6 FAD maintenance and monitoring

Ongoing FAD maintenance and monitoring is essential to the longevity of the device and national FAD programmes as a whole. Despite this importance and the prevalence of anchored FAD deployments across the region, FAD maintenance is often infrequent and there remains a large gap in data and information to identify the outcome of FADs in the context of their desired objective.

6.1 Maintaining FADs

One of the primary ways to retain fish aggregation at a FAD is by using aggregators (see 4.1.5 Aggregators). Aggregators help enhance a FAD's performance by providing additional structures and accumulating algae. This provides an artificial habitat and food source for small fish, which, in turn, attract larger fish. Aggregators, by design, are semi-permanent and require regular replacement.

Anchored FADs are subject to the forces of the ocean (currents, rough seas), salt-water corrosion, entanglement with fishing gear and fouling (i.e. the growth and accumulation of unwanted materials, such as corals and oysters). Ocean forces can cause floats to submerge and implode or split, allowing water into the float; fouling of surface floats and rope increases the weight and resistance on the upper floatation section; entanglement of fishing lines can cut and weaken the main rope line; and salt water can cause corrosion of hardware. Each of these scenarios results in weak points, which can result in the premature loss of the FAD. Problems arising from these weak points can be reduced through regular maintenance and replacement of damaged floats, rope and hardware.

Regular maintenance of a FAD ensures that it continues to aggregate fish and remain in the water for as long as possible. Regular maintenance programmes (recommended monthly) involve lifting the FAD's surface floatation and ropes out of the water and into a boat for inspection and repair. Alternatively, maintenance can be done in the water. FAD maintenance activities should be performed at low tide, when currents are slack, and the most main line is able to be pulled out of the water.

The following are the main aspects to consider during maintenance.

- Inspect surface floats for cracks (replace as required) and remove any fouling material from the floats and ropes.
- Remove fishing line entangled around the ropes.
- Inspect the ropes for any twists, kinks or hockles and cut and resplice ropes if required.
- Inspect surface hardware for corrosion and replace as required.
- Replace aggregators.

Unfortunately, only the upper portion of a FAD (~30 to 80 m) can be maintained, but regular maintenance on this section can increase the longevity of a FAD by many years. FAD maintenance can be performed by the implementing agency (e.g. national fisheries agencies) or by trained fishers / community members or interested groups (e.g. some countries have established partnerships with dive tourism companies). National fisheries agencies are likely to have the equipment to maintain FADs to a greater depth (e.g. using scuba gear and lift bags), but such maintenance techniques should be undertaken only by experienced personnel due to the risks involved.

6.2 Monitoring FADs

Monitoring is the systematic process of collecting, analysing and using data to track how a project (or programme) is progressing towards reaching its objective. FAD monitoring activities should be related to the specific objectives of PICTs' overarching national FAD programmes.

Unfortunately, monitoring activities are funding-dependant and PICTs often do not have or cannot secure the budgets required for extensive monitoring activities. Well-developed FAD catch and effort monitoring, such as that being undertaken in the region by SPC's Tails data entry app, provides a protocol to capture FAD use and frequency, volume, production, value and species harvested (by method). Such programmes require planning and dedicated staff to implement, analyse and report on. At the other end of the scale, simple perception-based monitoring activities (i.e. discussions with fishers to understand their use and fishing patterns) can also provide information for national agencies, but in a less quantitative way. A semi-quantitative guideline for nearshore FAD monitoring in the Pacific Island region has been recently developed and provides a protocol for countries to adapt (Albert et al. 2019).

At a minimum, PICTs need to maintain a FAD registry containing:

- FAD design and type;
- deployment date;
- deployment site, region/area name, latitude and longitude;
- site depth and scope;
- FAD identifiers, markers; and
- status of FAD (when it is lost).

This information is required for reporting to maritime safety authorities (and other authorities as relevant to the country.