



**Regional Fisheries Livelihoods Programme
for South and Southeast Asia (RFLP)**

Case study

Using crab banks to enhance resource management and livelihoods in Cambodian coastal communities

Overview



As part of its contribution to enhance fisheries resources in Cambodia, the Regional Fisheries Livelihoods Programme (RFLP) has helped four community fisheries (CFi) to strengthen and operate a crab bank system. Crab banks have been promoted and supported by the Fisheries Administration (FiA) in Cambodia as a promising approach for encouraging sustainable harvesting of wild crabs and creating incentives for local fishers to work collaboratively with the CFi.

This case study examines the process of crab bank operation and the contribution of crab banks to improved fisheries resource management. It also provides recommendations to enhance the sustainability of crab bank operation.

Key lessons learned

- RFLP field experience has indicated that there will be an increase in crab catch rates when crab banks are implemented in conjunction with other resource management tools (i.e. regular patrolling, and joint management of inshore fishing areas by both CFis and FiA staff).
- Strong commitment of group leaders and members is vital to ensure the sustainability of crab bank activities.
- The crab bank scheme can be operated successfully, but the likelihood of long-term sustainability is largely determined by equitable sharing of benefits and transparent management.
- The limited amount of loan capital generated by the crab bank remains a barrier to attracting more members to participate in the system. The start-up support to crab banks should be increased to attract sufficient group members under the credit scheme component to make the scheme economically sustainable.

Context

Rising demand for blue swimming crab in the markets of Southeast Asia has driven fishers to over-exploit resources. Fishers report that crab sizes and catch volumes are declining and they have realized that the resources are under threat. Governments in the region are seriously concerned about the state of blue swimming crab stocks, however, management measures to limit fishing pressure to date have been ineffective. The crab bank system may be the solution.

The crab bank system has been promoted as a tool by SEAFDEC, JICA, FiA and RFLP to promote stock enhancement and the sustainable management of crab resources. Four different crab bank models have been piloted. These include: i) the Japanese model where gravid crabs are marked and released into the sea, ii) the donation model where crabs are donated to a crab bank, iii) the purchase model where crabs are bought and then sold to the market after being held until they release their larvae, and, iv) the loan/credit system where fishers can borrow money from the crab bank and they return gravid crabs as monthly interest based on the amount of money they have borrowed.

Realizing the potential crab banks offer to enhance blue swimming crab resources, the Fisheries Administration of the Ministry of Agriculture, Forestry and Fisheries (MAFF) first began to promote the system in Cambodia in 2007. Since then, crab banks have been established in several community fisheries with support from international donors and NGOs. At least 19 crab bank projects have been operated along the coast of Cambodia since late 2007.

The initiative

Crab bank operation in Cambodia is a community-based undertaking and has been used as a tool for stock enhancement by

keeping gravid (carrying fertilized eggs) female crabs alive in cages for about a week until they release their larvae into the water. This means the female crabs breed before being sold to markets.



RFLP's support to the crab bank process is as described below:

- Organize the Crab Bank Group (CBG) under the Community Fisheries and encourage crab fishers to join the scheme as members;
- Develop internal CBG rules to manage the crab bank scheme;
- Purchase gravid female crabs and hold them in a cage until they have released their larvae;
- Sell the crabs after spawning;
- Income from crab sales is used for cage maintenance and crab feed costs;
- Any remaining money is saved as a revolving fund which is used as a mini-credit scheme;
- The mini-credit scheme operates under the internal rules of the CBG as follows:
 - Members wanting to borrow money must submit a request letter to the CBG committee;
 - Members who need to borrow money urgently can get a loan following CBG committee approval;

- The borrower will sign a credit agreement with the CBG which is witnessed by the commune council;
- The borrower shall return the money in accordance with the agreement;
- Interest will not be charged, but each borrower has an obligation to contribute a set number of gravid crabs per month based on the amount of money borrowed;
- The money borrowed from the CBG must be returned on a monthly repayment basis; and,
- If a borrower fails to repay their loan, he or she will face action by the CBG committee.

At the specific request of the FiA Director General, RFLP supported the establishment of three crab bank groups (namely CFi Chang Hoan, Kampot province, CFi Chroy Svay, Koh Kong province and CFi Tumnup Rolork, Preah Sihanouk province), to strengthen CFi fisheries management and income generation activities in 2011. Although the groups already existed, at the time they did not have formal rules and regulations approved by the commune chiefs. RFLP worked with FiA to get such approval and to restructure the groups.

In 2011, a total of 708 kg of gravid female crabs were stocked into holding cages and allowed to release their larvae (see Table 1). In 2012, three more crab bank groups were established in CFi Trapaing Ropov, Kampot; CFi Thmor Sor, Koh Kong; and CFi Tumnup Rolok, Preah Sihanouk). A total of 518 kg of crabs were held in cages until they had released their larvae and thereafter the remaining living crabs were sold (see Table 1). The money generated was then used as a revolving credit scheme.

Table 1: Number of gravid crab released by RFLP and by revolving funds in supported CFis

Name of CFi	Number of berried crabs released through RFLP budget	Number of berried crabs released through revolving fund
Tumnup Rolork, SHV: Site I	1,728	1,895
Tumnup Rolork, SHV: Site II	1,558	174
Trapaing Ropov, Kampot	1,649	170
Chang Hoan, Kampot	1,784	950
Chroy Svay, Koh Kong	1,780	130
Thmor Sor, Koh Kong	1,632	60
Total	10,131	3,379

Impacts/Results

Positive impacts of the crab bank activities have included: increased community participation in CFi activities, access to credit via the loan system, improved and strengthened CFi management structure and increased crab catches.

Increased catch

While no scientific research was conducted to prove that crab stocks have increased; anecdotal feedback from crab fishers who participated in focus group discussions indicated that after the implementation of crab banks, blue swimming crab catch volumes and average size had increased. In addition, crab fishers reported seeing more juvenile crabs than usual when out fishing.



In addition, besides crab bank members, other fishers had also perceived that crab numbers were increasing as a result of the implementation of crab bank scheme. It was believed that the main reason for this was holding the gravid female crabs long enough to release their larvae.

Mr. Hem Chheng Pa, crab bank committee member in CFI Tumnuh Rolok, said that, "Before the crab bank existed, fishers sold the gravid crabs to the landing site owners as soon as they reached the shore, so they did not release their young. However, since we introduced the crab bank system into the community, people have started to realize its benefits both for livelihoods improvement and crab stock enhancement."

Access to credit via a loan system

The establishment of a revolving fund for a credit scheme has helped CFI members to reduce their reliance on middle-traders in the village, who often charged very high interest rates.

In CFI Trapaing Ropov, Kampot, four members borrowed money from the crab bank to purchase or to fix their fishing gear (i.e. crab traps and crab nets). One of them was Mrs. Sous Mean.

She stated that "I borrowed 300,000 Riels (US\$ 75) from the crab bank and used that money to purchase crab nets. It is much easier to borrow from the crab bank as I only need to register as a crab bank member and then return gravid crabs as interest. The interest will go back to the community and I do not have to worry about paying high interest rates like before when I borrowed from middle-traders."

Improved crab bank management structure

The operation of crab banks in each CFI varies according to the management committees. However, RFLP has helped to ensure that each group has an approved set of internal rules and regulations recognized by the commune chief.

The crab bank operations in CFI Tumnuh Rolok and CFI Chang Hoan have been successful as all members fully understand the process and shared a mutual interest to increase the next generation of crab stocks, while also earning interest from the crab bank credit funds and having access to credit at low interest rates. Clear recording of all transactions ensured transparency and gave all group confidence in the scheme.

In CFI Trapaing Ropov, Kampot, RFLP worked with a crab bank scheme established by UNDP in 2010. RFLP supported the construction of a new crab holding cage and the registration of 12 new members who drafted and approved by-laws and regulations. As a pre-requisite for RFLP support for cage construction the new crab bank members released 178 kg of gravid female crabs as their contribution to the activity. After the crabs had released their larvae the committee members sold the crabs which generated US\$ 520 for the revolving credit fund.

In the case of CFI Chroy Svay, Koh Kong province, 22 community members borrowed money from the crab bank group. However, the group leader, who had limited leadership capacity, failed to ensure those CFI members

that borrowed from the crab bank revolving credit funds also became crab bank group members and returned gravid crabs as interest. As a result the revolving credit fund capital of the group did not increase.

Additionally the crab bank leader of Cfi Chroy Svay, felt sorry for the people who borrowed credit and gave them an additional year to repay. As a result the revolving funds are not revolving and others group members have been unable to access credit

However, after an RFLP facilitated consultation meeting at site, the group members agreed to re-structure the group and to select a new crab bank committee as well as assisting the group leader to follow the crab bank by-laws more strictly. Members can now only borrow for a maximum of 12 months and they have to pay repay the money back with interest in the form of gravid female crabs to the group.

The Cfi Thmor Sor, Koh Kong, crab bank group was an existing unit under the Cfi which had previously unsuccessfully practiced the purchase model, but had made insufficient profit to pay for the feed and cage repair costs.

In October 2011 RFLP organized a consultation and crab lessons learned sharing workshop which all 15 CFIs attended.

Mr. Ny Va, Patrol team leader of Cfi Thmor Sor, said that he learned the operation of crab bank system from Cfi Tumnup Rolork during the Cfi workshop when progress made during the first six months was presented. After he came back, he consulted with his Cfi to request replication of the credit scheme for the crab bank operation in Thmor Sor.



Having discussed the crab bank with FiA in their regular Cfi committee and FiA monthly meeting, the Cfi requested RFLP to help introduce a loan/credit system. In 2012, a new crab bank group was formed and facilitated by the FiA Cantonment Koh Kong.

Community participation enhanced

The crab bank system has motivated fishers and their communities to protect and conserve crab resources. Through the implementation of crab bank, a sense of ownership has been developed among the groups given that local communities have managed the activity themselves, and it has given them access to credit which has given an opportunity to invest in alternative livelihoods and generated supplementary income.

Lessons learned

More research, particularly on the long-term impacts of crab banks on natural stocks is required. However despite this there are other benefits of crab banks which were appreciated by all involved in the schemes. These include: access to credit through the crab bank loan model, increased awareness on sustainable swimming crab resource use, and strengthening of community-based management institutions.



- The crab bank was developed as a strategy to promote stock enhancement and to ensure the sustainable use of crab resources; anecdotal evidence has shown that there have been increases in catch rates and average crab size, in particular when crab bank schemes were implemented together with other resource management tools.
- The crab bank scheme also focuses on strengthening community-based management institutions through the provision of access to credit that can be invested in supplementary livelihoods activities that can generate more interest and profits for use by CFI members.
- The crab bank scheme operated successfully, but the likelihood of sustainability will be fragile unless benefit sharing is equitable and management transparent.
- The limited loan capital of the crab bank scheme remains a barrier attracting sufficient members to participate in the system to generate a critical mass. More CFI crab fishers were keen to join the crab bank group; however, this was constrained by the low start-up investment capital provided by the

project. Therefore, start-up support for crab banks should be increased.

- Strong commitment of fishers and group leaders is vital for sustaining crab bank scheme activities
- Crab bank holding cages should be sited away from areas where freshwater runoff in the rainy season will reduce water salinity as this stresses the crabs which stop feeding and die.
- Cages should also be sited away from overly strong currents and where convenient in terms of time and fuel used to reach the cage for routine daily crab bank management.

Sustainability of Crab Bank System

To sustain the crab bank system, the Fisheries Administration Cantonment should take the following measures to assist CFIs and crab bank groups:

- Organize awareness campaigns about the importance of the crab banks;
- Sustain the loan/credit scheme, and increase the start-up capital for crab banks;
- Ensure that stocking and transaction logbooks are recorded properly;
- The CBG must manage the budget in a transparent way; and,
- Organize a regular monthly meeting with CBG committee members with the participation of commune council members and fisheries officers.

Recommendations

- Crab bank systems should be maintained by the FiA Cantonment through the provision of on-going support to the relevant CFIs;
- Study tours to successful crab bank operations should be conducted to exchange lessons learned and experiences;

- CFIs and FiA should continue to increase the awareness of those who do not understand the benefits of the crab bank system;
- More research is required to assess the long term impact of crab bank schemes on swimming crab stock abundance; and,
- Good governance and transparent mechanisms with clear roles and responsibilities will contribute to the successful implementation of crab bank schemes.



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About RFLP

The Regional Fisheries Livelihoods Programme for South and Southeast Asia (RFLP) sets out to strengthen capacity among participating small-scale fishing communities and their supporting institutions in Cambodia, Indonesia, the Philippines, Sri Lanka, Timor-Leste and Viet Nam. The four-year (2009 – 2013) RFLP is funded by the Kingdom of Spain and implemented by the Food and Agriculture Organization of the United Nations (FAO) working in close collaboration with the national authorities responsible for fisheries in participating countries.