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THE PEARL SHELL BEDS OF FRENCH POLYNESIA.

Their exploitation - conservation
rehabilitation

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In French Polynesia, the large Blacklip Mother of Pearl oyster (Pinctada margaritifera) is found in almost all peripheric lagoons and bays of high islands as well as in the interior lagoons of low islands, (atolls).

However, these shells are found in sufficient quantities for commercial exploitation in only about 20 atolls of the Tuamotu archipelago, in two atolls of the Leeward Islands, and finally in the Gambiers islands.

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I. THE CHARACTERISTICS OF PEARL SHELL LAGOONS.

A list of pearl shell producing lagoons appears below and the islands are classed in order of importance of their yield:

1°) Classification of pearl shell producing lagoons by yield.

| Lagoon | Max. production (metric tons) | Last crop (metric tons) | Last open for diving | Quality of shell | Remarks on present condition |
|------------------|----------------------------------|----------------------------|-------------------------|------------------------|---|
| 1. Hikueru | 1500/2000 | 700 | 1959-1961 | World renowned | Production stabilised. Improvement under way. |
| 2. Takume | 700/1000 | 120 | 1960 | World renowned | In process of exhaustion |
| 3. Marutea-Sud | 400 | 382 | 1958 | Average | Stable |
| 4. Takapoto | 400 | 240 | 1957-1959 | Special | Present arrangements unable to stop decline |
| 5. Gambiers | 400 | 180 | 1958-59-60 | Mediocre except Tearai | Stable |
| 6. Takaroa | 300 | 270 | 1957-1960 | Average | Stable |
| 7. Marokau | 300 | 50 | 1958 | Good | In process of exhaustion |
| 8. Manihi | 100 | 20 | 1958 | Very good | In process of exhaustion |
| 9. Hao | 100 | 20 | 1960 | Very good | Stable |
| 10. Marutea-Nord | 100 (?) | 20 | 1956 | Good | ? |
| 11. Aratika | 80 | 30 | 1958 | Average | Stable |
| 12. Ravahere | 80 | 5 | 1960 | Good | Exhausted |
| 13. Scilly | 80 | 50 | 1960 | Good | Stable |
| 14. Arutua | 50 | 7 | 1957 | Average | In process of exhaustion |
| 15. Kaukura | 50 | 2 | 1957 | Average | Exhausted |
| 16. Ahe | 50 | 20 | 1956 | Good | In process of exhaustion |
| 17. Moruroa | 50 | 13 | 1960 | Mediocre | Exhausted |

| Lagoon | Max. production (metric tons) | Last crop (metric tons) | Last open for diving | Quality of shell | Remarks on present condition |
|--------------|----------------------------------|----------------------------|-------------------------|------------------------|------------------------------------|
| 18. Katiu | 50 | 15 | 1958 | Average | In process of exhaustion |
| 19. Amanu | 30 | 30 | 1957 | Average | Stable |
| 20. Apataki | 30 | 0.2 | 1959 | Average | Exhausted |
| 21. Mopelia | 25 | 5 | 1959 | Good | Exhausted |
| 22. Makemo | 20 | 20 | 1958 | Average | Stable |
| 23. Raroia | 20 | 13 | 1956-58 | Average | In process of exhaustion |
| 24. Tahanea | 20 | 15 | 1958 | Mediocre | Stable |
| 25. Taenga | 20 | 12 | 1958 | Very good | Exhausted |
| 26. Motutuga | 10 | 9 | 1957 | ? | ? |
| 27. Haraiki | 10 | 9 | 1957 | ? | ? |

Another 20 lagoons produce from 5 tons to a few hundred kilos. of shells.

From the preceding table we may distinguish 3 groups of lagoons.

The first group will include the first 6 lagoons mentioned: Hikueru, Takume, Marutea-Sud, Takapoto, Gambiers, Takaroa. All these lagoons produce over a hundred ton of shell in each campaign. (see annex 1).

Lagoons such as Scilly (Leeward islands) Aratika, Amanu, Manihi, Hao, Makemo, Marokau which can produce 20 to 50 tons of shell are included in the second group.

30 lagoons which produce less than 20 tons of shell form the third group.

Let us mention that the difference in production between the lagoons of the first group and those of the second is quite important since the islands in the first group all produce over a hundred tons, while those of the second group reach a maximum of 50 tons.

20) Classification of lagoons according to their topographical and ecological characteristics.

Five lagoons in the first group (Hikueru, Takume, Takapoto, Takaroa, Marutea-Sud) are distinguished from the other lagoons by topographical and ecological characters.

The sixth, in the Gambiers islands, is a special case as this archipelago has an exceptional configuration. It is noticeable that Hikueru, Takume, Takapoto, Takaroa, Marutea-Sud can each be included in an oblong 20 miles long by 8 miles wide.

These five lagoons are therefore, comparatively small in comparison with the other islands.

In addition these five lagoons are all dotted with numerous heads of madreporic rock, which are locally known as:

"Karena" when these rocks come up to the surface,

"Marahi" when the tops of these sub-marine peaks, which have an average height of 20 to 30 m. are a few meters below the surface of the water,

"Kapuku" when the rocks rise only a few meters above the bottom, and therefore, remain invisible from the surface. It is on these latter rocks that the most important beds of pearl shell are found.

Finally these lagoons, which are small and sprinkled with numerous rocks, are all closed with the exception of Takaroa which has a pass at its Southern end.

It is interesting to observe that these five lagoons which seem to have in common a number of characteristics favourable to the multiplication of pearl shell are populated by shells which differ by their size and thickness.

For instance, shells from Hikueru are generally between 14 and 16 cm. in their greatest diameter excluding the growing edge and traders appreciate them for their thickness, while the shells from Takume and Marutea-Sud are large, especially in the latter lagoon, where the biggest specimens in the territory are found (up to 25 cm.). The shells from Takapoto remain small and do not generally exceed 14 cm. (Average size from 11 to 12 cm.).

Three types of shells are found in Takaroa:

In the Northern part of the lagoon, where the influence of the currents from the pass is not felt and where the waters are confined in a sort of bottle-neck, shells are similar to those from Takapoto.

In fact, this Northern zone of Takaroa offers, like Takapoto, a sandy and comparatively shallow bottom.

In the centre: as one progresses towards the pass, the size of shell increases. In the centre of the lagoon, shells offer the same characteristics as at Hikueru; nearer the pass, the shells are of greater dimension, however they do not reach the same size as those from Marutea-Sud.

These remarks have led us to the following conclusions:

1. The smaller a lagoon is, the more concentrated its shell population, and the greater the chances of fertilisation of the sexual products, which are liberated separately, resulting in a greater number of larvae.
2. The more completely a lagoon is closed and the less chance of planctonic larvae being swept along by winds and currents towards the deep sea and its abysses. There is no waste. The larva born in a closed lagoon has an additional chance of settling.
3. Madreporic rocks represent the most common natural support for pearl shell: the pearl shell potential of a lagoon is governed in the last instance by the extent of rock surface offered for the young oysters to settle upon.

However, while it is apparent that an essential characteristic of a good lagoon is that it should be closed, it is still desirable that the water in the lagoon should be renewed even in the depths.

Thus the Takapoto lagoon with its small dimensions, its elongated shape and numerous rock pinnacles favours the multiplication of pearl shell, but its waters are seldom renewed.

It is remarkable that the shells which show the best development in this lagoon are found in the vicinity of certain passages called "Hoa", approximately one meter deep and 10 meters wide which communicate with the sea. A similar closed environment in the north part of the Takaroa lagoon produces a population of shells similar to the Takapoto type, as mentioned earlier.

At Hikueru and Marutea-Sud, the barrier is very low in the south and south-east over more than half the coast line. The surf washes permanently into the lagoon and the excess water flows out of passages 1 m. deep

and 30 to 50 m. wide in the north-east. This provokes a permanent agitation of the waters which varies according to the intensity of the influx over the reef barrier, the importance of tides and the strength and direction of the wind.

The ideal lagoon could be defined as follows:

- small like Hikueru; closed like Hikueru; sprinkled with rocks like Hikueru, Takapoto, Takume, Marutea and deep like Marutea and Scilly.

Indeed, the depth of the lagoon is the main natural factor contributing to the conservation of pearl shell beds.

Takapoto offers uniform depths of 20 to 25 m. with rare drops to 40 m.

Takume offers uniform depths of 25 to 35 m.

Hikueru offers uniform depths of 30 to 40 m. (42 maximum).

On the contrary, Marutea-Sud offers irregular depths from 30 to 45 m. with numerous holes up to 70 m. while Scilly is like a funnel with a depth of 60 m. in the middle.

All Polynesian naked divers commonly work between 15 and 18 fathoms (25 to 32 m.). Good divers work regularly between 20 and 22 fathoms (3 days work per week, 60 to 80 dives per day, from 90 to 110 seconds each, from 7 a.m. to 2 p.m.).

Some divers are able to reach 24 fathoms. A few good divers can dive at 20 fathoms for more than 2 minutes.

It is understandable that a lagoon such as Hikueru, which has a maximum depth of 42 m. would be raked clean of shell if it were freely opened to such champion divers. But lagoons such as Marutea-Sud and Scilly cannot be fished entirely. Virgin beds of shell remain below 45 m. and ensure the permanent receding of the rest of the lagoon.

Provided that diving apparatus be prohibited, the pearl shell wealth of these two lagoons appears to be inexhaustible. It is regrettable that the shell from Marutea-Sud, which is fragile and thin, though large, is not prized in the trade.

In order to be perfect the lagoon of Marutea-Sud should be a little more closed and the lagoon of Hikueru a little deeper.

II. EXPLOITATION OF PEARL SHELL BEDS.

A. Regulations:

Pearl shell fishing in French Polynesia is subject to the detailed regulations which were adopted by the Territorial Assembly on 16th January 1959. Official Gazette 31st January 1959 - page 69.

These regulations are based on 4 principles:

1. Each sector is opened to fishing every 4th year,
2. the duration of fishing operations is limited,
3. a minimum legal size has been established,
4. natural reserves and pearl shell raising zones have been established.

We shall examine here the application of these principles.

1. Opening of sectors every 4th year:

This principle ensure 4 years of rest for each lagoon or sector of a lagoon after each diving campaign.

In order to balance the annual production the main pearl shell lagoons have been divided into two sectors which are open alternately, and a fishing calendar has been drawn up.

The lagoons of Hikueru, Takaroa, Takapoto have been divided each into two sectors while the Gambiers lagoon was sub-divided into 4 zones, one of which is open to diving each year. This particular division takes into account the special situation of this group where pearl shell diving is reserved exclusively to Gambiers islanders. Pearl shell diving is indeed their main source of income and it is necessary to allow for a diving campaign each year.

Previously all lagoons were open to diving every three years.

2. Limitation of duration of diving campaign:

This regulation aims to avoid excessive fishing.

Ideally, "quotas" should be established for each lagoon or part of the lagoon, and fishing should be authorised until the ceiling is reached.

The first difficulty would be to establish these "quotas" upon rational bases.

This point would be an interesting development, but such studies appeared to be premature for the simple reason that it would be extremely difficult to enforce respect of the "quotas" established. In order to achieve this, it would be necessary that at the end of each week during the diving campaign, the quantity of shells gathered since opening could be estimated.

This check has been carried out for the last two years in the three main fishing centres, where a population of several hundreds divers are placed under the supervision of a European gendarme.

Experience shows that even under these conditions, from 10 to 15 % of the shell escapes all control on the diving grounds, due to the large number of divers, their dispersion and the irregularity in their work schedule.

Beyond doubt, if the closure of the diving campaign were subject to the obtention of certain pre-determined quotas the divers could, by hiding part of the shell gathered, lengthen almost at will the duration of the campaign.

One would notice afterwards that the actual production grossly exceeds the authorised quota, and there would always be very good reasons connected with the difficulties of checking. What sanction could be taken? How could the owners of excess quantities be determined?

The duration of diving campaigns has therefore been fixed at 3 months on the basis of past experience. One month extension is granted when the shell beds seem to be sufficiently prosperous; this is determined chiefly by the average importance of individual daily production and by direct checking of the beds by administrative officers equipped with self contained diving apparatus (Cousteau-Gagnan).

3. Size limit of shell:

The shells are measured on the outside; the growing edge of the shell is not included and the measurement is taken in a straight line along the greatest diameter of the shell which is generally a diagonal originating in the angle opposite the byssus.

The minimum legal size has been fixed at 13 cm. except in the Takapoto lagoon where, in view of the generally small size of shell found, the minimum dimension has been lowered to 11 cm. One of the 4 sectors of the Gambiers islands also benefits from the reduced size limit; this is the "Tearai" sector, which comprises a shallow area extending at an average depth of 15 m. over several score of acres and where shell does not grow well, although it is abundant.

As a matter of fact shells found in shallow water in any lagoon, whether they are on the "Karena" or near the beaches, are small. These shells which are under the legal size although they have reached the adult stage, create obvious difficulties. Divers have noticed, quite rightly, that such shells never reach the minimum legal size, that they vegetate until they die and thus are lost, wasted. Therefore the temptation is great, especially when the price of shell is high, to take these small oysters and to attempt to dispose of them illegally. The control is so severe that in most cases offenders must either hide illegal shell in the bush or bury them, or again, sink them. The result is pure waste since it is very difficult to prevent the gathering of small shell in shallow water where people are also seeking fish for their daily meal. To hide the shell is quite easy and the offender just waits for a slackening of control to sell his illegal shell at reduced rates. If there is no opportunity for that, he makes no profit, nor is there any loss, except to the lagoon.

We shall see later how this waste of small shells, which cannot be controlled by regulations, has been corrected.

4. Establishment of reserves and shell breeding zones:

All the measures mentioned above are of a defensive nature. They appear as a series of shackles invented by the nasty administration to curtail freedom in fishing.

As a result the diving contractors have been obliged to leave in a number of lagoons, quantities of oysters sufficient to ensure the rehabilitation of the beds.

Thus at Hikueru, Marutea-Sud, Takaroa, the efforts of controlling officers in conjunction with difficulties in reaching the diving centres, the depth of the shell beds, and prohibition of diving apparatus have kept production at a satisfactory level, although it is far from giving the fabulous catches it used to.

On the other hand, Takapoto where the lagoon is not very deep and is devoid of sharks, offers easy grounds for nocturnal raids and its production is steadily dwindling.

As purely defensive measures proved insufficient to maintain the shell beds, other means have been brought into play, natural reserves (Professor RANSON, 1952) and pearl shell breeding (Territorial Assembly of French Polynesia, 26th January 1961 - Official Gazette - page 75).

The natural reserves established from 1954 onwards following the advice given by Professor Ranson, are strips of coastal waters a few miles long and from one to two miles wide, situated so that larvae born in these areas could be disseminated over the whole of the lagoon by currents.

The idea of a breeding bed capable of insuring the repopulation of the whole lagoon was launched.

In application this proved difficult. Faced with the task of surveying the reserve, one had to rely on the co-operation of the local population and to believe in local information.

In the idea of "natural reserve" the elders chiefly understood that this was a zone where fishing would be completely forbidden. The natural reaction of the local authorities was to try and establish the reserves in the poorest areas, then to reduce their surface, and finally to obtain their suppression. Thefts have also been noted. So that the reserves were absolutely emptied of their contents.

In order to put the reserve idea into application, other means were necessary.

First of all, to prevent thefts which the high price of shell made a temptation.

Starting in 1957, the officers concerned started building up, in the reserved areas, stocks of breeding shells which were drilled in the angle opposite the byssus and threaded on nylon. The drilled valves were thus marked and it was easy to forbid their sale.

About 55.000 oysters have thus been set out in the reserved areas: 25.000 at Hikueru, 21.000 at Reao, 6.000 at Takapoto, 3.000 at Takaroa. However, even on this scale, plantings represent a guarantee of survival of the species rather than a way of promoting abundant crops.

Increase in production means more intense action either in the form of breeding stocks of over 100.000 shells or the multiplication of surfaces favouring the settlement of shell.

It has been impossible so far to make a serious study of artificial collecting. This technique seems far from easy to say the least. Efforts have been concentrated on building up breeding stocks.

The establishment of breeding beds of over 100.000 shells would have been difficult and costly. By promoting private breeding ventures, we have reached the same result which, in fact, is to concentrate the greatest possible number of oysters in one place, in order to facilitate reproduction.

The first breeding stock was established at Hikueru (August 1961) and involved the planting of 120.000 oysters. The shells were collected in

shallow water in the zone where oysters settle in large numbers, but do not grow well. Carried out to depths of 15 to 25 m. these oysters grow at a rate such that they reach commercial size in one or two years. Both the problem of establishing reserves and the repression of illegal fishing for small shells were solved at one stroke.

B. Shell marketing:

The shell trade is almost entirely in the hands of the local population of Asiatic origin.

1/ The stages in the commercial chain:

a) At the diving centre

Most of the divers sell their daily production to the diving contractors to whom they are more or less bound by official or unwritten contracts.

At the contractors' store, the shell halves are roughly cleaned, then piled up in regular heaps, the inner side down.

A few days before shipping to Papeete, the half shells are stowed in jute bags. A full bag weighs from 40 to 45 kgs.

b) At Papeete

The bags are emptied, the half shells cleaned, sorted and stowed in wooden or metal barrels. The commercial value of a consignment of shell in barrels is determined by gross weight, net weight and the percentage of the different categories of shell included in the lot.

Commercial usage distinguishes 4 categories of shell:

- No. 1 : sound halves without borer holes,
- No. 2 : sound halves with few borer holes,
- No. 3 : halves with borer holes,
- No. 4 : halves with a large number of borer holes and broken shell.

2/ The various trades involved in pearl shell fishing and trading.

Briefly, in the inner trade chain the shell goes through at least 3 different owners.

a) The diver sells his shell to a contractor who has generally tied up all or part of the diver's production in exchange for advances in money or in kind, some time before the diving season.

b) The contractor sells the shell to a Papeete trader from whom he has previously received funds in advance to organize his campaign, to provide equipment, transport, accommodation and food for his divers and also to purchase shell.

c) The shell traders are also exporters. Some buy shell and try for the best price while others work only on commission.

There are 10 exporters, of whom 3 are Europeans and the others Asiatics. The exporters also finance the diving campaign by making funds (Europeans) or goods (Asiatics) available to the contractors.

The contractors number about 30; 5 or 6 are Tahitians and the rest Asiatics. Their group represents the mainstay of pearl shell production. The divers regard them as being heaven-sent.

There are about a thousand divers but only half of these deserve the qualification of professionals. At the present time the best come from the Leeward islands, but the most numerous come from the Tuamotu-Gambiers archipelago, where diving is an ancestral tradition. The divers always take their families along, but nowadays they tend to leave their poultry at home.

Diving campaign each year provoke the migration of 2.500 persons and the transport of 3.000 tons of miscellaneous freight. At this time of the year communications by seaplane are established between Papeete and the main diving centres.

The relations between the contractor and the trader-exporter-banker present no outstanding characteristics. On the other hand, the relationship between contractors and divers shows a remarkable symbiosis which deserves description.

Most of the divers have no other income than that from their annual crop of shell. The best among them have left their native island to settle in Tahiti where they have purchased a plot of land and built a house. Having no thrift instinct, the divers obtain from the contractor the credit which enables them to live, sometimes lavishly, until the next diving season. The amount of credit allowed a diver by a contractor varies widely, but depends chiefly on the diver's honesty and on the steadiness of F.O.B. prices of shell. The higher these prices, the larger

the advances granted by contractors and also the heavier the costs which will increase the price of shell during the next campaign.

On the other hand it is often tempting for a diver who is heavily in debt to a contractor to hire his services to a competing contractor when the diving season comes. Some divers "promise" their services to 3 or 4 different contractors. This "dishonesty" which the contractor's instinct alone can detect, represents the second important factor in the profit and loss account which burdens the price of shell before it is even gathered.

When the diving campaign starts, the contractor outfits the diver entirely, giving him a canoe, diving gear, sometimes a motor, paying his fare and the fares for his assistant and both their families to the diving centre. There, the diver will build his house on land rented by the contractor, with materials (iron sheets and wood) loaned by the contractor.

It is again the contractor who provides the necessary supplies, pocket money for the movies, gifts, ice cream, alcoholic or soft drinks, and who keeps all accounts, through the campaign.

This commercial paternalism is unique and I must say that on the whole, the system functions to the complete satisfaction of both partners.

A decision, No. 59-2 of 16th January 1959, regulating naked diving for pearl shell, has established a standard contract between diver and contractor which makes it possible to punish the main offences (the holding back of shell by the diver, the desertion of the diver by the contractor) and makes an obligation for the diver to secure insurance against work hazards.

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III. REHABILITATION OF EXHAUSTED LAGOONS

Rehabilitating exhausted lagoons requires building up, preferably in the centre of the lagoon, a concentrated breeding bed of oysters of sufficient importance to allow for the reseeding of all the exhausted beds.

This breeding bed may be made of oysters which have escaped fishing and remain in the lagoon, but are too widely dispersed to allow for fertilisation of the genital products. If the oysters are not numerous enough, it becomes necessary to transplant some from a rich lagoon.

This operation was carried out for the Reao lagoon in January 1959. The initial plan included plantings in two lagoons in the course of a single operation, but in the end only the Reao lagoon received its quota of shell.

Here is a description of the various stages in this transplantation:

At the beginning of December 1958, eight divers were landed at Marutea-Sud, an uninhabited island. In two months' work, 40,000 shells had been taken, drilled in the posterior angle of the hinge and threaded on nylon lines in strings of 25. All these strings were stowed as they were assembled, in depths of about 5 meters.

Simultaneously 161 empty petrol drums were opened at one end, cleaned and sunk in the lagoon. Two days before the ship was scheduled to arrive, the shells were assembled in depths of 1 to 2 m. near the beach, at the end of a path leading through the coconut belt to the outer reef.

The schooner arrived on Monday the second of February, four days late.

As they were taken out of the lagoon, the shells were placed in the drums without water, at the rate of 10 strings per drum. When 10 drums were full, these were loaded on a two-wheeled cart. Six men were required to haul the cart along the 150 meters of sandy path from the edge of the lagoon to the outer reef flat.

The drums were then carried on men's shoulders to one of the two whale-boats working in relays. From the whale-boat, the drums were loaded on board the schooner where they were immediately filled with sea water.

The schooner sailed at about 08.30 for Pukarua where she was scheduled to arrive on the next day around 16.00 hours, but after an hour and 15 minutes the captain put about and came back to Marutea. Finally the next day around 10.00 hours we sailed for Reao, the nearer of the two islands, where it had been decided to plant all the shells since the delays lessened their chances of survival.

On board, the water in the 161 drums was renewed by two fire hoses and the pumps functioned almost continuously day and night.

The next day, unloading operations commenced at 07.00 and finished at 11.00 hours.

The first whale-boat went ahead of the roller on which it was riding and hit the reef with its own acquired speed increased by the thrust of the wave which broke over the boat and partly swamped it, causing a few minor wounds and damaging equipment.

Later, thanks to the skill of the sailors and the keen assistance of the whole population (men, women, and children who limped along with strings of shell hanging from a stick carried on the shoulder) all the shells were placed on the submarine ridges at the bottom of the lagoon, opposite the village.

A last inspection in the afternoon showed that a quarter of the shells were dead. The highest percentages of loss were found amongst the first lots loaded. Finally, half of the shell survived and the sale of the dead shells paid all costs.

Since these shells were planted, no administrative officers have had the opportunity to dive and observe the results of the operation. According to the inhabitants of the island, young mother of pearl shells are now found near the beaches. It is therefore possible that the operation has been successful (there were no pearl oysters in Reao before). A special tour is scheduled in 1962 to report on the outcome of the transplantation. A three year period is considered sufficient for a first estimate of results.

PRODUCTION DES NACRES PAR LAGONMOP Production for various lagoons

(kilogrammes)

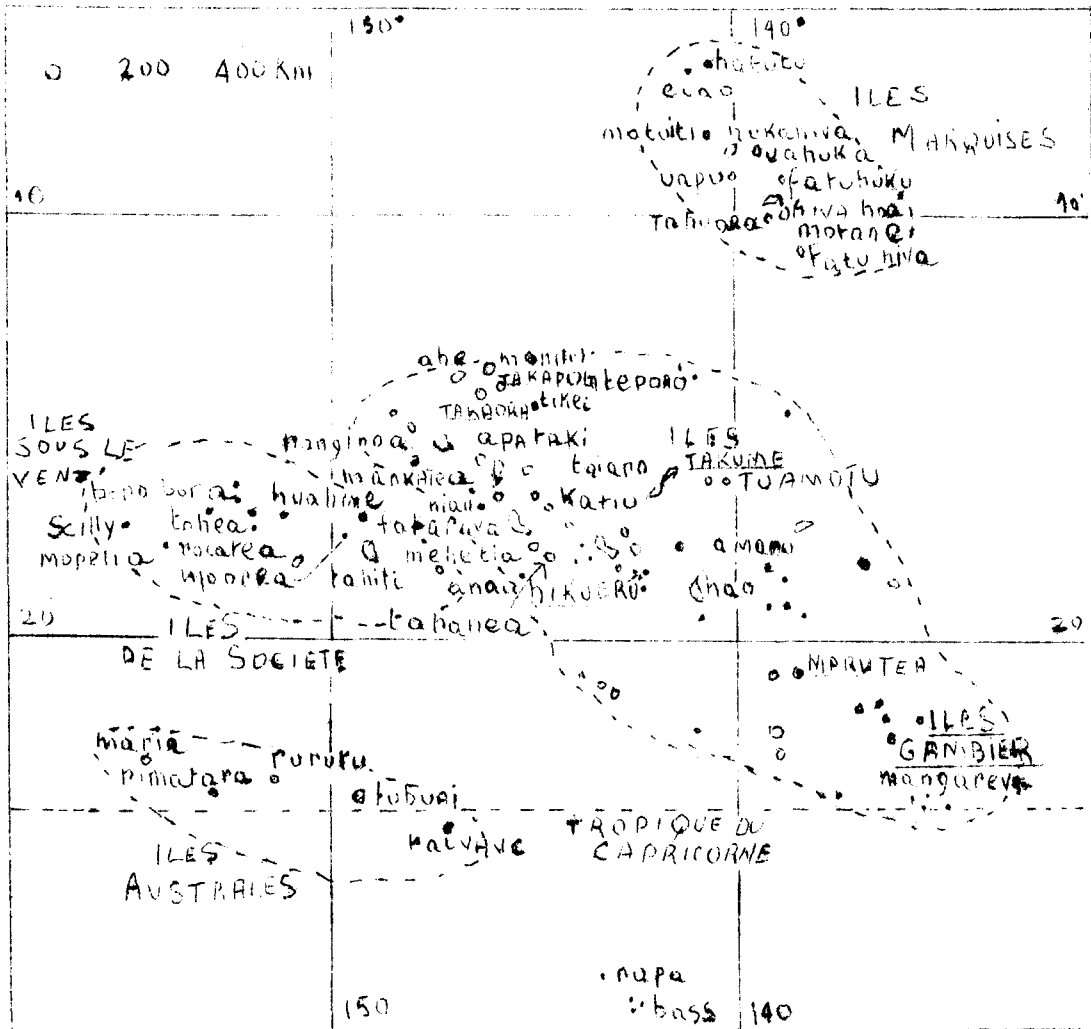
| Année Year | Hikueru | Marutea-Sud | Takaroa | Takapoto | Takume | Gambiers |
|---------------|---------|-------------|---------|----------|---------|----------|
| 1940 | | | | | | |
| 1941 | | | | | 200.000 | |
| 1942 | | | | | - | |
| 1943 | | | | | - | |
| 1944 | | | | | - | |
| 1945 | | | | | - | |
| 1946 | 370.628 | | 29.565 | 41.885 |) | 71.770 |
| 1947 | 89.628 | 228.360 | 69.331 | - |) | 40.116 |
| 1948 | 147.310 | - | 6.981 | - | 19.145 | 79.804 |
| 1949 | 292.198 | - | 100.187 | 82.538 | - | 14.111 |
| 1950 | 142.564 | 69.225 | - | 88.368 | - | 28.144 |
| 1951 | 193.639 | 244.269 | 20.193 | 1.025 | 1.683 | 69.332 |
| 1952 | 139.831 | 3.834 | 83.320 | 50.618 | 34.508 | 68.703 |
| 1953 | 208.222 | - | 125.411 | 43.977 | 20.414 | 39.508 |
| 1954 | 138.664 | 269.063 | 80.674 | - | 15.767 | 38.882 |
| 1955 | 285.780 | - | 48.041 | 167.604 | 63.471 | 124.450 |
| 1956 | 251.862 | - | 99.530 | - | - | 31.758 |
| 1957 | 62.821 | - | 70.787 | 148.787 | 62.214 | 56.859 |
| 1958 | - | 382.951 | 93.603 | - | - | 46.116 |
| 1959 | 409.765 | - | - | 86.043 | - | 58.708 |
| 1960 | - | | 189.986 | | 116.700 | 25.000 |
| 1961 | 254.158 | - | 49.580 | 49.839 | - | 53.347 |

EXPORTATION DES NACRESMOP EXPORTS

(Production totale)
(Total production)

| Année Year | Poids en tonne Weight (metric tons) | Valeur en 1000 CFP Value (1000 frs CFP) ¹ |
|---------------|---|---|
| 1940 | 225 | 523 |
| 1941 | 1.190 | 3.022 |
| 1942 | 679 | 3.663 |
| 1943 | 867 | 13.389 |
| 1944 | 725 | 15.119 |
| 1945 | 755 | 17.334 |
| 1946 | 930 | 27.651 |
| 1947 | 493 | 16.682 |
| 1948 | 362 | 10.789 |
| 1949 | 696 | 26.271 |
| 1950 | 490 | 19.847 |
| 1951 | 763 | 34.767 |
| 1952 | 546 | 29.037 |
| 1953 | 847 | 45.229 |
| 1954 | 872 | 59.751 |
| 1955 | 857 | 86.337 |
| 1956 | 539 | 72.026 |
| 1957 | 486 | 51.950 |
| 1958 | 620 | 49.100 |
| 1959 | 779 | 69.296 |
| 1960 | 538 | 64.560 |

¹ £Stg. 1.0.0. = 250 CFP approx.
£Aust.1.0.0. = 200 CFP "
\$US 1.00 = 89 CFP "



Etablissements français de l'Océanie