



**Bi-annual Project Progress Report  
of  
Locally Based Coastal Resources Management in Pulau Langkawi  
(LBCRM – PL)**

**Compiled by**

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**Southeast Asian Fisheries Development Center**

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## **Biannual Project Progress Report**

- Project title** : **Locally Based Coastal Resources Management in Pulau Langkawi (LBCRM – PL)**
- Program Categories** : Programs under the ASEAN-SEAFDEC FCG Mechanism
- Program Title** : Coastal Resources Management  
Resource Enhancement (Special 5-year Program - SDI-4)
- Duration of Project** : 1<sup>st</sup> Phase: 17 months (August 2003 – December 2004 under TF-1)  
2<sup>nd</sup> Phase: 24 months (January 2005 – December 2006 under TF – 4)
- Executing Agency** : The Department of Fisheries, Ministry of Agriculture, Malaysia
- Cooperating Agency** : SEAFDEC/TD
- Funding Agency** : The Japanese Trust Fund (FCG Scheme and Special 5-year Program)  
DOF Malaysia (Co-financing)
- Proposed Budget (2004 only)** : USD 80,000 (Under the Japanese Trust Fund – Coastal Resources Management)  
USD 10,000 (Special 5 year program – SDI-4)  
USD 20,000 (DOF Malaysia Input)
- Reporting period** : **July to December 2004**

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## 1. GENERAL ACCOUNT

As a whole, the project has progressed compatibly with the project design until 26<sup>th</sup> December when the devastating tsunami assaulted the project site. The future project work plan has to be so drastically modified to incorporate the rehabilitation program.

The project was initiated in August 2003 with a project duration of 24 months in the first phase under the co-financing arrangement with the Japanese TF-1 and DOF Malaysia. However, in the course of operation it was further decided that the financial arrangement with TF-1 will be terminated in December 2004 and a new one financed by TF-4 commences in January 2005 although eventually it began in 2004. In conjunction with this change, it was determined that the first phase of the project was bound to terminate at the end of 2004 and to begin the 2<sup>nd</sup> phase of the project in January 2005 with two years' tenure until the end of 2006 with more underlined emphasis upon human capacity building in the coastal fisheries management sector. The project title of this second phase is changed to Integrated Coastal Resources Management in Pulau Langkawi (ICRM-PL).

In this reporting period, it was seen that implementation of some activities were slowed or delayed during the Ramadan season and other administrative and public occasions.

From the previous reporting period, the officials from the Extension Division of DOF KL began to participate in all activities. It gave a very positive result to the project operation in view of its consistency and continuity, which is greatly appreciated.

The delayed installation of FADs by LKIM has affected the deployment of the major activities to a great extent.

The fish landing data collection system and a marine biological monitoring survey continued.

The business activities by KEN are in progress to a great extent in this reporting period, especially in the construction of a fish-processing yard managed by the newly organized women's group.

The cage-culturing scheme has been cancelled because of the non-availability of a suitable site.

The fishermen's training course in the introduction of improved fishing methods was conducted.

The 2<sup>nd</sup> experimental fishing in the use of improved fishing gear was conducted, especially in squid fishing.

To promote the CBRM concept, it was agreed to work out the mapping of the demarcated zone for an exclusive fishing right for the KEN. Some progress has been made.

For the purpose of project public relations, 300pcs of T-shirts with the KEN logo were distributed.

The 3<sup>rd</sup> Project Implementation Working Group (PIWG) meetings were held in December.

Some members of SEAFDEC Program Committee visited the project site when the 27<sup>th</sup> PCM was held in Langkawi.

## **2. ACTIVITIES**

### **2.1. Baseline surveys**

#### 2.1.1. Preliminary baseline survey

The preliminary base line survey was conducted in October 2003 and a preliminary report was submitted to DOF Malaysia in January 2004. The final report is yet to be published.

#### 2.1.2. Study on the impact of FADs/ARs installation

It was planned that ARs were to be installed in March 2004 by LKIM and therefore a pre-installation environmental survey in the project area was jointly carried out by SEAFDEC/TD and FRI in January 2004. However, this plan was cancelled because of a shortage of funds with LKIM (see in the minutes of 3<sup>rd</sup> PIWG meeting – Annex 9) as the result this activity has not taken place.

#### 2.1.3. Fish landing data collection at the project site

The localized fish landing data collection system was initiated in April 2004 after a data collection training course held on 30<sup>th</sup> March 2004. Since then, the logbooks have been regularly kept up by the four middlemen and collected monthly by the Extension Officer of District Fisheries Office for forwarding to SEAFDEC for analysis. However, this was suspended after the tsunami disaster.

The marine resources monitoring survey was initiated in the following three ways. This is particularly vital in relation to the introduction of new or improved types of fishing method

- Three fishermen were selected for recording their catches daily in the logbooks and training in recording methods was conducted on 15<sup>th</sup>-16<sup>th</sup> June. The logbooks to be filled up were collected monthly by the Extension Officer for forwarding to SEAFDEC/TD for analysis.
- The 23 fishermen were interviewed with questionnaires on various fishing data like sizes of fishing boat, horse power, types of fishing gear, sizes or numbers of fishing gear, mesh sizes of fishing net, main fishing ground, fishing hours and fishing seasons.
- The fish catch was sampled for the length distribution and average weight. The catch composition was also recorded.

A detailed description for the marine resources monitoring survey is seen in Annex 3.

### **2.2. Rehabilitation and enhancing of coastal resources**

#### 2.2.1. Deploy artificial reefs (ARs)

Installation of ARs in the project area in 2004 at a cost of RM100, 000 was committed to by LKIM (Ref. to the Minutes of 2<sup>nd</sup> SC meeting), and on this basis the project work plan was formulated. However, this was not implemented because of a shortage of funds. This affected negatively other related activities like fisheries resources management centered on ARs/FADs.

## 2.2.2. Deploying fish aggregating devices (FADs)

In the preliminary survey conducted in July 2003, it was suggested that FADs should be installed around ARs to interact their respective characteristics. In line with the orientation, the project team of SDI-4 in SEAFDEC/TD devised a type of FAD called a FED (Fish Enforcing Device) and training in construction of this device was conducted for 15 fishermen. The 4 sets of this device were installed around the ARs which were installed by LKIM in 2003. There are 7 sets of FADs installed by the fishermen in the project area but they are constructed of bamboo poles and coconuts fronds and can last a maximum of a few months. On the other hand, the new type of FED is claimed to last for a few years at a minimum. The detailed description of this activity is seen in the report of Annex 4.

## **2.3. Promotion of fish based businesses**

### 2.3.1. Introduce and expand job opportunities

#### Cage culturing

It is well known that the cage culture business would be very promising, especially in culturing grouper in this area and therefore DOF agreed to contribute 75,000RM to construct 10 cages for Kuala Teriang KEN during this year. There were two potential sites to place the cages. The one is a place near Kuala Teriang that is owned by a private hotel and the owner does not allow them to use the site, while the other one is located near the international marina in Pantai Kok, which is under the control of LADA (Langkawi Development Authority). In spite of repeated negotiations with LADA, permission was not granted to use the place for fish cage culturing. It was finally decided that the idea to operate a cage culturing venture by KEN would be abandoned and this was confirmed at the last ICC/IPWG meeting on 23<sup>rd</sup> December 2005.

#### Processing fish based products

During the previous reporting period, a study tour to Thailand to learn product development activities for the women's group was conducted. Additionally, a training course in processing surimi based products was organized by DOF Malaysia in Penang on 10<sup>th</sup> – 12<sup>th</sup> May 2005. In August, another study tour to Johor and Perak was arranged by DOF Malaysia to learn the processing of fish cracker (*Keropok*). A training course in accounting, marketing and acquiring GMP was held on 18<sup>th</sup> – 20<sup>th</sup> September 2004 in Kalantan, in which 12 members of the Women's Group participated. This course was also arranged by DOF Malaysia.

Thanks to the above training courses and the processing yard donated by DOF Kedah and the village development fund of LADA at 30,000RM and 20,000RM respectively, the Women's Group took off processing several fish based products like dried/seasoned anchovy with either fresh or dry chili from December 2004. This product is new to the island and therefore moving very fast without any competition. The processing yard was constructed with concrete and thus no damage was suffered from the devastating tsunami. It is anticipated that the processing of fish based products will be resumed without any difficulty.

The women's group was divided into 4 sub-groups to share the processing work evenly and regulated with their own 8 rules.

The detailed description on the women's activity is seen in Annex 5.



## **2.4. Fishing gear technology improvement**

Training in improved fishing methods was conducted for 3 types of fishing methods on 9<sup>th</sup> – 11<sup>th</sup> August for 15 fishermen. Prior to introduction of these fishing methods in the project operational area, experimental fishing to test the applicability of these fishing methods was carried out in June and the potential was convincing. The new and improved fishing methods introduced were *bottom vertical longline, collapsible crab trap and Babylonia shell trap*. However, the morale of the participants against training was not high as that time was the midst of shrimp season and most fishermen were busy fishing at sea and also the poor participation was aggravated by an incidental social occasion (a funeral). Nevertheless, the fishermen greatly appreciated the crab trap fishing method among others as it demonstrated a good catch during training compared with the local one. Also, it should be noticed that Babylonia shell are abundantly caught by the traps as these shell are not commonly consumed in this area unlike Thailand where the shell is marketed for as much as 200Baht per Kg. It needs a collective effort in finding out the marketing outlets. The detailed description of this training is seen in Annex 6.

The SEAFDEC/TD fishing technology team identified 7 fishing methods that could potentially be introduced to the project operational area. Three of them were introduced in August after being tested for applicability, while other types of fishing gear were tested for applicability on 19<sup>th</sup> – 23<sup>rd</sup> December 2004. Those are: (1). Collapsible crab traps with 3 different designs (rectangular collapsible crab traps, semi-cylindrical crab traps and local crab-traps), (2). Collapsible fish traps (3). Babylonia traps and (4). squid traps. As a result, it was found that the rectangular collapsible fish trap was the most effective among the three different types, for the squid trap more repeated trials are necessary and for the collapsible fish trap it was recommended as promising. As to the Babylonia trap it is also recommended for its high selectivity and abundant catch subject to ensuring the marketing outlets. The detailed description on this experiment is seen in Annex 7.

## **2.5. To Encourage and extend locally based fishery resources management**

### Zoning arrangements

At the 2nd Project Implementation Working Group meeting held on 17<sup>th</sup> June 2004 (refer to the paragraphs 31 & 33 in the minutes of 2<sup>nd</sup> PIWG meeting) the representatives of KEN, Kuala Teriang, raised the issue of illegal fishing, particularly encroachment by trawlers into Zone A. Discussions were centered on measures on how to enforce protection against such illegal fishing and various views were presented. One of the suggestions made was to establish coastal fishermen's exclusive fishing zone to be specially demarcated around the FADs that were installed by the fishermen of Kuala Teriang and propose to the authorities to declare an exclusive local fishing right for them. Under such a newly promulgated regulation, enforcement can be legally embodied and reinforced. After discussions, the meeting eventually agreed to prepare a zoning map in consultation with the relevant authorities, although there would be many barriers to clear toward realization. In such a movement, SEAFDEC/TD initiated preparation of a zoning map based on the data and information collected and the site verification of existing FADs and an AR in August. The provisional demarcation map was prepared by the SEAFDEC/TD GIS team in consultation with the representatives of KEN. This map was handed over to the KEN for their further action to submit the proposal to the District Fisheries Office for their consideration. The detailed description to prepare the demarcation map is seen in Annex 8.

This matter was further discussed in depth at the 3<sup>rd</sup> PIWG meeting on 23<sup>rd</sup> December and it was concluded that a special committee should be set up with DOF Malaysia to investigate together

with all relevant authorities the possibility of establishing zoning for Kuala Teriang KEN as requested for a test case.

#### Protection of FADs from damage by trawlers

In the course of discussion at the last PIWG meeting on how to protect against trawler's illegal encroachment in the coastal fishing area, SEAFDEC/TD suggested a certain device to equip the fish enhancing device (FED) with a SUS wire-cutter which was inexpensive and expected to work well. The detailed explanation on this device and the mechanism of protection was made. The DOF requested SEAFDEC/TD to give a detailed design and specification for their further study.

### **2.6. Enhance human resources capability and participation**

The planned training course in coastal resources management could not be organized as an appropriate lecturer could be arranged in time in Malaysia. This issue was raised at the last PIWG meeting and an alternate candidate was suggested as a proper lecturer. This course should be arranged as soon as possible.

As PR material, 300 pcs. of T-shirt on which the project promotion design was printed were produced and distributed to all parties concerned.

### **2.7. Implementation Coordination Committee (ICC) and Project Implementation Working Group (PIWG) meetings**

#### PIWG meeting

The 3<sup>rd</sup> PIWG meeting was held on 23<sup>rd</sup> December 2004 in Langkawi. A detailed description of this meeting is given in Annex 9.

At this meeting, it was suggested that the same people participated and that similar topics were discussed at both the Project Implementation Coordination Committee meeting and Project Implementation Working Group meeting during the last year so that would be more effective and relevant to merge these two meetings into one. The meeting agreed to this proposal and that the merged meeting would be called Project Implementation Coordination Committee. From 2005, only the ICC meeting will be held at least 4 times a year but not the PIWG meeting.

### **2.8. Steering Committee (SC) meeting**

It is planned to hold an SC meeting in September but it has not taken place as the project span was changed in conjunction with shifting the financial source of trust funds from TF-1 to TF-4 and the planned mid-term project evaluation in August 2004 was postponed to 2005. Instead, it was agreed at the last PIWG meeting in December that the 3<sup>rd</sup> SC meeting would be held on 24 January 2005 in Hua Hin including a day trip to the LBCFM-PD project site in Chumphon. However, it will again be postponed because of the tsunami.

## **3. OUTCOMES**

The major outcomes of the above activities are:

#### Baseline surveys

- Fish landing data are regularly obtained and analyzed.
- The marine resources survey system was established and the survey commenced.



#### Rehabilitation and enhancing coastal resources

- 15 fishermen were trained in the construction of the new type of FAD called a Fish Enforcing Device (FED).
- 4 sets of FEDs were installed.

#### Promotion of fish based businesses

- The women's group participated in the training course in processing surimi products conducted in Penang.
- The women's group participated in the study tour in Johor and Perak to inspect fish cracker (*Keropoh*) processing.
- 12 of the women's group members participated in the 3-day training course in accounting, marketing and quality control held in Kalanton.

#### Fishing gear technology development

- The training course in improved fishing methods was conducted for 15 selected fishermen.
- The test fishing to observe its applicability for 4 potential fishing methods was conducted.

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

- The demarcation map around the FADs and ARs was prepared and the process to appeal to the authorities began.

#### Enhance human resources capability

- Various training courses were conducted.
- As a PR material, 300 printed T-shirts were produced and distributed to the parties concerned.

#### Committee meetings

- The 3rd PIWG meeting was held.

#### Others

- Some members of SEAFDEC Program Committee visited the project site when the 27<sup>th</sup> PCM was held in Langkawi.

## 4. MAJOR CONSTRAINTS

#### Rehabilitation of the Tsunami damage

The project activity has progressed more or less compatibly with the project design until 26<sup>th</sup> December when the devastating tsunami assaulted the project site, this caused extensive damage to the fisheries industry. The degree of the damage is as follows.

#### Status of damages in Kuala Teriang

1). Casualty: 1 person

2). Damage to houses:

<u>Number of houses existed*</u>	<u>Damaged houses</u>		<u>Non or slightly-damaged</u>
	<u>Unrepairable</u>	<u>Repairable</u>	
122	12	30	80

3). Loss of fishing boats

<u>Type of boats</u>	<u>Existed*</u>	<u>Lost</u>	<u>Usable</u>
- Inboard engine boat	16	14	2
- Outboard engine boats	250	175 <sup>1</sup>	30

<sup>1</sup> Out of 175, the number of 105 boats was reported damaged while 70 were undamaged.

4). Loss of fishing gear (mostly fishing nets):	115 sets
5). Loss of outboard engines:	111 pcs.
6). Loss of insulated fish boxes:	31 pcs.
7). Loss of jetty:	21 places
8). Loss of cages for fish culture:	3 cages
9). Total value of damages:	RM 1,927,400

(\* Source of data: Base line survey carried out in October 2003)

Note: In the fish landing center of Kuala Teriang, all wooden structures including the KEN's community building and the fish purchasing yards belonging to the fish middlemen were completely destroyed. The KEN's office was damaged but is repairable. The height of the tsunami was as high as 2 meters and the ice-making machine was left unusable.

The damage by the tsunami is so devastating that it is foreseen that the rehabilitation from the stricken structures, facilities and equipment will take a considerable time. The Malaysian authorities and the foreign aid organizations started to take swift action to relieve the situation but it is most unlikely to be rehabilitated so as to continue the project activity within a short time. In the meantime, it is inevitable to suspend most on-going activities or modify the course of action, which should be decided in close consultation with the DOF Malaysia.

#### Delayed activities

There were some activities that were planned between September and November, but none of them could be implemented because of religious restrictions like Ramadan and the social and administrative affairs in Malaysia. In addition, the SEAFDEC/TD side had their own schedule and could not compromise fully with the one of the Malaysia side. This is one of the difficulties in running a collaborative project that needs very close coordination. Understanding that the well contemplated planning is necessary in the stage of programming, it is difficult to foresee all the schedule throughout the year precisely. The situation that both agencies are situated in separate countries aggravates the communication gap.

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

The activities taking place in the next reporting period is unpredictable at this stage as it all depends on the place of rehabilitation from the tsunami damage. Therefore, the project activity should be suspended for the time being until the time comes when both sides are convinced of resuming the activity. The timing of resumption should be decided within a few months. However, the activity related to fish processing should be continued without disturbance as all the facilities were completed in early December 2004 and remained in tact and ready to reopen production. In spite of the devastating disaster, the working morale of the women's group is very high requesting the quickest resumption of processing.

Under the above constraints, the following activities will take place.

Baseline survey

- Fish landing data collection will be resumed.

Promotion of fish-based businesses

- Training in product development
- Demonstration in new job opportunities

Enhance human resources capability and participation

- Workshop on community development in a particular condition, if required

Others

- Project reformulation
- ICC meetings in early March and June
- SC meeting in April

## 6. REPORTS PREPARED

Reports and documents prepared under the project during to 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 on Fishermen Training in Langkawi	Isara C.	August 2004
02.	Report on Resources Monitoring Survey in Langkawi	Punchan L.	June 2004
03.	Report on Fish Enhancing Device (FED) and Installation in Langkawi	Yuttana T.	December 2004
04.	Report on Women's Group Activity in Langkawi	Sumitra R.	December 2004
05.	Report on Fishermen Training in Langkawi	Isara C.	August 2004
06.	Report on Fishing Trial in Langkawi	Isara C.	December 2004
07.	Report on Preparatory Survey on Zoning in Langkawi	Etoh S.	August 2004
08.	Minutes of the 3 <sup>rd</sup> Project Implementation Working Group Meeting	Sumitra / Etoh	December 2004











**Project Progress Status Report (LBCRM-PL)**  
**January - December 2004**

Activity	Status (% in completion)	Accomplishment (January - December 2004)	Remaining activity	As of 31 December 2004 (Revision 1) Activity in 2005
1. Base Line Survey				
1.2. Preliminary base line survey				
1.2.1. Preparation of interim report	100%	Completed in January	Nil	Nil
1.2.2. Final report publication	50%	Compilation under way pending publication	Publication	Publication
1.3. Study on the impact of FADs/ARs installation				
1.3.3. Design and preparation of supplemental oceanographic and marine biological survey	0%	Due to delayed installation of ARs by LKIM, no progress has been made.	Subject to installation of ARs	Subject to installation of ARs
1.3.4. Conducting the above survey	0%	- do -	- do -	- do -
1.3.5. Analysis of the above survey data	0%	- do -	- do -	- do -
1.3.6. Report compilation and publication	0%	- do -	- do -	- do -
1.4. Fish landing data collection at the project site				
1.4.1. Establishment of fish landing data collection system	100%	Established in March	Nil	Nil
1.4.2. Fish landing data collection	100%	Started in March	Nil	To be continued
2. Rehabilitation and enhance coastal resources				
2.1. Deploy artificial reefs (ARs)				
2.1.1. Study out designing and installation of AFs/FADs	0%	Due to delayed installation of ARs by LKIM, no progress has been made.	All planned activities	Subject to installation of ARs
2.1.2. Installation of ARs	0%	No installation of ARs was made as planned.	All planned activities	Subject to installation of ARs
2.2. Deploy fish aggregating devices (FADs)				
2.2.1. Study on the intensity of FADs in the limited zone	100%	All existing FADs were positioned.	Nil	Re-survey is necessary after the tsunami disaster.
2.2.2. Study and advise on effective design of FADs	100%	The new design of FAD/FED(Fish Enhancing Device) was developed.	Nil	To monitor its effectiveness

Activity	Status (% in completion)	Accomplishment (January - December 2004)	Remaining activity	Activity in 2005
<b>3. Promotion of fish base business</b>				
3.1. A quick review of local on-going business				
3.1.1. Organize a task force team for fish based products	100%	A women's group was organized.	Nil	Nil
3.1.2. Study on local on-going business	100%	Studied by the Women's Group	Nil	Nil
3.2. Introduce and expand job opportunity				
3.2.1. Identify job creation opportunity	100%	Snack type products processing and cage culturing	Nil	More diversified job opportunities
3.2.2. Demonstration or training in new job opportunity	100%	Study tour and training courses were conducted.	Nil	Repeated training courses
3.3. Improve fish handling / processing technologies				
3.3.1. Study on current fish handling practices	100%	The study was made by interviewing fishers.	Nil	Nil
3.3.2. Identify improvement needs	100%	The need was identified by observation of fish handling on board.	Nil	Nil
3.3.3. Demonstration or training in improved methods	0%	No action has been taken.	All activities	Subject to change in fish distribution and marketing channels
<b>4. Fishing gear technology improvement</b>				
4.1. Study the current fishing practices in use of FAD/AR in Langkawi				
4.1.1. Study on current fishing practices in Langkawi	100%	Completed all planned activity	Nil	Nil
4.1.2. Determine improvement opportunity (experimental fishing)	100%	Completed all planned activity	Nil	Nil
4.2. Introduction of improved fishing technology				
4.2.1. Demonstration or training for improved fishing methods	50%	Introduction of some fishing methods was completed through a training course.	Introduction of other fishing methods	Introduction of other fishing methods
<b>5. Encourage and extend locally-based fishery resources management</b>				
5.1. Formulation and introduction of a local fishery resources management plan				
5.1.1. Study on zoning management plan with FADs and fishing efforts	100%	Study was carried out and a tentative zoning plan was prepared.	Nil	Nil
5.1.2. Formulation of management plan with FADs and fishing efforts	30%	Discussion was held with the fishers	Need more consensus	Finalize the zoning arrangement

<b>6. Enhance human resources capacity and participation</b>				
6.1. Reinforcement of structure and capacity of existing KEN and Fishermen's Association				
6.1.2. Training course in coastal fisheries management and extension services	0%	No action has been taken.	All activities	Arrangement of training course
6.1.3. Study tour by fishers to on-going project in CBRM and community development in the country	0%	No action has been taken.	All activities	Arrangement of study tour
6.2. Restoration of analytical results of base line survey to local communities				
6.2.1. Workshop on community development	0%	No action has been taken.	All activities	Organize a workshop
6.2.3. Preparation of text, manuals and audio-visual materials for extension services	50%	A project placard was constructed. The Project T-shirts were prepared and distributed.	Preparation of text etc.	Preparation of more extension materials
<b>7. Project evaluation</b>				
7.1. Mid-term project evaluation	0%	No action has been taken.	All activities	Evaluation to be carried out in August
<b>8. Committee meeting</b>				
8.1. Steering Committee(SC)	0%	No action has been taken.	All activities	SC meeting to be carried out in February
8.2. Implementation Coordination Committee (ICC)	50%	One ICC meeting was held	One more to be held	Merged into PIWG meeting
8.3. Project Implementation Working Group (PIWG)	75%	Three PIWG meeting were held	One more to be held	Merged into ICC meeting

## Annex 3

# Report on Marine resources monitoring survey in Langkawi

Penchan Laongmanee  
Pattarajit Kaewnuratchadasorn  
30 June 2004

The marine resources monitoring survey in Langkawi was conducted during 14 -17 June 2004. The prospectus of the survey is hereto attached. The survey was carried out aimed at ensuring the sustainability of available marine resources, especially around the ARs and FADs after introduction of improved fishing efforts in the project operational area, and it was focused on monitoring species composition and abundance of marine resources in the target area.

### **Activity 1: Logbook**

Logbook for marine resources monitoring survey in Langkawi was distributed to three fishermen: Mr. Mahadir B. Ibrahim, Mr. Rozi and Mr. Sarahudin. Fishermen were asked to record their catch and weight by species of every fishing day. Mrs. Sabena will be a logbook collector.

### **Activity 2: Interview fisherman and sampling their catch**

Fishermen were interviewed for sizes of their fishing boats, horse power, types of fishing gear, sizes or numbers of fishing gear, mesh sizes, fishing ground and period of fishing operation.

The catch was sampled for the length distribution and average weight. The catch composition was recorded from total catch. Unfortunately some catch (small size) were thrown to the sea before arrive to the fishing port.

The number of questionnaire distributed to fishermen is as follows.

<u>Questionnaire for each fishing gear</u>	<u>No. of questionnaire</u>
<u>Type of fishing gear</u>	
- Bottom vertical longline	2
- Fish gillnet	3
- Shrimp trammel net	15
- Crab gillnet	3

**Activity 3: Record catch composition and size distribution of catch from fishing trial (by fishing gear team)**

Date	Fishing gear	Species	Weight (kg)	Average weight per pc. (g)	
15 June	Crab trap	Swimming crab	2.4	240	
		Musk crab	2.7	168.75	
		Grouper	4.13	137.67	
		Terapon sp.	3.3	45.21	
		Other	0.350		
		<b>Total</b>	<b>12.88</b>		
	BVL	Starry Emperor	0.2	33	
		Croaker	6.8	148	
		Threadfin bream	0.4	133.33	
		Terapon sp.	0.4	400	
		<b>Total</b>	<b>7.8</b>		
		16 June	Crab trap	Swimming crab	4.35
Musk crab	3.570			210	
Mantis shrimp	0.46			35.39	
Grouper	2.2			169.23	
Terapon sp.	0.6			35.29	
<b>Total</b>	<b>11.18</b>				
	BVL		Grouper	0.2	200
			Siverbidy	0.4	133.33
			Threadfin bream	0.4	200
			Terapon sp.	0.22	55
			Catfish	0.15	150
<b>Total</b>	<b>1.37</b>				
17 June	Crab trap	Swimming crab	1.840	153.33	
		Babylonia	5.05	26.92	
		Other	1.45		
		<b>Total</b>	<b>8.34</b>		

The interview was made through an interpreter; Mrs. Sabena Binti Saleh, Mr. Saad Hj Selaymen and Mr. Azibi.

## Prospectus

### **Marine resources monitoring survey in Langkawi**

#### **1. Background**

Based upon the outcome of the socio-economic survey conducted in the project operational area in October 2003, it was decided to improve the currently prevailing fishing technologies in Langkawi within the project activity framework. The activity was initiated through a preliminary study in March 2004 by investigating the current fishing practices and identifying the improvement needs. Based upon the observations and findings in the study and also through discussions with the fishermen, the following 7 fishing methods were identified for improvement

- Bottom vertical longline (BVL)
- Collapsible crab trap
- Squid trap
- Trolling line for squid
- Trolling line for pelagic fishes
- Fish Trap
- Ivory whelk trap

As the nature of fishing characteristics in the area indicates, the fishing efforts are centered around artificial reefs (ARs) or fish aggregating devices (FADs). The fishing ground, therefore, is rather limited and the correlation between increased fishing efforts and fishery resource dynamics should be carefully monitored especially when such improved fishing methods are introduced into the limited area. The simultaneous efforts with fishery resources management and the fishing technology improvement are bound to be exerted.

It is anticipated to begin experimental fishing to test applicability, practicability and economic viability for envisaged improved fishing methods in the middle of June, prior to the actual introduction of such fishing technologies in the area. In accord with the attempt to be started, monitoring the changes of fishery resources will take place.

#### **2. Objectives**

To ensure the sustainability of available marine resources, especially around the ARs and FADs after the introduction of improved fishing efforts in the project operational area, a marine biological survey is conducted in monitoring species composition and abundance of marine resources in the target area.

#### **3. Expected outcomes**

The following outcomes are anticipated in the wake of marine resources survey activities.

- The current level of marine resources abundance around FADs in Langkawi is identified.
- The dynamic changes by introduction of improved fishing gear are monitored.
- The species composition around FADs in Langkawi are identified.



#### **4. Study team**

The study is carried out within the collaborative project framework between SEAFDEC/TD and DOF Malaysia and the study team is composed of the following members;

##### SEAFDEC/TD

1. Penchan Laongmanee
2. Pattarajit Kaewnuratchadasorn

##### DOF Malaysia (FRI)

1. To be yet nominated
2. - do -

#### **5. Data collection methodology**

##### 5.1. Data collection

- Data from sea trials and training in the selected fishing gear: to be collected by the fishing gear team
- Data from selected fishermen: logbook from fishermen who joined the experimental fishing in improved fishing methods and the subsequent training fishing (a logbook should be introduced during the experimental fishing)
- Data from gillnet fishery: to be collected from one to three fisherman volunteers for each fishing gear, i.e. shrimp trammel net, fish gill net and crab gill net that are operated around KEN's FAD. They are also requested not to land their catches until they are recorded.

##### 5.2. Type of data

The types of data to be collected are;

- Length frequency
- Total catch weight
- Weight by species
- Description of net used ; type, size, mesh size

##### 5.3. Data collection schedule

- The schedule for data collection from sea trials and training will follow that of the fishing gear team.
- The schedule for data collection from the selected fisherman will be based upon every fishing operation.
- Data collection from gill net fishery will be made once every 4 months.

#### **6. Necessary equipment and materials for data collection**

- A weighing scale (0 – 3 Kg) and a measuring board (60 cm): to be prepared by FRI
- Log sheets and punch cards: to be prepared by SEAFDEC/TD

#### **7. Activity itinerary**

- 13<sup>th</sup> June 04 Leave Bangkok for Langkawi
- 14<sup>th</sup> June 04 Discuss with KEN the selection of volunteer fishermen to operate gill nets near FADs  
Discuss with the fishing gear team the data collection methodology
- 15<sup>th</sup> June 04 Data collection
- 16<sup>th</sup> June 04 Data collection
- 17<sup>th</sup> June 04 Data collection
- 18<sup>th</sup> June 04 leave Langkawi for Bangkok

## **8. Funding**

The funding for conducting the marine resources monitoring survey will be drawn from the collaborative project execution arrangement between SEAFDEC/TD and DOF Malaysia. SEAFDEC/TD will offer the cost of traveling for the SEAFDEC/TD staff and of equipment and materials as listed in item 6 above, while DOF Malaysia will make the necessary arrangement for personnel, equipment and materials listed in the item 4 and 6 respectively.



Fig. 3: FED main rope and appendages construction.



Fig. 6: FED releasing at marked position.



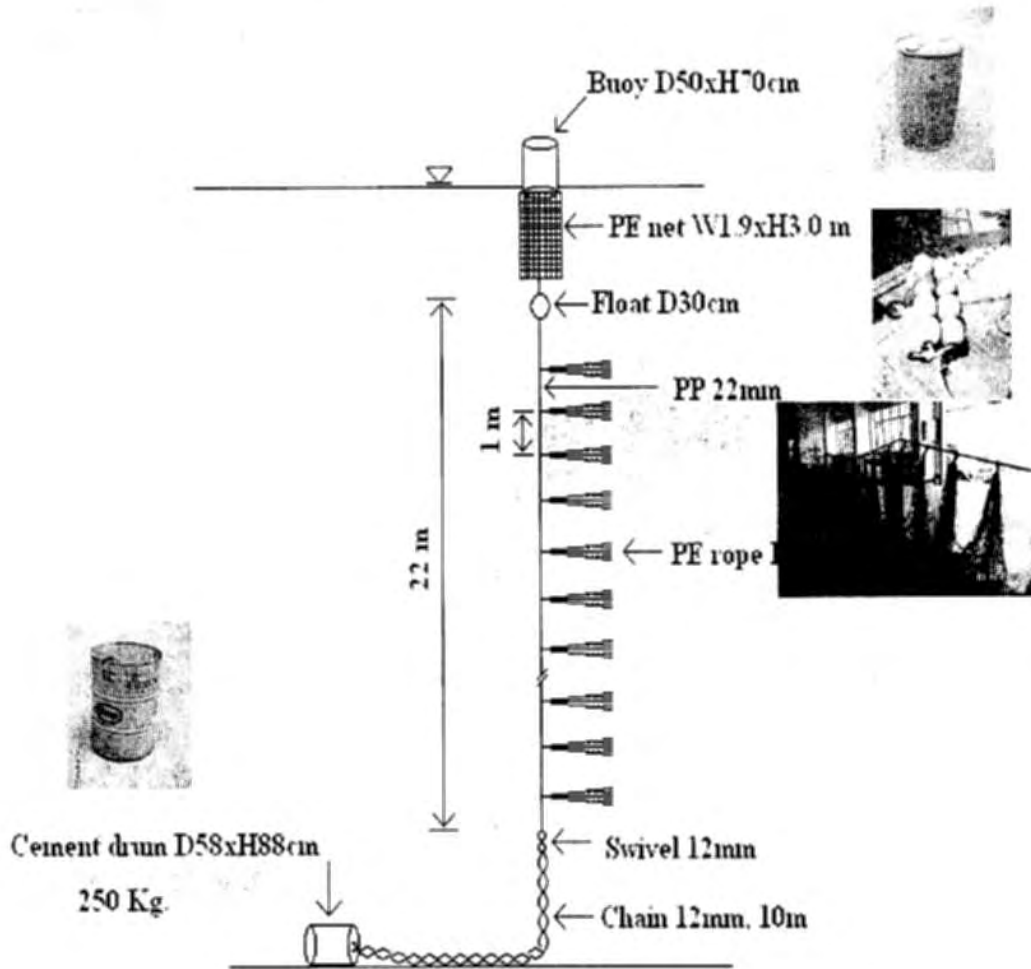
Fig. 5 FED installation by local fishing boat.



Fig. 7 FED installation surrounding artificial reefs on the project site.

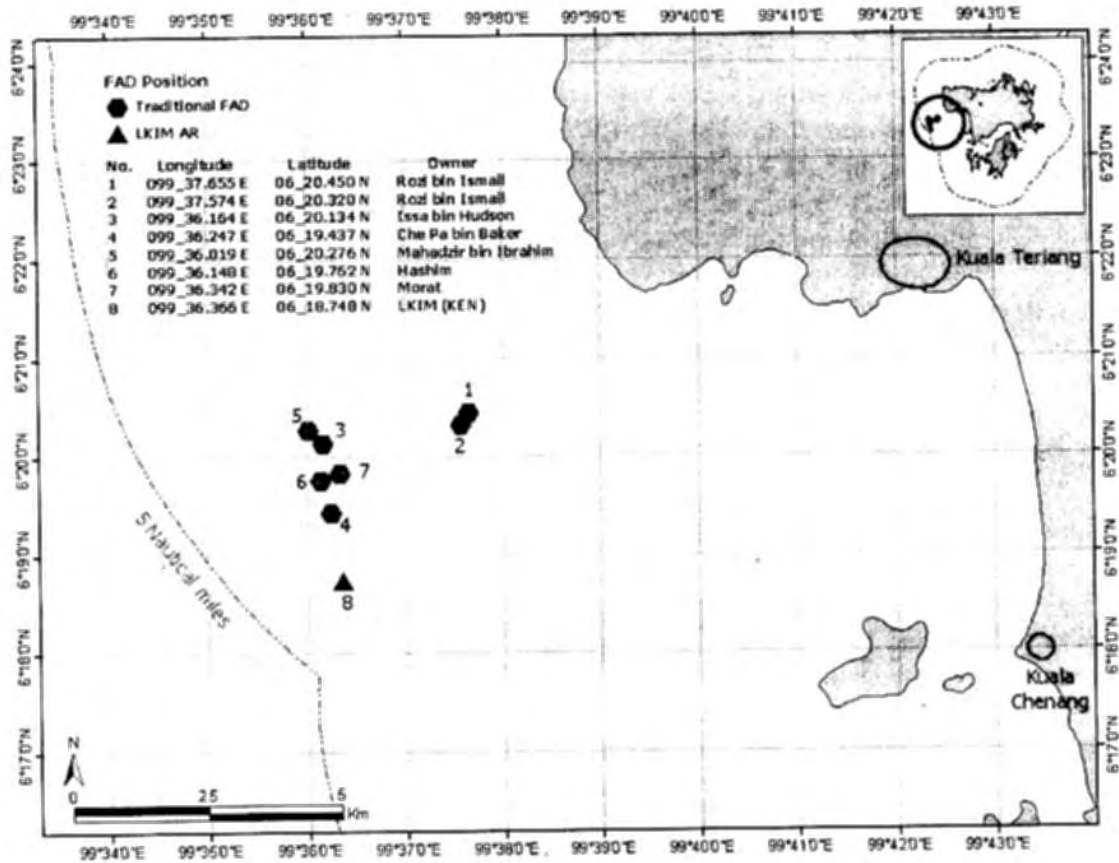
### Diagram of Fish Enhancing Device (FED)

**Project** : SEAFDEC/TD, Resources Enhancement  
**Location** : Langkawi, Malaysia  
**Water Depth** : 31 m  
**Material** : Synthetic Fiber - Poly-Propylene (PP)  
- Poly-Ethylene (PE)



## Fish Enhancing Device Installation Area

Location : Kuala Teriang, Lakawi, Malaysia  
 Latitude 06° 19'.009 N, Longitude 99° 36'.136'E ( Δ Number 8)  
 Water Depth: 31 m  
 Date: 18-24 December 2004



# **Work Plan**

## **on**

# **Fish Enhancing Devices (FEDs) Training and Installation in Langkawi**

### **1. Background**

It is considered that the marine productivity is relatively poor especially in demersal species of fish around Langkawi where the collaborative CBRM project with DOF Malaysia and SEAFDEC/TD has been deployed since last August. This is primarily because of the bottom topography of the sea; it is composed of very dense and unfertile mud strata. With such a natural environment, the fishers inevitably rely on the installation of ARs and FADs for their coastal fishing. The enhancement that comes with these devices is the aggregation of fish. In fact, there are 7 FADs and 1 AR installed in the project operational area and the main fishing activity engages around these facilities. This device is so vital for the fishers there that they are very keen to improve the design to provide better functioning of fish aggregation and durability. Aimed at meeting their demand, SEAFDEC/TD decided to try out the introduction of an improved type of FAD (the so-called Fish Enhancing Device – FED) and monitor its effectiveness and durability.

### **2. Objectives**

The objectives of this trial are as follows.

- To discuss and consult with the fishers the effective application of FADs/FEDs and combined usage with ARs
- To train the fishers in the construction of the new type of FAD(FED)
- To test the applicability of the new type of FAD(FED) of the improved design
- To monitor the effectiveness and practical application of the new type of FAD (FED)

### **3. Itinerary of activity**

18 Dec. 04 (Sat.)	: Departure from Bangkok to Langkawi, Malaysia
19 Dec. 04 (Sun.)	: Consultation and meeting with Fisheries Officer, DOF Malaysia, and fishers
20 Dec. 04 (Mon.)	: Training for local fishermen in Kuala Teriang in FED construction
21 Dec. 04 (Tue.)	: - ditto -
22 Dec. 04 (Wed.)	: FED installation
23 Dec. 04 (Thu.)	: Continue the FED installation and training program evaluation
24 Dec. 04 (Fri.)	: Leave from Langkawi, Malaysia to Bangkok



#### **4. Preparation and arrangement**

It is planned that 3 sets of FED will be constructed in SEAFDEC/TD, Bangkok, and transported to Langkawi while one will be constructed during the training course to be held on 20 and 21 December as per the design in the annex 1. To carry out such a training and installation program for FEDs, the following preparations and arrangements are necessary.

##### SEFADEC/TD side

- Participation and traveling for 3 SEAFDEC/TD staff,  
Dr. Yuttana Theparoonrat  
Dr. Thaweekit Amornpiyikrit  
Mr. Nakares Yasook
- Materials for construction of FED except the anchors
- Transportation of equipment and materials of FED from Bangkok to Langkawi
- Training costs

##### DOF Malaysia side

- Reception of equipment and materials of FEDs brought by SEAFDEC/TD in Langkawi
- Selection and participation of trainees, 10 to 15 fishers
- Arrangement of the space and facilities for the training course
- Preparation of 4 drums, cement, sand and aggregate to construct anchors
- Preparation of a boat with an inboard engine for the installation of the FEDs on the 22 and 23 December
- Arrangement and participation of the counterparts from an appropriate institution of DOF Malaysia

#### **5. Funding**

The fund for conducting the trials of the improved FAD and the training will be drawn from the collaborative project execution arrangement between SEAFDEC/TD and DOF Malaysia.

SEAFDEC/TD will offer the cost of traveling for SEAFDEC/TD staff and of equipment and materials as listed above, while DOF Malaysia will make the necessary arrangements for personnel, equipment and materials as listed above.

## Annex 5

### Report on Women's group Activity in Langkawi, Malaysia (LBCRM-PL)

18<sup>th</sup> – 24<sup>th</sup> December 2004

Sumitra Ruangsivakul  
24<sup>th</sup> December 2004

This duty trip to Langkawi was made between 18<sup>th</sup> and 24<sup>th</sup> December 2004 to pursue the work as described below.

#### 1. Objectives of the official trip

- To review the women's activities in product development and group management
- To monitor the bookkeeping and accounting systems
- To discuss with the women's group the potential business for beginning new products

#### 2. Background

In the LBCRM-PL project, Kuala Teriang, the women's group was formed in February 2004, primarily aimed at the creation of new job opportunities among the members through which some additional income to fishermen's families is anticipated. Now there are 13 members, the main of product is anchovy processing.

#### 3. Training course and study trip

Three training courses and two study trips have been provided so far for the women's group as listed below.

- Study trip to Chumphon and Phangnga Province, Thailand, on 28<sup>th</sup> April to 2<sup>nd</sup> May 2004. This activity was given by SEAFDEC/TD, There were 7 participants, 5 members of women's group and 2 officers of the DOF Malaysia. They were very impressed and encouraged in observing the women's activities in processing various products in both areas.
- The DOF Malaysia provided a training course on surimi and fish ball processing in Penang, Malaysia on 10<sup>th</sup>-12<sup>th</sup> May 2004. 6 members of women's group participated.
- SEAFDEC provided a Simple Bookkeeping course for the women's group at Kuala Teriang on 15<sup>th</sup>-16<sup>th</sup> June 2004, there were 20 participants from the women's group and KEN.
- Study trip to Johor and Perak on 2<sup>nd</sup>-6<sup>th</sup> August 2004. Processing creaker (keropok) was the main product for study and Ms. Sabidah and the Leader of the women's group attended this study trip.
- A training course on accounting, marketing and GMP was provided to 12 members of women's group on 18<sup>th</sup>-20<sup>th</sup> September 2004, the place of training was Kalantan, Malaysia.

#### **4. Equipment and materials**

The DOF Malaysia has provided much equipment and material to the women's group since they started active production. The fund started to distribute in September until the middle of November when the cottage scale fish-processing yard was completed. The equipment provided is itemized as follows;

- Hot oven, this equipment is too small, not enough for a day's cooking
- Gas stove with 2 gas containers
- Sealing machine
- Freezer (refrigerator)
- 2 Tables and chairs
- Packaging and labeling materials
- Building (4m x 8 m)

The total of budget was 50,000 RM, of which 20,000 RM was contributed by the village fund of LADA, and 30,000 RM for equipment and materials was from the DOF Kedah State. This cottage scale fish-processing yard was completed and finished in the middle of November 2004 and the women's group started production in December. The main products are dried/seasoned anchovy with fresh chili and dry chili. The current marketing is concentrated in Langkawi and most of the product is sold at the project site.

#### **5. Group's management**

There are 4 sub-groups to produce anchovy processing as described below.

Group No. 1 is named: CEMPAKA with 3 members

Group No. 2 is named: MELOR with 3 members

Group No. 3 is named: ANGGEREX with 4 members

Group No. 4 is named: ROS with 3 members

There are 8 regulations governing processing practices as follows,

1. One group will produce 3 kg of dried anchovy per day
2. The working hours being 0930 – 1700.
3. If a member in a group cannot come to work, it is necessary to call a member from another group to replace her.
4. If a member from another group doesn't come to work, that member will pay 3 RM to the group
5. All members must work their duty in one way or another.
6. The group will clean and dry 5 kg. of anchovy each day (for preparation for the next day's production)
7. To clean the building before leaving.
8. All member will maintain a good relationship

A monthly duty distribution table for the women's group is shown in the following.

Group	Day						
1	Sun	Thu	Thu	Sun	Thu	Sun	Sun
2	Mon	Sat	Mon	Sat	Fri	Sat	Sat
3	Tue	Fri	Tue	Fri	Tue	Tue	Fri
4	Wed	Sun	Wed	Mon	Wed	Mon	Wed
Week	1	1	2	2	3	3	4

Toward the end of month or the date of the 28<sup>th</sup> of each month, all members will meet for discuss various matters like new product development, the program of the group, and sharing the profit to the members etc.

#### **6. Plan of the women's group**

Some equipment is still needed to produce more products, training courses and study trips for skill development to members are also necessary.

##### Equipment

- An oil separator to drain the oil residue from the cooked anchovy
- Shelves for products display
- A mixer
- A vacuum sealer
- A gas stove
- A drier with a larger capacity

##### Training courses

1. Packaging course
2. Processing keropok, anchovy and sea cucumber
3. Study tour to exhibitions of fish products

**Work Plan**  
**on**  
**Monitoring product development and accounting system**  
**of Women's group in Langkawi**

**1. Background**

The women's group was organized upon initiation of the project operation in Pulau Langkawi and some activities were initiated in the wake of conducting the study tour to Chumphon where the sister project, LBCFM-PD, was in operation in April 2004. Learning from the women's activity in Chumphon, they started producing fish-based products like dried and seasoned anchovy. Meantime, the SEAFDEC/TD provided the training course in bookkeeping and accounting in June 2004 expecting to put their accounting system in place. As such the women activities have been highlighted and more substantial supports in finance as well as technique have been sought.

**2. Objectives**

- Review women's activity in product development
- Monitor bookkeeping system and accounting system
- Discuss with women's group the potential business to begin such as batik printing.

**3. Study team**

The study team is consists of:

SEAFDEC/TD side

- Mr. Sei Etoh
- Ms. Sumitra Raungsivakul

Malaysia DOF side

Ms. Sabidah Ninti. Saleh

**4. Study itinerary**

- 18.12.2004 : Leave BKK for Langkawi
- 19.12.2004 : Inspect women's activity at the site and discuss with the women's group
- 20.12.2004 : Collecting data on product, accounting and group's management
- 21.12.2004 : Discussion on the problem and group's direction with women's group
- 22.12.2004 : Prepare the paper for PIWG meeting
- 23.12.2004 : PIWG meeting
- 24.12.2004 : Leave Langkawi for Bangkok

**5. Funding**

The funding for reviewing and monitoring the women's activity will be drawn from the collaborative project arrangement with SEAFDEC/TD and DOF Malaysia. SEAFDEC/TD will bear the traveling cost of their staff and other miscellaneous cost incurred by carrying out activity, while DOF Malaysia will make the necessary arrangement for their counterpart staff to participate in the activity.

## Annex 6

### Report on Fisherman Training in Langkawi

(9<sup>th</sup> – 11<sup>th</sup> August 2004)

Isara Chanrachkij

20 August 2004

#### a) Training Program and Location:

The training on fishing technology is a sub-activity of Fishing gear improvement in Langkawi under the project of Local Community Based Fisheries Management, Palau Langkawi (LCBFM-PL). Practical on-site training on fishing technology has been designed since the success of the sea trial that was conducted in June 2003. Fishing technology of 2 main types of fishing gear, i.e. Collapsible crab trap and Bottom vertical longline were introduced to fisherman and Babylonia trap was a re-experiment to investigate the existence of a Babylonian shell fishing ground off Pandai Kok, and showed the fisherman the catching efficiency of this particular Babylonian trap.

The fishing gear construction training was conduct at the office of KEN (Fisheries cooperative), Kuala Teriang and the fishing operation was conducted around the ARs/FADs, at a distance of 3-5 nm from Kaula Teriang.



#### b) Main Activities: The training was divided into 2 main activities.

##### 1. Fishing gear construction



The objective of fishing gear construction training is; to let fishermen understand the construction of fishing gear and to be able to make them themselves. Not only fishing gear construction techniques, but also responsible fishing practice was introduced to the fishermen. The selected types of fishing gear are as follows; *Bottom Vertical Longline & Collapsible trap*

##### 2. Fishing operation practice



The fishing operation is a part of the training program to show the capture efficiency of the fishing gear. Fishermen were practiced and participated in the fishing operation of 3 types of fishing gear; *Bottom Vertical Longline, Collapsible trap & Babylonia trap*

**c) Activities Schedule;**

9 July 2004 (Monday)

<b>Time</b>	<b>Activity</b>
0930 hrs	Arrived Kuala Teriang, prepared Training facilities and training material.
1445 hrs	Left Pantai Kok for fishing station at ARs/FADs.
1445-1530 hrs	Set fishing gear, i.e. 50 collapsible crab traps and 20 Babylonian traps.
1600 hrs	Arrive at Pantai Kok

10 June 2004 (Tuesday)

<b>Time</b>	<b>Activity</b>	<b>Time</b>	<b>Activity</b>
0900 hrs.	Arrive at Kaula Teriang		
Fishing gear construction practice		Fishing operation practice	
1130-1200 hrs	6 participants attended at the class, lecture on the Bottom vertical longline and Collapsible trap, Made appointment for afternoon practicing	1100-1600 hrs	Leave Pantai Kok for fishing station. Setting 1 <sup>st</sup> 20 Babylonia trap at break water, out of Pantai kok. 1 <sup>st</sup> Collapsible Trap hauling operation, 24 traps have been lost by the intrusion of some bottom trawlers nearby the ARs/FADs Setting 2 <sup>nd</sup> collapsible trap operation
1445-1600	Remaining 2 Participants attended the class, practiced collapsible crab trap construction		

11 June 2004 (Wednesday)

<b>Time</b>	<b>Activity</b>	<b>Time</b>	<b>Activity</b>
0900 hrs.	Arrive at Kaula Teriang		
Fishing gear construction practice		Fishing operation practice	
1015-1200 hrs	4 participants attended at the class, Participants attended the class and practiced collapsible crab trap construction	1100 hrs	No attendance of any participants so that instructors left Pantai Kok for hauling operation of the deployed fishing gear.
1430-1600 hrs	5 more participants attended the class (Total 8 participants), Continue on the practice of Collapsible trap construction	1130-1130 hrs.	2nd Collapsible Trap hauling operation, 2nd Babylonia trap operation
1730-1900	Discussion on the training and activities concerning the trip		



**d) List of Instructors**

- 1) Seiichi Etoh from SEAFDEC/TD (Chief of project and training activity program consultant)
- 2) Isara Chanrachkij from SEAFDEC/TD
- 3) Pratakphol Prajakjitt from SEAFDEC/TD
- 4) Toko Nakajima from SEAFDEC/TD
- 5) Hussin bin Abdul Rahman from the Fisheries training institute (FTI), Terengganu
- 6) Mustafa bin Bidin from the Fisheries training institute (FTI), Terengganu

**e) List of Participants**

- 1) Mansor bin Ali
- 2) Archad bin Ramli
- 3) Anura bin Taib
- 4) Mohamad Zul bin Putih
- 5) Ahmad bin Hamid
- 6) Osman bin Anustafa
- 7) Azman bin Chepa
- 8) Saad Sirun
- 9) Che Won Sood
- 10) Roz Ismail
- 11) Ramli Hassin
- 12) Roslizan Razali
- 13) Hassin Ismail
- 14) Chepa Bakar
- 15) Yusuf Saleh

**f) Result and Discussion**

- The training has fully been cooperated in by the Department of fisheries, Malaysia, supporting the hydroacoustic equipment, i.e. an echo sounder for detecting and recording the bottom topography around the ARs/FADs and the Global Positioning Satellite (GPS) for recording the position of ARs/FADs. Also two instructors from the Fisheries Training Institute (FTI), Terengganu, closely cooperated with SEAFDEC staff during the conduct of the training activity.



**Echo sounder image**

- Two unexpected problems occurred during the training on fishing technology for fisherman in Kuala Teriang.

1) A fisherman in the fisherman village passed away on August 9. Almost all of them went to the funeral. Few fishermen attended the training for the morning period. Furthermore in the afternoon period some of them had left the class so that the training could not cover all details. The training could not reach the expected goals.

2) Plenty of shrimp catching during the period of training activity caused almost all not to attend. The participants preferred to go shrimp fishing rather than attend the training. Some of the fisherman had left the class in the morning session and some unlisted fisherman attended the afternoon practice. That makes it very difficult to instruct all fishermen to understand all the details of the training program. This problem occurred in the fishing operation session also. Some fishermen, who attended the fishing gear construction class, did not participate in the fishing operation session and some fishermen who had participated in the fishing operation session, did not attend the fishing gear construction class.

On the second day of the fishing operation session no fisherman attended because most of them went out to sea for shrimp fishing and the Malaysian coordinator and instructor could not anticipate their returned time.

- The conclusion of training for fisherman in Langkawi by instructors' observation has been shown by table below;

<b>Collapsible crab trap</b>	<ol style="list-style-type: none"> <li>1) Fishermen participants are able to construct, repair collapsible trap and conduct the fishing operation by themselves.</li> <li>2) Fishermen said that they would like to try fishing with collapsible trap and requested to SEAFDEC to arrange the traps at their expense.</li> <li>3) According to the limit of practical time, the construction of collapsible trap frame cannot be practiced. The Instructor prepared some frames from SEAFDEC/TD and the fishermen requested to SEAFDEC instructors to instruct them on how to make a collapsible trap frame.</li> </ol>
<b>Bottom vertical longline</b>	<ol style="list-style-type: none"> <li>1) Bottom vertical longline had not been strengthened during the practical because time was not available for construction. The fishing operation was conducted only once because during the second operation no fisherman participated, and the fishermen have skill and experience for bottom longline fishing operation.</li> <li>2) Dominant catches of Bottom vertical longline were catfish but that was not the main target fish of this fishing gear. It needs to be more modified for the fishing around the ARs/FADs</li> </ol>
<b>Babylonia trap</b>	<ol style="list-style-type: none"> <li>1) The fishing operation of the Babylonia trap had been practiced during the training for fisherman. Because the construction of Babylonia trap is not complicated the fishermen can copy from the Babylonia trap prototype.</li> <li>2) It is confirmed that the Babylonia shell fishing ground has been discovered off the breakwater of Pantai Kok. However the abundance of Babylonia still needs to be investigated and monitored in the long term.</li> <li>3) The marketing of Babylonia shell is the major problem in the promotion of harvesting.</li> </ol>

- Suggested preparing a more suitable training location because the office of KEN is located in the fishermen's village. They can leave the class anytime they wanted.
- Pattern and method of training should be altered to induce the interest of the fishermen.
- Because of the unexpected problems combined with the unsuitable training location, I have said that the fisheries training program in Langkawi is not 100% successful. The improvement of training methods should be considered in the light of an understanding of the living and daily activities of the fishermen

## **Evaluation of the training course**

Upon completion of the training course in "Introduction of improved fishing gear", questionnaire sheets were distributed to 8 out of the total of 16 participants selected at random. The questionnaire was aimed at evaluating the training mode and result, primarily for the purpose of making use of them as a guide for improvement for the training exercise in the future. The questionnaire sheet is as seen in the Annex 1 and the analyzed result is shown in Annex 2.

### **1. Trainees' ages**

Most trainees are grouped between 31 and 40 or 41 and 50. It was anticipated that younger trainees would participate thinking in terms of sustainable fisheries development in the future.

### **2. Usefulness of the training course**

Almost all participants responded as "very useful". In spite of the fact that this partly results from diplomatic favoritism, there is no doubt that the training was conducive to acquiring new fishing technologies for the trainees.

### **3. Training menu**

Among the three kinds of fishing method that were demonstrated to the trainees, it is obvious that collapsible crab trap fishing was of most interest to them and the Babylonia shell trap fishing followed. As to the bottom vertical long-line, some considered this applicable although others did not. This may be caused by the fact that the actual fish catch during the training by this fishing method was not appreciable.

### **4. Level of training**

As a whole, the level of training is appropriate although one responded to the course as being "Very difficult".

### **5. Quality of trainers**

The trainees appreciated the quality of the trainers from SEAFDEC/TD positively and it seems to be appropriate.

### **6. Training arrangement**

The training venue and other various arrangements jointly made by DOF Malaysia and SEAFDEC/TD were appreciated by all the respondents.

### **7. Any other comments**

Many comments were expected but it actually ended up as nothing. It is a bit disappointing.

### **8. As a whole**

Among the three fishing methods introduced, the crab trap fishing method was most appreciated by the trainees as it demonstrated a good catch compared with the local one during training. They immediately expressed their wish to procure equipment from Thailand to fabricate the trap.

As to the Babylonia shell trap, knowing that the fishing method is effective they did not show much interest as no market for this product is readily available in Malaysia unlike in Thailand. The joint marketing arrangement may boost this fishing method.

The bottom vertical long-line showed a good harvest during experimental fishing which was conducted in June 2004. But, the catch during this training course was not significant as such and therefore the trainees were simply disappointed. They have to continue the experiment by themselves and by devising gear to meet the local requirement.

## Annex -1: QUESTIONNAIRE ON TRAINING COURSE RESULT

Upon completion of the training course in Improved Fishing Technology conducted in Kuala Teriang on 10<sup>th</sup> –11<sup>th</sup> August 2004, SEAFDEC/TD carries out a survey on the impact given by the course and on the appropriateness of the course arrangement for future improvement. To do that, please fill up the following questionnaire. Thank you for your cooperation.

**1. Age of participant:**

**2. Do you think that, as a whole, this training course was useful for your present and future skill development?**

Very useful, useful,  Normal, Useless, Very useless

**3. If you answered “useful”, what points were of most interest and useful?**

a. Bottom set longline:

b. Crab trap

c. Babylonia shell trap

**4. Do you think you can make use of the technologies and knowledge gained through training in your day-to-day fishing operation?**

a. Bottom set longline:  Yes, No,

b. Crab trap:  Yes, No,

c. Babylonia shell trap:  Yes, No,

**5. What do you think of the level of the training?**

Too difficult, Difficult,  Normal, Easy, Too easy

**6. How do you think the trainers from SEAFDEC/TD performed?**

Excellent, Good, Normal, Bad, Worse

**7. What do you think of the training arrangements?**

Excellent, Good, Normal, Bad, Worse

**8. Any additional comments?**

## QUESTIONNAIRE RESULTS

The number of respondents: 8

**1. Age of participant:**

- 31 – 40 : 4 (50 %)
- 41 – 50 : 4 (50 %)

**2. Do you think that, as a whole, this training course was useful for your present and future skill development?**

- Very useful : 7 (87.5 %)
- Useful : 1 (12.5 %)
- Normal : 0
- Useless : 0
- Very useless : 0

**3. If you answered “useful”, what points were of most interest and useful?**

- d. Bottom set longline: No response
- e. Crab trap: 8 respondents mark.
- f. Babylonia shell trap: No response

**4. How do you think you can make use of the technologies and knowledge gained through training in your day-to-day fishing operations?**

- a. Bottom set longline
  - Yes : 2 (25.0 %)
  - No : 1 (12.5 %)
- b. Crab trap
  - Yes : 7 (87.5 %)
  - No : 0
- c. Babylonia shell trap
  - Yes : 3 (37.5 %)
  - No : 0

**5. What do you think of the level of training?**

- Very difficult : 1 (12.5 %)
- Difficult : 0
- Normal : 0
- Easy : 6 (75.0%)
- Very useless : 1 (12.5 %)

**6. How do you think the trainers from SEAFDEC/TD performed?**

- Excellent : 4 (50.0 %)
- Good : 4 (50.0 %)
- Normal : 0
- Bad : 0
- Worse : 0

**7. What do you think of the training arrangements?**

- Excellent : 2 (25.0 %)
- Good : 6 (75.0 %)
- Normal : 0
- Bad : 0
- Worse : 0

**8. Any additional comments?**

No comment made.

# PROSPECTUS

## TRAINING PROGRAM IN IMPROVED FISHING METHODS IN LANGKAWI

### Locally Based Coastal Resources Management in Langkawi (LBCRM – PL)

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#### 1. Background

Consistent with the “Project Action Plan for 2004” the LBCRM-PL project carried out a preliminary study in the project area of Pulau Langkawi toward the end of March 2004 to investigate the prevailing fishing practices there. Based upon the findings and observations and in consultation with the fishermen, the seven fishing methods as listed below were identified as ones for potential introduction to Langkawi, judged from various aspects including practicability, adaptability to the local conditions, economic viability, eco-friendly gear and consistency with the Malaysian Fishery Act.

- Bottom vertical longline (BVL)
- Collapsible crab trap
- Squid trap
- Trolling line for squid
- Trolling line for pelagic fishes
- Fish Trap
- Ivory whelk trap

Among these possible fishing methods, four types of fishing gear; i.e. bottom vertical longline (BVL), collapsible crab trap, trolling line for pelagic fish and ivory whelk trap were tested for applicability to the local conditions between 13<sup>th</sup> and 17<sup>th</sup> June 2004 in collaboration with the fishing gear technologists of Fisheries Technology Institute, DOF Malaysia. As a result, it was found that two out of four fishing methods tested; i.e. bottom vertical longline (BVL) and collapsible crab trap, were appropriate fishing methods to be introduced from the ecological, technical and economic points of view. Following the above findings and also the request put forward at the last PIWG meeting on 17<sup>th</sup> June 2004 by the representative of KEN, Kuala Teriang, it was decided to conduct a training course in improved fishing methods in Langkawi with the following criteria.

#### 2. Objectives

The major objectives of conducting a training course in improved fishing methods of bottom vertical longline and collapsible crab traps lie in;

- introduction of these new or improved fishing methods to the fishing community in Kuala Teriang, with particular attention being given to fishing around FADs,
- facilitating discussion among fishermen on the results of the fishing trials and deciding the future application of the new fishing methods



### 3. Expected outcome

The following outcomes are anticipated following the training course.

- The participants learn the new or improved fishing methods.
- The KEN can identify the future orientation in application of the new or improved fishing methods within the framework of coastal resources management, especially in relation to the use of FADs.

### 4. Training program

#### Date and venue

The training is to be conducted for 3 days from 10<sup>th</sup> to 12<sup>th</sup> August 2004 at the KEN's Building at Kuala Teriang

#### Training program and schedule

**Day 1 (9<sup>th</sup> August 2004)** Preparations for training

- Preparation of training equipment and facilities
- Fishing gear material preparation
- Setting a crab trap for fishing operation practice and
- Setting fish traps to investigate the fish catch around ARs/FADs (Sea activity)

**Day 2 (10 August 2004)** Training 1

Participant to be divided into 2 groups and each group should contain 6 trainees at a minimum.

- Group A: Practice on traps and BVL construction (on land)
- Group B: Practice on the fishing operation of Crab Trap and Bottom Vertical Longline (at sea)

**Day 3 (11 August 2004)** Training 2

- Group B: Practice on trap and BVL construction (on land)
- Group A: Practice on the fishing operation of Crab Trap and Bottom Vertical Longline (at sea)

**Day 4 (12 August 2004)** Training 3 (Evaluation)

- Continue to construct the fishing gear and discuss with the fishermen the result of catch. The discussion includes any comments on fishing gear and their operation.
- The trainees should discuss how to apply the new or improved fishing methods within the concept of coastal resources management, especially in use of AR/FADs.
- The researchers from SEAFDEC will collect the fishing gear information for the creation of a monograph of fishing gear in Langkawi. The trainees may assist in providing the necessary information.

## Training timetable

Day	0700-0900	0900-1100	1100-1300	1300-1500	1500-1700	Remark
9/8/2004		Visit fishing villages to inspect training facilities, fishing equipment, and hold discussions with the fishermen Setting collapsible traps and fish traps				Go to sea in the morning if possible
10/8/2004		Group A: Practice on trap and BVL construction Group B: Practice on the fishing operation of Trap and BVL				
11/8/2004		Group B: Practice on trap and BVL construction Group A: Practice on the fishing operation of Trap and BVL				
12/8/2004		Sea trial discussion with the fishermen and fisheries officer		Observe and collect the fishing gear and method information.		

## 5. Participants

### Trainers

#### SEAFDEC/TD side

- Mr. Isara Chanrakhij
- Mr. Pratakphol Prajakjitt

#### Malaysia DOF side(or MFRDMD)

- 2 Fishing gear technologists

### Trainees

Min. 12 and max. 16 (divided into 2 groups)

## 6. Training materials and facilities

The following materials and facilities are necessary to carry out the training. The boat in the following table number 08 should be large enough to accommodate 10 people.

No.	Particulars	Q'ty	Unit price(Baht)	Cost (Baht)	Responsible Party
01	Frames for trap	20 pcs.	30	600	SEAFDEC/TD
02	PE net, 2.5cm ST mesh,	¼ fold	-	1,000	SEAFDEC/TD
03	PE twine, 380/12	1 pack	100	100	SEAFDEC/TD
04	Net needles Nos.4 and 5	20 pcs.each	20	400	SEAFDEC/TD
05	Seamen's knife	20 pcs.	30	600	SEAFDEC/TD
06	GPS	1 set	-	-	SEAFDEC/TD
07	Echo sounder	1 set	-	-	DOF Malaysia
08	Fishing boat	1 boats	-	-	DOF Malaysia

## 7. Funding

The fund for conducting the training will be drawn from the collaborative project execution arrangement between SEAFDEC/TD and DOF Malaysia. SEAFDEC/TD will offer the cost of traveling for SEAFDEC/TD staff and of fishing equipment and materials as listed in table of paragraph 6 Training Materials and Equipment, while DOF Malaysia will make the necessary arrangements for personnel, equipment and materials as listed in the same table.

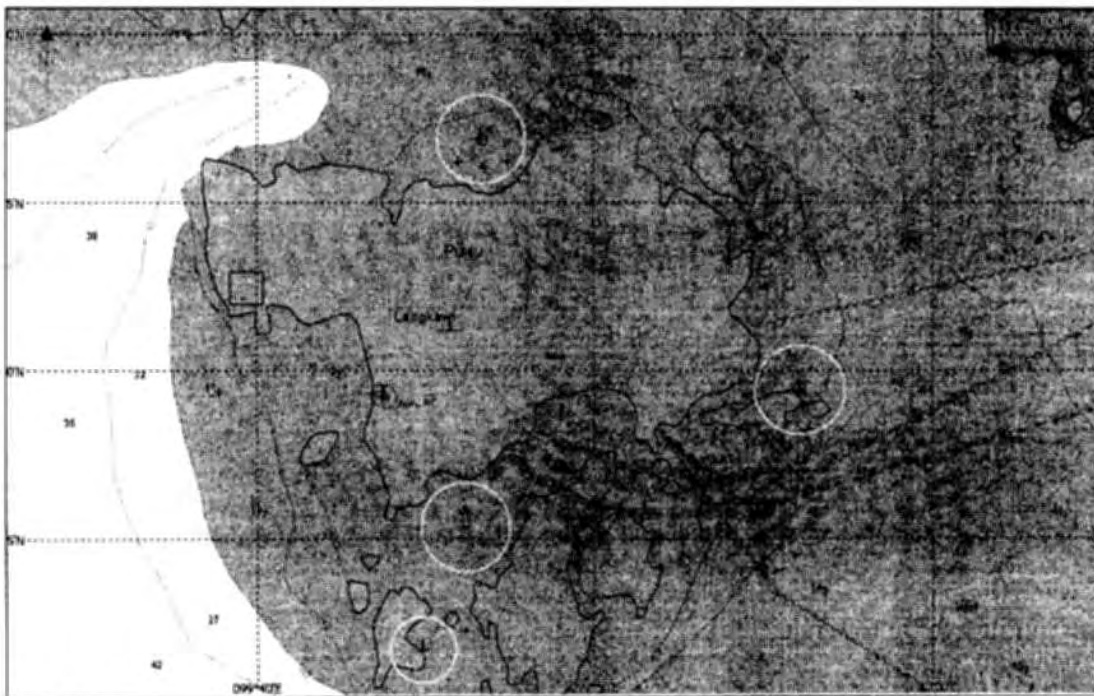
## Annex 7

### Report of Fishing Trial in Langkawi

19<sup>th</sup> –23<sup>rd</sup> December 2004

Isara Chanrachkiji  
Head, Fishing Gear Technology Section,  
Research Division, SEAFDEC/TD  
31<sup>st</sup> December 2004

**a) Research Area and Station:** The Fishing trail covered around the Artificial Reef and Fish Aggregating Devices (ARs/FADs) 3-5 nautical miles off the coast of Kuala Teriang, in the west part of the Langkawi coastal zone. The approximate depth is 20-25 m. The station is designed as appears in the Map below (Figure below)



**b) Main Activities (Figure 2):**

- Conduct the fishing trial using
- ✓ 3 designs of Collapsible crab trap i.e.,
    - A Rectangular collapsible crab trap
    - A Semi-cylindrical crab trap
    - A Local collapsible crab trap
  - ✓ Collapsible fish trap
  - ✓ Babylonia trap and
  - ✓ Squid traps

**c) Objectives**

The fishing trial is designed to be an operation trial of squid fishing gear and to investigate the catching efficiency of the traps used. The main objectives of the 2<sup>nd</sup> fishing trial are described as,

- To conduct a sea trial and investigate the most appropriate fishing gear and methods for catching the squid i.e., squid trap.
- To compare the catching efficiency between the SEAFDEC collapsible trap and local collapsible traps targeted at swimming crab fishing.
- To investigate the catching efficiency of fish traps around the AR/FAD area.
- To investigate the seasonal distribution of Babylonian shell in the Langkawi area

**d) Activities Schedule;**

17 December 2004 (Friday)

1800 hrs. Leave Bangkok for Satun Province

18 December 2004 (Saturday)

0700 hrs. Arrive at Satun province

0900-1130 hrs. Load all fishing gear and Fish Enhancement Devices to cargo vessel

1330 hrs. Left Satun province for Langkawi Island, Malaysia

1530 hrs. Arrive at Langkawi Island, Malaysia

1700-2000 hrs. Transfer all fishing gear and Fish Enhancement Devices from Langkawi harbor to Kuala Teriang

19 December 2004 (Sunday)

0900-1730 hrs. Prepare fishing gear and accessories for the fishing trail

20 December 2004 (Monday)

0930 hrs Left Marina Yacht Club, Pantai Kok for the fishing ground

1000-1500 hrs Fishing trial at the artificial reef off Kuala Teriang by setting  
 - 52 Collapsible Crab Traps  
 - 5 Collapsible fish traps  
 - 10 Squid traps and  
 - 20 Babylonia traps

1630 hrs Arrive at Kaula Teriang

21 December 2004 (Tuesday)

0930 hrs Left Marina Yacht Club, Pantai Kok for the fishing ground

1000-1400 hrs Hauling Collapsible traps and setting the 2<sup>nd</sup> operation.  
 Hauling Squid traps and found that 6 squid traps are lost.  
 Hauling Babylonia traps and setting for 2<sup>nd</sup> operation.

1400 hrs Arrive at Kaula Teriang

22 December 2004 (Wednesday)

0900 hrs Left Marina Yacht Club, Pantai Kok for the fishing ground

0920-1330 hrs Hauling collapsible trap and setting for 3<sup>rd</sup> operation  
 Hauling squid traps and found 8 squid traps are lost.  
 Hauling 5 fish traps and setting  
 Hauling up 20 Babylonia trap and setting for 2<sup>nd</sup> operation

1400 hrs Arrive at Marina Yacht Club, Pantai Kok

23 December 2004 (Thursday)

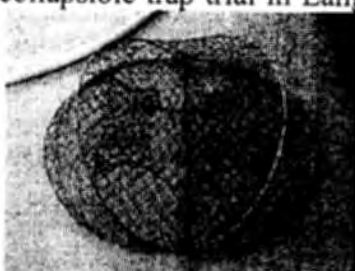
0900 hrs Left Marina Yacht Club, Pantai Kok for fishing ground

0930-1200 hrs Hauling collapsible traps  
 Hauling the remaining 2 squid traps  
 Hauling 5 fish traps  
 Hauling 20 Babylonia trap

1230 hrs Arrive at Marina Yacht Club, Pantai Kok

## Collapsible crab trap:

In respect of the first collapsible trap trial in Langkawi, the gear is able to harvest



swimming crab. Target catch of all collapsible trap designs in the coastal zone is mainly for the blue swimming crab (*Portunus pelagicus*) and Crucifix crab (*Charybdis feriatus*). Since 2004, SEAFDEC have introduced the newly designed collapsible

crab trap from Japan. The new design was found to have the highest efficiency during crab trap fishing operations on the coast of the South China Sea in countries like Brunei, Cambodia. To confirm the efficiency of the rectangular collapsible crab trap that was already introduced to the fisherman in Langkawi, a comparison of the three types of collapsible crab trap needed to be clarified. Furthermore, the seasonal distribution of the swimming crab will be investigated for sustainable crab trap fisheries in Langkawi.



52 collapsible traps, 20 rectangular collapsible crab trap, 20 semi cylindrical crab trap and 12 local Malaysian traps, were set during 3 fishing trials, 20<sup>th</sup> –23<sup>rd</sup> December 2004. All operations were deployed overnight around ARs/FADs. Total catch by three operations was 21.15 kg. Swimming crab was the dominant species with numbers of 63 and a weight of 13.22 kg. Average weight of the crab was 220g./crab. Almost the entire female swimming crabs appeared to be in the out-carapace egg stage. This shows the Northeast monsoon is the spawning season of swimming crab around Langkawi Island. The biology of the swimming crab around Langkawi Island should be investigated before any crab fishing is promoted. Fishing gear technologists suggest that promotion of collapsible crab fishing should be done side by side with the

promotion of releasing the out-carapace swimming crab on board to conserve the stock of swimming crab around the Island. The abundance of crab should be urgently investigated by scientists.

Species	Station1		Station2		Station3	
	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)
Grouper	7	1.74	9	1.83	7	1.57
Snapper	1	0.09	0	0.00	0	0.00
Therapon	15	0.42	18	0.81	1	0.05
Red Sea bream	1	0.08	0	0.00	0	0.00
Jew fish	0	0.00	1	0.16	2	0.45
Swimming crab	18	2.62	30	6.26	15	4.34
Muddy crab	0	0.00	1	0.44	0	0.00
ปูลายก้นมีไส้	0	0.00	2	0.29	0	0.00
<b>Total</b>	<b>42</b>	<b>4.95</b>	<b>61</b>	<b>9.79</b>	<b>25</b>	<b>6.41</b>

By the catch result, the second operation showed the best catch with 9.79 kg with 30 Swimming crabs, weight 6.26 kg. Total weight of swimming crab in the 3 operations was 13.22 kg and the average weight was 0.08 kg/ trap. Total numbers of swimming crab was 63 crabs and the average number of swimming crab was 0.4 crab/ trap (2 crab /5 traps)



The first operation had trouble with the sorting. All catches, by each type of collapsible trap on board, were mixed without any sorting. This mean that all catches belonging to the first operation can not be separated by trap. Comparison of the traps three types can be calculated from catch data at the second and the third station.

The preliminary catch report concludes that, the rectangular collapsible crab trap has the highest efficiency, compared with the other two designs. The semi cylindrical and local Malaysian trap design is close in average catch weight/ trap.

#### Catch result of the 2<sup>nd</sup> operation

Species	Rectangular trap		Local Malaysian trap		Semi cylindrical trap	
	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)
Grouper	7	1.43	2	0.40	0	0.00
Snapper	0	0.00	0	0.00	0	0.00
Therapon	9	0.38	9	0.43	0	0.00
Red Sea bream	0	0.00	0	0.00	0	0.00
Jew fish	0	0.00	0	0.00	1	0.16
Swimming crab	20	4.37	3	0.58	7	1.32
Muddy crab	1	0.44	0	0.00	0	0.00
ปลาอินทรี	2	0.29	0	0.00	0	0.00
<b>Total</b>	<b>39</b>	<b>6.91</b>	<b>14</b>	<b>1.41</b>	<b>8</b>	<b>1.48</b>

#### Catch result of the 3<sup>rd</sup> operation

Species	Rectangular trap		Local Malaysian trap		Semi cylindrical trap	
	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)
Grouper	6	1.29	1	0.28	0	0.00
Snapper	0	0.00	0	0.00	0	0.00
Therapon	0	0.00	1	0.05	0	0.00
Red Sea bream	0	0.00	0	0.00	0	0.00
Jew fish	0	0.00	0	0.00	2	0.45
Swimming crab	10	2.74	1	0.22	5	1.38
Muddy crab	0	0.00	0	0.00	0	0.00
ปลาอินทรี	0	0.00	0	0.00	0	0.00
<b>Total</b>	<b>16</b>	<b>4.03</b>	<b>3</b>	<b>0.55</b>	<b>7</b>	<b>1.83</b>

### Collapsible Fish trap:

In reference to the previous sea trial of Bottom vertical longline, The potential for fish, especially Grouper and Jew fish around the ARs/FADs has the potential for development to supply the fish market and cage culture around Langkawi and adjacent areas. Fishing gear technologists consider the design and construction of the local fish trap in which the space available is a major problem for carrying by the fishing boat. The collapsible fish trap has a combination design between the collapsible crab traps and red sea bream fish traps that are widely used by Thai fisherman.

The frame of the trap is made from 8.0mm iron bar and the trap wall is polyethylene net, twin size is 380d/15.

Local fish trap (Left) and collapsible fish trap (Right)





The trap dimensions are height 80 cm, width 70 cm and the length 120 cm. There are 2 entrances with a circular shape. The trap is designed to be collapsible, to increase the number that may be carried on the fishing boat. This is approximately 20 traps during a trip. Bait was use to attract the target fish. During the fishing trial, 5 collapsible fish traps were set over-night and the catch result was quite satisfactory.

#### Groupers and Swimming crabs caught by collapsible fish trap

Only grouper was the dominant in the fish traps. The average grouper weight per trap per haul was 0.51 kg/trap/haul. Average size of grouper caught by the trap was 221 gram/individual groupers. Swimming crab had been caught as a by-catch.

Total weight of swimming crab was 4.88 kg and the average swimming crab weight per trap per haul was 0.49 kg/trap/haul. The average size of swimming caught by trap was 257gram/individual crab. This is been bigger than the crab caught by the collapsible crab traps. The preliminary catch report concludes that, the collapsible fish trap is efficient enough for promotion to the fisherman in Langkawi.

The 1<sup>st</sup> operation was set on 20<sup>th</sup> -22<sup>nd</sup> December 2004 and the 2<sup>nd</sup> operation set on 22<sup>nd</sup> -23<sup>rd</sup> December 2004. Different soaking intervals were set between operations No.1 and 2. However, by observation, there was no difference in catch between a soaking time of 48 hours and 24 hours. It can be preliminarily concluded that the collapsible fish trap is able to be set over-night and fisherman can haul the catch everyday.



#### Catch result of collapsible fish trap operation

Species	1 <sup>st</sup> Hauling operation		2 <sup>nd</sup> Hauling operation	
	Number	Weight (kg)	Number	Weight (kg)
Grouper	12	2.29	12	2.81
Other fishes	0	0.00	2	0.17
Swimming crab	9	1.99	10	2.89
ปูทะเลในน้ำ	2	0.44	2	0.40
<b>Total</b>	<b>23</b>	<b>4.71</b>	<b>26</b>	<b>6.27</b>

#### Ivory whelk trap

The Ivory whelk trap is a kind of trap targeted at Ivory whelk (*Babylonia aerolatus*). The trap is not a collapsible design. It is developed from the small Ivory whelk lift net, mainly fishing for Ivory whelk. The trap is square shaped with a width and length of 35 cm and 20 cm in height. There are 4 entrances; with an angle of 20° sloped into the center of trap. The trap panel is made from polyester net (PE) twine of size 380/12. The sting line is PE of 3mm diameter and the length is 3 m. The topside



cm and 20 cm in



of the Ivory whelk trap is opened for removing the whelk. Non targeted fishes and crabs can easily escape from the Babylonia trap. The only problem of the Ivory whelk is the marketing, which is not a favorite in Langkawi and no exporting process is carried out at the present time.

Since the 1<sup>st</sup> fishing trial in June 2004, the operation of Ivory whelk trap has been successful. To investigate the seasonal distribution of Ivory whelk, three operations were conducted and the result is not different from the previous operations during June and August. The average size of the Ivory whelk is 40g/piece. The catch results appear in the catch table

**Catch result of Ivory whelk trap operation**

Species	1 <sup>st</sup> Hauling operation		2 <sup>nd</sup> Hauling operation		3 <sup>rd</sup> Hauling operation	
	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)
Ivory whelk	130	3.42	73	1.86	21	0.77

## Squid trap

Squid trap is the kind of trap targeting the Big-finned reef squid (*Sepioteutis lessoniana*). The trap is not a collapsible design. The frame of trap is made of wood, with a length of 1.2 m, a width of 0.8m, and a height of 0.6 m. There is only one entrance of 10 cm. The trap panels is of net PE 380/9 mesh size 2 inches. Bait is not put into the trap. Some plastic bags were hung in the trap to attract squid. 10 traps were set during the sea trial and 2 traps were retrieved when the operation was finished. The loss of 8 squid traps was



caused because the weight of the trap sinker was too light. And some trawlers came close to ARs/FADs at the night and possibly swept some traps away.



3 squid were caught after soaking the traps for a night. All were Big finned reef squid and caught but were only trap. Total weight was 920 gram with average weight only 307 gram/squid. The Squid trap-fishing trial is not able to give a clear result yet because almost all of the squid traps disappeared from the setting positions. However observation from the 1<sup>st</sup> hauling, show their efficiency to catch big finned reef squids. It is possible to harvest the squ

### e) Conclusion from the fisheries condition survey

SEAFDEC fishing staff concluded the 2<sup>nd</sup> fishing gear trial for the promotion and training. The result is shown in the table below;

<ul style="list-style-type: none"> <li>➤ <b>Collapsible crab trap</b> (control the number of trap per boat, landing size, non-landable crab with eggs, operated without hauling devices to control the fishing capacity)</li> </ul>	<p>Rectangular crab trap is recommended</p>
<ul style="list-style-type: none"> <li>➤ <b>Squid trap</b> Technology has been shown and transferred from the fisherman in Rayong province but it is necessary to hold trials in the area.</li> </ul>	<p>Possible to catch Big finned reef squid but needs more experiments because of the incomplete fishing trial</p>
<ul style="list-style-type: none"> <li>➤ <b>Fish trap</b> To catch demersal and rock fish around the FADs, fish traps can be set around the FADs.</li> </ul>	<p>Collapsible fish trap is recommended</p>
<ul style="list-style-type: none"> <li>➤ <b>Ivory whelk trap</b> To catch Ivory whelk (Babylonia)</li> </ul>	<p>recommended to catch Ivory whelk (Babylonia) because gear is found to have high selectivity</p>

# **Work Plan**

## **Fishing Technology Improvement in Langkawi**

### **PART II: 2<sup>nd</sup> FISHING TRIAL**

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#### **1. Background / justification**

One of the activities in the collaborative project between the DOF Malaysia and SEAFDEC/TD that commenced in August 2003 in Langkawi lies in the improvement of fishing technology. Various fishing methods are currently employed in Langkawi but the fishermen still expressed a wish to learn more improved or modern fishing technologies. Also, the DOF Malaysia and the LKIM (Malaysia Fisheries Development Authority) in Kedah State have deployed fish aggregating devices (FADs) in the potential fishing ground in Langkawi for the last few years. These devices are aimed at enhancing coastal fishery resources and aggregating fish schools. To induce the most effective usage of these facilities and maintaining the optimum level of exploitation, the project seeks an appropriate application of suitable fishing gear and methods that are highly efficient and also marine ecosystem friendly fishing methods.

In an attempt to identify potential fishing methods that may be applicable to Langkawi, the project carried out a preliminary study in the project operational area of Langkawi in March 2004. As a result, the following 7 fishing methods are identified as being potentially feasible judging from various aspects like practicability, adaptability to the local conditions, economic viability, eco-friendly gear and consistency with the Malaysian Fishery Act.

- Bottom vertical longline (BVL)
- Collapsible crab trap
- Squid trap
- Trolling line for squid
- Trolling line for pelagic fishes
- Fish Trap
- Ivory whelk trap

Among these potential fishing methods, an experimental fishing operation was conducted for the four types; bottom vertical longline, collapsible crab trap, trolling line for pelagic fish and ivory whelk trap, in June 2004 and a fishermen training course to introduce these fishing methods, except trolling line fishing, was conducted in August. The experimental fishing for the other fishing methods are delayed because of the prevailing fishing seasons and the fishing arrangements. Hence, the experimental fishing on squid trap and fish trap will be carried out this time. In addition to these, a comparative fishing trial in use of crab traps designed by SEAFDEC/TD and local ones will be also conducted.

## 2. Objectives

The major objectives of carrying out the 2<sup>nd</sup> fishing trial are:

- To conduct a fishing trial with potential fishing gear like squid traps, fish traps and crab traps and investigate the effectiveness and applicability to local conditions, special attention will be given to fishing in the use of AR/FADs,
- To compare the catching efficiency of collapsible crab between SEAFDEC/TD design and local one, targeted for swimming crab
- To demonstrate the result and findings in experimental fishing to the fishermen and consult with them on the introduction of selective fishing gear
- To collect information on fishing gear, methods and fishing grounds that may be useful for the subsequent compilation of *Fishing Gear and Method in Langkawi*.

## 3. Expected outcomes of the study

The following outcomes are anticipated in the wake of the experimental fishing activities.

- The fishing efficiency and applicability of selected fishing gear in the project area will be identified.
- The catching efficiency data in both types of collapsible traps; SEAFDEC design and local ones, are obtained.
- A consensus on selected fishing methods to be introduced through subsequent fishermen's training in the target fishing community is reached..
- Information on fishing gear and methods in Langkawi is obtained.

## 4. Study team

To conduct the above experimental fishing, the following personnel will be engaged in the work.

### SEAFDEC/TD side

- Mr. Isara Chanrachkij
- Mr. Pratakphol Prajakjitt
- or Mr. Narong Raungsivakul

### Malaysia DOF side

- 2 Fishing gear technologists (FTI)

## 5. Study itinerary

- 18.12.2004 : Study team arrive in Langkawi (Ferry)/ retrieve all fishing gear from the carrier ship (Afternoon time)
- 19.12.2004 : Visit fishing villages to hold discussions with fishermen and fishing gear preparation
- 20.12.2004 : Sea trial on the Squid trap, Fish trap and Collapsible crab trap
- 21.12.2004 : -Ditto-
- 22.12.2004 : -Ditto-
- 23.12.2004 : Evaluation and discussion with fishermen and a Malaysian fisheries officer.
- 24.12.2004 : Study team leaves Langkawi for Bangkok

## 6. Fishing trial materials and facilities

The following materials and facilities are necessary to prepare for the activities of the fishing trial. The boat in the following table number 08 should be large enough to load 10 squid traps. The expenses of the fishing gear do not include the procurement expenses.

No.	Particulars	Q'ty	Unit price (Baht)	Estimation Cost (Baht)	Responsible Party
01	Squid trap	10 pcs.	100	1,000	SEAFDEC/TD
02	Local collapsible trap	40 pcs	100	4,000	SEAFDEC/TD
03	SEAFDEC collapsible trap	20 pcs.	-	-	SEAFDEC/TD
04	Local fish trap (Wooden) (Locate at Pantai Kok area)	5	-	-	DOF Malaysia
05	SEAFDEC fish trap	5	1,000	5,000	SEAFDEC/TD
06	GPS	1 set	-	-	SEAFDEC/TD
07	Echo sounder	1 set	-	-	DOF Malaysia
08	Fishing boat	1 boats	-	-	DOF Malaysia

## 7. Funding

The funding for conducting the study will be drawn from the collaborative project arrangement with SEAFDEC/TD and the DOF Malaysia. SEAFDEC/TD will bear the travel costs of their fishing gear technologists and of the fishing equipment and materials as listed above, while the DOF Malaysia will make the necessary arrangements for personnel, equipment, materials and facilities as listed above.



**Detailed Operational plan of 2<sup>nd</sup> Fishing gear trial in Langkawi**

<b>Date</b>	<b>Time</b>	<b>Activities</b>	<b>Remark</b>
16 Dec 2004	0600	Truck leave SEAFDEC for Surat thani and stay over night at Surat thani	(1 drivers)
17 Dec 2004	0600-1600	Truck Leave Surat thani for Satun and stay over night at Satun	
	1800	3 SEAFDEC staffs leave Bangkok for Satun (by air condition bus)	1) Mr. Isara 2) Mr. Narong 3) Mr. Nakaret
18 Dec 2004	0800	3 SEAFDEC staffs meet SEAFDEC truck at Satun	
	0900	Load all fishing gears and accessories into the cargo vessel	
	1300	All SEAFDEC staffs embark on board ferry	
	1600	Arrive at Langkawi Check-in the hotel	Transportation from ferry pier to hotel
	1800	Retrieve fishing gears and accessories from cargo Vessel	Require the medium size truck
19 Dec 2004	0830-1700	Leave hotel for Kaula Triam Prepare fishing gears and accessories 1) Collapsible trap 2) Purchase the local collapsible traps 3) Check the Local fish trap 4) Prepare all accessories. 5) Prepare the bait	Fishing boat shall not be required on 19 Dec 2004.
20 Dec 2004	0830	Leave hotel for Kaula Triam	
	0900-1500	Setting 10 fish traps Setting Squid 10 traps and Setting 60-80 Collapsible traps	A fishing boat
	1500-1700	Assisting the new design of FADs invention activities	
21 Dec 2004	0830	Leave hotel for Kaula Triam	
	0900-1500	Hauling and setting 60-80 Collapsible traps	A fishing boat
	1500-1700	Assisting the new design of FADs invention activities	
22 Dec 2004	0830	Leave hotel for Kaula Triam	
	0900-1500	Hauling and setting 60-80 Collapsible traps	A fishing boat
	1500-1700	Assisting the new design of FADs invention activities	
23 Dec 2004	0830	Leave hotel for Kaula Triam	
	0900-1300	Hauling 60-80 Collapsible traps Hauling 10 fish traps and Hauling Squid 10 traps	A fishing boat
	1400-1700	(Discussion?)	
24 Dec 2004		Return to SEAFDEC/TD	

## Annex 8

# REPORT ON THE PREPARATORY SURVEY ON ZONING IN LANGKAWI

Locally Based Coastal Resources Management Project in Pulau Langkawi  
(LBCRM-PL)

Prepared by: Sei Etoh  
Fisheries Socio-economist, SEAFDEC/TD  
Siriporn Pangsorn  
Geographic System Developer, SEAFDEC/TD

13<sup>th</sup> August 2004

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### 1. Purpose of the survey

As described in detail in the attached work-plan of Annex 1, pursuant to the proposal presented by the representative of KEN Kuala Teriang at the 2<sup>nd</sup> Project Implementation Working Group meeting a preparatory survey on zoning was conducted. In this survey, the main purpose lay in preparing a detailed zoning map, which will be used subsequently as the basis for submission to the authorities concerned for legitimatization by the KEN.

### 2. Work done

#### Collection of data and information

It was advised that all the data with regard to the positions of the fish aggregating devices (FADs) was available from the Provincial LKIM (Malaysian Fisheries Development Authority) office and contact with them was made on 9<sup>th</sup> August 2004. The eight positions in all were given by the representative of the District LKIM office. Of these eight, two are artificial reefs installed by LKIM while the rest are FADs belonging to private fishermen in Kuala Teriang KEN.

#### Site verification

Based upon the above data and information, the site verification was made by physical inspection at sea with the help of GPS on 10<sup>th</sup> August 2004. In effect, one of the private FADs had disappeared as a trawler damaged it and another new FAD had been installed instead. Also, neither a positioning buoy nor any mark was made for the LKIM ARs and therefore the verification had to rely upon the fishermen's memories.

#### Mapping

Based upon the result of the above verification and the inspection of the existing AFs and FADs, the fishing area of KEN Kuala Teriang was mapped out with the help of the software of ARCVIEW as shown in Annex 2. It was discovered during mapping that most of the positions provided by LKIM were incorrect. Some of them were even marked on land.

### Zoning on map

Consultation with the KEN member fishermen was made on 11<sup>th</sup> August 2004 to define the demarcated zone where Kuala Teriang KEN plans to control marine resources under their own management. After discussion with the fishermen the final plan of demarcation was determined and a print-out was handed over to the representative of Kuala Teriang KEN.

### **3. Outcomes and conclusions**

- The positions of 7 FADs belonging to the private fishermen and one ARs installed by LKIM are shown in the map of Annex 2. The positions of the FADs were marked based upon the physical verification, while the one of ARs could not be done in such a way as the position mark had disappeared. SEAFDEC/TD and the Malaysian Fisheries Training Institute Team made an effort to locate the position with the help of an echo sounder but without success because of the mechanical failure of the fishing boat. LKIM or the District DOF Fisheries Office should do this.
- A zone was initially demarcated on the map as shown in Annex 3 and presented to the fishermen of KEN Kuala Teriang for consultation. After lively discussion, they proposed to expand the demarcated fishing area as shown in Annex 4.
- The fishermen will submit a proposal of zoning, including the management plan, to the District Fisheries Office as the next step, together with the finalized zoning map.

### **4. Participated parties**

The following parties participated in this study.

- (1). DOF Malaysia,
  - Mr. A. Krishnasamy, Fisheries Extension Division
  - Mr. Choong Kah Tung, Fisheries Training Institute, Penang
  - Ms. Sabida Binti Saleh, Extension Officer, District DOF, Langkawi
- (2). Langkawi Fishermen Association
  - Mr. Hayazee Bin Mohamad Daud
- (3). KEN Kuala Teriang
  - 6 executive members
- (4). SEAFDEC/TD
  - Mr. Sei Etoh
  - Ms. Siriporn Pangsorn

## Workplan development of zoning map in Langkawi

### Locally Based Coastal Resources Management in Langkawi (LBCRM – PL)

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#### 1. Background

At the 2nd Project Implementation Working Group meeting held on 17<sup>th</sup> June 2004 (refer to the paragraph 31 ¶ 33 in the minutes of 2<sup>nd</sup> PIWG meeting) the representatives of KEN, Kuala Teriang, raised the issue of illegal fishing, particularly encroachment by trawlers into Zone A. Discussions were centered on measures on how to enforce protection against such illegal fishing and various views were presented. One of the suggestions made was to establish coastal fishermen's exclusive fishing zone to be specially demarcated around the FADs which were installed by a particular community or by LKIM for the community and to propose the authorities to declare an exclusive local fishing right for that particular community. Under such a newly promulgated regulation, enforcement can be legally embodied and reinforced. After discussions, the meeting eventually agreed to prepare a zoning map to begin with, in consultation with the relevant authorities, knowing that there are many barriers to clear toward realization. The SEAFDEC/Training Department agreed to pursue the work as they have some expertise in the preparation of such a map and also have similar experience in the project LBCFM-PD in Thailand.

#### 2. Work schedule

A geographic system developer of SEAFDEC/TD will visit the site with the following itinerary to pursue the work in collaboration with the District Fisheries Officer in Langkawi.

<u>Date</u>	<u>Particulars of work</u>
08.08.2004 (Sun)	Arrive at Langkawi, Preliminary discussion on arrangements
09.08.2004 (Mon)	Collection of all available data and information on the positions of existing FADs and process with the PC, preparation of a base map
10.08.2004 (Tue)	Site positioning at sea with using GPS and process with the PC
11.08.2004 (Wed)	Discussions among the relevant authorities and beneficiaries (LKIM, KEN, Fishermen Association, LADA, DOF)
12.08.2004 (Thu)	Preparation of the final zoning map and presentation to District DOF
13.08.2004 (Fri)	Leave Langkawi for Bangkok

#### 3. Participants in the work

##### SEAFDEC/TD side

1. Mr. Sei Etoh                      Project Leader
2. Ms. Siriporn Pangsorn        Geographic system developer

##### DOF Malaysia side

1. Ms. Sabidah BT Saleh        Extension Officer

#### 4. Equipment, materials and facilities required

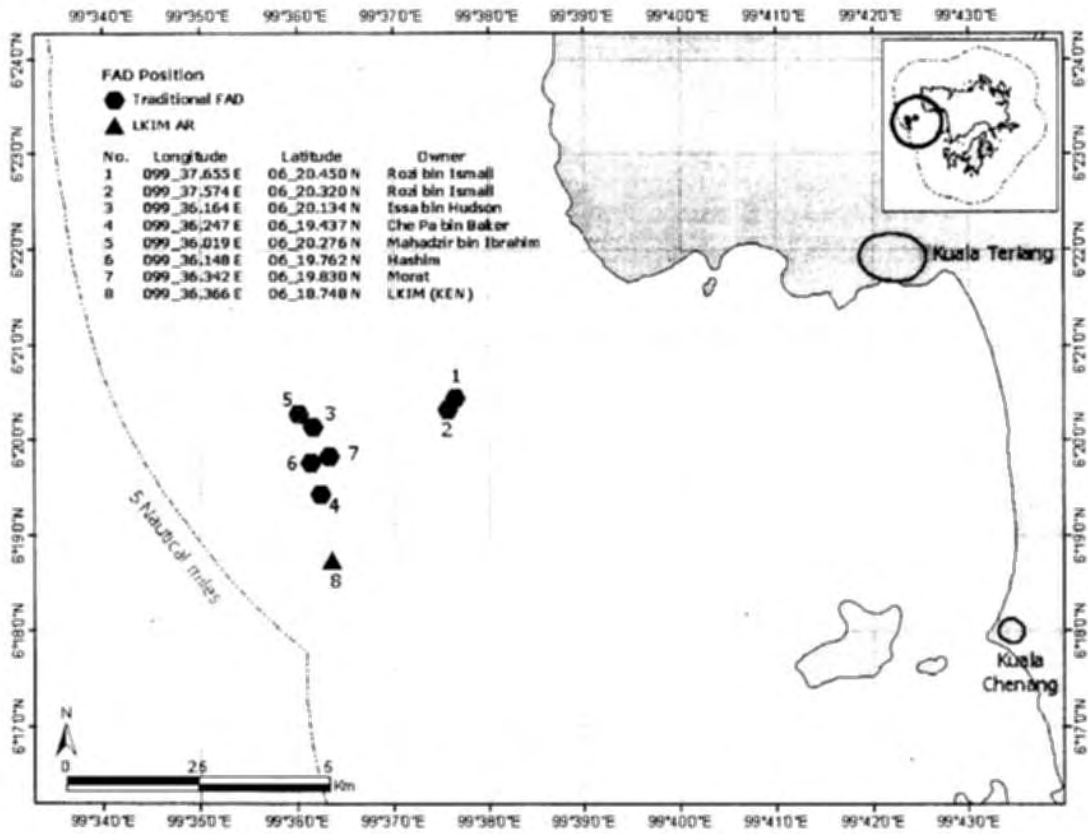
The necessary equipment, materials and facilities to carry out the work are as follows.

<u>No.</u>	<u>Particulars</u>	<u>Responsible parties</u>	<u>Remarks</u>
01.	GPS	SEAFDEC/TD	
02.	PC & soft ware (ARCVIEW)	SEAFDEC/TD	
03.	Speed boat (10 <sup>th</sup> August)	District DOF	To be arranged as required

#### 5. Funding

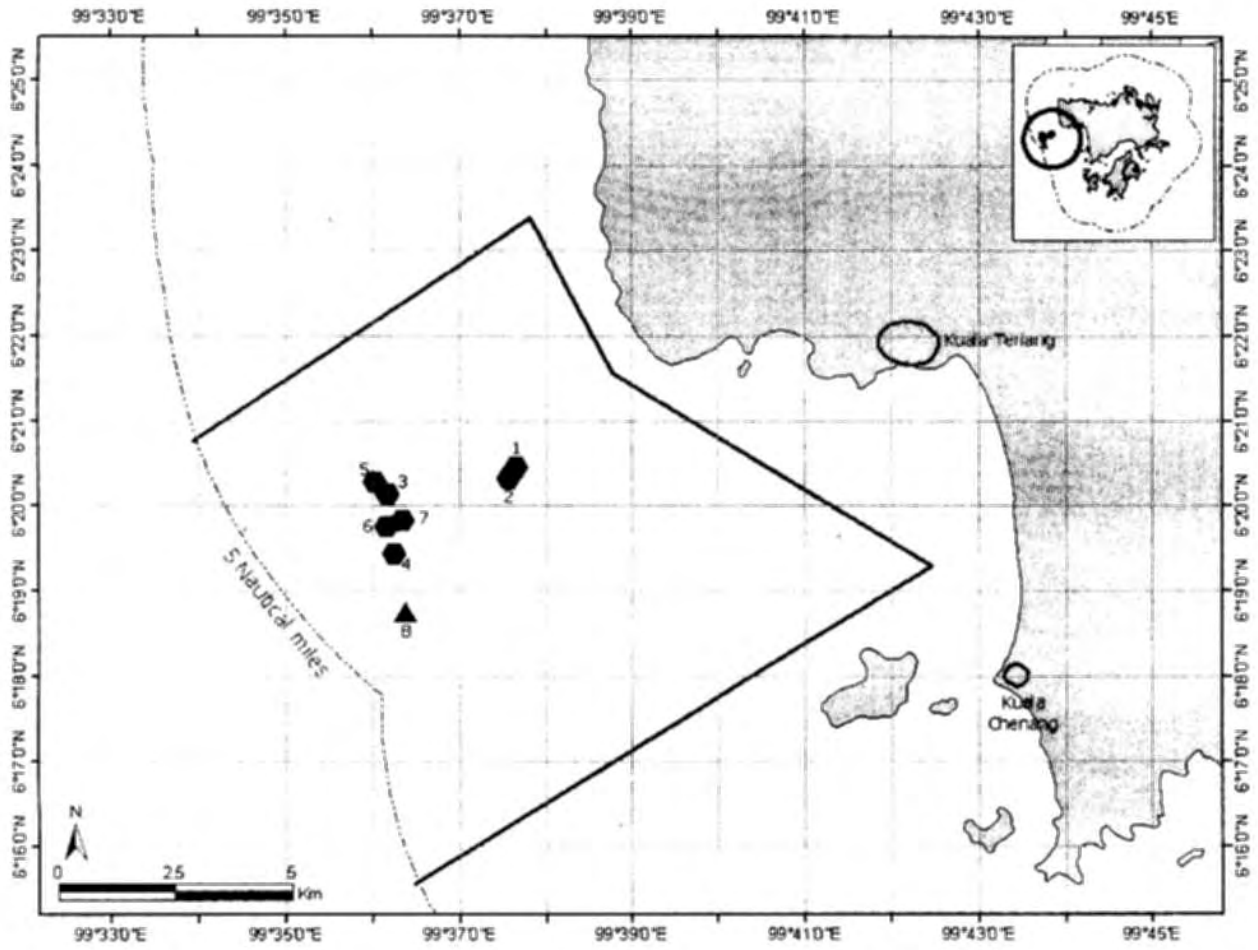
The fund for conducting the zone mapping will be drawn from the collaborative project execution arrangement between SEAFDEC/TD and DOF Malaysia. SEAFDEC/TD will offer the cost of traveling for SEAFDEC/TD staff and of processing data and the map as listed in the above table of 3. While DOF Malaysia will make the necessary arrangements for personnel, equipment and materials as listed in the table.

## Positions of FAD and AF belonging to Kuala Teriang

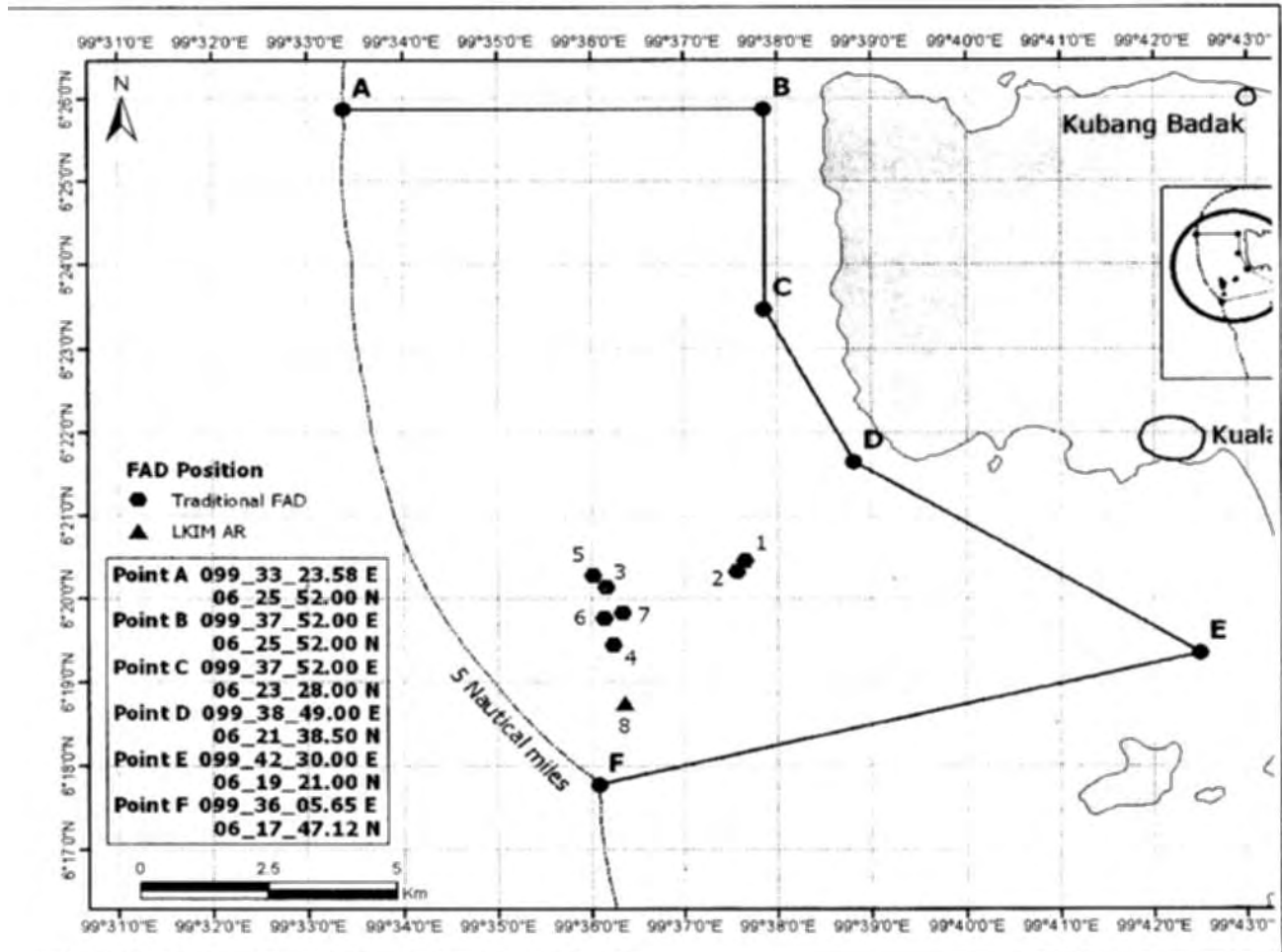




**Zoning map 1 – Suggested demarcation**



**Zoning map 2 – Demarcation proposed by KEN Kuala Teriang**



## Annex 9

### The Minutes of The 3rd Project Implementation Working Group (PIWG) Meeting

Venue: Aquaculture Project Office Meeting Room,  
Department of Fisheries, Langkawi Island,  
Kedah State

Date: 23<sup>rd</sup> December 2004

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#### 1. Lists of Participants

##### DOF Malaysia

- |                                |  |
|--------------------------------|--|
| 1). Mr. Mohd Shaupi Derahman   | Director, Fisheries Extension Division,<br>KL                    |
| 2). Mr. Fauzi Abdul Rahman     | Section Head, Fishing Technology and<br>Fishermen Community, KL, |
| 3). Mr. Bah Piyan Tan          | Head of Processing and Fish Handling, KL                         |
| 4). Ms. Nur Afifah A. Rohman   | Fisheries Officer, IPM, Terengganu                               |
| 5). Mr. Toshihiko Miyata       | JICA Senior Volunteer (Fish Processing), IPM                     |
| 6). Mr. Saad Hj. Selaymen      | State Fisheries Office, Kedah                                    |
| 7). Mr. Hussin B. Abdul Rahman | Fisheries Technology Institute, Terengganu                       |
| 8). Mr. Mustafa Bidin          | Fisheries Technology Institute, Terengganu                       |
| 9). Mr. Badali Hassan          | District Fisheries Officer, Langkawi                             |
| 10). Ms. Sabidah BT Saleh      | Extension Officer, District Fisheries Office,<br>Langkawi        |

##### LKIM

- 1.) Mr. Hamid Muttaman

##### KEN, Kuala Teriang

- |                             |                  |
|-----------------------------|------------------|
| 1). Mr. Mahadir B Ibrahim   | Chairman of KEN  |
| 2). Mr. Hj. Fazil B Hj. Din | Secretary of KEN |
| 3). Mr. Azman Che Pa        | KEN member       |

##### Women's group

- |                              |                           |
|------------------------------|---------------------------|
| 1). Ms. Che Embon BT Saad    | Chairman of women's group |
| 2). Ms. Mahani BT Masor      | Member                    |
| 3). Ms. Tempawan BT Abdullah | Member                    |

##### SEAFDEC/TD

- |                              |   |
|------------------------------|---|
| 1). Mr. Seiichi Etoh         | Project Leader/JICA expert                                  |
| 2). Dr. Yuttana Theparoonrat | Training Division Head                                      |
| 3). Mr. Isara Chanrachkij    | Head, Fishing gear Technology Section,<br>Research Division |
| 4). Ms. Sumitra Ruangsivakul | Socio-economic Section, Research Div.                       |

## **2. Content of the meeting**

The meeting was presided over by Mr. Mohd. Shaupi.

### **2.1. Endorsement of the Minutes of 2<sup>nd</sup> PIWG meeting**

The chairman gave a welcome address to all PIWG members and started the meeting by adopting the report on the 2<sup>nd</sup> PIWG meeting. Mr. Etoh suggested to the meeting to discuss only the key issues in the 2<sup>nd</sup> PIWG meeting's report rather than going through each sector of the report line by line. The suggestion was accepted by the meeting and the meeting proceeded in a manner that reviewed the follow-up activities of the last 5 months in line with the list of key issues, thus the endorsement of the minutes of the 2<sup>nd</sup> PIWG meeting was made.

The key issues in the 2<sup>nd</sup> PIWG meeting and the content of discussion is as follows.

- 1. The District Fisheries Officer is expected to contact the DOF HQ to clarify the delayed implementation of the installation of ARs in Kuala Teriang. (Ref. to 07 of the Minutes)*

The responsible organization for the installing the ARs; i.e. LKIM, could not implement the plan because of a shortage of sufficient funds in 2004. It may be possible in 2005. However, the reality will be confirmed before March 2005. In case of this happening, SEAFDEC/TD will be involved in the decision of the design of the ARs and where they will be installed.

- 2. The report on the preliminary study of fishing technologies prevailing in Kuala Teriang is to be compiled and send to the DOF Malaysia. (Ref. 08 of the Minutes)*

The report was compiled and submitted to the DOF Malaysia in April 2004.

- 3. In response to the request by KEN, the fishing technology improvement course should be conducted after completion of experimental fishing carried out in June. (Ref. to 10 of the Minutes)*

The fisherman-training course in improved fishing technology was conducted on 9/11 August 2004 and the detail of the training is seen in the report issued in September. The chairman of KEN stated that the training was carried out satisfactorily and found fruitful.

- 4. A request for budget allocation was made to LKIM by KEN for the construction of a mechanical workshop in May 2004. Follow-up action is necessary. (Ref. to 13 of the Minutes)*

The budget request was submitted by DOF to LKIM for the construction of the mechanical workshop, but they could not meet the request in 2004. It may be possible in 2005 depending upon where LKIM puts the priority on the KEN Kuala Teriang. Meantime, the DOF Malaysia disbursed RM10,000 to procure the necessary equipment in 2004.

5. *There was an intention to open a coffee shop and a tailor shop by the Women's Group, but no location was available for these activities. Follow-up action was necessary. (Ref. to 16 of the Minutes)*

The meeting was of the opinion that the Women's Group should concentrate their effort in fish based product development for the time being, to which the DOF can easily give full support. The representatives of Women's Group gave their consent to the suggestion.

6. *The District Fisheries Office should arrange a food package-training course at the Training Center for Food Processing in Alor Setar. (Ref. to 17 of the Minutes)*

This course has not yet taken place. But, there is a commitment at this meeting that a training course in product development including packaging technology, processing yard design and quality control of production is conducted in the Fisheries Institute Malaysia in Treanganu in February 2005 under the co-financing arrangement between SEAFDEC/TD and DOF Malaysia.

7. *Processing dried squid should begin in October. (Ref. to 18 of the Minutes)*

This production has not begun yet as the drier installed in the yard was inadequate. However, there was an opinion at the meeting that further investment should be made with discretion taking into account that the squid season is only a few months each year. A further feasibility study focusing on economic viability should be carried out before taking any action. The meeting agreed with this and Mr. Bar was to conduct this survey and submit a recommendation to the next meeting.

8. *LADA is to provide the Women's Group with space for a sales stall in the marina, subject to a formal request to be made by KEN. (Ref. to 19 of the Minutes)*

The District Fisheries Office wrote the request to LADA but no response has been received to date. No representative of LADA is present at this meeting and no further clarification could be made.

9. *The women group requested the DOF to provide them with fish processing equipment. The DOF representative asked them to prepare a list of necessary equipment for their consideration. (Ref. to 20 of the Minutes)*

The list of necessary equipment was submitted to the DOF, on which the equipment amounting to RM 10,000 has been procured. Most of them are satisfactory in function except the drier. The women group proposed the meeting a similar type of drier which they observed at the processing yard of Women's Group in Chumphon. It may be considered to dispatch Mr. Bar Piyon to Chumphon to identify the types if opportunity permits.

Mr. Etoh explained by showing zoning maps that the expanded zoning map as requested by the fishermen of Kuala Teriang KEN seems to be unjustifiably exceeding the limit of CBRM considering the current fishing practices in Langkawi and suggested the original one which was prepared by SEAFDEC/TD instead. After exchanging a number of views, Mr. Shaupi concluded that a special committee should be set up with DOF Malaysia to investigate with participation from all responsible authorities the possibility of establishing zoning for Kuala Teriang KEN as requested for a test case.

As above, the minutes of 2<sup>nd</sup> PIWG meeting was endorsed.

## **2.2. Work plan for 2005**

The proposed work plan for 2005 was presented by Mr. Etoh and each activity was explained in detail. The comments made by the meeting with regard to the new work plan are as follows.

01. Only SEAFDEC/TD is currently involved in the activities of the fish landing survey (1.1.) and the marine resources survey (1.2.) although it was agreed from the outset that these activities were jointly conducted with FRI of DOF, Penang, and SEAFDEC/TD. The meeting noted that the involvement of FRI in this work is vital if thinking in terms of sustainability of the project activities and requested DOF to ensure their participation from the year 2005.
02. The meeting noted that the training in bookkeeping and accounting (3.2.1.) is vital for the sound management of women's group and the DOF is considering supplemental training in a simple computerized accounting system by providing a computer to support this activity.
03. With regard to the activity on "Expansion of local business within fisheries related professions (3.3.), the meeting was informed that the possibility of initiating cage culturing became remote as LADA was adamant in not granting permission for the proposed space and KEN envisaged developing tourism business.
04. Various fishermen's workshops are planned but for convenience sake for the fishermen, it was suggested that some of workshops should be combined. The meeting took note of this point and would amend the training schedule accordingly.
05. Mr. Isara proposed to include the course of FRP boat repair in the fishermen's training program. The meeting agreed to include this course in the schedule.
06. Mr. Etoh suggested to the meeting that the same people participated and the same level of topics were discussed at both the Project Implementation Coordination Committee(PICC) meeting and Project Implementation Working Group PIWG) meeting during the last one year so that it is more effective and relevant to merge these two meetings into one. The meeting agreed to this proposal and the merged meeting would be called the Project Implementation Coordination Committee and the existing PIWG meeting would be merged into this meeting.
07. The meeting agreed to hold the 3<sup>rd</sup> Steering Committee meeting in Hua Hin around 24<sup>th</sup> January 2005 including a day trip to the project site of Chumphon.

