THE ARTISANAL TUNA FISHERY IN YEMEN

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ABSTRACT

The artisanal catch of tuna, tuna like, seerfish, and billfishes in Yemen is very old and Yemeni fishermen traditionally used wooden boats and old fishing means. Recently many fishermen use fibreglass boats with outboard motors. Handlines are the main traditional artisanal fishing gear (with live or dead baitfish or artificial bait), and also longlines and nets (driftnets, set gillnets and small-purse seines). Tuna fishing is still not exploited industrially.

The data collected was from fish receiving centres which belong to fishing co-operatives and associations located along the Yemeni coast. Production of tuna, seerfish and billfishes in Hadramout co-operative amounted to 4,360t for the two years 1995-96. Aden co-operative received 2,985t for three years from 1991 to 1993, and Shuqra co-operative 6,623t for eight years from 1990 to 1997. These three co-operatives are considered to produce about 75 % of the tuna catch of Yemen, while other co-operatives, e.g. Hodeida; Shabwa, Al-Mahara and Socotra have about 25 % .

The main species of tuna in catches are Thunnus albacares *(Yellowfin tuna),* Thunnus tonggol *(Longtail tuna),* Euthynnus affinis *(Kawakawa),* Sarda orientalis *(Striped bonito),* Scomberomorus commerson *(Spanish mackerel) and* Istiophorus platypterus *(Sailfish).*

Introduction

Yemen has a long coast, extended from Sultanate of Oman in the south east to Bab Al-Mandab towards the north until the boarders of Kingdom of Saudia Arabia. The length of these coasts is approximately 2,350 km.

There is a big stock of pelagic fish in the Yemen waters. These fishes immigrate from the Indian Ocean to regional sea of Yemen due to the availability of biophysical factors such as food, warm temperature, and dissolved oxygen in the water, suitable salinity and the Upwelling.

There is a long tradition of fishing of tuna in the Republic of Yemen. The Yemeni fishermen are famous in this type of fishing. They used wooden boats and fishing means. Nowadays many fishermen use fibreglass boats with outboard motors and still use some of the old means of fishing. There is no industrialised fishing of tuna in Yemen.

Tuna, in particular *Thunnus albacares*, are consumed locally and some are canned in Mukalla and Shuqra fish canning factories. Some quantities are exported fresh to France (500-1,000t yearly since 1991). *Scomberomorus commerson* and *Thunnus albacares* are mostly exported to the southern part of Saudi Arabia .

The data of tuna production and other types of fish are taken from fish selling centres belonging to the fish marketing co-operatives which are scattered along the coast of the Republic of Yemen.

Fisheries

The most important fishing gear is used in fishing tuna, seer fish and billfishes are:

Handline

Fibreglass boats 8 to 10m long are used with outboards of 15-45 Hp. These boats are light, fast and can carry big quantities. Each boat carries 2-3 persons. Each boat carries a "Mahlak" for live baitfish, a fibreglass box opened from the top and with three orifices at the bottom which have a filter for inlet and outlet of water. The livebait is put on the hook and trolled slowly according to the condition of the condition and the direction of wind, also the directions of schools of tuna.

Baitfish used for fishing of tuna are *Rastrelliger kanagura; Sardinella longiceps; Trachurus* sp. (Horse mackerel); *Parupeneus indicus*; *Scomber japonicus; Nemipterrus japonicus; Synodus indicus* and *Lutjanus coeruleolineatus*. Dead baitfish are also used, while the boat is either anchored or moving. Artificial lures are used in the same way as mentioned for livebait. Set longline are tied to the boat or anchored.

Nets:

Tuna, seerfish and billfishes are fished with drifting gillnets tied to the boat (driftnets) offshore and at night. Fishing is stopped during the moony nights. Set gillnet (anchored) are used at shallow depths during the whole year. Limited use is made of small-purse seines.

Data collection

Data is collected from fish receiving centres belonging to fisheries co-operatives and associations spread along the Yemeni coast. There are some problems in receiving the data in adequate time, particularly from faraway areas due to difficult communication. The Marine Science and Resources Research Centre collects the data monthly, seasonally or yearly and then these data are entered on a computer for analysis.

The data in this paper were collected from Aden co-operative for the period 1991 to 1993 (Table 1), Shuqra co-operative for the period 1990 to 1997 (Table 2) and from Hadramout co-operatives for the period 1995 to 1996 (Table 3). From the tables, it is clear that the production of tuna fishes is mainly concentrated in Hadramout Governorate, Shuqra area and Aden zone.

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Results

From the traditional fish production of tuna, it is clear that the production differs in quantities among the seasons due to several factors. The most important factors are:

Meteorological conditions

In the Arabian Sea, which extends from Bab Al-Mandab to the Oman border there are two monsoon seasons. The "Shemal", (north) wind blows from June to end of September. During this season there are high waves and the fish production is in general reduced. The "Al-Aziab" blows from October to May. During this season the sea is calm and there is more fish production. During the recent years (1989-1997) there was a change in the seasonal wind patterns, particularly in the "Shemal" season where the height of the waves was less than in previous years.

The situation is reversed in the Red Sea area. From June to September, the wind is calm and from October to May the waves slightly rougher.

Hydrographic conditions

Upwelling may occur with water temperatures reduced to less than 17°C and the dissolved oxygen at 1mg/l. These factors hem the fish in warm water areas.

Biophysical conditions

Biophysical conditions such as sufficient nutrition where tuna fish eat the small fishes such as sardines, crabs, squids, and shrimps, the temperature is relatively moderate and the amount of oxygen dissolved in water and the percentage of salinity are adequate. All these factors assist the stability of the presence of tuna in Yemeni Sea.

Migration

Yellowfin tuna is among the fishes migrating for nutrition into the Yemeni Sea. The other types of fishes are semi stable.

Conclusions

The data collected from the three cooperatives on the southern coast of Yemen show that the percentage of tuna fish in Hadramout Governorate during 1995 to 1996 was as follow: 46 % *Thunnus albacares*, 24 % *Scomberomorus commerson* and 16 % *Euthynnus affinis*

This indicates that the tuna stock is big and stable throughout the year due to the availability of biophysical factors and nutrients. Also, the traditional fishing of tuna does not have negative effects on the pelagic fish stock in general. It is possible to increase the production of tuna through commercial fishing, but this should be controlled continuously.

Acknowledgments

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References

R.R.C Eduard and S. Shaher, 1984, Seasonal change in fish stock on Yemen shelf in relation to the Upwelling.

FAO Fisheries Technical paper 222 Rev. l.

FAO Fisheries Technical paper 306/ 1 Rev. I.

Table 1: Catches (t) of seerfish, tuna, tuna-like and billfishes in Aden Co-operative.

Year	no. of boats (Fibreglass)	Spanish mackerel	Yellowfin	Longtail tuna	Kawakawa	Frigate tuna	Striped bonito	Skipjack	Sailfish	Black marlin	Swordfish
1991	650	281.923	184.498	106.14	571.18	20.891			69.981		
1992	725	223.346	129.135	103.227	251.171	36.495			56.515		
1993	830	114.774	140.65	118.62	305.316	143.625	24.655	74.086	9.721	10.267	8.332

Table 2: Catches (t) Seer fish, tuna, tuna-like and billfishes in SHUQRA Co-operative.

Year	no. of boats (Fibreglass)	Spanish mackerel	Yellowfin	Longtail tuna	Kawakawa	Frigate tuna	Striped bonito	Skipjack	Sailfish	Black marlin	Swordfish
1980	470	123.722	223.360	113.825	236.935	92.043	54.557	72.118	90.426	44.367	56.770
1991	540	122.311	212.181	118.433	248.360	55.251	36.705	44.610	75.562	52.120	19.460
1992	538	98.480	292.449	169.241	167.477	54.156	37.570	31.960	67.605	25.495	16.072
1993	725	119.610	219.590	113.050	267.630	63.624	47.384	84.472	51.627	30.946	10.187
1994	835	9.363	296.987	154.502	104.669	23.963	13.180	17.904	14.860	5.173	2.060
1995	876	159.186	156.721	106.022	251.146	64.705	58.766	46.533	71.633	108.377	11.124
1996	801	276.418	281.857	259.903	254.578	97.800	70.951	7.420	32.284	137.094	2.596
1997	843	212.397	239.004	132.663	205.442	43.800	33.900	22.250	67.970	55.600	13.062

Table 3: Catches of Seer fish, tuna, tuna-like and billfishes in HADRAMAUT Co-operative.

Year	no. of boats (Fibreglass)	Spanish mackerel	Yellowfin	Longtail tuna	Kawakawa	Frigate tuna	Striped bonito	Skipjack	Sailfish	Black marlin	Swordfish
1995	861	872.011	1683.519	125.256	593.062	58.996	41.510	232.131	43.612	16.196	48.217
1996	987	181.194	206.808	22.870	78.866	38.036	22.663	59.881	23.190	4.961	6.823

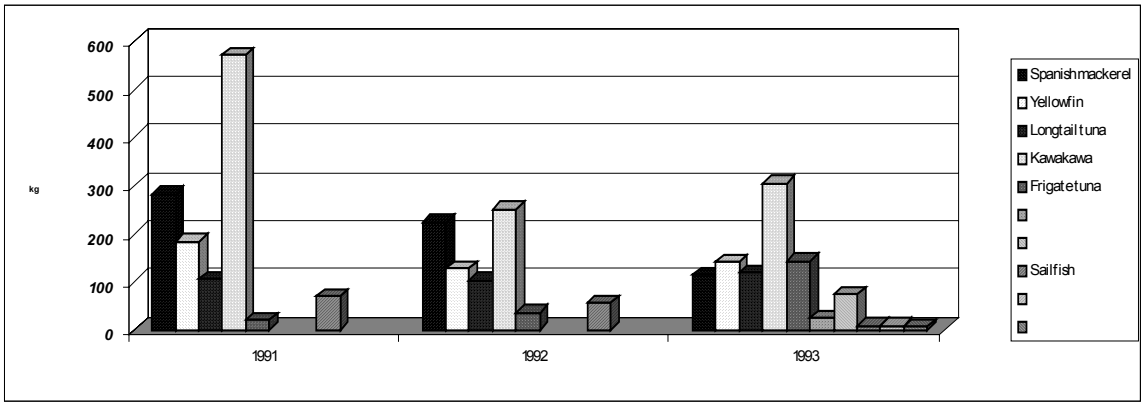

Figure 1: Catches (t) of seerfish, tuna, tuna-like and billfishes in Aden Co-operative

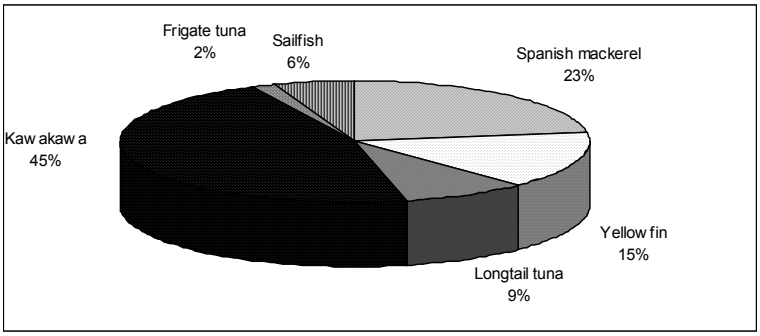

Figure 2: Percentage of catch by species in Aden, 1991

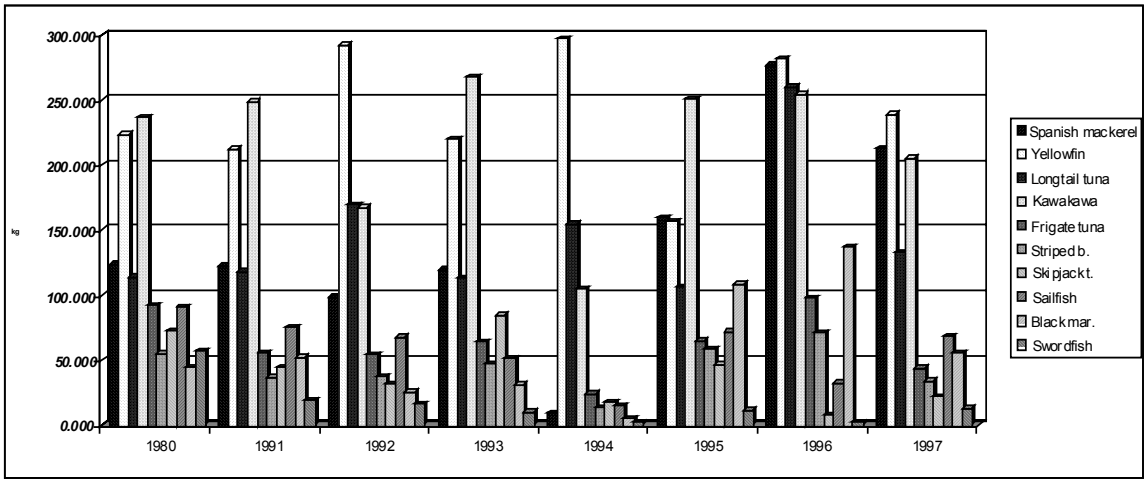

Figure 3: Total catches (t) of seerfish, tuna, tuna-like and billfishes in SHUQRA Co-operative, 1990-1997.

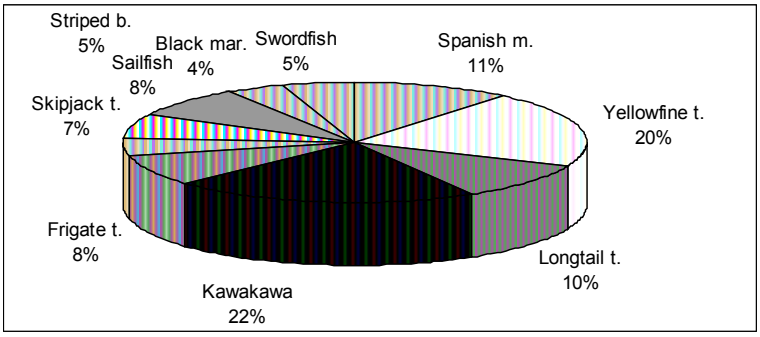

Figure 4: Percentage of catch by species in SHUQRA.

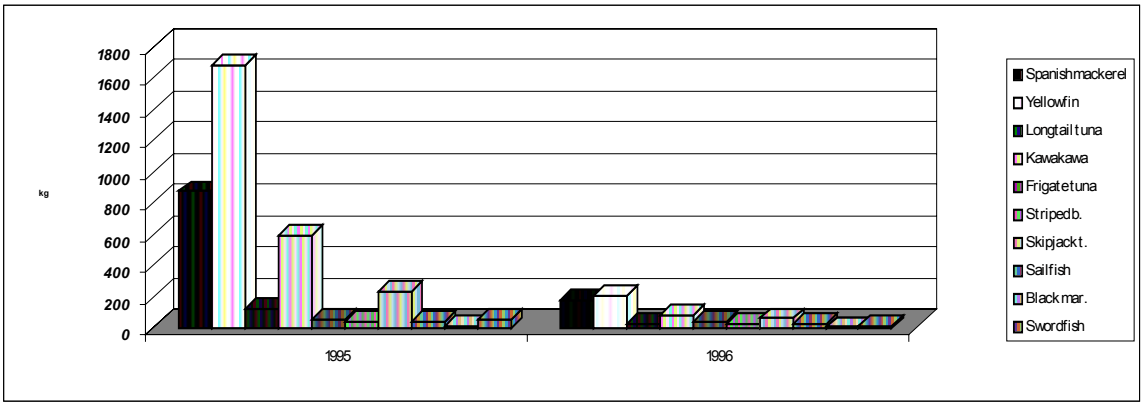

Figure 5: Total catches (t) of seerfish, tuna, tuna-like and billfishes in HADRAMAUT Co-operative, 1995-1996.

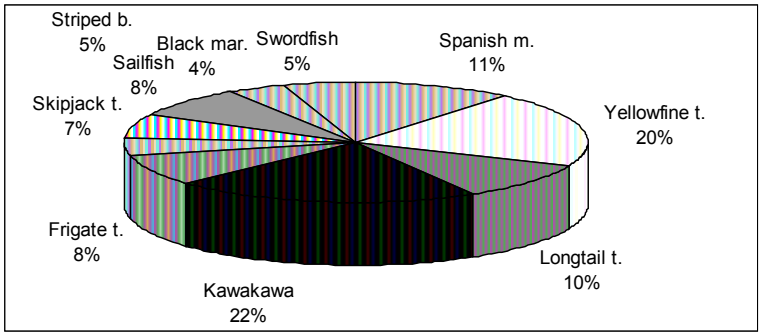

Figure 6: Percentage of catch by species in HADRAMAUT