

NEWS and VIEWS

FAD deployments around Reunion Island: background, development and influence on catches and activity in the coastal fishery

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FADs have been used in the waters of Reunion Island since 1988 (Biais & Taquet, 1991). Mauritius was the location for the first FADs to be deployed in the South-West Indian Ocean, in 1985 (Roullot & Venkatasami, 1987), as part of a UNDP-funded project; their success prompted the Reunion Island fisheries authorities to set a series of FADs around the island.

Various factors make FADs particularly beneficial for the Reunion fishery. The island is a young volcanic structure with a very steep undersea slope, where only limited areas are accessible for bottom fishing. Significant depths are encountered a short distance out to sea, and, beyond a distance of five miles offshore, it is unusual to record depths under 1,000 metres.

It has been established, however, that FADs are more effective when they are moored in deep water (Prado, 1991). This topographical feature also places FADs within easy reach of fishermen, who do not need large boats and who can operate without high fuel costs.

Reunion Island is virtually circular, and, at the time of writing (October 1995), a total of 28 FADs were moored around its 200 kilometres of coast-line (Figure 1). Most of these have been set to the west and north of the island, because very rough seas often occur to the east and south; and also because there are only a few places in these areas where landing is possible, and even these are often dangerous.

Table 1, which has been prepared from information provided by the Marine Apprenticeship School (EAM), shows the FADs deployed off Reunion Island since 1988. Two separate periods may be discerned. The first, from 1988 to 1991, was used to test and adapt the device designed by IFREMER and further developed by EAM, which had a suitable boat for setting FADs. The design and technology have been considered fairly satisfactory since 1992.

Management of the FADs was handed over to an association of professional fishermen known as APROPECHE, and subsequently to the Regional

Table 1: Number of FADs around Reunion Island and annual funding support

Year	No. of FADs deployed	No. on station as at 31 December	No. of FADs lost	Public funding support (FF)*
1988	11	9	2	?
1989	6	10	5	366,000
1990	9	14	6	276,000
1991	6	13	8	318,000
1992	16	23	6	318,000
1993	16	22	17	300,000
1994	11	26	5	300,000

* 1 FF ≈ US\$0.20

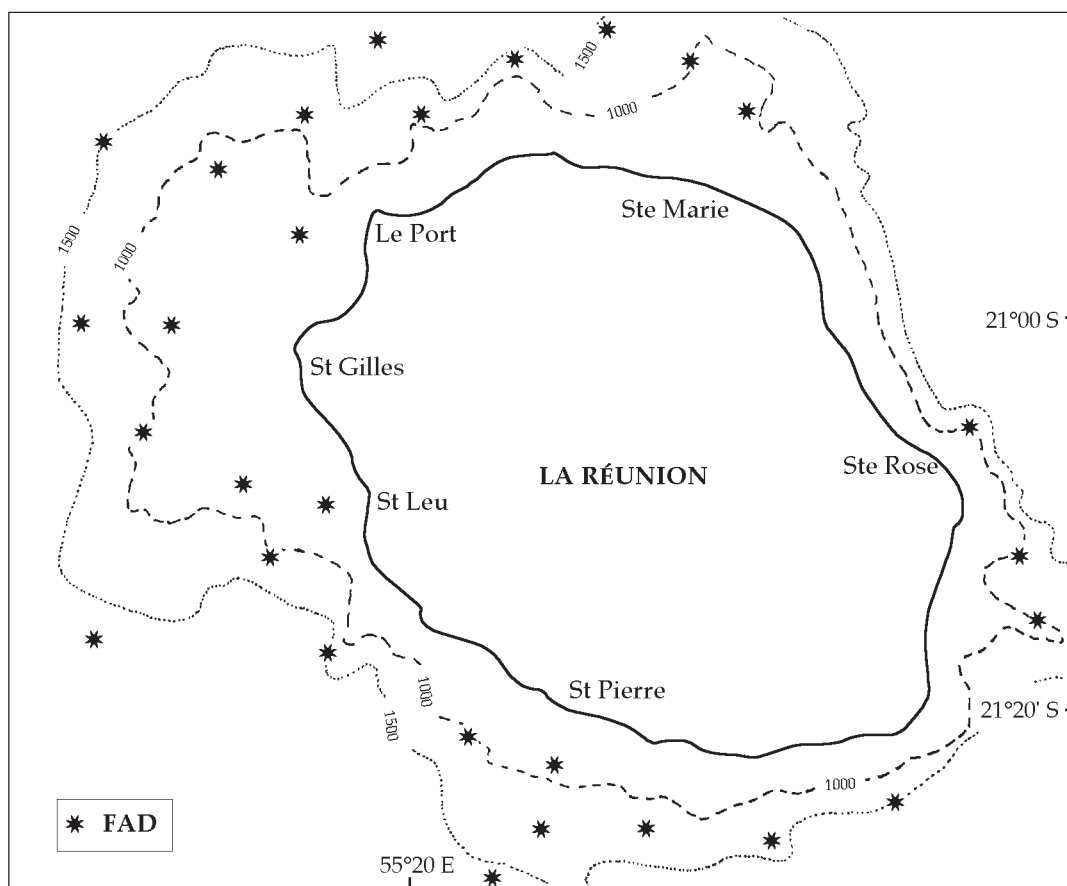


Figure 1: Reunion Island and locations of FADs in place on October 1995

Maritime Fisheries Committee (CRPM) when the latter took over from APROPECHE. This series of events is an illustration of the action of a research institute in introducing professional fishermen to a new technology, which they then adopted.

Reunion fishermen adapted to FADs very quickly and have developed increasingly efficient techniques, such as live-bait drift fishing, vertical longlining and a trolling technique involving constantly jerking the line. In 1994, the increasing popularity of FADs with professional and recreational fishermen resulted in regulations applying certain FAD access restrictions to recreational fishermen (see Appendix I).

The influence of FADs on catches is illustrated in Table 2. It is now evident that FADs play a determining role in the coastal artisanal fishery around Reunion Island. Catches of large pelagics have quadrupled in seven years and more and more fishermen are using the FADs.

The main species caught are *Thunnus albacares*, *Coryphaena hippurus*, *Katsuwonus pelamis* and *Acanthocybium solandri*, which are taken at the sur-

face by drifting or by trolling, while *Thunnus alalunga* is caught using a drifting technique with the bait lowered to depths of between 60 and 200 metres (*T. albacares* is also often caught by the deep-drift method). Tagging and sonic tracking experiments on yellowfin tuna caught around FADs off Reunion Island (Marsac et al., 1995), demonstrated the close link between this fish and FADs, to and from which they migrate. Development of the pelagic fishery has brought about a reduction in fishing effort on demersal species (from 40,000 trips to less than 30,000 trips per year), a limited resource because of the bottom topography.

According to Tessier (1995), the fishery of Reunion Island, with its population of 600,000, accounts for 430 professionals, to whom should be added 700 informal-sector fisherfolk, while FAD activity is estimated at approximately 30,000 fishing trips per year. All fishing boats are motorised and approximately 700 skiffs, five to six metres in length, have been registered (Figure 2a), along with 200 larger boats with cabins, six to ten metres long. The larger category, which in 1988 consisted of sport-fishing cruisers, has been replaced by boats which are more suitable for

Table 2: Influence of FADs on catches of large pelagics

Year	Average no. of FADs on station	Total catches of large pelagics by the coastal fishery (t)	Estimate of percentage of catches made around FADs
1986	0.0	161	0
1987	0.0	159	0
1988	3.2	223	28
1989	7.5	167	50
1990	11.9	371	70
1991	11.2	382	75
1992	16.0	495	80
1993	19.9	574	85
1994	25.7	635	85

FAD fishing because they are more robust and cost less in maintenance (Figure 2b). Fish caught around FADs are purchased from fishermen at an average price of 25 FF (= US\$ 5.00) per kg, which is low in comparison with bottom fish (60 FF per kg or = US\$ 12.00). However, average yields from FAD fishing (75 kg per trip for the larger boats and 50 kg per trip for the smaller ones) are more financially rewarding than those recorded with bottom fishing (10 to 15 kg per trip). It may also be noted that public funding support for the deployment and maintenance of FADs has remained fairly constant (Table 1).

(a)



(b)

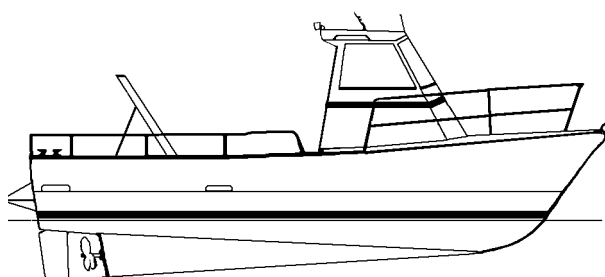


Figure 2: Typical Reunion Island artisanal fishing boats

(a) 'loup de mer' (sea-wolf), a 5.5 m skiff
(b) Professional fishing boat, 6.75 m in length

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Appendix I

The following extract comes from local legislation set up in 1995 (Arrete no. 10-167 du 11 Juillet 1995) in order to try to minimise conflicts between FAD users.

Nothing is said on the way these rules are enforced. As one can see, FADs bring all types of sources of conflict, mostly between professional and pleasure craft but also between professionals themselves.

In Reunion Island, FADs are, de facto, forbidden to industrial fishing boats by a law that obliges them to operate at least 15 miles from the coast.

. . . Fishing in a radius of half a nautical mile around the FADs is regulated in the following manner:

- It is forbidden to tie to the FAD.
- It is forbidden for professional fishermen to set up more than two longlines per boat in the area.

- It is forbidden for professional fishermen to set up longlines in the area when they have paying customers on-board.
- Longlining and drifting with live bait are forbidden to all pleasure craft in the area.
- Fishing from a pleasure craft is forbidden when a minimum of two professional fishing boats are fishing in the area (except on weekends and statutory holidays). Exceptional authorisations may be given for fishing tournaments by the local Director of Maritime Affairs.
- Dive-fishing is forbidden. Occasionally, authorisations for scientific purposes may be given by the local Director of Maritime Affairs.

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The FAD project of Tokunoshima Fishery Cooperative (TFC)

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The FAD fishery within the Tokunoshima fishery cooperative

The Tokunoshima Fishery Cooperative (TFC) is a small fishery cooperative located in the southern and sub-tropical area of Japan (Figure 1). In 1995 TFC had 144 members (44 regular members and 110 associate members). TFC's fish landing income ranges from US\$ 1.5 million to US\$ 2 million a year.

Many fishery cooperatives in the Ryukyu Islands introduced FADs (called 'Ukigy-oshyo' in Japanese) in the 1980s. In 1987, three FADs were introduced for trial at TFC. During the same year, fish caught around these FADs generated a total income of 13,569,552 yen (Table 1). This accounted for 8 per cent of the total income from fish landed and was considered a good result. Since then, TFC has set a FAD programme.

As of June 1995, ten FADs are moored on the eastern side of Tokunoshima Island

