A good relationship between local communities and seafood diversity

by Masahito Hirota

Background

Brackish waters, especially shrimp pond cultures, have been widely developed since the 1980s in South East Asian countries. However, deforestation for building ponds, and later, their abandonment due to mass diseases in cultures, have resulted in serious environmental degradation. Now, these problems are becoming a threat to the livelihood of the local inhabitants, giving rise to social instability at the local community level. To consider how to rectify this condition, the PICES Section on *Human Dimensions of Marine Systems*, in collaboration with the Agency for the Assessment and Application of Technology (Badan Pengkajian dan Penerapan Teknologi, BPPT) of Indonesia, is studying the use of an environmentally friendly aquaculture technology called *Integrated multiple trophic aquaculture* (IMTA – a method of aquaculture in which fish, scallop and seaweed are managed tropically by bio-recycling so that the by-products from one species are used as food or fertilizer for another) to remediate the environment while applying a social science approach by working together with the local community. This research is a part of a 5-year project on "*Marine Ecosystem Health and Human Well-Being*" (MarWeB) supported by the Ministry of Agriculture, Forestry and Fisheries (MAFF) of Japan.

Activities

A work plan has been developed for a MarWeB-sponsored pond experiment, to be conducted at the National Center for Brackishwater Aquaculture in Karawang (Java Island, east from the Indonesian capital, Jakarta). The main purpose this experiment is to investigate the effects of IMTA on the economic return of pond operations, and the pond water quality defined in terms of macronutrient concentrations. The hypothesis being studied is whether the addition of bivalves and seaweed into the aquaculture ponds of fish or shrimp will allow successful growth of all species, and decrease the macronutrient concentrations in the pond waters.

To build the skills needed to conduct the pond experiment, a nutrient and phytoplankton training workshop, led by Drs. Mark Wells and Mitsutaku Makino, was held March 25–26, 2014, at the National Center for Brackishwater Aquaculture. Sixteen local Indonesian scientists participated (Fig. 1). The workshop was a success, with the objectives fully met and the methodological skills raised to the quality required for publication of the pond experiment results.

Using a social science approach, a commodity chain map of the IMTA products in the Karawang area (Fig. 2) has been prepared to assess what kind of businesses are locally supported, who consumers are, and how much is consumed of the multi-species produced from the IMTA (shrimps, milkfish, crab, *etc*.). We expect that, by changing shrimp monoculture to IMTA, it will be possible to retain sustainable pond culture, and suppress coastal erosion. In addition, there is high probability this will lead to new diverse job creations, and will ensure a rich variety of seafood as ingredients of everyday life in the community.

Spreading information on the effects of IMTA to the community

To establish IMTA, it is indispensable that communities receive correct and comprehensive information about this approach. Of course, shrimp monoculture is highly profitable and is an important source of employment, but to ensure sustainability, it is critical to present a well-balanced understanding of the IMTA benefits to the local population. To extend relevant information, the MarWeB project, in

Fig. 1 Participants of the Nutrient and phytoplankton training workshop held March 25–26, 2014, at the National Center for Brackishwater Aquaculture, Karawang, Indonesia.

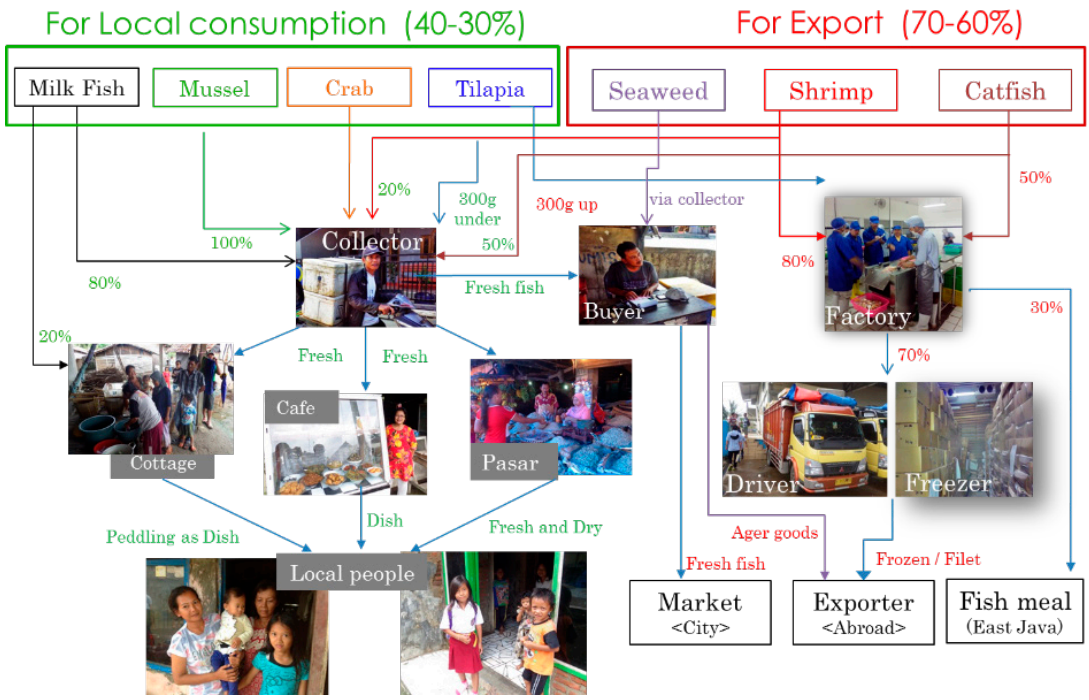

Fig. 2 The commodity chain map of IMTA products in the Karawang area, Indonesia.

cooperation with BPPT, has held two international workshops in Indonesia in March 2013 and March 2014 (for a review of the first workshop see PICES Press, 2013, Vol. 21, No. 2, pp. 18–19). These workshops drew not only local and international scientists, concerned with pond aquaculture, but also attracted special attention of the Indonesian press. Through the mass media, we have successfully raised the awareness of the general public about seafood sustainability. For the future, it is expected that the Indonesian community will establish and lead local IMTA programs in order to rectify their own well-being.

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