

## CRAB BANK

### *A tool for locally-based sustainable resource management and livelihood development*

#### **1. Introduction**

Crab Bank is an activity that is not solely concerned with resource conservation per se but with livelihood development where people are at the center. Crab Bank activity is an integrated approach to coastal and wetlands management as such. It is closely linked to livelihood development of people to become sustainable.

Crab catch has been steadily decreasing over the years in Coastal Cambodia due to overfishing. Increasing population and number of people engaged in fishing, and the use of modern fishing tools such as ironed-frame crab trap has contributed to increased exploitation and declining resources. To address this issue, local fishermen in Kampot and Kep in Cambodia established Crab Banks after learning from the experiences in Thailand. The Wetlands Alliance Program and CORIN has provided the much-needed support to help the local fishermen who are members of local Community Fisheries Group (CFi) in the establishment of crab banks including the setting up of mechanisms, use of tools and provision of technical assistance. The idea of a crab bank is such that the gravid female could be kept in cages for a few days until they spawn. After releasing the eggs, they are fattened and sold to the market.

Initially, crab bank operation was managed by the concerned CFi wherein gravid female crabs were donated by a few CFi members. However, this approach was unsustainable in the sense that local fishermen were not willing to donate the gravid female crab that they catch daily without any fee. In addition, conflicting interests among the local fishermen made operation of the crab bank difficult to manage and sustain. With this experience, CORIN-Asia facilitated and backstopped the Fisheries Administration cantonment and a number of fisheries communities in Kampot province, Coastal Cambodia to establish and manage the crab bank by setting up clear mechanism and tools in the operation and management. This increased awareness among CFi members and local community, drew their interest and increased participation in the crab bank management. With the increased participation of local fishermen, rehabilitation and sustainable management of coastal and marine resources, and livelihood development of the local communities is not far-fetched. Increased participation is in line with the goal and principles of integrated coastal zone management ICZM. Thus, this activity is an effective tool towards ICZM practice in Coastal Cambodia and maybe adopted elsewhere.

#### **2. The Process of Crab Bank Establishment in Kampot, Coastal Cambodia**

Initially, Crab Bank was piloted in one of Community Fisheries (CFi) area in Kampot under the management of Fisheries Administration Cantonment.

At the initial stages of the Crab Bank establishment, a cage was set up by the CFi in Kep Thmei. This was followed by a campaign to raise awareness of local fishermen about the need to rehabilitate coastal resources in the area especially crab resources, of which the province is famous of. Few members participated during these initial stages. Voluntary members deposited gravid female catch everyday in the Crab Bank until eggs were released. Afterwhich, the female crab is fattened for about two more weeks before finally being sold to the market. These initial approach gained little support from the CFi members because of skepticism about the effectiveness of the initiative. In addition, local fishermen were not very concerned about rehabilitation of crab resources. As long as they are able to

catch something, it was enough for them. Moreover, most of the local fishermen were more concerned about the loss of crab weight after egg release, which leads to the loss of crab value and reduced price. Despite these constraints, the Crab Bank pilot activity was continued with initial support from WAP and CORIN. CFi committee members participated with some incentives.

After the initial Crab Bank pilot, one more Crab Bank was established by CFi group in Kdat, Kampot province with clear system, mechanism, and tool to support the implementation and management to achieve the following objectives: i) to rehabilitate the crab resources in coastal area; ii) to promote participation of relevant stakeholders, particularly local people in community based resource management; iii) to promote conservation of the coastal ecosystem and resources; iv) to establish a Locally-Initiated Fund (LIF) for local livelihood development and operation of CFi; and v) to build capacity of local communities to respond to changes. Related activities include: organizing a steering committee within the community, creation of by-laws and regulations for membership and determining suitability for crab production. Likewise, a local initiative fund was established as a tool to support crab bank activities such as fund management, benefit sharing and ensuring sustainability of their livelihood.

The process of crab bank establishment is very much dependent on the involvement and collaboration of various local government offices and local authorities. The Coastal Cambodia Local Alliance (CCLA) partners play a very important role during the whole process of establishment as well as in the continued operation and management. They provided support in the areas of awareness-raising, setting up committee to manage crab bank, establishment of LIF, training on LIF management skill, setting up of regulation &, by-laws, and in the implementation. In addition, the involvement and role of middlemen are very important to the success of crab bank. This sector was also educated because at the initial stages, they were not interested to join the campaign to donate gravid female to the crab bank.



Building the crab bank



Information campaign about Crab Bank in Kampot Province



Recording the number of donated female crab as in a "savings account" for every fishermen



Depositing the gravid crabs in the bank



Harvesting crabs in the bank after spawning



Selling, recording income and putting part of the money back to LIF

Figure 1: Crab Bank establishment in Kampot, Coastal Cambodia

### 3. Role of LIF in Community-based resource management and livelihood development

Locally-initiated Fund (LIF) is mechanism and an effective tool to support Crab Bank activity especially in attracting interest and participation of more CFI members. It is an effective mechanism and tool in supporting livelihood development and improvement of local fishermen. The LIF is being managed by the CFI and Commune Council based on a legal structure and established regulation and by-laws to ensure the stability and sustainability of the activity. Fishermen donate gravid female to the crab bank as a contribution to the group's objective of resource conservation and stock enhancement. Whatever gravid female they donate is counted as a saving and the amount of gravid female crabs are being recorded, which is then used as a criterion to determine the amount of loan that they can avail from the LIF. The more gravid female deposited, the higher the loan amount they can avail of. Loan repayment is based on agreed norms. The collected gravid female are stocked in crab bank cages until it releases the egg with daily feeding to fatten to be able to command a higher price. Part of the income from selling these fattened crabs is being used for crab bank operation and maintenance while some are deposited back to the LIF thus, increasing available amount for lending to Crab Bank members.

### 4. Additional mechanism set up to support crab bank

After the crab bank was established, a number of additional mechanisms were set up through a series of consultation meetings. The established mechanism includes among others guidelines for membership, roles and responsibilities of being a member, operation and management system, monthly meeting among crab bank committee and other relevant stakeholders to review and evaluate the effectiveness of crab bank management and implementation, and to develop further strategies to overcome whatever issues and constraints there are. Currently, the various crab bank committees in Kampot, are being supported by the Coastal Cambodia Local Alliance (CCLA), an alliance of provincial government agencies in the Coastal Cambodia, and Coastal Resources Institute- Asia (CORIN-Asia), a regional partner of the Wetlands Alliance Program (WAP). The Crab Bank Committees are engaged in a process of dialogue with local authorities and policies makers regarding the need to formulate more practical policies to support and ensure the crab bank operation and mechanism for management of crab bank in the future by allocating provincial and communal budgets to support different institution as well as CFI committee involved in this crab bank in the long term.

### 5. Expanding the Crab Bank Model in Kampot to other areas

The success of the two crab banks in Kampot established at the beginning of 2008 attracted the attention and support from the national and provincial institutions, International Organizations and NGOs, who have the mandate to work in the coastal area of Cambodia.



Visit of Koh Kong Fisheries officers and CFI to Crab bank in Kampot



Signboard to raise awareness to stop trading and consumption of gravid female crabs



Fisheries Officers regularly follow up and support crab bank operation of CFI

Figure 2: Crab Bank activities

The positive results of the crab bank operation in Kampot brought the Director General of Fisheries Administration, Nao Thouk and other Provincial Fisheries Cantonments to visit Crab Bank in Kampot. As a result, they requested for duplication of such crab bank approach in Kampot to other coastal areas in Kep, Shihanoukville and Koh Kong provinces.

From the year 2008 until now, there are 16 crab banks established along the coasts of Cambodia in which 3 crab banks in Kampot (2 supported by CORIN-Asia under WAP), 1 crab bank in Kep supported by CORIN-Asia under WAP, 6 crab banks in Sihanouk ville, 6 crab banks in Koh Kong (1 supported by CORIN-Asia under WAP).

## 6. Results

The Crab Bank has become a regular place for fishermen to bring their gravid (bearing eggs outside the carapace) female crab catch to store in the cage for a certain time until the eggs are released from the crab carapace into the sea. The fishermen knows the stage by the color of the eggs: the yellow color egg is released within 7-8 days, the brownish egg need 4-6 days before it is released, and the dark gray egg takes only 1-3 days. After releasing eggs, the female crabs are still kept for one to two week for fattening so that it can command higher market price when sold. Crab bank is seen as an important activity to strengthen awareness of local communities on sustainable utilization of coastal and marine resources and contribute to food security, resources conservation and poverty reduction.

The ecological observation done by CFi during three month practice indicated the increase of juvenile crabs and catch after the Crab Banks started operation in 2008.

### 6.1 Resource rehabilitation and livelihood development

The crab bank activity initiated by CORIN- Asia was welcomed by the local fishermen as it contributed to an increase of juvenile crabs above the seagrass bed where gravid females release the eggs. According to these fishermen, crab bank has led them to harvest more crabs and can command better prices compared to the period before the crab bank was established. This has encouraged communities to work more for the crab bank as it contributed to an improvement of their livelihood and at the same time minimizing unsustainable fishing practices.

Currently there are more than 100 households from 4 CFi under WAP support, at least 50 fishermen who are poor and in need of loan for fishing operation and maintenance improved their livelihoods after being involved in Crab bank. Most of them have been in debt with crab middlemen who dictate the price of their catch with little chance to improve their income. At present, some of these vulnerable groups are actively participating in the Crab Bank activities. As such, they have gained benefits from the crab bank including the interest-free loan, reasonable selling price of crab, and increase of catch as result of crab conservation, among others. It is expected that the LIF will also expand and increase in terms of capitalization as more members participate. In the long run, the growing fund will help to support the local community to implement their own plan.

Based on the report of crab bank evaluation conducted in June 2009 along the coastal provinces by a team from national FiA, there is an increase in juvenile crabs and crab caught in terms of size and amount per day through different season of the year comparing to the statistics before crab bank was established. Previous catch before was only 4-5 kg/day/boat with average size of 10-12 crabs/kg. At present, they catch 15-20 kg/day/boat with an average size of only 7-8 crabs/kg. A number of other indicators are also observed such as: (i) increase in the local awareness of the importance of crab bank, (ii) local people are more willing to participate in the effort to rehabilitate crab resources and other fisheries conservation activities, (iii) local people are more cooperative in community activities, (iv)



capacities of community committees and local authorities in terms of resources and fund management skills as well as in communication and dialogue improved, and (v) improved livelihood of fishermen as income from fishing increased through better catch and higher price of product and lower interest payment for borrowed money.

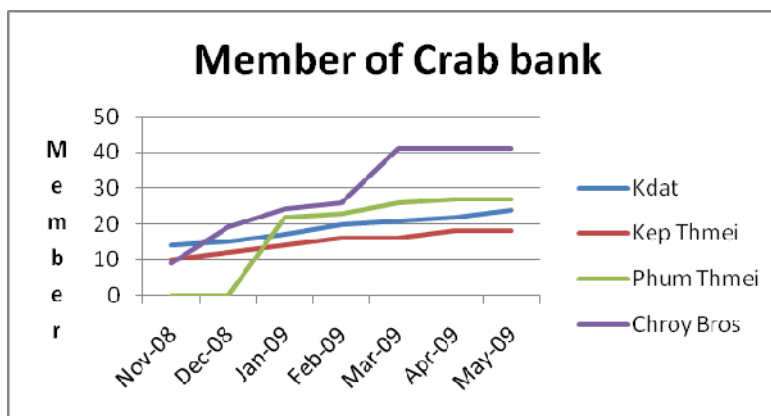


Figure 3. Membership of crab banks supported by WAP

Table 1: Member of crab bank and number of gravid female crabs contributed by local fishermen monthly

Date	Kdat		Kep Thmei		Phum Thmei		Chroy Bros	
	Member	No. Crab	Member	No. Crab	Member	No. Crab	Member	No. Crab
Nov-2008	14	73	10	94	0	0	9	145
Dec-2008	15	387	12	180	0	187	19	300
Jan-2009	17	142	14	177	22	841	24	1323
Feb-2009	21	169	16	257	23	1070	26	1548
Mar-2009	20	301	16	135	26	544	41	403
Apr-2009	22	142	18	210	27	446	41	*
May-2009	24	155	18	210	27	402	41	*

Note: The number of crab donated is dependent on the season. Fishermen would give more if they can catch more gravid female. If they fail to catch gravid female, they have to donate their normal female crab instead to fulfill the loan condition.

\* From April to July, the fishermen in Chroy Bros do not go for swimming crab fishing due to strong wave and rain. They move to collecting mud crabs in mangrove area instead. The crab bank in Chroy Bros starts activity again after August.

## 6.2 Notable results of crab bank in terms of policy support

The crab bank activity in Kampot was welcomed by the local fishermen as it contributed to the increase of juvenile crabs in the area. It also served as a tool to mobilize the community towards resource conservation. The establishment of LIF supported its development as well as attracted policy support. This activity is in line with the efforts of the technical unit of Fisheries Administration and policy-makers in creating tools to support fisheries resource management and contribute to poverty reduction. It also supports the achievement of goals of the Royal Government of Cambodia.

A notable impact of this activity is the recognition of the Fisheries Director General and the Minister of Agriculture, Forestry and Fisheries (MAFF) as they visited the crab bank in Kampot. The crab bank was also shown on a TV program (Bayon TV) called "One Corner of Idea" where they highlighted the

success of this activity in term of restoring the fisheries resources through involvement of local communities and NGOs to support government effort.



Figure 4a: H.E Nao Thouk, Director General of Fisheries Administration visited Crab Bank in Kampot



Figure 4b: H.E Chan Sarun, the Minister of Agriculture, Forestry and Fisheries visited the crab bank in Kampot

The result of crab bank in Kampot was also acknowledged by relevant academic institution. In addition, this Crab Bank initiative was picked up by University debate program on National TV called “Forum for Agriculture Understanding”, which involved several relevant universities such as Royal University of Agriculture, Royal University of Phnom Penh, School of Agriculture Prek Leap, among others. Many of the students who joined the debate went to different relevant government agencies, NGOs, particularly CFi committee to collect information for the debate. The CFi leader in Kampot who was actively involved in the establishment and management of the Crab Bank was invited to present the result of the Crab Bank on the TV during debate. This resulted to a sense of pride and accomplishment for the local people in Coastal Cambodia.

### 6.3 Women empowerment

Being aware of the important role of women in fisheries resources management, the Wetlands Alliance has encouraged participation of women in all its activities. As such, women were involved in Crab Bank activities from planning, to implementation and monitoring. Currently, at least 2 members out of the 5 members of the Crab Bank Committee are women, who are given the responsibility to determine eligible beneficiaries for the loan, keeps record of daily transactions and activities, negotiate and mediates during conflict resolutions and take care of loan collection. This involvement encouraged other women to get involved, gave them a sense of pride of being important and local community has given them an important role in local fisheries resources management like never before.

### 6.4 Changed attitude of local people

In 2009, after one year of crab bank operation in Coastal Cambodia supported by WAP, there is a progressive change of attitude among the local people participating in community-based fisheries resource management. Several fishermen who are members of the Crab Bank group still continue to donate gravid female crab although they stop getting loan. Recently, the biggest middleman in Kampot who initially refused to participate has changed attitude toward crab bank involvement and is now donating monthly the gravid female crabs to the crab bank. The middleman even now considers cooperating with the crab bank committee by providing gravid female crabs bought from fishermen daily to store in crab bank cage until they have spawned.

## 6.5 Lessons learned

Crab bank plays a very important role in fisheries resource management and livelihood development. It greatly contributed to the building of trust among local community as they are now more actively participating in CFi activities, trust and confidence between local people and government offices also increased. Communication and support by government offices to communities became more open. Capacities of local communities in resource management and livelihood development, technical skills, communication skills and networking and building partnership and cooperation among different stakeholders have become notable.

The LIF is recognized as a necessary tool to support crab bank establishment and operation, as it demonstrated the immediate benefit of participation to local people while taking a gradual step by step process to build awareness, skills and capacities, and develop livelihood of local communities. It is good example of how a tool to support sustainable management of resource and livelihood development at local level can be utilized. The LIF also provided a mechanism of implementation that guided operation and management. It helped in setting up the system of Crab Bank operation and management. Because of this established mechanism, it is easier to project it to other areas as there are existing guidelines and clear approach to the process of establishment from planning to implementation and monitoring.

It is important to involve women in fisheries resources management because they have the inherent capacity to become good managers, facilitators and negotiators.

Finally, the process of Crab Bank establishment, i.e LIF, training, backstopping, dialogue and consultation are necessary part of the mechanism. Although a set of established guidelines has been put in place, there is a need to have flexibility built into the process. This enables the process to be adaptable with local context and be able to align with policies and plan of local and national government while clearly addressing local needs and demands. This whole process need to involve different stakeholders from the very beginning and continuing, i.e consultation, planning, decision making, implementation, monitoring and evaluation. The sense of ownership and responsibility, the commitment of the various stakeholders, especially of the local communities are key to the success in sustainable resource management and livelihood development at local level.