# More FADs deployed in four Pacific Islands

***Since the beginning of this year several countries around the region have requested assistance from the SPC Nearshore Fisheries Development section to plan and implement their fish aggregating device (FAD) programmes and, in the process, train fisheries officers and selected members from the private sector in FAD-related work.***

## Kosrae, Federated States of Micronesia

In February 2012, three subsurface FADs were deployed in Kosrae. These FADs were built by Okabe Co., Ltd of Japan and shipped to Kosrae completely constructed with a fibreglass reinforced plastic (FRP) floatation cage containing 12 x 450 mm pressure resistant plastic floats and a mooring rope (Fig. 1). The subsurface FADs were constructed to be deployed in 500 m depth with the floatation cage to settle around 25 m below the surface. After deployment, the settling depths were measured at 20 m, 22 m and 26 m.

The subsurface FADs were deployed off Okat, Saoksa and Utwa districts, using the Division of Fisheries and Marine Resources boat *FV Sinlaku* (Fig. 2). In July, the FADs were reported to be working successfully, producing high catch rates.

A fourth subsurface FAD was deployed in July off Lelu district. This FAD is of a much simpler design with only five oval pressure resistant hard plastic floats strung directly onto the main mooring rode through the centre hole of the floats (Fig. 3). The FAD was deployed on a steep slope; the flotation settled 60 m below the surface instead of the preferred 20 m, but the FAD should still be effective for aggregating fish. The coastline along Lelu district has steep drop-offs so there is very little choice in selecting good FAD deployment sites.

The Okabe caged flotation FAD has strong buoyancy from its 12 x 32 kg buoyancy floats compared to the other FAD with its smaller 5 x 20 kg floats design. This gives the Okabe subsurface FAD the advantage of keeping the mooring taut in strong current, with a small scope for swing. The smaller subsurface design is susceptible to being swayed off the centre point by a strong current, giving it a larger scope; however, it is possible to increase the buoyancy by adding more floats. It should be noted that for deployments in more than 500 m depth it would be better to have the float buoyancy at a minimum of 350 kg. This should give it enough power to support the mooring rope as well as reduce swing scope.

At the end of the project, nine Kosrae Fisheries Division staff had been trained to rig and deploy FADs.

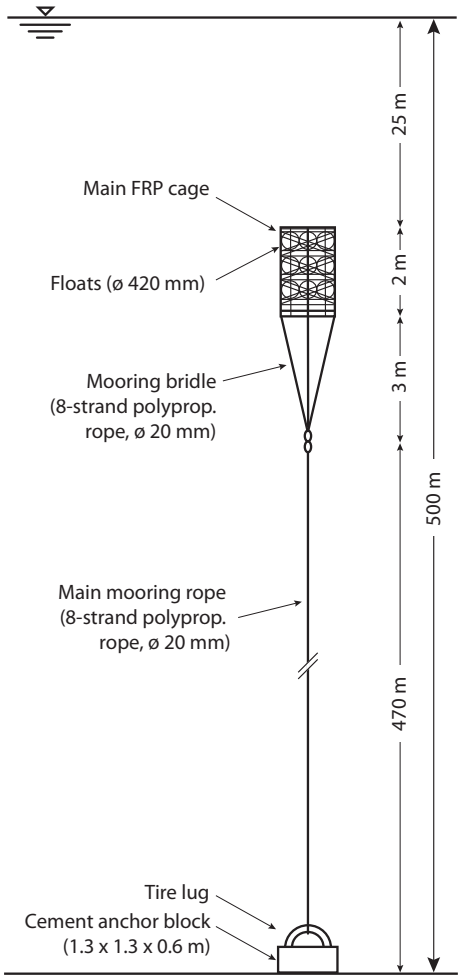


*Figure 1. Okabe subsurface FAD design.*

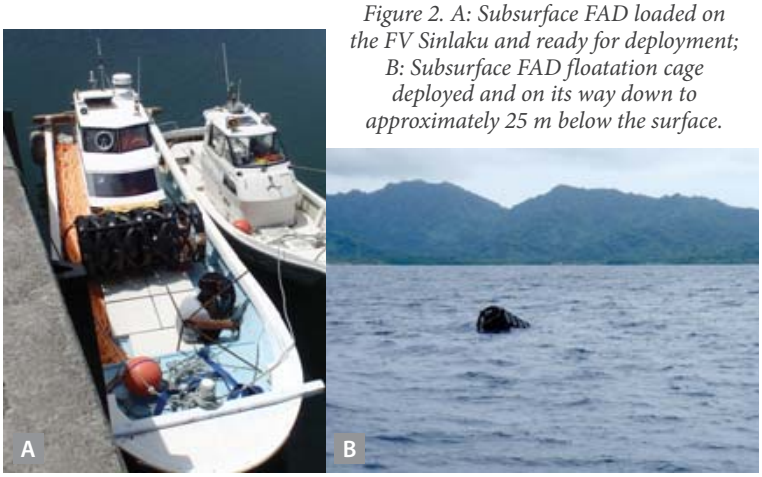


*Figure 2. A: Subsurface FAD loaded on the FV Sinlaku and ready for deployment; B: Subsurface FAD floatation cage deployed and on its way down to approximately 25 m below the surface.*

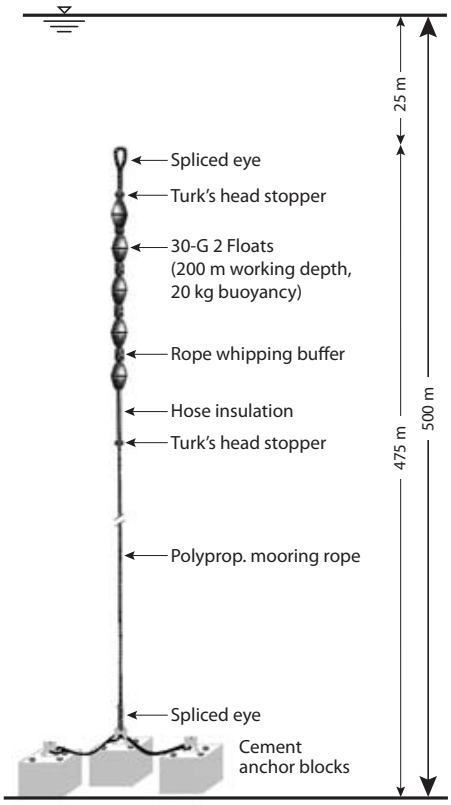


*Figure 3. SPC design for subsurface FAD.*

## Rarotonga, Cook Islands

A FAD development workshop was conducted in Rarotonga in mid-March to train Cook Islands Ministry of Marine Resources fisheries development officers and Cook Islands Fishing Association members on FAD construction and deployment. Eleven participants took part in the workshop, which was conducted over five days and resulted in the rigging and successful deployment of three FADs: a subsurface FAD deployed off Ngatangiia in 330 m depth, an offshore Indian Ocean FAD off the Rarotongan Hotel in 1100 m depth (Fig. 4), and a nearshore FAD off Black Rock in 361 m depth.

Before the deployment of the FADs constructed during this workshop, five FADs were already in place from previous deployments. These five FADs were aggregating well and had their "hot" moments at different times during the fishing season. The FADs were located off Panama (spar buoy, 1282 m); Black Rock (offshore Indian Ocean, 1023 m); Matavera (offshore Indian Ocean, 755 m); Kiikii (offshore Indian ocean 1196 m); and Avarua (nearshore Indian Ocean, 260 m).

Good results achieved at the Avarua nearshore FAD partly explains why the Ministry of Marine Resources had decided to trial another nearshore FAD (at Black Rock) and the nearshore subsurface FAD (at Ngatangiia).

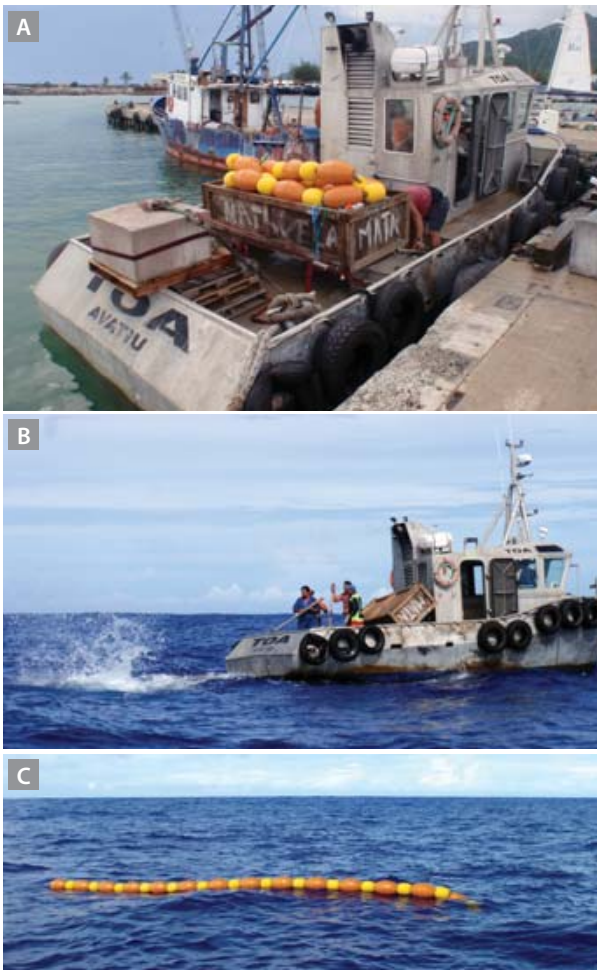


*Figure 4. A: Tugboat* Toa *loaded with an offshore FAD and ready for deployment trip; B: FAD anchor deployed; C: Ngatangiia offshore FAD settled and ready to aggregate (all images in this article: W. Sokimi).*

## Pago Pago, American Samoa

Following the Cook Islands FAD work, another FAD workshop was conducted in Pago Pago, American Samoa. The objectives of this workshop were to rig and deploy two spar buoy FADs (Fig. 5) and to run a FAD awareness programme for the Coastal and Community Fisheries staff of the American Samoa Department of Marine and Wildlife Resources (DMWR). At the same time, a team of new FAD technicians were trained to be the department's FAD crew (Fig. 6).

Twenty DMWR staff participated in the workshop and the two FADs were deployed from the inter-island government shipping vessel *MV Sili* at Site A (deployment depth 840 m) and Site B (deployment depth 1650 m) of the DMWR FAD location list.

Conducting a FAD operation in American Samoa is not as straightforward as on other Pacific Islands. Before any FAD can be rigged, the local US Coast Guard office needs to approve the design and the location where the FADs

*Figure 5. Spar buoy used for FADs in American Samoa.*

*Figure 6. American Samoa DMWR FAD crew.*

will be deployed. When submitting the design, all the specifics relating to material, buoyancy, volume, weight and dimensions need to be accounted for. The FAD must also satisfy coastal shipping regulations requiring it to be clearly visible at all times to passing ships; therefore it must have a radar reflector and a light for night-time detection. With regard to this regulation, and in consideration of vandalism problems experienced with previous FADs, the spar buoys are ideal for American Samoa's situation. However, the SPC spar buoy design is expensive to produce and expensive to deploy as the anchor and spar buoy units are bulky and heavy. This requires heavy machinery and a large vessel to carry out the deployment, which can make the cost of deployment equivalent to or higher than the cost of the FAD materials.

Consideration should be given to using smaller and cheaper factory-made navigation or mooring buoys that have the durability and buoyancy required to support the mooring load and weather stress, similar to those used in the New South Wales FAD programme but more robust to support the offshore mooring load.

If a suitable smaller and cheaper spar buoy can be identified, then these spar buoy FADs may be the solution to reduce vandalism on surface FADs in areas where this problem is common. Otherwise, subsurface FADs will have to be the choice if the FADs are to remain moored without being vandalised.

## Port Vila and Santo, Vanuatu

The formation of the Vanuatu Fisherman's Association has brought small-scale fishers together to coordinate their fishing efforts better. Associations are formed according to provinces and combined to form the Vanuatu Fishermen's Association.

This coordinated effort led the fishers to work closely with the Vanuatu Department of Fisheries, which assisted them further in their small fishing operations. In order to bolster the catches of small-scale fishers, the Vanuatu Fisheries Department planned a long-term FAD programme to be implemented countrywide in the six provinces of Malampa, Penama, Sanma, Shefa, Tafea and Torba. Representatives from each of these provinces were invited to join the Vanuatu Fisheries Department fisheries development staff in a FAD workshop conducted in July in collaboration with the SPC Nearshore Fisheries Development Section.

The workshop was attended by 18 participants who were trained to rig and deploy subsurface FADs. Vanuatu is vulnerable to frequent cyclones and stormy weather, so most of the surface FADs have short lifespans. Another problem is the high incidence of vandalism on the FADs, so deploying subsurface FADs is seen as another possible way to help ensure longer lifespans.

Two subsurface FADs were constructed and deployed off Pango point and Eratap point on Efate Island, close to Port Vila (Fig. 7), and another two were rigged and deployed off Aeaki Island and Tutuba Island in Santo. The FADs were targeted to settle 20 m below the surface. Three weeks after the deployment the FADs were described as "on fire" as the fishermen were returning with large catches of mahimahi and yellowfin tuna.

*Figure 7. Towing the subsurface FAD on a barge to the deployment site.*

**For more information:**

*William Sokimi*
*Fisheries Development Officer, SPC*
*(WilliamS@spc.int)*