

Component 7 Stock enhancement

“Tsukuru-Gyogyo” as Area-capability approach: A background explanation for participatory stock enhancement project of tiger shrimp in New Washington, Philippines

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Area-capability is a new idea expressing capacities to improve human societies by sharing abilities, necessities, knowledge and intentions to overcome various social problems and to facilitate affluent society through bottom-up approaches. “Tsukuru-Gyogyo”, a coined term in 1970s in Japan, which is sometimes translated as “cultivating fisheries” or “culture-based fisheries”, is expressing activities of fishers to conserve and control aquatic resources and environment for insurance of their catch. There are several negative criticisms to Tsukuru-Gyogyo from its uncertainty of economic efficiency and negative impact to ecological systems, though it gives fishers confidence and responsibility to manage resource conditions and environment by themselves. Among various methods for “Tsukuru-Gyogyo”, release of “fish seed” produced in controlled environment by local fishers has prominent enlightening effect. A typical example is release of the kuruma prawn juveniles in Lake Hamana. The Release of juvenile shrimp started in Lake Hamana as a test project to confirm the impact to the resource condition in 1978. The project needed cooperation of local fishers to implement acclimatizing rearing and impact survey, though the fishers are skeptical of the impact to the catch and they participate the project with bad glance. After 5 years of the pilot project, local fishers propose to donate 5% of their profit from the harvest of kuruma prawn as othe fund to continue the project. Through 5 years participation, fishers could have sense of responsibility and confidence to conserve their resources.

Batan Estuary is a brackish lake connected with Sibuyan Sea. The shallow shores of the lake were used to be covered with dense mangrove forests forming complicated shorelines that provide rich nurseries to aquatic organisms. Because of such productive conditions, the lake was rich in fisheries resources some 30 years ago, but mangrove forests have been extensively converted to shrimp culture ponds in the 1980s (Altamirano et al., 2010). Habitats for various living organisms including fisheries resources such as tiger shrimp were lost. The drastic changes in coastal environment combined with excessive fisheries caused collapse of estuarine resources within a few decades (Altamirano and Kurokura, 2010). Price of tiger shrimp is highest among shrimp species in the local market and the collapse of tiger shrimp resource resulted in a corresponding loss of main income source for local fishers. This decrease in income combined with changes in distribution structure (Kamiyama et al., 2015) forced fishers into operation of destructive fishing methods. In addition, shrimp culture production also suffered a collapse due to diseases in 1990s. Recently, many shrimp culture ponds that were constructed by converting coastal mangrove forest in the estuary have been left abandoned and some are naturally recovering with a succession of mangrove species. Those wasted shrimp ponds are expected to function as nurseries for coastal fish resources.

The present status of the environment and fisheries in the New-Washington-Batan Estuary is providing us an opportunity to implement a social experiment to confirm the importance of participation of local fishers

in activities such as Tsukuru-Gyogyo for enhancement of area capability in the area. The research project of “Coastal Area-capability Enhancement in Southeast Asia” has been carrying out a subproject to examine the possibility of stock enhancement operation by participation of local fishers in intermediate culture of releasing tiger shrimp juveniles for acclimatization and impact research after release. We spent nearly three years for establishment of a system for “seed release” including site selection of intermediate culture, procurement of healthy shrimp seeds, methods of intermediate culture and impact surveys. Activities included social preparation to motivate active collaboration and participation among local people, government and academe for stable implementation of “seed release” maintenance, monitoring and impact survey. This is the report of feasibility surveys for three years including baseline research of people’s consciousness in target area.