

SOUTH PACIFIC COMMISSION

NIUE

REPORT ON THE ORGANISATION OF FISHING TRIALS

May 7th - June 13th, 1962

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INTRODUCTION

While most South Pacific territories have been visited by the South Pacific Commission's Fisheries Specialists, some of them on more than one occasion, by the end of 1961, Niue was one of the very few remaining exceptions until the middle of 1962.

At the request of the Niue Island Administration, I spent a period of five weeks in this territory, from May 7th to June 13th, 1962.

I wish to express my sincere appreciation of the generous assistance extended by the Resident Commissioner, Mr. L. SHANKS, and by all members of the Administration whom I have been privileged to meet. I am also grateful for the advice and help I received from private persons too numerous to list here.

GENERAL

The characteristics of the Niuean coast-line make it impossible, at present, to conduct fishing activities with motor-boats from any point other than Alofi wharf. Even at this point, boats must be lifted ashore with the help of a crane except in the calmest weather.

Traditional fishing is carried out from canoes, which are launched at times under extremely adverse conditions. The fact that it is necessary to keep the canoes in reasonably safe places part way up the cliffs limits their weight and size, and has led to the development of remarkable craftsmanship in canoe building. There are two types in use, the one-man and the three-men canoes. Both are extremely light dugouts, the bottom of the hull being adzed down to 3/8" thickness.

While these traditional Niuean canoes are truly works of art, and are perfectly adapted to traditional fishing methods, they have a number of disadvantages: they are unsuitable for most modern fishing methods; mechanization would be limited to outboard motors of low power; due to the thinness of their hulls, they are extremely fragile; by reason of their size, and of the method of launching and landing, they cannot be used in rough weather.

Some attempts have been made in the past to use outboard motors on the larger (three-men) canoes; in one case this was done by cutting away one end of the canoe and adapting a transom.

The methods used are handlining for reef species and deep swimming tuna, trolling for tuna and related fishes, dip netting for flying fish at night (with a light), and hook and line fishing with a short double pole for Decapterus sp. which is widely used as bait. No nets other than dipnets are used in the island.

A large number of men fish for their family's subsistence, and a few occasionally sell part of their catches.

Very little can be attempted to improve traditional fishing methods. On the contrary, the adoption of small open motor boats of European design would make it possible to use more modern fishing techniques and to obtain better results for the same amount of effort.

When one considers that the timber used to build one three-men canoe could provide the planking for a fair sized boat, it becomes apparent that such a move, from traditional to modern craft, would entail not only an improvement in fish production, but also a saving of timber. In the same way, construction of planked canoes would not only ensure a substantial saving of valuable timber at the start, but also make it possible to repair a damaged canoe, instead of having to build a new one every time.

The cost of building boats and the price of engines and gear may be considered prohibitive. That is a question I have not been able to investigate. However, the volume of sales of imported frozen fish, prices offered for locally caught fish when available, and the presence of a number of motor-cycles owned by Niueans, to mention only a few factors, seem to indicate that there would be enough money in the island to cover the initial outlay, possibly on a cooperative basis.

In any case, fisheries development would be considerably helped if the Administration could see its way clear to waive customs duties on marine engines and possibly, after the conclusion of trials, on certain types of fishing gear, until such time as the production of fish has become adequate.

It must be realized that the outlet for local fisheries products is strictly limited to local use. Present facilities in Niue are such that any attempt at exporting fish would be impractical. Moreover, it is extremely unlikely that any such export can be contemplated in future.

To sum up, I feel that the improvement of fisheries in Niue is only possible by the use of small open motor-boats, and of more modern fishing techniques such as longlining, multiple trolling, and gillnetting. In consequence, I carried out a few fishing trials from a motor-launch made available by the Administration, and made plans for these trials to be continued over a period of eighteen months.

ORGANISATION OF FISHING TRIALS

Since trolling and deep handlining are traditional in Niue, it was felt that modifications of these two methods would be accepted more readily by local fishermen than any other techniques.

Multiple trolling and longlining were therefore chosen for immediate trial.

Trolling

One of the Administration 24' launches, equipped with a Diesel engine, was equipped with two outriggers, carrying two lines each, while two more lines were trolled from the quarters and occasionally one line was run deep with the help of a paravane.

The best time of the day for trolling appeared to be between dawn and 09.30, and an outgoing tide seems to improve conditions.

Results were not very encouraging at first, as schools of fish feeding on the surface were rather scarce and the tuna did not bite freely. Details of the trolling trials will be found in Annex I.

While no reliable statistics of fish caught by the canoe fishermen could be obtained, there are good reasons to believe that more fish were caught per unit of effort during the trials than by the local fishermen during the same period.

Total number of hours spent trolling was $67\frac{1}{2}$ including travelling time. Total weight of catches (dressed) was 382 lbs for 11 fish. Assuming that the launch had been operated with a crew of 4, as it normally would be for trolling, this would represent an average of 1.4 lbs per man/hour at sea, for what proved to be a very poor fishing season. It is very doubtful whether canoe fishermen can reach this average. On the other hand, it is quite certain that, if used regularly for trolling, a launch can average much higher catches over a period of years.

The marked preference shown by local fishermen for bait rather than lures may be justified up to a certain point in the off-season. I personally believe lures would be much better than bait during periods when fish bite freely.

Longlining

Quite a few difficulties were encountered in organizing longlining trials. Assembling the necessary gear was in itself a major task, and only 3 baskets of modified longline (80 fathoms long, with 6 hooks per basket) could be made up from supplies available locally.

Bait presented another problem, and the introduction of nylon gillnets will be mentioned later in this connection.

Finally, 36 hours only were devoted to longline trials (including travelling time). No results were obtained with this gear, but the small number of baskets used, and the fact that bait was scarce and had to be re-used until it reached an advanced stage of decomposition, do not permit to draw any conclusions.

Strong currents prevail along the south coast of Niue, and probably elsewhere, and the longline was eventually lost, due to a wrong estimate of drift. A close watch should be kept on longline gear during future trials.

PLAN FOR FUTURE TRIALS

A stay of five weeks in one island is clearly insufficient to conduct conclusive tests, even when all the necessary gear is available, not to mention bait. Further trials are necessary with a wider range of gear. These trials can be carried out by Peauvale Puleosi, Fisheries Assistant, with crews selected among the volunteers who helped during the original trials.

A period of one week in every month would be sufficient, provided the trials are spread over a sufficiently long time, say eighteen months, and provided also that results be carefully noted. The analysis of results obtained in relation to costs will then indicate which method(s) should be adopted.

Trolling, longlining and gillnetting (drift nets) should be tested over the above-mentioned period.

Trolling:

The trolling equipment at present available is suitable. However, a certain quantity of good double hooks will have to be procured, as well as various types of lures.

Trolling trials should be carried out from dawn to 10.00 every other morning and from 16.00 to 18.00 every alternate evening, using fresh bait on half of the lines and lures on the other half.

Longlining:

An abundant stock of bait will have to be built up before any longlining trials can be made. A set of 10 baskets of regular Japanese gear will have to be ordered, together with spare hooks, buoys, sekiyamas, etc...

Longlining trials should take place on alternate days with trolling trials, i.e. when trolling trials have been made in the morning, longlining should occupy the afternoon, and vice versa.

Times should be noted very carefully, as it may be found necessary to shorten the interval between shooting and hauling in order to reduce shark damage if any.

Gillnetting:

Nylon drift nets should be tested in order to ensure a good bait supply. These trials are the only ones which may have to be conducted at night, or in the early morning and late evening.

A. Driftnet trials for Ulihega (Decapterus sp.)Gear

Three shackles or units of nylon monofilament gillnet, 30/100 mm. thread, 2" stretched mesh, 100 yards x 120 meshes deep, enclosed cork and lead.

Operation

These nets should be used either from a launch or from a three-men canoe, and a canoe will be necessary in any case to scatter bait (grated coconut) along the net. They should be set near the coast in the vicinity of known "Ulihega" fishing grounds, and should be overhauled with a canoe every 30 minutes or more often if necessary.

B. Driftnet trials for Flying FishGear

Three shackles or units of nylon monofilament gillnet, 30/100 mm. thread, 2 $\frac{1}{2}$ " stretched mesh, 100 yards x 30 meshes deep, enclosed cork and lead.

Operation

These nets should be used from the launch or from a three-men canoe, at night, in the areas where local fishermen normally catch flying fish. They should be overhauled every 30 minutes. A small canoe carrying a powerful pressure lamp should patrol the net constantly.

Miscellaneous gear and equipment

An insulated bait box is already available. A few fish boxes would facilitate work in the launch. A gear shed will be necessary to store the gear between work periods and can also be useful as a repair shop. Two 300 candle-power pressure lamps and a small stock of fine cotton yarn, nylon thread and nylon line, hooks and swivels, will cover the immediate needs in connection with fishing trials.

A small but reasonably powerful radio transmitter and receiver set should also be made available for use in the launch.

Detail of costs

Cost of fuel and oil, maintenance of boat and engine, and crew wages should be carefully noted for assessment against the value of catches made.

CATCHES MADE DURING TROLLING EXPERIMENTS14/5/1962 - 9/6/1962

<u>Date</u>	<u>Species</u>	<u>Weight (dressed)</u>	<u>Remarks</u>
14/5/1962	Yellowfin tuna	67 lbs	on fresh bait
15/5/1962	Yellowfin tuna	25 lbs	on fresh bait
	Yellowfin tuna	25 lbs	on lure
16/5/1962	Yellowfin tuna	16 lbs	on lure
26/5/1962	Acanthocybium sp.	18 lbs	on bait
1/6/1962	Yellowfin tuna	44 lbs	on lure
6/6/1962	Acanthocybium sp.	31 lbs	on bait (several lines broken)
7/6/1962	Yellowfin tuna	25 lbs	on bait
8/6/1962	Acanthocybium sp.	51 lbs	on bait
9/6/1962	Yellowfin tuna)	80 lbs	on bait
	Acanthocybium sp.)		

eleven fish	382 lbs
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