

## ■ COASTAL FISHERIES MANAGEMENT SECTION

### Developing Palau's sea cucumber fishery's management plan

Palau's Bureau of Marine Resources (BMR) requested assistance from SPC's Coastal Fisheries Programme to develop a sea cucumber management plan. Etuati Ropeti (SPC's Coastal Fisheries Management Officer), Kim Friedman (SPC Senior Fisheries Scientist) and Kalo Pakoa (SPC Reef Fisheries Officer) attended to the request.

Unlike other Pacific Island countries, Palau possesses a sea cucumber fishery with over 20 marketable and commercially valuable species. Experiences from other countries reveal that the sea cucumber fishery is vulnerable to overharvesting, with most countries facing the difficulty of implementing proper management controls. Increased fishing, both over the years and across the fishery, means that fewer reef areas retain sea cucumbers at densities high enough to reproduce successfully, and the remaining adults are becoming too scattered to produce. Management systems have proven to be inadequate in controlling this decline in some countries. The tragedy is that sea cucumber fisheries have the potential to help boost village economies, but like falling dominoes, they have declined and collapsed in much of our region, as marine product agents move and

open new areas when traditional fisheries become less productive.

BMR recognised early on the danger to Palau's sea cucumber stocks, and judiciously put legislation in place in 1994 (Marine Resources Act 1994), banning the export of sea cucumbers in an effort to ensure the more valuable species were protected. With declines in sea cucumber resources across the Pacific, it is foreseeable that the demand for sea cucumbers will continue to place increasing pressure on Palau's fishery. A sea cucumber management plan for Palau could not come at a better time because the export of sea cucumbers is banned and pressure from increasing market demands mounts.

#### BACKGROUND

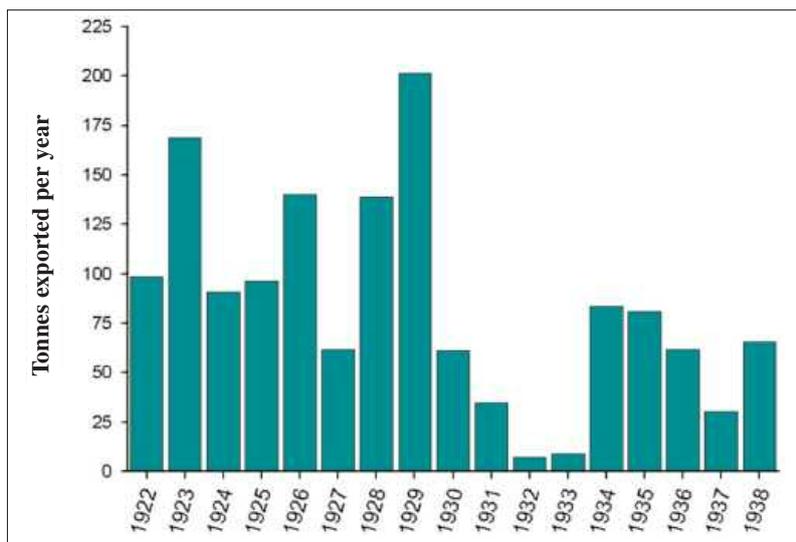
Palau's economy is dominated by the service sector, which contributes over 50% of Palau's GDP and employs half of the country's work force. Palau receives substantial aid money from the USA under the terms of the Compact of Free Association (this is likely to vary over the coming years). Tuna is the country's principle export commodity (2500 mt per year) although there has been a decline in the last few years.

Coastal reef fisheries are more important than pelagic fisheries for subsistence food security and domestic economy. Tourism is Palau's main industry, its major draws being its diverse and pristine marine and terrestrial environment.

Commercial fishing for sea cucumbers occurred before the 1700s, and is thought to have reached Palau and Micronesia in the 1800s. Commercial fishing for sea cucumbers is a traditional fishery in the Pacific region, although demand is low compared with the Asian (typically Chinese) market. The sea cucumber fishery can therefore be divided into two sectors: the subsistence sector, using certain species for domestic consumption; and the commercial sector, comprising species that are typically dried and sold to Asian markets. Atypically, there is also a small and growing sector for the sale of "export" quality species to local restaurants in Palau. This is likely to increase with increased tourism from China and the rest of Asia to Palau.

#### HISTORY AND STATUS OF THE SEA CUCUMBER FISHERY

Asian trade in sea cucumbers began very early, although historical records for Micronesia



**Historical sea cucumber production from Palau.**

indicate that it likely began during the Japanese presence (from the 1920s–1930s). These fishing records reveal that the islands of Micronesia were producing an average of 189 mt of dried sea cucumber per year for export to Hong Kong and China. Palau alone was a major producer in Micronesia, supplying on average 84 mt (of sea cucumbers (dry weight) in the Micronesian region during this period. Closer analysis of the data shows that by the 1930s, production had fallen from a high of around 150–200 mt to around 25 mt. Species of importance traded during these early days were *Holothuria scabra* (sandfish), *H. nobilis* (black teatfish), *H. fuscogilva* (white teatfish), *Actinopyga mauritiana* (surf redfish), *A. miliaris* (black teatfish) and *Thelenota ananas* (prickly redfish).

Fishing records after the Japanese occupation in Micronesia were patchy from the 1940s up to the 1960s, although some trading activities are known to have occurred in the 1950s. Trade resumed in 1970 with exports of 1400–2000 sacks of dried products per year.

**Development of the sea cucumber fishery management plan.**

While Melanesian countries experienced a surge in production in the 1980s and 1990s, Palau continues to export only small amounts. Low export rates of commercial species well into the 1990s, suggests that heavy fishing in the 1920s and 1930s may have largely depleted the fishery to a point where adults were only sparsely distributed, negatively affecting subsequent spawning success, and the fisheries’ natural capacity to “bounce back”.



**SUBSISTENCE USE OF SEA CUCUMBERS**

Subsistence use of sea cucumbers for domestic consumption is a long tradition in Palau. Ten of the 26 species of sea cucumbers present in Palau — *Holothuria scabra* (molech), *Actinopyga* sp. (*ceremrum*), *Stichopus vastus* (*ngimes*), *H. impatiens* (*sekesakel*), *Thelenota ananas* (*temtamel*), *S. horrens* and *Bohadchia similis* and *B. vitiensis* — are featured in the subsistence fishery but the most commonly used ones are *molech*, *ceremrum*, *ngimes*, *sekesakel*. The viscera (guts) of *ngimes* and *sekesakel* (and sometimes *molech*) are consumed as a delicacy and the flesh from the body wall of *molech* and *ceremrum* is processed into an edible form and consumed raw or cooked.

Palau’s subsistence sea cucumber fishery can be divided into three categories: home consumption, local market sales, and export for home use by families living abroad in Guam, Saipan and the USA. Landings of raw sea cucumber over a 10-year period from 1989–1998 by the subsistence sector, averaged 20 mt per year. Much of this production (40%) is exported for home use, 30% for local market sales, and another 30% for domestic consumption in Palau.

Local sales continue to be an important activity for women and an income generating activity for local communities.

#### DEVELOPING THE MANAGEMENT PLAN

The management actions recommended depict the collective view of community representatives, NGOs, State officials and representatives, government officials and various individuals in Palau. These management measures come about as a result of consulting with individuals who have engaged in the processing and export of sea cucumber products in the recent past, and interviews and stakeholder consultations during a two-day workshop in Koror, Palau. The management undertakings provide a framework to guide the development of relevant legislations and policies for potential commercialisation of the fishery.

The general vision for the management plan is:

*Well-conserved and biodiverse sea cucumber populations in a clean and healthy coastal environment, that support a sustainable fishery, are linked to cultural heritage activities and whose biology and ongoing status is well understood by the Palauan population.*

The management plan's overall objectives are to:

- manage the sea cucumber fishery for now and future generations;
- provide guidelines for the development of national and State policies on the management of the sea cucumber fishery; and

- provide a framework for policy-makers to assist with their decision-making in regards to the management of the sea cucumber fishery in Palau.

The recommendations highlighted in the plan include, among others, species controls, limited entry (i.e. restrictions on the number of fishers), fishing seasons, gear restrictions, maximising benefits through the export of premium products, limiting the number of processors/exporters of premium species, terms and conditions of licences (processors/exporters), and monitoring of the fishery.

