Component 6 Set-net

New challenges of set-net technology transfer in Thailand

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Since 2003, the Department of Fisheries and Southeast Asian Fisheries Development Center in collaboration with small-scale fisherman of Rayong Province have carried out the research project on "Set-Net fishing for the sustainable coastal fisheries management' at Mae Rumpheung beach, Rayong Province. Otoshi-ami, Japanese-type set-net technology was introduced through the technical assistance of Tokyo University of Marine Science and Technology (TUMSAT) by JSPS program and Himi city, Toyama prefecture by JICA-Grass root partnership program. The objectives of that project was ; a) to reduce fishing pressure on the coastal fishing ground, b) to develop common policy for large scale coastal fishing gear management, c) to protect coastal fishing ground from fishing pressure of commercial fishing gears and d) to enhance the coastal resources by the rehabilitation of coastal fishing ground around set-net construction. Rayong set-net project was also considered and selected as one of case study for the Area-capability project under the RIHN since 2012.

The results of 11 years Rayong set-net project was greatly successful, so that the small-scale fishermen developed their new way of life through the group operation for establishing the saving in both investment cost and fisheries resources.

Past challenges of technology transfer of Japanese-type set-net in Thailand

Thailand, in the past, bamboo stake trap was the popular traditional fishing gear in the Gulf of Thailand during the period from 1940 to 1970, where its target catch was among others the coastal pelagic species such as Indo-pacific mackerel Rastelliger neglectus. It is a passive and stationary fishing gear fixed on the sea beds, made of mainly bamboo and partly a palm tree.

In 1949, set-net fishing was firstly introduced to Thailand based on the technology which originated from Japan. After the 2nd World War, when people in the region had more chances to establish contact with Japan, for opportunity to be educated in Japan, so that the knowledge and experience gained were transferred to their home countries. The set-net fishing introduced to Thailand since 1949 was for the Masu-ami, and in 1953 for the Otosh-ami by Commander Sawang Chareonpol (the former Director General of the Department of Fisheries of Thailand for 1978–1983) after he graduated from Hokkaido University of Japan. Shallow water set-net, the Japanese type of Choko-ami had also been tried in 1983 at the coastal waters of Samet Island, Rayong Province. Unfortunately, the technology was not disseminated at that time, because there were still plenty of fish in Thai waters and it was very easy to go fishing by using simple fishing

methods with the aim of harvesting the coastal fisheries resources.

Recent technology transfer of Japanese-type set-net in Rayong, Thailand

The latest set-net technology transfer was promoted during the International Set-Net Fishing Summit in Himi City on 2002. With emphasis on the gear as an important coastal fisheries management tool as the community-based coastal management, the set-net fishing technology operation was initiated by Training Department of the Southeast Asian Fisheries Development Center (SEAFDEC/TD) on 2003. For the purpose to empower the coastal fishing community in the developing countries, the Japanese-type of set-net, large-scale trap net fixed in the coastal waters, was introduced as an appropriate tool to promote the cooperative works among individual small-scale fishers for aiming the optimal fishing ground use in coastal communities. The case study in Thailand is the first success story to introduce the Japanese-type of set-net in Rayong province, originally initiated by SEAFDEC/TD on 2003, with other institutional support both from Thailand and Japan. The lessons learned through the project activities on community-based set-net, are the importance of capacity and ownership building for all the related local stakeholders both for fishers and supporters, for the purpose to enhance the area capability to establish the driving force cycles toward the sustainable use of coastal fisheries resources and public awareness on coastal environment. Similar projects have been conducted in other areas such as promotion of set-net (Choko-Ami Type) for sustainable coastal fisheries management in Sriracha, Chonburi Province under the Sriracha Fisheries Research Station, Faculty of Fisheries, Kasetsart University on 2008. Set-net fishing for community-base fisheries management in Bangsaphan, Prachuapkhirikhan Province on 2011 under the responsibility of Marine Fisheries Technology Research and Development Institute, DOF Thailand.

Since the technology transfer of Japanese-type set-net at Rayong Province on 2003, the catch and marketing record has been accumulated for 11 years under the official permission on set-net research activities. Due to the termination of permission on 2014, the process to extend the permission period was requested to the group, so that the installation and operation of set-net was suspended for recent two years (2014-2015).

New challenges of set-net technology transfer in Thailand

Shallow water set-net (Choko-ami type with the size of 5×5×50 m, depth of 5 m) have been challenged in the area of Phetchaburi Her Majesty the Queen encourages 'sea farm' practice which located in Tambon Bang Kaeo, Ban Laem District, Phetchaburi Provice, Gulf of Thailand. For the purpose to study the possibility of artificial breeding of some high value species from set-net. Sea ranching of some species could be done in connection to brood stock collection and artificial breeding from set-net catch in the area of sea farm for green mussel *Perna viridis*. Juvenile of some important and economic species could be enhancing and nursing under the Her Majesty the Queen encourages 'sea farm' practices or could be developed for sustainable aquaculture in the future. In this connection, set-net have been considered as one of the most appropriate fishing gear using for collecting those mentioned species for this purpose.

Two fishing trips have been done under this project. The 1st trip for survey, installation and demonstration. The fishing ground survey was conducted by SEAFDEC/TD team at the site which has a permission for set-net experimental area covering 1 km^2, based on the suggestions and comments from the local fishers for the current direction and fish migrating route. The result from survey showed the average depth as 4.7 m with 1.5 m tidal range. Various types of boats were engaged for the installation process. Completed for installation process on 1st May 2015. The demonstration of set-net fishing operation was done on 2nd May 2015. Total of 2 boats were engaged for fishing/hauling operation, as the larger boat for observation and small boat for hauling operation by 3 project's staffs and 2 SEAFDEC staffs on board as an advisors. The

demonstration required 20 minutes. SEAFDEC team worked together along with, since the initial stage of the installation process until completion of the installation at the end. Good viewpoints, useful suggestions and comments were advised to the working team for further and future development. The 2nd trip was done during September 2015, for re-adjusting, changing and replacing the new netting panels for the chamber net with the larger size dimension of 8×25 m (original size is 5×5 m), as well as the practical training of daily gear maintenance.

More than 20 species were recorded, as economically important species such as Spanish mackerel *Scomberomorus spp.*, Short mackerel *Rastrelliger brachysoma*, Snapper *Lutjanus spp.*, Barracuda *Sphyraena spp.*, Kelee shad *Hilsa kelee*, Shrimp scad *Alepis djedaba*, Banded scad *Alepes kleinii*, Spotted scat *Scatophagus argus*, Torpedo scad *Megalaspis cordyla*, Yellowstripe Scad *Selaroides leptolepis*, Queen fish *Scombroides spp. Scomberoides sp.* Hilsa *Hilsa Ilisha sp.* Tooth anchovy *Thryssa hamiltonii*, Rabbitfishes *Siganus spp.*, Smoothbelly sardinella *Amblygaster leiogaster* including Squid *Loligo spp.*, and Bigfin reef squid *Sepioteuthis lessoniana*. The juveniles of these economic species have been collected and immediately transferred alive within 20 minutes to the hatchery station for further study. As the result from this successful case study, the Phangnga Coastal Fisheries Research and Development Center, DOF, Thailand also proposed for the similar project activities to conduct in the area of Phangnga Province, located in Andaman Sea. Then the latest of set-net technology transfer in Thailand have been challenged since October 2015.