REVIEW OF THE MALDIVIAN TUNA FISHERY

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INTRODUCTION

The Maldives is a tuna-fishing nation. The Maldivian tuna fishery has been in existence for centuries, and is still of central importance. In 1994 the total recorded fish catch reached a record of 104,000 t, of which 89,600 t (86%) were tunas. The great majority of the tuna catch is landed by live-bait pole-and-line vessels, known as *masdhonis*. There is also a significant but declining troll fishery. This is carried out from vessels known as *vadhu dhonis*, most of which are still sail-powered. In addition, some tuna longlining has been permitted under licence in the outer waters of the Maldivian EEZ during recent years. At the last two Expert Consultations the Maldivian tuna fishery was reviewed by Hafiz (1991) and Hafiz and Anderson (1994).

SKIPJACK, YELLOWFIN AND BIGEYE

Skipjack tuna (*Katsuwonus pelamis*) is caught mainly by pole and line. It is the most important fish species caught in the Maldives. Skipjack catches averaged 68% of the total national fish catch in 1992-94. Recorded annual catches had stagnated at about 58,000 t from 1988-1993, although they did increase in 1994. Catch rates declined during 1988-93. There is also evidence from commercial data that average sizes may have decreased over the last few years. There is therefore some concern about the status of skipjack resources.

Yellowfin tuna (*Thunnus albacares*) is the second most important species caught in Maldives. Catches have been increasing in recent years to a record high of 13,100 t, or 12.6% of the total recorded fish catch, in 1994. The great majority of the yellowfin tunas landed in Maldives are juveniles, caught by the pole-and-line fleet. However, increasing numbers of subadults and adults are being caught by handliners and longliners.

Relatively small quantities of bigeye tuna (*Thunnus obesus*) are landed among yellowfin catches. Most are juveniles, caught by pole and line. Separate catch statistics are not collected for bigeye tuna, but it has been roughly estimated that something of the order of 500 t per year of this species is currently being landed in the Maldives. This is about 0.5% of the total recorded catch.

Total estimated annual catches for skipjack and yellowfin tuna are summarized in Table 1. Further details of the fisheries and biology of these two species, and also of bigeye tuna, are presented in separate papers (Adam and Anderson, 1995a&b; Anderson, 1995), so they are not considered further here.

Frigate tuna

Frigate tuna (*Auxis thazard*), known locally as *raagondi*, is the third most important fish species caught in the Maldives. Catches have increased in recent years to an average of 4,300 t during 1992-94 (Table 1). This represents about 4.7% of all fish and about 5.4% of all tunas caught in the country. The majority of the frigate tuna caught in the Maldives is taken by live-bait pole and line (Table 2).

Catch per unit effort (CPUE) and catch have both increased recently (Figure1). This is believed to be due to the effects of oceanographic changes, particularly those associated with El Niño Southern Oscillation (ENSO) events (Anderson, 1987 & 1993; Hafiz and Anderson, 1994). Note the relatively high CPUEs during the El Niño years of 1982-83, 1987 and 1992-94 (Figure 1), and also the record catch during the earlier El Niño year of 1973 (Table 2).

The size range of frigate tuna caught in the Maldives is

***Figure 1**. Mechanized pole and line CPUE for frigate tuna, 1979-1994, for the entire Maldives (kg/day).*

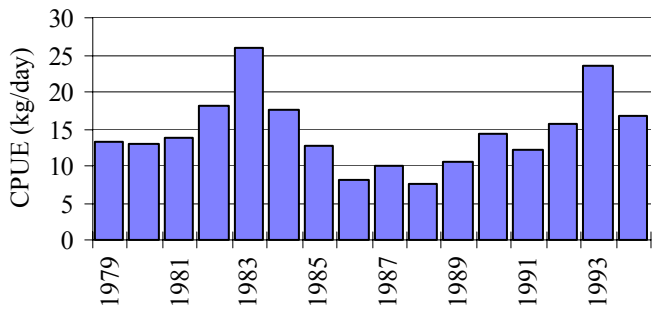


***Table 1**. Recorded annual catches (t) of tunas in the Maldives by species, 1970-1994*

Year	*Skip jack*	*Yellow fin*	*Frigate*	*Kawa kawa*	*Dog tooth*	*Total*
1970	27,684	1,989	3,023	644	n/a	33,340
1971	28,709	1,227	3,015	473	n/a	33,424
1972	17,971	2,076	3,186	596	n/a	23,829
1973	19,195	5,475	6,626	1,088	n/a	32,384
1974	22,160	4,128	6,006	830	n/a	33,124
1975	14,858	3,774	4,057	415	n/a	23,104
1976	20,092	4,891	2,707	953	n/a	28,643
1977	14,342	4,473	3,080	927	n/a	22,822
1978	13,824	3,584	1,661	768	n/a	19,837
1979	18,136	4,289	1,701	721	n/a	24,847
1980	23,561	4,229	1,595	1,063	n/a	30,448
1981	20,617	5,284	1,606	1,274	n/a	28,781
1982	15,881	4,005	2,061	1,887	n/a	23,834
1983	19,701	6,241	3,540	2,087	n/a	31,569
1984	32,048	7,124	3,105	1,714	376	44,367
1985	42,602	6,066	2,824	2,177	182	53,851
1986	45,445	5,321	1,778	1,071	136	53,751
1987	42,111	6,668	1,921	1,232	105	52,037
1988	58,546	6,535	1,629	1,257	84	68,051
1989	58,145	6,082	2,146	1,322	108	67,803
1990	59,899	5,279	3,013	1,891	281	70,363
1991	58,898	7,711	2,582	1,677	234	71,102
1992	58,577	8,697	3,389	2,451	337	73,451
1993	58,740	10,110	5,456	3,569	628	78,503
1994	69,411	13,126	4,019	2,656	387	89,599

Source: Ministry of Fisheries and Agriculture, Economic Planning and Coordination Section

***Table 2.** Annual Maldivian catches (t) of frigate tuna by vessel type, 1970-94.*

Year	*Sailing P/L*	*Mech. P/L*	*Total P/L*	*Trolling*	*Total*
1970	2,775	-	2,775	248	3,023
1971	2,849	-	2,849	166	3,015
1972	3,004	-	3,004	182	3,186
1973	6,440	-	6,440	186	6,626
1974	5,804	-	5,804	202	6,006
1975	3,713	181	3,894	163	4,057
1976	1,971	448	2,419	289	2,707
1977	1,863	953	2,816	264	3,080
1978	720	735	1,455	206	1,661
1979	435	994	1,429	272	1,701
1980	207	1,084	1,291	304	1,595
1981	141	1,156	1,297	309	1606
1982	80	1,750	1,830	231	2,061
1983	141	3,048	3,189	351	3,540
1984	66	2,701	2,767	338	3,105
1985	70	2,071	2,141	683	2,824
1986	130	1,309	1,439	339	1,778
1987	25	1,580	1,605	316	1,921
1988	14	1,373	1,387	242	1,629
1989	5	1,944	1,954	197	2,146
1990	21	2,760	2,781	232	3,013
1991	2	2,421	2,423	159	2,582
1992	32	3,220	3,252	137	3,389
1993	34	5,216	5,250	206	5,456
1994	12	3,764	3,776	243	4,019

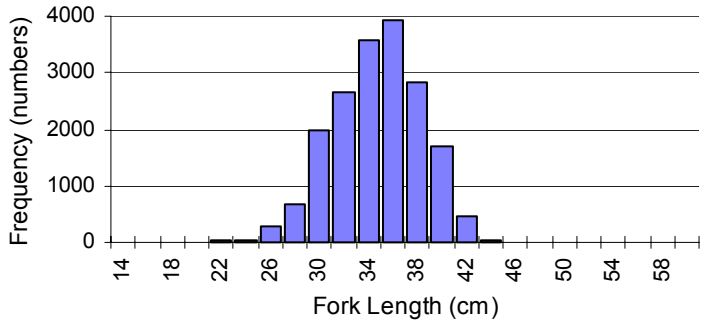
Source: MOFA. Note: minor catches by other categories are included under trolling.

rather limited (Figure2). The great majority of the frigate tuna caught in 1994 were within the 30-40 cm FL range, with a mode at about 36 cm. This is consistent with lengths reported in earlier years (Anderson, 1987; Hafiz and Anderson, 1988; Rochepeau and Hafiz, 1990).

Kawakawa

Kawakawa, or eastern little tuna (*Euthynnus affinis*), is the fourth most important species caught in the Maldives. Catches have increased in recent years to an average of 2900 t during 1992-94 (Table 1), or about 3.1% of all fish and about 3.6% of all tunas caught in the country. The recent increase in kawakawa catches was achieved by the pole-and-line fleet (Table 3). The trolling fleet traditionally landed the bulk of kawakawa in the Maldives. However, over the last decade the trolling fleet has declined in size, and consequently catches have also declined.

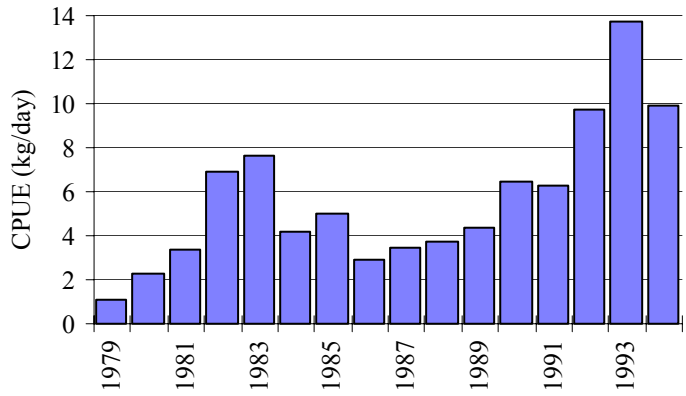
***Figure 2.** Length frequency distribution of frigate tuna in the Maldives, 1994. (H.Dh. Kulhudhufushi, R. Alifushi, and G.Dh. Thinadhoo)*



In addition to catch, CPUE has also increased recently, to a record level of nearly 14 kg/day by mechanized pole-and-line vessels in 1993. As with frigate tuna, the CPUE of kawakawa in Maldivian waters is known to be affected by ENSO events (Anderson, 1987, 1993; Hafiz and Anderson, 1994). Note the high CPUEs during the El Niño years of 1982-83 and 1992-94 (Figure 3), and also the high catches during the earlier El Niño years of 1973 and 1977 (Table 3).

Kawakawa is relatively uncommon in the south of

Figure 3. *Mechanized pole and line CPUE for kawakawa, 1979-1994, for the entire Maldives (kg/day)*



Maldives. A combined length-frequency histogram for kawakawa sampled on three islands in the north and centre of the Maldives is presented in Figure 4. The majority of kawakawa caught were within the size range of 26-50 cm FL, which is consistent with previous reports (Anderson, 1987; Hafiz and Anderson, 1988; Rochepeau and Hafiz, 1990).

TUNA FISHERY BYCATCH

The Maldivian pole-and-line fishery is highly directed, specifically targeting tunas, and the quantity of other species caught is relatively small, probably less than 5% of the total catch. Data presented by the Ministry of Fisheries and Agriculture (MOFA) (1995) suggests that nearly 10% of the pole-and-catch line consists of species other than tunas. Despite the fact that "other species" tend to be underreported in Maldivian catch statistics, this is likely to be an overestimate resulting from misreporting of fishing methods. The main bycatch species in the pole-and-line fishery are rainbow runner (*Elagatis bipinnulata*), silky shark (*Carcharhinus falciformis*) and, to a lesser extent, dolphinfish (*Coryphaena hippurus*). Species taken in minimal quantities include ocean triggerfish (*Canthidermis maculatus*), tripletail (*Lobotes surinamensis*), and oceanic whitetip shark (*Carcharhinus longimanus*).

Silky sharks are of particular interest for both economic and ecological reasons. The association of silky sharks with tunas is well known (*e.g.,* Au, 1991; Anderson and Ahmed, 1993). In Maldives the adults are known as *ainu miyaru* (school shark) because of their close association with tuna schools. The juveniles are known as *oivaali miyaru* (drifting object/flotsam shark) because of their association with such objects. Drifting objects, and their associated fishes, are carried to the Maldives by the monsoon currents, so tend to appear off the west coast during the southwest monsoon (May to October) and off the east coast during the northeast monsoon (December to March). Maldivian tuna fishermen search for flotsam in order to catch the fish associated with it. The most commonly associated variety is juvenile yellowfin tuna, but other target and bycatch species are also found, including juvenile silky sharks. Fishermen occasionally catch these sharks by pole and line, but they are more commonly taken by handline or by hand. The majority are juveniles within the 90-150 cm length range. Adult silky sharks are caught in Maldives by pelagic longline. Virtually all Maldivian tuna fishermen report that tunas follow silky sharks, and that catching silky sharks reduces tuna catches. Despite this, many Maldivian tuna fishermen catch silky sharks because "everybody else does" and because of the economic incentives. In August 1995, on the fishing island of B. Thulaadhoo, local processors were paying fishermen MRf 100 (about US$ 8.45) per piece for whole juvenile silky sharks. The meat is salt dried for export to Sri Lanka, and the fins are dried for export to the Far Eastern Chinese markets. Rising demand for shark fins, combined with increasing longlining activity in the Indian Ocean (IPTP, 1995) will undoubtedly have a major impact on pelagic shark stocks in the Indian Ocean. The effect this will have on tuna stocks and/or catches is unknown.

OTHER TUNAS AND RELATED SPECIES

Figure 4. *Length frequency distribution of kawakawa in the Maldives, 1994. (H. Dh. Kulhudhufushi, R. Alifushi, and Dh. Kudahuvadhoo)*

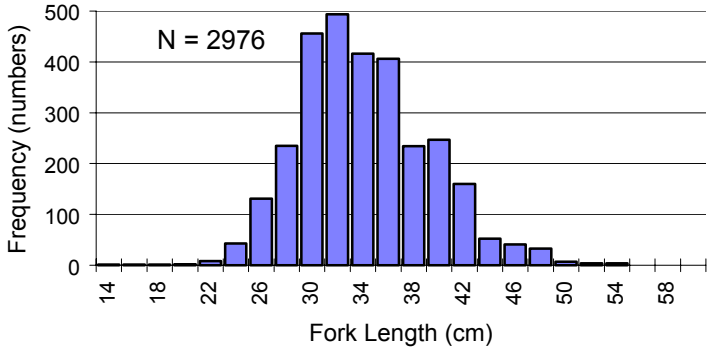


Table 3. *Annual Maldivian catches (t) of kawakawa by vessel type, 1970-1994.*

Year	*Sailing P/L*	*Mech. P/L*	*Total P/L*	*Trolling*	*Total*
1970	242	-	242	402	644
1971	220	-	220	253	473
1972	253	-	253	343	596
1973	574	-	574	514	1,088
1974	397	-	397	433	830
1975	140	7	147	268	415
1976	157	34	191	762	953
1977	112	48	160	767	927
1978	78	55	133	634	768
1979	94	79	173	548	721
1980	104	191	295	768	1,063
1981	119	284	403	871	1,274
1982	172	671	843	1,044	1,887
1983	98	895	993	1,094	2,087
1984	49	646	695	1,019	1,714
1985	99	811	910	1,267	2,177
1986	23	476	499	572	1,071
1987	18	548	566	666	1,232
1988	11	690	701	556	1,257
1989	13	811	824	498	1,322
1990	15	1,238	1,253	638	1,891
1991	4	1,244	1,248	429	1,677
1992	65	1,998	2,063	388	2,451
1993	20	3,061	3,081	488	3,569
1994	11	2,217	2,228	428	2,656

Source: MOFA. Note: minor catches by other categories are included under trolling

Dogtooth tuna (*Gymnosarda unicolor*) is a reef-associated species, and is caught mainly by trolling along reefs. Total recorded catches are summarized in Table 1; these undoubtedly underestimate actual landings due to under-reporting of reef fish catches. Wahoo (*Acanthocybium solandri*) is the only seerfish of any importance caught in Maldives; most are caught by trolling, although some are still taken by a traditional lure-and-harpoon fishery (known as *heymas helun*). Separate catch statistics are not maintained for this species. The narrow-barred Spanish mackerel (*Scomberomorus commerson*) does occur in Maldives, but is very rare.

The billfish species most commonly caught in Maldives is the sailfish (*Istiophorus platypterus*). As with wahoo, this species is caught mainly by trolling, although some are still taken by the traditional lure-and-harpoon fishery. Separate catch statistics are not maintained for billfishes. At Malé market nearly all the billfishes landed are sailfishes, with only occasional landings of black marlin (*Makaira indica*) and even rarer landings of blue marlin (*Makaira mazara*) and striped marlin (*Tetrapterus audax*). The scarcity of marlins at Malé market is believed to be a result of local fishermen not targeting these species, rather than a reflection of real scarcity. Marlins appear regularly in

Table 4. *Numbers of active fishing vessels operating in the Maldives, 1985-94.*

Year	*Sailing P/L*	*Mech. P/L*	*Total P/L*	*Trolling*	*Total*
1985	43	988	1,031	963	1,994
1986	32	1,009	1,041	753	1,794
1987	21	1,044	1,065	655	1,720
1988	16	1,096	1,112	505	1,617
1989	14	1,114	1,128	414	1,542
1990	11	1,151	1,162	343	1,505
1991	6	1,252	1,258	352	1,610
1992	38	1,347	1,385	270	1,655
1993	15	1,434	1,449	299	1,748
1994	42	1,410	1,452	324	1,776

Source: MOFA/EPCS.

game-fishing and longlining catches. Longliners also catch quantities of broadbill swordfish (*Xiphias gladius*).

Table 5. *Annual fishing effort (number of boat days) by vessel type, and numbers of fishermen, 1970-1994*

Year	*Sailing P/L*	*Mech. P/L*	*Total P/L*	*Trolling*	*No. fishers*
1970	191,421	-	191,421	104,482	17,094
1971	169,237	-	169,237	67,378	18,075
1972	158,544	-	158,544	76,136	18,535
1973	215,278	-	215,278	90,461	18,807
1974	203,362	-	203,362	93,504	19,362
1975	171,808	4,200	176,008	90,100	19,666
1976	153,539	21,800	175,339	135,031	21,381
1977	104,943	41,300	146,243	157,949	21,594
1978	53,739	54,800	108,539	176,878	22,683
1979	24,615	74,904	99,519	132,903	23,924
1980	16,877	83,134	100,011	136,934	24,330
1981	13,852	83,731	97,583	130,362	22,301
1982	10,036	97,085	107,121	132,342	21,727
1983	6,339	117,172	123,511	118,639	22,262
1984	6,220	153,460	159,680	108,314	21,028
1985	4,681	162,430	167,111	110,061	19,671
1986	3,354	161,910	165,264	79,139	22,245
1987	2,355	158,785	161,140	69,380	22,387
1988	1,242	184,353	185,595	51,460	21,880
1989	911	183,944	184,855	39,725	22,025
1990	1,317	193,045	194,362	37,933	21,725
1991	424	198,320	198,744	35,814	21,432
1992	3,602	204,808	208,410	28,137	21,195
1993	1,057	222,548	223,605	34,507	19,995
1994	1,138	223,095	224,233	31,687	22,268

Source: MOFA/EPCS

FLEET TRENDS

Details of the numbers of both pole-and-line and trolling vessels actively engaged in fishing are presented in Table 4, and their fishing effort is shown in Table 5. Mechanization of the traditional sailing pole-and-line fleet started in 1974-75. By 1982 the great majority of the tuna catch was being landed by mechanized vessels. The number of mechanized pole-and-line vessels grew steadily from 1974 to 1993. 1994 was the first year in which there was a decline in the number of pole-and-line vessels actively engaged in fishing. The reasons for this probably include the rising costs of such vessels; the increasing difficulty of finding crews; and the expansion of other investment opportunities within the country.

During the transition to a mechanized pole-and-line fleet in 1975-1982, the trolling fleet increased its fishing activity (Table 5). Since then, however, mechanized pole-and-line vessels have dominated the fishery, and trolling vessels have been marginalized. As a result both the number of active trolling vessels and the number of days that they fish have decreased in recent years (Tables 4 and 5).

The decline of the troll fishery and the apparent cessation of growth in the mechanized pole-and-line fleet are indicative of changing socioeconomic conditions in the Maldives. Of particular importance are changing attitudes to fishing as an occupation. Fishing is not seen as a desirable occupation, even though income can be relatively high. The great expansion and diversification of the economy over the last two decades has created many employment opportunities in other sectors. The number of fishermen in the Maldives reached a peak in 1984, and has stagnated or even declined since then (Table 5). With an increasing population the net result is that the percentage of fishermen has dropped from its historical level of about 15% of the population to the current level of about 8 or 9%.

SPORTFISHING

Sportfishing is becoming increasingly popular with foreign tourists visiting the Maldives. There are at present about 6 dedicated game-fishing boats based at resorts in the country. In addition, an unknown number of local boats (*dhonis*) carry out sportfishing on a part-time basis. Most vessels target sailfish and wahoo, and also catch occasional dogtooth tuna, yellowfin tuna, marlins, jacks (fam. Carangidae), and other species. At present there is no national licencing scheme or data collection system for sportfishing boats. All the vessels involved in this fishery are of Maldivian registry.

One vessel specifically targets billfish, and has carried out some tagging under the aegis of the International Billfish Foundation of Florida, U.S.A. About 100-plus releases of billfish have been made since 1993. There has been one reported recovery, of a sailfish, recaptured in the Maldives in 1993 34 days after release.

BAITFISH

The Maldivian tuna fishery is based to a very large extent on the live-bait pole-and-line technique. In 1994 an estimated 93% of the total recorded fish catch of the Maldives was caught by pole and line (MOFA, 1995). A wide range of livebait species are used, but the main varieties, in order of importance, are:

- Sprats, particularly the silver sprat, *Spratelloides gracilis* (fam. Clupeidae).
- Juvenile fusiliers (fam. Caesionidae).
- Cardinalfishes (fam. Apogonidae).
- Anchovies, notably the Indian anchovy, *Encrasicholina heteroloba* (fam. Engraulididae).

The total annual catches of livebait in the Maldives have been roughly estimated for three different time periods by Anderson and Hafiz (1988) and Anderson and Saleem (1994), as follows:

1978-1981	3,000-3,500 t
1985-1987	5,800 ± 1,300 t
1993	11,100 ± 2,800 t

It should be noted that there are considerable uncertainties associated with these estimates. Despite this it is clear that there has been a major increase in livebait catches in recent years. In part this can be explained by the steady increase in fishing effort over the last 15 years (Table 5). The 1978-81 period marked the low point of pole-and-line fishing effort, and therefore of livebait utilization, during the transition from an entirely sailing fleet to an essentially mechanized one. There also appears to have been an increase in the quantity of bait used per day. This appears to be largely a result of the increase in average size and associated fishing power of pole-and-line vessels in recent years.

Tuna catch per unit bait (CPUB) has been estimated at about 10 kg (range 7-13 kg) in 1985-87 (Anderson and Hafiz, 1988), and at about 7 kg (range 5-9 kg) in 1993 (Anderson, 1994). This is rather low compared to CPUB rates from the western Pacific (*e.g.* Sakagawa, 1987) and very low compared with estimated rates in Lakshadweep (Pillai, 1991). There are several possible explanations for the apparently low CPUB in Maldives. These include:

- The Maldivian fishermen's profligate use of livebait when it is available in abundance.

***Table 6**. Exports (t) of tunas and tuna products from the Maldives, 1990-1994.*

Commodity	*1990*	*1991*	*1992*	*1993*	*1993*
Frozen	17,056	10,085	5,540	9,869	7,439
Smoke dried	2,418	3,285	3,093	3,578	4,102
Salt dried	2,084	2,298	1,323	1,657	2,394
Canned	6,931	7,188	7,478	4,877	6,849
Fish meal	1,971	3,110	2,150	2,450	2,350

Source: Customs data compiled by MOFA/EPCS

- Total catch has been estimated in the Maldives, not the quantity of bait used (excluding losses during capture and holding) as may be the case elsewhere (Sakagawa, 1987).

A possible overestimation of total Maldives bait catch, as a result of poor estimation of the frequency of reuse of unused bait from one day to the next. Sampling has been initiated to estimate this factor more accurately.

With an estimated catch of 11,100 ± 2800 t in 1993, the Maldivian livebait fishery is much larger than the livebait fisheries of the south Pacific (cf. Blaber and Copland, 1993; Dalzell, 1993). It is certainly the largest reef fishery in the Maldives, and by far the most important, since it supports the 80,000-t-per-year pole-and-line tuna fishery.

FAD PROGRAMME

Maldives carried out initial experiments with fish-aggregating devices (FADs) for tunas in 1981. Numerous trials were carried out over the following years to develop a design that was suitable for Maldivian conditions (Naeem, 1988). A suitable design has now evolved, and is proving very successful (Naeem and Latheefa, 1994). The latest model FADs typically last for about two years after deployment. Thirty-two sites around the Maldives have been identified as appropriate locations for FADs, taking into account bottom topography, proximity of fishing islands, and local tuna abundance. MOFA aims to maintain FADs at all of these sites, with 28-30 FADs in place at any one time.

INFRASTRUCTURE DEVELOPMENT

The Maldivian tuna fishery has traditionally been carried out by privately-owned pole-and-line vessels. Government efforts over the last decade have concentrated on the development of infrastructure for the collection and export of tuna. The government agency responsible for these activities is the Maldives Industrial Fisheries Company (MIFCO), which maintains a fleet currently comprising 22 collector (ice-carrying) vessels and 12 mother (freezer) vessels. Four of the collector vessels were commissioned during 1995. MIFCO runs the tuna cannery at Felivaru in Lhaviyani Atoll (north of Malé), and is also commissioning two new cold-storage facilities, both in the south of the country. One, at Maandhoo in Laamu Atoll, is already partially operational, and should be fully operational from October 1996. The other, at Koodhoo in Gaafu Alifu Atoll, is expected to open in April 1996.

EXPORTS

Tunas in general, and skipjack in particular, form a major part of the Maldivian diet. Nevertheless, tuna has a major export of the Maldives for centuries. The traditional export was smoke-dried tuna, known as 'Maldive fish', and the traditional export market was Sri Lanka. This market collapsed in the early 1970s, when the Maldives diversified into canned and frozen tuna exports. A byproduct of canning operations is fish meal, which is also exported. In the last few years the market for Maldive fish has opened up again, and exports of this commodity have increased. Details of tuna and tuna product exports over the last few years are presented in Table 6.

EEZ FISHERY

The Maldives declared a 200-mile EEZ in 1976. Since 1985 fishing by foreign or joint-venture longliners has been permitted under licence in the outer waters of the EEZ (from 75 to 200 nautical miles offshore). The inner waters up to 75 miles offshore are reserved for local fishermen. No purse seining or gillnetting is permitted in the Maldivian EEZ.

During 1994 a total of 20 foreign longliners (14 Korean and 6 of Central or South American registry) were licenced to fish in the Maldivian EEZ by the Ministry of Trade and Industries. As a condition of licencing vessels were required to submit full catch and effort data on a regular basis. Three vessels submitted full data; three submitted partial data; twelve reported only total catch and number of days fished; and two submitted no data, perhaps because they did not fish in the Maldivian EEZ. Partly because of their non-compliance with this requirement, the licences of all foreign vessels were terminated from August 1994. Total effort, total catch, estimates of catch composition, and estimates of catch per unit effort for 1994 are summarized in Table 7.

Table 7. *Catch, effort and catch per unit effort of foreign and Maldivian registry vessels operating in the Maldivian EEZ.*

	Licenced Vessels	***Maldivian Vessel***
Period of Operation	***1/94 - 8/94***	***5/93 - 1/95***
Fishing Effort		
No. vessels fished	18	1
No. reported days fished	985	279
Average no. hooks per day	2403[a]	1768
Total hooks used	2,366,955	493,343
Catch (t)		
Total catch	790.9t (100%)	273.2t (100%)
Bigeye tuna catch	538.6t[b] (68.1%)	118.2t (43.2%)
Yellowfin tuna catch	136.0t[b] (17.2%)	77.1t (28.2%)
'Other' catch	116.3t[b] (14.7%)	77.9t (28.5%)
Catch per unit effort		
Bigeye tuna CPUE	228 kg/1000 hooks	240 kg/1000 hooks
Yellowfin tuna CPUE	57 kg/1000 hooks	156 kg/1000 hooks
'Other' CPUE	49 kg/1000 hooks	158 kg/1000 hooks
Total CPUE	334 kg/1000 hooks	554 kg/1000 hooks

a. Based on reports for 192 days.
b. Based on reports for 256 t.
Source: Ministry of Trade and Industries and MIFCO data compiled by MOFA/EPCS/MRS.

It is emphasized that these estimates are based on vessel reports; and have not been independently verified. However, one Maldivian vessel, a high-seas longliner currently owned and operated by MIFCO, has been operating in the same outer waters of the Maldivian EEZ since May 1993. This vessel has a Japanese master fisherman on board, but is being operated on a trial basis with a Maldivian crew. It might therefore have been expected to achieve lower catch rates than the foreign licenced vessels, but in fact its reported rates were higher (Table 7), strongly suggesting that the foreign vessels had been underreporting their catches.

PURSE-SEINE TRANSHIPMENTS

In recent years purse seiners based in Seychelles have fished in the region of the Chagos Archipelago, just south of Maldives, during the first half of the northeast monsoon (November to January). In November 1994 Spanish purse seiners started transshipment in Addu Atoll (the southernmost Maldivian atoll), under a licencing agreement with the Maldivian government's State Trading Organization (STO). The numbers of vessels involved and the quantities of fish transshipped are summarized below (source: STO, Malé):

Date	***No. Purse Seiners***	***No. Reefers Arrived***	***Tuna Transshipped (t)***
11. 94	2	3	1,561
12. 94	4	4	4,147
01. 95	6	2	5,778
Total	12	9	11,486

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