

Marine Invertebrates of the South Pacific: An Examination of the Trade

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Summary

Given that aquatic habitat far exceeds land mass in the South Pacific, marine species are an important natural resource for the 22 countries and territories of the region. Annual fisheries catch by South Pacific nations is estimated to be 100,000 tonnes, only 20 per cent of which is sent to commercial markets.

Near-shore marine resources play a particularly significant role in the lives of Pacific islanders because they are easily collected and, in some cases, can carry a high value. Like other marine resources, they are also in demand on the global market and therefore can be critical to the economies of South Pacific nations. In 1991, for example, exports of Trochus, Green Snail, pearl oyster and bêche-de-mer earned the Solomon Islands US\$3.8 million, approximately 2 per cent of the nation's Gross National Product.

This report examines the exploitation of these marine invertebrates and giant clams, reporting on the levels of trade in national and global contexts and the known or potential impacts. It also gives recommendations for management, where appropriate.

Trochus

Trochus, *Trochus niloticus*, have long been exploited for both subsistence and export in the South Pacific. On the coral reefs where they are found, most can be collected by hand or free diving. The shells are used to make jewellery and as inlay in carvings, but their primary use is in the production of mother-of-pearl clothing buttons. Such clothing buttons are in high demand in the fashion industry.

Nonetheless, very few countries have harvest controls, such as restrictions on the size of shell that can be taken. The reporting of exports from South Pacific countries is scant and, in some cases, under-reported. In addition, the information available does not reflect the quantities actually collected because a percentage of poor-quality shells are discarded.

The available data indicate that Fiji, Papua New Guinea, New Caledonia and the Solomon Islands exported the greatest quantities during the period 1972-1992. A minimum of 28,842 tonnes of Trochus, valued at US\$26

million, was exported from the South Pacific during the period. Fiji, Papua New Guinea and the Solomon Islands achieved annual exports in excess of US\$1 million on numerous occasions in the late 1980s. In 1990, a tonne of *Trochus* sold for US\$7,061 in the Solomon Islands and US\$9,781 in Fiji; the value of *Trochus* exports for both countries peaked at US\$2 million that year.

The main importers were France, Germany, Hong Kong, Italy, Japan, Singapore, Spain and the UK. While there has been a decline in raw product exports from the South Pacific, the export of button blanks made from *Trochus* and other near-shore marine resources has steadily climbed. This has been mainly due to an increase in the amount of in-country processing. Japan's imports of button blanks from the region increased from 6 per cent of its total imports in 1990 to 25 per cent in 1993.

Green Snail

The Green Snail *Turbo marmoratus*, which inhabits reef crests and deeper slope areas, is believed to occur in extremely low numbers but the population status is poorly known because of a lack of stock assessments. It is utilised in the mother-of-pearl trade primarily for inlay in wood crafts but also for jewellery and clothing buttons. It is also sold in the shell trade, with individual shells attracting up to US\$40.

The three main exporters from the South Pacific are Papua New Guinea the Solomon Islands and Vanuatu. Export quantities have shown a general downward trend for Papua New Guinea and the Solomon Islands, probably because of stock declines. In the Solomon Islands, where there is no protective legislation, only two tonnes were exported in 1991 and stocks are reported to be over-exploited and in decline. In Vanuatu, however, exports jumped from eight tonnes in 1989 to 44 tonnes in 1991. Harvest here is allowed only with Government permission.

Pearl Oyster

The two main commercially significant species of pearl oyster in the South Pacific are the Black-lip Pearl Oyster *Pinctada margaritifera* and the Gold-lip or Silver-lip Pearl Oyster *P. maxima*. The Solomon Islands also utilises the Brown-lip Pearl Oyster *Pteria penguin*. Black-lip Pearl Oysters are found in lagoons, bays and sheltered reefs while Gold-lip Pearl Oysters are found mostly on open shelf areas of continents and large islands.

In the South Pacific, pearl oysters have traditionally been used in the production of fishing lures. Globally, however, they are in demand for the

shell and cultured pearls. While this demand has led to extreme pressure on wild stocks, most countries have yet to set limits on harvesting. In Fiji, there are very few Black-lip Pearl Oysters remaining in the wild and the Gold-lip Pearl Oyster is now extinct. Exports from Fiji during 1980-1992 peaked at 57.5 tonnes in 1988, declined to a minimum of 9.9 tonnes in 1991 and stood at only 10.9 tonnes in 1992.

Black-lip Pearl Oysters are cultured for black pearls in Fiji, French Polynesia, the Cook Islands and Japan. The Gold-lip Pearl Oyster is cultured for white pearls in Australia and Southeast Asia and at varying times in Palau, Papua New Guinea and the Solomon Islands. In 1993, global pearl production was estimated at 1,200 tonnes.

In addition to Fiji, South Pacific exporters included the Cook Islands, French Polynesia, Papua New Guinea and the Solomon Islands during 1984-1992. The Solomon Islands, however, banned exports in 1994 because of stock declines. Japan, with overall annual imports of 500-600 tonnes, increased its imports of South Pacific Black-lip and Gold-lip Pearl Oysters from about 30 per cent in 1990-1992 to 52 per cent in 1993.

Bêche-de-mer

There are approximately 1,200 species presently described, but only a selection of the 300 species that occur at less than 20 metres are harvested. Bêche-de-mer, also known as sea cucumbers or Rori and Trepang in the South Pacific, are collected by hand in tidal flats and pools and by free-diving or the use of SCUBA gear in deeper waters. They are gutted, boiled, smoked and then dried for export, destined predominantly to Asia where they are considered a delicacy. They are also consumed on a subsistence basis in the South Pacific.

Stocks have often been over-exploited, but only two nations—Fiji and Vanuatu—have management controls in place.

Fiji appears to have been the largest South Pacific exporter during 1982-1992, but complete data were available only for Fiji and the Solomon Islands. Exports from Fiji, where the status of bêche-de-mer stocks are believed to be critical, peaked at 717 tonnes in 1988 and declined thereafter. By the 1990s, the Solomon Islands overtook Fiji as the biggest exporter, with exports jumping from 119 tonnes in 1990 to 622 tonnes in 1991. The western province stocks of the Solomon Islands supply 50 per cent of the nation's production and are believed to be in severe decline. Other major South Pacific exporters were New Caledonia and Papua New Guinea.

In considering export data, it must be noted that the weight of bêche-de-mer is greatly reduced during processing so the final product weighs only about 10 per cent of the original. This means that the actual harvest of

bêche-de-mer for export is much greater than export volumes indicate.

The major importers of Pacific island bêche-de-mer are Hong Kong and Singapore, with secondary markets in Beijing, Los Angeles, Sydney, Vancouver and elsewhere. Hong Kong is also a major re-exporter, with the main destination being China. Taiwan is also a major importer, although the South Pacific supplied only 3 per cent of its total bêche-de-mer imports in 1994 compared to 14 per cent in 1990. In 1991, Papua New Guinea became the major South Pacific exporter to Taiwan while the Solomon Islands assumed that role for Hong Kong.

Giant clams

The nine species of giant clam occur in coral reef habitat, where they are collected mainly by free diving. Giant clams are harvested for their meat or adductor muscle. The shells are used as ornaments in the curio trade, troughs for holding water or feeding livestock and as garden decorations. Small live clams are also sold in the aquarium trade. The meat of the larger Giant Clam *Tridacna gigas* is often obtained by removing the adductor muscle from the clam still on the ocean floor, avoiding the effort needed to bring such a large shell to the surface.

Local extinctions of some species and the low numbers of some remaining populations reflect unsustainable exploitation, ranging from legal commercial and subsistence use to illegal poaching activities. As a result of the over-exploitation, all species of giant clams are listed in CITES Appendix II, requiring Parties to monitor and regulate international trade. The listing has led to better trade data than that available for other species examined here. However, CITES annual report data does not include trade by non-CITES signatories and, therefore, all South Pacific countries except Papua New Guinea and Vanuatu and large importers such as Taiwan. In addition, data to quantify subsistence use in the South Pacific remains virtually non-existent.

To date, most South Pacific nations do not have management plans in place. The available data indicate that significant amounts were exported from Fiji and Papua New Guinea during the 1980s, with Fiji exporting 50 tonnes during 1984-1987 and Papua New Guinea exporting 68 tonnes during 1982-1987. In Fiji, where two species are already extinct, export of wild giant clam meat has since been banned but exports have continued.

At the same time, South Pacific countries play a dual role as major consumers, importing thousands of live clams for hatcheries, introductions and re-introductions.

Almost all of the recorded trade in clam meat is destined for Japan while

the greatest share of giant clam shells are destined for the USA. CITES data on the carving trade indicate that the major importer is the USA, followed by Japan.

Utilisation of giant clams for subsistence has a long traditional history in the South Pacific and remains important, as evidenced by the 11 tonnes of giant clam sold on the Fiji local market in 1990. Indeed subsistence would seem to be the major threat to wild stocks with international demand being met by a growing mariculture industry. However, TRAFFIC has observed the presence of wild stocks in Australian markets and the potential for laundering wild stocks with mariculture-produced giant clams cannot be discounted.

Conclusions and recommendations

The lack of adequate export information for all of the species covered in this report is a growing problem. This information is needed to gain insight into the biological background of the species to allow fisheries managers to ascertain maximum sustainable yields and design appropriate management strategies. There is also a general lack of information on subsistence use and the quantity of these resources supplied to in-country button factories.

The introduction of mariculture-produced juveniles of Trochus and giant clams and, to a much lesser extent, Green Snail and pearl oyster, has been widespread. However, the problems that could result from these introductions have not been researched and, therefore, cannot be viewed as a panacea to stock depletions.

National governments should consider the following actions and others detailed in the report as a minimum to ensure sustainable utilisation of their marine invertebrate resources:

- In the case of Trochus and the Green Snail, there is a need for minimum size limits to ensure these species are harvested only once they have reached maturity. Also, maximum size limits are required to protect the larger individuals not suitable for the production of buttons.
- In regard to button production, there is a need for better reporting of the volumes of Trochus, Green Snail and pearl oyster entering button factories. In Vanuatu, the limits set for purchasing Trochus raw shell by local button factories should be reviewed to assure they are realistic and sustainable.
- In cases where a total allowable catch existed before button production commenced (such as in Vanuatu), management practices need to be developed to once again limit the amount of Green Snail being supplied to button factories.
- Quota levels need to be enacted for the harvest of pearl oysters in the wild. In addition, more data is needed on the volume of wild stock collected for pearl farms and the impact on wild populations.
- Given the nature of the bêche-de-mer fishery and its susceptibility to over-fishing, there is an urgent need for adequate management. The setting of minimum size limits would be an important first step in this regard.
- Management plans for exploited populations of giant clams need to be developed. These should include minimum size/weight limits with limited quota seasons. Better reporting on actual harvest levels from reefs would be important as well.

- In terms of exports, there should be better reporting of the specific species and quantities exported of all species covered in this report. In Fiji, clarification is especially needed of the status of giant clam stocks to ascertain the sustainability of the quantities being exported as exemptions to the export ban. There should be better reporting of the volumes of giant clam imported into Taiwan.

A strong requirement exists for ongoing work in the field of aquaculture to assess the possible ecological effects of introductions on species already present.