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# The FAD Watch Program

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# The FAD Watch Program

## Turning Challenge into Opportunity

Over the last decades, as GPS and fish-monitoring technologies became more advanced, affordable and portable, they revolutionized the way commercial fishing fleets operate. Today, modern tuna purse seine fishing fleets use drifting Fish Aggregating Devices, called dFADs, to attract tuna. For the fleet, dFAD costs are minimal compared to the increased catch efficiency they provide.

### What is a Fish Aggregating Device (FAD)?

Commercial fishermen use dFADs to aggregate commercially valuable schooling fish. A dFAD is constructed of a floating raft structure made of durable material such as bamboo, floats, synthetic netting and PVC pipes, then fitted with a satellite tracking buoy with an echo sounder, which continually transmits information about fish abundance beneath the dFAD.

Below the surface, dFADs have long tails—hundreds of feet long—made of wrapped netting, ropes or organic material like palm fronds. The rafts with their trailing tails float across the ocean with the currents, attracting fish and letting commercial fishers know when and where to go for their best chance of securing a good catch.

Approximately 45-65,000 dFADs are deployed across the Pacific Ocean annually.They are tracked via satellite, but given the sheer number of devices and oceanic currents, the fate of 80% of dFADs is unknown and they are unlikely to be recovered. Because dFADs are relatively low cost, such losses amount to far less than the value they create. Fleets are also unable to retrieve dFADs in protected waters where they don't have legal fishing access.

Such areas include Kingman Reef and TNC's Palmyra Atoll within the U.S.'s Remote Pacific Islands Marine National Monument (PRIMNM) in the Central Pacific. If not intercepted before grounding, dFADs that enter these protected waters can entangle sea life, contribute to marine pollution, and damage sensitive coral reef ecosystems.

### TNC's FAD Watch Program: Interception Before Impact

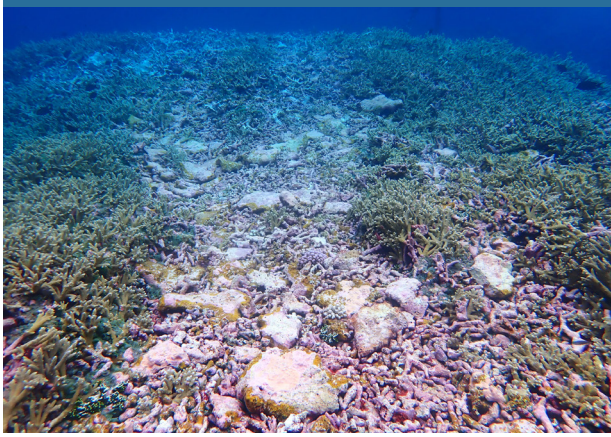
TNC scientists began documenting dFAD groundings on Palmyra Atoll in 2008. Over the next decade, they noticed increasing numbers of the devices washing up. A few hours of a dFAD's long tail dragging across sensitive corals causes damage that can take years to heal. Fortunately, dFADs come with built-in location technology that is the foundation of the FAD Watch Program—the precedent-setting partnership between TNC and the US Purse Seine Tuna Fishing Fleets is the first program of its kind in the Pacific Ocean.

Top image: What happens when a dFAD isn't recovered before reaching Palmyra. TNC staff work to remove the tail of a dFAD that snagged on the reef. © Daniel Clifford/TNC

## Location, Location, Location

Palmyra Atoll and Kingman Reef National Wildlife Refuges (NWR) are units within the Pacific Remote Islands Marine National Monument (PRIMNM). Combined, the NWRs and PRIMNM protect approximately 13 million acres of ocean and coral reef surrounding 580 acres of emergent land, including TNC's 250-acre Palmyra Atoll Preserve.

This is the largest swath of ocean and islands protected under a single jurisdiction in the world. That makes it one of the finest areas for pioneering public-private partnerships like the FAD Watch program.



Path of coral destruction left by the dFAD's tail . © Daniel Clifford/TNC

## The FAD Watch Program

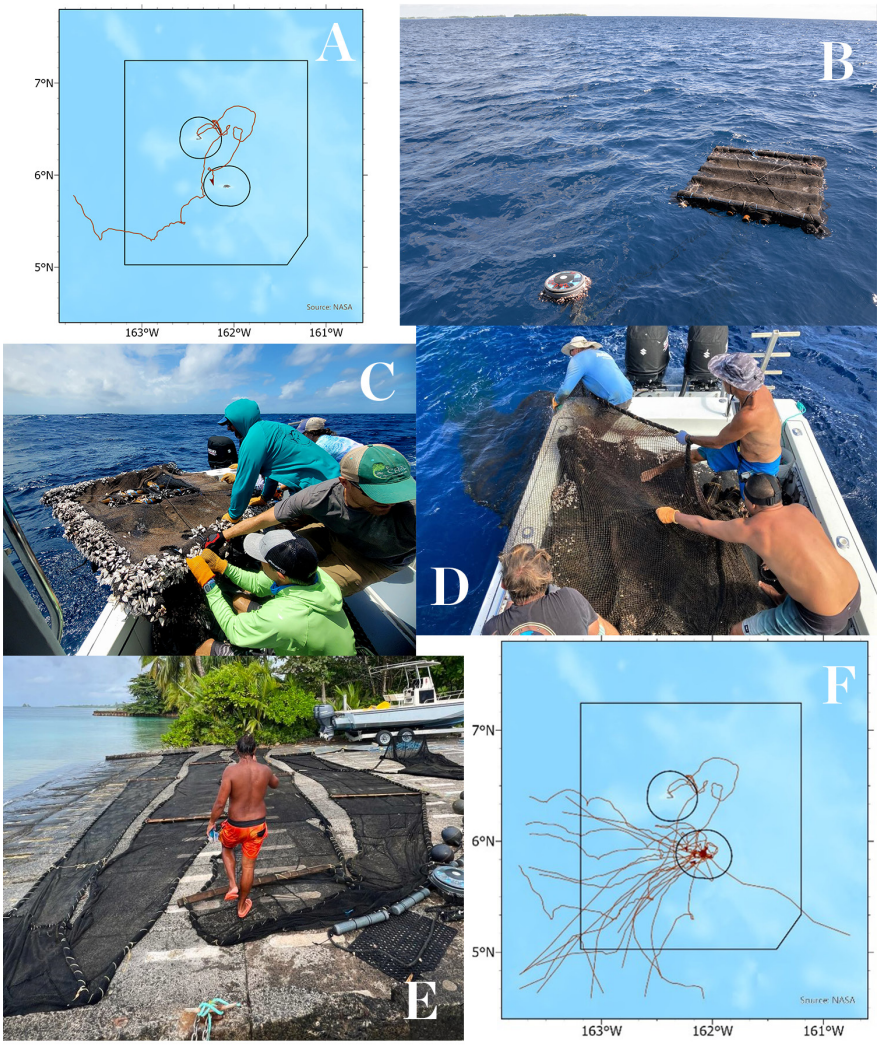
### How it Works

The solution is as elegant as it is effective: Through a structured agreement, American and Spanish purse seine fishing fleets provide TNC with near-real-time dFAD location data so researchers can track the devices as they drift through the protected ocean habitat around Palmyra Atoll and Kingman Reef.

The data is collated to monitor dFAD location and guide dFAD recovery when they drift within 6 nautical miles of Palmyra. If dFADs are on a grounding course with Palmyra's reef, TNC can deploy a team from the atoll-based research facility to intercept the dFAD before the sensitive coral reef is impacted.

The fishing companies also provide TNC access to oceanographic and fish biomass data from the satellite buoys tethered to dFADs. TNC and partners are able to better understand the relationship between Bluewater Marine Protected Areas (MPAs), like PRIMNM, as well as smaller scale oceanic processes in the central Pacific, highly migratory fish movements through an MPA, and the environmental impacts associated with commercial purse seine tuna fishing equipment.

### The dFAD Recovery Process




RECOVERING A dFAD FROM THE WATERS AROUND PALMYRA CAN BE AN ARDUOUS, LABOR-INTENSIVE PROCESS. IMAGES **A-E** SHOW THE ESSENTIAL STEPS THAT ARE PART OF EVERY dFAD RECOVERY. **(A)** dFADS ARE TRACKED VIA SATELLITE BUOY AND SOFTWARE. **(B)** ONCE ONE IS SIGHTED ON A COURSE TO LAND ON PALMYRA, A TNC OFFSHORE RESEARCH VESSEL IS DISPATCHED TO LOCATE IT. IN THIS CASE, THE dFAD HAD ALREADY HIT KINGMAN REEF, BUT THE TNC TEAM WAS ABLE TO INTERCEPT IT BEFORE IT COULD IMPACT PALMYRA'S REEFS. **(C-D)** ONCE IT WAS LOCATED, THE CREW HAD TO HAUL IT ABOARD MANUALLY FROM THE DEEP WATERS OF THE MPA. IT'S STRENUOUS WORK BECAUSE dFADS CAN WEIGH AS MUCH AS 500 POUNDS OR MORE. **(E)** THE CREW RETURNS TO PALMYRA AND OFFLOADS THE ENTIRE dFAD ON LAND. **(F)** TRACKS OF dFADS RECOVERED BY TNC STAFF WITHIN 6 MILES OF PALMYRA AS PART OF THE REEF CONSERVATION INITIATIVE.

Photos ©Kydd Pollock / TNC

## FAD WATCH BY THE NUMBERS

Since 2021, FAD Watch has:

- Doubled the dFAD tracking geofence area and fishery data collection,
- More than doubled the number of vessels included in the FAD Watch program,
- Avoided more than 35 dFAD grounding events because TNC intercepted the devices outside Palmyra's fragile reefs,
- More than a dozen repurposed satellite buoys recovered and repurposed to develop the Micronesian artisanal community fishing project,
- More than 4000' of coral-destroying ropes and netting removed from the ocean before they could impact Palmyra's reef ecosystem or entangle marine life—
- All with one boat and four people (on average) carrying out each dFAD removal by hand. No mechanical assistance is currently available on the recovery vessel.

## Beyond Palmyra: the Future of FAD Watch

This successful work is made possible by a solid partnership between TNC and the commercial tuna purse seine fishing industry. Now the program is focusing efforts on dFAD management and conservation protocols and efforts with the goal of expanding FAD Watch to other Pacific Island nations.

As of 2024, there are 22 fishing companies and more than 35 vessels participating in the program. Discussions to add additional companies and vessels are currently ongoing. Increasing the number of collaborating vessels is critical to TNC being able to improve and strengthen this conservation initiative.

Through FAD Watch, TNC scientists not only help protect the reefs near Palmyra, they are also able to use the data to compile unique information on the interaction of dFADs, pelagic fish biomass and Bluewater MPAs. This important data provides crucial insights for improving the science of managing Bluewater MPAs at Palmyra and beyond.

## Seizing the Opportunity

To build on the success of FAD Watch, TNC needs funding specifically to:

- continue to pay for satellite data downloads,
- improve dFAD recovery process by investing in mechanical tools to make it easier to haul the heavy devices out of the open ocean
- cover TNC conservation program management and recovery time to carry out this work
- vessel maintenance, and
- assist the re-purposing of recovered dFAD components for conservation initiatives.

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