL?

In 2015, it was estimated that up to 121,000 dFADs were deployed annually, with this figure likely to have risen since then. It is estimated that 30 per cent of dFADs deployed are lost or deliberately abandoned, 40 per cent are stolen or pirated, and only 30 per cent of deployed dFADs remain available to be monitored and set upon. Drifting FAD ownership is not clearly established, which makes any legal ramifications surrounding dFAD use and misuse difficult to monitor and enforce.

Image left Divers swimming below a FAD.

DRIFTING FADS ARE NOT EASY TO TRACK, WHICH MAKES IT DIFFICULT TO PROSECUTE VESSEL OWNERS WHO ARE BELIEVED TO HAVE CONTRAVENED MARPOL.

THE IUU NATURE OF FADS

Presented by Guillermo Gomez, Gomez-Hall Associates

A recent paper by Gomez et al. investigated the illegal, unreported and unregulated (IUU) nature of dFADs and the implications for tuna management and markets. The paper concluded that dFADs do qualify as 'fishing', meaning that, like other fishing practices, they could become IUU if they drift on an unauthorized basis into neighbouring exclusive economic zones (EEZs), marine protected areas (MPAs) or other closed fishing sites, or if they contravene fishing agreements or conservation measures. With this in mind, it was estimated that 53-89 per cent of purse seine tuna entering the world's markets could be the product of IUU FAD fishing operations.

The paper stated that tuna regional fisheries management organisations (RFMOs) are not effectively monitoring dFADs, given the limited data provided. FADs can be used responsibly, but only through transparent ownership, tracking, and monitoring. The paper made a number of recommendations, such as increased observer coverage, establishment of a FAD registry, and access to vessel monitoring system (VMS) data as part of a tracing process for FAD-related activity.

Retailers typically work to avoid sourcing IUU products. The paper recommended that retailers should prioritise sourcing tuna from pole and line fisheries, non-FAD fisheries, or fish caught around RFMO-registered FADs that are closely monitored. It recommended that the Marine Stewardship Council (MSC) should push RFMOs to establish FAD registries as part of the assessment and certification process.

LEGAL IMPLICATIONS OF POLLUTION AND HAZARDS CAUSED BY FADS

Presented by Professor Robin Churchill, University of Dundee

A recent paper by Professor Robin Churchill investigated whether drifting FADs contravene international marine pollution law. The paper analysed MARPOL, the treaty that regulates pollution from virtually all ships. Annex V of MARPOL deals with the prevention of pollution by garbage, including a complete prohibition on discharging plastics.

Where a fishing vessel retrieves a dFAD, there is no breach of MARPOL. However, if a vessel abandons a dFAD or fails to take all reasonable precautions to prevent its loss, there will definitely be a violation of MARPOL if the dFAD contains plastic. Even if it does not, it will nevertheless likely constitute 'garbage' for the purposes of MARPOL, and therefore its abandonment or loss (if reasonable precautions have not been taken) will also be a breach. Traditionally, dFADs have contained plastic, but now RFMOs are encouraging them to be made of biodegradable materials.

Drifting FADs are not easy to track, which makes it difficult to prosecute vessel owners who are believed to have contravened MARPOL. The paper notes a number of measures which do or could assist in monitoring for possible breaches of MARPOL. They include:

- The use of observers. Currently all relevant tuna RFMOs oblige purse seine vessels to carry observers.
- Marking a FAD so that its owner can be identified. All tuna RFMOs impose such a requirement.
- Reporting the loss of a FAD to the vessel's flag State. This is currently required by ICCAT and IOTC, and encouraged by the WCPFC.
- Recording the loss of a FAD in the vessel's logbook. This is required by ICCAT and IOTC.
- Reporting by coastal States of FADs washed up on their beaches to the relevant RFMO (and flag State where known).

CASE STUDY

KENYA

Presented by Stephen Ndegwa, Assistant Director of Fisheries, Kenya

Off Kenya's coast, foreign purse seiners dominate the tuna fisheries. As well as fishing tuna at unsustainable levels, these vessels are subsidised by their home countries, an option not available to local Kenyan fishermen. These vessels commonly use drifting FADs, which lead to catches containing a high proportion of juveniles, threatening the longevity of stocks like yellowfin tuna in the Indian Ocean.

Kenya has 14,000 fishermen, and 6,000 more dependent on fishing. Fishermen have reported major decreases in catches of certain species, particularly larger pelagics, since the start of the century. This threatens the economy and wellbeing of entire coastal communities.

Should the already-overfished Indian Ocean tropical tuna stocks collapse completely, the subsidised distant water purse seine fleets will be able to simply pick up and move their efforts to another ocean, while local small-scale Kenyan fishers will be left with nothing.

There is a call for a regional agreement to reduce the use of dFADs and limit the use of subsidies of industrial distant water fleets for the wellbeing of fish stocks and the coastal communities that depend on them.

Image right Tuna fishermen in Kenya.
Credit: Vivienne Evans

WHEN IS A DFAD FISHING?

Presented by Professor Quentin Hanich, University of Wollongong

Drifting FADs have proliferated in recent decades. A 2019 case study by Hanich et al. of the Western and Central Pacific Fisheries Commission (WCPFC), home to the world's largest tuna fishery, was undertaken to determine state responsibilities. They found that high densities of dFADs drifting through closed areas, such as the Phoenix Islands Protected Area in Kiribati, raised important questions regarding definitions and responsibility.

Analysis of international agreements and operational practices concluded that dFADs in the WCPFC should be regarded as "fishing" from the moment they are deployed, leading to State obligations to monitor, control and report them throughout their life cycle; from the point of deployment, through their drift, to the point of capture.

The study identified three recommendations to strengthen regional management:

- implement regional dFAD monitoring systems;
- control deployment of dFADS, increasing recovery and minimising loss; and
- define appropriate responses for dFADs drifting into national/ closed waters without a licence.

ANALYSIS OF INTERNATIONAL AGREEMENTS AND OPERATIONAL PRACTICES CONCLUDED THAT DFADS IN THE WCPFC SHOULD BE REGARDED AS "FISHING" FROM THE MOMENT THEY ARE DEPLOYED.

MPACTS OF DFADS ON MPAS

Presented by David Curnick, Zoological Society of London

The effects of dFADs on marine protected areas can be often overlooked, partly because of the challenges involved in monitoring them. Drifting FADs present numerous risks to MPA ecosystems, including bycatch and entanglement, physical damage to sensitive habitats, and the import or export of biomass to and from MPAs.

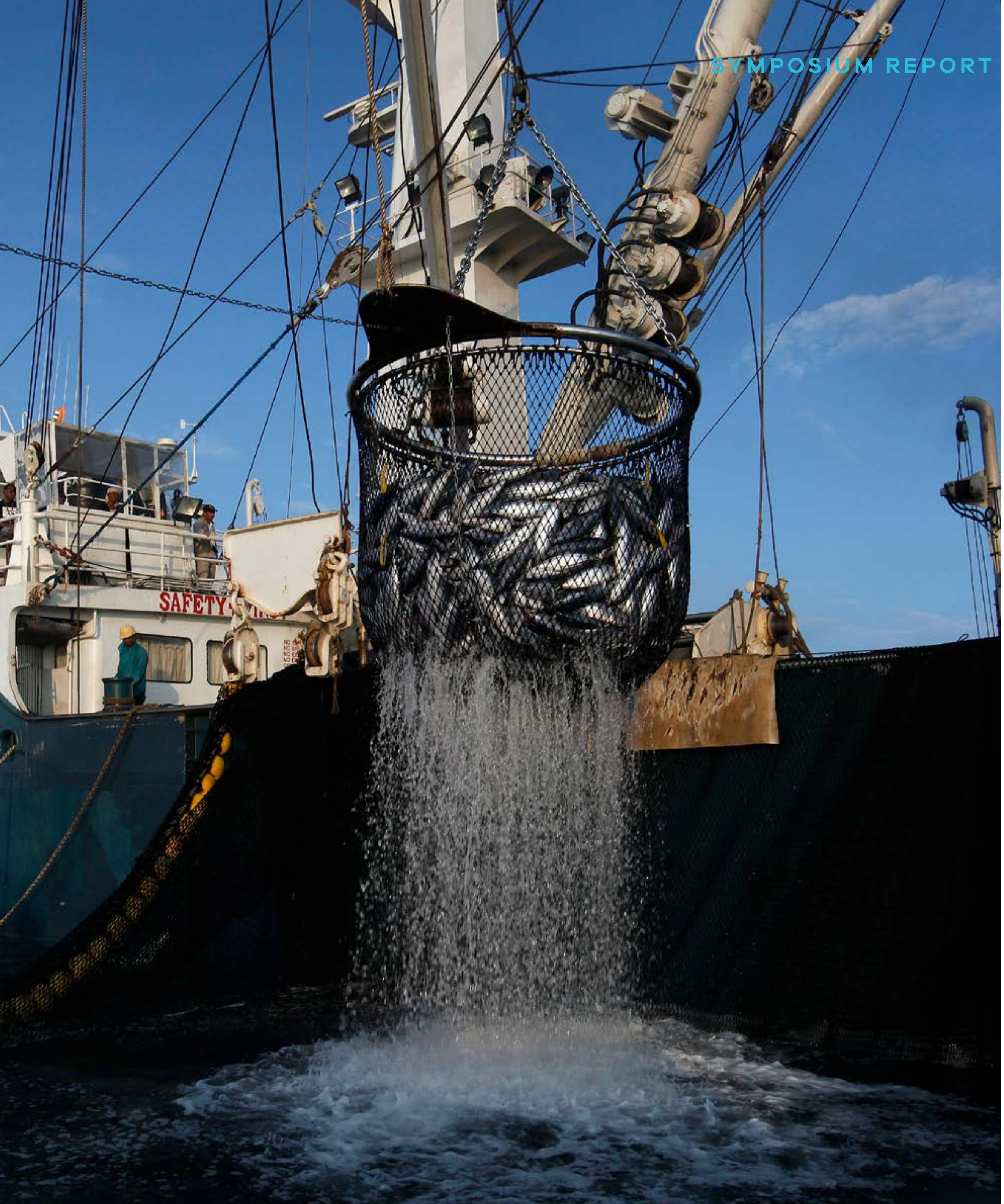
A recent study by Curnick et al. modelled the movement of dFADs in the large MPA surrounding the Chagos Archipelago in the central Indian Ocean. The study modelled the movement and impacts of dFADs as they drift through the MPA, including their transition time and risk of beaching.

The study found added complexities – for instance, that prevailing currents mean that dFADs deployed east of the MPA are more likely to beach. Some deployment areas are also especially likely to lead to aggregation, meaning that they could be consistently targeted by fishers. Another study found that, shark catch rates were twice as high in dFAD sets versus fishing sets on free-swimming schools of fish, and silky sharks can comprise 95 per cent of elasmobranch bycatch.

The study by Curnick et al. provides information for managers to allocate resources effectively to tackle dFADs in this area. Suggested next steps include the consideration of other gear types, an investigation into the behaviour of fishers on the perimeter of the MPA, and a focus on the implications for regional management.

Image far left A drifting fish aggregating device

Image left Tuna caught in a purse seine net. Credit: Alex Hofford/ Greenpeace



SECTION TWO

EFFECTS OF FADs ON ECOSYSTEMS

The use of FADs in tuna fisheries has seen a sharp rise in recent decades. By some estimates, around 80 per cent of purse seine fleets' tuna catches are associated with dFADs. There is a need to examine the extent to which drifting FADs present bycatch risks, invoke behavioural changes, and lead to habitat modification both in the open ocean and within coastal ecosystems.

Some experts advocate for the removal of FAD fishing altogether. If stocks are allowed to recover, purse seine and longline fisheries could ultimately benefit from the elimination of FAD fishing and the increased economic viability of fishing on free-swimming schools.

Image left A purse seine brailer bringing tuna on board. Credit: Alex Hofford/Greenpeace

THE EU AND THE TUNA INDUSTRY PAY VERY LITTLE IN TERMS OF 'ENVIRONMENTAL RECOMPENSE' RELATIVE TO PROFITS EARNED FROM THESE ACTIVITIES.

FADS AND MARINE POLLUTION

Presented by April Burt, University of Oxford

The Seychelles islands lie between two major current systems and accumulate significant quantities of marine plastic pollution as a result. Organisations in the Seychelles are quantifying this marine pollution, the majority of which comes from the industrial fishing industry. Drifting FADs arriving in the Aldabra reserve, a UNESCO Heritage Site, become entangled on coral reefs and mangrove forests, but most wash up along the coast, clogging important turtle nesting sites. This waste has other ecological impacts, such as microplastic pollution and ghost fishing, with drifting FADs responsible for the deaths of between 500,000 and one million silky sharks every year in the Indian Ocean.

A large-scale clean-up in 2019 removed 25 tonnes of waste from Aldabra, representing an estimated 5 per cent of total waste accumulated, at a cost of $8,900 per tonne. Removal of this waste is very costly in terms of time and resources, and is destined for landfill, imposing a high toll on the Seychelles. Further calculations show that around $1 million is needed per year to keep up with clean-up costs on Aldabra.

Various clean-ups have found dFADs with identification codes indicating they originated from purse seiners operating in the Seychelles, including from Spanish-flagged vessels. The EU and the tuna industry pay very little in terms of 'environmental recompense' relative to profits earned from these activities. Even if payments were sufficient to support clean-up operations, there are still many little-understood environmental impacts of FADs. It is therefore argued that the complete removal of dFAD use is the best strategy for the environmental health of the Seychelles EEZ.

Image top A turtle swimming near a dFAD. Credit: Alex Hofford/ Greenpeace

Image right A beached FAD collected in the Seychelles. Credit: Nature Seychelles

THE EFFECTS OF FADS ON THREATENED MARINE SPECIES

Presented by Professor Boris Worm, Dalhousie University

Drifting FADs can lead to significant bycatch of non-target species such as sharks and turtles. Observer data has recorded a large increase in reported bycatch of sharks on dFADs and there has been a steady increase in dFAD bycatch events, especially in the Indian Ocean where dFAD use is more pronounced.

There is also believed to be significant unreported bycatch associated with dFADs, due to entanglement, with one study suggesting that total mortality associated with entanglement could be the same order of magnitude or worse than the reported catch. It highlighted that the entanglement mortality of silky sharks in the Indian Ocean was 5-10 times that of known bycatch from the region's purse seine fleet. Estimates of entanglement from a single ocean are similar to those of the entire catch of silky sharks from all fisheries.

Other finfish are also affected, like oceanic triggerfish which can be used to differentiate FAD-associated tuna from non-FAD associated tuna catches. Mahi mahi and bullet tuna are also common FAD bycatch species, with incidences of bycatch increasing over time. Turtles, manta rays, dolphins, and sea lions may also be at risk from dFADs.

Proposed solutions to mitigate bycatch risk include:

- for sharks – mandating live releases, implementing finning bans, and banning the use of hanging nets in FADs (which, though adopted by several tuna RFMOs, remains difficult to enforce due to a lack of reliable monitoring);
- for manta rays and whale sharks – the use of avoidance and escape panels in purse seine nets to enable these large species to escape unharmed; and
- for turtles: the use of non-entangling materials.

When abundance is restored, FADs are not needed. One case study of the Galapagos marine reserve indicated that effective protected areas lead to spillover of restored stocks, resulting in free school fishing becoming viable again. The establishment and effective management of MPAs could be an effective tool in promoting a shift away from FADs.

IT HIGHLIGHTED THAT THE ENTANGLEMENT MORTALITY OF SILKY SHARKS IN THE INDIAN OCEAN WAS 5-10 TIMES THAT OF KNOWN BYCATCH FROM THE REGION'S PURSE SEINE FLEET.

Balderson and Martin described a shift towards 'non-entangling' dFADs by the fishing industry but acknowledge that they still pose a threat to coral reefs. Sea turtles and sharks are particularly vulnerable to entanglement. Tuna fisheries are also affected, with the average yield per recruit reduced as a result of the increased catches of juvenile bigeye and yellowfin tuna that accumulate beneath dFADs.

Given that mortalities are imperfectly reported, inadequately monitored and poorly understood, the precautionary approach should be adopted, especially for highly susceptible endangered, threatened and protected (ETP) species like silky sharks.

Image above A silky shark

CASE STUDY

THE SEYCHELLES

Presented by Dr Nirmal Shah, Nature Seychelles

Nature Seychelles, one of the islands' largest and oldest environment NGO, states that dFAD fishing represents a major double standard in the Indian Ocean. European-origin fishing vessels commonly deploy dFADs, which catch high proportions of juvenile tuna, while the Seychelles has regulations preventing their own small-scale fishers from catching juveniles. The EU fleet is working against sustainability principles and undermines local efforts to conserve stocks and mitigate bycatch of sensitive species.

In 2015, the IOTC declared that yellowfin tuna was deemed to be overfished and in need of stock rebuilding. Since then, an estimated 100 million juvenile yellowfin tuna have been caught. In addition to catching millions of juvenile tuna, drifting FADs also endanger turtles which are protected in the Seychelles.

The tuna industry is extremely important to the Seychelles, so ensuring its sustainability is imperative. Recommendations include promoting FAD-free tuna to retailers and consumers, ensuring that dFADs are tagged and licensed so owners can be held accountable, and putting a carbon tax on distant water fishing organisations, given the high fuel consumption of foreign vessels and the importance of living tuna stocks in sequestering carbon.

Image right A Seychelles beach. Credit: Nature Seychelles

IMPACT OF FADS ON THE BEHAVIOUR AND ECOLOGY OF PELAGIC WILDLIFE

Presented by Professor Callum Roberts, University of Exeter

FADs are altering pelagic habitats across entire oceans. One study found that a higher density of FADs led to yellowfin and skipjack tuna individuals spending less time un-associated with FADs and spent longer at FADs – a clear indication of altered behaviour. It is also possible that FADs are altering migration patterns.

It has been suggested that pelagic wildlife have evolved to associate floating objects with rich prey abundance, given that floating objects naturally accumulate in near nutrient-rich terrestrial runoff. Therefore, FADs may operate as 'ecological traps' when they drift through prey-poor areas, leading predators to congregate despite little prey availability. One study suggested that oceanic triggerfish and rainbow runner fish could be especially susceptible.

Research has found that tunas in the Atlantic and Indian Oceans associated with FADs ate less, were less fat, and grew more slowly than those in free-swimming schools. This suggested that fish located alongside FADs had poorer access to food.

There is significant evidence that FADs can and do alter fish behaviour, though implications for survival and reproduction are unclear. More research is needed but, in the meantime, a reduction in FAD use should be an urgent priority for fisheries managers.

FAD USE IN THE INDIAN OCEAN

Presented by Louisa Casson, Greenpeace

The Indian Ocean is a global hotspot for dFAD use by tuna fisheries. Greenpeace investigated the high seas of the Western Indian Ocean in early 2021 and described a fundamentally unsustainable and inequitable system that threatens ocean health, local livelihoods, and food security. This included increasing dFAD use by industrial European-owned purse seiners, leading to substantially modified pelagic habitats and overfishing of some tuna populations. This was in addition to illegal large-scale drift nets and unchecked fisheries targeting new species.

A special session of the Indian Ocean Tuna Commission (IOTC) in March failed to adopt any new management measures. A proposal to reduce the use of FADs, put forward by Kenya, Maldives and Sri Lanka, was not accepted in the face of lobbying from the fishing industry (largely distant water fishing nations). This led Greenpeace to conclude that the IOTC is incapable of effective management for ocean health, calling for fundamental reform to RFMOs, and urgent progress in negotiations for a global ocean treaty to protect the high seas. They urge EU nations in particular to act more collaboratively and in line with their international commitments to sustainability.

Image right A turtle caught in a purse seine net. Credit: Alex Hofford/ Greenpeace

THERE IS SIGNIFICANT EVIDENCE THAT FADS CAN AND DO ALTER FISH BEHAVIOUR, THOUGH IMPLICATIONS FOR SURVIVAL AND REPRODUCTION ARE UNCLEAR.

SECTION THREE

MARKETS AND TRANSPARENCY IN FAD FISHERIES

The incidence and impacts of dFAD use can be difficult to monitor, given the scale of the open ocean and lack of transparency within the fishing industry. While many dFADs are tracked using satellites, confidentiality concerns often prevent this data from being available to those monitoring regulatory compliance. The data are also dispersed between different vessel owners and satellite manufacturers, making any broader analysis of dFAD use challenging.

Additionally, chains of custody to separate FAD-caught from non-FAD caught tuna remain challenging to define, given purse seiners often catch a mix of tuna around dFADs and free-swimming schools. FAD use can also be performed in more sustainable ways, leading to suggestions that fisheries should be treated according to their overall sustainability. Certification, namely by the MSC, has a role to play in helping retailers identify tuna caught through more sustainable means.

Image left Tuna caught in a purse seine net. Credit: Alex Hofford/ Greenpeace

MSC CERTIFICATION OF FAD-CAUGHT TUNA

Presented by Rohan Currey, Marine Stewardship Council

The Marine Stewardship Council has a significant role to play in influencing the use of FADs. As a voluntary certification programme, uptake of the MSC standard increases transparency as it encourages data sharing. It also incentivises fisheries to improve and drives research and collaboration across RFMOs. Currently, 28 per cent of the world's tuna fisheries meet the MSC standard. At the time of the symposium, only two MSC-certified tuna fisheries use drifting FADs. Nine further fisheries are under assessment for dFADs use.

The MSC standard encompasses three principles: sustainability of the stock, ecosystem impacts, and effective management, and undergoes five-yearly Fisheries Standards Reviews to allow the evolution of these requirements.

The Fishery Certification Process (FCP) was updated in 2020 because compartmentalising fishing practices was not found to promote or incentivise long-term change. Now, all fishing practices using the same gear are assessed together. The updated FCP requires all types of tuna (both FAD-caught and free-swimming school) to be assessed.

A number of areas of the MSC standard tackle impacts associated with FAD fisheries.

Bycatch assessment:

- All observed and unobserved mortality requires assessment (Principles 1 and 2), including indirect impacts on ETP species.
- Both certified dFAD fisheries have conditions aimed at improving data and management of dFAD ETP impacts

Image right A tuna purse seine vessel. Credit: Alex Hofford/ Greenpeace

Habitat assessment:

- The impact of lost and derelict FADs on vulnerable marine ecosystems (e.g. coral reefs) is assessed.
- Both the certified fisheries that use dFADs have conditions to address the impacts and uncertainties on FAD use.
- Actions focused on loss reporting and improving drifting FAD design (non-entangling and/or biodegradable) are implemented.

Ecosystem assessment:

- The potential impact of dFADs on pelagic ecosystems (e.g. ecological trap hypothesis) is assessed.
- Both certified fisheries have conditions to address ecosystem impacts associated with drifting FADs.

MSC's Ocean Stewardship Fund has awarded funding to a number of fisheries around the world to support research into FAD impacts, such as to the Echebastar Fleet and Purse Seine Skipjack Tuna fishery.

THE FISHERY CERTIFICATION PROCESS (FCP) WAS UPDATED IN 2020 BECAUSE COMPARTMENTALISING FISHING PRACTICES WAS NOT FOUND TO PROMOTE OR INCENTIVISE LONG-TERM CHANGE.

CASE STUDY

THE MALDIVES

Presented by Yaiza Dronkers Londoño, IPNLF

While anchored FADs have been used by fishing communities for centuries and continue to benefit artisanal fishers, the industrial use of drifting FADs by purse seiners has only occurred since the 1980s, mostly by distant water fishing fleets. Tuna have only become overfished since the introduction of dFADs which regularly drift through many nations EEZs without permission.

One study found that in the western and central Pacific alone, only 13 per cent of dFADs are recovered and the rest are lost or deliberately abandoned, amounting to 39,000-56,000 non-recovered dFADs every year.

In contrast, the entire Maldivian fishing fleet has just 50 anchored FADs across the very large EEZ, with a loss of around 10 per year. It is thought each purse seiner loses around 260 dFADs every year but, due to a lack of transparency, this figure is expected to be far higher. This highlights the massive difference in impact of anchored or drifting FADs.

Image right Fishermen fish near an anchored FAD in the Maldives. Credit: IPNLF

TECHNOLOGY, TRACKING AND TRANSPARENCY IN FAD FISHERIES

Presented by Bradley Soule, OceanMind

FAD use can be compared to the terrestrial practice of 'lamping', where bright lights are used to transfix deer, making them easier to kill. Even though lamping itself doesn't kill the deer, its significant effect on the efficiency of hunting means that there are many restrictions and regulations in place – though the practice still faces issues of monitoring and compliance. Given the scale and inaccessibility of the open ocean, managing and monitoring dFADs is much harder. Even the best studies, such as one that tested designs and identified options to mitigate impacts of dFADs on ecosystems in the western Indian Ocean, provide only a snapshot of the wider picture.

Technology to monitor dFADs does exist, but its application is held back by lack of data sharing. FAD tracking can use the same technology as VMS, which in some areas is established as a confidential compliance and management tool. However, there are currently only minimal requirements for sharing dFAD data. This differs from vessel positions using Automatic Identification System (AIS), which is publicly available to avoid collisions. There is an argument for confidentiality in dFAD positions, given high rates of FAD theft.

The Parties to the Nauru Agreement (PNA) represents some of the largest tuna-producing countries, and for several years has encouraged companies to voluntarily submit dFAD data. This has resulted in a substantial amount of data, but does not reach the Forum Fisheries Agency, which is responsible for monitoring. Even if it were to, there are limitations on resources for processing and analysing such quantities of data.

OceanMind uses machine learning technologies that can help process these data. From position tracking alongside logbook data, they can identify certain 'fishing' activities (such as identified in this report) that may be associated with dFAD activity. These are challenging analyses, and still require the sharing of data. Enforcement at all levels continues to be critical to ensure transparency throughout the supply chain.

CONSUMER ENGAGEMENT IN FAD FISHERIES

Presented by Alex Hofford, WildAid

WildAid proposes an international ban on dFADs, citing the environmental dangers of this type of fishing gear, and concerns about industrial fisheries being able to manage or regulate themselves effectively. WildAid urges all consumers, markets, NGOs, governments, RFMOs, the MSC and the fishing industry, to take concrete steps towards banning dFADs. They refer to a number of the studies referenced in this report to evidence their stance.

Image right A purse seine vessel bringing tuna on board. Credit: Alex Hofford/Greenpeace

ENFORCEMENT AT ALL LEVELS CONTINUES TO BE CRITICAL TO ENSURE TRANSPARENCY THROUGHOUT THE SUPPLY CHAIN.

CONCLUSION

There was broad consensus at the symposium that drifting FADs presented a number of legislative, ecological and compliance challenges in need of addressing. Through cross-sector collaboration on enacting the recommendations above, it is hoped that use of dFADs can become more effectively managed, ultimately benefiting ecosystems and people alike.

Following the successful FADs in Responsible Tuna Fisheries Symposium, the Blue Marine Foundation developed a set of minimum requirements for responsible drifting FAD use, which has since been endorsed by several other organisations. A copy of the minimum requirements document can be downloaded here.

BLUE MARINE FOUNDATION

bluemarinefoundation.com
info@bluemarinefoundation.com

South Building, Somerset House,
Strand, London WC2R 1LA