

# FADs – Are they all bad?

*By Tim Adams*

*Fisheries Management Adviser, Nauru Fisheries and Marine Resources Authority*

***An article published in the American Samoan press in 2011 calls fish aggregation devices “Beehives of the Ocean”.<sup>1</sup> It firmly makes a case for having as many fish aggregation devices (FADs) in your waters as possible (at least 200 for each large vessel) and wishes to provide balanced information in the face of the “internal and external forces that wish to ban the use of FADs”.***

***On the other side is a groundswell of popular opinion that “FADs are bad” because fishing around them leads to more unwanted fish (bycatch) and smaller tuna being caught (FADs are a haven for the young and the despised of the fishy world), therefore FADs should be banned.***

Now I can understand someone in American Samoa running the flag up for FADs — after all Pago Pago is where the fraction of the US purse-seine fleet that is US-built and US-owned lands its catch, and these vessels use FADs more than most other fleets — a characteristic they have in common with fleets that started life in the eastern Pacific.

And I can understand environmental lobbyists trying to shoot that flag down. They have seen regional fisheries commissions in other oceans serially unable to agree to measures to effectively curb tuna fisheries when over-fishing occurs. Regional tuna commissions usually lack the legal clout of national fisheries administrations, and their members generally lack unanimity of purpose. Complex, finely-tuned measures designed to maximise yield while minimising the risk of biological harm are difficult to implement under such conditions, and “blunt instruments”, such as complete bans on certain gear-types such as FADs seem to be of more immediate practical benefit.

So is this all rhetoric? On both sides?

My view is this: FADs are no more intrinsically “bad” or “good” than any other piece of fishing gear. All fishing gear is designed to make it easier for humans to catch fish. But if there are too many people catching, or if the gear is too large-scale compared with the size of the fish stock, or if the size of the fish stock is reduced because of non-fishing impacts, then *any* fishing gear can become “damaging”.

Even fishing with bare hands — for example collecting intertidal shellfish — can become a problem if over done, and if the resources being collected are not “resilient”. Consider: it is easy to pick up every last giant clam on the reef top — giant clams need to expose themselves to sunlight to survive — and giant clams are

slow-growing, erratically recruiting animals. Giant clam populations are not resilient. But some organisms are more resilient. But would you be able to catch every last trochus, with the juveniles hidden in crevices and under rocks? For the ultimate in resilience, how about trying to catch every crown of thorns starfish? Many attempts have been made to eradicate those.

FADs have real advantages under certain circumstances:

- They can minimise searching time by boat users. And if that boat is a powered boat then less fuel may be used. FADs may even make it possible to use unpowered boats — paddle or sail-powered, where an engine would otherwise be necessary to search for fish. Thus FADs can be considered “carbon-friendly”;
- Reduced searching time also means more time is available in subsistence communities — of which there are many in the Pacific Islands — for other activities, once the basic protein needs of the family have been met. Under the right circumstances, inshore FADs can be considered “development-friendly”;
- Nearshore pelagic FAD-fishing can provide alternative livelihoods and food sources for people who are trying to rehabilitate or reduce fishing effort on reef or lagoon fisheries. Under the right circumstances FADs can be considered “MPA-friendly”;
- FADs can increase the catch per unit effort for certain types of fish. Sometimes dramatically. For example a purse-seine set on a FAD or other floating object in PNA waters can yield an average of 50% more skipjack by weight, than a similar set on a free school. (This is not a hard rule: Setting purse-seine nets around FADs produces less yellowfin tuna than free school sets, and in the far western Pacific, FADs actually produce a lower tonnage of fish per set than free schools, perhaps because the fish caught around

<sup>1</sup> <http://ip-208-109-238-104.ip.secureserver.net/viewstory.php?storyid=28873>

FADs are smaller, or the purse-seine gear used around FADs in the waters of the Philippines and Indonesia is perhaps smaller-scale than the gear used to catch free schools.)

And of course FADs have disadvantages under other circumstances:

- The very increase in catch per unit of effort that improves the efficiency of fishing can more quickly contribute to overfishing if market incentives, regulatory deficiencies, and poor stock status conspire to put a fish stock in a vulnerable state. For example, purse-seine sets around FADs can catch over six times as much bigeye tuna as free-school sets;
- Purse-seine catches around FADs contain a greater number of species than sets made around free swimming schools of tuna. And since purse seiners retain only tuna, those other species become bycatch — usually discarded;
- Purse-seine FAD sets produce smaller tuna, on average, than free schools. As well as increasing the risk of recruitment overfishing (through lower spawning potential), smaller fish have a lower value per unit of weight and are sometimes unsaleable. You may catch more fish but they may not be worth as much;
- Purse-seine fishing is a surface fishing method and the community of marine creatures around FADs is much more diverse than in free schools; thus, purse-seine fishing around FADs is likely to catch more surface-swimming, non-tuna species than other fishing methods around FADs, or than purse-seine fishing on free schools of tuna. Simply put: the surface biota contains a relatively high number of vulnerable species — think air-breathing species such as turtles and marine mammals, or species feeding on sunlight-dependent organisms.

So how do we weigh the relative values and horrors of FADs in terms of these pros and cons?

The simplest way is to bear in mind that there are essentially two types of FAD, depending on who is using them, and how.

1. “Oceanic” FADs — usually freely-drifting “d-FADs”, set far from shore, and used by large-scale (in the Pacific Islands region, usually foreign) vessels fishing for tuna, usually with purse-seine nets (although pole-and-line and troll vessels can also benefit from oceanic FADs);
2. “Coastal” FADs — usually anchored or tethered “t-FADs”, set relatively close outside the reef (within outboard or canoe range), and used by artisanal, local boats fishing with hook and line, and fully using the whole range of species caught. This kind of t-FAD may also benefit tag-and-release game fishing tourism.

I will leave it up to you to decide which kind of FAD is most “sustainable”, and under what circumstances.

The important thing to remember is that FADs are used in different situations, and while FADs may have unacceptable consequences in certain fisheries, in other circumstances they may be beneficial, particularly in developing country artisanal fisheries.

## Pacific Islands action on oceanic FADs

This is probably the time to point out that the countries that are Party to the Nauru Agreement (PNA) have decided that cutting down on the use of d-FADs by industrial tuna purse seiners in the western tropical Pacific will be part of their strategy for reducing fishing mortality on bigeye tuna to the levels advised by SPC’s fishery scientists to be sustainable.

The logic is simple. A purse-seine net set on a d-FAD in PNA waters will catch on average 600% more bigeye tuna than a free-school set. Reducing d-FAD use is one of the more effective ways of reducing fishing mortality on bigeye tuna — a species that is experiencing overfishing in the western tropical Pacific — without unduly impacting catches of skipjack (the main target species). The idea is to reduce the use of FADs by purse seiners and get them fishing on free schools of skipjack — and if everybody has to follow the same rules there should be no unfairness.

This logic was also picked up by the entire membership of the Western and Central Pacific Fisheries Commission in 2008 when the Commission agreed not only to a three-month annual closed season for FADs, but to actually start the Pacific-wide ban a year ahead of PNA’s ban.

The first year with a FAD closed season — two months in 2009 — did not appear to have a huge impact. But the PNA ruling that all purse seiners in PNA waters should have an observer aboard was not yet in effect and, judging by the number of pre-dawn sets made (it is normally only useful to set a purse-seine net in the dark if it is around a d-FAD — free schools have to be spotted by eye), and the average species composition of the catch, many vessels were apparently still using FADs in defiance of the closed season agreed to by their flag states.

However, the results are now in for the second western and central Pacific purse-seine FAD closed season (July–September 2010), and this one appears to have had a significant effect. The average catch composition changed, and in addition, many vessels seem to have also reduced their FAD use before and after the closed season. The results have been considered by PNA countries that have jointly decided to increase the length of the purse-seine FAD closed season to four months in 2012, with an option to extend this up to six months in the future.

The third purse-seine FAD closed season was in effect from 1 July to 30 September 2011 and the results are being analysed with close interest.

### The future of drifting FADs

Some governments are considering a complete ban on d-FADs as one of the potential future options, if the other existing strands in the regional bigeye tuna fishing mortality reduction strategy do not produce the desired results.

These other strands include preventing purse seiners (that they licence) from fishing in the high seas to the east of the region (where bigeye tuna turn up in purse-seine nets in larger proportions than in the west), requiring full retention aboard of all small tuna caught (small bigeye were often discarded, and retention introduces an economic incentive for trying to avoid catching too many of them), as well as increasing port sampling and observer coverage (small bigeye and small yellowfin are sometimes confused in vessel reports).

However, the jury is still out. A complete purse-seine FAD ban might well be a step too far, causing disproportionate hardship to skipjack fisheries for possibly little extra gain in terms of bigeye conservation. Purse seiners are not the only vessels catching bigeye tuna. In fact, longliners catch much more. Over the past 60 years, longliners have taken around 77% of the bigeye tuna caught in the western and central Pacific, and purse seiners around 15% (with the rest being

taken by other methods such as pole-and-line fishing and trolling) (Fig. 1).

However, the purse-seine impact on bigeye has been increasing, simply because purse-seining is a relatively new fishing method in this region and has grown rapidly. Summed over the last 15 years rather than the last 60 years, the purse-seine share of the bigeye catch has jumped to 27% of the total regional bigeye catch, and longlining has dropped to 64%.

A bigeye tuna caught by a longliner is far more valuable than a bigeye tuna caught by a purse seiner. For companies or countries that run both purse seiners and longliners, it makes a lot of economic sense to require their purse seiners to avoid bigeye so they can be caught by their longliners. In addition, longlining is a smaller-scale fishing method and may be seen as a more feasible development path for the Pacific Islands private fisheries sector than purse-seining.

However, purse-seine fleets, and the PNA small island countries that are highly dependent on the rentals they obtain from access by purse seiners to their waters, might justifiably ask why they should be required to bear most of the burden of bigeye conservation when the far more numerous longline boats face much lighter restrictions. Longliners are not required to have an observer aboard every vessel during every trip, their bycatch to target species ratio is much higher than for purse seiners, their reporting compliance is much lower, and their effort levels are not limited (at least not yet).

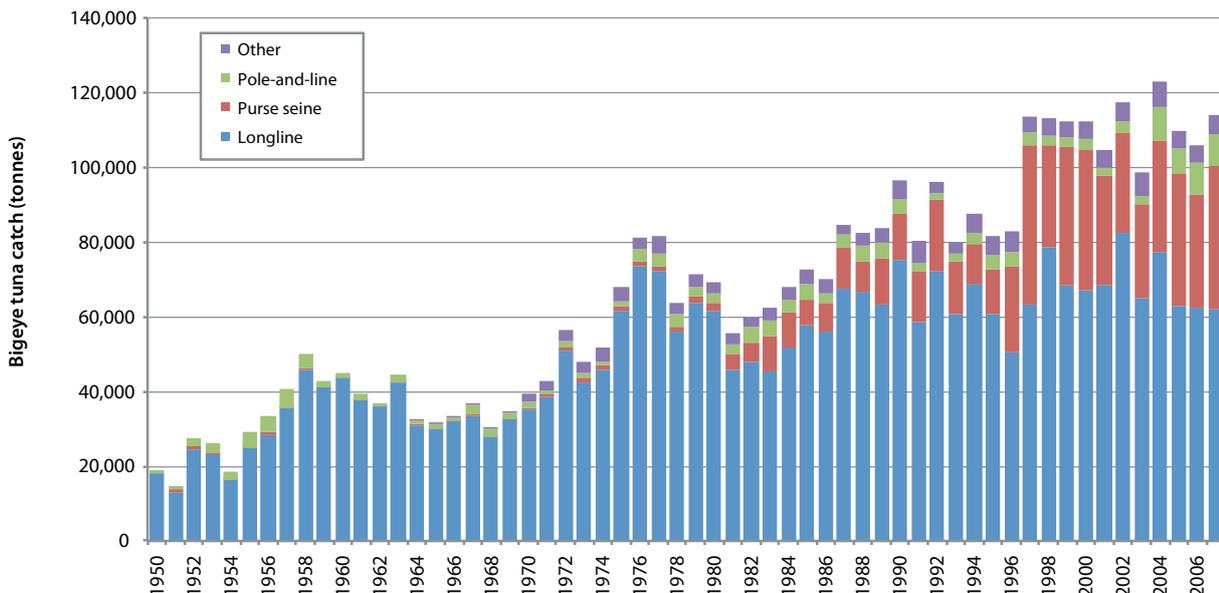


Figure 1. Annual catch (tonnes) of bigeye tuna in the western and central Pacific categorised by fishing method (Source of data: SPC Tuna Fishery Year Books).

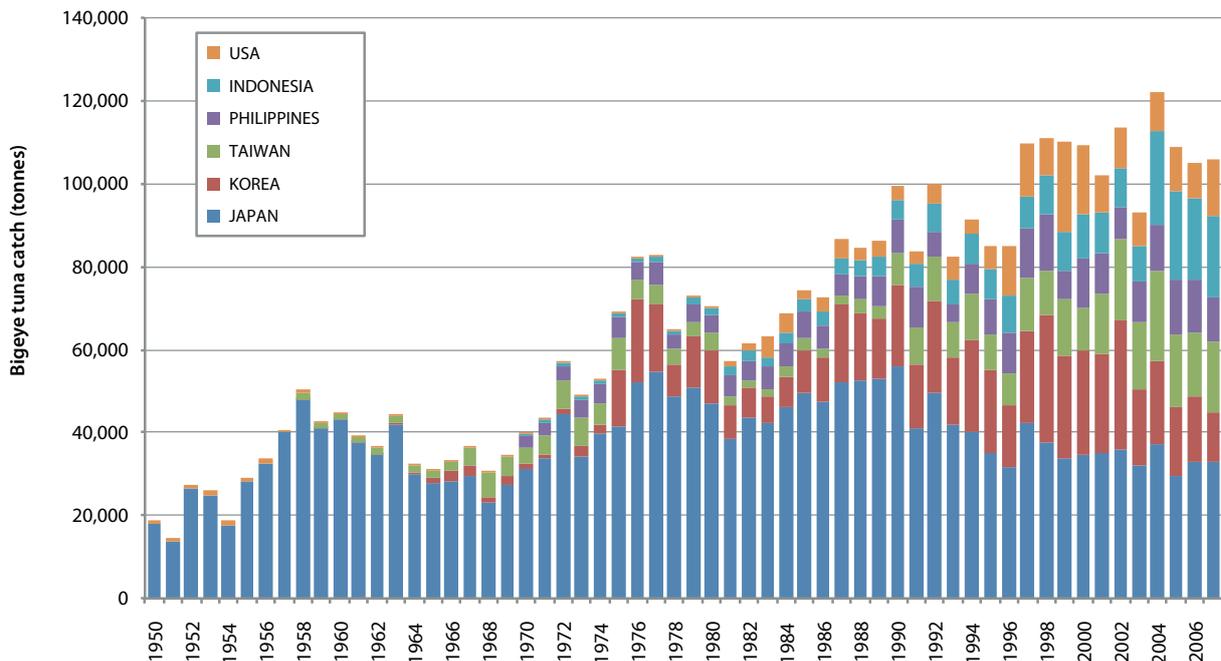


Figure 2. Annual catch of bigeye in the western and central Pacific categorised by catching vessel nationality (flag states with the top six largest catches only) (Source of data: SPC Tuna Fishery Year Books).

Whether or not further d-FAD limitations are imposed by PNA governments in PNA waters in the future, it is clear that purse-seine d-FADs need to be brought under the fisheries management umbrella alongside purse-seine vessels themselves. And this is something that is best done by agreement at the regional or subregional level. Like purse seiners, and the tuna stocks that they harvest, d-FADs are “highly migratory”. During the course of its short lifetime, a d-FAD is likely to drift through several national exclusive economic zones.

This year’s annual Meeting of the Parties to the Nauru Agreement discussed potential d-FAD management possibilities in some detail, and learned that it would be technically relatively simple to implement d-FAD tracking and reporting requirements through the existing electronic vessel monitoring system. As well as helping to better monitor and regulate d-FAD use this would also provide a quantum leap in the information available to oceanic fisheries and other scientists because many of these d-FADs not only have satellite location communicators, but also fish-finding equipment attached.

## Market forces

Another part of the PNA strategy to reduce reliance on d-FADs, and hence bigeye bycatch, by purse seiners is ecolabelling — using the carrot of the market rather than the stick of regulation. FAD-caught skipjack tuna has been excluded from the Marine Stewardship Council sustainability certification that has been granted to the PNA for skipjack caught on free schools in their waters.

With the MSC label attached, free school-caught skipjack will have a market advantage over FAD-caught skipjack from PNA waters. Purse-seine vessels that wish to obtain the price premiums and access the markets that the MSC approval unlocks will be able to apply for registration under the PNA programme, provided they are willing and able to follow PNA rules in order to qualify for the label. Strict net-to-cannery documentation and chain of custody controls are being implemented, using observers and inspectors to verify vessel, transport and cannery records, to ensure that FAD or floating object-caught fish are never mixed with free school-caught fish at any point in the supply chain.

Some worry that banning FADs will drive the price of tuna off the charts. Although it is unlikely that canned skipjack will ever command the same prices as, say, smoked wild salmon or caviar, anyone who has noticed the gourmet cachet that is attached to certain brands of fully traceable sardines, and who is aware of the increasing price trend for fisheries across the globe, knows that the day may well come when some brands of canned skipjack tuna are considered luxury items.

Is it a bad thing for Pacific Islanders if the price of cannery skipjack increases? It’s not as if Pacific Island nutrition will be affected — after all, Pacific Islanders are not dependent on locally canned tuna. They either catch their own fresh, or eat cheaper imported canned fish from the large continental-shelf fisheries at higher latitudes. And with discards now banned, a lot of very cheap tuna will increasingly be landed at Pacific Island ports. And tuna purse-seine owners are not without a

cent or two — witness the number of vessels that are currently under construction in Asia, intending to enter a Pacific Islands regional fishery that is currently very lucrative for Pacific rim businesses.

As far as I can see, an increase in the cannery buying price for skipjack has hugely more benefit for the Pacific than disadvantage. For those countries that cannot support the infrastructure necessary to run their own purse-seine vessels, a higher skipjack tuna price is going to lead to higher resource rentals per unit of catch, and at least three PNA economies are critically dependent on this source of income. For those Pacific Island countries that have their own fishing vessels, the benefits of higher catch values are obvious. And for the resource itself, a tight, well-controlled fishery, producing a highly traceable, high-quality product using reduced-bycatch fishing methods, has got to be beneficial.

Even the foreign purse-seine companies will benefit, at least those that work within regional standards and thereby on the one hand gain access to premium markets, and on the other hand avoid running foul of ever-more-efficient PNA fishery monitoring, control and surveillance measures.

Pacific Island countries with skipjack canneries, however, may worry that an increasing world price of raw material (landed skipjack tuna) will affect their economic feasibility. But if consumers are prepared to pay more for non-FAD caught skipjack, the increased cost of supply should be offset by increased retail prices. In any case, should we really be aiming for an increasingly high-volume, low-value form of production — a mechanism that is really only feasible in low-wage-rate economies or those with preferential access to large markets — or should we be trying to maximise the value of the finite natural resources available to us?

As the fisheries sector analysis for the Pacific Plan urged in 2004,<sup>2</sup> “most Pacific Island fish stocks, whether

offshore or inshore, are felt to be at their maximum safe level of production, and extra economic benefit is likely to be derived not from increasing overall fishing effort in the region but from (a) developing higher-price markets and higher-value or higher-quality products; (b) Pacific Island vessels substituting for distant water fishing vessels, or encouraging foreign vessels to land fish in Pacific Island countries for value-adding; ... Before trying to increase the economic value of fisheries and aquaculture however, it will be essential for PICTs to consolidate and sustain the value of what they currently have.”

And as the 2010 regional “Future of Pacific Islands Fisheries Study”<sup>3</sup> suggested:

“Offshore fisheries could support stable high catch rates with healthy tuna resources at levels that maximize benefits for PICTs. Effective use of sovereignty over these resources could leverage much greater economic benefits than at present. An orderly reduction of foreign access and its replacement by genuine locally based investments would see the development of competitive domestic industries. The growing Asian markets and the trend for eco-certification could create opportunities for innovative and alternative tuna products. The effective management of bycatch and the banning of discards could help supply the domestic market with fish at an affordable price.”

Restricting the use of d-FADs may have far-reaching effects.

*Source: Adapted from an article on the weblog “Gonedau – fishy musings from the Pacific Islands: A semi-personal take on fish and fisheries”, maintained by Tim Adams at <http://www.gonedau.blogspot.com>*

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<sup>2</sup> <http://www.spc.int/DigitalLibrary/Doc/FAME/Meetings/HOF/4/BP6.pdf>

<sup>3</sup> [http://www.spc.int/DigitalLibrary/Doc/FAME/Reports/Gillett\\_10\\_FutureFisheries\\_Report\\_and\\_appendices.pdf](http://www.spc.int/DigitalLibrary/Doc/FAME/Reports/Gillett_10_FutureFisheries_Report_and_appendices.pdf)