

Fact sheet: NSW Artificial Reefs & FADs

Offshore artificial reefs

Why deploy reefs?

Artificial reefs are widely used around the world to enhance fishing opportunities. DPI commenced building artificial reefs in some NSW estuaries, which has now progressed to the building of offshore artificial reefs. These reefs are installed to improve offshore recreational fishing opportunities by creating new fish habitat and additional fishing locations.

The reefs are specially designed to provide high quality habitat for a diverse range of fish species and have proved very popular with coastal recreational fishers around NSW. It's a flagship program of the Recreational Fishing Trusts.



What's involved in planning for a reef?

NSW DPI conducts a rigorous assessment of the proposed reef locations through a comprehensive environmental assessment (EA). These assessments consider ecological, biological and socio-economic impacts and include baseline studies of proposed reef sites, considerations of changes to coastal processes, cultural and Aboriginal heritage, bathymetric seabed mapping and community and stakeholder consultation. Each reef requires permit and licensing arrangements with State and Commonwealth jurisdictions.



What do DPI reefs look like?

NSW DPI has installed two artificial reef types:

1. Large pinnacle style steel tower structures up to 10 metres in height
2. Concrete modular structures up to 5 metres in height

Did you know?

The DPI reefs are engineered to withstand enormous coastal storms and are designed to last many decades; ensuring that the benefits from today's investment in recreational fishing and artificial reefs can be enjoyed for many years to come for current and future generations of recreational fishers.

Where are offshore reefs deployed?

NSW DPI has installed seven offshore artificial reefs since 2011, with a new reef to be installed off Tweed Heads in mid 2020 and planning underway for the installation of reefs off Batemans Bay in 2021 and Jervis Bay in 2022.

| Location | Depth (m) | Deployment date | Reef type |
|-------------------|-----------|-----------------|--|
| Sydney | 38m | October 2011 | One steel pinnacle reef tower |
| Shoalhaven | 33m | January 2015 | 20 concrete modules |
| Port Macquarie | 46m | February 2016 | 20 concrete modules |
| Sydney South (JD) | 30m | October 2017 | Two sets x 18 concrete modules |
| Merimbula | 32m | September 2018 | Two steel pinnacle reef towers |
| Newcastle | 28m | August 2019 | Two steel pinnacle reef towers |
| Wollongong | 32m | September 2019 | Two steel pinnacle reef towers |
| Tweed | 43-45m | Mid 2020 | One steel pinnacle and 32 concrete modules |

How do we know if artificial reefs work?

DPI has a long-term monitoring program for all the reefs.

Researchers monitor the succession of various aquatic species and fish which colonise the reefs, while also monitoring structural integrity, threatened species interactions and the accumulation of fishing debris.



Reefs are monitored using a combination of methods to assess species diversity including:

- baited remote underwater video (BRUV),
- underwater vehicles (ROV) and
- state of the art sonar scans.

These methods assess the species diversity, abundance and size of the fish found on artificial reef sites and surrounding natural reefs. Monitoring has shown that in just a few short years, the new reefs come alive with a diverse fish community taking up residence on the new reef habitat.

Did you know?

Over 2 million old tyres were deployed off part of the Florida coast in the 1970s in an attempt to create an artificial reef to attract more game fish to the area. The project became an environmental disaster as tyres moved during storm events damaging nearby natural reefs and washing up on beaches all along the US East Coast. The cost of tyre removal has been estimated at US\$40-100 million.



Fish Aggregation Devices (FADs)

What is a FAD?

FADs can be moored, or free-floating structures placed in the open ocean to attract fish such as mahi-mahi, also known as dolphinfish. While, it has been suggested that some species won't aggregate around a FAD unless prey is present (e.g. striped marlin), other species including mahi-mahi are attracted to the structure of the FAD alone, possibly for use as a resting place or geographical reference point for feeding or school re-composition.

FADs are installed using funds from the NSW Recreational Fishing Trust for the benefit and enjoyment of all recreational sectors, including fishers, charter operators and spearfishers.



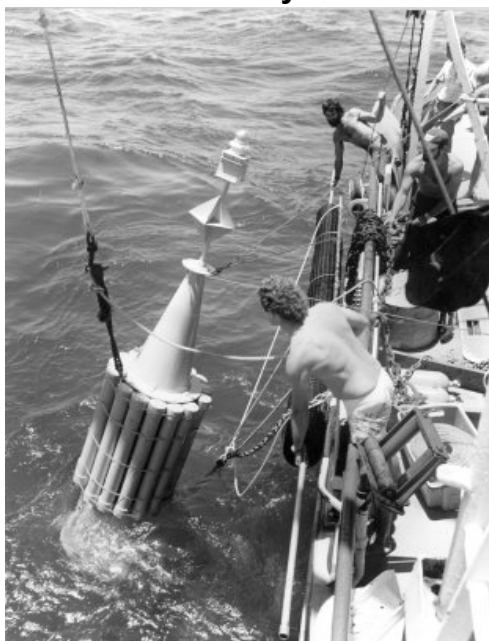
Did you know?

Around 95% of the catch around FADs in NSW consists of mahi mahi. Other species of fish encountered at FADs include yellowtail kingfish, wahoo, highfin amberjack, striped tuna, yellowfin tuna, cottonmouth trevally and billfish.

When are the FADs available to fishers?

The NSW FADs attract seasonal pelagic fish species whose arrival coincides with the warm water that is delivered by the Eastern Australian Current (EAC) over summer and autumn. FADs are installed for the warmer months of September through to June and retrieved during winter for maintenance.

What's the history of FADs?

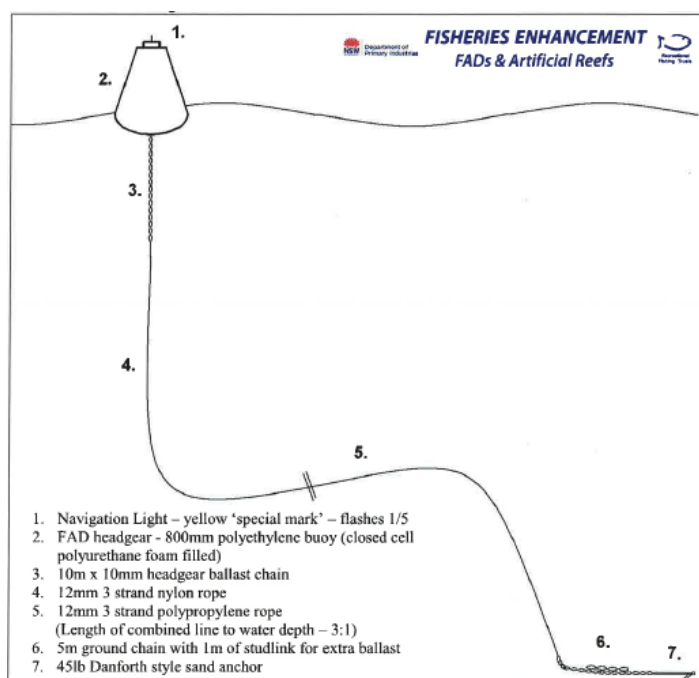


FADs were first used by indigenous fishermen of the tropical Pacific by floating palm fronds on top of the ocean. Moored and drifting FADs currently form the basis of large-scale commercial fisheries and have more recently been used for recreational fisheries.

FADs were trialed by Fisheries NSW in the 1980s, but the cost of deploying and maintaining these large structures was high and the program was discontinued.

A trial of five moored FADs began in NSW in 2002 after the introduction of the recreational fishing licence in 2001. This trial used a much lighter FAD design to withstand the immense power of the EAC. The program quickly expanded and today we have 34 FADs from Tweed Heads in the State's north to Eden with more new locations to follow next season.

What does a FAD consist of?



Various FAD designs have been tested to find the best suited to withstand the particularly harsh sea conditions experienced off the NSW coast.

FADs are not designed as mooring devices which can result in anchors dragging or worse still, FADs breaking free and becoming lost.



Quick quiz:

For your chance to win a FADs shirt, answer these two questions and send your answers to fish.care@dpi.nsw.gov.au

Make sure you send your answers in before 8th May 2020. All correct entries will be placed in a lucky draw for one shirt per region.

- 1) What is the most common fish caught around the FADs in NSW?
- 2) How many offshore artificial reefs have been installed in NSW coastal waters by NSW DPI?



Acknowledgments

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