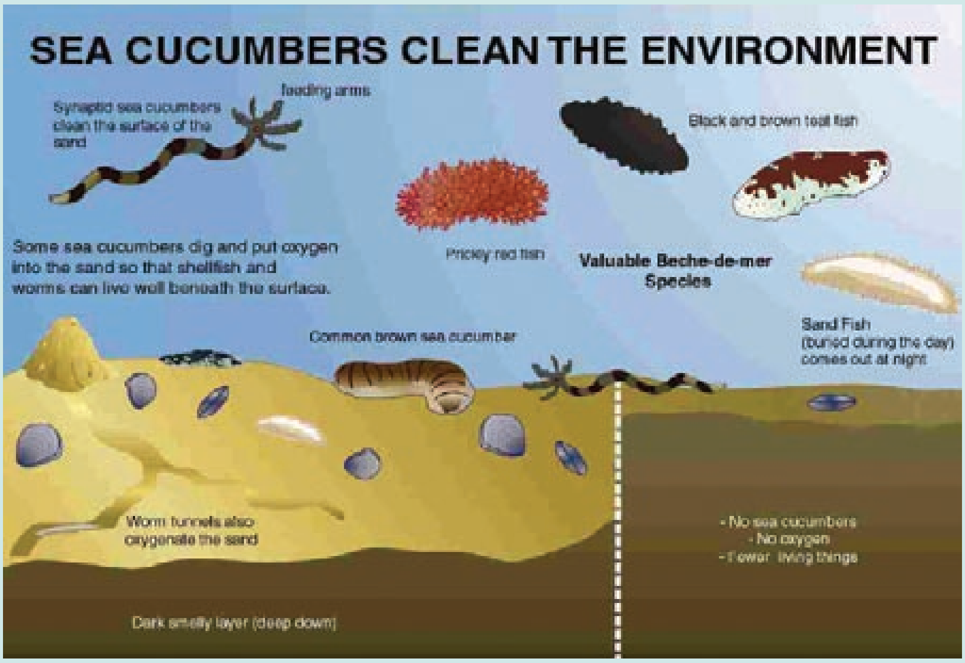
Comic book designed by the National Fisheries Authority (Papua New Guinea): left – front cover; right – example page.

Pacific



Poster designed by the Foundation of the Peoples of the South Pacific-International.
Source: J.P. Kinch.

6.7 IMPROVE QUALITY OF PROCESSING THROUGH TRAINING

Definition

Support or facilitation of training for fishers and processors in best practices for processing sea cucumbers into beche-de-mer or other marketable forms.

Processing means the transformation of live sea cucumbers into a product form that can be exported or sold for consumption (e.g. salted, frozen, dried and canned). Processing of sea cucumbers more often results in a dried product (called "beche-de-mer" or "trepang"), which can be more easily stored and transported, and is a way of value-adding of raw products suitable to the market. Processing may, however, involve canning, methods for preparing a salted product, or ways of preparing body parts (e.g. organs or muscle bands) for sale (see Section 2.4). To improving the quality of processing, managers should provide reference material, actively support training workshops (to better train fishers and processors), or improve the contacts between experience processors and fishers.

FIGURE 35
Left: small, poorly processed sandfish (*Holothuria scabra*) from the southern Philippines. The calcareous spicules expelled from the dermis of the animals after the first boiling have not been adequately removed and the body forms are contorted. Right: large, well-processed sandfish in New Caledonia

PHOTOS: S.W. PURCELL

Uses

Promoting better processing of sea cucumbers provides a number of direct and indirect benefits. Managers should promote the adoption of technology for the best use and care of the catch (FAO, 1995; Section 3.1). Improving the quality of processing of sea cucumbers allows fishers to make more money out of the animals they harvest (see Section 2.2), thus enhancing household incomes and the proportionate gains for national revenues through taxes.

Indirectly, improvement to processing can ease the stress of fishing on sea cucumber populations. Fishers may harvest fewer animals because they have made sufficient money out of fewer well-processed animals. Additionally, fewer animals are discarded through careful processing, resulting in fewer animals being removed from the wild to meet fishers' livelihoods (Figure 35).

Effectively, better processing shifts the emphasis of income generation from harvesting to processing. By paying more attention to the money that can be made (or lost) through processing, less time can be spent at sea and more time is spent in adding value to the catch. This shift can open up job opportunities through processing.

Improved processing, on a broad scale, helps to raise and standardise, the quality of all sea cucumber products coming out of a country. Training fishers and processors that are processing poorly works to ensure that low-quality product is not tainting the overall exports.

The training could initially focus on best-practice methods and later include new processing methods, e.g. arising from changes in market preference. Training may also look at alternative ways of discarding the guts and liquid from processing or find alternative uses for the waste products.

Limitations

Experienced processors may want to keep their methods confidential, to maintain market competitiveness. Fishery technicians/officers may then need to do the training with information they can gather from literature or advice from processors. There may be little interest from the larger processing companies and buyers to train fishers in rural areas (Figure 36).

It is evident that there is no single "best-practice" method for processing sea cucumbers. This is partly due to the fact that the product preferred by importers varies among regional and global market centres. Therefore, not all buyers want the same processing methods, so training must either present a range of methods or be tailored to suit the preferences of the exporters. Processing methods have evolved considerably

FIGURE 36
Boiling of sea cucumbers in rural communities in the Western Province (left and centre) and Milne Bay (right), Papua New Guinea

PHOTOS: J.P. KINCH (LEFT AND CENTRE)

PHOTO: G. MCKIE (RIGHT)

in recent years, so some training may either fail to embody recent changes or become obsolete as new methods arise. Alternatively, fishers may be relatively transitory, in which case workshops need to be repeated because the expertise is lost over time.

The processing of sea cucumbers into beche-de-mer requires substantial supply of fuel wood which is sometimes not available, especially in small islands. In some cases the demand for fuel wood can become a cause of deforestation and ecological impacts (see *Examples and lessons learned* below).

Management agencies may lack the resources or expertise to conduct training themselves, and so rely on contracted trainers. Qualified consultants may be relatively costly.

Information needed

Naturally, there must be a need in the fishery for fishery managers to intervene in processing. In some fisheries, there are few fisher/processors and sea cucumbers are already being processed to a high standard. In other fisheries, a small number of processors may do most of the processing work but some fishers may still prefer to, or need to, process sea cucumbers and not practice good handling techniques (Purcell, Gossuin and Agudo, 2009a). Therefore, fishery managers should assess what grades of sea cucumbers (albeit salted, frozen or dried) are being exported, whether some exports are of lower grade due to processing, and whether there is wastage in some poorly-processed animals being occasionally discarded. This information can be sought from overseas buyers and the local processors themselves.

If poor processing is a problem, identify where this occurs. It may also be useful to conduct a study on the economic returns to fishers for their time in processing and whether they can process to a high enough standard. If the fishers have the skills and equipment to process well, then it is probably better to train them and have processing done locally. But the economic trade-offs of this should be examined.

Prior to any training, the manager should know which processing types are preferred by the importer or overseas buyer. For instance, Singapore importers do not want smoked product whereas China, Hong Kong SAR, buyers like smoked beche-de-mer (Figure 37).

The modes of training should be evaluated. Are workshops the best approach, or would it be better to disseminate booklets in local languages? Contact appropriate research and development institutions to see what reference information (manuals, articles, leaflets) already exist on processing methods. Where they exist, support and strengthen co-operatives for training the processors. Develop a simple information product (e.g. manual, handbook, species pamphlets), which details minimum handling

FIGURE 37

Left: woman drying and smoking a local catch of sea cucumbers at Tsoi, Papua New Guinea. Right: a mixture of sea cucumber species being sun dried in a village in Tonga

PHOTO: J. KINCH

PHOTO: M. KRONEN, SPC PROCFISH/C

and processing requirements. If companies require a specific type of product then they should provide this further training. Managers should obtain a list of reputable processors or experienced consultants for workshops. Do the processors have skills appropriate for training people, including speaking local dialects? Would it be best for the consultants go to the communities or should fishers be supported to travel to venues to demonstrate processing procedures?

Compile information on coherent protocols for processing sea cucumbers. This should cover methods starting from the post-capture handling and gutting all the way to the final processed product. Consider providing a few "recipes" for the gutting, cooking and drying sea cucumbers that are also efficient with time and fuel wood for boiling. Help to incorporate methods in the workshops or reference material about handling the waste from processing.

EXAMPLES AND LESSONS LEARNED

Papua New Guinea

In the Western Province, large quantities of mangroves are cut each season on Bristow Island to supply fuel wood to beche-de-mer processors on neighbouring Daru. The cutting of mangroves, whilst being an important economic activity for some groups who do not have the assets to actively engage in the collection of sea cucumbers, is causing deforestation of some areas where mangroves are more accessible. The production of beche-de-mer requires a large supply of fuel wood – 10 tonnes of fuel wood is believed to be needed to process one tonne of beche-de-mer.

On smaller islands in the Milne Bay Province, much of the fuel wood is obtained from driftwood. However, once this has been exhausted, fishers cut timber from the interior and foreshore. Removal of vegetation from the foreshore is having a negative impact on islands, especially smaller atolls and cays, as they are now exposed to increased wave action and thus erosion. Fuel wood has been such a problem in the Milne Bay Province, that companies sometimes send shipments of sawmill off-cuts to smaller islands to enable fishers to process their sea cucumbers into beche-de-mer.

The lesson from wood use in Papua New Guinea is that training in processing needs to extend beyond just methods of handling, boiling and drying sea cucumbers. Fishers and processors should also be trained on ways to cook sea cucumbers that require less wood, to help reduce deforestation.

Source: J.P. Kinch.

Above: mangrove fuelwood on sale in Daru, Western Province, Papua New Guinea.

Above: small atoll island in Milne Bay Province, Papua New Guinea, showing sparse trees and bushes that are easily depleted to supply firewood for processing sea cucumbers.

New Caledonia, France

The recent project by the WorldFish Center on the sea cucumber fishery of La Grande Terre, New Caledonia, used socio-economic surveys to evaluate the need the Provincial Fishery Services to promote training in processing by fishers (Purcell, Gossuin and Agudo, 2009a). The interviews with processors pointed to a need for training of fishers in processing methods, since two-thirds of processors responded that sea cucumbers that they bought from fishers were sometimes poorly processed.

Above: artisanal processing of sea cucumbers in the Northern Province of New Caledonia.

Roughly half of the fishers near the main processing centres in Noumea sell their catch as gutted (fresh) animals or gutted and salted. Conversely, most fishers in the far northern regions of the country sell their catch after they have fully processed the sea cucumbers into dried beche-de-mer. This is mainly attributed to the fact that the fishers are much

further from processors and cannot easily sell fresh animals, nor store salted animals in large quantities. One lesson is that training workshops to improve the quality of processing by fishers will need to target remote communities in particular.
Source: S.W. Purcell.

Seychelles
Processors are well equipped and produce good quality beche-de-mer from salted sea cucumbers bought from fishers. The fishers prefer to conduct long fishing trips, given the distance they have to travel and keep their catch in salt until they return to land. The sea cucumbers are then sold, as gutted and salted animals, to processors. In this case, there is some value adding that is lost by fishers because processing is done by local industrialized processors. Presently there are four licensed processors.

PHOTOS: C. CONAND

Above – Left: sea cucumbers in salt sold by licensed fishers to processors. Right: sea cucumbers processed (mostly the high valued teatfish "pentard") by a licensed processor.

One lesson is that the fishers get enough money, given the present high commercial value of the catch and the processors have to report their purchases and exports.
Source: C. Conand.

6.8 RESTOCKING

Definition

Stock rebuilding through the translocation of adults, or release of juveniles, to create or increase densities of protected adults that breed and enhance recruitment of new sea cucumbers in the fishery.

Other potential classes of interventions (e.g. improving habitat, decreasing predation) are not discussed here. Several definitions are given to distinguish different types of direct "enhancement", following Bartley and Bell (2008) and Bell *et al.* (2008). *Restocking* is the replenishment of a fishery through the release of juveniles, or translocation of adults, to form nucleus breeding populations that subsequently supply larvae to enhance recruitment to fishing grounds. The released animals are fully protected, e.g. within a no-take zone (NTZ), and they serve to "fast-track" the rebuilding of stocks in the fished areas through effective breeding and export of larvae. In contrast, *sea ranching* would involve the release of sea cucumbers into unfenced/unbounded areas of private access with an aim to harvest all released animals once they reach market size – it is a "put-grow-and-take" activity and replenishment of the fishery is secondary (Pickering and Hair, 2008). Another put-and-take activity is *sea* *farming*, where sea cucumbers would be released into sea pens, or other bounded areas in the sea, and harvested after they reach a good market size (Bell, Purcell and Nash, 2008; Lavitra *et al*., 2009). *Stock enhancement* has also a primary goal of increasing the year-class of wild animals and enhancing short-term yields to fishers through broad release of animals but occurs in open access areas, and again differs from restocking because there is no direct intention to form protected breeding populations.

Uses

Despite the use of artificial propagation (i.e. restocking with cultured juveniles) to facilitate the recovery of depleted stocks, it should not be used as a substitute for a precautionary approach to management. Managers should take actions to prevent fishing pressure that depletes stocks to the point where such corrective action is needed (FAO, 1995; Section 3.2).

Restocking is used to fast-track the recovery of wild sea cucumber stocks to a state where breeding populations are dense enough that the fishery can once again support conservative exploitation (Battaglene and Bell, 2004). It could also be employed to recreate a fishable population where a stock has become locally extinct through overfishing or natural disaster.

Managers should consider restocking with hatchery-produced juveniles (Figure 38) only as a "last-resort" intervention, when the densities of breeding animals in the wild have been depleted far too low to expect natural recovery of the stock using other management measures (Lovatelli *et al*., 2004; Conand, 2006a; Bell, Purcell and Nash, 2008). The use of cultured juveniles should be considered only where it seems that breeding populations cannot be created in the wild using other means and when the costs of hatchery production are justified (Battaglene and Bell, 2004; Purcell and Simutoga, 2008).

Where there are sufficient wild adults, but at densities too low for effective mating, some adults may be collected by fishery workers and aggregated into NTZs (Bell, Purcell and Nash, 2008). This alternative mode of restocking is faster and more cost-efficient than a captive-release programme at creating the necessary nucleus breeding populations to reinitiate recruitment in the fishery.

A further mode for restocking may arise, inadvertently, from breeding populations of adults created by sea-based aquaculture of sea cucumbers. Programmes to growout of hatchery-reared sea cucumbers in sea pens ("*sea farming*") (Figure 39) or in exclusively managed areas of natural habitat ("*sea ranching*") (Figure 40) are arising in the Indo-Pacific region and Indian Ocean for the purpose of providing income

FIGURE 38
Left: early hatchery-produced juvenile *Stichopus (Apostichopus) japonicus* in northern China for mass release into coastal areas where mariculture takes place. Right: hatchery-produced juvenile sandfish ready for release in the wild, New Caledonia

FIGURE 39
Left: transferring hatchery-reared juveniles into sea pens at Antseragnasoa, Madagascar. Right: the villagers of Ambolimoke, Madagascar, harvesting the sea cucumbers from the first experimental pen, December 2008

PHOTO: G. CRIPPS
PHOTO: G. ROBINSON

FIGURE 40
Hatchery-produced juvenile sea cucumbers (*Holothuria scabra*) being released into exclusively managed coastal areas in an initial sea ranching programme in Australia

PHOTOS: B. GIRASPY

for coastal livelihoods (e.g. Robinson and Pascal, 2009; Lavitra *et al*., 2009; Pickering and Hair, 2008). Although profit from these "put-and-take" ventures is the aim, these programmes could result in small, but dense, breeding populations that improve egg production for rebuilding sea cucumber stocks in neighbouring fishing grounds.

Limitations

In some places, stocks have been depleted so far that programmes cannot find enough broodstock to allow captive breeding or aggregation (see Section 2.4). In these instances, fishery managers may need to consider translocating stocks from the nearest related populations and accept the potential irreversible changes to the genetic structure of remnant local stocks (see Uthicke and Purcell, 2004). Where restocking with local sea cucumbers is possible, managers should avoid interregional or intercountry translocation. The genetic integrity of local stocks should be preserved wherever possible (FAO, 2003; Section 3.1). In some areas, sea cucumbers are genetically different over small spatial scales: for example in tropical species, e.g. *H. scabra*, and temperate species, e.g. *C. frondosa* (Section 2.1).

Running a hatchery is costly in equipment and trained personnel, making each juvenile expensive to produce. In addition, the availability of hatchery technology and costs of producing juveniles are fundamental limitations to the restocking of sea cucumbers using hatchery produced individuals (captive-release restocking). There are just a handful of species for which commercial-scale breeding technology is well documented:

- *Stichopus (Apostichopus) japonicus* (Wang and Cheng, 2004; Liu *et al*., 2004),
- *Holothuria scabra* (Battaglene, 1999; Agudo, 2006; Rasolofonirina, 2007; Lavitra *et al*., 2009),
- *H. lessoni* (previously named *H. scabra* var. *versicolor*; Giraspy and Ivy, 2005),
- *H. spinifera* (Asha and Muthiah, 2005), and
- *Isostichopus fuscus* (Mercier, Hidalgo and Hamel, 2004).

Producing juveniles is the first large step to captive-release restocking – then the juveniles must be released into the wild in ways that result in high survivorship to maturity (Purcell, 2004b; Purcell and Simutoga, 2008). Juvenile sea cucumbers may need different microhabitats than adults, which may necessitate some investment in scientific studies to define these confidently. The optimal size-at-release should also be determined, since too small juveniles may suffer unacceptable mortality while large juveniles will be expensive to produce (Purcell and Simutoga, 2008).

A further key limitation of restocking, either with cultured juveniles or aggregated wild adults, is that the animals must be protected within NTZs. These may be difficult to establish, e.g. due to socio-cultural reasons, or impractical to enforce. To gain the full return on investment of restocking of a whole fishery, the aggregated or released sea cucumbers should be protected in a network of moderately large no-take reserves for their entire lives (Purcell and Kirby, 2006). In some cases, e.g. in China for *A. japonicus*, modification of habitat (e.g. to create artificial reefs) may be needed for restocking.

Animals stocked into new habitats may have unforeseen affects on the benthos or competing species. Although sea cucumbers are not predators, the potential effects of the introductions on the ecosystem should be considered and may be deemed too risky to permit releases of foreign stocks. Much care should also be taken to ensure that hatchery practices do not result in the introduction of disease (FAO, 2003).

Restocking can lead to false expectations and conflicts among the stakeholders. For example, fishers may exploit stocks more because they believe the restocking has rebuilt populations. Alternately, they may be reluctant to accept other management measures because they already sacrificed some optimal (previously fished) areas for the NTZs and contributed to other costs or services to rebuild the breeding populations.

How to implement

Firstly, managers should consider the costs and timeframes for restocking and whether a restocking programme is likely to add value to other forms of management (FAO, 2003; Bell, Purcell and Nash, 2008). What will be the costs of producing and protecting the animals, and are these costs likely to outweigh simply waiting a longer time for stocks to recover under a moratorium? Next, managers should perform a cost/benefit analysis on captive breeding versus adult aggregation. This may be rather simple and should also consider the logistic and capacity constraints of the fishery service.

Underwater censuses or fishery-dependent surveys will help to show whether restocking is needed and whether it can be achieved more cost-effectively by aggregating remnant wild adults in NTZs (Sections 6.1.2 and 6.1.3).

Methods for culturing juveniles at semi-commercial scales in hatcheries must be known and include the technology to produce larvae and newly-settled juveniles as well as the nursery methods to grow them efficiently to appropriate sizes for release

(Purcell and Simutoga, 2008). If the juveniles are to be produced in a government-operated hatchery, managers should critically assess the technical capacity of staff to operate a hatchery (a hatchery manager, skilled technicians and aides).

There must be a sound understanding of the habitat requirements of the species and appropriate release strategies (Purcell, 2004b). If such information is lacking, managers may need to invest in scientific studies to determine the optimal release strategies. Most importantly, the optimal release size and microhabitat for the juveniles needs to be determined. Thousands of juveniles will probably be needed to furnish each nucleus breeding population, since many will die in the first period after release, and multiple sites should be stocked to mitigate restocking failure at some sites (Purcell and Simutoga, 2008). The juveniles should be marked (Purcell, Blockmans and Nash, 2006; Purcell and Blockmans, 2009) to allow some "mark-recapture" monitoring to verify survival rates and to identify restocked animals (see photograph in Box below).

Managers should get information on the reproductive biology of the species to be restocked (e.g. Conand, 1993) and dominant water currents in the fishery. Sites for restocking should permit the larvae from the breeding adults to travel with the currents to target fishing grounds. Managers should also consult or commission studies to understand the delineation of genetic strains of the stocked species within the fishery.

Enforcement and improved management are required before restocking programmes are implemented. If the progeny from restocked animals are only to be overfished again, then the broader aim of restocking will be missed. A stock recovery programme should include the establishment, or use, of NTZs for stocked breeding groups and strict regulations for fishing outside reserves. More conservatively, this would entail a well-policed moratorium on the fishing and export of sea cucumbers in the whole fishery to allow stock rebuilding (Battaglene and Bell, 2004). Perhaps the depleted species could be banned and regulated fishing could be permitted for other species. At the onset, managers should agree with stakeholders on the target densities or abundance that populations should reach before fishing is again permitted.

Managers are urged to avoid the translocation of stocks from distant populations, in order to preserve the genetic structure of local stocks (FAO, 1995; Uthicke and Purcell, 2004). States are also called upon to undertake efforts "to minimise harmful effects of introducing non-native species […] into waters under the jurisdiction of other States as well as waters under the jurisdiction of the State of origin" (FAO, 1995). This means that managers and governments should take steps to avoid inappropriate translocations in their own waters, and from their waters into those of neighbouring regions and countries.

Monitoring of populations of the stocked species outside the stocked NTZs should take place before and after stock rebuilding. The moratorium on fishing should be lifted only once animals outside the NTZs have grown to maturity and populations in the fishery have generally returned to the pre-determined densities.

EXAMPLES AND LESSONS LEARNED

New Caledonia, France

Following studies in the Solomon Islands to further develop methods for culturing sandfish (*Holothuria scabra*) in hatcheries, a multidisciplinary project was conducted in New Caledonia to determine optimal methods for releasing the juveniles in the wild for restocking. Releases in the wild were not intended to restock the fishery, but instead were at an experimental scale to provide directions for future restocking projects by using the releases to define the conditions in which juveniles survive and grow well.

PHOTOS: S.W. PURCELL

Above – Left: thousands of juvenile sandfish ready for marking with fluorochrome chemicals prior to being released into the wild. Right: a small piece of skin is excised from a sandfish recaptured one year after release, as part of monitoring to analyse whether it was one of the released cultured animals.

The final studies of the project examined the survival and growth of cultured juveniles up to one and a half years after release, using chemical marking of the juveniles (Purcell and Simutoga, 2008). The key lessons from the study were:

- Experimental releases are critical for defining the successful release methods, but some uncontrollable factors (e.g. environmental variations) can dictate the survival of cultured juveniles in the wild.
- Success on one occasion does not guarantee success at that site on another occasion.
- Success from short-term experiments is no guarantee for success of large-scale releases over longer timeframes; some key causes of mortality occur infrequently.
- Restocking programmes should expect failures at some sites or occasions, so multiple release sites and repeated releases should be used.
- The size-at-release of the cultured juveniles is important, but there may be a threshold to how strongly it affects survival. For sandfish, juveniles should be grown to >3 g before release.
- Microhabitat is another key criteria to specify in restocking sea cucumbers. It is the release *microhabitat*, more than the "habitat" that needs to be determined and targeted for releases.

Source: S.W. Purcell.

Gilbert Islands, Kiribati

Commonly known in Kiribati as "white teat", *Holothuria fuscogilva* is a high-value sea cucumber species that has been heavily fished by local fishers and fishing companies using compressed-air diving. Depletion of white teatfish, prompted the Kiribati Ministry of Fisheries and Marine Resources Development (MFMRD) to develop technical capacity for restocking. Through assistance from the Government of Japan (via the Overseas Fisheries Cooperative Foundation), a project was initiated in 1995 to master the hatchery methods for culturing white teatfish juveniles.

Several thousands of juveniles were released in lagoon shoals over a number of years. However, there is little evidence that many of the released animals survived to maturity or contributed to augmenting local stocks. The juveniles are highly cryptic and rarely found during monitoring, and tagging/marking methods were not available (until recently) to distinguish recaptured white teatfish from wild stock. Additionally, the knowledge of juvenile habitat preferences is lacking. Lessons from a recent project in Kiribati were:

- Future restocking requires some preliminary studies to determine microhabitats that provide juveniles with shelter and food, to allow them to grow and avoid being eaten.

- Cultured juveniles need to be marked or tagged to allow them to be distinguished from wild individuals in order to monitor their survival to maturity.
- Juveniles need to be released into no-take reserves to ensure they are protected from fishing once they grow to maturity, so they can act as breeders to replenish the stocks more broadly.
- Restocking needs to be placed within the broader framework of resource management, which must address the initial causes of depleted stocks.

PHOTOS: S.W. PURCELL

Above – Left: raceway tanks used to culture juveniles for restocking. Right: a white teatfish broodstock held in a hatchery facility.
Source: S.W. Purcell.

Madagascar

In 1999, a sea cucumber mariculture project was launched in Madagascar. A hatchery at the Toliara marine sciences institution (Institut Halieutique et des Sciences Marines – IHSM) was functional in 2003 and currently produces tens of thousands of juveniles of the valuable sea cucumber *Holothuria scabra*. In 2004, a programme was initiated in which hatchery-produced sea cucumbers are grown to market size in sea pens by coastal villagers.

Management of the sea pens by farmers is ensured by scientists working in the company and by people from non-governmental organizations (NGOs) based in the Toliara region (Eeckhaut *et al.* 2008). The experience of this village-based mariculture appears very positive and demonstrates the social and economic viability of a new model for alternative livehood creation. The village participants receive hatchery-produced sandfish (*H. scabra*) and grow them in pens in shallow sandy habitats. One attribute to the success at this stage is that each of the four villages involved in the mariculture project has designated the area around the pens as a permanent no-take reserve protected by a local law. Only the pen owners and researchers are allowed access to the sea pens in the reserve, which limits poaching. At some sites, sandfish juveniles have grown from a release weight of 15 g, at 5-months old, to an average weight of 350 g during 8 months in the sea pens. This approach will be extended to many villages on Madagascar's west coast and will hopefully establish protected spawning aggregations. Although the purpose is mariculture, the creation of spawning populations in nearshore waters should inadvertently support stock rebuilding (Robinson and Pascal, 2009), and serve as an example for other countries in the Indian Ocean.

The lesson from this example is that mariculture of sea cucumbers can involve local communities, not just aquaculture businesses. The success in Madagascar seems to be due, in part, to a novel partnership between local communities, NGOs and private sector stakeholders.
Source: C. Conand.