

Vatuika FADs survive category 5 cyclone Pam in Vanuatu

The Vatuika fish aggregating device (FAD), also known as Vanuatu FAD (Amos et al. 2014), has proven its strength against category 5 tropical cyclone, Pam. Since 2012, 26 FADs, which use a new design developed in Vanuatu, have been deployed around the country; 13 of which are in the Shefa and Tafea provinces – the two provinces most affected by cyclone Pam. Of these 13 FADs, four were quickly lost because of vandalism or for unknown reasons, which left nine in the water before cyclone Pam hit Vanuatu on 13 and 14 March 2015. All of these nine FADs survived the cyclone and were still attracting fish and serving fishing communities in their respective areas when this article was written (July 2015).

The Vatuika FAD design

The Vatuika FAD design (Fig. 1) was elaborated and fine-tuned from 2012 to 2014 by George Amos and Graham Nimoho, fisheries officers from the Vanuatu Fisheries Department (VFD), with the support of the Japanese International Cooperation Agency (JICA) *Grace of the Sea Project*, Phase II.

The Vanuatu Fisheries Department felt that it was important to give a local name to this new design to mark its ownership over it. *Vatu* means money and *ika* means fish; a well-built and long-lasting Vatuika FAD will provide communities with fish and wealth.

The Vatuika FAD is a combination of the float section of the Indian Ocean FAD promoted by the Secretariat

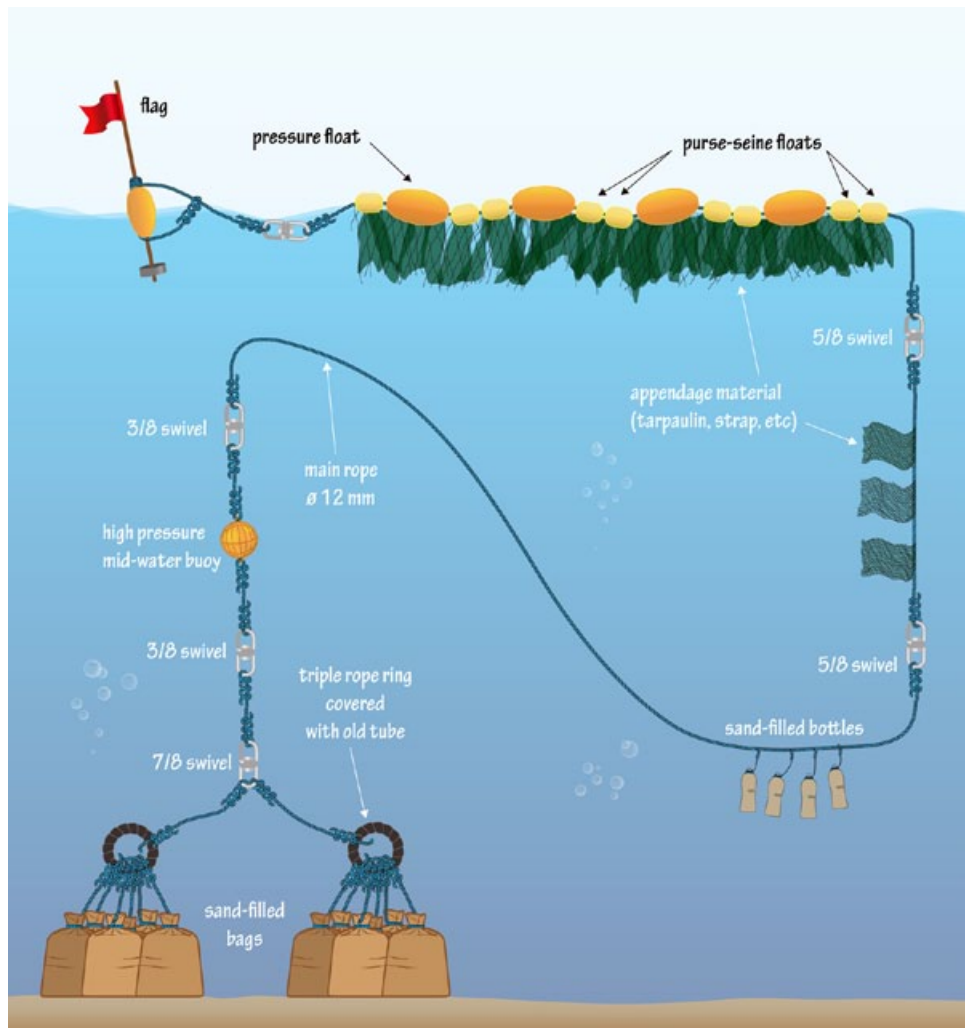


Figure 1. Vatuika, the low-cost Vanuatu FAD (illustration: Boris Colas).

of the Pacific Community (SPC) (Chapman et al. 2005) and the mooring section (main line and anchor) of the Caribbean design promoted by JICA (Horner 2011).

The Indian Ocean FAD design (Fig. 2) was first modified in Vanuatu by reducing the surface float section to minimise strain on the main line, but its anchor remained an issue. The heavy (around 1 tonne) concrete or engine block used in the original design presented several drawbacks: 1) it required heavy machinery to be displaced and transported; 2) it required a relatively big boat for the deployment; 3) it didn't settle well on the hard seafloor and steep slopes; and 4) it was expensive to build or acquire.

The Caribbean FAD design introduced in 2012 by JICA did not stand Vanuatu's rough sea condition. The buoys of the floating section easily tangled up and FADs were quickly lost, but this design had a low-cost mooring section that was easy to construct, with an anchor that could be built using a material that is widely, and freely, available locally: sand!

Fisheries Development Officer George Amos came up with the idea to use the best parts of each design to produce the *Vatuika* FAD.

The float section of the Caribbean FAD design was replaced with the float section of the modified Indian Ocean FAD used in Vanuatu. Adjustments were then made to the weight of the anchor (the sand bags), taking into account the reduced buoyancy of the floating section, to make sure that the whole system would be easy to carry on to and deploy from a banana boat – a type of boat widely used by fishers around the country (Fig. 3).

The section of surface floats that are in line with the Indian Ocean design solves the issue of ropes tangling in current, as was the case with the Caribbean design. The small size of the mooring rope (12 mm diameter), provides little resistance to the current and reduces strain on the whole mooring system. Sand is available anywhere around islands and can be easily sourced at the deployment site, which solves the logistical difficulty of heavy anchor block manipulation.

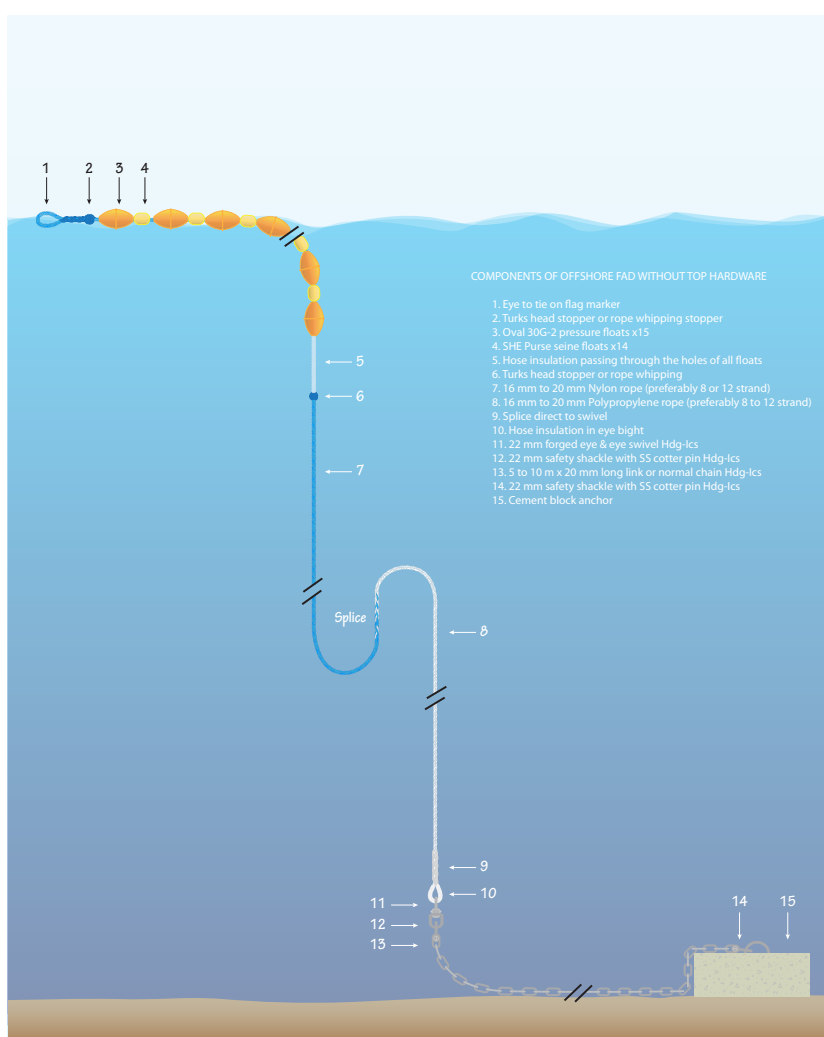


Figure 2. A typical SPC Indian Ocean FAD design (not showing the appendages and the flagpole usually added to the top of the mooring) (illustration: Boris Colas).



Figure 3. *Vatuika* FADs can be deployed from locally available banana boats (images: George Amos).

FAD cost

The *Vatuika* FAD is relatively less costly to construct and deploy than other FAD designs used before in Vanuatu. Total cost for materials, construction and deployment is USD 1,300 for 1200 m depths, USD 950 for 400 m depths and USD 750 for 300 m depths. All the materials needed for the floating and mooring sections (floats, ropes, shackles and swivels) can be carried by planes and small boats to deployment localities. Communities can then assemble the FADs in their villages by building the anchors with bags of sand and then do the deployment with their own banana boats. It allows the setting of FADs in remote places to which the VFD rarely has access.

FADs management

The Lelema community on Efate Island, as well as the charter boat operators in Port-Vila and fishers' associations in other islands, maintain their own FADs in their respective areas. All visit their FADs regularly to change the floats (when necessary) and to collect catch data that they then submit to VFD. The management of the *Vatuika* FADs by users largely contributed to their success.

Performance

The massive seas (12 m waves) generated by cyclone Pam left no one believing that the FADs would 'ride the storm'. However, to the surprise of everybody, all nine FADs at Efate, Emae, Tanna, Futuna and Aneityum survived the cyclone and were used to catch fish a few days later. For instance, two days after the cyclone, fishers in Port-Vila were back to the FADs to catch fish to feed their families. Donors, including the French Government, JICA, the Asian Development Bank, SPC, the Vanuatu-Climate Adaptation Project (V-CAP), the Save the Children Fund, the WorldFish Project, World Vision and fishing industry operators came forward to financially support the FAD programme given that it's an efficient, and quick-to-put-in-place, tool to sustain Vanuatu people's livelihoods.

Ownership of design and ways forward

VFD believes that the *Vatuika* FAD design, elaborated by fisheries officers George Amos and Graham Nimoho, is the perfect design for Vanuatu conditions. The new FAD development programme implemented by VFD is based on the *Vatuika* design, and communities are encouraged to form their respective fisheries committees or associations as a prerequisite for support with FAD fishing developments.

References

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