FISH LANDINNG DATA IN OCTOBER 2007 - OCTOBER 2008 IN PREY NOP II, SIHANOUKVILLE, CAMBODIA

INTEGRATED COASTAL RESOURCES MANAGEMENT IN SIHANOUKVILLE (ICRM-SV)

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TD/RP/128
ICRM-SV No. 12

April 2009

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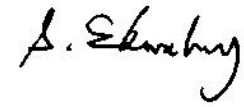
FOREWORD

The Project on Integrated Coastal Resources Management in Sihanoukville (ICRM-SV), Cambodia is a collaborative project between SEAFDEC/Training Department (TD) and the Fisheries Administration (FiA) of Cambodia. The initial component of the ICRM-SV project on Coastal Resources Management was based on the framework of the ASEAN-SEAFDEC Fisheries Consultative Group (FCG) Scheme. The ICRM-SV is financially supported by the Japanese Trust Fund and the FiA through the Cambodian Government Fund.

One of the outstanding activities of the ICRM-SV project is the conduct of a baseline survey on fish landing and data collection. This volume is the result of a series of monitoring surveys that have been carried out from October 2007 to October 2008. I hope that the results of this activity could be of great use, not only to Cambodia for its coastal fisheries development program but also for the other countries in the Southeast Asian region.



Siri Ekmaharaj, Ph.D

Secretary-General

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FISH LANDING DATA IN OCTOBER 2007 - OCTOBER 2008 IN PREY NOP II, SIHANOUKVILLE,CAMBODIA

INTEGRATED COASTAL RESOURCES MANAGEMENT IN SIHANOUKVILLE (ICRM-SV)

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I. BACKGROUND

The Integrated Coastal Resources Management Project in Sihanoukville, Cambodia (ICRM-SV) has been implemented since November 2005 with the objective of sustaining the fisheries resources in Prey Nop II, Sihanoukville. Therefore, the need to assess the trend of the fishery resources during and after project's operation was considered necessary. In order to establish the trend of the fishery resources in the project area, fish landing data collection was conducted starting in February 2006, three months after project had started. Henceforth, fish landing data collection had been regularly carried out and the data have been compiled and analyzed. The first landing data collected from February 2006 to November 2007 was analyzed and compiled by SEAFDEC/TD in December 2007, and published as the Fish Landing Data in 2006-2007 in Prey Nop II, Sihanoukville, Cambodia. The subsequent

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data compilation, which covered the period from October 2007 to October 2008, was also analyzed by SEAFDEC/TD, the result of which is shown in the following sections of this document.

II. MATERIALS AND METHODS

The landing data were recorded by middlemen from four villages of Prey Nop II, namely: Kampong Chin, Prey Pross, Prey Sangke, and Prey Toal. The data collected for the main species such as swimming crab, mud crab, blood cockle and bivalves from October 2007 to October 2008, were sent to SEAFDEC/TD for analysis and compilation.

III. RESULTS AND DISCUSSION

3.1 Swimming crab trap

The landing data for swimming crab were collected from Prek Pros and Prey Sangke, where most fishermen use 100-700 swimming crab traps. In this paper, the analysis of the data follows that of the report on "Fish Landing Data in 2006 and 2007 in Prey Nop II, Sihanoukville, Cambodia", where the information on the swimming crab traps in the study area is grouped into three categories, namely: CPUE of fishermen having less than 100 traps, with 100-250 traps, and more than 250 traps because of the different fishing grounds being exploited. Since only few fishermen use less than 100 traps in 2008, the data from this category were not included in this report.

In addition, since there were no data on crab traps from Prey Sangke from June 2008 to August 2008, the middlemen did not record the number of traps in September 2008 and October 2008. Thus, the corresponding CPUE could not be calculated.

Number of traps: 100-250 traps

Table 1. CPUE (kg/100 traps) of swimming crab traps used by fishermen, 100-250 traps/trip

Month	**CPUE (kg/100 traps) of crap trap (Calculate only crab weight)**			
	Maximum	**Minimum**	**Average**	**Number of data**
Oct-07	5.6	0.9	2.0	66
Nov-07	3.7	0.7	2.0	124
Dec-07	4.0	0.7	1.9	186
Jan-08	2.5	0.2	1.3	146
Feb-08	5.1	0.8	1.9	93
Mar-08	4.2	0.7	2.0	181
Apr-08	5.6	1.0	1.9	116
May-08	3.8	0.8	2.0	86
Jun-08	5.0	0.7	2.3	54
Jul-08	4.0	0.9	2.1	39
Aug-08	3.6	0.9	2.0	73
Sep-08	3.4	0.9	2.0	65
Oct-08	4.0	0.7	2.1	42
Average	4.2	0.8	2.0	97.8

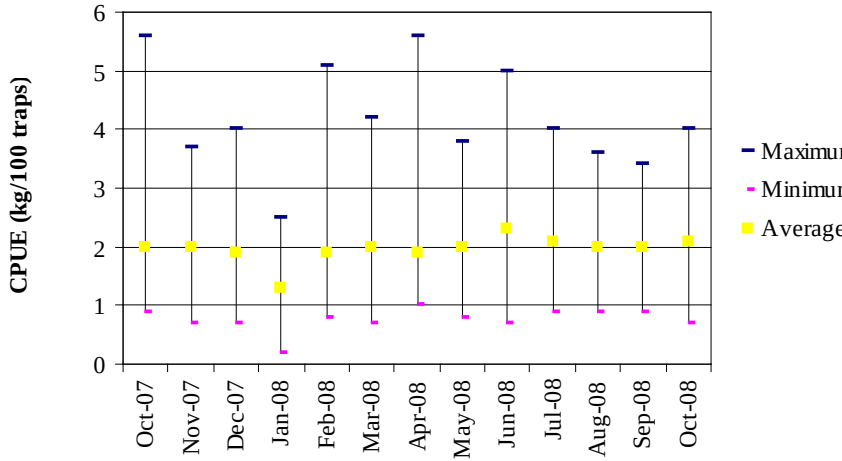

Fig.1. Maximum, minimum and average CPUE (kg/100 traps) of crab traps, 100-250 traps/trip

Table 1 and Fig. 1 show that the average CPUE of fishermen having 100-250 traps was 1.3-2.3 kg/100 traps. The maximum CPUEs recorded in October 07, February 08 and April 08, were higher than 5 kg/100traps.

The average CPUE of swimming crab traps in October 2007 to October 2008 was almost constant, which did not differ from the average CPUE from February 2006 to September 2007 (1.6-3.3 kg/100 traps, Annex 1), even after considering that the number of fishermen had been increasing. In general, there was no significant sign of catch variation throughout the year.

Number of traps: more than 250 traps

Table 2. CPUE (kg/100 traps) of swimming crab traps, more than 250 traps/trip

Month	CPUE (kg/100 traps) of crap trap (Calculate only crab weight)			
	Maximum	Minimum	Average	Number of data
Oct-07	2.7	0.2	1.3	108
Nov-07	2.4	0.4	1.7	104
Dec-07	2.3	0.6	1.6	141
Jan-08	2.6	0.4	1.3	158
Feb-08	2.1	0.2	1.2	96
Mar-08	3.2	1.1	1.8	145
Apr-08	2.3	0.9	1.7	151
May-08	2.7	0.4	1.7	156
Jun-08	2.9	0.6	1.9	82
Jul-08	3.0	0.8	2.0	122
Aug-08	2.7	0.4	1.7	153
Sep-08	2.7	0.4	1.7	137
Oct-08	2.8	0.6	1.9	68
Average	2.6	0.5	1.7	124.7

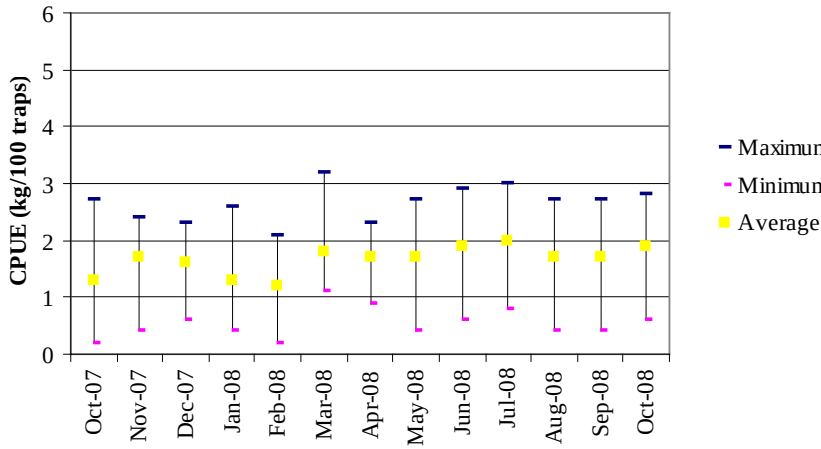

Fig. 2. Maximum, minimum and average CPUE (kg/100 traps) of crab traps, more than 250 traps/trip

Based on the data in Table 2 and Fig. 2, the average CPUE of the swimming crab traps of fishermen using more than 250 traps, was 1.2-2.0 kg/100 traps. High CPUE (about 3 kg/100 traps) was observed in March 2008 and also in July 2008.

By comparison, the maximum CPUE of the swimming crab traps of fishermen with more than 250 traps during this period (3.2 kg/100 traps) was lower than the corresponding maximum CPUE from February 2006 to September 2007 (5.9kg/100 traps). However, the average CPUE of crab traps in both periods was observed to have the same trend.

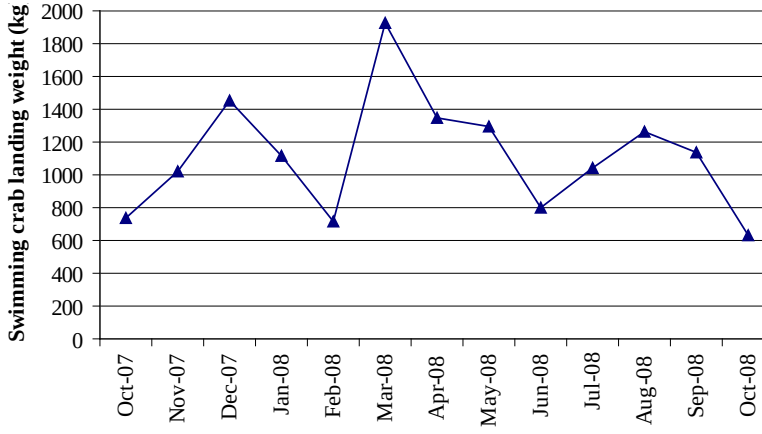

Fig. 3. Monthly swimming crab landing data collected by 2 middlemen

As shown in Fig. 3, the highest landing weight of the swimming crabs was recorded in March 2008 (1,925.6 kg) while the lowest landing weight was 710.6 kg recorded by the middlemen in February 2008.

The total landing weight of swimming crab in October 2007 - October 2008 (Annex 2) was higher than that collected during the period from February 2006 to September 2007. However, it should be noted that the landing data from Prey Sangke from June 2008 to October 2008, was not available.

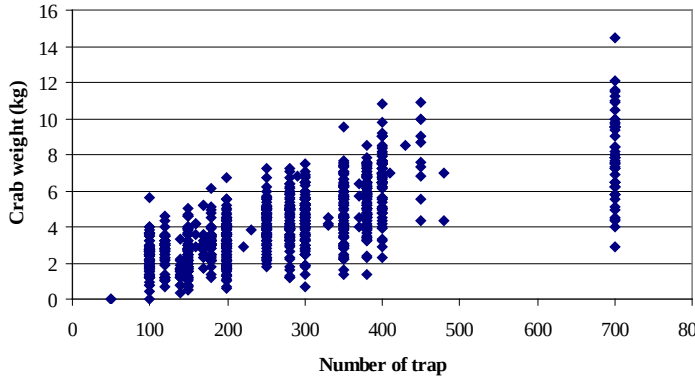

Fig. 4. Crab weight versus number of traps used in each fishing trip

The data in Fig. 4 suggested that there is little difference in the quantity of crab caught per trip between the fishermen using 700 traps and 500 traps, implying that the fishing ground could be relatively limited. Therefore, there is a need for the fishermen to also consider the cost and return of their fishing activity.

Considering therefore the low crab stock in the fishing ground of the study area, the Integrated Coastal Resources Management in Sihanoukville, Cambodia project established a Crab Bank on 1 April 2008 to enhance the fishermen's awareness in the area's swimming crab resources. The outcome of the crab bank could not yet be summarized at this time because of the short period that this has been conducted while monitoring of swimming crab resource was still ongoing and would be continued in the future.

3.2 Mud crab trap

The last data collection for mud crab was from February 2006 to September 2007, and resumed again from October 2007 to October 2008 for one year. Most of the mud crab data at this time was still from Kampong Chin Village, indicating the same fishing ground being exploited. During the latter data collection period, the highest average CPUE of mud crab trap was 11.85 in January 2008 compared with the highest average CPUE of mud crab trap during the first collection period which was 10.5 in January 2007. Therefore, the average CPUE during the latter collection period was higher than that of the previous year's data collection period. The number of traps used in this latter survey was 40-50 compared with 25-55 traps used in the previous survey

This implies that there was more fishing effort during the latter survey period, and comparing month by month the data from the two collection periods, it could be noted that the average CPUE was not much different, therefore the mud crab resources have not changed during the period from 2006 to 2008. The data also indicated that high CPUE was attained during the dry season (Table3 and Fig. 5). Also, the fact may be underlined that high demand for mud crab occurs during the Chinese New Yew in and around January and February.

Table3. CPUE(kg/50traps) of mud crab trap

Month	CPUE(kg/50 traps) of crab trap (callculate only crab weight)			
	Maximum	Minimum	Average	Number of data
Oct-07	6.40	1.90	4.06	31
Nov-07	5.63	1.87	3.79	30
Dec-07	6.78	2.50	4.18	31
Jan-08	15.50	6.56	11.85	30
Feb-08	15.40	6.56	11.65	25
Mar-08	8.70	2.50	4.42	30
Apr-08	7.00	1.90	4.02	30
May-08	7.11	2.50	4.09	30
Jun-08	4.56	1.30	3.16	30
Jul-08	5.89	2.44	4.05	30
Aug-08	6.00	1.89	3.88	31
Sep-08	6.00	2.30	3.79	30
Oct-08	4.90	2.40	3.56	30
Average	7.68	2.82	5.12	29.85

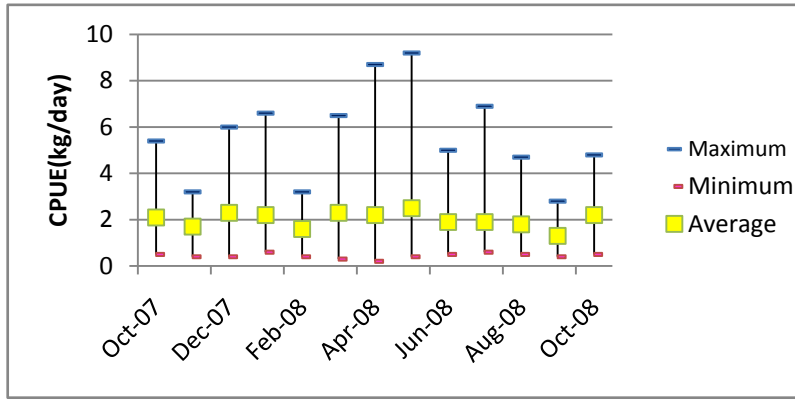

Fig. 5. Maximum, minimum and average CPUE (kg/day) of mud crab traps in Kampong Chin Village

3.3 Shellfish collection by hand

One species and one group for shellfish were considered in this data collection, namely: blood cockle and bivalve. Although blood cockle is a species of bivalve, it was separated from the other bivalves species because the group of bivalves has been aggregated with all other assorted species and also considering the economic importance of the blood cockle.

1. Blood Cockle

Most of the blood cockle data were collected from Prey Sangke. The highest average CPUE was 2.5 kg/day in May 2008. Table 4 and Fig. 6 show that the abundance of blood cockle in the study area could be consistent, provided the fishing effort would not increase when more blood cockles would be collected. However, the data collected during this latter period was lower than that of the previous data collection period (Annex 3). Therefore, the average CPUE during the latter period was lower than the previous period (Table 4 and Fig. 6).

In February 2008, the ICRM-SV project organized its blood cockle fishers group with 25 members to promote the concept of fish refugia. It aimed to promote self-regulatory measures for blood cockle by encouraging the fishermen to collect big sized blood cockles, and the conservation of the young blood cockles by allowing them to mature and spawn eggs. Restriction imposed includes the harvest size should be less than 100 pcs/kg or over 10 g/piece or over 32 mm x 22 mm mesh size of the sieve. The fishermen agreed with such self regulatory measure.

Table 4. CPUE (kg/day) of blood cockle collected by hand

Month	CPUE(kg/day)			
	Maximum	Minimum	Average	Number of data
Oct-07	5.4	0.5	2.1	141.0
Nov-07	3.2	0.4	1.7	98.0
Dec-07	6.0	0.4	2.3	167.0
Jan-08	6.6	0.6	2.2	110.0
Feb-08	3.2	0.4	1.6	102.0
Mar-08	6.5	0.3	2.3	108.0
Apr-08	8.7	0.2	2.2	267.0
May-08	9.2	0.4	2.5	126.0
Jun-08	5.0	0.5	1.9	165.0
Jul-08	6.9	0.6	1.9	39.0
Aug-08	4.7	0.5	1.8	39.0
Sep-08	2.8	0.4	1.3	22.0
Oct-08	4.8	0.5	2.2	47.0
Average	5.6	0.4	2.0	110.1

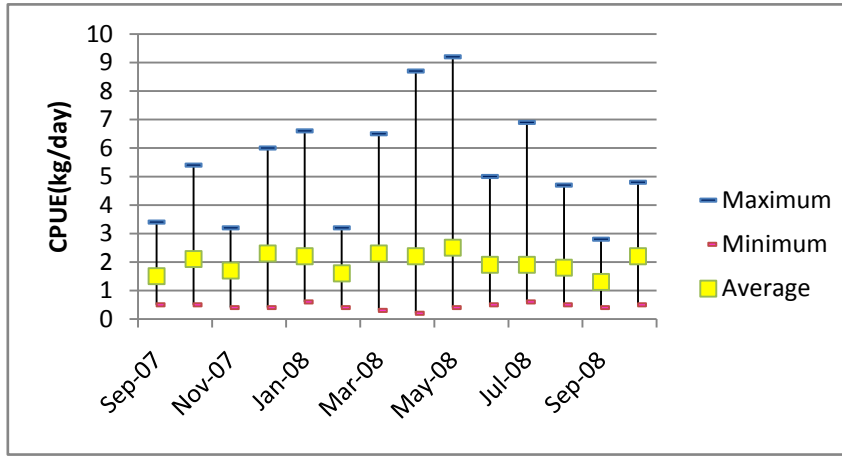

Fig. 6. Maximum, minimum and average CPUE(kg/day) of blood cockle collected by hand

2. Bivalve

The bivalve data was collected from Prey Toal. The highest average CPUE was 18.6 kg/day in February 2008 while the lowest average CPUE was 8.6 kg/day in July 2008 (Fig.7.). As shown in Fig.7, two high seasons of bivalve were recorded, from September to April and August to October, the same pattern which was also recorded during the last landing survey from February 2006 to September 2007. From the landing survey data, fishermen could still collect at least 3 kg/day of bivalves everyday (Table 5).

Table 5. CPUE (kg/day) of bivalves collected by hand

Month	CPUE(kg/day)			
	Maximum	Minimum	Average	Number of data
Oct-07	37.0	5.0	17.2	283.0
Nov-07	24.0	3.0	11.3	228.0
Dec-07	24.0	5.0	14.6	218.0
Jan-08	23.0	4.0	12.4	448.0
Feb-08	29.0	4.0	18.6	316.0
Mar-08	24.0	3.0	11.5	294.0
Apr-08	24.0	4.0	13.7	288.0
May-08	19.0	3.0	9.5	228.0
Jun-08	18.0	3.0	9.3	175.0
Jul-08	17.0	4.0	8.6	37.0
Aug-08	20.0	4.0	13.8	134.0
Sep-08	22.0	5.0	14.3	216.0
Oct-08	19.0	4.0	11.7	126.0
Average	23.1	3.9	12.8	230.1

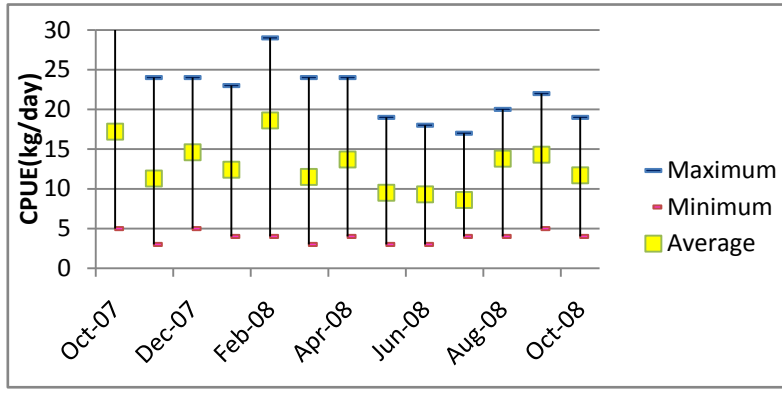

Fig. 7. Maximum, minimum and average CPUE (kg/day) of bivalve collected by hand

IV. CONCLUSIONS

This is the second time that fish landing data analysis and compilation was carried out under the Integrated Coastal Resources Management Project in Sihanoukville, Cambodia. The landing data collection for these two periods was comprehensive because the middlemen fulfilled their data collection duties every month. In fact, there were no empty data in the table forms provided for them, making it easy for SEAFDEC/TD to calculate and analyze the trends.

In terms of the CPUE for each kind of fishery resources during this data collection period, it was observed that the CPUEs for the swimming crab caught by 100-250 traps and more than 250 traps were consistent even if the fishermen had increased the number of the traps. Likewise for mud crab, it was also constant even if the CPUE was higher than the previous period's data because the fishing effort was also high. The CPUE for the blood cockle collected by hand was lower than that of the previous period, but the trend of the resource was constant because the fishing effort was lower than the previous period's. As for the bivalves, the data from this period was difficult to compare with that of last year's as the data was a mixed of all other kinds of bivalves.

In summary, the trend of the fishery resources in the project area was not different from the time the project was started. It should also be considered however that the ICRM-SV project have executed various activities for the conservation and enhancement of the fishery resources in the project area since the inception of the its operation. Under the project's activity on the rehabilitation and enhancement of coastal resources, the establishment of fish refugia for blood cockle was conducted since April 2008, while the crab bank was also established for enhancing the swimming crab resources in April 2008 with 11 crab fishermen as members. In

addition, mangrove reforestation has also been promoted every year for the enhancement of the fishery resources' habitat. These three schemes have been carried out to enhance the fishery resources in Prey Nop II, Sihanoukville.

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Annex 1

CPUE (kg/100 traps) of swimming crab traps set at 100-250 traps/trip from fish landing data in 2006-2007

Month	CPUE (kg/100 traps) of crab trap (Calculate only crab weight)			
	Maximum	Minimum	Average	Number of data
Feb06	12.5	1.0	2.7	66
Mar06	8.3	0.6	3.1	84
Apr06	6.3	0.6	2.6	50
May06	7.2	1.3	1.9	41
Jun06	5.4	0.6	2.1	153
Jul06	3.6	0.5	2.1	76
Aug06	4.1	0.5	1.9	58
Sep06	2.9	0.7	1.7	52
Oct06	4.7	0.4	2.2	38
Nov06	7.1	0.6	2.4	109
Dec06	6.4	0.6	2.5	118
Jan07	5.2	1.0	2.3	58
Mar07	8.3	0.6	3.1	76
Apr07	6.3	0.6	3.3	12
May07	4.9	0.7	2.3	58
Jun07	5.1	0.8	1.7	77
Jul07	5.4	0.8	2.1	26
Aug07	3.7	0.8	2.0	28
Sep07	2.3	0.7	1.6	22

Annex 2

CPUE (kg/100 traps) of swimming crab trap set at more than 250 traps/trip from fish landing data in 2006-2007

Month	CPUE (kg/100 traps) of crab trap (Calculate only crab weight)			
	Maximum	Minimum	Average	Number of data
Feb06	2.1	1.6	1.8	7
Mar06	3.5	0.2	1.4	97
Apr06	3.3	0.3	1.8	35
May06	2.7	1.3	1.9	41
Jun06	2.8	0.8	2.1	58
Jul06	3.1	0.5	2.1	32
Aug06	3.0	0.3	1.6	54
Sep06	2.5	0.8	1.5	45
Oct06	2.4	1.3	2.0	11
Nov06	3.1	0.5	1.1	17
Dec06	2.5	0.6	1.3	55
Jan07	2.4	0.5	1.4	25
Mar07	3.5	0.2	1.4	97
Apr07	3.3	0.3	1.7	21
May07	3.7	0.4	1.6	127
Jun07	4.3	0.7	1.6	134
Jul07	5.2	0.4	1.6	113
Aug07	5.9	0.4	1.5	108
Sep07	2.6	0.4	1.4	107

Annex 3

CPUE of blood cockle collected by hand (kg/day) from fish landing data in 2006-2007

Month	CPUE (kg/day)				Mode
	Maximum	Minimum	Average	Number of data	
Apr07	51.0	0.4	3.3	207	1.5
May07	66.0	0.3	3.8	407	2.5
Jun07	57.0	0.4	4.9	284	4.2
Jul07	17.0	0.5	3.2	140	1.8
Aug07	28.0	0.5	2.6	128	2.5
Sep07	2.7	0.2	1.6	50	1.2