

### Coordination for better recognition of coastal fisheries

Participants expressed concern that there was a lack of political will and support for coastal fisheries compared with oceanic (tuna) fisheries. Both areas of fisheries are critical to Pacific Islands countries and territories, and so should receive the same political support.

A workshop outcome recommended that SPC facilitate, encourage and support national and regional forums to exchange ideas, lessons learned and accelerate the

introduction of adaptive management approaches that are suitable to national contexts. It was also recommended that SPC support national arrangements to develop or use existing multi-sectoral committees that recognise and incorporate NGOs, and are of sufficiently high level and have a legal mandate with appropriate community representation. SPC should work closely with NGOs under formal consultative arrangements and use joint implementation strategies, as guided by national fora, to extend regional initiatives at the national level.

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### Can the sea cucumber resource survive the next open season in Tonga?

*Growing demand for beche-de-mer products in China and limited resources worldwide are driving the greatest pressure ever on sea cucumber fisheries. In Tonga, where the fishery was closed for 11 years, re-opening the fishery has been the most lucrative economic activity in the country in the past three years. Sales of raw and dried products contribute significantly to community income and export earnings for the country. Tonga made a decisive move to impose a 10-year moratorium on sea cucumbers in 1997 to protect the fishery after it declined. The fishery was re-opened in 2008 and is reaping the benefit of waiting 10 years; but increasing pressure may have done more damage than good for the resource.*

### Sea cucumber fishery

The sea cucumber fishery developed in the 1990s after resource surveys (Japanese Overseas Corporation) found a potential for a small-scale fishery development. Declining catches in the mid-1990s supported by a 50% decline of resources revealed by SPC studies in 1996, elicited concern by the government. A decisive move in 1997 saw a 10-year moratorium on the fishery to allow longer lived, slow-growing and high value species (white teatfish, black teatfish and golden sandfish) to reach sexually maturity. Reassessment of the resource in 2004 by SPC under the European Union-funded Pacific Regional Oceanic and Coastal Fisheries Development Programme project indicated recovery back to the 1990 population level for many of the commercial species. But there was still bad news for the high value black teatfish (*Holothuria nobilis*), which has not recovered. White teatfish has recovered by 80% of its pre-moratorium level while the golden sandfish *H. scabra versicolor* stock is uncertain.

### Export production

Major production occurred in the 1990s when peak exports of around 70 tonnes (t) were achieved in 1995. Exports, however, quickly fell back to 10 t by 1997. High value species were important during this period. Tonga experienced its first “boom and bust” phenomenon in the fishery, which has been the characteristic of many small-scale sea cucumber fisheries in the Pacific Islands region. Sudden declines instigated concern, resulting in the 10-year fishery ban. Recent production after the moratorium is a different story, with 15 t of beche-de-mer exported in the first open season in 2008; exports exploded in the

latest two seasons with 370 t and 312 t, respectively. These exports represent the highest ever in the history of Tonga's sea cucumber fishery. With high value resources still depleted, attention was turned to whatever was left in the water. Low to medium value species began dominating production, with snakefish (*Holothuria coluber*) and lollyfish (*H. atra*), two of the lowest ranked products, making up 41% of total exports in 2010.

Besides beche-de-mer, Tongan's also love raw sea cucumber. They are among the few islanders who regularly consume sea cucumber in their subsistence diet. Gonads, body wall, and the polien vesicle of five sea cucumber species (*H. atra*, *H. coluber*, *H. scabra versicolor*, *Stichopus herrmanni* and *Bohadchia similis*) are edible in raw form as a local delicacy. Surplus of these products are sold at local markets in Nukualofa. The subsistence collection of sea cucumbers is not regulated and was unaffected by the last moratorium. Ongoing subsistence exploitation is likely to have contributed to the lack of recovery of golden sandfish whose stock status is uncertain today.

### Management measures

The Tonga National Sea Cucumber Fishery Management Plan was developed in 2007. The plan provides policy guidance for the sustainable harvesting of sea cucumbers by restricting access to resources, controlling harvesting and processing to improve quality, and providing a mechanism for data collection and monitoring of the fishery during open seasons. Some of the measures in the plan include a total annual export quota (around 200 t divided between the three main island groups), a six-month annual fishing season, limit of nine beche-

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de-mer export licenses per year, and many processing licenses. Unlike in the past, where fishers fished and processed their catch at will, now all fishers must be registered and only processing license holders are allowed to process products. The new policy will improve quality at the same time as facilitate effective monitoring. Implementation of the plan worked well in the first open season, although for the last two seasons, increased pressure by traders and the need for income by communities has forced decision-makers to open up export license and increase license fees. As a result, 26 export licenses were issued in 2009 and 22 in 2010, leading to record export figures.

### *Request for assessment*

The Tonga Department of Fisheries is concerned that an increase in production may have resulted in significant damage to the resource. They fear the resource may have been depleted far beyond the pre-moratorium level. The principal question that is currently being asked is “Can the remaining resource support another open season, or is it time to call for another longer moratorium?” Tonga Fisheries is seeking an answer to this question and has requested SPC’s assistance to find the answer. In response, SPC is conducting resource assessment and reporting trainings under the EU-funded SciCOFish project to build local capacity to collect data and generate answers to their own questions.

Kalo Pakoa, SPC Fisheries Scientist (invertebrates), was in Tonga’s Vava’u Group from 6–19 November 2010 to begin trainings. Vava’u was the second most important producer (80 t) of beche-de-mer in the 2010

season, and so is an important site for the training. A team of six local officers from the Department of Fisheries and Environment Department went through the three-week training by Kalo. The two agencies are collaborating in many areas, and so training the training of officers together is very necessary to equip them with the appropriate skills to respond to Tonga’s resources assessment and management needs.

### *Training in invertebrate resource surveys*

The six officers: Sione Mailau, Poasi Ngaluafe, Ve’a Kava and Talaofa Loto’ahea from the Department of Fisheries and Senituli Finau, and Samuela Pakileata from the Environment Department were trained on the standardised invertebrate resource survey methodologies being promoted by SPC. Because the training is also expected to generate real data for the Vava’u Group for the national assessment, the training was planned to dedicate more time to in-water field training than classroom type exercises. Five invertebrate resource assessment protocols (shallow transect, manta tow, shallow scuba transect, deep scuba timed searches, and timed swim) were the focus. These protocols are not new but their proper use is necessary to ensure greater effectiveness.

Coverage of all invertebrates and habitats within a station is part of the standardised protocols used to generate data that can be used for different purposes. So although our target was sea cucumbers and trochus, other invertebrates were recorded as well. For the Environment Officers, these are important protocols for biodiversity status assessments. Areas covered



*Senituli Finau (Tonga Environment Department)  
with white teatfish specimen from a deep  
dive station, Vava’u, Tonga.*

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in the trainings included survey planning, decision-making, communication, habitat selection, transect placement of transect, use of maps, proper use of survey equipment (manta board, GPS and transects), data recording, understanding records, measuring different invertebrates, species and habitat identification, and most importantly safety issues.

### *Outcome and follow up trainings*

The package included field data collection, data entry, and in-country database familiarisation where the officers are further mentored to conduct in-country reporting. The Vava'u survey set up the local team on a countrywide sea cucumber survey for the overall understanding of the resource. At the end of two weeks, trainees were confident in using the methodologies and were ready to go ahead and complete the surveys.

They were left to complete the work in the Vava'u Group in November 2010, Tongatapu in December 2010, and Ha'apai in January 2011, before returning to Nuku'alofa. From there, two trainees will undertake attachment training in Noumea to learn data cleaning, entry, analysis and reporting. For the two Environment Officers, their only experience was in coral reef monitoring assessment

of live coral using line intercept transects. This training has equipped them with the skills their agency needs in conducting biodiversity assessments. Sea cucumber resource status results for Tonga will come out after all the surveys have been completed. For Vava'u, the general feeling is that sea cucumbers stocks are not in good shape. Although diversity may not be affected, abundance and sizes, which are important characteristics in determining the health of a fishable stock may be seriously affected, which puts future harvesting into question.

### *Acknowledgement*

SPC acknowledges the support of Tonga Fisheries staff in Nuku'alofa and the Vava'u branch for their support. The next stage of training (attachment) in Noumea is planned for February to March 2011.

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