

Establishment and Management of Crab Bank System: An Experience in Kuala Teriang, Pulau Langkawi

Mr. Krishnasamy A/L Arunasalam
Assistant Fisheries Officer
Department of Fisheries Malaysia

Introduction

The Integrated Coastal Resources Management in Pulau Langkawi (ICRM-PL), Malaysia was implemented under a collaborative project framework between SEAFDEC through the Training Department (SEAFDEC/TD) and Department of Fisheries (DOF) Malaysia starting in August 2003 after successful implementation of the project in Pathew District, Chumphon Province, Thailand then known as the Locally Based Fisheries Management (LCBRM-PD).

The Malaysian project site which is located in a fishing village in Kuala Teriang, Pulau Langkawi, had previously carried out CBRM-related activities through the formation of a Fishermen Economic Group or *KEN* since 2001 emphasizing more on economic activities. *KEN* was later renamed in 2007 as the Fisheries Resources Management Community (KPSP) in line with the activities that give more focus on responsible fisheries management and with greater emphasis on ecosystem and environmental aspects.

Under the collaborative involvement of SEAFDEC/TD, many scheduled programs and activities were carried out with the assistance and participation from various agencies mainly by the DOF Malaysia. Among the activities and programs initiated and carried out were: Fishing Gear Technology, Biological Survey, Statistics, Outboard Engine Repairs Workshop, Fiberglass Fishing Boat Repair and Maintenance, Simple Book-Keeping Methodologies, Installation of FEDs and Working Visits to project sites in Thailand. One of the activities which interest the KPSP was the Crab Bank project after a study tour for the then *KEN* members in Kuala Teriang to the ICRM Project site in Pathew District, Chumphon Province, Thailand conducted in April 2005.

Background of Crab Bank System

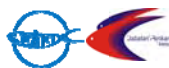
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The initiative of preserving natural crab resources, which has been declining over the years, was initiated at the ICRM-PD project in Pathew District, Chumphon Province, Thailand since year 2002. The necessary steps involved restocking the gravid crabs caught by the fishermen in spawning cages. This project was initiated under the supervision of an NGO, the Thai Environmental Institute and subsequently handed over to the collaborative project ICRM-PD of SEAFDEC and DOF Thailand in August 2003. Since the main fishing gear being operated was the collapsible crab trap, further studies and steps were taken to reduce the juvenile crabs being caught by enlarging the mesh size of the trap bottom from 1.2 to 2.5 inches so that the smaller ones could escape while the trap is being hauled. Hence the catch data collected from year 2002 to 2006 showed an increase in catch landings and marked crabs sighted, also the carapace length of female and male crabs caught varied (**Table 4**).

Table 4. Record of swimming crab catch in Pathew District, Chumphon Province, Thailand

Data: CMDEC 2007

year	Average carapace length (cm)		Total catch(Ton / year)
	Male	Female	
2002	8.60	8.97	–
2003	9.17	9.56	72.1
2004	9.55	10.01	87.6
2005	10.15	10.34	112.6
2006	10.39	10.62	142.6



As part of the ongoing activities of the Pakklong Fishermen Group (PFG) in Pathew District, Chumphon Province, Thailand, this particular activity on crab resources rehabilitation was specifically undertaken by the Crab Trap Fishing Sub-Group as one of their main activities in 2004. The process of releasing gravid crab and stocking in cages takes about one month or more until the eggs are hatched. However, some problems were encountered along the way such as loss of stocks by theft, high mortality rate, high feeding costs, and laborious work in feeding and stocking. In 2006, a study tour to Japan was conducted for the Chairman of PFG, and a Fisheries Extension Officer to inspect and observe the crab bank scheme practices successfully conducted for the past 20 years in Hyogo Prefecture of Japan.

This method and approach in Japan impressed the participants on crab resource management and thus, a trial using the Japanese system was introduced upon their arrival in Thailand by Crab Bank Sub-Group of the PFG. The Japanese system seemed to be more simple and practical as it was found to be very applicable in the project area. After the gravid crabs with live-bearing eggs are caught these are marked **X** on the carapace after being cleaned, they are released back to the sea for spawning. The approach was found easy which could be practiced voluntarily among the members.

Establishment of Crab Bank in Kuala Teriang, Langawi, Kedah, Malaysia

There are two main common species of swimming crabs (blue and red) found in the waters of Malaysia, having high demand as delicacies and fetching reasonable high prices at all levels in the market chain. Thus, improved fishing efficiency and efforts by modern technologies available to the fishing communities to increase the daily catches became known phenomenon. The total catch landings and retail values of the two types of crabs from 2004 to 2006 in Malaysia showed significant contribution to the crab fishing industry of the country (**Table 5**).

Table 5. Estimated total crab landings in Malaysia by year and retail prices

SPECIES/YEAR	2004	2005	2006
Blue Swimming Crabs			
Landings (mt)	3,162.00	3,786.00	3,486.00
Retail price M\$/kg	RM 12.00	RM 12.00	RM 12.00
Red Swimming Crabs			
Landings (mt)	9,350.00	5,959.00	5,813.00
Retail price M\$/kg	RM 9.50	RM 9.00	RM 10.00

Source: DOF Malaysia

The interest on crab bank system was thus mooted, gained recognition and obtained popularity among the then KEN members. The serious commitment and responsibility of the local fishermen as shown by the Crab Bank Sub Group in Pathew District, on the steps taken to conserve the crab resources by the stakeholders was an inspiration for the KEN members.

Meanwhile the survey results carried out by SEAFDEC/TD in Langkawi from April to December 2004, showed an estimated 3,494 kg of the swimming crabs landed predominately by gill netters which suggested the potential of the resources which could be tapped. Steps were initiated by the then KEN group in Kuala Teriang to obtain a suitable site from the Langkawi Development Authority (LADA) to introduce the cage system. Unfortunately for more than a year they were not successful in obtaining any site for this purpose due to some unavoidable circumstances.

In the meantime, it was suggested that the Japanese model which was successfully introduced in Chumphon, Thailand in 2006/2007 was initiated. Since this method does not require any cages, it is cost effective but it needs the voluntary commitment by the members specifically in releasing the gravid crabs caught back to the sea after marking the carapace. On 22 March 2007, a decision was finalized to introduce the Japanese crab bank system in Kuala Teriang. Thus, a total of 300 sets of rectangular collapsible crab traps were donated by SEAFDEC in April 2007 to the members, which could be used on a trial basis by the participating members.

A practical workshop was organized on Crab Bank System for the crab fishers by SEAFDEC/TD and DOF Malaysia on 13 June 2007. Attended by 23 participants, the Workshop aimed to disseminate the concept, procedures, methodologies and recording in logbooks as well as the appropriate way to release the crabs back to the sea. Hence, the Crab Bank Sub-group was organized and a signboard to promote the activities was made by SEAFDEC/TD.



Marking the crab carapace (left) and training on logbook entry (right)

Objectives

The Crab Bank system was introduced to the FRMC (KPS) Kuala Teriang, Langkawi for the Crab Trap and Gill Net Fishers in order to achieve and fulfill the following objectives:

- i. To introduce to the crab fishers (stakeholders) the voluntary scheme of releasing gravid crabs caught alive back to the sea after marking the carapace;
- ii. To assist in preserving and sustaining the crab resources as well as minimizing their extinction by taking necessary steps on resource utilization at an optimum level;
- iii. To encourage and impart awareness to the fishing communities and the public regarding the steps taken to conserve, protect and rehabilitate the crab resources;
- iv. To promote teamwork, cooperation and responsibilities towards the importance of crab resources conservation to fishing industry in Malaysia; and
- v. To recognize the FRMC (KPS) as the front liner and initiator of the management and conservation of crab resources to the fishing communities and industries.

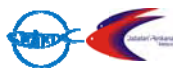
During the workshop, the Crab Fishers' agreed to abide by the conditions on recording the number of every gravid crab caught in a logbook provided to each member. Follow up and counterchecking would be done by the District Fisheries Extension Officer. A token as form of incentive, was promised to the participants recording the highest catch and release by the end of December 2007.

Tools and Materials

The crab trap and gill net fishers of FRMC (KPS) Kuala Teriang are the participating members and the necessary materials needed included a special marker pen, log book to record the catches, a towel to clean the carapace, and possibly a camera to record while marking and releasing the gravid crabs. In December 2007, the logbooks were inspected and it was observed that only three (3) participants could provide the necessary figures (**Table 6**).

Table 6. Number of crabs released by KPS Kuala Teriang

PERIOD	PARTICIPANT	QUANTITY (pcs)	FROM 4.6.08 - 15.9.08 (pcs)
From 0.06.2007 To 03.06.2008	No.1	140	(30)
	No.2	63	(25)
	No. 3	30	(20)
Total	3	233	(75)



From the total of 24 participants, many did not record for some reasons that included loss of their log books although according to some members, they released gravid crabs but never recorded. Nevertheless, after the introduction of the system, the opinion received from the fishers was that the crab landings have since then increased slightly and the system appeared to be more practical, applicable and acceptable for implementation.

Rewards and Appreciation

As a form of appreciation towards the commitment shown, and in order this scheme will be continued for the benefit of the crab fishers and conserve the crab resources, prizes were given out for the three (3) participants after auditing. It was understood that the participation of the members was not active and they seemed not willing to use traps because the gears either drifted or were stolen. A new group consisting of 10 members using traps and gill-nets volunteered to take part in the project.



Prize for the Crab Bank Winner (left), the Crab Bank members (center), and marked crab for releasing back to the sea (right)

Future Programs on Crab Bank

The Department of Fisheries Malaysia will continue to promote this program under the ongoing its Fisheries Extension activities through dialogues, study tours, short-term training sessions, and onsite demonstrations, to the fishing communities especially the crab fishers. The DOF will also conduct monitoring, collection and analysis of the catch data with the collaboration of Fisheries Research Institutes of the country. Initiatives have been taken to produce leaflets and pamphlets on Crab Bank system to promote and conduct awareness programs to the stakeholders and the public on the conservation plans for the crab resources. Such activities will be evaluated from time to time in accordance to the needs and the convenience of the stakeholders and the responsible authorities, to make such approaches acceptable and their implementation successful.

The DOF is identifying other suitable FRMC (KPSA) groups or individuals especially the crab fishers to introduce this project as part of the conservation effort. Rewards and appreciation to the crab fishers in the form of certificates and prizes are also being considered as form of encouragement by the DOF. This could also serve as a platform for the involvement of dignitaries and corporate bodies at the local level, which will ultimately benefit the communities.

Conclusion

Along with the experience from Thailand and Japan, it has been observed that the implementation of Crab Bank scheme which is simple and costs effective, has the potential towards the efforts of conservation and protection of the dwindling crab resources. It could also create awareness and responsibility among the fishers in contributing to the enhancement of the resources, through voluntarily participation by the stakeholders for the benefit of the fishing industry.

References

- Department of Fisheries Malaysia. 2006. Annual Fisheries Statistics: 2004 to 2006
- Ibrahim Salleh. 2008. Final Project Evaluation of the ICRM
- Sei Etoh. 2006. Optional approaches for Crab Bank Scheme, 27 May 2006 (SEAFDEC/TD)
- Sei Etoh. 2003. Introduction of the Japanese Model Crab-Bank to a Fishing Community Thailand (SEAFDEC/TD)