SUMMARY RESULTS OF THE OFFSHORE FISHING SURVEY

R. C. Anderson
Marine Research Section

INTRODUCTION

In 1986 the Republic of Maldives declared a 200 mile Exclusive Economic Zone (EEZ). Maldives has a large traditional pole and line tuna fishery, but these fishermen rarely venture beyond 30 miles offshore. There has been some poaching by Far Eastern longliners, and there is a licensing scheme under which some longlining has been carried out in the range 75-200 miles offshore. However, in general the zone 30-200 miles offshore is hardly exploited.

OFFSHORE FISHING SURVEY

An Exploratory Tuna Fishing Project, jointly initiated by the Bay of Bengal Program (BOBP) and the Marine Research Section of the Ministry of Fisheries was carried out for one year between December 1987 and November 1988. Its aims were to test the feasibility of commercial multiday fishing in the zone 30-100 miles offshore using drifting gillnets and pelagic longlines. Fishing operations were carried out from a chartered 52' wooden fishing vessel 'Matha Hari'. Fishing was confined to the eastern side of Maldives and was carried out in three latitudinal areas: north (based at Felivaru), central (off Male') and south (off Laamu Atoll).

SURVEY RESULTS

Despite many difficulties encountered, which greatly limited fishing activity, the survey aims were largely achieved. One particular constraint that would need to be overcome if a commercial offshore fishery were to be developed is the lack of supporting infrastructure (Waheed and Anderson, 1989).

Three main fishing gears were employed: drifting gillnet, tuna longline and shark longline. Of these three only shark longline showed real commercial promise.

The drifting gillnet used (2.5 km total length) caught about 20% of the tuna landed by pole and line masdhonis operating inshore of the project vessel at the same time. Extra sharks caught by the gillnet raised the value of the catch to more than that of the pole and line vessels, but this did not compensate for the higher running costs of the project vessel. While catches by the gillnet could be increased in a number of ways, the gillnet was shown to be unviable as an alternative to pole and line for catching tunas. This finding is perhaps an opportune one, given the current international concern about the relatively indiscriminate nature of gillnet fishing, and the increasing demand for 'dolphin-free' tuna.

The tuna longline used also proved to be unsuccessful. The average catch rate was only about 2.5 fish (67 kg) per 100 hooks. Of this yellowfin accounted for 0.3 fish (11kg), the rest being mainly sharks. The catch rate for yellowfin was about half that achieved by Far Eastern longliners operating in the Indian Ocean in recent years. This may be due to chance, regional differences or the inadequate bait available during the survey. Whatever the case, with the low prices paid for large yellowfin in Maldives tuna longlining seems unlikely to be commercially viable.

In contrast to the gillnet and tuna longline, the shark longline did yield catches in commercial quantities. The catch rate for sharks was nearly 5 sharks (223 kg) per hundred hooks:

TABLE 1. Average catch rate per 100 hooks by shark longline

	No.fish	Weight(kg)	Average Wt.(kg)
Shark	4.9	223	45.8
Billfish	0.7	10	15.2
Yellowfin	0.1	3	35.4
Others	0.1	1	5.9
Total	5.7	237	-

Thus a small boat equipped with a longline of 500 hooks might expect to catch about 1 MT of sharks per night. Infact, using stronger gear (e.g. chain instead of wire leaders) should lead to even higher catches, for during the survey about 3% of hooks were lost each night, presumably to large sharks.

Overall shark catches did not vary much between seasons or with distance offshore. However, there were considerable differences in catch rates between the north and south, with those in the north and central areas being some 60% higher than those in the south. In addition there were notable differences in the species composition of shark catches between regions and seasons.

The commonest species caught was the silky shark *Carcharhinus falciformis* (Dhivehi: oivali miyaru, ainu miyaru, aadhaige miyaru). The average catch rate by shark longline was 2.9 sharks per 100 hooks. However, catch rates in the northern and central fishing areas were over 3 times higher than those in the south. Within the northern and central areas, catch rates were highest during the southwest monsoon season. In addition, the average size of silky sharks caught during the SW season was larger than that in the NE season, when many juveniles associated with drifting objects were present (oivali miyaru). A summary of the length frequency distribution of silky sharks caught by shark longline is presented in Fig. 1.

TABLE 2. Catch rates of sharks by species, area and season by shark longline (numbers per 100 hooks)

Area	North and Centre		South		Total
Season	NE	SW	NE	SW	
Silky Shark	2.9	4.1	-	1.0	2.9
Oceanic white tip	1.1	1.0	-	2.1	1.2
Others	1.2	0.4	-	0.2	0.7
Total	5.2	5.5	-	3.3	4.9

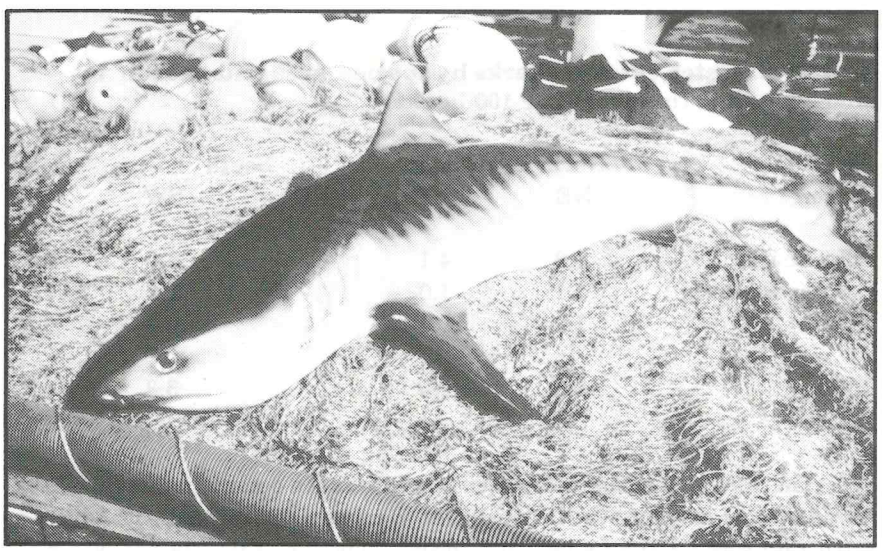
The second commonest species caught was the oceanic white tip shark, *Carcharhinus longimanus* (Dhivehi: feeboa miyaru, fee miyaru). The average catch rate was 1.2 sharks per 100 hooks, however, this species was most

abundant in the southern area, where the catch rate was about twice that in the northern and central areas. The length frequency distribution of oceanic white tip sharks caught by shark longline is given in Fig. 1.

Several other species of shark were caught in small numbers, including the blue shark *Prionace glauca* (andhun miyaru), the silvertip shark *Carcharhinus albimarginatus* (kattafulhi miyaru) and the tiger shark *Galeocerdo cuvieri* (femunu). Only the silvertip shark showed signs of regional or seasonal variations, with all specimens being caught during the NE season.

CONCLUSIONS

The offshore fishing survey was handicapped by the lack of infrastructure necessary to support multiday offshore fishing. Nevertheless, it did show that gillnetting is not an efficient alternative to pole and line fishing for skipjack, and that offshore longlining for large yellowfin is not feasible given the low prices paid in Maldives. On the positive side, the potential of the Maldives' oceanic shark resources was clearly demonstrated. Development of this fishery would of course depend on Government pricing policies, but shark stocks are notoriously easy to overfish because of their relatively low reproductive capacity, so any large development should be closely monitored.



2m tiger shark caught during the offshore fishing survery

FIG.1. LENGTH FREQENCY DISTRIBUTION OF TWO SPECIES CAUGHT BY SHARK LONGLINE