

## Hands-on training in sandfish and microalgae hatchery techniques



The simulator tanks where sandfish broodstock is kept – Kiribati (Image Beero Tioti)

*To support livelihoods of communities and assist in the replenishment of sea cucumber stocks in the region, the Secretariat of the Pacific Community (SPC), with funding assistance from the Australian Centre for International Agriculture Research (ACIAR)/ DFAT Australia, has conducted two workshops on sea cucumber (sandfish) breeding and live microalgae culture techniques. The participants were fisheries officers and people working in the private sector in Pacific Island countries that have a sea cucumber restocking and farming programme.*

The first workshop was conducted in Kiribati with the Ministry of Fisheries and Marine Resources Development in January 2015 as part of an ACIAR project on community-based aquaculture, which, for Kiribati, focuses on the culture of sandfish (*Holothuria scabra*). A total of 14 staff from the Tanaea hatchery, including fisheries assistant trainees, were trained in all aspects of hatchery techniques for breeding sea cucumber and microalgae culture. The second workshop, conducted from 27 April to 23 May 2015 in Fiji at the government's fisheries station in Galoa, was attended by 12 participants from Fiji, Vanuatu, Solomon Islands and Cook Islands.

The participants were taught about various spawning induction methods and culture techniques for rearing sandfish larvae in tanks. They also learned how to culture microalgae – a staple food for most marine organisms, including sandfish, pearl oysters and shrimps – in an artificial environment, a hatchery, and how to follow feeding protocols using microalgae and Spirulina, an artificial dried alga, to ensure high survival of larvae produced.

During the four-week course, the participants set up a simulator habitat tank for growing sea cucumber in an artificial environment. Resembling the natural habitat, being covered with the nutrient-rich seagrass that is often inhabited by sea cucumbers, the simulator is used for growing and conditioning adult sea cucumber for the breeding programme. It can also be used for nursing and growing juvenile sea cucumber produced in the hatchery.

Another part of the Fiji course involved obtaining eggs from a female sandfish and fertilising them with male sperm in a beaker. Despite the small number of eggs fertilised, the *in-vitro* fertilisation technique proved that female eggs can be fertilised by artificial means (stripping gonads) and then reach pentactula stage (early settled juveniles). This technique could be improved and used to enhance stocks of sea cucumbers that are currently under threat from overfishing. One of the participants who was impressed with the outcome of the technique said, 'During times of harvest when a lot of sea cucumber are being gutted, one could actually collect all gonadal matter and fertilise

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it *in-vitro*, producing sea cucumbers which otherwise would not have existed.’

Replenishing natural sea cucumber stocks, which are almost all under the threat of overfishing, will require efficient and well-monitored management measures. Mastering the artificial reproduction of sea cucumbers by using the hatchery techniques taught during this training will come as an additional tool to assist with the rebuilding of natural stocks.

The training sessions were conducted by Masahiro Ito, who has over 30 years of marine hatchery experience in the region. He was assisted by the SPC aquaculture team and the Galoa aquaculture staff of the Fiji Ministry of Fisheries and Forests. The training programme was a success, with most countries now being able to carry out their breeding and restocking programmes to enhance current depleted stocks that will, it is hoped, improve livelihoods of local communities.

### For more information:

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*Masahiro Ito (right) explains how to induce sandfish specimens to spawn. (Image: Beero Tioti)*