

CASE STUDY: MARINE RESERVES IN NEW CALEDONIA

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BACKGROUND

New Caledonia is surrounded by a large and rich lagoon which is enclosed by a barrier reef over 1,000 km long.

Exploitation of the living lagoon resources to meet local requirements for fish and other seafood has not, up to now, greatly affected the overall bio-ecological balance of the lagoon environment because New Caledonia's population density is very low.

The sea area near the capital of Noumea, where over half of the Territory's population lives is, however, a notable exception. Artisanal fishermen are far more active in this area than anywhere else in the Territory and their impact is further compounded by other activities such as recreational fishing, spear fishing and tourist related activities.

The New Caledonian authorities were therefore led to implement, in addition to the general fisheries legislation applicable to the Territory as a whole, a specific strategy for the protection of the sea areas close to Noumea. This involved the establishment, over a period of years, of several different types of marine reserves.

1. "Yves Merlet" Reserve

This reserve was established in 1970 at the south-eastern tip of the main island. It is a complex and very diversified ecosystem comprising many islands and reefs, whose unique wealth and beauty made it desirable to classify it as a strict nature reserve.

Not only are fishing, capture or collection of all animals, plants or minerals prohibited in this area, but it is also out of bounds to boats, which are not permitted to pass through it or to moor near any of the islands or emerging reefs. These regulations may, however, be waived for traditional canoes and customary fishing activities.

This protected area constitutes a living museum which is representative of the rich marine heritage of New Caledonia and is a valuable reference area for biological and ecological studies on reef and lagoon systems.

2. Special Marine Reserves Around Some Islands of Tourist Interest in the Noumea Area.

Among the recreational activities available to tourists visiting Noumea, launch trips to the Amedee Lighthouse Island and to Maitre Island, on which a hotel was built two years ago, are very popular.

The surroundings of these two islands, which are easily reached from Noumea, used to attract many weekend boating and fishing enthusiasts. However, when one considers that over 7,300 pleasure craft are registered in Noumea, one can easily imagine that the marine fauna and flora in these areas has been considerably depleted over the years.

This is why the two above-mentioned islands, the reefs enclosing them and the adjacent waters (less than 10 metres deep) were, in 1981, classified as special reserves, within which fishing, as well as the capture or collection of all animals and plants, whether on land, in the sea or in the air, is strictly prohibited.

When the environment has had sufficient time to regenerate, these reserves, access to which remains authorised, will offer tourists and the general public reef and lagoon sites of great interest. In addition to the protection of plant and animal life, these two reserves also have an educational and recreational purpose.

3. Special Rotating Reserve on the Barrier Reef opposite Noumea (see Map).

The barrier reef lying more or less opposite Noumea and its surrounding waters are among the most heavily fished areas in New Caledonia, being used both by recreational and commercial fishermen.

There are three distinct sections of reef, Annibal, Abore and Kue, separated from one another by channels used for navigation.

Divers from ORSTOM and the Noumea Aquarium, as well as local fishermen, had for some years reported that these areas were becoming noticeably poorer, particularly in their stocks of fish and crustaceans. It therefore seemed urgent to take measures that would lead to regeneration of stocks without unduly restricting access of fishermen to fishing grounds in the Noumea area.

This is the philosophy behind the special rotating reserve which was established in 1981 and operates as follows:

- on the date on which the law establishing the special rotating reserve came into force, one of the three reef sections referred to above and its surrounding waters (area B on the map) was closed to all fishing activity, with the other two sections remaining open to fishing without any restrictions (areas A and C);
- at the end of three years, area B was re-opened, while area C was in turn closed to fishing activity;
- this pattern is repeated every three years, with area A to be closed when C is opened, etc.

The major difficulty with this rotating system is to determine the most appropriate cycle for opening and closing the areas.

It is practically impossible to assess the exploitable stocks in and around any one reef section quantitatively because of the great species diversity and the interactions occurring between adjacent reef sections.

Furthermore, not enough biological data are at present available, especially on the reproduction and growth of the various commercial species, on which to base such an assessment. However, the three-year rotation that was chosen should normally lead to fairly good recruitment for most fish species.

Although there has been no proper scientific monitoring of this reserve so far, divers from ORSTOM and the Noumea Aquarium, as well as many fishermen, reported that a definite improvement seemed to have taken place in the first area to be closed for three years.

The system thus appears to have been effective. However, this is only a rough and subjective evaluation; a more precise assessment of the effects of the protective measure would need to be based on fishing statistics that are sufficiently precise to separate catches and efforts in each of the three areas.

Such a degree of precision in the recording of fishing results is not feasible at present.

4. Specific Fishing Zones

The provisions outlined above have recently been complemented by specific measures allowing for the exploitation of certain resources such as coral, aquarium fish, Bryozoa, and sponges in the protected areas.

It was felt that the possibility of initiating and developing new handicraft activities based on the commercial exploitation of these resources should not be automatically ruled out, although great caution had to be exercised and a thorough evaluation made of the impact of such exploitation on the reef and lagoon ecosystem.

4.1 Exploitation of Coral

Commercial exploitation of coral which had been prohibited, was authorised on a trial basis from 1984 in one section of the barrier reef (Tetembia) situated just north of the rotating reserve discussed under heading 3. At the same time, the territorial government asked ORSTOM to conduct a study on coral growth, colonisation processes, the impact of coral collection and an assessment of the coral stocks exploitable on this section of reef.

Coral collectors must hold a special permit and undertake to co-operate with the ORSTOM scientists. They must follow any new instructions that might be issued by the scientists or the territorial government as regards methods of exploitation, genera to be protected, or maximum allowable quantities, and submit monthly reports on their activities.

This trial programme should eventually lead to a precise definition of coral exploitation procedures that do not endanger the ecosystem and thus help to avoid the often irreversible damage done in the past in other parts of the Pacific through uncontrolled exploitation.

4.2 Aquarium fish

The New Caledonian lagoon contains numerous species of aquarium fish that are in high demand, especially on American and European markets. Small-scale exportation of this resource was begun recently. Capture of these fishes is permitted only by day and without scuba diving equipment, all fishing with the latter being in any case prohibited in New Caledonia.

However, in order to enable divers to catch sought-after specimens without damaging their natural habitat and without jeopardising their survival by rough handling, the territorial authorities are at present considering the advisability of authorising the use of scuba equipment for the capture of small aquarium species. The fishermen concerned would need to hold a special permit issued annually which identified those species whose capture was prohibited (in particular, juveniles of fishes marketed for human consumption).

In order to keep adequate control over this activity and limit its impact on the natural environment, capture of aquarium fish with scuba diving equipment would be authorised only in one area. The general idea is to combine the choice of this area with the rotating reserve on the barrier reef opposite Noumea. The capture of aquarium fish would be permitted only in one of the two "open" areas of the rotating reserve described under heading 3, and the fact that the area concerned would change every three years should reduce the risk of over-fishing in any one area.

Quarterly monitoring of catch statistics should enable appropriate restrictions to be applied if fishing pressure on any species was found to be too high.

4.3 Bryozoa and Sponges

Since there is a demand for certain species of Bryozoa and Sponges, both on the local souvenir and handicrafts market and for export, consideration is also being given to special provisions authorising capture with scuba diving equipment of these species which are generally found at depths of more than 10 metres. Two well defined lagoon areas would be opened on a trial basis for this type of fishing : one north of Noumea for the Bryozoa, one south of Noumea for the Sponges.

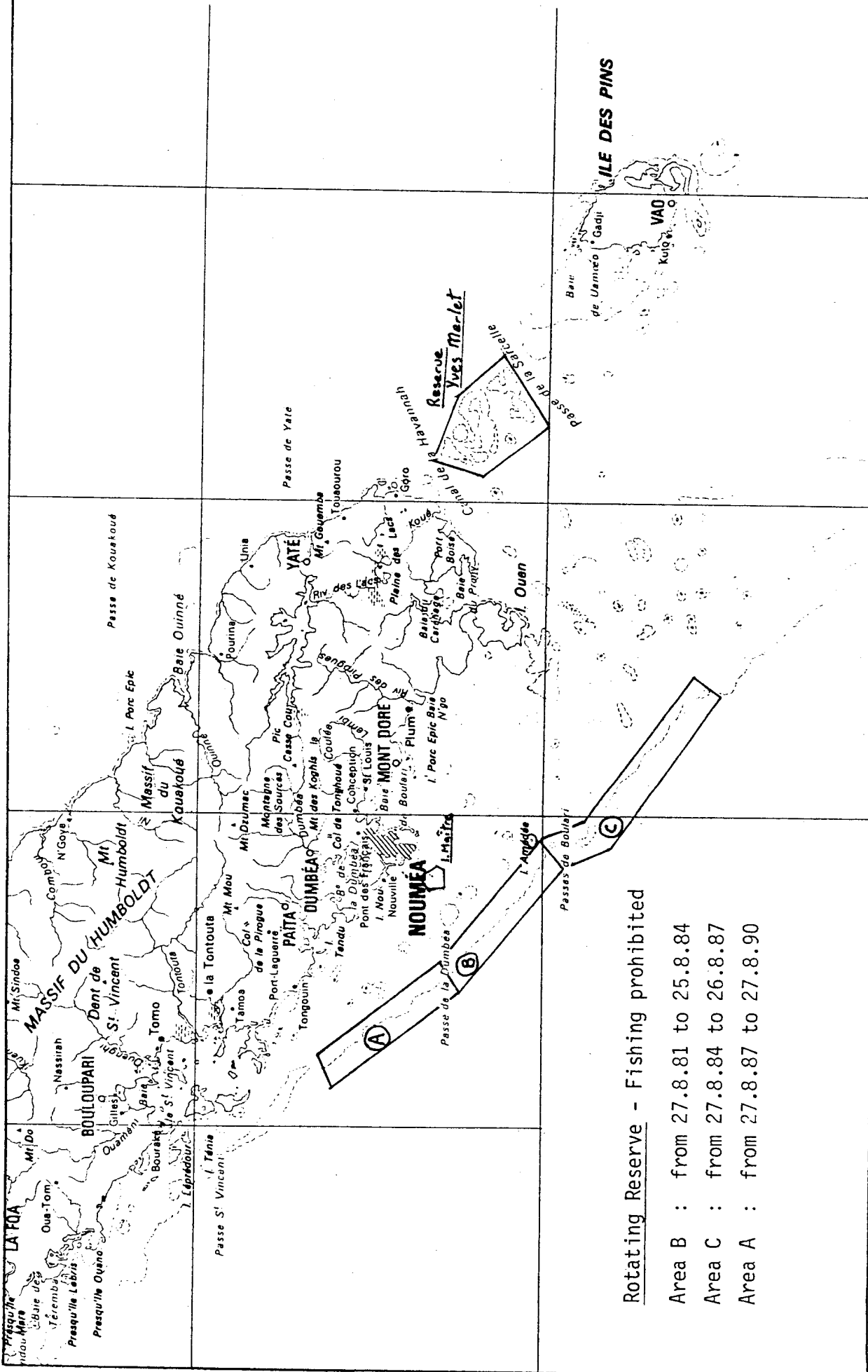
Fishermen wishing to engage in this activity will, as for the exploitation of aquarium fish, have to obtain a special permit and undertake to submit quarterly reports on their catches.

5. Conclusion

The lagoon and reef zones near the capital city of Noumea are under heavy fishing pressure from both recreational and commercial fishermen. Being easily accessible and suitable for a wide range of activities they are currently governed by a series of legislative provisions designed to enable the various users of the sea to live in harmony and to foster development of economic activities while preserving a natural heritage of great value and interest.

Close monitoring of activities in this zone, together with the implementation by ORSTOM of a comprehensive programme of identification and evaluation of biotopes in the New Caledonian lagoon using the most sophisticated interpretation techniques, (in particular satellite imagery) should, in the coming years, allow the effectiveness of these provisions to be measured very precisely.

ROTATING MARINE RESERVES - NEW CALEDONIA



Rotating Reserve - Fishing prohibited

Area B : from 27.8.81 to 25.8.84

Area C : from 27.8.84 to 26.8.87

Area A : from 27.8.87 to 27.8.90