

SPECIAL REPORT

Management of economically-important small pelagic fishes in the Southeast Asia

By Abu Talib Ahmad, Abdul Razak Latun, Mazalina Ali
SEAFDEC Marine Fishery Resources Development and Management Department (MFRDMD)



In the Southeast Asian region, two families of small pelagic fish are important components of marine pelagic ecosystems and support important pelagic fisheries. These are the family of mackerels, tunas and bonitos (Scombridae) and the family of jacks, pompanos and scads (Carangidae). These are fast-swimming schooling fish that feed voraciously on zooplankton and other small pelagic fishes as well as squid. The catch of small pelagic fish in the Southeast Asian countries was 3.773 million tons, which made up 30% of the total fisheries catch in 2010. Scads (*Decapterus* spp.) and mackerels (*Rastrelliger* spp.) are the two most important small pelagic fishes, which contributed more than 38% to the total small pelagics or 11% to the total capture production in that year. Scads are more dominant in the South China Sea, contributing up to 25% to the total small pelagic production as compared to about 15% by mackerels. On the other hand, mackerels is more dominant in the Andaman Sea contributing more than 26% to the total landings of small pelagics compared to only 12% contributed by the scads.

Study on the migration pattern of these small pelagic fishes is urgently needed as information on unit stock of this resource is still lacking. Information obtained from the study form a strong basis for the formulation of management plans for this shared stock. This is important as effective management of shared stocks requires management measures to be taken for the whole coverage area which is beyond national waters. The formulation of management plans could be achieved through the results of the implementation of regional projects shown below:

- (1) Information collection for sustainable pelagic fisheries in the South China Sea (2002-2006)
- (2) Tagging program for economically-important pelagic species in the South China Sea and Andaman Sea (2007-2012, ongoing)
- (3) Formulation of recommendations for small pelagic fish management plans in the Southeast Asian region. (2013-2017, future project)

The Current Project (on-going 2007- 2012)

The Japanese Trust Fund II project (2) on “*Tagging for economically-important pelagic species in the South China Sea and Andaman Sea*” was carried out from 2007 and will run until the end of 2012. This is a continuation of the terminated 2006 project (1) on “*Information Collection for Sustainable Pelagic Fisheries in the South China Sea*”. One of the main objectives of the project (1) was to clarify the actual status of operation and catches of purse seine fishery targeting small pelagic fishes in the South China Sea. The project also estimated the biological parameters of the main species of mackerels and scads using time-series biological data collected at selected major landing sites throughout the region. However, the project was not able to provide information for stock identification and shared stock of such pelagic fishes. Therefore, MFRDMD since 2007 coordinated with TD and eight (8) participating Member Countries, namely: Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Thailand and Vietnam to undertake fish tagging both in the South China Sea and in the Andaman Sea (2). The studied species were the major species exploited by the small pelagic fisheries, *i.e.* Indian mackerel (*Rastrelliger kanagurta*), short mackerel (*R. brachysoma*), shortfin scad (*Decapterus macrosoma*), and Japanese scad (*D. maruadsi*). The project also includes a study to genetically examine the existence of sub-populations and extent of the shared stocks by focusing on the two selected species which are the Indian mackerel and Japanese scad. The information obtained from the studies would be utilized to identify unit and shared stocks for effective management.

Objectives:

The main objective of project (2) is to ascertain the existence of sub-populations or just one panmictic population within the

species in the region based on results of the study on migration pattern and genetic study of the fish throughout its distribution area.

Activities:

In order to attain the objects of project (2), the following activities are being undertaken:

- (1) Tag and recapture study of economically-important small pelagic fishes to understand their migrating route and sub-population structures in the South China Sea and Andaman Sea; and
- (2) Genetic study to confirm on existence/absence of sub-populations of the target species in the South China Sea and Andaman Sea.

Achievements:

- (1) Four Core Expert Meetings and demonstration of tagging experiment conducted;
- (2) Implementation of on-site training for tagging implementation in eight Member Countries;
- (3) Formulation of Standard Operating Procedures (SOP) for tagging small pelagic fishes in the region;
- (4) Preparation and dissemination of posters in eight native languages to publicize the project for better recovery of tagged fishes;
- (5) Promotion of the database software in Member Countries and improvement for tagging data handling;
- (6) Implementation of tagging activities at selected study sites in each Member Country where 32,345 fishes were tagged in the South China Sea and 15,770 in the Andaman Sea;
- (7) Some amount of tagged fish were recovered, *i.e.* 356 in the South China Sea and 161 in the Andaman Sea;
- (8) Mitochondrial genetic information of selected small pelagic fishes; and
- (9) Preparation for publication of terminal report.



(Left) Staff of DOF Myanmar tagging the Indian mackerel caught by purse seine in Myanmar waters; (Right) Former Director of Fisheries Malaysia Dató Junaidi Che Ayub and Former MFRDMD Deputy Chief Dr. Osamu Abe showing the tagging project's poster that promises reward for the return of recaptured tagged fish at the 2008 press conference in Kuala Lumpur, Malaysia



Group discussion to prioritize issues on small pelagic fisheries in the Andaman Sea at the July 2012 Core Expert Meeting

Review of project:

Tagging Activities:

In the South China Sea area, 32,345 fishes were tagged which is equivalent to 85% of the number of fishes targeted to be tagged. The highest number of tagged species was *Decapterus maruadsi* at 14,579 or 45% from the total fish tagged in the area. *Rastrelliger kanagartha*, the second most tagged species (7,665 or 24%) and the remaining 31% of the tagged fishes were *R. brachysoma* (5,220 tails, 17%) and *D. macrosoma* (4,881 tails, 14%). In the Andaman Sea area, 93% or 12,611 mackerels were tagged against the targeted 13,600 fishes. Of this, 6,636 tails were *Rastrelliger kanagartha* and 5,975 tails *R. brachysoma*. In terms of recovery of the released tagged fish, the South China Sea area recorded an overall recovery rate of 1.07% and the Andaman Sea at 1.02%.

Genetic Study:

Analysis on the genetic sequence of all samples received from the Member Countries is in progress, and the comprehensive results should be ready by the end of 2012.

Future activities

The future activities (project (3)) will focus on the formulation of recommendations for small pelagic fish management plans in the Southeast Asia region. It will also aim to develop monitoring tools for pelagic fishery resources in the region.

It is envisioned that project (3) will carry out:

- Activity 1: Information compilation and analysis for sustainable pelagic fisheries in the South China Sea and Andaman Sea;
- Activity 2: Comparison of existing systems for management of pelagic fishery resources; and
- Activity 3: Formulation of recommendation for management of small pelagic fish resources in the Southeast Asian region.

