REFORT ON THE SOUTH PACIFIC COMMISSION OUTER REEF FISHERIES PROJECT IN FUNAFUTI (TUVALU)

21 September 1976—28 March 1977

by

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The current interest shown in the Project by the whole population was also a great incentive.

1. Introduction

The main objectives of the Project were to survey the fish resources of the outer slope of the barrier reef and to determine and demonstrate deep bottom fishing techniques suitable to the area. It was also expected to survey the pelagic fish resources in close proximity to Funafuti and the marine and fish resources of the lagoon. The commercial feasibility of fishing was to be ascertained. Training was to be provided by Project personnel.

Because of various problems, it became difficult to carry out all these objectives.

The Project arrived at Funafuti on 12 September 1976 after six-week delay due to the late arrival of the chartered vessel from Aitutaki. The installation of the ice-maker, laying of moorings, unpacking and re-rigging fishing gear, and installation of the echo-sounders, radio and electric reels took eight days. The first exploratory fishing and familiarization voyage took place on 21 September.

The Project left Funafuti on 28 March 1977. However, because of extremely bad weather, fishing was effective only for a period of three months. Furthermore, one of the boats was wrecked on the reef and her skipper had to go to Fiji to supervise boat repairs.

2. Features of Funafuti Island

Tuvalu consists of nine coral atolls about 600 miles to the north of Fiji. The administrative centre is at Vaiaku on Fumafuti Island, located at 8°30′ S and 179°08′N (Figure 1).

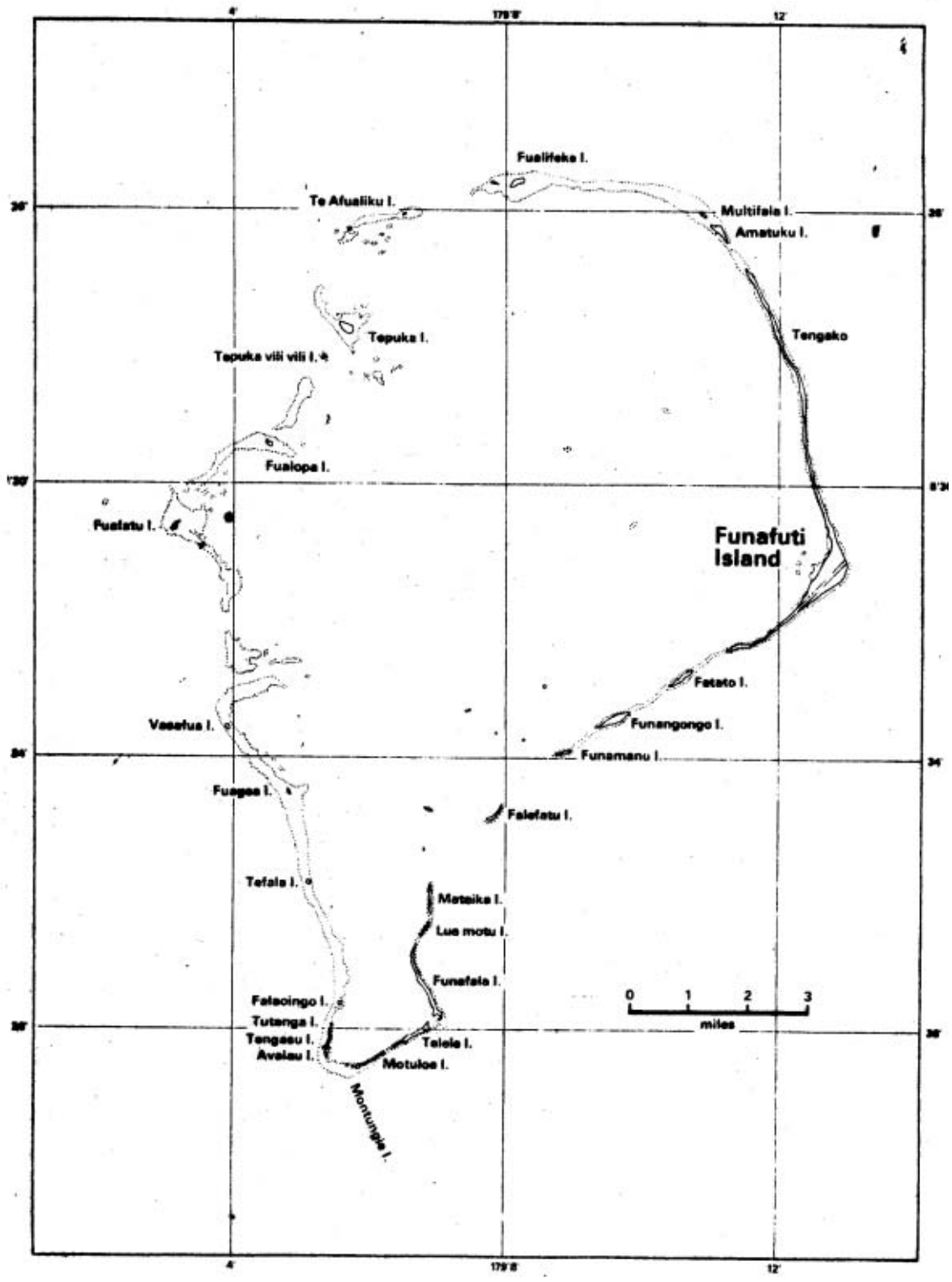

Figure 1: Funafuti Atoll

2.1 Funafuti waters.

Because of the latitude of Funafuti, its surrounding waters are not influenced by the enriching equatorial currents. The water masses are of the oligotrophic tropical type, which is characterised by the presence of a thick layer of warm water, due to the strong sunlight. This thick, warm water later prevents any cold water, rich in nutritional elements, from rising up from the depths. Therefore, the phytoplankton — the first link in any chain of marine production — has available for its development only the limited quantity of mineral salts found in this warm, isothermal layer. The result is reduced productivity within the food chain of the pelagic ecosystem. The waters are beautifully clear, which means that they are generally poor in marine life.

There is, nevertheless, a weak enriching factor which is the "wake effect" of islands. The wind causes a general draft of surface and sub-surface Water. At the place where windward and leeward zones meet, that is to say, at the tips of islands, turbulence arises which brings rich deep waters to the surface and increases the productivity in those areas. It is these areas, in fact, which local fishermen have always indicated as the location of concentration of tuna, skipjack and mackerel. It should be noted that this turbulence, and therefore the concentration of fish, depend upon the winds; thus, they are of a seasonal nature.

2.2 Geomorphology

According to Coates (1970), "Funafuti is an almost circular and conical submarine mountain 12,000 feet high, originally volcanic, and of immense geological age, much older than the relatively young and active mountains of the New Hebrides and Solomons. At its base on the ocean bed it is 30 miles wide in one of the directions tested, and 28 miles wide on the other. It rises in a gentle slope which gradually steepens to a point 2,400 feet below water level, after which it rises at an angle of 80 degrees to 840 feet below water level. From this point it rises vertically, like an enormous pillar, till reaches the surface in the form of a reef enclosing a lagoon of irregular size, but of which the extremities give a measurement of 13.5 by 10.0 miles". The average depth in the lagoon is about 20 fathoms. The outer slope of the reef falls steeply down to a great depth.

2.3 Weather

From April to November the atoll experiences winds mainly from the north east with an average wind speed of 12 knots, Stronger trades from north east to south west, with wind speeds of up to 25 to 30 knots, occur during this period, but are usually of short duration, seldom blowing for more than four to five days. From December to March periods of calm with light and variable winds are experienced; however, sudden squalls from the south west to north west with very strong winds are frequent at this time. Storms with strong south west to north west winds can also occur in this season and it is not unusual to have wind speeds of up to 60 knots. These stormy conditions can last for several weeks and cause very rough seas in the lagoon, especially off the western coast of Vaiaku.

During the northwest season, there is no protected anchorage off the main island, which is the only inhabited island. Permanent moorings were laid in the lagoon off the shed housing the ice-maker. These moorings wets sheltered in the south east season but exposed during the north west season.

While the Project was operating in Funafuti, one of these storms caused the wreck of one of the boats and from December to March the others were unable to fish intensively.

2.4 Fisheries

For centuries fishing has been a traditional activity in Funafuti. Nevertheless, in the last decades some of the old traditional techniques and skills seem to have disappeared. Open boats powered by Seagull and Yamaha outboard motors have replaced outrigger canoes.

Nearly considerable amount of fish is landed and sold locally. The main fishing effort is concentrated on trolling for skipjack, yellowfin and wahoo and, to a lesser extent, poling with pearl-shell lures. The fishermen usually leave before dawn so as to arrive at the fishing grounds, which are mainly to the west of the atoll, at sunrise. They travel considerable distances offshore when searching for and fishing the tuna schools. It is not uncommon for the best boats to arrive home with over 40 skipjack each; but there are days when very few or even no tuna are caught.

The fisherman's reputation at Funafuti is based mainly on the success of his tuna fishing and less effort is put into fishing in the lagoon. Monofilament nets ate used for surgeon-fish, mullet, goatfish, etc; very little hand-lining is carried out in the lagoon and nearly none outside the lagoon. A special rig is used for "atule" (*Selar crumenophtalmus*).

As no statistical data are collected, no reliable figures are available on the weight of fish landed. However, according to Pita (1976) 350 tons of skipjack and 420 tons of flying fish are caught annually. These figures may be slightly overestimated. The supply does not appear to satisfy the market requirement.

The boats used are too small to carry ice to preserve the catch and if the boats remain at sea all day returning late in the afternoon, some of the fish is in poor condition by that time.

2.5 Marketing

There is no fish market but fish are sold on the beach or put into small carts and sold throughout the island by the women. The price paid to the local fishermen varies from about 20—30 cents per pound according to the supply available. The price reaches 50 cents per pound when the fish are scarce. Skipjack and the smaller *Lutjanus* and *Lethrinus* are the most popular fish and command a ready market. The Funafuti people are not familiar with some of the deep-water fish and suspect them of being poisonous.

3. Project Management

3.1 Personnel

The Project team at Funafuti consisted for the first three months of the Master Fisherman and Project Leader, Mr. R. Eginton, and Boat Skippers/Fishermen Mr. P. Mead and Mr. C. Scott. From January to March, the team was reduced to one man because of unexpected circumstances, one dealing with the repair of the wrecked boat in Fiji.

3.2 Boats and Equipment

The dories used in the survey were:

a. a 24-foot aluminium boat designed and built in New Zealand, powered by a Nissan diesel motor of 56 h.p. driving a Hamilton Model 1011 Jet Unit. This vessel was satisfactory for bottom fishing but her top speed of six and a half knots and the turbulence from the jet unit renders her useless for trolling for skipjack and yellowfin tuna. Consumption: 2.6 gallons/hour.

b. a 24-foot plywood dory, designed and built in Page Page, powered by a Chrysler Nissan diesel motor of 56 h.p. driving a conventional shaft and propeller, with a top speed, loaded, of eight knots. This dory was also too slow to fish schools of tuns successfully. Consumption: 1.8 gallons/hour.

c. a timber dory, built in Apia to an FAO design, powered by a Perkins 35 h.p. diesel motor driving a conventional shaft and propeller, with a top speed of ten knots. This dory was successful trolling for skipjack and yellow-fin. Consumption: 1.0 gallons/hour.

Each vessel was equipped with a model FM22 Furuno echo-sounder, with a range of 0—410 fathoms, and the two 2A-foot vessels with Furuno SSB radiotelephones. The two 24-foot vessels were each fitted with two 12-volt “Electric” snapper reels, which had a capacity of 2,000 feet of 3/64″diameter stainless steel wire. Trolling lines, hand lines and monofilament gill nets were also used.

A Resco block icemaker, driven by an 8 h.p. Petter diesel engine, with a capacity of 1,000 lb. of ice every twelve hours was used to supply the ice required. An electric domestic 22 cubic foot deep-freeze unit was used for the storage of bait, and two ice boxes of twelve cubic feet each were used for the storage of the fish for sale.

3.3 Fishing methods used by the Project

During the months of September and October, the Project's fishing effort was concentrated on the outer slope of the barrier reef, using electric winch reels and lines for deep bottom fishing (Figure. 2). Funafuti is a typical atoll where the outer slope of the barrier reef drops away almost vertically to 2,000 fathoms. Because of the steep slope, anchoring the dory to fish the drop-off, poses a problem. It is possible, if the wind remains constant and blows offshore all night, to anchor the dory in shallow water and pay out enough warp to fish the desired depth. If the wind changes and blows onshore or drops away, the skipper has no option but to weigh anchor and attempt to find an alternative position where he can anchor and fish. The deep-water species of fish which the Project attempted to exploit at Funafuti each inhabit a well-defined depth range. Night fishing was more productive than day fishing; the same result has been obtained in all the areas in which the Project has operated. Fishing took place from about 50 fathoms down to 200 fathoms.

During November the Project made some fishing trials in the shallower waters of the lagoon and passages. A few gill net operations were also carried out inside the lagoon, which appears to be under-exploited at the moment.

Only sufficient tuna were trolled to supply bait for the Project's other fisheries. Fishing for tuna and skipjack is a traditional fishery of the Funafuti people, and, except for supplying the fisherman with better quality lures than were available locally, there was nothing the Project team could teach these fishermen about catching skipjack and tuna.

3.4 Training

Seven trainees joined the Project in September 1976. All were from Funafuti and several had previously worked for the Fisheries Division of the Department of Commerce and Natural Resources. Six more trainees were taken on early in January 1977. Each of these trainees was employed by the Project for two weeks. One trainee was employed at the Project shed part-time only. The selection of the trainees was the responsibility of the Fisheries Division. The trainees were paid by the Project at a rate of A$14.00 per week.

3.5 Sale of fish

The fish caught by the Project were sold at the Project shed at a price adjusted so as not to compete with the local market. The deep-water fish, such as *Ruvettus* and cod, caught by the Project were not at all popular and could not be sold even during a fish shortage. These fish were usually given to the trainees for pig food or dumped at sea after being held in ice boxes for several days. Although shark is not currently eaten by Funafuti Islanders, people from some of the outer islands who are now living in Funafuti do eat them. Shark meat is also salted and dried. This process involves boiling the meat, then mashing the flesh and drying it in compressed cake form. The deep-water shark is also eaten salted and dried and some people are fond of its liver.

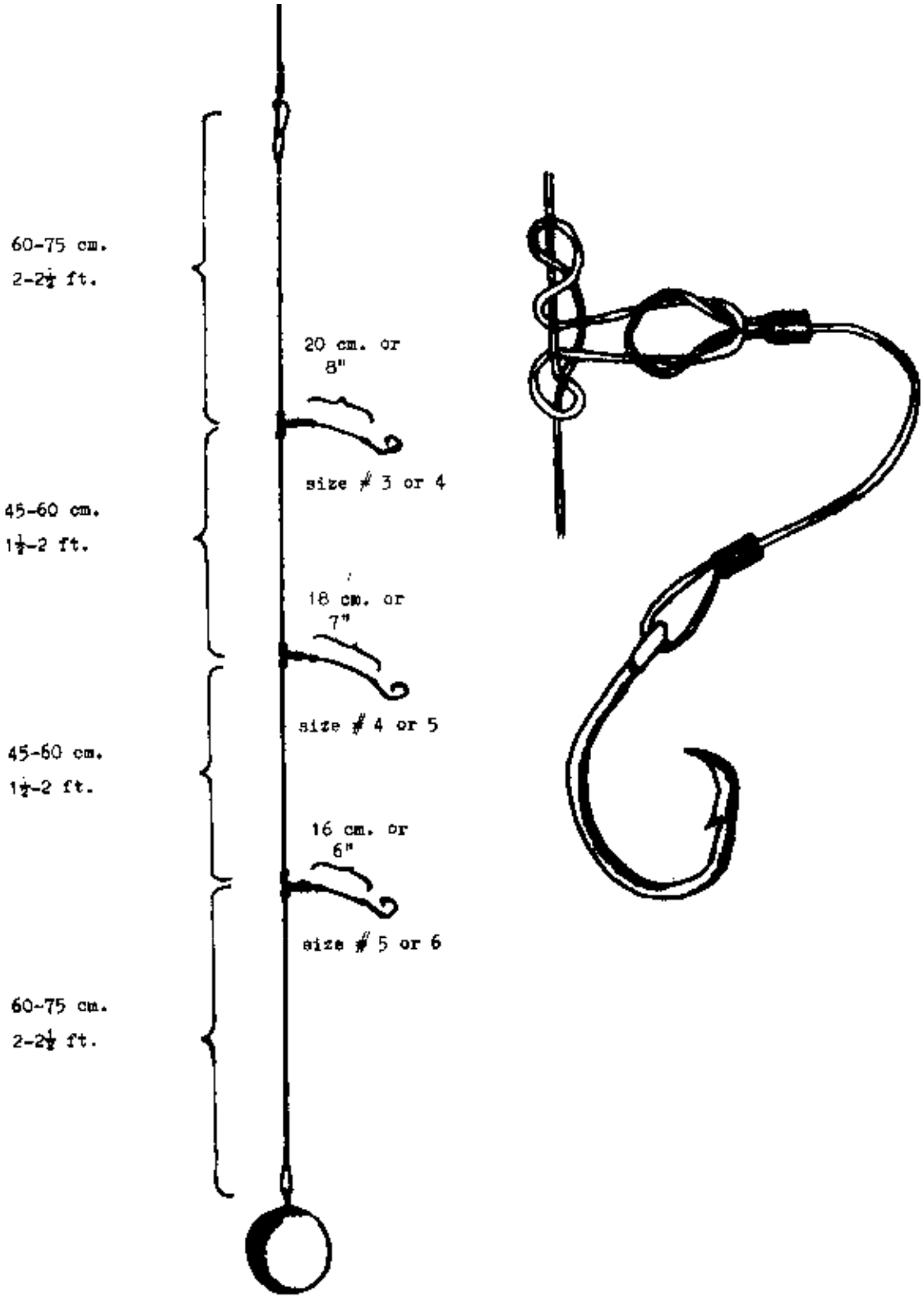

Figure 2: Terminal rig – Coastlock snap swivels Mustad tuna circle hooks*

* Sizes of hooks taken from Atlantic & Gulf Fishing Supply Corp. Catalogue April 1977

4. Results

4.1 Deep bottom fishing on the outer reef slope

As previously said, emphasis was put mainly on deep bottom fishing. Table 1 shows that the average catch per trip was only 52.5 kg. (115.6 lbs). This figure includes all edible fish except shark. Table 2 gives the results of the same exercise in other places where the Project was successively based. (See Hume 1975, 1976; Hume and Eginton, 1976).

TABLE 1: Night deep bottom fishing on the outer reef slope off Funafuti by the SPC Project

Total number of trips	53
Steaming hours	
Total	224 hrs.
Average per-trip	4 1/2hrs.
Fishing hours	
Total	557 hrs.
Average per trip	10 1/2hrs.
Total hours per trip	15 hrs.
Catch	
Total	2785.0 kg.
Average per trip	52.5
Average per reel per trip (1)	26.3
Average per reel per hour fishing	2.5
Average per trip per hour fishing	5.0
Average per man per hour fishing (2)	1.7

(1) Two reels per boat
(2) Three men on board

TABLE 2: Average catch per deep bottom fishing trip in countries where the SPC Project was successively based

Country	Ave. catch (kg)
New Hebrides	71
Western Samoa	83
Aitutaki (Cook Islands)	71.5
Funafuti	52.5
Solomon Islands (Western District)	115.5

We have defined two different units of effort: one hour of fishing with one reel, and one hour of fishing with one man. From experience, it appears that it is reasonable to have a crew of three fishermen on board and therefor the second unit of effort seems more realistic. The figures lead to a catch per unit effort(man/hour) of 1.7 kg.

The mean species composition is given in Table 3. Ciguatera poisoning is not a major problem in Funafuti but, even so, a large proportion of fish caught — approximately 21% of the Project's catch — is reputed to be poisonous, The species considered poisonous include *Lutjanus bohar*, large grouper and cod and several unidentified *Lutjanus* sp. If one deducts *Lutjanus bohar* from the total catch, this leads to an average catch per trip of 42.3 kg and an average catch per man/hour of 1.5 kg, which is very poor.

TABLE 3: Mean species composition of catch(deep bottom fishing)

Species	No. of fish	Average wt. per fish (kg)	Total wt. (kg)	% of Total catch by weight
Ruvettus pretiosus	50	17.5	877	31.4
*Lutjanus bohar**	141	3.8	540	19.4
Epinephelidae	56	6.5	362	13.0
Pristipomoides flavipinnis	104	2.0	206	7.4
Etelis carbunculus	40	5.0	198	7.1
Gymnosarda unicolor	8	16.6	133	4.8
Carangidae	42	2.5	104	3.7
Tropidinius zonatus	67	1.9	89	3.2
Gempylidae	42	1.9	81	2.9
Sphyraenidas	25	2.8	69	2.5
Etelis oculatus	8	5.7	46	1.7
Lethrinidae	19	1.1	21	0.8
Aprion virescens	17	0.9	15	0.5
Aphareus rutilans	2	4.0	8	0.3
Various reef species	40	0.9	36	1.3
	661		**2785**	**100.0**

* This species is highly poisonous.

4.2 Bottom fishing inside the lagoon

The Project boat *Tangaroa* made eight trips during the month of November fishing the reef passages just inside the lagoon. The boat usually anchored 50 to 100 metres from the reef passages in depths of 20 to 40 metres[1]. All fish were caught between sunset and sunrise as fish stopped biting during daylight hours.

[1] Light handlines of 60 to 100 lb. test monofilament were used in combination with 0.1 to 0.2 kg. lead sinkers and 3/0 5138 ST quality Mustad hooks The hooks and lines were purchased at the local Tuvalu Co-operative Society Store. Sinkers are made from melted down scrap lead.

Table 4 shows that the average catch per trip was 91 kg (201 lbs). The figures lead to a catch per unit effort (man/hour) of 3.0 kg which is higher than with deep bottom fishing.

TABLE 4: Night bottom fishing inside the lagoon by SPC boat *Tangaroa* in November 1976.

Total number of trips	8	
Steaming hours		
Total	40	hours
Average per trip	5	hours
Fishing hours		
Total	80	hours
Average per trip	10	hours
Total hours per trip 15 hours		
Catch		
Total	726	kg
Average per trip	91	kg
Average per man per trip*	30	kg
Average per fan per hour fishing	3.0	kg

* Three fishermen on board

The mean species composition is given in Table 5. If one deducts *Lutjanus bohar*, which represents 12 per cent of the catch, this leads to an average catch per trip of 80 kg and an average catch per man/hour of 2.7 kg.

TABLE 5: Mean species composition of catch inside the lagoon

Species	Number of fish	Average weight/fish	Total weight of species	% of total catch by weight
Aprion virescens	2	2.5	5	.7
Aphareus rutilans	3	2.3	7	.3
Acanthocybium solandri	1	12.0	12	1.7
Carangoides sp.	1	2.0	2	.3
Epinephelidae	10	1.3	13	1.8
Elevates bioinnulata	1	6.0	6	.8
Gymnosarda unicolor	4	5.8	23	3.2
Luthrinus nebulosus	492	.7	360	49.6
Lutjanus bohar	42	2.0	86	11.9
Lutjanus gibbus	364	.4	148	20.4
Lutjanus monostigmus	3	1.7	5	.7
Lutjanus kasmira	96	.2	30	4.2
Pristipomoides flavipinnis	1	1.0	1	.2
Sphyraenidae	21	1.3	27	3.8
Total	**1141**		**726**	**100.0**

5. Economics of deep bottom fishing in Funafuti

In order to study the economic feasibility of a commercial fishing operation in Funafuti, two types of boats have been used as references (Tables 6 and 7):

– a 28-foot V-bottom boat powered by a 35 h.p. diesel motor driving a conventional shaft and propeller, with a top speed of ten knots like the Project boat *Viking*, which was built to FAO plans in Apia. This boat must be moored some distance from the shore and cannot easily be beached.

– a 19-foot catamaran powered by a 25 h.p. outboard engine like one of the FAO boats built in Apia. This boat is easily portable and can be beached in ease of bad weather.

5.1 Earnings (Tables 6 and 7)

According to the landings of the SPC boats, earnings cannot easily be increased. The only way seems to be to increase the number of reels per boat (i.e. three reels instead of two). However, this would make fishing on a boat more difficult. Furthermore, the average weight of 42.5 kg per trip excludes poisonous fish but includes castor oil fish (*Ruvettus pristiosus*)which represent 31.4 per cent of the total catch. As this fish is now at all popular in Funafuti, this percentage should also be subtracted from the total catch. This would lead to an average catch of about 26.0 kg per trip which would be worth approximately A$3640.00 per year.

5.2 Expenses (Tables 6 and 7)

It was difficult to estimate expenses, particularly the prices of the boats, because similar vessels do not exist in Funafuti.

If a fisherman intends to borrow money to buy or construct a boat he must pay a rate of interest of approximately 10 per cent. Depreciation has been estimated over a five year period for the boats themselves and the inboard engine and only three years for the outboard motors.

Petrol is the major expense item for the 19-foot catamaran. It is very expensive in Ftunafuti.

The cost of the fishing equipment at delivery was estimated from Gulbrandsen(1977) for Western Samoa. A list is given in Appendix I. Part of this basic equipment is lost or broken every day, so replacement costs also appear in the list.

Skipjack appears to be the best bait. Its efficiency as a bait is increased when it is preserved in salt.

For a truly commercial operation, ice is charged to the fishermen at production cost, estimated to be 4¢ per kg. It is conservatively considered that 100 kg of ice are needed to preserve each 100 kg of fish.

The wages were estimated from the basic salary in Funafuti which was about 40¢ per hour for an 8-hour day. This salary was doubled in the SPC study in order to take into consideration the fact that each night's fishing trip lasted at least 12 hours.

TABLE 6: Economics of deep bottom fishing using a 28-foot V-bottom boat, FAO type

Earnings/year		
5 days fishing/week, 40 weeks/year 200 trips/year 42.5 kg/trip, 8,500 kg/year, 70¢/kg.		A$5,950
Expenses/year		
Depreciation of boat 5 years at 10% interest Buying cost A$4,500.00	A$990	
Fuel 1 gal./hour, 89¢/gal. 4 1/2 hours/trip, 200 trips/year	800	
Lubrication oil and grease A$5.00/week, 40 weeks/year	200	
Maintenance and repairs A$10.00/week, 40 weeks/year	400	
Depreciation of spare engine 7.5 h.p. buying cost A$350.00 3 years at 10% interest	128	
Fishing gear at delivery A$277.00, 3 years at 10%	100	
Fishing gear replacement A$3.00/week, 40 weeks/year	120	
Bait Skipjack 60¢/kg, A$5.00/week 40 weeks/year	200	
Salt and sundries	50	
Ice—4¢/kg/. 50 kg/trip, 200 trips/year	400	
Wages of crew A$5.00 day/fisherman, 3 fishermen	3000	
Total expenses per year	**A$6388**	
Balance (deficit)		**A$ 438**

TABLE 7: Economics of deep bottom fishing using a 19-foot catamaran, FAO type

Earnings/year		
5 days fishing/week, 40 weeks/year, 200 trips/year		
42.5 kg/trip, 8,500 kg/year, 70¢ kg.		A$5,950
Expenses/year		
Depreciation of boat		
5 years at 10% interest		
Buying cost A$1,600.00	A$350	
Depreciation of engine		
25 h.p., A$550.00		
3 years at 10% interest	200	
Fuel-petrol		
A$2.20/gal. 2.2 gal./hour		
3 hours/trip, 200 trips/year	2900	
Maintenance and repairs		
A$4,00/week, 40 weeks/year	160	
Depreciation of spare engine		
5 h.p., A$230.00, 3 years at		
10% interest	8A	
Fishing gear at delivery		
A$277.00, 3 years at 10% interest	100	
Fishing gear replacement		
A$3.00/week, 40 weeks/year	120	
Bait		
Skipjack 60¢/kg, A$5.00¢/week		
40 weeks/year	200	
Salt and sundries	50	
Ice — 4¢/kg, 50 kg./trip, 200 trips/year	400	
Wages of crew		
A$5.00/day/fisherman, 3 fishermen	3000	
Total expenses per year	**A$7564**	
Balance (deficit)		**A$1614**

6. Conclusions

From the above figures, it appears to be clear that deep bottom fishing is not economically feasible in Funafuti, at least under the existing circumstances. At first glance, deep bottom fishing appears to show a smaller probable loss with the diesel boat than with the outboard catamaran (see Tables 6 and 7). In fact, because of the absence of any protected mooring area, it is essential to be able to beach the boat, an operation which cannot be done easily with an inboard engine. Furthermore, diesel engines are less costly to run but the particular skills needed to repair them may not be available in Funafuti at the present time.

If the price of petrol could be reduced considerably through government grants, fishing could become economically feasible under the following conditions:

- That plywood boats, light enough to be beached and even passed over the reef or island, propelled with a 25 h.p. outboard engine, be used.
- That fishing be carried out inside the lagoon (which is presently unexploited)[1] land occasionally on the west outer reef slope, weather permitting. In the case of northwesterly winds blowing for a long period, the boat could be brought over the reef or island in order to fish the eastern slope.
- That a large amount of time be devoted to fishing skipjack and yellowfin (only if the price of petrol is reduced).
- That ice be made available at reasonable rates to the fishermen.
- That safety be increased by using "walkie-talkies" available at low cost and a listening watch scheduled.
- That arrangements be made for a better, less expensive supply of fishing equipment to be available to fishermen.
- That a supply of outboard spare parts be available at reasonable prices.
- That assistance be sought from overseas countries for outboard motor repairs and maintenance.
- That a cooperative be created in order to organise the market.

[1] Fishing inside the lagoon requires only gear available locally. This simple method of fishing can be easily performed by local fishermen from their own canoes.

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APPENDIX I

Fishing gear delivered with each boat in Western Samoa (FAO/DANIDA VILLAGE FISHERIES PROJECT)

	QUANTITY	UNIT PRICE WS$	AMOUNT WS$
Nylon monofilament fishing line No. 100, 230 lb breaking strain supplied in coil of 500 m,(275 fath.) colour: clear	4	7.50	30.00
Nylon monofilament fishing line No. 60, 120 lbs breaking strain, supplied in coil of 50 m (16 fath.) colour: clear	1	1	1.00
Stainless steel wire leader 230 lbs. length of 8 m. (25 ft.)	1	2	2.00
Galvanised longline wire, size 26/7, of 40 m. (16 fath.)	1	3.00	3.00
Double hook, looped eye, tinned, size 2	2	0.15	0.30
" " " " " " 4	10	0.09	0.90
" " " " " " 6	15	0.07	1.05
Tuna hook, Cat. No. 508, size 40	2	0.21	0.42
BKN hook, size 36	30	0.04	1.20
" " " 32	30	0.03	0.90
Heavy swivel w/corkscrew, size 70 mm	10	0.14	1.40
Brass barrel swivel, size 1/10	10	0.03	0.30
Octopus lure bait only, No. 35, colour no. 105	10	0.09	0.90
" " " " " 55 " " KR30	2	0.30	0.60
New pearl Jig No. 6, head only size 13 mm	5	0.49	2.45
" " " " " " " 10 mm	5	0.37	1.85
No. 22 Feather Jig, head only, 6 oz.	1	1.55	1.55
Gaff. hook, stainless steel, 3 inches	1	2.90	2.90
Plier/Wire cutter	1	5.00	5.00
Tackle box	1	6.00	6.00
Jerry can, plastic, DAISHO brand, 18 litres	2	6.00	12.00
w/pouring spout			
Electric torch., SUNRISE	1	2.20	2.20
Shackle, galvanised D. Type, 14 mm	1	1.10	1.10

Sinkers, 4 lbs load	8	0.80	6.40
Anchor buoy	1	12.00	12.00
Thimble, galvanised	4	0.20	0.80
Anchor line, coil of 10 mm x 220 m, pelypropylene	2	16.00	32.00
Anchor and galvansied wire 3, 4 mm	2	6.00	12.00
Flare kit	1	12.00	12.00
Drum pump for petrol	1	7.50	7.50
Braided rope 4 mm, 15 fath.	1	1.00	1.00
Fishing reels	4	15.00	60.00
Raincoats	4	13.50	54.00
TOTAL		**WS$**	**277.08**

APPENDIX II

LIST OF MAIN FISH CAUGHT BY THE PROJECT

Scientific name	Tuvaluan name	Common English name
Acanthocybium solandri	pale	wahoo
Aphareus rutilans	palu sega	smalltooth job fish
Aprion virescens	utu	green job fish
Carangidae	tafauli, maluuli	trevally
Elagatis bipinnulata		rainbow runner
Epinephelidae	ngatala (small) ataata palu putuki (v. large)	cod, grouper
Etelis carbunculus	palu malau	
Etelis oculatus	palu loa	squirrelfish, snapper
Gempylidae	palu kumoro	snake mackerel
Gymnosarda unicolor	valu	dogtooth tuna
Lethrinidae	filoa	emperor
Lutjanus bohar	fangemea	red sea bass
Lutjanus gibbus	taea	paddletail sea perch
Lutjanus kasmira	savane	bluelined sea perch
Lutjanus monostigmus	taiw	blackspot smapper
Pristioomoides flavipinnis	palu or palu sina	rosy jobfish
Ruvettus pretiosus	palu talatala	castor oil fish
Sphyraenidae	ono	barracuda
Tropidinus zonatus	palu savane	flower snapper