

Fish aggregating devices (FADs)

What is a FAD?

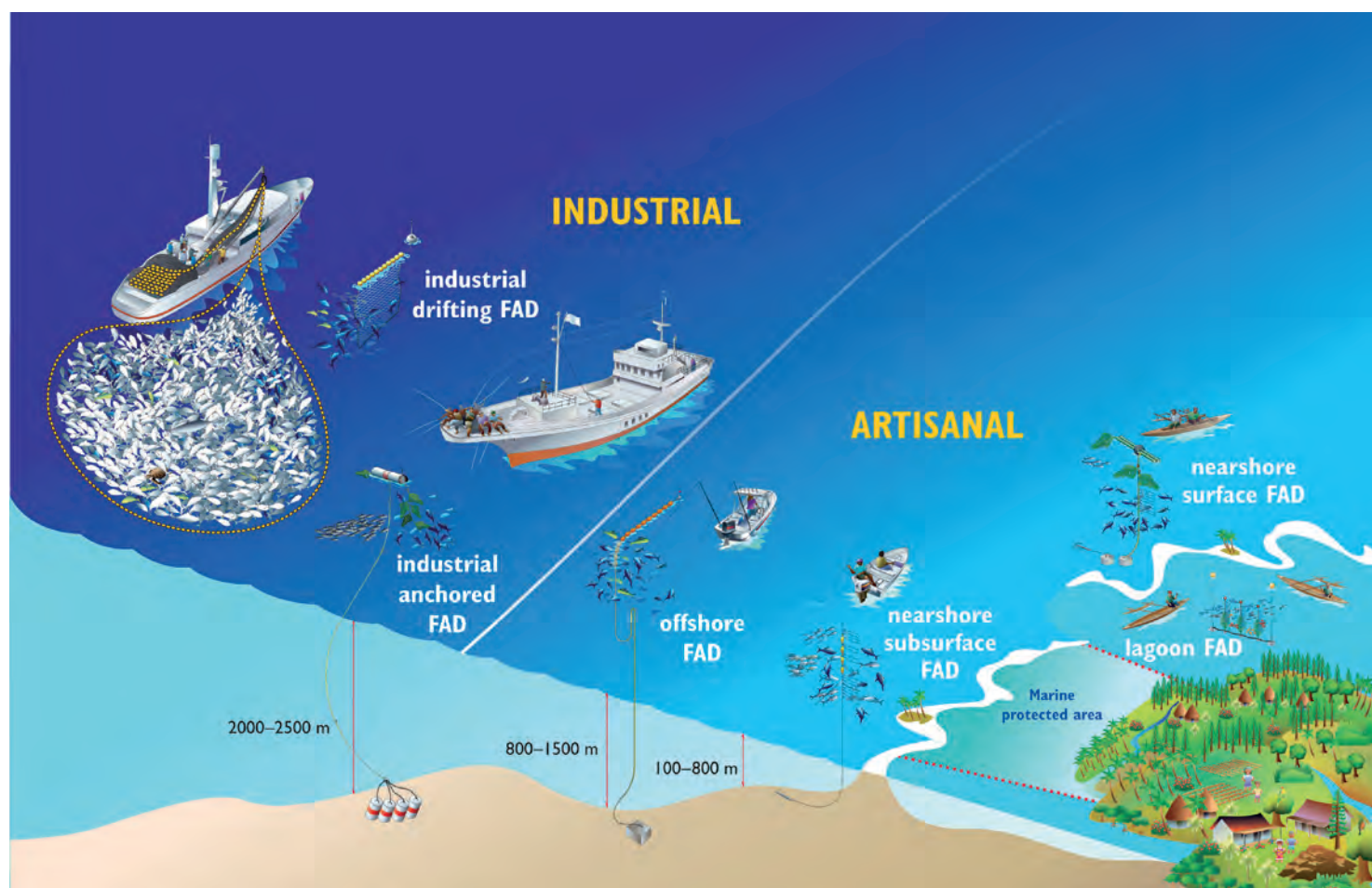
Fish aggregating devices, more commonly called FADs, are anchored or drifting objects that are put in the ocean to attract fish. Tuna and other fish gather around FADs, which makes it easier to find and catch them. Fish also aggregate under drifting logs and even whales, and rules on fishing around FADs often apply to all objects drifting on or near the sea surface, which attract fish.

Types of FADs and who uses them

There are two general categories of FADs used in the Pacific Ocean, industrial and artisanal. Table 1 describes the FAD types, user groups and catches under each general category.

Table 1. Category, types, users, objective and catch rate of FADs in the Pacific

Category	FAD types	User groups	Objective	Catch
Industrial FADs	Drifting and industrial anchored	Purse seine and pole and line fleets	Used by fishing companies in support of industrial scale vessels that target large tuna schools	High
Artisanal FADs	All anchored: offshore, nearshore (surface and subsurface), and lagoon	Subsistence, artisanal and recreational fishers	Set by government fisheries agencies to improve food security and small-scale domestic fisheries' development, including sport fishing tourism	Low



FAD types, users, location and typical depth of FADs in the Pacific.

Artisanal FADs

Artisanal FADs are used to improve the catch rate of people who catch fish to feed their families or sell in small amounts at local markets, as well as people who fish as a hobby. They are anchored within range of small motor boats and canoes and they are an important tool for food security and domestic fisheries' development. The fishing methods used, such as handline and trolling, select only the species that the fishermen want, and only a small proportion of the fish around the FAD are caught.



Artisanal fisherman displaying a yellowfin tuna caught at a nearshore FAD off Yaren, Nauru

Management recommendations for artisanal FADs

Management of artisanal FADs should improve access by communities and extend the working life of FADs. Artisanal fishers in the Pacific catch less than 5% of the tuna caught in the Western and Central Pacific Ocean (WCPO) and will need to harvest more in future for food security. Policy-based management of artisanal FADs should incorporate:

- **An increase in the number of FADs:** deploy more networks of artisanal FADs to increase the supply of fish;
- **A public awareness campaign and a code of conduct:** to explain the benefits of FADs and prevent user conflict;
- **Training:** continue and extend training programmes for fisheries officers and fishers;
- **Data:** collect catch, effort and socio-economic data to show the benefits of FADs;
- **Research in FAD technology:** resulting in low-cost FADs that can last longer (i.e. sub-surface FADs); and
- **Budget allocation:** for maintenance and replacement of FADs, and to carry out the other recommendations listed above.

Benefits of artisanal FADs

Some of the reasons artisanal FADs are deployed in the Pacific include:

- i. **Food security:** increased catch rate and improved access to tuna and other oceanic fish;
- ii. **Vessel efficiency:** increased catch rate and reduced cost of fishing;
- iii. **Coastal resource management:** transfer of fishing effort from the reef to the ocean;
- iv. **Climate change adaptation:** increased food security and resilience of coral reef ecosystems;
- v. **Tourism:** sport fishing developed around FADs; and
- vi. **Safety at sea:** improved through defined fishing zones around FADs.

Problems with artisanal FADs

Some of the problems with artisanal FADs include:

- i. **Short lifespan:** all FADs eventually break free and some are lost before the benefits are realised; others are destroyed by passing ships or are vandalised by people who do not understand their benefits;
- ii. **User conflict:** caused by overcrowding of fishers and not enough FADs in an area; and
- iii. **Budget constraints:** insufficient human and financial resources to maintain and extend FAD programmes.

Artisanal offshore FAD off Kavieng, Papua New Guinea



Industrial FADs

Industrial FADs improve the catch rate of purse seine and pole-and-line vessels that target large schools of tuna. These are commonly drifting rafts, with an electronic beacon so the fishing boat can find the FAD and sometimes sonar equipment that shows the amount of fish under it. Anchored buoys are also used in the western Pacific. FADs play an important economic role for industrial fishing fleets and their use has increased greatly in recent years. Most fishing is by purse seine – a non-selective method which catches all the fish around the FAD.

Benefits of industrial FADs

Reasons industrial FADs are deployed in the Pacific include:

- i. **Food security (global):** increased catch rate in the biggest tuna fishery in the world;
- ii. **Efficiency:** improved economic viability and fuel efficiency of fishing vessels;
- iii. **Domestic development:** small, locally based vessels that supply domestic tuna canneries are dependent on FADs; and
- iv. **Distribution of effort and license revenue:** to some EEZs where fishing on non-FAD schools is inefficient.

Problems with industrial FAD fishing (associated sets)

There is a need to manage FAD usage in industrial tuna fisheries due to some adverse impacts, including:

- i. **Increased catch of bigeye tuna:** contributing to overfishing of this species, even though it is not the target species;
- ii. **Catch of small tuna:** purse seine nets set around FADs catch more small tuna than unassociated sets. These are worth less and catching them can lead to overfishing; and
- iii. **By-catch:** purse seine by-catch is lower than in many other fisheries (e.g. longlining, prawn trawling). However, there is more by-catch in FAD sets than in non-FAD sets. Turtles and silky sharks are of particular concern.



Purse seine catch

Management recommendations for industrial FADs

Due to the problems associated with industrial FADs, sound policy and management are required. Policy-based management of industrial FADs should consider:

- **Seasonal closures:** ban industrial fishing around FADs and other floating objects for part of the year;
- **Area closures:** ban industrial fishing around FADs and other floating objects in some areas — where bigeye catches are high, or on the high seas where it may be harder to regulate FAD use;
- **TAO buoys:** ban purse seine sets on all tropical atmosphere ocean (TAO) buoys to avoid damaging them;
- **Licensing and monitoring:** introduce licensing for FADs and/or limit the number of FADs per fishing boat as a license condition, and monitor the number of FADs;
- **Economic incentives:** encourage non-FAD fishing using the willingness of buyers to pay higher prices for sustainably caught tuna; and
- **Researching alternative FAD designs and fishing practices:** find ways to reduce capture of juveniles, bigeye tuna and by-catch.



Yellowfin tuna, rainbow runner and mahi mahi in a purse seine net

Technical assistance

For assistance with artisanal FAD deployment, data collection and developing a FAD code of conduct for small scale fisheries, contact SPC's Coastal Fisheries Programme (cfpinfo@spc.int). For advice on industrial FADs and tuna fisheries management, contact the Forum Fisheries Agency (info@ffa.int).

Further reading

- Morgan, A.C. 2011. Fish aggregating devices and tuna: Impacts and management options. Washington, DC : Ocean Science Division, Pew Environmental Group.
- Hampton, J.A. 2010. Tuna fisheries status and management in the western and central Pacific Ocean. Noumea : Secretariat of the Pacific Community.
- Chapman, L. et al. 2005. Manual on fish aggregating devices (FADs): Lower cost moorings and programme management. Noumea : Secretariat of the Pacific Community



CONTACT DETAILS
Secretariat of the Pacific Community

SPC Headquarters
BP D5,
98848 Noumea Cedex,
New Caledonia
Telephone: +687 26 20 00
Fax: +687 26 38 18

SPC Suva Regional Office
Private Mail Bag,
Suva,
Fiji Islands,
Telephone: +679 337 0733
Fax: +679 377 0021

SPC North Pacific Regional Office
PO Box Q,
Kolonia, Pohnpei, 96941 FM,
Federated States of
Micronesia,
Telephone: +691 3207 523
Fax: +691 3202 725

SPC Solomon Islands
Country Office
PO Box 1468,
Honiara, Solomon Islands,
Telephone: +677 25543
+677 25574
Fax: +677 25547

Email: spc@spc.int
Website: www.spc.int