

Summary of the 2nd symposium on "Tuna Fisheries and FAD"

Tahiti, November 28th-December 2nd, 2011

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1 - General

This symposium was organized by IFREMER and the authorities of French Polynesia. 123 scientists and technicians from 30 countries (80 French) met during one week. Its goal was to make a global assessment of the current situation of drifting & anchored FADs, their scientific components and their perspectives. The symposium was structured around 59 lectures and four thematic panels covering all FAD. The conferences were organized into five themes:

- (1) Anchored FADs and artisanal fisheries, the dominant theme of the symposium: 24 lectures, covering FADs anchored in 17 countries and regions,
- (2) Industrial fisheries and anchored and drifting FADs: 8 lectures,
- (3) Understanding of the aggregation phenomenon: 12 lectures,
- (4) Ecological Impact of FADs: 7 lectures,
- (5) Socio Economic FAD: 8 lectures.

Four panels, each lasting about 2 hours, covered the following 4 themes:

- a. Anchored FADs technology
- b. Socio-economic impact and management of FADs regional programs
- c. Management of drifting FADs by the tuna RFMOs
- d. Research priorities on FADs

As for the FAD symposium held in Martinique in 1999, the results of this symposium will be published in various forms: fifteen of the best conferences should be published in a special issue of the ALR journal, the rest being published in a collection edited by the organizers of the symposium, and will be available in an electronic format (some conferences will be published in other journals). Summaries of all lectures are available on the website of the organizers of the symposium. The conclusions and recommendations emerging from this symposium will be detailed in the conference proceedings, but they can already be summarized as follows.

2 - Anchored FADs and artisanal fisheries

The dominant theme of this symposium, producing an almost exhaustive review of the major programs implemented FAD for the last thirty years in countries and regions, mainly islands and often developing countries. The majority of these programs have been discontinuous in time and with few FAD installed: 2 / 3 of those programs with less than 20

FAD anchored. Very large number of anchored FADs being observed in Thailand, Indonesia and the Philippines .

The paradox of these fisheries is that none of them has a good statistical monitoring: the result is that none of these conferences on anchored FADs have been able to provide a table of annual catch by species carried out on the FAD. Species caught under FADs are discussed in most conferences, but not quantitatively, and therefore these species taken under anchored FADs are very difficult to estimate. A strong and logical recommendation by the symposium will be that future programs of artisanal FADs should include mandatory statistical sampling of catches by species (and sizes). These basic statistical data (biological and economic) are considered essential both to assess the impact of these fisheries and their possible interactions with other fisheries, and especially to assess the benefits of developing these implementations of FADs. The current paradox is that it is very difficult to justify these FADs on a sound scientific basis in the absence of any statistical information.

Many discussions focused on the cost and duration of operation of the FAD. If the coastal FADs (<100 m) are most often inexpensive and reliable, deep FADs (> 500m) are expensive (several thousand dollars) and often unreliable: they often disappear after a year, victims of vandalism (commonly), and also of the degradation of their mooring lines. The technology of durable FADs is complex and often restricted to industrial countries. It would be logical and desirable that FAD programs in small developing countries could benefit from the best technology, best suited to their fishing environment, and at the best cost, including their maintenance.

It is clear from lectures and discussions on these anchored FADs than they are usually very positive for the artisanal fisheries (and recreational ones): fuel reduction, improved catches, declining fishing pressure of fragile reef resources). In addition, these FAD catches do not generate high fishing pressure on the targeted pelagic resources: very few of these anchored FADs (less than 1000 world wide?), and their overall catches are low (even if they are not well known), and very little or no discards.

It is then very logical that the introduction of such anchored FADs to small scale fisheries, especially insular is encouraged by countries and donors, but ensuring a good technology, good maintenance and a minimum statistical monitoring of catches by species and fishing effort.

3 - Drifting and anchored FADs exploited by industrial fleets.

It was not the focus of the symposium, but several interesting presentations were made on the subject, covering both the major ocean fisheries by drifting FADs (dominant) and also by important fisheries using anchored FADs, these industrial purse seine fleets being important in the western Pacific (PNG, Solomon Islands, Philippines, Indonesia, Thailand). The purse seine FAD catches are observed worldwide since 1990 in all equatorial areas and they are still growing, nearly 2 million tonnes annually (about 60% of purse seine catches), especially of the dominant species skipjack (70% of the catches are taken on FADs). Skipjack catches on FADs do not cause problems, these are all skipjack stocks are still under exploited, while catches of bigeye and yellowfin, all these stocks being fully exploited, are considered negative due to the reduced average weight of tuna under FADs (3 to 5 kg, thus below the ideal average weight of these species). The desirable fishery management measures for FAD

fisheries have been widely discussed by panel 3, but without reaching fresh & firm new conclusions.

A certain number of new results and positive recommendations emerge from the presentations and discussions of the symposium on drifting FADs, the most interesting are summarized below:

1. Recommendation to develop good models for the population dynamics of FADs: their seeding rates, biomass, their movements, their mortality rate, etc ... (the data for these models have still to be acquired)
2. Recommendation to develop and generalize the use of scientific FADs equipped inter alia of sounder, camera, etc. (type GOOS, but in a FAD version). The use of scientific FADs should in particular be systematic during FAD moratoria in the strata involved.
3. Recommendation to develop research on the role of ecological trap (sensu largo) which could be played by FADs (hypothesis born in 1999), with a recommendation to that effect to generalize the analyses of stomach contents of tunas under and off FADs (the type of work carried out by SPC scientists).
4. Recommendation that more **comparative studies** should be conducted by scientists between oceans and regions, on anchored and on drifting FADs, as these comparative studies are essential to better understand biological mechanism and processes related to FADs. The creation of an internet network of FAD scientists should be a positive step in this way.
5. Recommendation to compare the species composition and sizes of the catches from anchored and drifting FADs in order to understand the causes of the major differences that seem to exist under these two types of FADs (eg skipjack always dominant under drifting FADs, never under anchored FADs, etc. ..)
6. Recommendation to rapidly generalize the use of biodegradable and environmentally friendly FADs which would generate a zero incidental mortality of turtles and sharks.

4 - Conclusion

This global symposium on anchored and drifting FADs was very interesting for fishermen (those from developing countries fishing on anchored FADs) and scientists. FADs are clearly of great interest worldwide. Most scientific and fisheries observations in relation to FADs are consistent from one ocean to another. FAD fisheries are mainly dependent of the fished ecosystem & of the types of FADs used. It is therefore typically a Kobe situation, where sharing of expertise and research facilities worldwide inter RFO, as well as comparative research multi oceans are the most effective to solve the FADs problems. These results are essential to ensure a sustainable and highly productive exploitation by FADs, without degrading the environment.