

# Warning Signs Unheeded in South Pacific Invertebrate Trade

Bobbie J. Kelso

*Nearshore marine resources play a significant role in the lives of South Pacific islanders and can be critical to the economies of nations in the region. However, few countries have adequate management controls in place to ensure that harvests remain at sustainable levels, and determining current levels of utilization is far from easy.*

*A lack of information about the volume of both domestic and international trade in marine invertebrates in high demand is a growing concern. Further hindering management and conservation efforts is the little available background biological information to allow for population assessments, according to this new study on the global trade in South Pacific marine invertebrates.*



PHOTO BY R. SEITRE, WORLD WILDLIFE FUND

A giant clam from New Caledonia.

A study by TRAFFIC, a joint program of the World Conservation Union (IUCN) and World Wide Fund for Nature (WWF), examined the exploitation of trochus (*Trochus niloticus*), green snail (*Turbo marmoratus*), pearl oysters, bêche-de-mer and giant clams. Its findings, detailed in the report *Marine Invertebrates of the South Pacific: An Examination of the Trade* (TRAFFIC International, UK), illustrate how monitoring and management of the trade are scarce or began only after depletions and even extinctions of some local marine invertebrate populations.

"Fisheries around the world classically have suffered from a lack of management until it is too late, and South Pacific marine invertebrate fisheries are no exception," said Glenn Sant, Senior Research Officer at TRAFFIC Oceania and author of the report. "Time and again, we have seen knee-jerk management as a result of dramatic declines in stocks and often it has simply come too late."

Trochus, green snail and pearl oysters have long been harvested for both subsistence use and export in the South Pacific. Since the beginning of this century, they have been used in the production of mother-of-pearl clothing buttons. Development of the low-value synthetic button caused a collapse of the mother-of-pearl button industry during the 1950s, but there has since been a resurgence in demand and they remain fashionable for high-quality garments today. The mother-of-pearl scraps are ground up to use in lacquer and shampoo.

In the case of trochus, which can be collected by hand or free diving on coral reefs where they are found, few countries have set needed limits on the size of trochus that can be harvested. In addition, the study found that reporting of trochus exports from South Pacific countries is scant or under-reported as shown by examining the import data of destination countries.

Where they do exist, export data also cannot accurately reflect the quantities of raw product collected. This is because a percentage of poor-quality shells are discarded, and countries such as Fiji, Papua New Guinea, Solomon Islands and Vanuatu have shifted toward supplying the international market with worked products in the form of button blanks, rather than with raw product, to add value to the exports.

In Vanuatu, for example, only button blanks, rather than raw materials, have been



PHOTO BY CAROLINE RAYMAKERS

*Cultured pearl oysters. Global demand for them is increasing.*

allowed for export since 1987, but the amount of button blanks that can be exported is unlimited. Stock surveys in Vanuatu between 1990 and 1992 indicated rapidly declining trochus populations. In recent years, five button factories operated in the country, but four have now closed. It has been estimated that in 1990-1992, more than 3 000 t of raw trochus were processed in these button factories — far more than previous quantities of shell exported.

The available data indicate that Fiji, Papua New Guinea, New Caledonia and the Solomon Islands exported the greatest quantities of trochus during the period 1972-1992. A mini-

mum of 28 842 t of trochus, valued at US\$26 million, was exported from the South Pacific during this time. Fiji, Papua New Guinea and Solomon Islands achieved annual exports in excess of US\$1 million on numerous occasions in the late 1980s, according to the report. The main importers were France, Germany, Hong Kong, Italy, Japan, Singapore, Spain and the UK.

The data indicate a decline in raw product exports of trochus and other marine invertebrates from the South Pacific during the period. However, export of mother-of-pearl button blanks has steadily climbed. Japan, one of



PHOTO BY CAROLINE RAYMAKERS

**A drying sea cucumbers (bêche-de-mer) harvest.**

the world's biggest importers of mother-of-pearl, increased its import of South Pacific button blanks from 6% of its total imports in 1990 to 25% in 1993.

On a global scale, the Philippines, Indonesia and South Korea provided 60% of Japan's mother-of-pearl imports in recent years. But countries such as South Korea import raw mother-of-pearl shell and then re-export the worked product in the form of button blanks to Japan, which is of significance when considering that 67% of Vanuatu's trochus exports and 71% of its green snail exports are destined for South Korea.

The green snail, 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 used 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, Solomon Islands and Vanuatu. Export quantities have shown a general downward trend for Papua New Guinea and Solomon Islands, probably because of stock declines. In Solomon Islands, where there is no protective legislation, only 2 t were exported in 1991 and stocks are reported to be overexploited and in decline. In Vanuatu, harvest is allowed only with government permission, but the available data show that ex-

ports have risen.

Pearl oysters have traditionally been used in the production of fishing lures. Globally, however, they are best known as the source of cultured pearls and for their shell in the mother-of-pearl trade. 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*.

In Solomon Islands, the brown-lip pearl oyster *Pteria penguin* is also used. Black-lip pearl oysters are cultured for black pearls in Fiji, French Polynesia, the Cook Islands, the Philippines and Japan. The gold-lip pearl oyster is cultured for white pearls in Australia and Southeast Asia and at varying times in Palau and Papua New Guinea.

While the global demand for pearl oysters has led to extreme pressure on wild stocks, most countries have yet to set quota levels for pearls harvested in the wild. In addition, more data are needed on the volume of wild stock collected for pearl farms and the impact on wild populations.

In Fiji, there is a minimum size limit of 10 cm, but 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 t in 1988, declined to a minimum of 9.9 t in 1991 and stood at only 10.9 t in 1992, the most recent year for which data were available. The decreased supply is indicative of dwindling

stocks. Stock declines in black-lip and gold-lip pearl oysters also led Solomon Islands to ban exports indefinitely in 1994. In addition to Fiji, South Pacific exporters include the Cook Islands, French Polynesia, the Philippines and Papua New Guinea.

Japan, with overall annual imports of 500-600 t, increased its imports of South Pacific black-lip and gold-lip pearl oysters from about 30% in 1990-1992 to 52% in 1993. In 1989, the value of pearls imported into Japan from French Polynesia alone topped US\$40 million.

Bêche-de-mer, also known as sea cucumbers, *rori* and *trepang* in the South Pacific, are one of the more valuable marine invertebrate fisheries in the region. There are approximately 1 200 species presently described, but only a few of the 300 species that occur at less than 20 m depth are harvested. They are gutted, boiled, smoked and then dried for export, destined predominantly for Asia where they are considered a culinary delicacy and used for medicinal purposes. They are also consumed in the South Pacific.

While stocks have often been overexploited, only two countries—Fiji and Vanuatu—have management controls in place. Vanuatu has set a maximum export of 40 t, while Fiji has set a minimum size limit for all species and banned the export of sand fish (*Holothuria scabra*). Fiji appears to have been the largest South Pacific exporter during 1982-1992, but complete data were available only for Fiji and Solomon Islands.

Exports from Fiji, where the status of bêche-de-mer stocks is believed to be critical, peaked at 717 t in 1988 and declined thereafter. By the 1990s, Solomon Islands overtook Fiji as the biggest exporter, with exports jumping from 119 t in 1990 to 622 t in 1991. However, the western province stocks of Solomon Islands which supply 50% of the nation's production are believed to be in severe decline. Other major South Pacific exporters were New Caledonia and Papua New Guinea.

In considering export data for bêche-de-mer, however, it must be noted that the weight of bêche-de-mer is greatly reduced during processing so the final product weighs only about 10% of the original. This means harvest 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% of its total *bêche-de-mer* imports in 1994 compared to 14% in 1990.

There are more data available for the trade in giant clams than for any other species covered in the study. Two reasons for this are the increasing importance of aquaculture production and the listing in 1985 of all species of giant clams in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The listing, which followed severe depletions in some populations, requires CITES member-countries to monitor and document international commercial trade in giant clams and this has led to better import and export data.

CITES annual report data show the Philippines as the source of 99% of world production. However, CITES data do not include trade by nonsignatories of CITES, including all South Pacific countries except Papua New Guinea and Vanuatu and large importers such as Taiwan.

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 largest 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 the large shell to the surface.

To date, most South Pacific nations do not have management plans for giant clams in place. The available data indicate that significant amounts were exported from Fiji and Papua New Guinea during the 1980s. In Fiji, where two species are already extinct, export of wild giant clam meat has since been banned but exports have continued as exemptions. In a nine-month period during 1994 alone, Fiji exported 17 t of giant clam meat, exceeding quantities exported in the two years prior to the export ban.

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 is destined for the USA. CITES data on the shell carving trade indicate the major importers are the USA and Japan.

Use of giant clams for subsistence has a long traditional history in the South Pacific and remains important, as evidenced by the 11 t of giant clam sold on the Fiji local market in 1990. Indeed, subsistence would seem to be the major

the combination of commercial exploitation and the introduction of western-style fisheries management during the past 100 years has led to a decline in many of the South Pacific's near-shore resources. If there is one thing we can learn from western-style fisheries management, it is that management can only be successful when there is adequate background biological knowledge and a suitable management mechanism."

Delay could prove costly. In the case of trochus, for example, the 1995 harvest in Palau was 413 t, of which 376 t were exported after cleaning — the largest amount ever, according to the South Pacific Commission, the region's largest and oldest intergovernmental advisory body. The Cook Islands trochus harvest reached 35 t in 1995, the largest since 1987, according to Tim Adams, the Commission's Fisheries Resource Adviser.

In addition, while introductions of mariculture produced juveniles of trochus and giant clam and, to a lesser degree, green snail and pearl oyster, have been widespread, the TRAFFIC report notes that the possible ecological effects of

such introductions have not been fully researched. In this regard, introductions cannot be viewed as a panacea to existing stock depletions. The development of hatchery-based production, however, is a positive step in filling the demand for marine invertebrates that otherwise may be obtained illegally or taken from depleted wild stocks.

The report recommends a variety of actions to ensure the survival of marine invertebrates in commercial trade, including enactment of harvest restrictions, development of management plans, better levels of reporting on the domestic and international trade, and ongoing work in the field of aquaculture to assess possible ecological effects of introductions on the species already present.



PHOTO BY MIKE MCCOY, ICLARM/CAC

*The six species of giant clams in Solomon Islands.*

threat to wild stocks. International demand is being met by a growing mariculture industry, currently under development with assistance from ICLARM's Coastal Aquaculture Centre in Solomon Islands. However, TRAFFIC has observed the presence of wild-collected giant clams in Australian markets and the potential for laundering specimens from the wild with shipments of mariculture-produced giant clams cannot be discounted.

While the study uncovered a lot of useful data, the available information for the trade in all of these marine invertebrates is inconsistent and incomplete. In some cases, such as in-country use, there is little or no information. Without adequate information to gain insight into the biological background of the species involved, fisheries managers are unable to ascertain maximum sustainable yields and design appropriate management strategies, according to Sant.

"South Pacific nations have been lucky in having traditional marine tenure systems, allowing the sustainable utilisation of resources to occur for centuries," Sant said. "However,

**BOBBIE J. KELSO** is the Information Officer at TRAFFIC International, 219c Huntingdon Road, Cambridge CB3 0DL, UK.