

First year of data collection on beached drifting FADs in Wallis and Futuna

A fish aggregating device (FAD) is a human-made anchored or drifting object that is intentionally placed in the ocean to attract pelagic fish, such as tuna. A drifting FAD (dFAD) typically consists of a bamboo raft with a 50-m appendage of old ropes or nets hanging below it, and is equipped with a solar-powered satellite buoy, and often an echosounder, so that fishers can track the dFAD's position and assess the tuna aggregated underneath it.

In high-seas waters, the purse-seine fishery deploys thousands of dFADs each year to aggregate and catch tuna. These dFADs eventually drift into coastal waters where they become marine pollution, and may damage coral reefs, or entangle threatened marine species (Banks and Zaharia 2020; Escalle et al. 2019).

In early 2020, the Wallis and Futuna fisheries department, with support from the Pacific Community (SPC) Oceanic Fisheries Programme, launched a project to collect data on beached dFADs and/or dFADs that had drifted into the coastal waters of Wallis and Futuna from elsewhere in the Pacific. Information regarding dFADs found in Wallis and Futuna are important for quantifying and better understanding the impacts of dFADs locally and in the Pacific in general. Results from this programme will support sustainable fisheries management and help protect the environment through scientific advice to governments and regional management bodies (e.g. the Western and Central Pacific Fisheries Commission).

Following an awareness and communication campaign in Wallis and Futuna, the public was invited to report any dFADs they found to the fisheries department (Service de la pêche, DSA Wallis et Futuna). In just the first year of this programme, 159 distinct dFADs and/or satellite buoys have been reported. The majority (93) were unattached satellite buoys, 43 were dFADs without buoys attached, and 22 included the dFAD with a satellite buoy attached (Fig. 1). Most dFADs were reported from the east side of Wallis Island (Fig. 2 and Table 1).

Most of the retrieved dFAD components were recycled as hammocks, nets for chicken pens, moorings, or anchored FADs. Some satellite buoys have been taken apart as well, with the components re-used locally, while others have been kept alongside houses or brought to the fisheries department. A project to re-purpose some satellite buoys was implemented with a high school

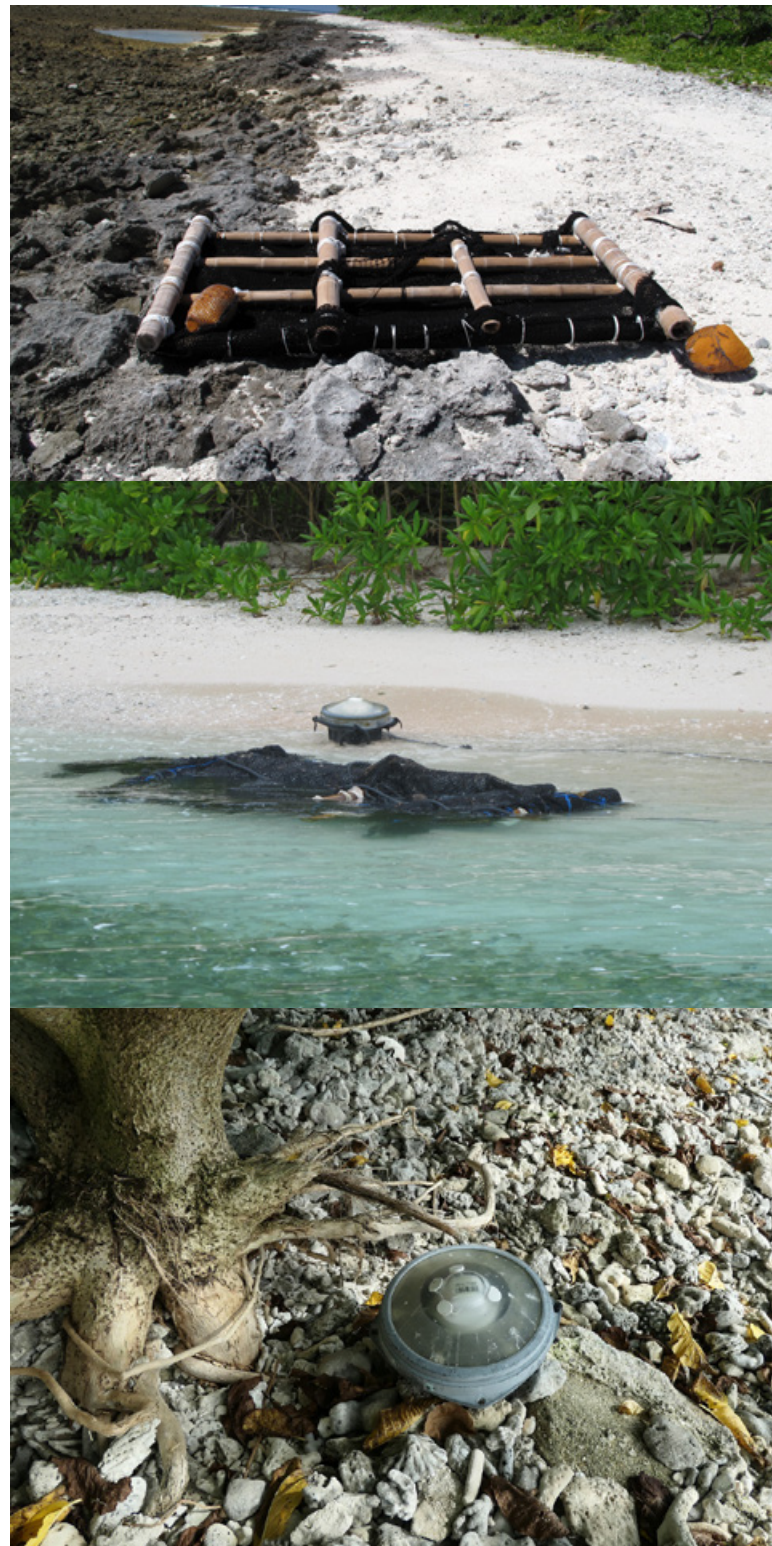


Figure 1. A dFAD found beached (a), a dFAD with a satellite buoy recently stranded (b), a detached satellite buoy found in Wallis and Futuna (c). (images ©SPC)

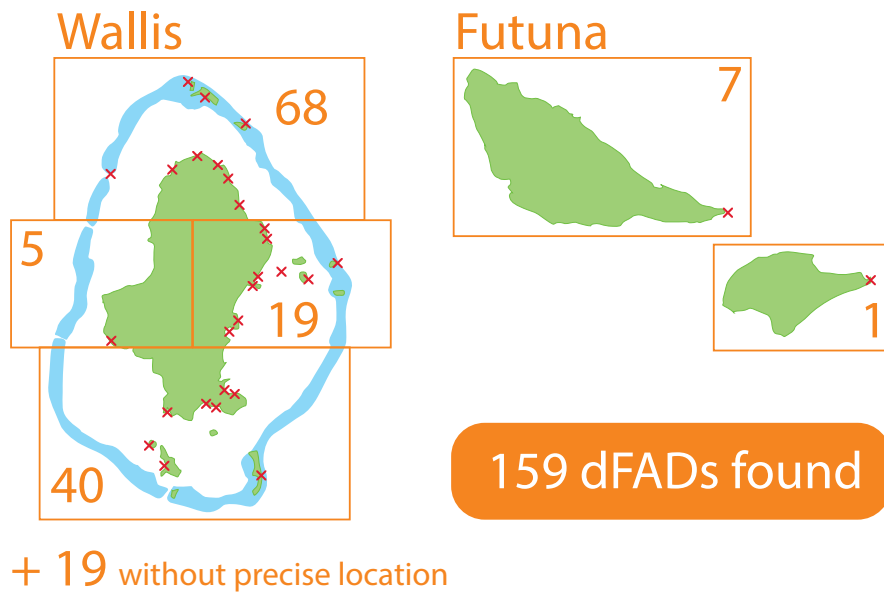


Figure 2. Known positions of 159 dFADs and buoys found beached in Wallis and Futuna over the course of the programme. Note: dFADs and buoys may have been found in previous years but reported to the fisheries department since the beginning of the programme.

class. Students transformed buoys into outdoor solar lamps and phone chargers for the Mata Utu high school (Fig. 3).

While the impact on the environment is difficult to fully assess, it can be noted that no animals were found entangled in the nets of the beached dFADs. Some dFADs, however, were found caught on corals (Table 1), although the degree of damage could not be assessed. When still drifting in the lagoon or ocean, dFADs can aggregate fish and be used by local fishers; one fisher reported that he had caught a Spanish mackerel on a dFAD.

In terms of marine pollution, most of the dFADs found consisted of a bamboo raft with various plastic components attached (PVC tubes, ropes, nets, buoys, tarps). These dFADs were rarely found completely intact with both the raft and the netting hanging below it (10% of the findings) (see Fig. 1). Typically, only the raft of a dFAD was found. Rafts were found either intact (50% of the findings) or damaged (40% of the findings), which could indicate they had been drifting a long time before reaching Wallis and Futuna. The satellite buoys – made of solar panels and electronic components – were present in most of the findings (72%).



Figure 3. Mata Utu high school students re-purposed washed-up dFAD satellite buoys into autonomous outdoor solar lamps for the main entry of the school, or used as phone chargers. (images: ©Mata Utu High School)

The programme is continuing in Wallis and Futuna, with the population still encouraged to report any dFAD or satellite buoy found beached or drifting close to shore. The data collected are part of a wider regional data collection effort (see box below), intended to be the basis for scientific analyses to guide sustainable management of the purse-seine dFAD fishery in the Pacific.

Table 1. Location of dFADs found in Wallis and Futuna.

Status	Location	Number found
Picked up previously	House or garden	77
	Wharf	6
Found along the coast	Beach	41
	Reef flat	6
	Rocky shore	3
	Mangrove	1
	Effluent	1
Found at sea	Drifting in the lagoon	9
	Ocean	5
	Coral reef	10
Total		159

References

- Banks R. and Zaharia M. 2020. Characterization of the costs and benefits related to lost and/or abandoned fish aggregating devices in the western and central Pacific Ocean. Report produced by Poseidon Aquatic Resources Management Ltd for The Pew Charitable Trusts.
- Escalle L., Hare S., Hunt A., Faure C., Pollock K., Nicholas T.-R., Tanetoa M., James J., Bigler B. and Pilling G. 2020a. In-country initiatives to collect data on beached and lost drifting FADs, towards a regional database of in-situ data. WCPFC Scientific Committee 16th Regular Session. WCPFC-SC16-2020/EB-IP-02.
- Escalle L., Muller B., Hare S., Hamer P., Pilling G. and PNAO. 2020b. Report on analyses of the 2016/2020 PNA FAD tracking programme. WCPFC Scientific Committee 16th Regular Session. WCPFC-SC16-2020/MI-IP-14.
- Escalle L., Scutt Phillips J., Pilling G., 2019. Beaching of drifting FADs in the WCPO: Recent science, management advice and in-country data collection programmes. SPC Fisheries Newsletter 160:9–14.

Regional database of dFADs found in coastal areas

The data currently available to quantify beached dFADs have been shown to be under-estimates, given the frequent deactivation of dFADs when drifting outside the intended fishing area (see Escalle et al. 2020b), and do not contribute information regarding ecosystem impacts. Hence, data collected locally is the key to precisely assessing beaching rates and impacts.

In the Pacific region, data collection programmes on dFADs reaching coastal waters and/or beaching have also started in the Cook Islands and French Polynesia in 2020, as well as in the Federated States of Micronesia and the Republic of the Marshall Islands in 2021 (Escalle et al. 2019, 2020a). These programmes involve local communities reporting their findings to fisheries officers, who enter data onto forms and in their country or territory's database. Data are then transferred to SPC, where staff compile all the data into a regional database. In parallel, other initiatives have also led to additional data on beached dFADs being included in the regional database, for instance through data collection at Palmyra Atoll since 2009 (The Nature Conservancy) or in Hawaii since 2015 (Center for Marine Debris Research) (Escalle et al. 2020a). Opportunistic data collection has also been reported to SPC since 2018, including through SPC's existing data collection networks, and includes reports from Australia, New Caledonia, Pitcairn Islands, Samoa, Tuvalu and Vanuatu (Escalle et al. 2020a).

Relevant quantification of the occurrence of dFADs beaching or drifting nearshore, as well as an assessment of resulting ecosystem impacts, will be possible through continued data collection over several years and covering the largest area possible. Collaboration with several Pacific Island countries and territories is key to the success of the database and will help guide sustainable management of dFAD fishing in each country and the whole Pacific.

For more information:

Lauriane Escalle,
Fisheries Scientist, SPC
laurianee@spc.int
Service de la pêche et de gestion des ressources
marines
Wallis et Futuna
service.peche@agripeche.wf