

## **Biannual Project Progress Report**

- Project title** : **Integrated Coastal Resources Management in Sihanoukville (ICRM – SV)**
- Program Categories** : Program under the ASEAN-SEAFDEC FCG Mechanism
- Program Title** : Capacity Building of Human Resources and Participation in Integrated Coastal Resources Management
- Duration of Project** : 4 years and 2 months from November 2005 to December 2009
- Executing Agency** : The Fisheries Administration, Ministry of Agriculture, Forestry and Fisheries, Cambodia
- Collaborating Agency** : SEAFDEC/TD
- Funding Agency** : FiA Cambodia (Co-financing)  
Japanese Grassroots Level Aid (Embassy of Japan in Cambodia)
- Proposed Budget (2009 only)** : USD 40,600 (Under the Japanese Trust Fund)  
USD ? (FiA Cambodia Input)
- Reporting period** : **July to December 2009**

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February 2010

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## **1. GENERAL ACCOUNT**

In general, the project has progressed on the right track in line with the project document.

SEAFDEC/TD organized the training course on fish landing data analysis for six (6) staff of the FiA's Kampong Som FiA Cantonment (KSFC) on 17-19 February 2009.

Results of the marine biological survey from April 2008 to February 2009 were analyzed by SEAFDEC/TD and were presented at the 8<sup>th</sup> ICC meeting on 4 June 2009.

For the socio-economic survey conducted by FiA staff on 2-5 February 2009, data analysis by SEAFDEC/TD is still underway.

The scale of the map in the Community Fisheries Area Management Plan (CFAMP) must be changed from 1/60,000 to 1/50,000. As planned, the map will be endorsed by the Inspectorate on June 2009 and submitted to the Governor Sihanoukville Province.

The concept and application of fish *refugia* for blood cockle have been disseminated to neighboring villages, after workshops were conducted in four villages on March 2009.

SEAFDEC/TD conducted a study tour for 5 members of the blood cockle fishing group to visit the fish *refugia* in Svay Chrum District, Svay Rieng Province.

The new crab bank sub-group at Prey Pros was established on 18 March 2009.

The Project gave 10 rewards to 10 members of 2 crab bank sub-groups on 3 June 2009.

The 2<sup>nd</sup> experiment on sea bass culture was started by the cage culture group on 7 January 2009 using 600 fingerlings.

Mushroom production has been perfectly commercialized using a self-financial management system.

The Assistant Japanese Trust Fund (TF) Manager from the SEAFDEC Secretariat, Mr. Akito Sato visited the project site on 17-19 February 2009.

A mission from the Department of Fisheries Malaysia visited the project site on 16-17 March 2009.

TF agreed on the postponement of the regional seminar from December 2009 to January 2010.

The 5<sup>th</sup> SC Meeting was convened on 17 March 2009.

The 8<sup>th</sup> ICC Meeting was convened on 4 June 2009.

## **2. ACTIVITIES**

The project has progressed on the right track as shown in the project activity monitoring sheet (Annex 1).

### **2.1 Baseline/monitoring survey**

#### **2.1.1 Fish landing data collection**

The collection of fish landing data has been regularly conducted by the designated enumerators, everyday in fish landing stations. The data collected were sent to SEAFDEC/TD for analysis and compilation. The data obtained from October 2007 to October 2008 were analyzed and completed in April 2009.

The collection of fish landing data was established and commenced in April 2006.

Since then, the data collected have been sent to SEAFDEC/TD for analysis and for further publication. This exercise has been continued until October 2008 and it is considered an appropriate time to transfer such responsibility from SEAFDEC/TD to FiA Cambodia taking into consideration the project sustainability as SEAFDEC's involvement in the project would be terminated towards the end of 2009. The 3-day training course on Fish Landing Data Analysis was conducted by the Fishing Ground and Fisheries Oceanography Section of SEAFDEC/TD at the Cantonment Office of FiA in Sihanoukville on 17 -19 February 2009. The training was attended by 6 marine biologists from FiA's Kampong Som FiA Cantonment. The detailed description of the training course is shown in the report attached as Annex 2. Prior the closing of the training, the participants were requested to evaluate their level of understanding of the course content. As indicated in the report of the training, most participants indicated that they were able to understand about 70% of the course content, while one answered 50% and one answered 80%. From the trainer's point of view, all participants were able to analyze the fish landing data of the ICFM-SV. However, they still need to work together to have more confidence to analyze the data collected. In this regard, some follow-up actions would be necessary.

#### 2.1.2 Socio-economic survey

The monitoring socio-economic survey was conducted on 2-5 February 2009 by the Cambodian project team by interviewing the households in the project operational area, in the Khmer language. The raw data was translated from Khmer to English for further analysis and compilation by the project team of SEAFDEC/TD. Data analysis is still underway and would be published during the next reporting period.

#### 2.1.3 Marine Biological survey

The marine biological survey was conducted from April 2008 to February 2009 by the marine biologists of SEAFDEC/TD to identify the spawning seasons of blood cockle as the main target species for the fish *refugia*. The report on the "Study on Development of Blood Cockle Gonad in Prey Nup II Sihanoukville, Cambodia" was presented at the 8<sup>th</sup> ICC Meeting on 4 June 2009. The results indicated that there are two periods of spawning seasons for blood cockle, from June to August and from February to March. Moreover, it was recommended that prohibition of harvesting matured size blood cockles could be confined for two months in July and February. It was also further recommended that a replication of the study should be conducted in June/August and January/March in order to confirm the aforementioned findings.

### **2.2 Encourage and extend locally-based fishery resources management**

#### 2.2.1 Community Fisheries Area Management Plan (CFAMP)

The final version of the CFAMP was submitted to Kampong Som FiA Cantonment (KSFC) in February 2008 and eventually endorsed subject to the amendment of the zoning map from the current scale of 1/60,000 to 1/50,000. Furthermore, in compliance with the provisions of Prakas, the map was submitted together with other relevant documents such as the CFAMP on 17 October 2008 by the Chief of Prey Nup II Community Fisheries in the presence of the Governor of Prey Nup Khan, the Chief of Teuk Tla Sangkat and the Director of Marine FiA

Inspectorate.

On the other hand, since CFAMP should be registered with the Ministry of Agriculture, Forestry and Fisheries, the scale of the map must be changed from 1/60,000 to 1/50,000 before submitting the documents to the Ministry, which would also require the signatures from the community fisheries, the Sangkat Chief, the Prey Nup District Governor, the Kampong Som FiA Cantonment, the Inspectorate, the Sihanoukville Province Governor, the Fisheries Administration, and the Ministry of Agriculture, Forestry and Fisheries. As planned, the map is still awaiting the endorsement of the Inspectorate for submission to the Governor of Sihanoukville Province.

### 2.2.2 Local Enforcement Unit (LEU)

The project continued supporting the voluntary activity of the Local Enforcement Unit in patrolling the project area. As a result, cases of encroachment of illegal fishers and violations against the fisheries regulations have been evidently reduced. The result of the patrolling efforts by the LEU from January to June 2009 is shown in Table 1.

Table 1. Results of Patrolling Efforts by LEU from January to June 2009

<b>Violations</b>	<b>Cases</b>	<b>Punishment for violations</b>
Use of illegal fishing gear – push net	5	Confiscation of fishing gears and receiving lecture on law abiding
Mangrove felling in Prey Pross	1	Write pledges not to do again and order to replant mangrove saplings
Illegal transportation of mud crab juveniles	2(1 case=50kg, others=471kg)	Releasing of confiscated mud crab juveniles into the sea
Break CF demarcation poles in Kampong Chin	1	Cooperate with Sangkat to find offenders

### 2.2.3 Blood cockle Fishers Group (BCFG)

In order to disseminate the concept of fish *refugia* in the neighboring fishing villages, FiA and Prey Nup II CF members collaborated with the project for the conduct of a workshop in March 2009 for participants from 4 neighboring villages to explain the regulations of fish *refugia*. The workshop was attended by 11 leading members of the Community Fisheries in each village. Mr. Chamrouen, Deputy Director of the Cantonment of Kampong Som explained the regulations about fish *refugia* to the fishers, specifically informing them that such area is being established to protect the marine resources, primarily the blood cockle resource. He added that Artificial Reefs (ARs) would be installed around the demarcated zone to protect the fish *refugia*.

However, it was also explained that although fishermen from outside can still fish near the area of the *refugia*, they should abide by the self-regulated measures, especially the spawning seasons and the sizes of blood cockles that could be harvested. FiA promised to bring posters on fish *refugia* and the regulations to the villages at a later date. At the end of the meeting, the representatives from the 4 neighboring villages expressed their appreciation for providing them information about the movement.

The Project agreed with the FiA that marking poles for the demarcated area in the fish *refugia* as well as 30 sets of obstacles should be installed manually by FiA in July 2009.

A research study on gonad development of blood cockles in the project area was conducted by SEAFDEC/TD from April 2008 to March 2009. The result of the study showed two possible spawning seasons for blood cockles in the project area: June to August and February to March. The concerned SEAFDEC/TD team agreed to send the full report of the study to FiA in July 2009. Furthermore, the marine biological survey was continued by the Blood Cockle Fishing Group (BCFG) starting in April 2009, after the project team demonstrated to the leading members of the BCFG the proper way of carrying out the survey. The data collected from the survey will be analyzed by SEAFDEC/TD for publication and subsequent presentation in the local seminar.

### Study tour

The Blood Cockle Fishing Group (BCFG) requested to undertake a study tour to observe the prevailing fish resources management in other places. Responding to such request, SEAFDEC/TD approved the budget for the group to conduct the study tour in March 2009. Five women representing the BCFG visited the fish *refugia* in Svay Chrum District, Svay Rieng Province which is about 350 km from Sihanoukville Province.

### 2.2.4 Crab bank

The Crab Bank Group was organized during the 2<sup>nd</sup> workshop of CBG on 1 April 2008 and started to release gravid crabs on 16 May 2008, after which the activity has since then been continued. However, since the outcome from such trial was way below the satisfactory level, an improvement plan was discussed at the 6<sup>th</sup> Workshop on Crab Bank Group on 18 February 2009 and it was agreed to seek the possibility of persuading the crab trap group of Prey Pros to install an additional cage close to their village to serve as a crab bank.

As the result of the 7<sup>th</sup> workshop of the crab bank group on 18 March 2009, the project had re-organized the group into 2 sub-groups, namely the Prey Pros and Prey Sangke sub-groups which were placed under the Prey Nup II Crab Bank Group. The Prey Sangke sub-group was renamed the Prey Angkor with 13 members while the Prey Pross sub-group was named the Kampong Kandow with 39 members.

SEAFDEC provided materials for the construction of two cages to serve as crab bank, funds for the operating costs (for feeds and transportation) and 2 books for the general leader and normal book for the Kampong Kandow sub-group (Prey Pros). This group started to release gravid crabs on 28 March 2009, and the income from the sale of the spawned crabs has been recorded in the accounting book.

The 8<sup>th</sup> workshop of the crab bank group was held on 3 June 2009. In order to recognize the accomplishments of the group, 10 prizes (6 prizes from SEAFDEC, 2 prizes from FiA and 2 prizes from JICA) were provided to 10 members of 2 sub-groups for the successful implementation of the related activities.

Based on the result of 8<sup>th</sup> workshop of crab bank group, two meetings of the crab bank sub-groups at Prey Sangke and Prey Pross were convened. The first meeting at Prey Sangke convened in the morning had 23 participants, while the second meeting held in the afternoon at Prey Pros had 30 participants. During the meetings, most of the members said that the amount of swimming crabs was increasing and that a big number of small swimming crabs have been observed near the crab bank cages. They believed that the crab bank activity is

conducive for enhancing the swimming crab resources, and they promised to continue such activity in the future.

Six (6) members of the Prey Angkor crab bank sub-group (Prey Sangke) released 130 gravid crabs from May 2008 to March 2009. Three (3) rewards were given to 3 ranks of Prey Angkor (Prey Sangke), as shown in Table 2.

Fourteen (14) members of the Kampong Kandow crab bank sub-group (Prey Pros) released 247 gravid crabs from March to June 2009. Seven (7) rewards were given to 7 ranks of Kampong Kan Dow (Prey Pros), as shown in Table 3.

Table 2. Number of gravid crabs released by the Prey Angkor sub-group from May 2008 to May 2009

No.	Name	No. of crab released
1	Matt Oumet	29
2	Loeup Dol	27
3	Tun Chek	25
4	Ri Kob	22
5	Sen Lay	15
6	Hak E Soeur	12
	Total	130

Table 3. Number of gravid crab released by the Kampong Kandow sub-group from March to June 2009

No.	Name	No. of crab released
1	Moul Neath	44
2	Lim	30
3	Phea	27
4	Ty	23
5	Soth Bun	22
6	Laek	18
7	Ung	16
8	Da	12
9	Khoun	11
10	Phean	11
11	Kha	9
12	Chom	8
13	Lin	8
14	Phan	8
	Total	247

## 2.3 Promotion of local business

### 2.3.1 Women's Group Activity

The Internal Rules of the Mushroom Producers Group was adopted at the group's first general meeting on 2<sup>nd</sup> April 2008 and the organizational function was legitimately commissioned under the structural framework of the Community Fisheries Prey Nup II. The training course on production of mushroom spores was conducted in December 2008 in

Battambang and the new venture commenced in January 2009 (Table 4). Inspection of the site for mushroom and spore production was conducted in all 4 villages. Simultaneously, verification and scrutiny of bookkeeping and accounting records maintained by the four groups were continued by the project team (Table 5).

Table 4. Monthly mushroom production from January to May 2009

Month	Kampong Chin	Prey Sangke	Prey Pros	Prey Toal	Total
January	158.5	122.10	80.9		361.5
February	84.5	80.10	81.2		245.8
March	108.0	90.20	65.8		264.0
April	49.0	78.40	101.1		228.5
May	85.0	110.30	90.9		286.2
Total	485.0	481.1	419.9	0.0	1386.0

The Prey Toal group suspended temporarily their production because they were simply waiting raining season to come. They started to purchase all the necessary materials in May and planned to re-start producing mushroom as soon as possible.

Table 5. Summary of transactions for spore production from December 2008 to May 2009

Item	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Total	Remarks
<b>1. Sale</b>		48,000	58,500				106,500	Money started production move from saving account 730,000
<b>2. Expenditure</b>								
- Paid by SEAFDEC								
- Paid by Group	381,500					84,000	465,500	
<b>3. Gross income</b>	348,500	48,000	58,500			-84,000	371,000	
<b>4. Share to members</b>								
<b>5. Net income</b>								
<b>7. Cash in hand</b>	348,500	396,500	455,000	455,000	455,000	371,000	371,000	

### 2.3.2 Mud Crab Culture Group Activity

#### Mud crab fattening

In the wake of the successful outcome during the 3<sup>rd</sup> experiment, the 4<sup>th</sup> experiment was commenced to challenge the commercial application of mud crab culture on 15 December 2008. However, after the commencement of the 4<sup>th</sup> experiment, the salinity of the ponds gradually increased reaching to as high as 37-38 ppm towards the middle of January 2009. Consistent with increasing salinity, the number of dead crabs also augmented day by day, especially during molting, and eventually the experiment was discontinued on 16 February 2009. Although the 4<sup>th</sup> experiment failed it gave useful lessons in the commercialization of the activity, as shown in Table 6.



Table 6. Result of the 4<sup>th</sup> mud crab culture experiment

	Pond no. 1	Pond no. 2	Pond no. 3	Pond no. 5
No. stocked	170	190	232	132
No. dead	122	135	183	108
No. sold	5	0	0	18

Salinity	30/38 (Min/Max)
Temperature Low/High	29/33 (Min/Max)
Tide	30/110cm.(water)

Based on the experiences and knowledge obtained from the experiments for almost two years from February 2007 to February 2009, the 13<sup>th</sup> Workshop on Mud Crab Culture was held at the project site on 18 February 2009. The whole production process from the start was carefully analyzed by all participants from the MCCG, and the future course of action was discussed. As a result, the following conclusions were derived:

- Mud crab fattening needs attentive care therefore large-scale operation is technically difficult.
- Mud crabs are very susceptible to high salinity and temperature but can relatively tolerate low salinity and low temperature.
- Growth rate is also largely affected by the salinity and temperature.
- Judging from the above limitations, crab fattening in commercial scale can be attempted only twice in a year from July to November.
- Lowering the water temperature by covering the ponds with black polyethylene sheets was also conducted. The comparative test on the effect of covering the ponds with black polyethylene sheets and the control (without covering) will be continued for a month.
- Pond No. 2 and 3 have been leased out to the private sector for them to use, taking into consideration the prevailing conditions such as salinity, water temperature and tide movement, which should be properly recorded in the logbook and subsequently submitted to the project.
- Responding to the invitation for commercial application, a member of CF Prey Nup II, Mr. Vicob showed interest in implementing a mud-crab fattening enterprise from July 2009. In order for him to pursue the enterprise, the lease contract with the CF Prey Nup II should be drawn and signed prior to the start of his work.
- Pond No. 2 & 3 should be dried and cleaned in March/April before the rainy season sets in.
- For the utilization of other ponds, the members of MCCG proposed to try sea bass culture. As observed when the Cantonment released sea bass fingerings in pond No.6 in June 2008, many survived in spite of little attention given on the fish stocked.
- For the abovementioned trial, it was agreed that sea bass culture would commence in June using pond No. 4 and 5.
- Prior to the start of the sea bass culture, the pond should be dug at 50 cm deeper to enhance the environment of the fish stock. The cost for digging the pond would be borne by SEAFDEC.

In line with the above agreement, the pond digging was completed and the comparative test

on covering the pond surface with black polyethylene sheets was made in March and April. The result of the above comparative test showed some positive effectiveness in lowering the temperature within the range of 1 to 2°C. However, at the 8<sup>th</sup> ICC meeting held on 3<sup>rd</sup> June 2009, Mr. Vicob who was supposed to commence the mud-crab fattening work using 2 ponds retracted his commitment. In this connection, FiA proposed to provide the crablets if SEAFDEC would want to continue the fattening trial. However, SEAFDEC indicated that it would not be able to continue the trial because funds have not been earmarked for such trial in the approved budget. It was therefore suggested that a special contribution by JICA could solve the problem, and that further trial could start in August.

### Fish cage culture

The Fish Cage Culture Group (FCCG) was established on 3 April 2008 during the 2<sup>nd</sup> workshop of FCCG and the economic feasibility of the proposed venture was discussed during the 3<sup>rd</sup> workshop on 18 June. As a result, at the 4<sup>th</sup> workshop on 14 August 2008 it was eventually decided to set to a cage culture scheme. The construction of cages and rafts commenced thereafter and completed in September. At the onset, 2,500-3,000 fingerlings of sea bass were released in the cages on 23 September 2008. Within one week by 30 September, the fish stock was found all dead. The major cause of the mass mortality was clarified during the 5<sup>th</sup> workshop on 19 November 2008. Based on lessons learned from this first experiment, the 2<sup>nd</sup> experiment was started on 7<sup>th</sup> January 2009. Site inspection together with collection of marine environmental data was carried out by the project team and the JICA expert on 18 February 2009. Based on the observation of the team, the 6<sup>th</sup> Workshop on Cage Culture took place on the same day. During the Workshop, it was decided to shift the location of the cage culture further down to a canal as the current location was not suitable for culture due to low DO level. Thus, the location was shifted although in the same stream of the creek.

After moving the cages to the new location, Mr. Hatori investigated the water parameters like salinity, DO and temperature in the canal on 3 June 2009, and the results indicated improved environmental conditions. The remaining 80 sea bass fingerlings showed sign of being in sound shape, giving a good sign for future culture efforts.

Based on the results of the experimental fish cage culture, it was found that the best season for culturing sea bass in the area would be after the advent of the rainy season in July and the stocks could be harvested for the Chinese New Year which will fall in January or February considering the prevailing highest prices for all commodities during that period. With this perspective, the project is intending to conduct the 3<sup>rd</sup> experiment from July/August.

As observed from the outcomes of the previous experiment on sea bass cage culture as well as the mud crab fattening trial, it was suspected that the mangrove trees have brought about the unfavorable effects for maintaining DO and salinity in the water which in turn contributed to the major reason of high mortality of the mud crab and sea bass stocks. Having been involved in the project activity, the JICA expert has inductively asserted the negative effects of mangrove trees against sound pond and cage aquaculture like the ones carried out by the project. Therefore, it was deemed necessary to verify the facts scientifically with a comparative test before entering into a commercial scale venture. Depending on the outcome of the test, the orientation towards the future course of aquaculture business in the project site could be drastically changed.

## 2.4. Enhance human resources capacity and participation

Throughout the project operation, main emphasis has always been given to human as well as institutional capacity building especially for the Community Fisheries Prey Nup II, and further for the sub-groups such as the Mud-crab Culture Group (MCCG), Blood Cockle Fishers Group (BCFG), Mushroom Producers Group (MPG), Crab Bank Group (CBG), and Fish Cage Culture Group (FCCG). A series of workshops, training courses were conducted during this reporting period. In each workshop, relevant handouts in the Khmer language were distributed as discussion and extension materials. Moreover, more chances were given for all members to participate actively in the discussions and presentations in order to convince them to take active part in the project activities.

### 2.4.1. Meeting with Community Fisheries Prey Nup II

The first meeting between Community Fisheries Prey Nup II and the project was held on 17 February 2009, which was attended by the CF leader, the vice-leader and 7 committee members. In this meeting, various issues including the future orientation of CF were closely discussed with the leading members of the CF Prey Nup II. It was mutually agreed to continue such a meeting at least once a year to maintain close communication.

### 2.4.2. Workshops

Various workshops also took place during this reporting period as listed in Table 7.

Table 7. List of Fishers Workshops taken place from January to June 2009

<u>No.</u>	<u>Date</u>	<u>Title of Workshop</u>	<u>Particulars of the workshop</u>	<u>No. of participants</u>
1	18.02.09	1st Meeting for CMCF Prey Nup II	Aimed at maintaining a good communication between the project and Community Fisheries	9
2	18.02.09	13th W/S for MCCG	Discussion of the progress of the 4th experiment and the action plan among the members	18
3	19.02.09	6th W/S for CBG	Discussion of the progress on the crab bank scheme and identifying the issues to be addressed	21
4	19.02.09	7th W/S for BCFG	Discussion among the BCFG members on the practical application of the regulations and identifying issues, especially those reported by the four middlemen concerned	30
5	18.03.09	7th W/S for CBG	Follow up on the installation of additional cage at Prey Pross.	39
6	18.03.09	8th W/S for BCFG	Monitoring the progress of disseminating the concept of fish <i>refugia</i> in neighboring fishing villages	27
7	03.06.09	8th W/S for CBG	Awarding of 10 prizes to 10 members, who released gravid crabs and ranked the rank no. 1 to 5 of each sub-group	53

Note: MCCG - Mud Crab Culturing Group  
 CBG - Crab Bank Group  
 FCCG - Fish Cage Culturing Group  
 MPG - Mushroom Producers Group

BCFG - Blood Cockle Fishers  
Group

CMCF - Committee Members of Community  
Fisheries

### 2.4.3 Training

During the reporting period, more emphasis was placed in onsite training especially in the improvement of bookkeeping and accounting technologies for the Mushroom Producers Group, Crab Bank Group, Mud Crab Culturing Group and Fish Cage Culture Group. Through such efforts, the preciseness of the records entered in the accounting books has been noticeably reckoned as having considerably improved.

In addition, the training course on fish landing data analysis conducted on 17-19 February 2009 had 6 participants from Kampong Som FiA Cantonment. After the training, most participants were able to absorb about 70% of the course content, and all participants were able to analyze the fish landing data in the project operational area. The fish landing data of ICRM-SV from November 2008 to November 2009 will now be analyzed by the staff of Kampong Som FiA Cantonment. The results of the analysis would be presented at the local seminar and regional seminar in December 2009 and January 2010, respectively. The detailed results of this training are shown in Annex 2: Report of the training course on fish landing data analysis.

### 2.4.4. Study tour

In response to the request by the Blood Cockle Fishing Group (BCFG) for a study tour to observe the prevailing fish resources management in other places, SEAFDEC/TD approved the budget for the group to conduct the study tour on March 2009. Five women from the BCFG visited the fish *refugia* in Svay Chrum District, Svay Rieng Province located about 350 km from Sihanoukville Province.

## 2.5 Rehabilitate and enhance coastal resources

### Establishment of the fish *refugia*

As dealt at length in 2.2: “Encourage and extend locally based fishery resources management”, effort to disseminate the concept of fish *refugia* in the neighboring fishing villages has been exerted. As a result, it was reported that the fishers in the neighboring villages became well-informed about the objectives and activities of such initiative.

In order to rehabilitate and enhance the fishery resources particularly the blood cockle resource, fish *refugia* was established in the project area. For this initiative, the self-regulatory measures were formulated by the newly established Blood Cockle Fishers Group (BCFG) and the zoning map with covering 200 ha was marked out. The demarcation and the regulations were endorsed by the FiA Cantonment while the marking poles to enclose the demarcated zone were procured for installation. In order to protect this zone from encroachment by illegal fishing boats like the blood cockle dredgers, 30 units of protection obstacles, with shapes similar to the artificial reefs, have been constructed using the fund of SEAFDEC, and now these are awaiting installation by the FiA in due course of time.

From the results of the marine biological research work carried out by SEAFDEC, the spawning seasons for blood cockle were identified. This data will be incorporated in the provisions of the self-regulatory measures.

The fish *refugia* established in the project area is the first one which has been practically functional in Cambodia. It is expected that the concept of fish *refugia* would be disseminated to other areas following this model but could also depend on the outcome of this model in future.

## **2.6 Project management meeting**

### **2.6.1 Steering Committee (SC) Meeting**

The 5<sup>th</sup> SC meeting was convened on 17 March 2009 in Sihanoukville. At this meeting, the progress made since the last SC meeting was reported and pertinent strategic issues at the project management level were discussed with the representatives of various agencies and institutions. The major issues raised at this meeting included the regional seminar on ICRM-SV which will be organized in Sihanoukville, Cambodia in January 2010. Another central issue lay in the necessary follow-up activities after the involvement of SEAFDEC in the project is terminated in December 2009. SEAFDEC proposed that FiA should continue the core project activity as the follow-up stage at least for a couple years, just like in the cases of Thailand (ICRM-PD) and Malaysia (ICRM-PL). However, FiA could not commit itself to continue the project activities due to unavailability of the required funds. The SC Meeting therefore suggested that FiA must exert every effort to seek for a new donor for the project in order to continue some of the core activities. The results of the discussion are shown in the attached Annex 4.

### **2.6.2. Implementation and Coordination Committee (ICC) Meeting**

The 8<sup>th</sup> ICC meeting was convened on 3 June 2009 in Sihanoukville. At this meeting, the progress made since the last ICC meeting was reported and pertinent issues were raised to seek for solutions at the local level. Also, the immediate action plan for the succeeding four months was discussed in detail. The major issues raised at this meeting included the postponement of the regional seminar from December 2009 to January 2010 which was considered by the Japanese Trust Fund (TF), the preparation of the proceedings of the regional seminar one month after the seminar, and the need for the project to immediately clear all financial matters with the TF before March 2010. It is for this reason that SEAFDEC proposed to FiA to hold the regional seminar not later than January 2010.

Other issues discussed at the ICC meeting included the installation of the poles and obstacles in the zone of the fish *refugia*, expansion of the commercial activity of the Mushroom Producers Group into spore production as a new business venture, the future courses of action for the sham-commercial operations of mud crab fattening and sea bass cage culture, the expanded activity of the crab bank, etc. Moreover, the JICA Expert informed the meeting that there were signs and evidence in which the mangrove trees could have negatively affected the sound fish aquaculture in some cases, like the mud crab fattening and sea bass cage culture being carried out by the project. Since this was new to the participants, a heated debate ensued. However, it was agreed that this matter would be scientifically verified and clarified before entering into the stage of commercialization.

The detailed results of the discussions at this meeting are shown in Annex 6: Minutes of the 8<sup>th</sup> ICC Meeting, prepared in both Khmer and English languages for distribution.

## 2.7. Final Project Evaluation

The project could not conduct the mid-term project evaluation in 2007 because the FiA could not immediately identify an appropriate candidate to undertake the evaluation. Thus, the issue of identifying the candidate for the out-sourced consultancy to carry out the final project evaluation was one of the serious issues discussed at the 8<sup>th</sup> ICC meeting. FiA made all efforts to find the proper candidate for the said evaluation. Finally upon the recommendation of the FiA, the final candidate was accepted by SEAFDEC and Special Service Agreement comprising TOR was mutually signed by SEAFDEC and the Consultant in June. The consultant commenced his duty in July which will be completed in August. The final report will be submitted to SEAFDEC in September.

## 2.8. Other activities

A DOF Malaysia Mission visited the project site on 16-17 March 2009 to look over the project activities as DOF Malaysia had also deployed a CBRM project, called ICRM-PL jointly with SEAFDEC/TD in Langkawi, Malaysia from August 2003 to December 2007. After visiting the project site in Prey Nup II in the afternoon of 16 March, the Mission participated in the 5<sup>th</sup> SC meeting in the morning of 17 March as observers. The DOF Malaysia Mission comprised the following:

1. Mr. Mohamad Shaupi bin Derahman - Director, Planning and International Division (Malaysian National Coordinator for SEAFDEC)
2. Mr. Annuar Omar - Officer, Extension Unit, Kedah State Fisheries Office
3. Mr. Jephrein Wong - Officer, Sabah State Fisheries Office

The Officer from the Sabah State Fisheries Office, Mr. Jephrein Wong presented the Tagal system, which is a traditional resource management system initiated in the village of Tuaran in 1987. The Tagal system has been developed in the whole Sabah State of Malaysia. This system is now widely reputed as a traditional natural resources management approach based on the own motivation of the indigenous fishermen in Malaysia. Although the Tagal system could be different from the CF of Cambodia, the principle of having the fishermen as the originators to control their own fishery resources is identical and the lecture was given by Mr. Wong greatly impressed the participants in the meeting.

## 3. OUTCOMES

The major outcomes of the project activities during this reporting period include:

### Baseline/monitoring survey

- The regular fish landing data collection exercises produced monthly data.
- The data obtained from November 2007 to October 2008 were compiled and published.
- The socio-economic survey was conducted on 2-5 February 2009, and the data analysis is in progress.
- Results of the marine biological survey were analyzed by SEAFDEC/TD, and presented at the 8<sup>th</sup> ICC meeting on 4 June 2009.

### Encourage and extend locally-based fishery resources management

- The scale of the map of Community Fisheries Area Management Plan (CFAMP) must be changed from 1/60,000 to 1/50,000. As planned, the map will be endorsed by the Inspectorate in June 2009 for submission to the Sihanoukville Province Governor.
- The concept and application of fish *refugia* for blood cockle have been disseminated to neighboring villages, through a workshop conducted in March 2009 for leaders from the five villages.
- The new crab bank sub-group at Prey Pros was established on 18 March 2009.
- Project provided 10 rewards to 10 members of 2 sub-groups of the crab bank.

#### Promotion of local business

- The project continues to monitor the practices in bookkeeping and accounting on a monthly basis so that transparency in terms of money transactions is promoted and proper business management procedure is enforced.
- The training course on the production of mushroom spore was conducted in December 2008 in Battambang and the new venture was commenced in January 2009.
- Mushroom production was continued with a total production of 1386 kg for 5 months from January to May 2009.
- The 2<sup>nd</sup> trial of the sea bass culture started by the cage culture group on 7<sup>th</sup> January 2009 using 600 fingerlings.
- The 4<sup>th</sup> experiment for exploring the commercial application of cage culture began on 15 December 2008 and finished on 16 February 2009.
- The Mud crab Culturing Group decided to invite a private sector to initiate a mud crab fattening venture using pond number 2 & 3 and simultaneously conduct experimental sea bass culture using pond No.4 and 5.

#### Enhance human resources capacity and participation

- Various training courses and workshops were conducted.
- The training course on fish landing data analysis was organized on 17-19 February 2009, with 6 trainees from Kampong Som FiA Cantonment.
- Blood cockle fishing group study tour to Svay Chrum District was conducted on March 2009 for skills development on resources management.

#### Rehabilitate and enhance coastal resources

- The concept and application of fish *refugia* for blood cockle have been disseminated to neighboring villages, through a workshop on March 2009 attended by leaders from the five villages.

#### Project management meeting

- The 5<sup>th</sup> SC meeting was held on 17 March 2009
- The 8<sup>th</sup> ICC meeting was held on 4 June 2009.

#### Final Project Evaluation

- The letter of agreement of the final project evaluation was signed by Mr. Chum Chanthol, Provincial Technical Working Group, Sihanoukville Province in June 2009.
- The final evaluation report will be submitted to SEAFDEC/TD at the end of August 2009

#### Other activities

- 10 blood cockle posters were published in June 2009.
- The Assistant Japanese Trust Fund Manager, Mr. Akito Sato visited the project site on 17-19 February 2009.

- The Malaysian Fisheries Department Mission visited the project site on 16-17 March 2009.
- TF agreed to postpone the regional seminar from December 2009 to January 2010.

#### **4. MAJOR CONSTRAINTS**

One of the major components in the project approach focuses on local business development to enhance the socio-economic level of fishing communities and is considered an indispensable factor to promote the concept of community-based resources management. So far, mushroom production and spore production have successfully demonstrated as a commercially viable operation. The other two potential businesses, i.e. mud crab fattening and sea bass cage culture have not yet been considered commercially viable but would be tested through a sham-commercial operation in the next stage. As for the mud crab fattening activity, it was agreed at the 13<sup>th</sup> Workshop of MCCG on 18 February 2009 that one of the members would commence a sham-commercial operation of crab- fattening after the rainy season sets in, but such an intention has not been realized so far. Therefore, one more experiment should be conducted by the project, instead. However, since the necessary budget is not available within SEAFDEC as it was agreed that a private sector would carry out the sham-commercial operation, the funds needed have not been earmarked in the SEAFDEC budget. To solve the problem, FiA agreed to cover the cost of procuring the crablets but still no financial commitment for the operational costs could be identified from any sources so far.

The 3<sup>rd</sup> experiment of sea bass cage culture will be carried out using SEAFDEC funds. The experiment will commence in August so that the products could be harvested in January or February 2010 during the Chinese New Year. To complete and verify the results of this experiment, FiA was asked to look for other sources of funds to be able to continue the activities during the follow-up phase. However, at the 5<sup>th</sup> SC Meeting on 17 March 2009 the FiA expressed the apprehension that it might not be able to support the follow-up phase of the project due to financial constraints. Under the current pace of realization of the expected project outputs, it is definitely necessary for FiA to take over the project activity as the follow-up phase, as done with the case of the ICRM-PD and the ICRM-PL.

#### **5. WORK PLAN FOR THE NEXT REPORTING PERIOD**

The work plan covering 6 months from July to December 2009 is described as follows.

##### Baseline/monitoring survey

- Continue fish landing data collection
- The fish landing data from November 2008 to October 2009 will be compiled by Kampong Som FiA Cantonment and analyzed
- The report on the marine biological survey will be published
- The report on the socio-economic survey will be published

##### Encourage and extend locally-based fishery resources management

- Submission of CFAMP to Sihanoukville Provincial Governor
- Practical application of CFAMP
- Reinforcement of the structure and capacity of Local Enforcement Unit (LEU)

##### Promotion of local business

- Further promotion of mushroom production and monitoring its financial transactions
- Identify the second local business venture
- Continue fish culture of sea bass in the ponds and cages



- Continue the effort in commercialization of mud-crab fattening

Enhance human resources capacity and participation

- Increase awareness on the implementation of CFAMP
- Study tour to inspect a model case on CBRM
- Identify the community-based volunteer work
- Publication of PR and extension materials
- Organize and conduct regional seminar

Rehabilitate and enhance coastal resources

- Continue management of fish *refugia*
- Continue marine biological survey of blood cockle in the fish *refugia*
- Analysis and reporting of the results of the marine biological survey

Project management meeting

- Convene the 9<sup>th</sup> ICC meeting

Final project evaluation

- Conduct the final project evaluation
- Publication of the project evaluation report

## 6. REPORTS PREPARED

Reports and documents prepared under the project during this reporting period are listed below.

<u>No.</u>	<u>Title of the report</u>	<u>Name of author</u>	<u>Date of issue</u>
01.	Report of training course on fish landing data analysis	Penchan L.	Feb. 2009
02.	Travel Report to Cambodia on 16-20 February	Sumitra R.	Feb. 2009
03.	Minutes of the 5 <sup>th</sup> SC Meeting	Sumitra R.	Mar. 2009
04.	Travel report to Cambodia on 16-19 March	Sumitra R.	Mar. 2009
05.	Minutes of 8 <sup>th</sup> ICC Meeting	Sumitra R.	Jun. 2009
06.	Travel Report to Cambodia on 2-5 June	Sumitra R.	Jun. 2009

## Annex 1

### Project Activity Implementation Chart for ICRM-SV in 2009

Activity	2009												Remarks
	1	2	3	4	5	6	7	8	9	10	11	12	
<b>1. Baseline / monitoring survey</b>													
<b>1.1. Fish landing survey at the project site</b>													
1.1.1. Regular collection of fish landing data	←-----→											Continued activity	
1.1.2. Analysis and compilation of data and information	←-----→			←-----→						←-----→			I. Data in 2008 II. Data in 2009
<b>1.2. Marine Biological survey</b>													
1.2.1. Regular collection of blood cockle data	←-----→												
1.2.2. Analysis and compilation of data and information	←-----→												
<b>1.3. Socio economic survey</b>													
1.3.1. Data collection	←-----→		←-----→		←-----→		←-----→		←-----→		←-----→		
1.3.2. Analysis and compilation of data and information	←-----→		←-----→		←-----→		←-----→		←-----→		←-----→		
<b>2. Encourage and extend locally-based fishery resources management</b>													
<b>2.1. Community Fisheries Area Management Plan (CFAMP)</b>													
2.1.1. Submit CFAMP to Sihanouk Province Governor	←-----→					←-----→		←-----→					The map scale changed from 1:60,000 to 1:30,000 To Sihanoukville Governor
2.1.2. Formation of Community Fisheries Coordination Committee (CFCC)	←-----→		←-----→		←-----→		←-----→		←-----→		←-----→		Meeting with 5 neighbour villages
2.1.3. Practical application of CFAMP	←-----→											Continued activity	
<b>2.2. Local enforcement unit (LEU)</b>													
2.2.1. Reinforcement of the LEU's activity	←-----→											Continued activity	
<b>3. Promotion of local business</b>													
<b>3.1. Cottage scale industry by women's groups</b>													
3.1.1. Monitoring mushroom production	←-----→											Continued activity	
3.1.2. Identify the second local business	←-----→											Continued activity	
<b>3.2. Mud crab aquaculture business</b>													
3.2.1. Running mud-crab culturing business	←-----→												
3.2.2. Running tilapia / sea-bass culturing business	←-----→												
<b>4. Enhance human resources capacity and participation</b>													
<b>4.1. Reinforcement of structure and capacity of existing Prey Nup II CF (PN2CF)</b>													
4.1.1. Increase awareness on implementation of CFAMP	←-----→											Continued activity	
4.1.2. Study tour to inspect a model case on CBFRM	←-----→												
<b>4.2. Participation in community development work</b>													
4.2.1. Identification of the community development and CBFRM voluntary work	←-----→												

Activity	2009												Remarks
	1	2	3	4	5	6	7	8	9	10	11	12	
<b>4.3. Publication and PR materials</b>													
4.3.1. Publication of reports and manuals	←-----→												As required
4.3.2. Distribution of PR materials	←-----→												
						←→							Fish landing report in 2008
<b>4.4. Regional Seminar</b>													
4.4.1. Organize and conduct regional seminar												←	Postpone to January 2010
<b>5. Rehabilitate and enhance coastal resources</b>													
<b>5.1. Fish refugia / Marine protected area</b>													
5.1.1. Study on establishment of conservation area			←→										study the fish refugia of Sulu, Negros Occidental
5.1.2. Establish and manage fish refugia	←-----→												
5.1.3. Marine biological survey in fish refugia	←-----→												
5.1.4. Analysis and report the result of marine biological survey				←→		←→							
<b>6. Fishing / fish handling technologies improvement</b>													
<b>6.1. Fishing and fishhandling technologies improvement</b>													
6.1.1. Identify improvement needs	←-----→												
6.1.2. Technical application for improvement if found necessary	←-----→												
<b>7. Project management meeting</b>													
<b>7.1. Steering Committee (SC) meeting</b>													
7.1.1. Organize and convene SC meeting			←→										
			←→										
<b>7.2. Implementation Coordination Committee (ICC) meeting</b>													
7.2.1. Organize and convene ICC meeting						←→		←→		←→			
						←→							
<b>8. Project evaluation</b>													
<b>8.1. Final project evaluation</b>													
8.1.1. Identify a relevant outsourced consultant	←-----→												
						←→							
8.1.2. Conduct a final project evaluation							←→						
8.1.3. Publication of the project evaluation report									←→				

## Annex 2

# Report of training course on fish landing data analysis

At Cantonment of Kampongsom  
17 – 19 February 2009



### **Background:**

The project Integrated Coastal Resources Management in Sihanoukville commenced its activities in November 2005 in the Sub-district of Prey Nup II, Sihanoukville under the collaborative project framework between SEAFDEC/TD and FiA Cambodia. One of the core activities of the project is the introduction of sustainable community-based resources management approach in the community consistent with the Royal Decree on The Establishment of Community Fisheries and the Sub-decree on Community Fisheries Management. To introduce such an application, it is vital to verify the fish resources dynamic movement along with the deployment of the project activity in coastal fishery resources management. In order to achieve this goal, the basic data on fish harvest should be regularly collected and properly analyzed. However, such a system had not yet existed in the project operational area. Prior to the establishment of such a system, baseline socio-economic survey including the fishing activity survey was conducted in March 2006. Based on the findings from such survey, the data collection system on daily fish landing was established by several enumerators covering the project operational area.

Thus, the fish landing data collection was commenced in April 2006. Since then, the collected data have been sent to SEAFDEC/TD for analysis and for further publication. This exercise

has been continued until now and it is high time to shift such the duty from SEAFDEC/TD to FiA Cambodia for the sustainability of the project. Hence, the training course on Fish Landing Data Analysis was conducted.

**Objectives of the training course:**

The proposed objectives of the training course are as follows:

- To acquaint the participants with the basic knowledge of data collection system and analysis
- To master the basic technology in the analysis of fish landing data
- To learn the practice of compilation of analyzed data
- To disseminate the data management system for small pelagic fisheries “FishBio” developed by SEAFDEC/TD

**Envisaged outcomes:**

The expected outcomes of the training course are as follows:

- The basic knowledge of data collection system and analysis are learned.
- The basic technology in analyzing fish landing data is mastered and this exercise can be carried out by the Cambodian staff after completion of the training.
- The compilation of analytical data is learned and the publication of the survey result can be made by the Cambodian staff after completion of training.

**List of participants:**

1. Mr. Hoc Laim , Deputy Director Fisheries Administration
  2. Mr. Prak Sarawatt, Deputy Director Fisheries Administration
  3. Mr. Khin Saravuth, Fisheries Administration Officer
  4. Mr. Keo Chamroun, Fisheries Administration Officer
  5. Ms. Chin Leakhena, Fisheries Administration Officer
  6. Mr. Mam Sokdara, Fisheries Administration Officer
- All from the Cantonment of the FiA of Kampongsom.

**Instructors:**

1. Ms. Penchan Laongmanee, Fishery Oceanographer, SEAFDEC/TD
2. Ms. Woraluk Meesomwat, Database Developer, SEAFDEC/TD

**Activity brief:**

The workshop was opened by Mr. Doung Samath, Director of the Cantonment of the FiA Kampongsom. The Project Director, Mr. Sei Etoh then briefed the participants on the background and objectives of the training course. Six staff from the Cantonment of FiA Kampongsom participated in the training course (see list of participants). The training schedule is shown below:

## Training schedule

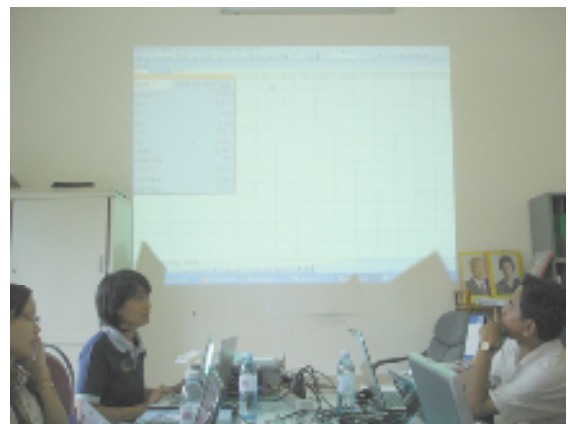
Date	Activity	Resource Person
Day 1, 17 Feb 2009 (Tue)		
09:00 – 09:20	Opening of the training course	
09:20 – 09:30	Briefing on training course	
09:30 – 09:45	Break	
09:45 – 12:00	Introduction of fish landing data - objective of data collection - Type of indicator - Parameter and statistic used in fish landing data of ICRM-SV	Penchan
12:00 – 13:30	Lunch break	
13:30 – 16:30	Data analysis using Microsoft Excel	Penchan
Day 2 , 18 Feb 2009 (Wed)		
0900-16:30	Data analysis using Microsoft Excel	Penchan
Day 3 , 19 Feb 2009 (Thu)		
0900-1000	Introduction to Data Management System “FishBio” for Small Pelagic Fisheries	Penchan
1000 - 1030	Software installation	Woraluk
1030 – 10:45	Break	
10:45 – 12:00	Hand on training for “FishBio”	Woraluk
12:00 – 13:00	Lunch	
13:00 – 16:00	Hand on training for “FishBio”	Woraluk
16:00 – 16:10	Certificate	
16:10 – 16:30	Closing	

The contents of the training course which included the objectives of data collection, basic concept of indicators, background of landing data in ICFM-SV project, selected indicators for the project and recommended additional indicators to monitor crab bank project, are shown in Annex I. After the presentations, the participants practiced to analyze the data using Microsoft Excel Software. They learned the necessary MS Excel function to record, calculate and plot the stock chart to determine the maximum, minimum and mean; and plot the resource trend and histogram of length frequency of fish landing data of ICRM-SV project. On the third day of training course, the database management system for small pelagic fishery namely “FishBio” was introduced to the participants (Annex II). The “FishBio” software setup and manual were distributed to the participants.

Prior to the closing of the training, the participants were requested to evaluate their understanding of the course content. Most of participants replied that they understood about 70% of the course content, only one participant answered 50% and one person answered 80%. From the trainer’s point of view, they noted that the participants are now able to analyze fish landing data of ICFM-SV. However, they may need to work together to have more confidence especially in analyzing the data.

Mr. Doung Samath assigned the participants to analyze the fish landing data of ICFM-SV from November 2008. They were requested by the Project Director, Mr. Sei Etoh to send a representative to present the results of the analysis during the local and regional seminar on

the integrated coastal management-Sihanoukville in December 2009 and January 2010, respectively.



**REPORT  
TRIP TO CAMBODIA  
16-20 FEBRUARY 2009**

Sumitra Ruangsivakul

**1. Objectives**

The ICRM-SV project plans to carry out various activities from 16 to 20 February 2009. One of the major activities is the training course on fish landing data analysis for Cambodian marine biologists. The following itinerary was pursued to conduct the various activities as described below.

Training Course on Fish Landing Data Analysis

The fish landing data collection exercise in the project operational area was initiated in February 2006 by the designated enumerators. Since then, the data obtained have been collected monthly by the project team in Sihanoukville and sent to SEAFDEC/TD for analysis and compilation. The results were published periodically and also presented in the annual local seminars for localization. It is now high time that the analysis and compilation technique should be learned by the relevant staff of the Kampong Som FiA Cantonment in order that the data analysis exercise could be carried out by them. This is particularly important given the fact that in the project tenure, the involvement of SEAFDEC would be terminated in December 2009.

Compilation of raw data of the monitoring socio-economic survey

The monitoring socio-economic survey was conducted on 2-5 February 2009 by the Cambodian project team by way of interviewing the households in the project operational area in Khmer language. A session was necessary to translate the outcomes and raw data from the survey into English for further analysis and compilation by the project team of SEAFDEC/TD.

Mud-crab Culturing Group (MCCG)

The 3<sup>rd</sup> experiment of Mud Crab fattening exercise commenced on 8<sup>th</sup> September and was completed on 4 November 2008 with promising results. In the wake of the successful trial to seek for the technical application, the 4<sup>th</sup> experiment for exploring the commercial application began on 15 December 2008. In this meeting, the progress in implementation of the 4<sup>th</sup> experiment was discussed among the members, and based on the outcome of this experiment, the subsequent action plan for mud-crab fattening would be discussed and determined.

Cage Culturing Group (CCG)

The Cage Culture Group was established on 3 April 2008 during the 2<sup>nd</sup> workshop of CCG and the economic feasibility of the proposed venture was discussed at the 3<sup>rd</sup> workshop on 18 June. As a result, it was eventually decided at the 4<sup>th</sup> workshop on 14 August to set a cage culture scheme. The construction of cages and rafts commenced thereafter and was completed in September, after which 2,500-3,000 fingerlings of sea bass were released in the cages on 23 September but within one week by 30 September, the fish stocked were found all dead. The major cause was clarified during the 5<sup>th</sup> workshop. After lessons were learned in this first experiment, the 2<sup>nd</sup> experiment was started during the first week of January. A site inspection was made by the JICA Expert on 15 January, and after inspecting the cages, appropriate technical advices were given to the members. Based on the outcome of this inspection,



discussions on immediate future actions were made on site, and based on the above results, discussions and instructions on any counter measures, if necessary, were made.

#### Women's Group activity – Mushroom Producers Group (MPG)

The Internal Rules of the Group for the Mushroom Producers Group was adopted at the first general meeting on 2<sup>nd</sup> April 2008 and the organizational function was legitimately commissioned under the structural framework of Community Fisheries Prey Nup II. The training course on the production of mushroom spores was conducted in December 2008 in Battambang and the new venture was launched in January 2009. The site inspection of mushroom and spore production was conducted in all 4 villages. Simultaneously, the verification and scrutiny of bookkeeping and accounting records of the four groups was continued by the project team. The agenda and activity are:

1. Inspection of mushroom and spore production
2. Discussions on immediate future action plan in each village
3. Discussions on any issue in each village
4. Verification of the accounting books in each village

#### Crab Bank Group (CBG)

The Crab Bank Group was organized in the 2<sup>nd</sup> workshop of CBG on 1 April 2008 and the study tour to Stung Hao was conducted by the leading members on 5<sup>th</sup> April 2008. Based on the outcome from the study tour, cages for stocking gravid crabs were constructed on 25-28 April 2008 and the operation was started on 16 May 2008. The project team intends to monitor the activity and discuss operational issues with the members of Crab Bank Group as well as verify and scrutinize the logbook record and the accounting book. The agenda include:

1. Progress on the crab bank scheme and identifying any issues to be solved
2. The current contribution record

#### Blood Cockle Fishers Group (BCFG)

The draft Self-regulatory Measures for Blood Cockle Fishing in conjunction with establishment of Fish Refugia was thoroughly discussed among the members arriving at a consensus at the 1<sup>st</sup> BCFG meeting on 19 February 2008. The self-regulatory measures were further discussed at the 2<sup>nd</sup> BCFG meeting on 2 April 2008 in the light of technical applicability. At this workshop, it was agreed that the minimum size of harvestable blood cockle was limited to 100 pcs per kg or over 32 x 22mm (L x H). Consistent with this size restriction, the mesh size of the filtering sieve was also enlarged to 22 x 22 mm (it was subsequently found that this mesh size was too big to filter 10 g blood cockles and suggested that the proper size should be less than 20 x 20 mm). After repeated arguments, it was eventually agreed to begin with the sieve mesh-size of 18 x 18 mm and 4 sets o sieves were distributed to middlemen on 25<sup>th</sup> December 2008 for controlling the sizes of the harvested cockles.

For the zoning of the fish *refugia*, during the 3<sup>rd</sup> BCFG meeting on 19 June 2008, the group insisted that the demarcated area for fish *refugia* should be 200 ha but not 20 ha as initially suggested by the project in the light of limitations in terms of managerial capacity. This amendment was sent to the Kampong Som FiA Cantonment for technical consultation. The Kampong Som FiA had a follow-up meeting with the members thereafter and the BCFG eventually agreed to expand the proposed demarcated area to 200 ha. The amended self-regulatory measures were endorsed at the 4<sup>th</sup> BCFG meeting on 13 August 2008. This was sent again to the Kampong Som FiA for consultation in its legal context, which was finalized

in November 2008. Also, the center point of the fish *refugia* was marked with a pole and the extent of the demarcated area which is 200 ha (1,400 x 1,400 m) was measured. As a next step, the proposal for the establishment of Fish *Refugia* along with the Self-regulatory Measures should be submitted to Kampong Som FiA Cantonment by the Community Fisheries Prey Nup II through the regular channels in accordance with the Prakas on Guidelines of Community Fisheries. Meantime, preparation of establishment of Fish *Refugia* and implementation of the Self-Regulatory Measures should already be in progress at provisional basis. The practical application was initiated towards the end of December 2008. On this occasion, the implementation of such self-regulatory measures should be verified. Also, discussions on any issues relevant to complying with the self-regulatory measures by the members would be made at this meeting. The agenda and activity include:

1. Discussion with the BCFG members on the practical application of the regulations and identify issues, especially based on the reports by four middlemen
2. Collection the data sheets recorded by enumerators
3. Installation of the plan to the demarcated area with marking poles and protection obstacles
4. Action plan on workshops in the neighboring villages
5. Collection of sample cockles for biological analysis

#### Meeting with Community Fisheries Committee of Prey Nup II

Aimed at maintaining a good communication between the project and Community Fisheries, the meeting was arranged with their committee members as participants. The agenda include:

1. The outline of the project activity and outcomes
2. The future plan of the project activity
3. The major activity of the Community Fisheries and future plan
4. Most serious issues that CF is encountering
5. Any other issues

#### **2. Travelers**

- Sei Etoh : Project Leader
- Akito Sato : Asst. Japanese Trust Fund Manager
- Sumitra Ruangsivakul : Head, Socio Economic Section
- Penchan Laongmanee : Head, Fishing Ground Fishery and Oceanography Section
- Woralak Meesomwat : Researcher
- Jariya Sornkliang : Researcher
- Thanyalak Suasi : Researcher

#### **3. Work schedule**

##### 16 February 2009 (Monday)

- 05.00 – 11.30 Leave BKK and arrive at the border of Cambodia (Koh Kong)
- 11.30 – 16.00 Move to Sihanoukville (SNV)
- 16.00 – 17.00 Verify arrangement of Fish Landing Data Analysis Training course

##### 17 February 2009 (Tuesday)

- 08.30 – 16.30 Training course on Fish Landing Data Analysis  
(The 2<sup>nd</sup> group)
- 08.30 – 10.00 Participation in the above training course
- 11.30 – 14.30 Meeting with Committee members of Community Fisheries Prey Nup II
- 14.30 – 15.00 Lunch break
- 15.00 – 17.00 Visit the Mushroom Production sites by Assist. Trust Fund Manager

17.00 - 18.00 Move to Sihanoukville

#### 18 February 2009 (Wednesday)

08.30 – 16.30 Training course on Fish Landing Data Analysis  
(The 2<sup>nd</sup> group)

07.30 – 08.30 Move to the project site

09.00 – 12.00 Account checking for Mushroom Producers Group

09.00 – 12.00 Meeting with Mud Crab Culture Group

12.00 – 13.00 Lunch at the site

13.00 – 15.00 Meeting with the Crab Bank Group

15.30 – 17.00 Visit the sea-bass cage culturing site and discuss with the members

17.00 – 18.00 Move to Sihanoukville

#### 19 February 2009 (Thursday)

08.30 – 16.30 Training course on Fish Landing Data Analysis  
(The 2<sup>nd</sup> group)

07.30 – 08.30 Move to the project site

09.00 – 10.30 Meeting with Blood Cockle Fishing Group

10.30 – 12.00 Marine biological survey on blood cockle in the zone of fish refugia  
- Inspection of crab bank stocking

12.00 – 13.00 Lunch at the site

13.30 – 14.30 Move to Sihanoukville

- Mr. Akito Sato move to PNH

14.30 – 19.00 Discussion and compilation on the raw data of monitoring socio-economic survey

#### 20 February 2009 (Friday)

08.30 – 13.30 Move from SNV to the Thai Border (Khlung Yai)

14.30 – 22.00 Move from Khlung Yai to BKK

## **4. The results**

### **4.1 Training Course on Fish Landing Data Analysis**

- The meeting between the SEAFDEC team and FiA Sihanoukville team for the preparation of the training course was held at Kampong Som FiA Cantonment at 0400 pm on 16 February 2009. Mr. Etoh explained the objectives and program of the training course, and introduced the SEAFDEC lecturers, namely: Ms. Penchan and Ms. Worluk. Ms. Penchan explained the details of the course and the software program that would be used during the course, such as MS Excel program and Assess program which would be used for the analysis. The Training Course would be opened by Mr. Doung Samath, Director of Kampong Som FiA Cantonment, and would be closed with giving out of certificates by Mr. Etoh and Mr. Doung Samath. Mr. Etoh suggested that the FiA staff participating in the training should be able to continue monitoring the fish landing data and analysis by themselves, especially after the involvement of SEAFDEC in the ICRM-SV is already terminated.
- The result of training course is reported by Ms. Penchan (**Annex I**)

### **4.2 Meeting with Community Fisheries Committee of Prey Nup II**

- Nine (9) members of CF Committee participated in the meeting which aimed to report on the progress activities of ICRM-SV project to the CF Committee for them to understand and help in monitoring the project.

- Mr. Etoh encouraged the meeting to bring the issue of the ICRM-SV project for discussion at the CF Committee meetings. However, the frequency of CF meeting based on information from a CF Committee member may be once a year and conducted as general meeting to discuss the budget and progress of the various activities.
- Mr. Rim Mousoeur, CF Leader added that in some cases discussion of certain problems could be done at coffee shops or by phone, with no fixed time and place. However, the last meeting when the last report of Kampong Som FiA Cantonment was held on 8 February 2009. The last meeting of each group was organized for 3 villages on 23-25 June 2008, Prey Toal, Prey Sangke and Prey Pross. The main purpose of the meeting was to discuss the main regulations of CF and Human Rights issues.
- Mr. Etoh mentioned that based on the landing survey, the resources seemed to be going down, especially the blood cockle. Since the project operational area has also been established as fish *refugia*, the CF must be able to control and monitor the resources based on the CF regulations. The Project planned to explain and disseminate the information on the demarcation of the fish *refugia* to 5 neighboring villages. The team would be composed of the Chairman and Vice Chairman of CF Prey Nup II with FiA staff or a total of 6 persons. The Project will prepare the poster on fish *refugia* for distribution to the 5 communities, the objective of which is to maintain the blood cockle resources by prohibiting the collection of small sized blood cockles and fishing during the spawning season.
- On the swimming crab resources, Mr. Etoh explained that swimming crab fishing is not bad at all, because the crab bank system has already been started for the community and such system could maintain the swimming crab resources. He showed the record of gravid crabs released in the crab bank although the number of gravid crabs released by this group is quite small different from that of the Chumphon project where they could release about 1,000 gravid crabs per month. The Prey Nup II released 200 gravid crabs from May 2008 to February 2009.
- A Member of Prey Pross explained that the swimming crab from Prey Pross is small sized and only a few number of gravid crabs could be caught.
- Mr. Etoh provided further information on the crab bank and that by the end of April 2009, the project would provide 10 prizes to 10 members of the crab bank who released the highest number of gravid crabs, comprising 5 prizes from SEAFDEC, 2 prizes from JICA and 2 prizes from FiA Cambodia.
- For the Mushroom Producer Association, Mr. Etoh informed them that the project would not be able to assist their group forever. Thus, they must check the accounting by themselves based on 2 ways: (1) investing the sale (money) to be taken back by the members and (2) investing the sale (money) for profit that could be used for other business ventures.
- Mr. Etoh also mentioned that the 3<sup>rd</sup> experiment on mud crab culture was successful, although it was not profitable, and asked for the reason behind such predicament.
- Mr. Rim Mousoeur explained that 3 success stories could be derived from the project activities:
  - Mangrove forests can protect before the project implementation
  - Fishermen are beginning to understand the concepts of resources management and conservation
  - Mushroom activity facilitates the good relationship between women in the communities
- Mr. Moc Zen, Leader of the mud crab culture group explained that based on the geographic data, Prey Toal area could be suitable for sea bass culture than mud crab

culture. In fact, the FiA had experimented on sea bass culture near the mud crab culture area, and the experiment was successful. In this regard, a Member of the mud crab culture group said that mud crab culture was discontinued and that they would need to culture sea bass in ponds.

- Mr. Etoh emphasized that the project would like to continue the two culture activities for mud crab and sea bass. However, mud crab culture could be operated by a private person provided that the data on releasing and harvesting are provided to SEAFDEC. A member of mud crab culture group, Mr. Vicob agreed to start mud crab culture on August 2009 using 2 ponds. The remaining ponds will be used by the mud crab culture group to culture anything. In Thailand, sea bass cultured in ponds do not command good price due to its quality. Mr Etoh therefore asked the group to choose the best species for culture and collect the necessary information on the culture. He added that since the involvement of SEAFDEC in the Project will be terminated in December 2009, Kampong Som FiA Cantonment has committed to support the group but maintenance of the project should be the responsibility of the group.
- Mr. Etoh introduced Mr. Sato to the members of the CF committee, informing them that Mr. Sato is the Assistant Trust Fund Manager, who is interested to visit the culture site.
- Mr. Rim Mousour welcomed Mr. Sato and thanked the Trust Fund for supporting the project. He added that some activities have been successfully implemented by SEAFDEC, like mushroom production, the people in Thuk Tha commune know that this project has been supported by SEAFDEC. Although the mud crab culture still have some technical problems, but the equipment for the culture have been provided by SEAFDEC and the study on the measurement of the parameters could be carried out. The people also have started to understand the concept of fish *refugia*, the regulations in the Fisheries laws and Sub-decrees through the implementation of this project.



**Fig. 1** Mr. Akito Sato visited the ICRM-SV (left) and CF Committee Meeting (right)

#### **4.3 Women's Group activity – Mushroom Producers Group (MPG)**

- For the women's group, the project requested for confirmation of their fund balance at the end of November 2008 and also checking the balance in December, so that if the group has finished the balance as of December 2008, the group can pay the members their share.



**Fig. 2** Monitoring of the accounting book of mushroom production at Prey Pross and Prey Sangke

**4.4 Meeting with Mud crab culture group**

- The meeting was attended by 18 participants including the members of the CF Committee and members of the mud crab culture group.
- Mr. Etoh informed them on the objectives of the meeting which is focused on the decision of the project to continue with the 4<sup>th</sup> experiment on mud crab culture, and discuss the reason to continue the experiment which would be reported to SEAFDEC as well as the plan for the next program of the mud crab culture group.
- Mr. Moc Zen then showed the result of the 4<sup>th</sup> experiment of mud crab culture as follows:

	Pond no. 1	Pond no. 2	Pond no. 3	Pond no. 5
No. of stock	170	190	232	132
No. of dead	122	135	183	108
No. of sale	5	0	0	18

Salinity            30/38 (Min/Max)  
 Temperature      29/33 (Min/Max)  
 Low/High tide    30/110 cm. (water)

- Mr. Moc Zen explained that the experiment was conducted from 15 December 2008 to 16 February 2009 and that the group had been checking and recording in the logbook every day. However, after 5 days of releasing, many mud crabs were found dead because the temperature and salinity were increasing, and that the crab died during the molting stage. In the 3<sup>rd</sup> experiment the salinity was 10-20 ppt and the temperature was 22/23°C, which was different from the 4<sup>th</sup> experiment.
- Recognizing that salinity had affected the survival rate of mud crabs in ponds, Mr. Etoh informed the group that the experiment was an exercise and that such experiment should serve as an experience for the group and the conclusion should be part of the lessons learned from the experiment.
- Mr. Moc Zen explained that the mud crabs were dead at 30-38 ppt salinity since appropriate salinity should be 5-15 ppt and the culture period should be from August until October.
- Mr. Etoh also asked the group to compare the feeding between the 3<sup>rd</sup> and the 4<sup>th</sup> experiments. In response, Mr. Moc Zen explained that the transparency of the water in the 3<sup>rd</sup> experiment was not good, so that the uneaten feed could not be seen.
- On water temperature, Mr. Etoh asked the group about their observation and the lessons learned. Mr. Moc Zen explained that the optimum of temperature is 20-25°C, and that if the temperature is above 25°C, this would not be conducive for mud crab culture.
- Responding to the query of Mr. Etoh on the possible effect of the tide, Mr. Moc Zen replied that low tide could lead to mortality, but 60-120 cm tide would be good since the water temperature is fixed at high tide.
- Mr. Etoh also inquired that if the culture would take 2 months, how many times should culture be undertaken per year.
- A Member of the mud crab culture group replied that the culture could be operated 2 times per year, from May to July and August to October, and added that the fingerlings (crablets) could be available in high quantities from July to September. Although fingerlings

(crablets) could also be bought every day from July to February, but not from March to May.

- Mr. Moc Zen also mentioned that the group members would like to change from mud crab culture to sea bass culture, and that 2 ponds have been proposed for the culture of mud crab by a private person, while the other ponds would be used to culture sea bass by the mud crab culture group.
- The JICA Expert, Mr. Hatori suggested that since everybody has already acquired good information and equipment for sea bass culture, and that the DO and COD of the ponds have already been checked, the area could be used for sea bass culture. In fact, he added that the condition could even be better than Kampong Chin. Thus, he suggested that if possible fish cage culture could also be carried out in the area.
- In this regard, Mr. Etoh mentioned that it might not be possible to move the cage culture to the pond area, because the location for the cage easily situated at Kampong Chin, and member of cage culture may be not agree to move their cages.
- A member of the mud crab culture group stated that sea bass culture in ponds could be started during the early part of June, although this year the rain season came earlier.
- After the discussion, Mr. Etoh agreed to continue the sea bass experiment as the fishers have already acquired good knowledge on the culture and considering that this is a measure of the achievement of the project's objective. Thus, Pond no.2 and 3 will be used for mud crab culture by Mr. Vicob (private sector). However, before the sea bass culture could be started, the ponds would be dug deeper by 50 cm and the sea bass culture group would be reorganized. Sea bass culture using pond no. 1, 4 and 5 could start in June.

#### 4.5 Meeting with Crab Bank group

- The meeting had 21 participants including the members of the CF Committee and members of the crab bank group from Prey Sangke and Prey Pross.
- Mr. Etoh reiterated that the main species of crab in the area is mud crab and swimming crab, and the main fishing gears used are the gill net and collapsible crab trap. It is the objective of the project that the crab bank system had been established in the project operational area, the swimming crab resources could be improved and the conditions of the fishing group could also be enhanced, hence the need to monitor the swimming crab catch data in the project area. Considering that the results of the gravid crab releasing activity have not yet been updated, initial information seemed to indicate only few gravid crabs that have been released. In the Chumphon project, which has only 15 members about 100 gravid crabs could be released per day.
- The leader of crab bank group, Mr. Hak E Souer reported on the number of gravid crabs released in 2008 and 2009, as follows:

2008		2009	
Month	No. of gravid crabs	Month	No. of gravid crabs
May	5	January	3
June	3	February	0
July	3		
August	34		
September	69		
October	3		
November	56		
December	21		
Total	194	Total	3

- The group leader further stated that the active members of the crab bank group in Prey Sangke have been engaged in clam collecting because it is the clam season starting on 15 December. He added that in fact, some members are able to harvest 100 kg per day and will continue to collect clams until the harvest would decrease to 10-20 kg per day, after which the members will continue operating the swimming crab gill net again.
- Mr. Etoh then inquired why the members from Prey Pross have not released gravid crabs.
- A member from Prey Pross replied that the group did not get any gravid crab this time, and their catch of swimming crab was only 3-5 kg per day (200 crab trap). Moreover, he also requested for additional cage to be installed as crab bank at Prey Pross because the crab bank in Prey Sangke is far from their village.
- In this regard, Mr. Etoh informed the group that the project agreed to establish a new one cage at Prey Pross for the crab bank activity. However, there must be someone from the group who should take care of recording and monitoring the log book like in Prey Sangke.
- Mr. Chanthana reiterated that the group planned to organize a meeting at Prey Pross in March or at the same time that the Prey Sangke meeting on 9-15 March. During the meeting, the site of the cage would be selected and that as proposed the group leader would take care of the crab bank activity.
- Mr. Etoh explained that the use of collapsible crab trap in Prey Pross would yield swimming crabs in better condition than those caught by gill net fishing gear. He expressed his hope that the swimming crab resources in Prey Pross will be rehabilitated through this activity as it would be good not only for the site but also for the project. He also informed the meeting that the Project would provide prizes to members of the crab bank who could release the highest number of gravid crabs by the end of April 2009. He added that there will be a total of 9 prizes: 5 from SEAFDEC, 2 from JICA and 2 from FiA Cambodia, and that if the Community Fisheries can operate this activity by itself, the CF will win the crab bank prize in Cambodia.
- In this regard, Mr. Chanthana stated that there are 2 systems of crab bank in Cambodia, by buying gravid crabs and volunteer to release gravid crabs (SEAFDEC approach). The FiA, Cambodia has chosen to adopt the SEAFDEC system to be promoted in the country. In fact the next site will be established at Rong Island in Sihanoukville.



**Fig. 3** The crab bank cage at Prey Sangke

#### **4.6 Fish cage culture group**

- Six members of the fish cage culture group attended the meeting, the objective of which was to follow up the result of the sea bass cage culture.
- Mr. Etoh asked the group for the source of the fingerlings, how many fingerlings were stocked, the status of the culture, why the fishes did not immediately eat the feed, and whether there is a need to move to another site.
- In reply, Mr. Hatori informed the meeting that DO, temperature and salinity were very critical and it was found that the fingerlings were difficult to growth.
- A member of fish cage culture group said that the fingerlings were bought from a middleman who ordered them from Thailand to Vietnam. The group used 600 fingerlings



but suggested that the cages be moved to another site in the same river but not to move to another village.

- In this connection, Mr. Etoh asked the group to properly check the new site and make sure that it would be the best location in the project area for sea bass culture.

#### **4.7 Blood cockle fishing group meeting**

- Thirty members of the blood cockle fishers group attended the meeting.
- Mr. Etoh informed the group on the objective of the meeting which was to monitor the progress of the activity that and confirm the regulations of the fish refugia. He added that after the fishermen and Kampong Som FiA Cantonment agreed on regulations and demarcation zone in November 2008, SEAFDEC provided the necessary sieve to the middleman to control the size of blood cockles being harvested and sold since blood cockles smaller than 10 g will pass through the sieve. After one year the size and total catch of blood cockles in the project area would be assessed as the results would serve as valuable indicators to establish the status of the blood cockle resource in the area.
- Mr. Etoh reiterated that the project is lucky because FiA Cambodia has a Decree and Sub-decree to carry out fisheries resources management, and that 3 important and relevant activities have been done by the project, namely:
  - Project have already made the poles to be installed around the fish refugia
  - 30 units of protection obstacles have also been installed near the fish refugia
  - 5 villages around the fish refugia have already understood the regulations of FiA
- Mr. Etoh further indicated that the project would continue the data collection of blood cockle until December 2009, in order to evaluate the status of the resources. He encouraged the members report all activities being done and proposed to be done to the group leader.
- The leader of blood cockle fishers group, Ms. Mariya said that the blood cockles harvested from the village are bigger and do not pass sieve.
- The Middleman added that during the month of February, the fishermen collected big sized blood cockles for sale because if they sell the small size, he returns these to the fishermen and tells them to return the blood cockles back to sea.
- While appreciating the efforts of the fishers to comply with the regulations, Mr. Etoh said informed the meeting that the spawning season of blood cockles in the project area would be confirmed by scientific research. After the duration of the spawning season is confirmed, harvesting of blood cockles would be stopped for one or two months. Now that the regulations have been established, if illegal fishers from outside come to fish in the demarcated area, they must be told to comply with the rules and regulations just like any other member of the group. Considering that the FiA has provided the demarcated area to group so it now belongs to the group who should be responsible in taking care and preserving the area. In the future and as soon as the scientific data are verified and confirmed, the resources would be enhanced and the harvest could be good.



**Fig. 4.** The Middleman confirming that all blood cockles harvested by the fishermen did not pass the sieve (left), and members of blood cockle fishers group with project's staff on their way to collect blood cockles (right)

#### **4.8 Mr. Akito Sato visited Kampong Som FiA Cantonment**

- Mr. Akito Sato paid a courtesy visit to Mr. Doung Samath, Director of Kampongsom Cantonment. In introducing himself, he mentioned that he worked at the Fisheries Agency of Japan and was happy for having been given the chance to visit the ICRM-SV project site. He said that the project on resources management by the community is successful, because Mr. Etoh had introduced good ideas to your project site.
- Mr. Doung Somath informed him that the Ministry has already approved the Sub-decree on Community Fisheries. In the beginning, the CF in Sihanoukville did not understand the concept of resources management, but after SEAFDEC had arranged for the training and study tour of the CF members and made them understand the concept of resources management, they are now learning. Now many agencies have visited the project site to study the resources management plan, and the CF members are now able to explain the resources management concept to them.
- On the status of the ICRM-SV project, Mr. Doung Somath mentioned that the collaborative project is going well, the project is different from other projects implemented in Cambodia since the project has directly involved the communities, and that the FiA plan to continue all the activities after SEAFDEC shall have already terminated its involvement in the project.
- Mr. Etoh reiterated that during the 1<sup>st</sup> year of project, SEAFDEC took care of 100% of the activities and after SEAFDEC's involvement would be terminated, FiA should support some activities and may be also allow fishermen to own some lands and must enforce and strongly control the regulations.

## Annex 4

### Minutes of the 5<sup>th</sup> Steering Committee (SC) Meeting Integrated Coastal Resources Management in Sihanoukville (ICRM-SV)

**Venue:** The meeting room, Agriculture Department, Sihanoukville, Cambodia

**Date:** 17 March 2009

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#### 1. List of Participant

##### DOF, Cambodia

01. Mr. Ing Try	Deputy, Director General, FiA, PNH
02. Mr. Suon Kamsan	Agriculture Department, SHV
03. Mr. Oum Sokun	Inspectorate Office, FiA, SHV
04. Mr. Duong Samath	Director, Cantonment of Fishery Kampong Som
05. Mr. Pich Bunna	Vice Chief, CFDO, FiA, PNH
06. Mr. Va Longdy	Conservation Division, FiA, PNH
07. Mr. Nen Chamroeun	Deputy, Director of Cantonment of Fishery Kampong Som
08. Mr. Park Sarawat	Inspection Officer, FiA, SHV
09. Mr. Yos Chanthana	Team Leader/Marine Biologist
10. Ms. Heng Ponley	Fishery Officer, CFDO, FiA, PNH
11. Mr. Kang Maxcy	Cantonment, SHV
12. Mr. Khin Saravuth	Cantonment, SHV
13. Mr. Samreth Keila	Extension worker of ICRM-SV

##### SEAFDEC/TD

14. Mr. Sei Etoh	Project leader
15. Dr. Yuttana Theparoonrat	Division Head, CSFD
16. Ms. Sumitra Ruangsivakul	Socio-economic Section Head
17. Ms. Jariya Sornkliang	Marine Biology Researcher
18. Ms. Thanyalak Suasi	Socio-economist

##### DOF, Malaysia

19. Mr. Mohamad Shaupi Darahman	Director, Planning and International Division (Malaysian National Coordinator for SEAFDEC)
20. Mr. Anuar Omar	Extension Unit, Kedah State Fisheries Office
21. Mr. Jephrein Wong	Officer, Sabah State Fisheries Office

##### JICA

22. Mr. Tatsuya Hatori	JICA Expert
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#### 2. Contents of meeting

##### 2.1. Opening of the Meeting

- Ms. Heng Ponley introduced the agenda and objectives of the meeting, as follows:
  - to endorse the bi-annual project progress reports for 2008
  - to endorse the proposed work-plan for 2009
  - to discuss other issues pertinent to the project management and strategic matters like the outline of the forthcoming Regional Seminar

- the prospective follow-up actions after the termination of the involvement of SEAFDEC in the project
- She then invited Mr. Ing Try, Deputy Director General of Fisheries Administration, to give the welcome speech on behalf of FIA and officially open the meeting.
- Mr. Ing Try welcomed all participants, especially the participants from Malaysia and Dr. Yuttana of SEAFDEC for attending the meeting.

## **2.2. Endorsement of the minutes of the 4<sup>th</sup> SC meeting**

- The project team leader, Mr. Yos Chanthana presented the minutes of the 4<sup>th</sup> SC meeting in Khmer, but the foreign participants followed the English version which was part of the documents distributed during the meeting.
- Mr. Ing Try mentioned that the minutes of SC meeting will be reported to the DG of FiA, Cambodia.
- Mr. Ing Try asked for the meaning of tea cake because this word might be difficult to understand by the fishers. In reply, Dr. Yuttana replied that tea cake could kill the freshwater fishes by destroying the fish gills.
- Mr. Ing Try was thankful that under the TF-4 although it has been terminated in 2008, the TF manager has been kind enough to continue this project until December 2009.
- Mr. Etoh explained that actually the TF-4 will be terminated in December 2009, but the project is supposed to be terminated in 2008, but the TF manager agreed to extend this project until December 2009.
- After the discussion, Mr. Ing Try declared the Minutes of the 4<sup>th</sup> SC meeting approved and endorsed.

## **2.3 The progress of activities from July to December 2008**

- Mr. Yos Chanthana explained the progress report of the project following bi-annual report (July-December 2008).
- Mr. Etoh added that based on the feedback on mud crab and sea bass culture, the fishermen could learn lessons and gain experience from the activities.
- Mr. Tatsuya Hatori, JICA Expert, mentioned that some appropriate conditions could be established for mud crab and sea bass culture, such as the following:
  - Rain flow which is increasing annually at maximum of 3000 mm, could affect the culture
  - More in-depth study on mud crab culture is necessary especially the relationship between mud crab and mangroves as some species could have negative effect on the mud crab being cultured
  - The optimum value of the salinity and temperature should be monitored and established for mud crab culture
  - For sea bass culture, there is a need to find the best location for the culture site
- Mr. Etoh informed that since SEAFDEC has spent a lot of budget for mud crab culture last year and this year, and that the fishermen had already gathered a lot of information, SEAFDEC intends continue the mud crab culture next year.
- Mr. Ing Try mentioned that there must have been a mistake in the beginning because of lack of information and experience on this culture the natural mangroves were removed even if there was no scientific data that the mangroves could have impact to the mud crab cultured. The last mud crab culture was an experience for fishermen from where a lot of scientific data could be derived. He added that when FiA would establish its Aquaculture Center, all of the information gathered and the experience learned from this culture would be used as basis for any decision to embark on mud crab culture in the future.

- Mr. Hatori further stated that from the results of the research survey on mangrove forests, the fishermen will gain much experience and knowledge on mangroves.
- In this regard, Mr. Ing Try suggested that if the study on mangroves would be carried out at the fishermen level, it should be conducted in collaboration with the FiA.
- Mr. Etoh also informed the meeting that under the ICRM-SV project, local seminar is held every year, and each year the level of understanding of the fishermen on coastal resources management could be evaluated.
- Mr. Ing Try suggested 3 important indicators to evaluate the project, namely:
  - Income, like the mushroom production group who are happy because of additional income
  - Local business
  - Motivation to attend meetings, which the participants are happy to do, such feeling can be a measure of the success of the project.
- While noting that the size of the protection obstacles or ARs is 1mx1mx1m, Dr. Yuttana commented that the size could be too small, and if the sea bottom is mud and sand all the ARs will be sinking in one year. He then inquired on the current situation of the ARs.
- Mr. Etoh also informed the meeting that SEAFDEC has provided the materials while FiA will be responsible for the construction and installation. FiA was then asked to monitor the situation of the ARs and findings would be discussed again after one year from installation.
- Mr. Ing Try explained that the same structures have been installed in many areas of Cambodia, even in soft sea bottom, and after one year the ARs are still in good conditions. The FiA has tried obstacles made of wood, but the result was not good.
- Mr. Ing Try suggested to the Board of the ICRM-SV project that FiA has planned to produce posters on the project using the photographs of the activities. This responsibility has been assigned to Mr. Doung Samath.

#### **2.4 Work plan in 2009**

- While considering that SEAFDEC has agreed to continue the ICRM-SV project until December 2009, Mr. Etoh informed the meeting that since his contract with SEAFDEC will be terminated on 15 April 2009, he intended to present the work plan for 2009.
- Mr. Pich Bunna mentioned that FiA would like to promote the crab bank scheme in Cambodia. However, since the FiA does not have the guidelines for the crab bank system, he requested SEAFDEC to provide the guidelines to FiA.
- In response, Mr. Etoh said that SEAFDEC has guidelines for crab bank system based on the experiences in Thailand, Malaysia and Japan, and would give such guidelines to FiA Cambodia.
- In this regard, Mr. Ing Try added that SEAFDEC could send the guidelines for the crab bank system to Mr. Chanthana for translation into the Khmer language before Mr. Etoh completes his tour of duty with SEAFDEC. He also informed the meeting that a budget would be provided for the publication of the guidelines in July 2009.
- Mr. Ing Try also mentioned that Kampong Som FiA Cantonment planned to construct 10 ponds in each village for cat fish culture, which means a total of 40 ponds in 4 villages. The duration of cat fish culture is 3-4 months, and FiA is now selecting the site in each village. The members of CF will be digging the ponds and laying black plastic at every pond. The size of each pond is 2mx4mx0.8m. He added that FiA expects to start cat fish culture in June or July and that the results of the culture will be presented during the regional seminar.
- In this connection, Mr. Etoh requested to see the site of cat fish culture in each village and reiterated that from June to November 2009, private fishermen will start the mud crab

culture using 2 ponds, and the data from this culture will be compared with research data of Mr. Hatori. In addition, sea bass culture will be started in January 2010.

- Concerned about the expenditures for pond digging, Mr. Chanthana suggested that if the research pond used outside pond, we will not pay more on digging. Mr. Hatori replied that, if the research pond is outside, it can't compare with private culture. For sea bass culture, we try to start to culture on June 2009.
- On mud crab culture, Mr. Yuttana commented on why culture is without mangrove when usually mangrove is friendly with mud crabs. He also observed that the water gate of the pond could be made deeper so that it would be easy to open.
- In response, Mr. Hatori indicated that some species of mangrove absorb O<sub>2</sub> and some species could be friendly with mud crab. In this regard, he suggested that further study on mangroves in the project area would be conducted in order to collect additional data from the research conducted inside pond.
- Mr. Ing Try informed the meeting that FiA is trying to compile all scientific data on mud crab culture, and will raise the comments from Dr. Yuttana and Mr. Hatori for consideration during the next trial.
- As for the gate of the ponds, Mr. Hatori informed the meeting that due to limited budget, the gate could not be made deeper.

## **2.5 Regional Seminar**

- On the regional seminar of the ICRM-SV project, Mr. Etoh suggested that the seminar would be organized for 3 days. In this regard, some agreements should be made specifically on who should write the report, the budget needed and the working team for the seminar. It is timely that the regional seminar would be held in January 2010, immediately after the involvement of SEAFDEC in the project has already been terminated in December 2009.
- Mr. Etoh informed the meeting that as regards the budget for the seminar, as experienced during the last regional seminar at Thailand and Malaysia, SEAFDEC provided allowance, accommodation and transportation to foreign participants and from SEAFDEC side, while the host country provided the budget for the participation of their staff for example their allowances, accommodation and transportation.
- In this regard, Mr. Ing Try asked SEAFDEC to provide an estimated cost of the regional seminar, indicating the items to be paid by FiA. He also suggested that if it is not possible for FiA to provide the budget may be the regional seminar could be held at SEAFDEC/TD in Thailand.
- Moreover, Mr. Etoh also mentioned that when the involvement of SEAFDEC in the ICRM project in Thailand and Malaysia have been terminated, the two countries have continued to carry out the project's activities. In this regard, Mr. Etoh asked FiA to seek for other donors to take care of the project, especially to continue some of the project activities.
- Mr. Doung Samath mentioned that it could be possible for this project to find new donor because many people have visited the project site. Moreover, the CF and FiA can collaborate and work together, because SEAFDEC has provided the groundwork and experience to CF on coastal resources management.
- Mr. Ing Try also reiterated that as he informed during the last meeting, from the start of the ICRM-SV project until December 2009, the FiA has shared 10,000,000 Riels to support the project under the cost-sharing scheme as well as also providing a boat to CF. In this connection, Mr. Etoh thanked the FiA for supporting the project and for providing assistance in terms of funding support.

## 2.6 Tagal system

- Guest Meeting Participant, Mr. Jephrein Wong, Fisheries Officer from Sabah State Fisheries Office presented the Tagal system, which is a traditional resource management system initiated in the village of Tuaran in Sabah in 1987. The second Tagal System was put in place in Kota Belud in 1991, and the third one in the village of Penanpan in 1997. The highlight of his presentation is on the lessons that could be learned from the work carried out by the local communities in conserving and restoring one of the endangered freshwater species, i.e. Masheer, Pelin or Kelah (local name) or Greater brook carp (in English) or *Tor duorensis* or *tombroides* (scientific name). In recognizing the urgency to address the problem on the dwindling Measheer resources, the Sabah State Government and the Fisheries Department manifested their strong support for promulgation of the Inland Native Law to govern the practices of Tagal System in 1995. In 1999, the Sabah Fisheries Department also organized more Tagal groups in the communities along the rivers. To legitimize the attempt legally, the Sabah Fisheries Enactment was promulgated in 2003 and legally embodying thereby the Tagal System movement. Thus by the end of 2008, the Tagal System has been implemented in 353 and 40 villages in Sabah and Sarawak, respectively.
- Mr. Wong added that the demarcation for the Tagal System depends on the size of the deep pools in rivers along the villages. The target fish, Masheer lives in particular deep water pools and do not migrate to any other pools. It is for this reason that resources management can be practically possible. The system initially practiced by the communities was just to refrain from fishing but after 2001, the State Fisheries Department expanded this by dividing the area into three zones; i.e. red, green and yellow zones.
  1. Green zone: Open fishing zone for members of the community Tagal group. The members are allowed to fish throughout the year with regulated fishing methods: i.e., no gillnet fishing but only cast-netting and angling.
  2. Yellow zone: Open once or twice a year depending on the occasions of the community, like a festival. In this time, encircling gillnets are used. The catch is shared with the members after deducting some portions for the Tagal group's administrative costs.
  3. Red zone: Restricted only for sports fishing with entrance fees. The cost of fishing fee is RM50 per day from 8.00 AM to 16.00 PM plus the cost of the services of local guides at RM50 for two guests.

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Draft by: Sumitra Ruangsivakul 26.03.2009

**REPORT  
TRIP TO CAMBODIA  
16-19 MARCH 2009**

Sumitra Ruangsivakul

## **1. Objectives**

Since the project plans to carry out various activities in 2009, one of the major activities of the Project is to take part in the 5<sup>th</sup> project Steering Committee meeting from 16 to 19 March 2009, where the major project strategy and issues would be raised for consultation with the Steering Committee.

### Mud-crab Culturing Group (MCCG)

The 4<sup>th</sup> experiment of Mud Crab fattening exercise was completed in early February 2009 deriving useful technical data and information concerning mud-crab fattening. As agreed during the 13<sup>th</sup> workshop on Mud-crab Culturing Group on 18 February 2009, mud-crab fattening venture would also be initiated by the private sector using pond number 2 & 3, and simultaneously experimental sea-bass culture would be conducted using pond No.4 and 5. Meantime, pond drying and cleaning work are expected to be completed before the rainy season sets in. During this trip, therefore, inspection on the progress of work would be conducted at the site.

### Cage Culturing Group (CCG)

The 2<sup>nd</sup> experiment on sea-bass culture by the Cage Culturing Group was started on 7<sup>th</sup> January 2009. Site inspection together with collection of marine environmental data was carried out by the project team and the JICA expert on 18 February 2009. Report from the observation was presented during the 6<sup>th</sup> Workshop on Cage Culturing that took place on the same day. As the result from the discussion, it was decided to shift the cage culture location further down to the canal. During this trip, site inspection of the cages will be made and discussion on the immediate future work will be carried out.

### Women's Group activity – Mushroom Producers Group (MPG)

The mushroom production was privatized as a corporate type of venture in April 2008, and since then the group has been developing mushroom production by themselves under the Internal Rules in a harmonized way. In addition, the new venture in production of mushroom spores commenced in January 2009. Site inspection of the mushroom and spores production will be conducted in all 4 villages. Simultaneously, verification and scrutiny of the bookkeeping and accounting records in the four groups would be continued by the project team.

### Crab Bank Group (CBG)

The Crab Bank Group was organized in the 2<sup>nd</sup> workshop of CBG on 1 April 2008 and since then the activity has been continued. However, the outcome of the crab bank activity is below the level of satisfaction. An improvement plan was discussed at the 6<sup>th</sup> Workshop on Crab Bank Group on 18 February 2009 and it was agreed to seek the possibility of persuading the crab trap group of Prey Pros to release gravid crabs in an additional cage which would be installed close to their village. During this trip, follow up action will be made on the preparations for the 7<sup>th</sup> workshop to be held on 18 March. Also, the project team will verify and scrutinize the logbook record and the account book of the CBG.



### Blood Cockle Fishers Group (BCFG)

The Self-regulatory Measures for Blood Cockle Fishing in conjunction with establishment of Fish Refugia had been finalized in November 2008, and the actual implementation of the regulated sieve with 18 mm x 18 mm mesh size had taken place since December 2008. Thereafter, the fishers have been abiding by the self-regulatory measures and the middlemen have been controlling the sizes of blood cockles purchased from the fishers using the regulated sieve. During this trip, monitoring inspection will be made at the spot where the middlemen are purchasing blood cockles from the fishers.

In a bid to disseminate the concept of fish refugia in the neighboring fishing villages, it is envisaged to conduct workshops in 5 villages by the team composed of the project and FiA Cantonment staff in early March. Monitoring the progress of this plan will be made during this trip.

As agreed by the FiA, the marking poles for the demarcated area in the fish refugia as well as 30 sets of obstacles are to be installed manually by FiA in March. During this trip, it is envisaged to follow up this activity as previously agreed upon.

In addition, marine biological analysis to identify the spawning seasons and other data collection work would also be continued during this trip.

### The 5<sup>th</sup> Steering Committee meeting

The SC meeting will be held on 17 March 2009 in the meeting room of the Agriculture Department Office in Sihanoukville.

### Study tour by the Malaysian DOF mission

It is envisaged that the mission of Malaysian Fisheries Department visits the project site to inspect the activities as they had deployed the CBRM sister project called the ICRM-PL jointly with SEAFDEC/TD in Langkawi, Malaysia, from August 2003 to December 2007. They are expected to visit the project site in Prey Nup II in the afternoon on 16 March and also participate in the 5<sup>th</sup> SC meeting in the morning on 17 March as observers.

## **2. Travelers**

- Sei Etoh : Project Leader
- Yuttana Theparoonrat : Division Head, CSFD
- Sumitra Ruangsivakul : Head, Socio Economic Section
- Jariya Sornkliang : Researcher
- Thanyalak Suasi : Researcher

## **3. Work schedule**

### 16 March 2009 (Monday)

- 05.30 – 10.30 Leave BKK and arrive at the border of Cambodia (Koh Kong)
- 10.30 – 15.00 Move to Project site including lunch break
- 15.00 – 17.00 Guiding the Malaysian DOF mission to inspect the project activities
- 17.00 – 18.00 Move to Sihanoukville (SNV)

### 17 March 2009 (Tuesday)

- 08.30 – 12.30 Participate in the Steering Committee meeting (the Malaysian DOF mission is also present as observers.)

- 12.30 – 13.30 Lunch break
- 13.30 – 17.30 Malaysia DOF mission and Dr. Yuttana move to Phnom Penh (PNH)
- 13.30 – 18.30 Project team visit the site for cat fish culturing and inspect cage culturing site

18 March 2009(Wednesday)

- 07.30 – 08.30 Move to the project site
- 09.00 – 12.00 Account checking for Mushroom Producers Group (Ms. Ponley and Ms. Jariya)
- 09.00 – 10.30 Meeting with Blood Cockle Fishers Group
- 10.30 – 12.30 Marine biological survey on blood cockle in the zone of fish refugia
- 12.30 – 13.30 Lunch at site
- 14.00 – 16.00 Meeting with Crab Bank
- 16.00 – 17.00 Move to SNV

19 March 2009 (Thursday)

- 07.00 – 12.00 Move from SNV to the Thai Border (Khlung Yai)
- 12.30 – 17.30 Move from Khlung Yai to BKK

**4. The results**

**4.1 Visiting project site by DOF, Malaysia**

- Mr. Etoh explained the brief background of ICRM-SV and the progress of the projects’ activities. The team from DOF, Malaysia became interested in the Local Business of the project, especially the initiative undertaken by the Mushroom Producer Groups.



**Fig. 1.** Team from DOF, Malaysia visited the Mushroom Producers Group (left) and Mud crab Culture (right) at Sihanoukville

**4.2 Mud crab Culturing Group**

- Pond no. 5 was dug and prepared for drying and cleaning before the rainy season sets in.



**Fig. 2.** Digging of the mud crab culture pond no. 5, left side is still unfinished, while the right side shows the work already completed

#### 4.3 Cage Culture Group

- The location of the cage culture have been shifted down the canal and Mr. Hatori, who has been checking the quality of sea water near the new location, reported that the water is not yet good for culture and that if sea bass stocked is still weak the fish would die. Therefore, the cage culture group will inform the FiA staff for the possibility of moving the site to another location again.



**Fig. 3** The new location of cage culture (left) sea bass culture at Kampong Chin (right)

#### 4.4 The 5<sup>th</sup> SC meeting

- The minute of the 5<sup>th</sup> SC meeting is shown as **Annex I**



**Fig. 4** The 5<sup>th</sup> SC meeting held at Sihanoukville, Cambodia on 17 March 2009

#### 4.5 Blood cockle fishers group meeting

- Twenty-seven members came to participate in this meeting.
- Mr. Etoh summarized the background of fish refugia and objectives of the meeting specifying that since the regulation and demarcated area of fish refugia have been done by the group, the next important activity would be for the FiA and Prey Nup II CF members to collaborate in conducting the workshop for 4 neighboring villages to explain the regulations of the refugia. He mentioned that at this meeting, SEAFDEC would like to follow up on the result of the 4 villages meeting, and improve on the members'

understanding on the regulations for fish refugia.

- The Deputy Director of Cantonment of Fishery Kampong Som, Mr. Chamrouen as one of the staff who attended the meeting of the 4 neighboring villages, informed the meeting that the regulations of fish refugia were explained to the 4 neighbor villages specifying that around the area established as fish refugia, ARs would be installed. Fishermen from outside can still come to fish around the area, but they must follow the regulations, especially regarding the spawning season and on the regulation related to the size of blood cockles that could be harvested. He mentioned that the FiA will bring the posters on fish refugia and the regulations to the villages later, and that after the meeting, the representatives from the 4 neighboring villages appreciated the efforts in disseminating the concept to them and especially on the regulations.
- Mr. Etoh informed the blood cockle fishing group that generally all villagers understand the regulations in a harmonized way, but he asked why there are still small size blood cockles at the market. Responding to the query of Mr. Etoh on where the blood cockles in the market come from, the members told him that the bivalves come from Koh Kong and not from Prey Nup II. The group further informed Mr. Etoh that 5 middlemen buy the blood cockles in the area and that the size of the blood cockles bought from fishermen was over 10 g/pc.  
Mr. Etoh continued that SEAFDEC planned to construct a pole at every one meter around fish refugia, and install protection obstacles to protect the area which belongs to the group. He added that the size of the blood cockles will be bigger in the spawning season, and expressed the hope that the size would be about 20 g or 50 ps/kg. The results of the research work conducted by SEAFDEC on the period of spawning season would be shown to the group the following month. He also mentioned that the biological survey should be continued by the local staff, one month per time. The result of the survey could determine and measure the resources dynamic.
- On biological survey, Mr. Etoh informed the meeting that the project will present the right procedure on how to do the survey at sea, and the next time the survey will be conducted by the local staff alone. At the start, Mr. Keilah will participate in the activity with the project staff, and thereafter he will be with the survey team every time the survey is conducted. The areas where the biological data would be collected will be divided into 4 areas where one area should have an area of 1 m x 1 m. At the end of the year, the results should be presented during the local seminar.
- The Group Leader, Ms. Marisa informed the meeting that since the area has been established as fish refugia and the regulations have been imposed, only big size blood cockles have been harvested.
- In this regard, Mr. Etoh explained further that Ms. Marisa was right especially that big size of blood cockles are expensive and under regulation the regulations big size bivalves can be harvested. However, he added that aside from such reason, the fishers should be aware that if all size is collected no more blood cockles would be left for the next harvest, but if only the big size is collected there will still be the chance to collect in the future because the blood cockles will not disappear from the area.
- One member of blood cockle fishing group inquired about what to do to some members who do not follow the regulations of fish refugia.
- Mr. Etoh suggested that such member should be made aware that if he does not follow the regulations and get all sizes of blood cockles, production of new generation of blood cockles will stop and there will be no more blood cockles for future harvest. The members should also be made to understand that the blood cockles should be allowed to grow to mature size because at such size the bivalve would produce the spats (baby cockles) and after the spats grow to marketable size the fishers can harvest them.

Lastly, Mr. Etoh informed the meeting that after having worked with the group closely, in one month time he will leave SEAFDEC and the project. However, he assured the group that the other project staff would continue to implement the activities. He also expressed the hope that the resources would be enhanced and wished the group success in their future endeavors. Finally, he thanked everybody for their cooperation.



**Fig. 5.** Project's staff visiting a middleman at Prey Sangke showing how the size of blood cockles has been improved using the regulated sieve

#### **4.6 Crab bank meeting**

- Thirty-nine (39) participants from Prey Pross and Prey Sangke attended the meeting which was convened at Prey Pross.
- Mr. Yos Chanthana introduced the SEAFDEC team to new crab bank group, and presented the objectives of the meeting.
- Mr. Etoh explained that in accordance with the objectives of the meeting the swimming crabs in the project area are still small sized, and that if the fishers would still continue to catch crabs without resources management, the catch and size of swimming crabs would be decreasing. Such situation would be like Japan 25 years ago. Now Japan has been implementing a management plan for swimming crabs where the fishermen mark the carapace of gravid crabs and release them back to the sea and that it is strictly prohibited to catch the gravid crabs. During the first year of the management plan, the fishermen did not believe the strategy, but after 10 fishermen carried out the management plan, the catch and size of the swimming crabs have increased. In the region, the crab bank system has also been introduced specifically in Chumphon, Thailand five years ago using cages. The ICRM-PD project in Chumphon has 15 members led by Mr. Jang, who oversees the releasing of gravid crabs from the members to the cages (average gravid crabs released is about 100 crabs per day), and selling of spent crabs after spawning. The group has established a credit scheme from the income of the crab sale. This system has become popular in Thailand, where many stakeholders have adopted the this system. The Chumphon Project has two crab bank systems, using cage and the Japanese system during the monsoon season. The ICRM-PL project in Malaysia has started the Japanese crab bank system on June 2007. The crab bank group must have strong leader who is capable of carrying out the activity. The two projects in Thailand and Malaysia have strong leaders, and the leader of the crab bank in Thuk Tha Commune should also be strong. The crab bank in Thuk Tha commune already started the activity in May 2008, and it is already 10 months of operation for the Prey Sangke group but the Prey Pross group has not yet started. In this regard, a new cage for crab bank will be constructed at Prey Pross because usually this village has the best survival rate of swimming crabs.

- Mr. Etoh also explained the new structure of the crab bank group proposing that the group could be re-organized into 3 sub-groups, namely: north Prey Pross, Center Prey Pross and Prey Sangke, and all sub-groups are under the Prey Nup II. The new name of the sub-group of Prey Sangke is Prey Angkor and Center Prey Pross as Kampong Kadow. SEAFDEC will provide the materials for the cage construction but construction should be done by the members, which should be completed by the end of March in order to be able to start operation immediately. The operation costs for feeds and transportation could be supported by SEAFDEC, and the income from crab sale will be saved in accounting book. The Project will provide 2 books as the general leader and normal book, and every month the FiA staff will monitor and collect the data for analysis. The group has still one month for releasing, and the project will provide the prize for members who release the highest number of gravid crabs for a total of 5 best members per sub-group.



**Fig. 6** The new Crab bank sub-group meeting at Prey Pross (left) and daily catch of swimming crabs by collapsible crab trap (right)

## Annex 6

### MINUTES OF THE 8TH IMPLEMENTATION COORDINATION COMMITTEE (ICC) MEETING

#### Integrated Coastal Resources Management in Sihanoukville (ICRM-SV)

- Venue: Meeting Room, Agriculture Department, Sihanoukville
  - Date: 4 June 2009
- 

#### List of participants

##### FiA Cambodia & Governor of Sihanoukville

- |                      |   |
|----------------------|---|
| 1. Mr. Ing Try       | Deputy Director General, FiA, PNH                       |
| 2. Mr. Duong Samath  | Director, Kampong Som FiA Cantonment                    |
| 3. Mr. Pheng Se      | Deputy, Department of Agriculture Sihanoukville         |
| 4. Mr. Pich Bunna    | Vice chief CFDO, FiA, PNH                               |
| 5. Mr. Oum Sokun     | Deputy, Marine Fisheries Inspectorate, Sihanoukville    |
| 6. Mr. Kem Ann       | Director of Fisheries Administration Division, Prey Nub |
| 7. Mr. Yos Chanthana | Project Team leader of Cambodia site                    |
| 8. Ms. Heng Punley   | Project Socio-economist                                 |
| 9. Mr. Samrith Keila | Extension worker  |

##### CFs

- |                    |  |
|--------------------|--|
| 10. Mr. Phoun Nam  | Sangkat Chief, Toeuk Tla Commune                 |
| 11. Mr. Nos bet    | Vice chief of Community Fisheries of Prey Nub II |
| 12. Mr. Mok Sen    | Mud-crab Culture Group leader                    |
| 13. Mrs Hoc Tean   | Chief of mushroom producer group                 |
| 14. Ms. Kob Malaya | Blood Cockle Fishers Group leader                |
| 15. Mr. Kak Eseu   | Leader of crab bank group at Prey Sangke         |
| 16. Mr. Mol Neat   | Leader of crab bank group at Prey Pross          |

##### SEAFDEC/TD

- |  |  |
|--|--|
| 17. Dr. Yuttana Theparoonrat<br>Division | Head, Coastal Small-scale Fisheries Management |
| 18. Ms. Sumitra Ruangsivakul             | Head, Socio economics Section                  |
| 19. Ms. Jariya Sornkliang                | Researcher                                     |
| 20. Ms. Thanyalak Sausi                  | Researcher                                     |

##### JICA

- |                        |                               |
|------------------------|-------------------------------|
| 21. Mr. Tatsuya Hatori | Expert on Coastal Aquaculture |
|------------------------|-------------------------------|

#### Results of the meeting

After getting permission from Mr. Ing Try to start the 8<sup>th</sup> ICC meeting, Mr. Yos Chanthana presented the main objectives, the provisional agenda and timetable of the meeting. The specific objectives of the meeting are to:

- monitor the progress of the project since the last ICC meeting,
- discuss the proposed project's immediate action plan for the next 3 months, from the point of view of practical implementation,
- identify the constraints in the project implementation at the local level and suggest possible solutions
- Discuss the budget and outline of the Regional Seminar, and

- Discuss and identify the candidate who will undertake the final project evaluation

In his welcome speech, Mr. Pheng Se, Deputy, Department of Agriculture of Sihanoukville, deeply expressed his thanks to all participants from SEAFDEC/TD, the Fisheries Administration, and CF Prey Nup II. He specifically thanked SEAFDEC for implementing the project. He conveyed the intention of the Agriculture Department to continue the project, because it has provided a lot of benefits to the local people, especially the mushroom producer group which has successfully implemented a number of activities. He also expressed the wish for the successful conduct of the Meeting.

The Deputy Director General, FiA, Mr. Ing Try delivered his welcome speech in the Khmer language, considering that most of the participants came from community. He informed the Meeting that although the project would be terminated at the end of this year, still many activities should be carried out in order to conserve the marine and coastal resources. He therefore encouraged the team from FiA who are attending the Meeting to also record the proceedings of the Meeting as these could be useful when the project operations are being taken over by the FiA.

### **2.1 Endorsing the Minutes of the 7<sup>th</sup> ICC Meeting**

After adopting the provisional agenda, Mr. Ing Try invited Mr. Yos Chanthana to read the minutes of the 7<sup>th</sup> ICC Meeting and suggested that all participants should comment and as much as possible seek clarifications on issues in the minutes that concern their efforts towards the successful implementation of the project. The results of discussion and comments are described as follows:

- Mr. Pich Bunna and Mr. Kem Ann requested for the spelling of their names to be corrected, in which case Mr. Ing Try commented that the spelling of names should be verified in the next report.
- On the progress of the video spot and poster demonstrating the achievements of the project, Mr. Yos Chanthana informed the Meeting that such activity has not yet started because of budget and time constraints, and that the cost of producing the video spot is USD500.
- Mr. Ing Try therefore requested SEAFDEC to consider providing the necessary budget for the video spot and poster, because these materials containing all activities of the project would be presented in the other provinces of Cambodia.
- In the ensuing discussion, Ms. Sumitra of SEAFDEC/TD recalled that the SEAFDEC team has already produced a video on ICRM-SV in 2007. However, she informed the Meeting that this issue would be discussed with the audio-visual section of SEAFDEC/TD and with the Trust Fund Manager on the budget.
- In this connection, Mr. Ing Try recommended that FiA will install ARs at the project site, and during the ARs installation, the FiA staff would take photographs on the activity.
- In another development, Dr. Yuttana inquired why bush could not be installed in the blood cockle fishing ground to obstruct illegal fishing such as drag net by powered boat. In response, Mr. Hatori introduced a reason why bush could not be applied in the fishing grounds in Cambodia, and mentioned that the Law on Fisheries prescribes restriction on the use of bush.

### **2.2. Achievement of activities since the 7<sup>th</sup> ICC meeting**

After the endorsement of the minutes the 7<sup>th</sup> ICC Meeting, Mr. Yos Chanthana reported on



the achievements of project activities since the last ICC meeting. The participants then requested for clarification and made comments as follows:

The results of the Study on the Development of Blood Cockle Gonad in Prey Nup II Sihanoukville, Cambodia presented by Ms. Jariya Sornkliang, Researcher of SEAFDEC/TD, defined the spawning seasons for blood cockle which are from June to August and from February to March. Mr. Hatori asked for clarification on the graphs presented and recommended that for a clearer picture of the trend, perhaps a bar graph should be applied to describe the maturity trend of the blood cockle gonads.

In this connection, Mr. Ing Try while thanking Ms. Jariya for the presentation recommended that the report should be revised considering the comments made at the Meeting and that the revised report should be sent to FiA. He added that the results of the study on the Development of Blood Cockle Gonad in Prey Nup II would be presented during the local community and FiA meetings in order to justify a regulation of FiA prohibiting blood cockle fishing in July.

In addition, Ms. Jariya and Dr. Yuttana clarified that the spawning period of blood cockle depends on the development of the gonad maturity which is described by the percentage of blood cockle samples with 4 stage maturity. In response to the query made by Mr. Hatori, JICA Expert on the number of blood cockle samples used to analyze gonad, Ms. Jariya replied that 20 samples of blood cockle is used every time, the size of each shell should be bigger than 10 g, considering that this would be easy to find the gonad using the microscope.

At any rate, Mr. Ing Try asked the extension workers and the local people not to catch small shells as this would mean losing the new generations of the blood cockle. He also mentioned that the life cycles of blood cockle and swimming crab are different. In the case of blood cockles, the eggs are not very visible so that blood cockle with eggs could not be released as in the case of swimming crabs where the eggs could be detected. Therefore, Mr. Ing Try expressed the need to be very careful in collecting blood cockles and recommended that small shells should not be collected and that collection should not be done during the spawning season.

As regards the mud crab culture, Ms. Sumitra asked the leader of the group for their future plans. In this regard, Mr. Mok Sen, leader of mud crab culture group requested to be replaced as leader of the group. He added that as recommended during the last meeting, the group planned to culture sea bass while mud crab culture will be given to the private sector. He also informed the Meeting that the concerned private sector is waiting for budget from SEAFDEC. In this connection, Ms. Sumitra replied that SEAFDEC and JICA would consider sea bass culture as an alternative, after the fish cage culture experiment would be finished but for mud crab culture, SEAFDEC agreed to provide the 2 ponds to the private sector, but budget would not be provided.

Moreover, Mr. Hatori also explained that the water temperature and D.O were suitable values at the estuary but the salinity was low at 9 ppt on 3<sup>rd</sup> June due to heavy rain. He also indicated that he could not conclude whether lower salinity is suitable to culture of mud crab or not, but if the members would wish to continue to culture mud crab during the wet season, they should add 6 months to the existing 3 months of culturing mud crab and even for sea bass. He added that 9 months should be enough to repeat to fattening trial of 100 g mud crab to 200 g and as already experienced it took 2 months to fatten 100 g mud crab to 200 g. Meanwhile,

Mr. Ing Try informed leader of mud crab culture group that FiA would like to support the proposal of giving the culture of mud crab to the private sector, and asked for the estimated budget required although he also added that FiA will not provide any budget.

On the progress of the mushroom production, Ms. Hoc Tean, Leader of Mushroom Producer Group informed the Meeting that the group is already capable of producing mushrooms by themselves and that the group could already produce spores that could be sold to the other groups in Prey Nup II. Mr. Ing Try also inquired whether stocking new sea bass fingerlings in cages could be done. Mr. Hatori gave his advice by stating that the problems on sea bass cage culture should be solved step by step because the members should conclude whether the water quality is suitable enough for sea bass culture on the site or not. He added that from the results of the water quality monitoring, it was found that the conditions at the existing location was not suitable. In fact the members were advised since this March to move the cage to a new location upstream but the fish cage culture group has not followed such advice. His recommendation to move the cage to a new location and to observe the sea bass in August when majority of sea bass could grow to more than 600 g, was in accordance with the plans made during last year's meeting. Mr. Ing Try informed the Meeting that since the project had already provided two ponds for the private sector, the use of the remaining pond would be up for FiA to decide later and suggested that this would be discussed after the ICC meeting.

Moreover, Mr. Hatori also suggested that the Meeting should also deliberate on the possibility of carrying out sea bass culture in pond after the cage experiment is completed. In a parallel vein, Dr. Yuttana commented on the condition of the fish cage culture of sea bass in one cage only, where small size and big size fish are mixed together. He therefore suggested that the various sizes should not be stocked in one cage, instead the stocks should be grouped into small, medium and large sizes and stocked in corresponding cages but should not be mixed together.

In response, Mr. Hatori explained that the reason why grading of sea bass could not be conducted by the group members even though SEAFDEC had planned it before stocking, was because of the mortality of sea bass which was too high and it would be risky to grade them. He also added that it is usual for fish to get infected by pathogens due to physical contact, and after grading the fish could be in bad conditions. However, Ms. Hoc Tean, member of fish cage culture explained that, the sea bass recently collected had already been sorted into small size and large size, and stocked in 2 separate cages.

### **2.3 Discussion and identification of the candidate for the final project evaluation**

On the final evaluation of the project, Ms. Sumitra of SEAFDEC/TD requested for the agreement on Final Evaluation from FiA. She added that the project had already prepared the TOR and for the FiA to find the appropriate consultant from a University or other agencies, but should not come from FiA. She suggested that the final evaluation must be finished before the regional seminar in January 2010. In response, Mr. Chanthana replied that, FiA can identify the candidate for the final evaluation, and that the TOR has already been endorsed but the consultant has not yet confirmed his schedule for the evaluation.

In this regard, Ms. Sumitra confirmed that the budget for final evaluation is USD1700, and that the consultant should send his CV to SEAFDEC as soon as possible. After receiving his CV, SEAFDEC will request the necessary budget from the Trust Fund (TF) and the letter of

agreement would be prepared for him to sign. The final evaluation should start in early July 2009.

#### **2.4 Discussion on the budget and duration of the Regional Seminar**

As regards the proposed Regional Seminar, Ms. Sumitra informed the Meeting that the budget and duration of the regional seminar have already been relayed to the FiA, and that the TF agreed on the postponement of the regional seminar from December 2009 to January 2010 as proposed by SEAFDEC. She added that the proceedings of the regional seminar would be prepared and there would only be one month to do that because the project must clear all financial matters with the TF before March 2010. It was based on this situation that SEAFDEC had to propose the regional seminar to be held not later than January 2010. As for the budget, the total expenditures would be shared between FiA and SEAFDEC/TD, or about USD3320 by FiA and about USD16,345 by SEAFDEC/TD. Since the budget to be shouldered by SEAFDEC has already been agreed by TF, the FiA should also consider and comment on its proposed budgetary responsibility.

In this regard, Mr. Ing Try replied that final date of the regional seminar would be confirmed as soon as possible. However, as regards the budget, he informed the Meeting that since FiA's budget must be proposed to the government at the early part of the budget year, he expressed the apprehension that perhaps FiA can only afford to share USD1500 for the conduct of the regional seminar.

In order to lessen the financial burden of the FiA, Ms. Sumitra informed the Meeting that the budget has been estimated based on the cost of hotel accommodation in Sihanoukville. She therefore suggested that if FiA can find a cheaper accommodation including lunch and coffee break for the regional seminar, then may be SEAFDEC could support part of FiA's budget. In this connection, Mr. Ing Try requested Mr. Doung Samath and Mr. Chanthana to find the most reasonable cost for accommodation and that the information would be sent to SEAFDEC soon as possible.

#### **2.5 Other Matters**

Before the Meeting closed, Mr. Ing Try asked the participants, to give additional suggestions and for them to raise questions to clarify many issues, especially the participants from the local site.

Ms. Kob Malaya, Leader of blood cockle fishing group informed the Meeting that they encountered a lot of illegal fishing cases in the fish refugia, where clam dredge is used during the fishing operations. In this regard, Mr. Kem Ann, Director of the Fisheries Administration Division of Prey Nub requested the group that when they encounter illegal fishers especially in the fish refugia, they should call him immediately.

In this connection, Mr. Phoun Nam, Sangkat Chief, Toeuk Tla Commune, informed the Meeting that illegal fishing at project site are of three main cases. The first case involves fishers collecting small bivalves about 1-2 tons per day by dredge; the second case involves people cutting mangrove trees to make charcoal; and the third case involves people taking off the new mangrove seedlings that were planted by the communities and FiA with the intention of taking the land for themselves. After learning more information on illegal fishing, Mr. Ing Try asked the people involved in the project that upon encountering illegal fishers, the FiA should be immediately informed so that the illegal fishers could be arrested. He added that

the people should be made aware that the mangrove forests belong to the government, and hence nobody is allowed to take any mangrove tree.

While indicating that the government needs more land for its mangrove reforestation activity, Mr. Ing Try asked the concerned member of the Project to find some area for such activity. Mr. Phoun Nam also mentioned that, there is also a plan to plant mangroves at Kampong Chin. Considering that this village also has a lot of sea grasses, Mr. Ing Try recommended that the sea grasses should also be conserved. Moreover, Mr. Ing Try informed the Meeting that FiA will also conduct an investigation on sea grasses and mangroves at Kampong Chin, and that the mangrove seedlings should be prepared for planting. He also suggested that Mr. Kem Ann should select the land for mangrove reforestation.

The Leader of Mushroom Producers Group, Ms. Hoc Tean informed the Meeting that the group has been producing good spores that are sold to other groups at Prey Nup II. He also added that the group has been conducting training courses on mushroom production to students in Prey Nup II, an activity which has been coordinated by Mr. Kem Ann. In this regard, Mr. Ing Try suggested to the group to put more information outside the spore bottles such as brand name and telephone number, because such information could expand the market of the spores produced by the group.

The Leader of crab bank group in Prey Pross, Mr. Mol Neat informed the Meeting that after having operated the crab bank activity in one month, small crabs could be observed near the crab bank. In this connection, Mr. Ing Try asked Mr. Keilah to collect the data on gravid crab releasing and monitor the month of high season for gravid crabs. Mr. Mol Neat replied that from his observation, the high season of gravid crab in Prey Pross is September.

In response to the query of Dr. Yuttana for the specific date of the installation of the ARs by the FiA, Mr. Ing Try replied that FiA plans to install the ARs in July 2009.

### **Summary**

Mr. Ing Try summarized the results of meeting as follows:

- Mr. Yos Chanthana will contact the consultant to do the Project Evaluation and get his CV which should be sent to SEAFDEC as soon as possible.
- FiA will discuss among the communities on the next culture of mud crab in the three mud crab ponds, after which sea bass pond culture may be conducted. With regards to sea bass culture, Mr. Hatori mentioned that during the rainy season in Cambodia, the downpour could be very heavy which could affect the water quality necessary for sea bass culture.
- As for the fish cage culture group, Mr. Ing Try asked them to follow Mr. Hatori's advice, so that if Mr. Hatori would like to move the cage to another location, they should follow him.
- The full paper of the study on blood cockle gonad development in Prey Nup II should be sent to FiA in July, since FiA would translate this into the Khmer language and would be presented to the communities during the FiA meetings.
- SEAFDEC will fund the cost of the VDO spot production by the SEAFDEC team at the Cambodia site.
- The crab bank group requested for more marker pens from SEAFDEC for marking the carapace of the swimming crabs to be released back to the sea.
- Mr. Doung Somath and Mr. Kem Ann should continue coordinating with the mushroom producers group to provide training course to more students.

- The decision of FiA on the duration and budget of the regional seminar, would be relayed to SEAFDEC at a later date.

### **Closing the meeting**

At the end of the meeting, Mr. Ing Try thanked all the participants for their time and efforts to participate in the 8<sup>th</sup> ICC meeting, after which he declared the meeting closed.

Drafted by Sumittra Ruangsivakul                      Date: 10 June 2009

Endorsed by Mr. Tatsuya Hatori                      Date: 11 June 2009

Endorsed by Mr. Yos Chanthana                      Date: 11 June 2009

**REPORT  
TRIP TO CAMBODIA  
2-5 JUNE 2009**

Sumitra Ruangsivakul

## **1. Objectives**

Since the project plans to carry out various activities, one of the major activities lies in Project team's participation in the 8<sup>th</sup> project Implementation Coordination Committee (ICC) meeting from 2 to 5 June 2009, where the major project strategy issues would be discussed.

### Mud-crab Culturing Group (MCCG)

From the result of Mud-crab Culturing Group meeting, it was decided that the mud-crab fattening venture by a private sector would be in pond no. 2 and 3, and the mud crab culturing group will experiment on sea bass culture in pond no. 5. During this trip, inspection of the progress of work such as pond digging, drying and cleaning pond no. 5 would be conducted before starting the sea bass culture starts in June.

### Cage Culturing Group (CCG)

During the 6<sup>th</sup> Workshop on Cage Culturing on 18 February 2009, it was decided that the cage culture location should be shifted further down the canal. After moving the cage to the new location, the environmental condition is still not good. During this trip, inspection of the site of the cages will be made and discussion on the immediate future work will be conducted.

### Women's Group activity – Mushroom Producers Group (MPG)

The new venture in the production of mushroom spores was already started in January 2009. Site inspection of the location of the mushroom and spore production will be conducted in the 4 villages. Simultaneously, verification and scrutiny of the bookkeeping and accounting records maintained by the four groups would be continued by the project team.

### Crab Bank Group (CBG)

The 7<sup>th</sup> workshop of the crab bank group on 18 March 2009 that one new cage should be constructed at Prey Pross and that the crab bank group would be re-organized into two sub-groups, namely: Kampong Kadow Sub-group at Prey Pross and Prey Angkor Sub-group at Prey Sangke, all under the Prey Nup II Crab Bank Group. During this trip, follow-up would be made on the progress of work for discussion during the 8<sup>th</sup> workshop to be held on 3 June, where 10 prizes would be given to 10 members, who release gravid crab most number of crabs to be ranked into no. 1 to 5 from each sub-group. Also, the project team will verify and scrutinize the logbook record and the account book of the CBG.

### Blood Cockle Fishers Group (BCFG)

Based on the Self-regulatory Measures for Blood Cockle Fishing, and introduction of sieves with 18mm x 18mm mesh has been taken place in December 2008. The result of monitoring inspection with middlemen was improving, blood cockle from fishermen were not pass sieve. During this trip, following up marking poles for the demarcated area in the fish refugia as well as 30 sets of obstacle objectives are to be installed by hand of FiA.

### The 8<sup>th</sup> Implementation Coordination Committee (ICC) meeting

As planned, the ICC meeting will be held on 4 June 2009 in the meeting room of Agriculture Department Office in Sihanoukville. The detail of this meeting is described in the attached Annex 1: Prospectus of the 8<sup>th</sup> ICC Meeting.

## **2. Travelers**

- Yuttana Theparoonrat : Division Head, CSFD
- Sumitra Ruangsivakul : Head, Socio Economic Section
- Jariya Sornkliang : Researcher
- Thanyalak Suasi : Researcher

## **3. Work schedule**

### 2 June 2009 (Tuesday)

- 05.30 – 10.30 Leave BKK and arrive at the border of Cambodia (Koh Kong)
- 10.30 – 15.30 Move to Project site including lunch break
- 15.30 – 16.30 Follow up fish cage culture
- 16.30 – 18.00 Move to Sihanoukville (SNV)

### 3 June 2009 (Wednesday)

- 09.00 – 11.00 Meeting with crab bank group – I (Prey Sangke)
- 11.00 – 13.00 Follow up biological survey of blood cockle
- 14.30 – 16.30 Account checking for Mushroom Producers Group (Ms. Ponley and Ms. Jariya)
- 15.00 - 16.30 Meeting with crab bank group - II (Prey Pross)

### 4 June 2009 (Thursday)

- 08.30 – 12.30 Participate in the Implementation Coordination Committee (ICC) meeting
- 12.30 – 14.30 Lunch break
- 15.00 – 16.30 Meeting with FiA's staff

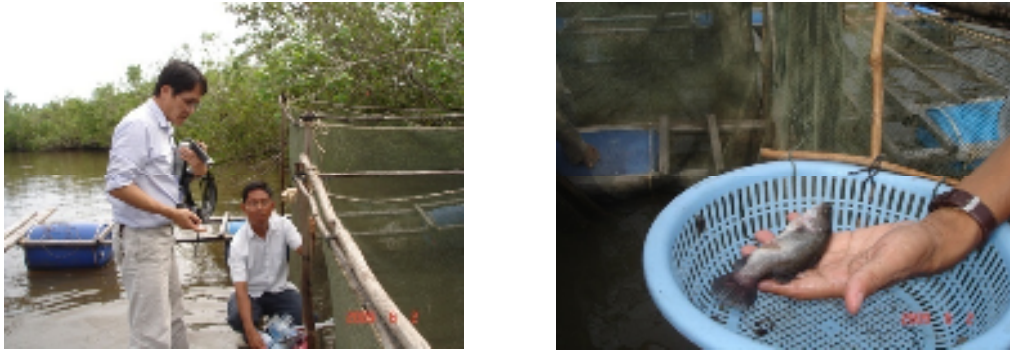
### 5 June 2009 (Friday)

- 07.00 – 11.00 Move from SNV to the Thai Border (Khlung Yai)
- 12.30– 17.30 Move from Khlung Yai to BKK

## **4. The results**

### **4.1 Fish cage culturing group**

- Mr. Tatsuya Hatori, JICA Expert and the SEAFDEC team visited the new location of the fish cage culture, and after checking the water quality and measuring fish body, the result showed that the water quality especially the DO is not good, the oxygen at the bottom is low, salinity is zero, and a lot of parasites were observed on the sea bass.
- Mr. Hatori suggested that, the fish cage culturing group must select the size so that the small size fish is put in one cage and big size in another cage. The remaining number of sea bass was 80, which should be treated with NaCl to kill the parasites.



**Fig. 1** Mr. Tatsuya Hatori checking the water quality (left) and sea bass with parasites (right)

**Table 1** Summary of the Accounting Sheet of the Fish Cage Culturing Group in 2009

Month	B/F	Received	expenditure				Total expenditure
			feed	coffee	Gasoline	ice	
January	0	260,000	160,100	0	0	0	160,100
February	99,900	300,000	332,000	50,000	5,000	1,500	388,500
March	11,400	380,000	279,000	0	70,000	15,000	364,000
April	27,400	310,000	270,500	0	59,500	6,000	336,000
May	1,400	400,000	283,500	0	52,500	15,000	351,000
June	50,400						
July							
<b>Total</b>		<b>1,650,000</b>	<b>1,325,100</b>	<b>50,000</b>	<b>187,000</b>	<b>37,500</b>	<b>1,599,600</b>
<b>Percent</b>			<b>82.8%</b>	<b>3.1%</b>	<b>11.7%</b>	<b>2.3%</b>	<b>100.0%</b>
<b>(In USD)</b>		<b>412.5</b>	<b>331.3</b>	<b>12.5</b>	<b>46.8</b>	<b>9.4</b>	<b>399.9</b>

#### 4.2 Mud Crab Culturing Group

- The members of mud crab culturing group plan to conduct sea bass culture experiment at pond no. 5, while 2 ponds will be used by the private sector for mud crab culture. SEAFDEC has provided budget for digging pond no. 5, but Mr. Tatsuya Hatori commented that actually SEAFDEC and JICA have not yet decided to use pond no. 5 for sea bass culture while the result of the fish cage culture experiment is still not available. For the mud crab culture venture by a private sector, FiA promised to provide the crablets (fingerlings) to the private sector.

#### 4.3 The 8<sup>th</sup> ICC meeting

- The minutes of the 8<sup>th</sup> ICC meeting appear as **Annex I**



**Fig. 2** The 8<sup>th</sup> ICC meeting held at Sihanoukville, Cambodia on 4 June 2009



#### 4.4 Crab bank meeting

- There were two meetings of the crab bank sub-groups at Prey Sangke and Prey Pross. The first meeting was held at Prey Sangke in the morning on 3 June 2009 with 23 participants. The second meeting was held at Prey Pross in the afternoon on 3 June 2009 with 30 participants.
- The Prek Angkor crab bank sub-group (Prey Sangke) has released 130 gravid crabs from May 2008 to March 2009 done by 6 members (Table 2).
- The Kampong Kan Dow crab bank sub-group (Prey Pross) has released 247 gravid crabs from March to June 2009 done by 14 members (Table 3).

**Table 2** The number of gravid crabs released by Prek Angkor sub- group from May 2008 to May 2009

No.	Name	No.of crab released
1	Matt Oumet	29
2	Loeup Dol	27
3	Tun Chek	25
4	Ri Kob	22
5	Sen Lay	15
6	Hak E Soeur	12
	Total	130

**Table 3** The number of gravid crabs released by Kampong Kan Dow sub-group from March to May 2009

No.	Name	No.of crab released
1	Moul Neath	44
2	Lim	30
3	Phea	27
4	Ty	23
5	Soth Bun	22
6	Laek	18
7	Ung	16
8	Da	12
9	Khoun	11
10	Phean	11
11	Kha	9
12	Chom	8
13	Lin	8
14	Phan	8
	Total	247

- SEAFDEC, FiA and JICA provided 10 rewards to two sub-groups, 3 rewards to Prek Angkor (Prey Sangke) and 7 rewards to Kampong Kan Dow (Prey Pross).
- During the discussion, a lot of members said that their swimming crab catch has increased and they observed a lot of small swimming crabs near the crab bank. They believed that the crab bank activity has enhanced their swimming crab resources, and promised to continue this activity in a long term.



**Fig. 4** Meeting and providing rewards to members of Kampong Kandow sub-group (left) and SEAFDEC providing more marker pens to the leader for marking the carapace of gravid crabs before releasing to the cage (right)