



## new info beche-de-mer

### Recent developments with the sea cucumber fishery in Solomon Islands

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In July 2003, the Regional Assistance Mission to the Solomon Islands (RAMSI) entered Solomon Islands — at the invitation of the national Solomon Islands government — to restore law and order following the outbreak of ethnic tension in the late 1990s and the coup in 2000. The return of generally peaceful conditions occurred within weeks. In late August 2003, the WorldFish Center was invited by the Australian Centre of International Agricultural Research (ACIAR) to develop an outline for a project, in the field of fisheries or aquaculture, that would provide benefits quickly to rural Solomon Island communities. In the language of aid and development, the “impact pathway” between the research project and the intended beneficiary (i.e. the village community) had to be short: benefits should flow to the communities during the life of the project, rather than after additional research and development.

One project emerged clearly as a high priority: implementation of sustainable fishery management practices for the sea cucumber fishery. This decision was made because it was evident, from both fishery export statistics and general knowledge, that sales of dried sea cucumber (beche-de-mer) were an important source of income to coastal communities in many parts of the country, and in some places virtually the only source of income. It was also apparent from analyses of export figures and anecdotal reports that sea cucumber stocks were declining in many parts of the country because of unsustainable fishing levels. This project satisfied ACIAR’s requirement of immediate returns because preventing further decline of sea cucumber stocks would contribute to sustainable levels of harvest indefinitely into the future (although at a lower level than current), and thereby continue to be an important source of income for local households. Failure to intervene would result in continued depletion of stocks, and negligible income from this resource, perhaps for many years. Chronic overfishing of sea

cucumbers, and failure of the resource to recover have certainly occurred in other countries, such as the Federated States of Micronesia (Chuuk) and Egypt on the Red Sea. When incentives to fish are high — such as high prices and few alternative sources of income — the rate of depletion may be very rapid, and to a very low level, as happened in several countries (Lovatelli et al. 2004).

Recognising that regenerating overfished stocks, either passively (with slow natural recovery from a low recruitment base) or actively (either by restocking with hatchery-reared juveniles or manually aggregating remnant adult stock to promote gamete fertilisation rates), is slow and costly, we concluded that by preventing further depletion of sea cucumber stocks, ACIAR’s directive to develop a project yielding benefits to rural communities in the short term could be met.

Preparing the project proposal to ACIAR included gathering evidence to confirm that overfishing was occurring. WorldFish Center marine scientist Dr Chris Ramofafia worked with Peter Ramohia of the Solomon Islands Department of Fisheries and Marine Resources (DFMR) to examine beche-de-mer fishery export statistics for evidence of overfishing. The trends were clear: beche-de-mer exports in the early/mid-1990s consisted of a small number of high-value species, but by 2004, the number of species exported had risen to 32, and the proportion of high-value species in the exports was small. This trend reflects the following: 1) a progressive depletion of species, over time; 2) the mean size of individuals within the exports, by species, declined steadily over the same period; 3) the use of destructive fishing methods including the use of “rocket bombs” and dredge nets has increased in the last couple of years; and 4) the number of export licenses issued by DFMR increased from 9 in 2001 to 22 in 2003, and then decreased to 17 in 2004. Dwin-

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ding export volume was the principal reason cited for the decrease in licenses in 2004. Collectively, this evidence of overfishing is at least as strong as that derived from trends in fishery catch rates over time, since fishermen can maintain their catch rates, even when stocks are declining, by moving further afield when stocks in one area decline. (Catch rate trends *can* sensitively track abundance changes if catch statistics are gathered at a small spatial scale.)

The awareness of overfishing raised by this analysis, as well as results of sea cucumber resource surveys by DFMR and other groups, led DFMR to announce an indefinite ban on the harvest and export of all species of beche-de-mer in Solomon Islands until further notice, effective 1 December 2005. DFMR also announced its intention to develop a Management and Development Plan for the fishery.

One of the objectives of our ACIAR-funded project is to develop sea cucumber fishery management plans at the provincial level in Isabel Province and Western Province. This now becomes the highest project priority, and is to be done in coordination with the national management plan. The scale of planning and consultation required to develop a national fishery management plan is beyond the scope or mandate of our project, and will require the efforts of other agencies and additional funds. DFMR is establishing a steering committee to guide the planning process.

The ACIAR-funded project on sustainable management of the beche-de-mer fishery started in January 2005 in the Kia community at the western end of Santa Ysabel (Isabel) Island, one of the major areas of beche-de-mer production in the country. We will describe the project in a future issue of the *Beche-de-Mer Information Bulletin*, but some of the findings to date are worth mentioning here because of their social, economic and resource management implications in relation to the recent ban.

- The importance of beche-de-mer as a source of income was confirmed.
- A shift in species composition in the harvests, from high- to low-value species, has occurred over the past few years.
- Local overfishing is indicated by decreasing catch rates over the last decade.
- Levels of personal debt of sea cucumber fishermen (among others), even in remote village communities, are quite high, mainly to local business entrepreneurs. These debts are serviced by the sale of beche-de-mer. The ban will,

therefore, make it difficult (or impossible if alternative sources of income are not available) to service these debts.

- Alternative sources of income are likely to be sought, and this may include increased harvests of other fished species. Reports of increased fishing for trochus and shark fin since the announcement of the beche-de-mer export ban have been made, but these have not been confirmed or their magnitude determined. If true, then an unintended consequence of the closure of this important source of income to remote coastal communities may be increased fishing effort — perhaps to unsustainable levels — on other species. Given their demographic characteristics (low fecundity and low natural mortality), many shark species are vulnerable to overfishing; the additional fishing pressure that may arise as a result of the sea cucumber export ban would be undesirable, and highlights the urgent need for alternative, sustainable livelihood options for rural communities in Solomon Islands.
- We note that, given the rapid rate at which sea cucumber populations can be depleted when economic incentives are sufficiently high (e.g. the Egypt fishery collapsed within five years after it started: Lawrence et al. 2004), income from sea cucumber fishing in Solomon Islands may have declined to very low levels in the near future even if the ban were not imposed — the difference in loss of income may well have been only a matter of time.

## References

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