

SOUTH PACIFIC COMMISSION

THIRTEENTH REGIONAL TECHNICAL MEETING ON FISHERIES
(Noumea, New Caledonia, 24 - 28 August 1981)

COUNTRY REPORT - NEW CALEDONIA

TUNA SURVEY AND ASSESSMENT OPERATIONS IN THE EEZ OF NEW CALEDONIA

SUMMARY

A number of surveys and studies have been conducted in New Caledonia since 1977 by ORSTOM and SPC to assess tuna stocks and baitfish availability for a live-bait pole-and-line tuna fishery.

The SPC Skipjack Programme surveyed the EEZ of New Caledonia in the 1977-78 summer, tagging skipjack and also fishing for bait.

In February 1979, ORSTOM initiated a tuna prospection and infra-red aerial radiometry programme aimed at collecting data on tuna presence and areas where tuna concentrations are most likely to occur.

With a view to the development of a live-bait pole-and-line fishery, a baitfish assessment programme was undertaken by ORSTOM from March 1980. To date, 8 surveys have been carried out in 47 different locations. They demonstrated seasonal variations both in yields and in the relative presence of the major species.

Other ongoing work concerns juvenile skipjack, fisheries statistics and the preparation of a tuna compendium for fishermen.

After the establishment of the New Caledonian EEZ in 1978, several fishing agreements were concluded, with Japan and with the American company "Starkist". Catches by the Japanese pole-and-liners were very satisfactory, averaging 8-9 T/day of presence in the Zone.

Purse seining trials were too limited to be conclusive, but despite some difficulties there were indications that this method could be successful in New Caledonia with appropriate changes to gear and techniques.

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Tuna has long been known to be present around New Caledonia. As early as 1956 ORSTOM III trolling trials showed skipjack and yellowfin to exist along the reef throughout the year.

Japanese longliners started fishing in New Caledonian waters in 1962, and Taiwanese fleets followed from 1967, but both gradually reduced their fishing effort up to 1978 when the Exclusive Economic Zone was established.

A surface tuna fishery was set up in 1970 with a small Tahitian skipjack fleet which is still operating and suffices to saturate the home market.

The development of pole-and-line live bait fishing began with the Japan Marine Research Centre's survey in 1972-73 which yielded very satisfactory results on the basis of which Japanese pole-and-liners came into the EEZ where they caught 330 T. in 1975 (with a cpue of 6 T/day) and 1500 T. in 1977 (a cpue of 6.9 T/day).

To confirm these encouraging results several surveys are being conducted or will be initiated shortly by SPC and ORSTOM.

I. CURRENT SURVEYS

1) SPC Skipjack Programme

We shall briefly give the results of the skipjack survey and assessment programme in the EEZ of New Caledonia.

The survey lasted from December 1977 to January 1978. It involved bait fishing as well as tuna fishing.

- Baitfish: 40 hauls were made in nine different locations. The average catch was 125/kgs/haul and the main species taken were anchovy (Stolephorous sp.), sprats (Spratelloides gracilis) and gold-spot herrings (Herklotsichthys punctatus).

Despite these satisfactory yields, few locations were really favourable for the use of the bouki-ami net which is very large and requires depths of at least 23 metres.

- Tunas: both the east and west coasts were surveyed but the need to fish for bait every night limited the radius of operation of the ship. Fishing conditions were better on the east coast than on the west coast.

The number of schools sighted per survey hour was greater in New Caledonia (0.72) than in the Solomon Islands (0.63) and in Papua New Guinea (0.45), but the size of the schools was generally smaller.

A total of 10,272 fish were tagged - a very satisfactory result. Since it is quite possible to fish for bait in shallow waters with appropriate techniques, a tuna fishery in New Caledonia would appear feasible.

2) Aerial radiometry: under an agreement between the Territory of New Caledonia and ORSTOM, a tuna prospection and infra-red aerial radiometry programme was undertaken in February 1979.

During the first year, 494 flying hours were carried out over the Exclusive Economic Zones of New Caledonia, Vanuatu, and Wallis and Futuna.

In New Caledonia numerous thermic gradients were observed. In June-July 1979 a massive thermic front, associated with the presence of tuna schools, was surveyed by close co-operation between the plane and two oceanographic vessels.

Other hydrological structures were detected, notably a cold water upwelling to the south-east of the Isle of Pines, probably related to the bathymetry and the effect of island masses.

In addition, the presence of tuna throughout the year was confirmed.

During the year (April 80 - April 81) 493 flying hours were conducted. The results for this period have not yet been published.

3) ORSTOM baitfish assessment programme in New Caledonia

In the tropical western Pacific, tuna fishing with pole-and-line and using live bait is a very common technique. Being less costly than purse seining, it could offer good prospects for development in the Territory.

It is therefore necessary to assess available baitfish stocks because lack of live bait can be a severe limiting factor for a pole-and-line fishery.

The Territory requested ORSTOM to undertake an assessment programme with the following main objectives:

- Survey of baitfish stocks and fishing grounds
- Identification of baitfish species
- Study of yields and possible seasonal variations
- Analysis of the biological parameters of the main species.

Baitfish stock dynamics can only be considered in relation to the operation of a pole-and-line tuna fishing fleet.

Since March 1980, eight baitfish surveys, each about two weeks long, were made around New Caledonia and 47 different fishing grounds were visited.

The catch per haul ranged from a few kilos to 300 kilos, with an average of 72 kilos, the best hauls being recorded in February-March and the poorest in November. It is significant that the best hauls coincided with peak skipjack concentrations in New Caledonia.

The gold-spot herring Herklotsichthys punctatus is the commonest species, which makes up 36% of the hauls. Then follows the sardine Sardinella sirm (24%), the hardihead Pranesus pinguis (11.7%), the anchovies Stolephorus heterolobus and S. indicus (12%), and the sprats Spratelloides sp. and Dussumeria acuta (6%). All these species make very good bait.

4) Tuna compendium: at the request of commercial fishermen, and under an agreement concluded with the Merchant Marine Department, ORSTOM in 1979 undertook the preparation of a compendium of all data on tropical Pacific tunas of possible value to fishermen: tuna biology, description of existing fisheries, surveys to date, hydrology, meteorological data.

This document is to be published shortly.

5) Juvenile skipjack found in the stomach contents of adult skipjack.

(Joint ORSTOM/SPC project): the stomach contents of skipjack caught by the SPC skipjack programme were analysed with a view to learning more about the juvenile phase of skipjack and the predator/prey relationship. Of the 5,956 skipjack stomach contents examined, 4.2% contained juvenile tunas and 3.3% juvenile skipjack between 2 and 14 cm. in length.

The relative abundance of juvenile skipjack seems greater in the vicinity of large land masses: Papua New Guinea, Western Samoa, New Caledonia, Fiji and Vanuatu.

The cannibalism index is higher in large skipjack (70 cm in length) than in smaller ones (30 cm.).

6) Fishery statistics

An ORSTOM study is being conducted on albacore caught in the Coral Sea and the Tasman Sea by Taiwanese longliners which unload at Santo (Vanuatu).

7) Projects: ORSTOM and SPC are planning a joint study on the environment of surface tunas: relationship between hydrological conditions (particularly salinity) and tunas.

This study will be based on data collected by the ORSTOM hydro-climate programme.

- tuna aggregation trials with rafts.

II. FISHERY AGREEMENTS

After the Exclusive Economic Zone around New Caledonia was established in February 1978, fishery agreements were concluded with Japan, which was already fishing in the area, and with the American company "Starkist" which wanted to conduct some trials there.

1) The France-Japan Agreements

The first agreement was concluded on 20 July 1979 for a period of nine months. For a single fixed fee, Japan was entitled to send in seventy ships and catch 3,375 tons during that time.

Twelve ships only (out of the fifty-eight licences actually issued) came to fish in the Zone between 13 November 1979 and 18 March 1980. Catches totalled about 3,200 tons, an average yield of 9.6 T. per day of presence in the Zone (from 3 to 18 T/day depending on the boats).

This agreement was renewed for a further period - from 20 April 1980 to 19 July 1981 - with an authorised quota of 7,250 T. for ninety-five ships.

During this additional period, few ships actually operated in the Zone: 8 boats caught a total of 827 tonnes, with the yields remaining very satisfactory (8.2 T/day).

New negotiations are to begin with Japan shortly with a view to reaching an agreement for the 1981-82 season.

2) Starkist-New Caledonia Agreement

On 20 May 1980 an agreement was signed by the Territory of New Caledonia and the American company "Starkist Foods" which had asked to be authorised to conduct trial purse seine operations in the zone.

In May-June 1980, the trials began with 4 boats, only two of which actually caught any fish: 90 T. for the "Frontier", and 170 T. for "Island Princess".

Purse seining of tuna proved exceedingly difficult: the fish, highly mobile, dives rapidly as soon as it is surrounded and swims away under the net. The use of higher seines with a looser purse and in conjunction with live bait to stabilise the school could give better results.

In April-May 1981, the "Frontier" which had modified its seine caught 165 T. in the vicinity of the Chesterfield Islands, and the "Voyager", in her first trial, caught 120 T. in the north-west part of the EEZ.

This would seem to indicate that purse seining is feasible in New Caledonian waters, but further trials are needed to determine alternative techniques (different types of seines, use of live bait, anchored rafts).

CONCLUSION

DEVELOPMENT PROSPECTS

There is scientific evidence that New Caledonia has substantial tuna stocks which could be exploited at least during part of the year (the Southern Hemisphere summer), since live bait availability appears sufficient for a pole-and-line fishery.

Japanese fishing activities from April 1979 to July 1981 were particularly productive during the summer (November to March) and the catch results (averaging 8 to 9 T/day of presence in the zone) justify serious consideration to be given to the establishment of pole-and-liners in New Caledonia.

The results of purse seine trials in the Zone are as yet very incomplete and while they were not really conclusive, these trials did leave open the possibility of operating this type of fishery in New Caledonia with appropriately modified gear and techniques.

It must be recalled that New Caledonia is located half-way between the purse seining zones of New Zealand and Papua New Guinea, and it would therefore seem quite feasible for boats to fish in New Caledonian waters between their New Zealand and Papua New Guinea seasons.

Naturally, a prerequisite for any Noumea-based fishery will be the provision of adequate infrastructures, and the Territorial authorities are therefore currently considering a fishing port project (100 m. of wharf, cold storage facilities and a boat elevator).
