



Socio-economics of pearl culture: Industry changes and comparisons focussing on Australia and French Polynesia

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World production of cultured saltwater pearls has expanded greatly during the last two decades, mainly due to an increase in the supply of black pearls. Australia, French Polynesia, Indonesia and Japan are the principal producers of marine pearls in the world. French Polynesia and Indonesia have been the main sources of the increased supply of black pearls and South Sea pearls, respectively. While this increase in supply expanded the market for pearls globally, it has also led to a decrease in price per pearl. Numerous causative factors are involved in this price decrease and various social and economic impacts are apparent. Australia and French Polynesia are major pearl producing countries that have different regulatory systems, production approaches, industry structures, and marketing. Therefore, exploring how each country has influenced the worldwide market and the possible consequences captures interest.

History of pearl culture

Western Australia is by far the major producer of pearls in Australia, producing over US\$ 200m dollars of mostly South Sea pearls annually. A brief history of the existing industry there is worth-

while. Pearl culture in Northern Queensland and the Northern Territory showed similar trends.

The economics of the early pearl industry relied on mother-of-pearl shell, mainly used for buttons and inlay work. Actual pearls, if found, were just a bonus. The Western Australian industry developed in the late 1800s relying first on Aboriginal and Malay divers and then Japanese divers. The industry, however, declined dramatically in the 1920s and 1930s with the introduction of plastics. Nevertheless, a useful side benefit of this decline was the opportunity for over-harvested populations of wild oysters to recover.

The Western Australian pearling industry owes its recovery to the introduction of pearl culture in the 1950s. Most of the production is based on the culture of *Pinctada maxima*, although some is derived from the black-lipped pearl oyster, *Pinctada margaritifera*. The industry is based, primarily, on the collection of wild oysters. These oysters are collected, seeded, and placed in seabed panels, turned regularly for the next 2–3 months, and then taken to farms and held on panels suspended from long lines. They are cleaned regularly to eliminate bar-

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nacles and other marine growth. Oysters are about 3 years old when they are captured and seeded; two years later they are available for harvesting. *Pinctada maxima* is a very large oyster yielding white, rose, blue, or golden pearls between 10 and 18 mm in diameter.

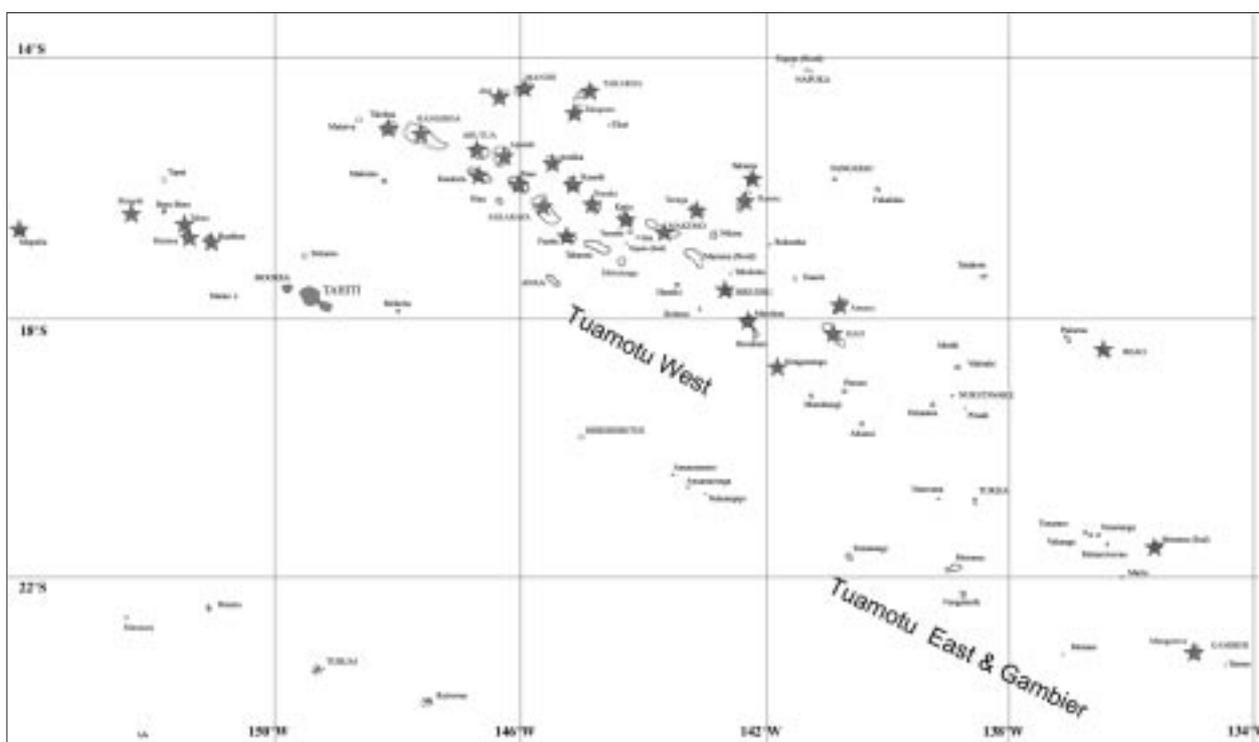
To reserve parent stocks, and to control supply to some extent, state governments regulate the industry. Producers must be licensed and are allocated annual quotas and catch areas for collecting wild oysters for implanting. Currently, there are 16 licensed companies in Western Australia with individual catch quotas ranging between 15,000 and 100,000 shells. The total allowable annual catch is about 572,000 shells. The cost of landing oysters for implantation is about US\$ 20/shell.

Hatchery production of pearl shells has recently developed. In 1992, the Western Australia Fisheries Department issued licenses with a right to use 20,000 shells from hatchery stock. If all 16 licensees were to exercise this option, there would be an additional 320,000 shells (oyster) for implantation; in fact, it seems that licenses for about 350,000 shells have been issued. This amount represents just over 61 percent of the total allowable catch of 572,000 shells (oysters) in Western Australia. Most licensees are in the process of taking advantage of these quotas, which have a potential to increase Australia's supply of South Sea pearls substantially.

Development of the pearling industry in French Polynesia was originally associated with collection of mother-of-pearl shell. Presumably, the French Polynesian industry suffered a fate similar to that of the Australian pearl industry due to the introduction of plastics. The resurrection of the pearl industry in French Polynesia is quite recent and began in the 1970s with the emergence of a black pearl industry.

Polynesians have been diving in the Tuamotu islands to collect mother-of-pearl from *Pinctada margaritifera* oysters since 1820–1830. Mother-of-pearl was exported to make buttons and inlay works. Occasionally, a rare natural black pearl was found. Approximately one in 15,000 black-lipped oysters gave a natural south sea black pearl.

In 1963, the head of the Tahitian Fisheries department, Jean Domard, with the help of an Australian company, Pearls Pty Ltd, based at Kury Bay in Western Australia, experimented with black pearl grafting on *Pinctada margaritifera*. Pearls Pty Ltd sent grafters to Hikueru and Bora Bora. Two years later, pearls of excellent quality were obtained. In 1967, Mr Jacques Rosenthal, a reputed gem wholesaler, who had seen the pearls harvested by the Fisheries Department, hired Mr William Reed, an Australian biologist, to study the feasibility of a pearl farm on Manihi Atoll (Tuamotu Archipelago). Reed recommended spat collection because natural



Map of French Polynesia with areas of black pearl production highlighted by stars.
Source: Service des Ressources Marines, Ministère de la Mer, Tahiti, French Polynesia

oysters were in short supply due to over-harvest to sell the oyster shells. Later, Mr Reed was hired by the Fisheries Department to study spat collection, a project financed by a French Government grant. The project was a success, showing that spat collection was indeed possible on a large scale on Manihi, Takapoto, Hikueru, and in the atolls of the Gambier Archipelago.

In 1973, William Reed founded his own pearl company Tahiti Perles, on Mangareva Island, Gambier Archipelago. Robert Wan, today's foremost producer of Tahitian pearls, bought the company in 1975. Around this time, two other persons began pearl companies: Koko Chaze, on Manihi (Tuamotu), and Jean Claude Brouillet, on Marutea (Tuamotu). The latter bought from the local government the stock of black pearls obtained by Jean Domard in 1965 following the 1963 grafting experiment. Brouillet had been told the cultured black pearls were valueless because there was no market for them.

Brouillet traveled around the world to show his sample of Tahitian black pearls to famous jewelers in Paris, London, Tokyo, New York and according to his own account, the result was a pitiful fiasco (un fiasco pitoyable). In his book he recalls a humiliating meeting with the president of Cartier in Paris: "He began to smile and to play with the pearls on his desk, like a kid. Obviously, he was very much amused. Not me." Brouillet nevertheless decided to pursue his project and founded Polynesie Perles, a company now owned by Robert Wan who currently controls 50% of Tahitian black pearl exports. Later, Brouillet met Salvador Assael, a New York wholesale jeweler and pearl dealer, who decided to promote the South Sea black pearl among the most famous jewelers in the United States and France. As a result of their joint effort, the market for Tahitian black pearls began to emerge. After Brouillet sold his company to Robert Wan, he and Assael contin-

ued their joint effort to promote the South Sea black pearl on the American market. However, Japan soon became the main importer, and also the main exporter of black pearl necklaces and jewels to the rest of the world.

French Polynesia is now the main producer and exporter of loose South Sea black pearl, with a 95 per cent share of world exports, and a 28 per cent market share of total pearl exports (in 1998).

Starting with less than 2 kilos in 1972, French Polynesia exported close to 9 tonnes of black pearls in 1999, 70 per cent of those being bought by Japan. From 1980 to 1999, export growth (in grams) has been exponential (Figure 1). Between 1989 and 1999 exports increased more than fifteen fold, from 575 kilos in 1989 to 9 tonnes in 1999 (a 31.6% average annual increase). Pearls now account for more than 95 per cent of French Polynesia's total exports of goods (Figure 2).

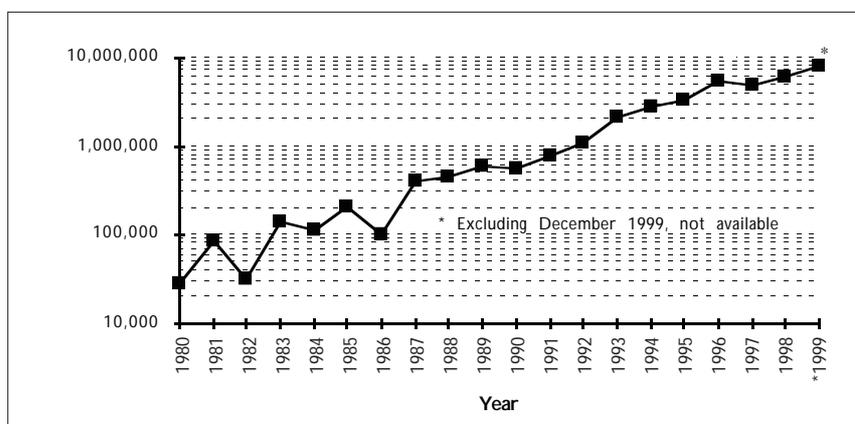


Figure 1. Tahitian black pearl exports (weight in grams) (Semi-logarithmic scale)

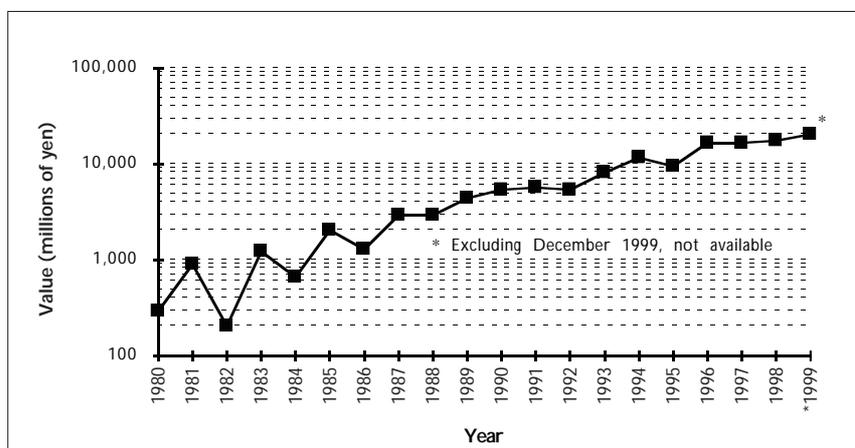


Figure 2. Tahitian black pearl exports (value in millions of yen) (Semi-logarithmic scale)

Industry and technology

Being sheltered from open seas, atolls are ideal breeding grounds for oysters and the production of juveniles (spat). Spat collectors are made of plastic strips that hang about 2 metres below the surface, one every 1–2 metres, and are tied on 200-metre lines. This method of collecting juvenile oysters is easy and economical and they sell for approximately 1 US dollar each. This activity does not require much capital and is very profitable. The cost to construct a spat collection station, which does not require much maintenance, is about US\$ 2000. After one year, the spat can be sold for US\$ 6000 to 8000. As a result, many families of the Tuamotu islands have engaged in this activity.



A pearl farm, a grafting house and a grafter at work in French Polynesia

Pictures provided by the Service des Ressources Marines, Ministère de la Mer, Papeete, Tahiti.

By contrast, wild spat collection is not yet possible in the open sea fisheries of Western Australia. Juvenile wild oysters must be collected on the seabed by divers and, as a result, cost about 20 times more than those in French Polynesia. The Australian operators are now allowed a quota to breed spat in hatcheries, but this method of procurement is still much more costly and risky than natural spat collection in the lagoons of French Polynesia.

This cost difference explains why the industry structure and regulation in Australia and French Polynesia are so different. In Australia, the wild oyster resource is limited and overfishing would rapidly deplete the stock; therefore the imposing of quotas is necessary. In French Polynesia, some atolls have been overexploited and in others spat collection is not possible, but there are still dozens of atolls where spat collection is very easy and plentiful. One large-scale operator may have up to 1000 spat collection stations in one atoll. Where spat collection is not possible, it is easy to purchase oysters from another atoll and ship them in. For example, in 1997, one pearl farmer on Raiatea (leeward island in the Society Archipelago) received an air shipment consisting of a 4-ton supply of juvenile oysters from Takaroa (Tuamotu Archipelago).³

Spat collection also helps to increase the stock of breeding oysters, because many spats which otherwise would have been killed by predators survive on the collectors and some then fall to the bottom to grow and breed. As a result, natural stocks of oysters are in little danger of depletion as was the case when shells were being collected for mother-

of-pearl and spat collection techniques had yet to be introduced. Therefore, this is one of the reasons why a quota system has not been established to preserve natural stocks.

In French Polynesia, a small-scale operation is easy to establish. There are no expensive open sea vessels to buy; everything can be done at the same place with small boats. A small family operation works well with family members and no salaried labor. The maritime concession is easy to obtain and, sometimes, not requested before setting up an operation. Also, the fee is relatively inexpensive and, often, never paid. In addition, no quota on grafted oysters exists, even though the size of the operations on the lagoon surface is specified by the maritime concession. Moreover, the government of French Polynesia has been following a policy to promote activities to repopulate the outlying islands. As a result of atomic testing, people have emigrated from these islands to the main island of Tahiti and its capital city of Papeete since 1962 in search of well-paid salaried jobs. Local, small-scale family and co-operative operations have been promoted through a co-operative organization called GIE Poe Rava Nui, which has been helping with technical advice, marketing (an annual auction held in Papeete), and financing through loans secured from the SOCREDO development bank. Technical help is also provided to small producers through an administrative body called Etablissement pour la valorisation des activités aquacoles et maritimes (EVAAM). In addition, the very high price obtained for Tahitian black pearls until the middle of the 1980s made this activity

3. Personal communication by J.P. Dihlan, pearl producer and wholesaler

very profitable and attractive to the locals, as well as Tahitian and Chinese entrepreneurs from Tahiti.

The structure of the pearl industry in the two countries is very different. In Australia, there are only 16 licensees and most of them are large-scale operators. In fact, the Paspaley Pearling Company produces more than 50 per cent of Australia's cultured pearls. In French Polynesia, the industry is bi-level in nature. A few important companies represent at least 70 per cent of the industry's output. They are affiliated with the Syndicat des Producteurs de Perles de Polynésie (SPPP). The four most important producers are Robert Wan, Jean-Pierre Fourcade, Anaita Bréaud and Patrick Rosenthal. Robert Wan alone claims to represent at least 50 per cent of total sales. The very small family or co-operative operations are federated by a groupement d'intérêt économique: GIE Poe Rava Nui. Their combined production represents only 3.5 per cent of total exports. The number of family operations affiliated to GIE Poe Rava Nui grew from 13 in 1981 to 446 in 1994, and then decreased to 321 in 1996. Only 160 of these farms sold lots at the 1996 auction, suggesting that some of them either ceased activity or sold their harvest through other channels. Some medium-scale operators have set up yet another association: le Syndicat des Producteurs de Perles de Tahiti et des Iles (SPTTI), which is associated with GIE Tahiti Pearl Producer, a marketing association. Many of the 200 independent small-scale operators have not joined any association. However, sharply declining prices since 1989 have caused bankruptcies among medium- and small-sized producers. Since 1970, 9459 maritime concessions were granted for operations on 47 islands and 1929 were for spat collection. In 1996, 330 new concessions were granted, and 60 were cancelled. In practice, many concessions are not exploited (more on this later).

Because supplies of oysters for Australian pearl farmers are limited by a quota, every effort is devoted to maximize the number of pearls obtained from each oyster, and to obtain the highest quality possible. Since oysters are so plentiful and so inexpensive to purchase in French Polynesia, and with no quota imposed on grafted oysters, a trade off between quality and volume exists. Generally, investment toward increased input and output is more profitable than an increase in the average quantity and quality of pearls from a fixed supply of oysters. Falling prices since 1986 have further encouraged this tendency to increase production at the expense of quality, because higher volumes are needed to maintain profits when profit margins tend to fall.

The readily available and abundant supply of spat and the lack of quota imposed on producers have made possible a spectacular growth of the supply of Tahitian black South Sea pearls: from 104 kilos in 1986, to 1069 kilos in 1992, to 9 tonnes in 1999. The share of Tahitian black pearls in the overall world loose pearl market increased from almost nothing to about 28 per cent in 1998. Whether market share will continue to expand at that rate is doubtful. Therefore, a slow down in the rate of growth of supply will be necessary to keep in phase with world demand and thereby preserve the present level of prices. Indeed, the world demand for pearls declined between 1994 and 1998.⁴

The big operators typically deplore the anarchic nature of the industry in French Polynesia, but at the same time they are reluctant to accept any form of regulation. Since most of them own private atolls, they do not feel concerned about tragedy of the commons type of problems. They believe they can manage their operations in their best interest, and do not see the need for government interference to prevent over-exploitation of the oyster resource.

Socio-economic impact

In Western Australia, about 1000 persons are employed in the primary aspects of pearl production. Taking into account the Northern Territory and Queensland, the total persons employed in Australia in primary production of pearls is less than 1500, considerably fewer than in French Polynesia. Furthermore, a considerable amount of the Australian employment is seasonal. Production is located in the warmer northern tropical waters of Australia, areas that are sparsely populated.

At least 4000 persons are now estimated to derive their living from pearl farming or spat collection in French Polynesia. In the islands of the Tuamotu and Gambier Archipelagos, where pearl farming takes place in about 35 islands, it is estimated that one family in four earns a living from this activity (the active population there numbers 6427 at the 1996 census). According to social security statistics, 1020 salaried persons are employed by 87 employers in large or medium scale pearl farms. Many small farms use only non-salaried family labour. More and more small family operations turn to spat collection, and big farms buy juveniles from the small-scale family operations.

The pearl boom has had both positive and negative impacts. Positively, it has reversed the former emigration trend from the outer islands of the

4. GIE Perles de Tahiti, *Perles de Tahiti News*, N° 21, July–August 1999, p. 9

Gambier and Tuamotu Archipelagos to Tahiti. The islands where black pearl farming occurs have experienced a strong return migration movement. For example, between 1988 and 1996, the population of the Gambier Archipelago has increased by 75 per cent. Individual islands in the Tuamotu Archipelago have had spectacular population growth over the same eight year period: Kauhei +191 %, Ahe +133%, Apataki +106%, Fakarava +88%, Arutua +81%, Manihi +79%, Rangiroa +46%, Takapoto +31%, Takaroa +23%. The economic impact is also positive. Census figures indicate that living standards have improved rapidly. Households are better equipped with modern amenities, including cars and even motorcycles (in Arutua, they replaced bicycles and scooters) (ITSTAT 1991, 1997; Pollock 1978). Clearly the positive side of the industry is that jobs are created on remote islands from where young people previously emigrated to find jobs. Additionally, most of the jobs created are well suited to the kind of outdoor work that Polynesians always liked to do in the remote archipelagos, such as fishing and diving for shells. This industry offers a working environment and a life style as close as possible to the traditional activities of the local population.

Socially, this rapid growth has also had some negative side effects. Many small family operations went into debt to invest in pearl farming. Due to the lack of knowledge about management and a tendency to confuse turnover and profits, they were never able to pay back their loan to the bank. In 1996, outstanding, unrecoverable loans to small pearl farmers represented at least 5 million US dollars.⁵ The considerable amount of cash generated by pearl farming has increased inequalities between successful and unsuccessful families, and between islands where pearl farming is booming and where copra production is still the only cash resource. Moreover, there are often conflicts between locals (islanders) and outsiders from Tahiti or other islands moving in to establish pearl farms. In the recent past, big producers have tried to encourage government regulation to limit production of small scale operators, on the grounds that small producers tend to produce lower quality pearls and market them less satisfactorily than professional dealers. On the other hand, long time residents and landowners in the Tuamotu and Gambier islands have been complaining that the government was granting licenses to aliens⁶, to occupy the maritime public domain for pearl farming. These aliens are mostly Chinese, Tahitians, half-Tahitians (Demis), and European businessmen

from the main island of Tahiti and have neither relatives nor property on the island. In many instances, newly arrived outsiders were met by violent demonstrations from the locals, who believe that the riches of the lagoons are theirs by right and that no maritime licenses should be issued to aliens (Rapaport 1991, 1993, 1996).

Foreign pearl farming operations are not authorized although many local operations are believed to be covertly financed by Japanese interests acting through straw men. According to Rapaport (1993), almost all of the authorized pearl farming area on Takaroa had been allocated to alien entrepreneurs. Alien pearl farmers occupy half of the total near-shore lagoon farm area, blocking more than a third of the occupied shoreline. They also use a substantial proportion of the central lagoon area for spat collection. These activities violate previous agreements with the community as well as the authorized concession limits set by the administration.

A note of the Ministère de la Mer (1990) describes an anarchic occupation of the public maritime domain, without any real control and an obsolete regulation of maritime concessions whereby oyster density within the lagoon is not considered. Increasing delinquency (oyster and pearl stealing) is noted and protests linked to granting of maritime licenses to outsiders (people not originating from the island) are increasing, even though French laws do not allow discrimination on the basis of residence or place of birth (our translation).

Adverse economic side effects are also beginning to appear. The large-scale operators such as Robert Wan privately own islands and therefore are personally interested in preventing over-exploitation. This concern is not demonstrated by small and medium scale operations that share a common resource, the lagoon. Such a situation is a typical case of the tragedy of the commons (Hardin 1968; Gordon 1954); each private farm tries to maximize the scale of its operation, even if over time such a strategy may lead to overexploitation and, therefore, massive oyster mortality. Well before the occurrence of overexploitation, pearl quality and productivity deteriorate, causing a reduction in each operator's profit. Spat collection yields seem to provide a good advance indicator of whether or not a lagoon is overexploited. For example, in Takapoto, a once very rich pearl producing atoll, spat collection has been abandoned, and pearl farming is now much less productive than elsewhere. Massive oyster mortalities have occurred in

5. As of June 1996, unrecoverable debts owed to the SOCREDO bank by small pearl farmers amounted to at least 550 million Pacific Francs, that is, around US\$ 5 million (Institut territorial de la Statistique, Points Forts, 1997).

6. In the following text, alien means not born on the island

Hikueru in 1977 and in Takapoto in 1985. The transfer of oysters from one lagoon to another can also spread diseases.

In the common interest of all operators sharing a lagoon, it seems necessary to limit the over-exploitation of the free common resource by creating the (missing) market for the access to the lagoon (this is similar to the enclosure of the commons in 17 century England). This could be done by designing a scheme of transferable quota rights that limit the number of oysters farmed and grafted each year. These quota rights would be sold periodically by auction and be based upon biological carrying capacity and economic yield. Such a scheme was used to manage oyster banks in Holland from 1870 on (Van Ginkel 1988), even though the optimum level of exploitation was not precisely known. To alleviate the previously described conflicts of interests that caused locals to oppose outsiders, some of the proceeds from the auctions could be transferred to the locals through either financing of communal projects or subsidising of local co-operative pearl farming operations. Another part of the proceeds could be used to finance promotional efforts worldwide. Some free quotas could also be reserved for islanders as long as they really exploit them and do not resell them on the market.

However, such a stated scheme is not likely to be enforced in the near future in French Polynesia. Government regulation is almost non-existent; the existing formal regulation is far from being strictly enforced; and the need for public management and regulation of a common natural resource is not widely recognized as valid by most producers.

Marketing aspects

Prices

Between 1990 and 1995 the average price of the Tahitian black pearl decreased almost fourfold (3.85), from 9486 yen per gram in 1990 to 2464 yen per gram in 1999, as production and exports expanded very rapidly (Table 1, Figure 3).⁷ Figure 4 shows that the volume of exports, in grams, tends to be related inversely to the price per

Table 1. Tahitian South Sea pearls exports and prices per gram, 1980–1999

Year	Exports in grams	Value of exports million Fcfp	Value of exports million yen	Price/g in Fcfp	Price/g in yen	100 yens in Fcfp
1980	28,779	102	300	3,544	10,424	34.0
1981	86,527	404	898	4,669	10,376	45.0
1982	32,310	99	206	3,064	6,383	48.0
1983	139,888	712	1,228	5,090	8,775	58.0
1984	112,183	441	668	3,931	5,956	66.0
1985	206,463	1,392	2,017	6,742	9,771	69.0
1986	104,114	998	1,279	9,586	12,289	78.0
1987	407,620	2,252	2,963	5,525	7,269	76.0
1988	446,827	2,513	2,953	5,624	6,610	85.1
1989	608,861	3,764	4,428	6,182	7,273	85.0
1990	575,007	3,732	5,455	6,490	9,486	68.4
1991	786,521	4,404	5,761	5,599	7,324	76.5
1992	1,069,126	4,195	5,517	3,924	5,160	76.0
1993	2,113,728	7,749	8,319	3,666	3,936	93.2
1994	2,815,070	11,718	11,863	4,163	4,214	98.8
1995	3,239,745	9,394	9,685	2,900	2,989	97.0
1996	5,486,900	14,071	16,362	2,564	2,982	86.0
1997	4,988,940	14,658	16,657	2,938	3,339	88.0
1998	6,182,700	14,587	17,724	2,359	2,867	82.3
1999*	8,200,000	20,000	20,202	2,439	2,464	99.0

* Excluding December 1999.

Sources: Institut Territorial de la Statistique, French Polynesia, and GIE Tahiti Perles

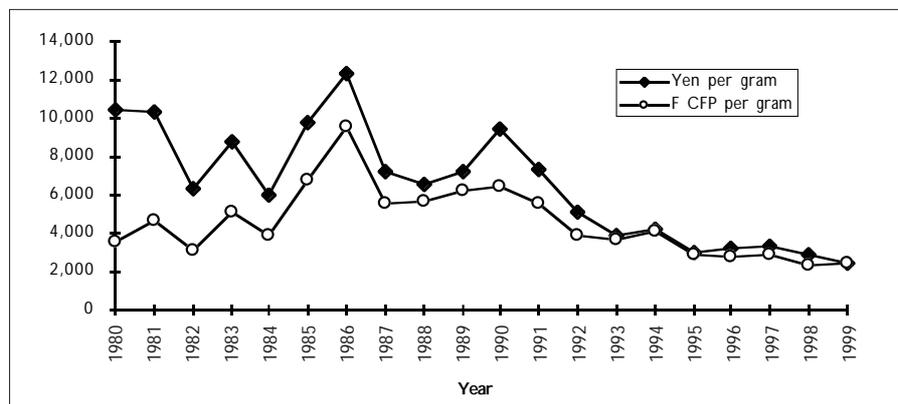


Figure 3. Average price per gram of French Polynesia's black pearl exports.

7. The average price per gram does not take into account the varying quality of production from one year to the next and the overall increase or decrease in average quality and size over time.

gram in yen. This trend is not surprising because the supply of Tahitian pearls is rather inelastic in the short term. Supply depends on the quantity of oysters grafted 18 months before, and producers do not stock their harvest from one year to the next. Therefore, prices tend to decrease if supply grows faster than world demand. The average price in yen per gram has decreased six fold between 1986 and 1999.

Market shares

Tahitian black pearls are no longer an extremely rare and expensive item reserved to a privileged elite. They now appeal to a wider clientele. The declining price of the Tahitian South Sea Pearl (TSSP) over the past few years has helped expand its demand in both volume and value, and therefore its share of the world market. In 1995 the market shares for TSSP and ASSP were almost identical, at 24.5 per cent (GIE Perles de Tahiti). From 1995 to 1996, their combined market share increased markedly, from 49 per cent to 57 per cent, at the expense of Indonesian, Japanese and Chinese competition. ASSP supply has been rising at a rate much less than that of TSSP, thereby helping to maintain high prices, but slowing the overall increase in value.

Hatchery production of oysters for seeding has the potential to raise the supply of pearls in Australia considerably. Given current quotas for aquacultured shells, aquaculture can increase the Australian supply of pearls by 60 per cent, compared to the wild limit, which seems to be the product of biological constraints. Any constraints on aquacultured shells can be expected to be determined by market considerations. Australia relies heavily on the high quality of its pearls to obtain premium prices.

Distribution

Japan, still the principle importer of loose Tahitian black pearls, bought 70 per cent of the total value of Tahitian pearl exports in 1996, much more than the USA (10%), and Hong Kong (8.6%). In 1996, Japan's share of worked Tahitian black pearls exports was 96 per cent. Dealers in Kobe, Japan,

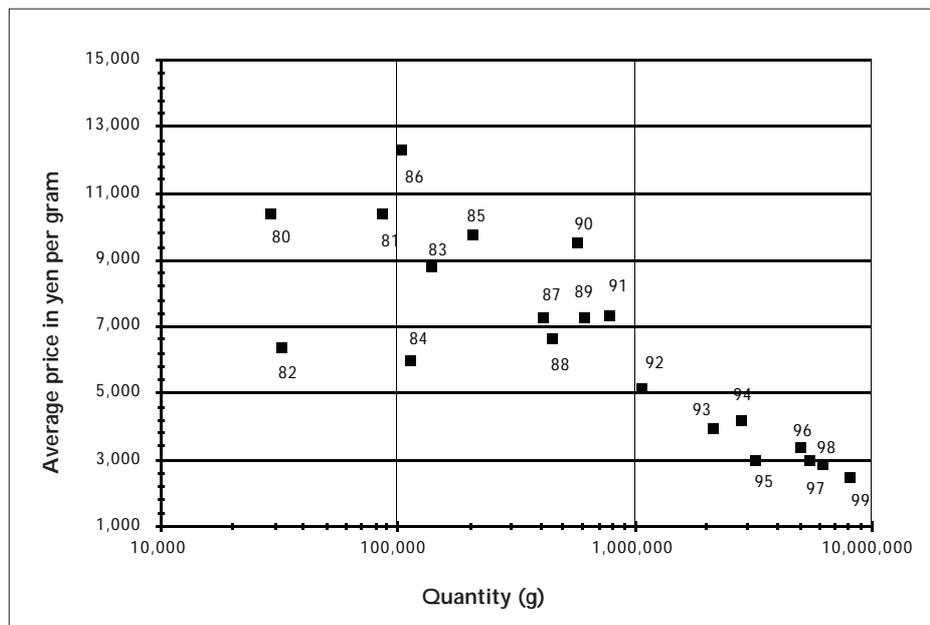


Figure 4. Relationship between average price (yen/g) and quantity (g) of black pearl exports from Tahiti

work with high volumes that enable them to match pearls of similar size, color and quality perfectly, and then assemble them into strands. It is estimated that more than half of Japanese imports of loose Tahitian black pearls is re-exported, after processing, mainly to the USA.

However, a challenge to the Japanese *de facto* monopoly on the worldwide marketing of Tahitian black pearls appears to have been laid down. According to GIE Perles de Tahiti, the share of loose Tahitian black pearls bought by Japan was 68 per cent in 1998. More and more non-Japanese jewelers and wholesalers are buying from two cooperatives of small pearl farmers, GIE Poe Rava Nui and GIE Tahiti Pearl Producers, and from local wholesalers at the annual auctions held in Papeete. Local wholesalers are beginning to offer a better choice of paired pearls because they are working with volumes that are much larger than those of a few years ago. Following the successful example of Australian producer Nick Paspaley, who managed to bypass the Japanese monopoly by setting up his own international auction of Australian South Sea pearls, Robert Wan, Tahiti's leading producer, has held annual auctions in Hong Kong for the last three years, with much success. Hong Kong is now the second largest importer of Tahitian pearls.

As from January 1999, legislation required all pearl dealers in French Polynesia to be licensed in order to sell pearls abroad. The conditions for licensing pearl dealers in French Polynesia are rather stringent. However, small producers of pearls in French Polynesia are still allowed to sell

directly to whomever they want. In some cases, small producers who have a desperate need for cash have been known to sell directly to jewelers in the United States at vastly discounted prices. As a result, the profession's credibility has been adversely affected and a prejudice toward professional wholesalers exists.

Some producers of Tahitian pearls, wholesalers, and jewelers have proposed to establish a central marketing board to prevent small producers from selling directly at discounted prices. An overabundant supply, stemming from the lack of quota schemes regulating growth, is bound to lead to such anarchic behaviors, because each producer strives to sell directly to maximize diminishing profit margin. Only large producers working with high volumes can offer homogeneous lots by pairing pearls. Smaller producers are compelled to sell heterogeneous lots that command a lower average price. In theory, a central marketing board would select only the best quality pearls, classify and pair them, and sell only homogeneous lots. This production approach would return the important value now added by wholesalers (most of them Japanese), who are doing this work, to the producers. Also, producers would have the opportunity to regulate the market to prevent wildly erratic price changes from year to year.

Since 1992, the local producers in Australia have sold their annual harvest directly through annual auctions held in Hong Kong and Japan. These auctions, and the quota system, which limits supply and encourages producers to improve pearl quality, have helped to achieve prices much higher than those in French Polynesia. Ten years ago, average prices per gram between the Australian and the Tahitian pearls were very similar (about US\$ 100 per gram). Due to its limited supply, the Australian pearl now commands a much higher price, about US\$ 180 to 200 per gram, compared to US\$ 25 to 30 per gram for the Tahitian pearl. Using these prices, the value of pearl exports was approximately the same in both countries in 1995. But by 1998, the value of pearl exports from French Polynesia exceeded that from Australia. However, about 10 million oysters must be grafted in Tahiti, while only 572,000 oysters are grafted in Australia.⁸

Promotion

Much more money has been spent on promotion of the Tahitian South Sea pearl in the last few years. An association for the promotion of the Tahitian black pearl, GIE Perles de Tahiti, was created in

1993 and receives half the proceeds of the export tax, 160 F CFP per gram, on Tahitian black pearls. Proceeds from the tax increased rapidly as the value of exports increased in recent years. Therefore, the promotion budget of GIE Perles de Tahiti has been steadily rising (+63% in 1996). Promotion was aimed at fine jewelers in 1995 and 1996 and, since 1997, all efforts are being directed toward establishing an association of Tahitian black pearls with the world of high fashion and show business. Promotion associations have been set up in Japan, the United States and Europe (France, Germany). Still, the overall promotion budget (379 million F CFP) represents only 2.7 per cent of total sales (14 billion F CFP in 1996), a relatively modest percentage in the world of luxury goods (GIE Perles de Tahiti 1997). In Japan, a similar association of black pearl import companies, the Japan Black Pearl Promotion Association, was also created in 1993.

Successful promotional efforts since 1995, as well as falling prices, are probably responsible for the growing interest for black pearls in the world of jewelry and the increasing market share of the Tahitian black pearl in total exports of loose cultured pearls in recent years.

Observations from recent statistics on Australian pearl exports

Australian statistics on pearl exports are incomplete. Figures for both volume and value of exports are only available from 1994 to 1995 and thereafter. In the initial years (1994–1995 and 1995–1996), the volume of exports is only available as number of pearls, and weight must therefore be estimated.

Table 2 presents estimates of average prices received for Australia's export of pearls. In 1995–96 the considerable expansion in volume of exports compared to that of 1994–95 was accompanied by a substantial reduction in the average price received for pearls. Price recovered in 1996–97 when the volume of pearl exports was reduced to about three-quarters of that in 1995–96. The pattern of price fluctuations is similar to that observed for Tahitian black pearls. However, the relative variation in price is greater for the Australian pearl, and, after the trough of 1995–96, a seemingly stronger recovery of price was achieved for Australian pearl exports. This occurrence possibly reflects a much sharper reduction in relative supplies by Australia following the 1995–96 collapse in prices. In turn, the greater market concentration in the Australian industry compared to that in French

8. This estimate is obtained by dividing the 5 tons harvest of 1996 by the average weight of pearl, which gives 3,700,000 oysters, and then applying a rate of one marketable pearl for every three grafted oysters.

Table 2. Recent statistics on Australian pearl exports*: prices in AU\$

Reference period	Total Exports		Total Value (FOB)	Average price/pearl (\$)
	Numbers	Weight (g)**		
1994-95	976,605	2,856,569.63	210,146,225	215.18
1995-96	1,218,106	3,562,960.05	79,870,844	65.57
1996-97	937,334	2,741,701.95	191,753,714	204.57

Source: The Australian Bureau of Statistics

* In 1994-95, Australia exported articles of natural or cultured pearls (71161000) and round cultured pearls, unworked, not mounted or set (71012110) worth \$1,307,572 and \$488,713 respectively. The corresponding figures for 1995-96 were \$1,623,719 and \$116,028,252 respectively. Data on export weight for these two categories were not available and have been estimated as in note **.

** Initially unit of quantity was given only as number. In order to determine the average per gram price of a pearl, number was converted into weight (grams) using the industry estimates: Average weight of each pearl = 0.78 momme; 1 momme = 3.75 grams (Paspaley Pearling Co. Pty Ltd, Darwin personal communication).

Table 3. Major export markets for Australian pearls (cultured worked - 71012201), 1996-97

Country of destination	Number	Value (FOB) (AU\$,000)	Market share in value (%)
Japan	53,011	17,183.281	30.63
Hong Kong	22,662	8,934.125	15.93
United Kingdom	32,980	7,468.752	13.31
United States of America	38,081	4,547.850	8.11
Germany	18,323	3,401.825	6.06
Switzerland	10,644	2,869.397	5.12
Others	118,951	11,691.568	20.84
Total	294,652	56096.798	100.00

Source: The Australian Bureau of Statistics

Polynesia, and therefore superior capacity to regulate supply, are possible explanations.

Japan was the principle market destination for such pearls, followed by Hong Kong and the United Kingdom with the United States of America, Germany and Switzerland providing significant market outlets (Table 3).

Conclusion

In September 1998, Robert Wan, Tahiti's leading pearl producer, told *Jewelry News Asia* magazine that Tahitian pearl production would reach a maximum of 7 to 8 tons in 5 to 6 years. By November 1999 production had reached 8.2 tons for 11 months, a 35 per cent increase compared to the 1998 annual export figures. Thanks to a booming world demand, the 1999 value of exports increased

by 39 per cent over 1998, (excluding the month of December 1999). Any industry increasing its supply at a rate of more than 40 per cent a year is indeed fortunate not to see the world price decline!

Obviously, the Tahitian pearl industry would benefit from the adoption of the Australian quota system or a similar one, such as the former Dutch regulation system for oyster banks (Van Ginkel 1988). Nonetheless, there is no immediate danger of over-exploitation of the oyster resource. It is estimated that present production could increase by a factor of four because many lagoons are still under exploited. More than forty lagoons are suitable for pearl culture in French Polynesia. However, limitation of the growth of supply is still necessary to avoid a further decline in prices as well as anarchic commercial practices. A quota system will be difficult to enforce because pearl farming occurs on 43 islands scattered on the oceanic zone of French Polynesia, encompassing an area as large as Europe. As most pearling activity occurs underwater, monitoring is more difficult,

even with the help of satellite technology. Grafting activity is also difficult to enforce as more and more local grafters are trained and become proficient in their trade. Moreover, the difficulty of monitoring hundreds of small-scale operations, many of them already operating without official licenses, far exceeds that encountered with just 16 licensed large operators in Australia.

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Black pearl industry continues to expand

The Micronesian US-affiliated Pacific Islands have a small but rapidly expanding pearl farming industry based in the Republic of the Marshall Islands (RMI) and the Federated States of Micronesia (FSM). While only three farms are currently operational all show signs of expansion and growth, indicating the enormous potential for pearl farming in the region.

At the forefront of expansion is Black Pearls of Micronesia Inc (BPOM) based in Majuro, RMI. Started by Hawaii Residents Neil Sims and Dale Sarver some years ago, BPOM had their first pearl harvest last year and have undergone rapid expansion in the last year. Included in this expansion are new farm site and hatchery in Majuro. BPOM is also looking for joint venture partners in an effort to step up their expansion efforts. Dale Sarver said in a recent press release, "As well as expanding BPOM's own 'nucleus' farm, we would like to involve local Marshallese partners in developing 'satellite' farms in the surrounding lagoons." Sarver added, "We have now reached the stage where we would like to begin this expansion." BPOM currently employs 19 full-time staff.

Also based in the RMI is the Robert Reimers Enterprises (RRE) Pearl Farm at Nam Lagoon on Arno Atoll. Started five years ago, RRE also had its first pearl harvest in 1998 and currently has about 11,000 shell under cultivation. Hampered in this

expansion efforts by a chronic shortage of pearl oyster spat, RRE's CEO, Ramsey Reimers recently collaborated with the Center for tropical and Subtropical Aquaculture (CTSA) and the University of Hawaii (UH) Sea Grant extension service in a spat collection trial on Jaluit Atoll. Mr Reimers is also exploring the possibility of hatchery production of spat and expansion of the RRE pearl farm through joint venture partnerships.

About 1000 miles southwest of Majuro is the tiny atoll of Nukuoro in Pohnpei State, FSM, which is home to the third operation pearl farm in the US-affiliated Pacific Islands. Started in 1995 with significant technical assistance from the CTSA regional aquaculture extension agent, this community-owned and -operated farm had its first pearl harvest in 1999 and is currently the only operating farm that sustains itself on wild spat fall. The Nukuoro pearl farm, which is managed by CTSA Industry Advisory Council member Toshiyuki Rudolph, has 14,000 shell under cultivation. A grafting technician has been scheduled for early in the year 2000 to "seed" 11,000 of the farm's oyster stocks. The Nukuoro community was also the recent beneficiary of a CTSA/UH Sea Grant sponsored workshop on making jewellery out of pearl oyster shell, an important aspect of maximising pearl farm profits.

CTSA, in conjunction with the UH Sea Grant Extension service and the College of Micronesia