Practical training on milkfish capture-based aquaculture in Fiji

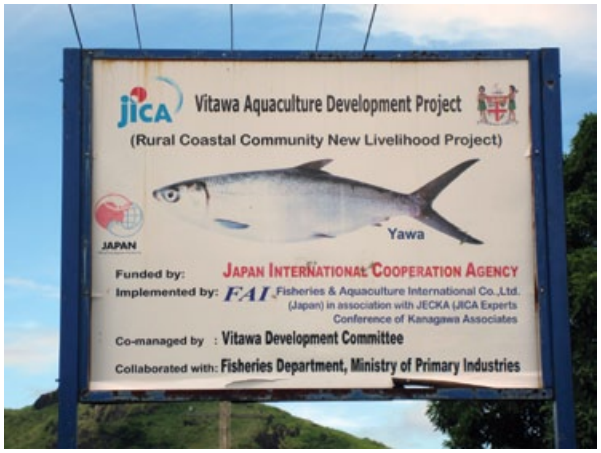
Milkfish have been identified by the Secretariat of the Pacific Community (SPC), the Japan International Cooperation Agency (JICA) and governments of Pacific Island countries and territories as a fish species that has potential for low-cost aquaculture. If viable in the Pacific, milkfish aquaculture could help meet the projected increased demand for food fish by growing populations, and the demand for fishing bait by tuna longline fleets.

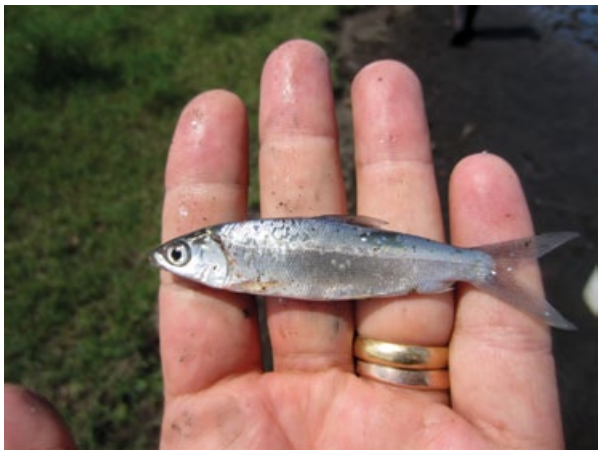
Attributes that make milkfish (*Chanos chanos*, or *yawa* in Fijian) suitable for low-cost aquaculture include the possibility of capturing fingerlings from the wild for pond stocking, and rearing them on (mainly) natural feeds growing in the pond. This saves money because the cost of running a hatchery is avoided. Milkfish are low in the food chain and can eat naturally occurring sea plants and plankton in addition to low-cost formulated pellet feeds.

Although milkfish aquaculture is well established in Southeast Asia, it is scarcely practiced in the Pacific Islands region. This is mainly because the necessary techniques to capture and culture milkfish have not yet been transferred to the Pacific, with the exception of one or two places. For this reason, the community of Vitawa Village in Fiji's Ra Province, in collaboration with Fiji's Department of Fisheries, JICA, and Japanese company Fisheries and Aquaculture International (FAI Co. Ltd.), has established a milkfish aquaculture project.

The Vitawa project, which has been previously reported on in this newsletter, has reached a stage where it is ready to provide hands-on learning opportunities for people from other parts of the Pacific who are interested in establishing their own milkfish farming projects. Fiji's Department of Fisheries and JICA put forward the idea to organise a training workshop in Vitawa Village for 30 participants from other communities in Fiji.

SPC added a regional component to the workshop by sponsoring the participation of an additional 12 participants from Cook Islands, French Polynesia, Nauru, Palau, Papua New Guinea, Solomon Islands, Tonga and Vanuatu. The WorldFish Center in Solomon Islands funded two of their staff to attend, and Nauru self-funded one extra participant. Interest around the region in milkfish aquaculture is high, with projects either already underway in places such as Kiribati, Palau and Tuvalu, or in the process of being implemented in Cook Islands, Nauru, Tonga and Solomon Islands. Two University of the South Pacific Marine Science Masters students from Solomon Islands, who are beginning milkfish aquaculture studies in Solomon Islands under SPC and WorldFish co-supervision, also attended the workshop in order to learn the techniques needed for their studies.

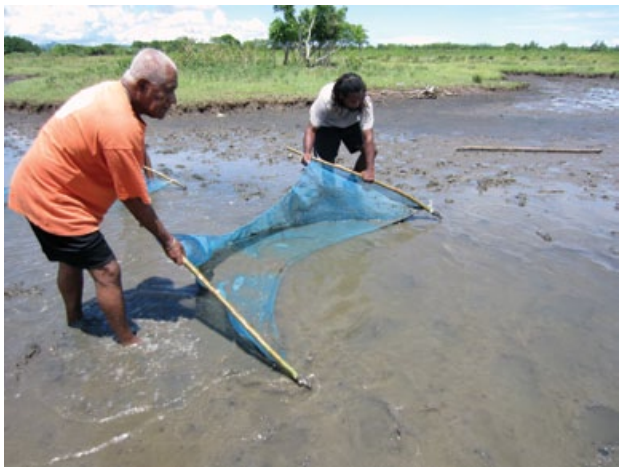




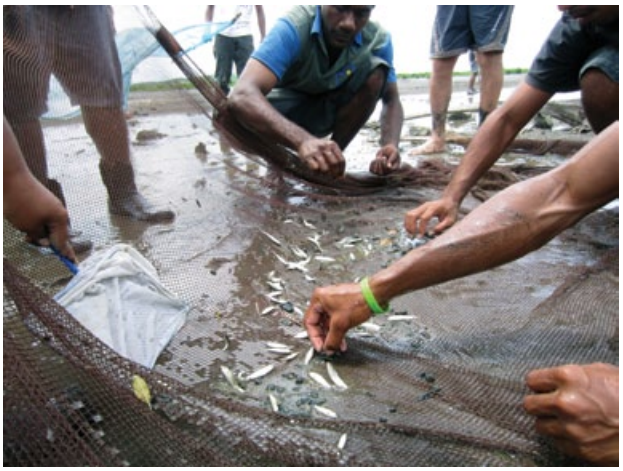
Milkfish, Chanos chanos, *fingerling ready for pond stocking.*

The workshop was designed to have maximum hands-on, outdoor learning experiences and a minimum of classroom lectures. During the first day, resource people such as Mark Napulan from the Phillipines and Hideyuki Tanaka from Japan gave presentations on the biology of milkfish breeding and the basis for capture-based culture. Alifereti Senikau summarised the past history of Fiji's experiences with milkfish capture-based culture, and Moana Maamaatuaiahutapu did the same for French Polynesia where milkfish are highly prized on some atolls of the Tuamotu Islands.

After the first day, all learning was done "on the job". Participants manufactured their own bulldozer nets, using materials purchased by the workshop organisers, made



Marika Silimaibau of Fiji teams up with Simon Vuto from Solomon Islands to capture milkfish fingerlings using a fine-mesh seine net.

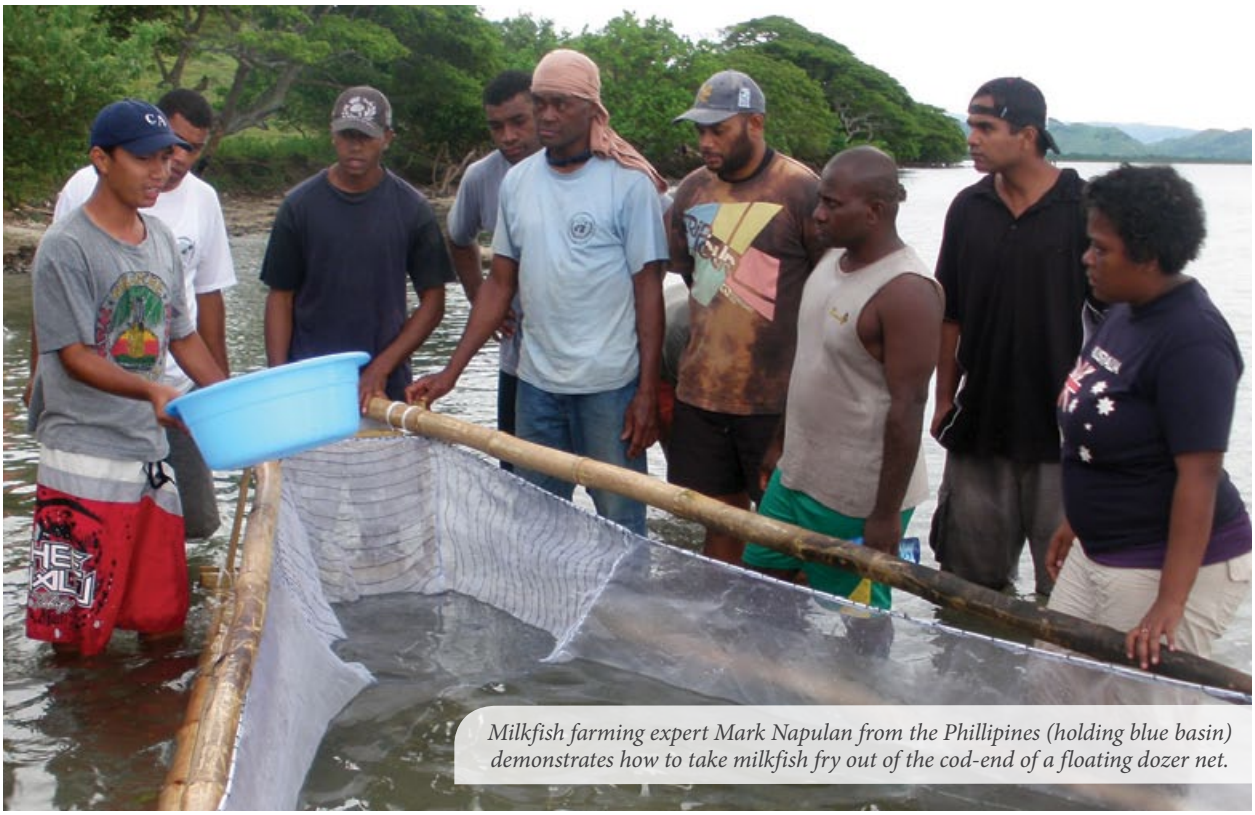


Fingerlings are carefully moved from the seine net into buckets with aeration for transport to the fishponds.

from local materials such as bamboo provided by the Vitawa Village youth. The idea was that, having made their own nets, participants would be able to take the nets back with them to their places of origin and conduct their own trials of milkfish capture-based culture.

The two main methods of fry capture were demonstrated. One method is to capture fingerlings in shallow pools within mangroves. The other is to use floating "bulldozer" nets to catch young fry along beach fronts. Workshop participants using the shallow-pool method successfully caught several thousand fingerlings. This catch was used to demonstrate the correct techniques for handling and transporting baby milkfish to the farm. Participants worked jointly with the Vitawa milkfish farm youth group to acclimate the fish to pond water, sort the fish according to correct species, and stock them into nursery ponds. In addition to learning the correct methods, workshop participants were able to contribute to the Vitawa fish farm project by stocking several thousand more fish into the fishponds.

Participants practiced the correct way to calculate how much feed to give fish in ponds each day. Water



Milkfish farming expert Mark Napulan from the Phillipines (holding blue basin) demonstrates how to take milkfish fry out of the cod-end of a floating dozer net.

management regimes that encourage natural food in the pond in order to reduce added-feed costs were demonstrated. Because the Vitawa project had fish that were of a size ready to harvest, one training exercise involved harvesting fish using seine nets. As a result, post-harvest techniques for packing fish in ice, and for de-boning and smoking fish for vac-packing in plastic, could also be practiced by all participants. As a further training exercise, and to assist neighbouring communities at Togavere and Vunitogaloa (also in Ra Province), other possible project sites were surveyed for pond construction. Two new fish farms were designed by participants under the guidance of workshop resource people, then measured and marked out by stakes on the ground ready for pond and channel construction.

Feedback from participants and from the Vitawa community was positive, and centred mainly on the very hands-on nature of the training, which was much appreciated. The warmth of the reception and the hospitality shown to outside participants by the Vitawa community and the women's group was especially commented on. Participants came with knowledge of and experience with milkfish from their own country, which they shared with their Vitawa hosts in nightly exchanges of information around the kava bowl. The most important aspect of this milkfish training was the Vitawa community setting, which as a learning experience compared better than the usual type of regional training workshop that takes place in air-conditioned meeting rooms in hotel venues. This training was "real life", done in a way that the benefits of the training experience flowed on not just to participants but also to the host community in ways that were not only technical but also financial and cultural.

Due to renewed interest in milkfish aquaculture in the region, this workshop was timely. Several other communities in Fiji, and other countries in the region, have begun or will soon be starting their own milkfish capture-based culture projects.

For more information:

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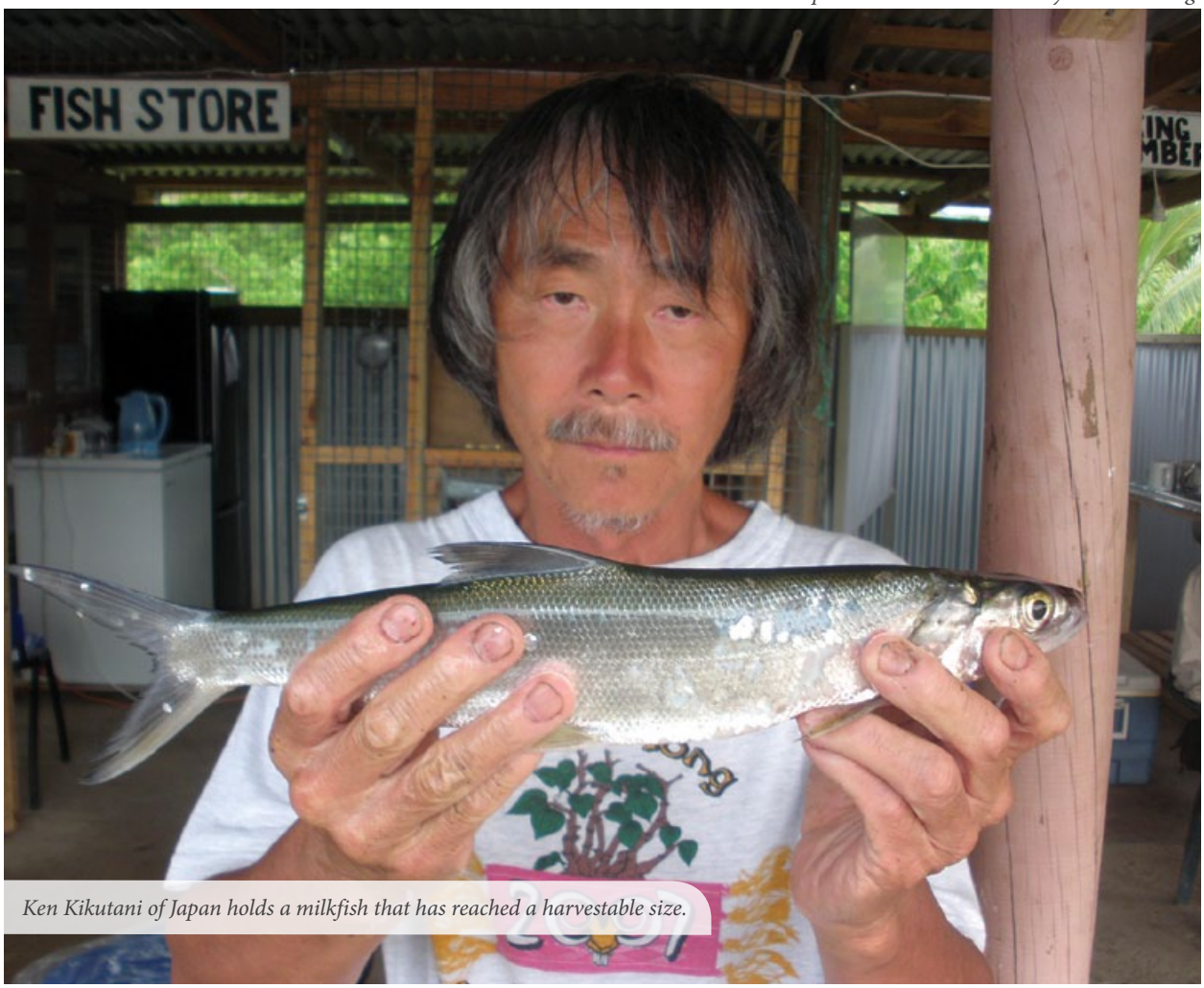
All pictures in this article are by Tim Pickering.



Ken Kikutani of Japan holds a milkfish that has reached a harvestable size.