

# Koh Rong Samloem Community Fishery

Socio-Demographic Survey – April 2011 update



For Fisheries Administration: Fisheries Conservation Department  
July 2011



Photo 1 - Billboard located in front of the main pier, showing the Community Fishing Area (FiA –RFLP/FAO)



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**Koh Rong Samloem Community Fishery (“Village 23”)**

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## Abstract

Upon request from the Fisheries Conservation Department of the Fisheries Administration (FIA-FCD) Marine Conservation Cambodia (MCC) undertook a series of socio-demographic surveys to assess the human use of marine resources around the islands of Koh Rong Samloem and Koh Kon, Preah Sihanouk Province, Cambodia. Three communities needed to be surveyed: Koh Rong Samloem Community Fishery (CFi) as well as Koh Toch and Daem Thkov on Koh Rong, Prek Svay having already been studied by the Fisheries Action Coalition Team (FACT) in 2010. The surveys were conducted to collect data necessary to the creation of a Marine Fisheries Management Area around the islands of Koh Rong and Koh Rong Samloem.

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### List of Abbreviations

CFi	Community Fishery
CFA	Community Fishing Area
FACT	Fisheries Action Coalition Team
FiA	Fisheries Administration
FCD	Fisheries Conservation Department
HH	Household
HP	Horse-Power
ICM	Integrated Coastal Management
KRS	Koh Rong Samloem
MAFF	Ministry of Agriculture, Forestry and Fisheries
MCC	Marine Conservation Cambodia
MFMA	Marine Fisheries Management Area





## Introduction

Cambodia has rich marine resources and habitats such as coral reefs, sea grass beds, mangroves, wetlands, salt marshes, sensitive benthic habitats and sandy beaches. These marine resources and habitats have and are being seriously damaged by human activities including excessive fisheries exploitation, illegal and destructive fishing, habitat conversion, pollution and terrestrial run-off. High population growth and increasing demand for marine fisheries products for both the local and international markets have caused a drastic decrease in fisheries resources, thus threatening the livelihoods of coastal communities that rely on these resources.

In order to manage fisheries resources more sustainably, the Fisheries Administration (FiA) has tried several approaches including centralized and decentralized approaches. Community-Based Natural Resources Management is one of the decentralized fisheries management approaches that have been promoted in the Cambodian fisheries sector for several years. The Royal Decree on the Establishment of Fisheries Communities was officially adopted and launched in June 2005 (FiA, 2005). The Decree encourages local small-scale fishers to form community organizations for the purpose of protecting and using fisheries resources in sustainable way within locally defined areas. Furthermore, the creation of a Conservation Department in 2009 has gone a long way to increasing the efforts to protect and conserve Cambodia's marine resources.

The FiA-registered Community Fisheries around the islands of Koh Rong and Koh Rong Samloem have been working towards conservation over the past few years, with the support of the FiA, relevant local authorities (local fisheries committees, Sangkat and local police) and other partner organizations. The introduction of the Community Fishing Area (CFA) around the islands of Koh Rong Samloem and Koh Koun, reaching the southern shore of Koh Rong, has had a great influence on the protection of reefs and surrounding habitats with community patrols cracking down on illegal and destructive fishing techniques such as dynamite, cyanide fishing and coral harvesting. The monitoring is beginning to show the effectiveness of community protection, although major issues such as illegal inshore trawling and united law enforcement still constitute a significant threat to the conservation and sustainable use of marine resources.



In order to conserve marine resources on a long-term scale, biodiversity approach and socio-economic approach need to be fully integrated within the creation and management of the MFMA (Marine Fisheries Management Area) and its associated Zoning Plan. It is essential that relevant government departments collect all necessary information on the communities that will be directly affected by the creation of the MFMA and Zoning Plan, that is to say the communities residing on Koh Rong and Koh Rong Samloem namely Koh Rong Samloem Community Fishery (CFi), Koh Toch, Prek Svay and Daem Thkov. Koh Rong Samloem CFi will be the subject of this report.



## I. Site description

### a. Koh Rong Samloem Island

The island of Koh Rong Samloem is located south of the bigger island of Koh Rong, approximately 20 km west of Sihanoukville (*Figure 1*). Irregularly shaped island, roughly oriented NW-SE it is approximately 6 km long by 3 km at its widest point, with a land area of 25.8 km<sup>2</sup> (2,580 ha). Stretches of land form a protected bay of almost 4 km wide on the eastern side. Another bay, over 1 km wide, locally known as Vietnamese Bay, is located on the northernmost part of the island, where the CFI is established.

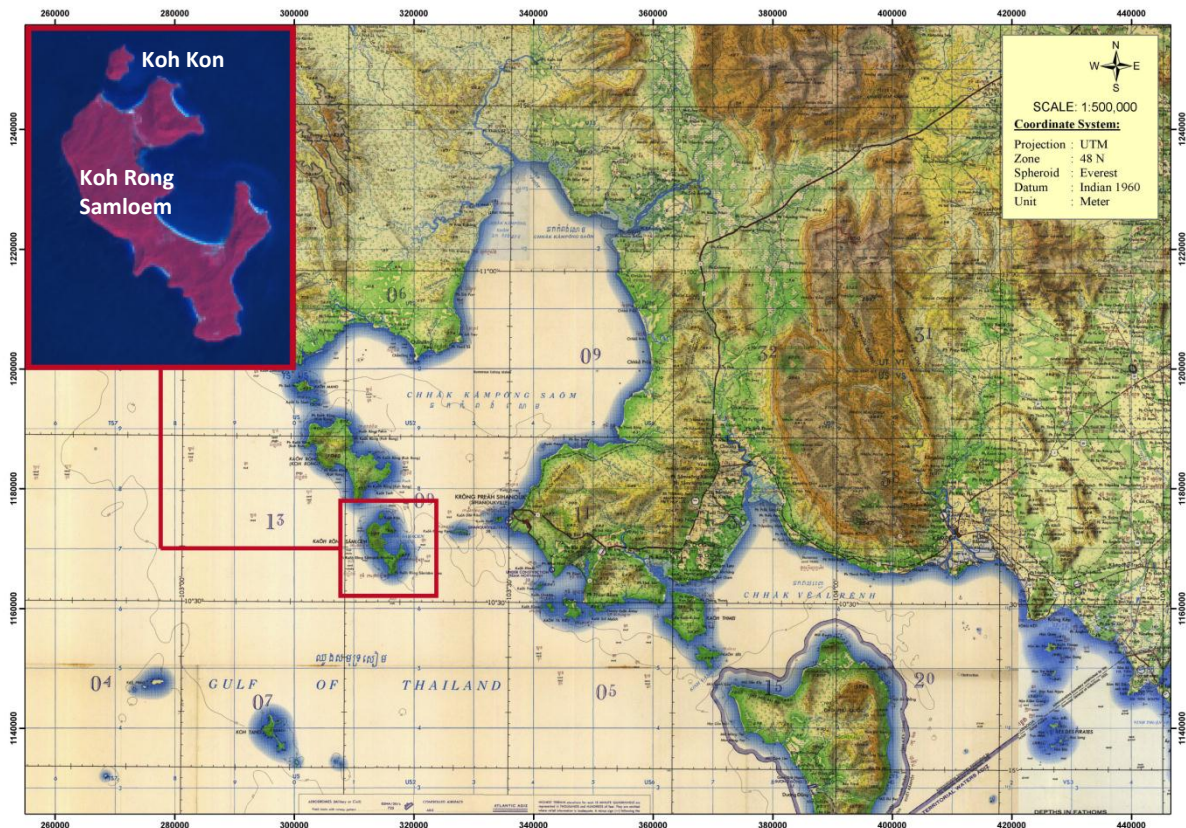


Figure 1 - Coastal Cambodia: close-up on Koh Rong Samloem & Koh Koun





Photo 2 and Photo 3 – More than 25 species of orchids have been found so far on Koh Rong Samloem

Koh Rong Samloem is predominantly covered by dense humid forest where a rich biodiversity can be observed. Among the most significant species (flora and fauna): orchids (25 species identified so far) (Photos 2 and 3), water dragons (*Physignathus cocincinus*), monkeys, and Hornbill. Until recently, only three hornbill species were known to occur in Cambodia: Great Hornbill (*Buceros bicornis*), Wreathed Hornbill (*Aceros undulates*), and Oriental Pied Hornbill (*Anhracoceros albirostris*). Oriental Pied Hornbill was historically common throughout much of Cambodia (Tan Setha, 2004): we believe that it is the one that can be observed on the island of Koh Rong Samloem (Picture 6). Many species of snakes (Picture 7) are also encountered, as well as an infinite numbers of insects, arachnids and invertebrates.

### **Marine ecosystem**

Koh Rong Samloem Community Fishing Area (CFA) surrounds the island of Koh Rong Samloem, Koh Koun, and stretches to the southern shores of Koh Rong (Figure 2). The tropical reefs, mainly fringing reefs, provide a unique marine environment which allows the presence of a great biodiversity. Benthic habitats such as the main seahorse breeding grounds are also to be found as they constitute an extremely fundamental part of the marine ecosystem where a range of macro life can be observed. The area also encompasses seagrass (Photo 4 and 5) and mangrove ecosystems therefore contains representative habitats of whole shore to intertidal environments and from coral reefs to deep water environments.







Photo 4 and Photo 5 - Seagrass, *Cymodocea serrulata* & *Halophila ovalis*

Koh Rong Samleom area has recently become the focus of Sihanoukville diving industry as dive operators now use the area all year long. Indeed, diving and snorkeling here provide people with the opportunity to learn about a wide variety of species and understand a part of Cambodia's natural history (*Photos 6 and 7*).



Photo 6 – Seahorse *Hippocampus* sp.



Photo 7 – Indian volute *Melo melo*

The island hosts two villages: Koh Rong Samloem CFi or “Village 23” and a military base, located respectively on the northern and northern and eastern part of the island. Koh Rong Samloem has been leased for development to Hong-Kong based firm LimeTree Capital and will eventually start a Master Plan that is currently being reviewed by the Cambodian government.

## b. Koh Rong Samloem Community Fishery (Village 23)

Koh Rong Samloem CFI was established with an initial founding congress in July 2009 and entered into a Community Fishing Area Agreement in early 2009. The community was provided with a total marine area of 9491 hectares to ensure a sustainable use and conservation of surrounding fisheries resources and marine habitats. According to latest survey, Koh Rong Samloem CFI hosts 43 households with a total population of 220 persons, of which 106 are females.

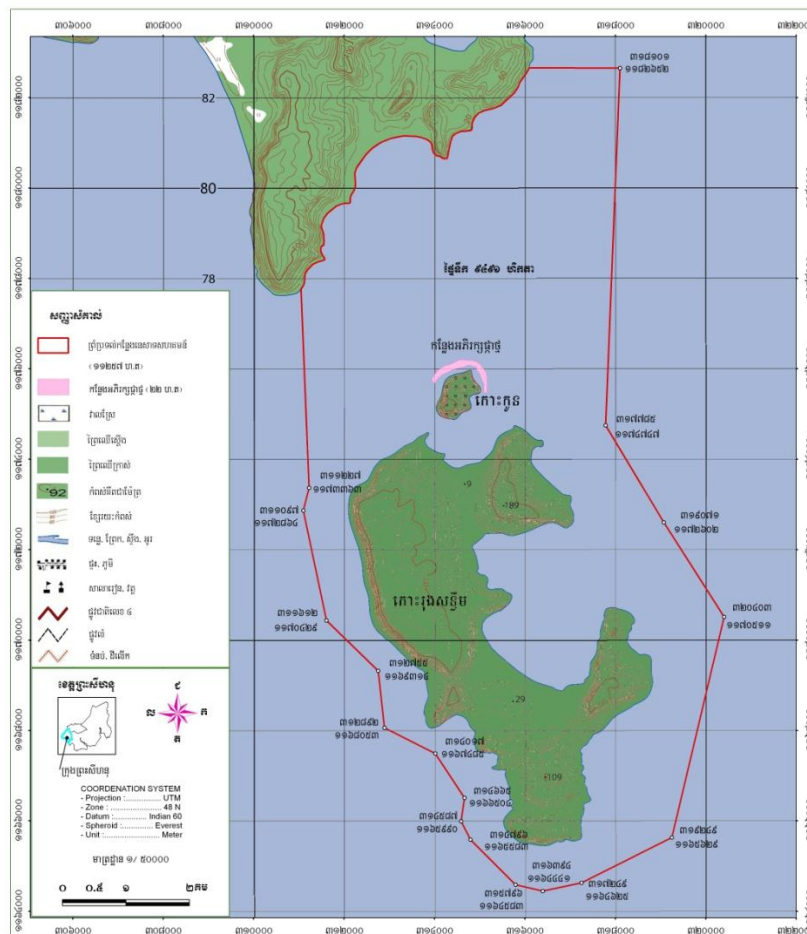


Figure 2 : map of the Community Fishing Area, courtesy of FiA

The first settlers of Village 23 arrived in the early 90's, attracted by the abundance of fishing opportunities in the surrounding waters while looking for a safe and peaceful place to live, away from the social and political troubles that were happening at that time. However, rampant anarchic fishing and encroachment from neighboring fishing fleets quickly increased, causing serious conflicts with local



fishers. As such a number of local fishermen were compelled to give up their activities or to change to even smaller scale inshore fishing for safety reasons. The number of larger fishing vessels trawling the inshore areas has increased in recent years despite this practice being forbidden by the national fisheries law. This increase in fishing vessels has caused a serious impact on inshore fish stocks and marine habitats. M'Pai Bei community has faced a substantial decrease in the yield of fish, crab and squid caught and this reflects in the decreased livelihoods of the fishers within the community. Many fishers had to give up on crab fishing, due to their expensive gear being destroyed by illegal trawling; they then turned to squid fishing on long-tail boats or small polystyrene paddle-boats to avoid rising gasoline expenses.



Photo 8 – Seahorse catch from a Vietnamese boat, KRS 2011

On another hand tourism is bringing alternative livelihoods, but this is also potentially under threat as whole dive sites have been lost to illegal trawling, dynamite and cyanide fishing. The main seahorse sites were decimated by illegal Vietnamese fishermen who came specifically to target the breeding grounds in search of the seahorses (*Photo 9*). In 2008, a team of divers, understanding that the need for constant protection was immediate and urgent, created Marine Conservation Cambodia (MCC) in close communication with the FiA (Fisheries Administration) and with the support of the M'Pai Bei community.



Photo 9 – Community Patrols use MCC boats and fuel to run daily patrols. Here: approaching a trawler illegally fishing inshore areas, May 2011.

The Community has since been working side by side with MCC and the FiA not only in assisting in the protection of the area but also in setting up a proper Integrated Coastal Management (ICM) plan of the area that would enable a sustainable development of the Community, insuring an increase in livelihood by using marine resources in a sustainable manner and developing responsible tourism. Through these efforts, the Community itself was registered as an official Community Fisheries allowing it to manage and protect its own designated marine area under the direction of the Fisheries Administration (FiA) (*Photo 10*).



## II. Goals and objectives of the assessment

The main objective of this assessment is to collect baseline data on the social and economic situation of Koh Rong Samloem CFI. Data collection will focus on household structures and activities, but also on fisheries resource related activities, including catches and types of fishing gears, in order to get a clear picture of marine resource use and conservation around the island of Koh Rong Samloem. Questions related to people's feeling towards changes brought by recent and rapid increase in local tourism were also added to the questionnaire.

The results from this assessment will be used to improve local community-based fisheries resource management and seek support from relevant government departments. Furthermore, the research finding will be essential to the future creation of the first Cambodian MFMA and associated Zoning Plan surrounding the island of Koh Rong and Koh Rong Samloem.

Socio-economic monitoring of coral reef and fisheries resources are essential initial steps in the MFMA creation process and success. By conducting surveys in Koh Rong and Koh Rong Samloem, the social and economic data collected will allow:

- Integrating requirements of marine ecosystems with the need of the people who depend upon fisheries resources. If these social and economic criteria are not taken into account, the MFMA and its Zoning Plan will be created from a single sector management view and will eventually lead to a significant number of resource use conflicts.
- Collecting all necessary data, including information on fishing gears, techniques and target species, in order to establish a clear and well-defined Zoning Plan that is to say a spatial (or temporal) allocation of specific uses and activities to well-defined areas within the larger MFMA. A multiple-use zoning scheme will allow reducing competition and conflicts between human uses of the area while still allowing for conservation.
- Getting a clear picture of people's needs, expectations and perceived issues related to fisheries resource management in their area. This will allow exploring possibilities of alternative sources





of income that would contribute decreasing anthropogenic pressure on fisheries resources, especially through marine ecotourism.

### III. Indicators Selected

The questionnaire is divided into three different parts focusing on household structure, occupations and fishing habits. All the indicators listed apply to the social, political and environmental context of the studied community. *Table 1* below summarizes the selected indicators used in the questionnaire. The complete questionnaire can be reviewed in the appendix.

Category	Indicators
Demographics	<ul style="list-style-type: none"> <li>• <i>Study area</i></li> <li>• <i>Age and Gender</i></li> <li>• <i>Household size</i></li> <li>• <i>Language</i></li> <li>• <i>Ethnicity</i></li> <li>• <i>Religion</i></li> <li>• <i>Education</i></li> <li>• <i>Occupation</i></li> <li>• <i>Migration / Year of Arrival</i></li> </ul>
Fishing Practices	<ul style="list-style-type: none"> <li>• <i>Type, number of boats and engines</i></li> <li>• <i>Fishing gears and main targeted species</i></li> <li>• <i>Average time spent at sea</i></li> <li>• <i>Evolution in the quantities caught</i></li> </ul>
Perceived issues and threats	<ul style="list-style-type: none"> <li>• <i>Perceived main threats to fisheries resources and related activities</i></li> </ul>
Livelihood/Lifestyle	<ul style="list-style-type: none"> <li>• <i>Type of building / material used</i></li> </ul>
Tourism	<ul style="list-style-type: none"> <li>• <i>Feeling towards tourism; balance of positive and negative impacts.</i></li> </ul>

Table 1 - Summary of selected indicators



## IV. Methodology

The survey was conducted in April 2011, over two weeks. Two Community Member Trainees were assigned to conduct the survey, each of them accompanied by one MCC staff at the beginning to overview the note-taking strategy and check for consistency of data entered. After a couple days of practice, the trainees were able to handle the survey by themselves. The methodology was quite simple: going from house to house with a short but precise questionnaire. MCC facilities being located on-site, time did not constitute a limiting factor which allowed us to survey all households present in the Community at the time.

### a. Household survey

Household surveys were conducted during two days in the community. The three-part questionnaire (*Appendix 1*) focused on:

- Household structure, demographics and activities with additional questions regarding to historical background (date and reason of arrival to the island and/or change of activity).
- Fishing practices including type of fishing gears, main target species, perceived threats, and evolution in the quantities caught.
- Tourism development (feeling towards tourism; benefits, issues and possible resolutions).

Since time was not a limiting factor, no special sampling method was used: all households were surveyed. The relatively small size of the village made it easy to remember and return the day after to a household that was unavailable at the time of the survey.

### b. Observation

On-site observations complemented the surveys by recording “hidden data” or information that might not be divulged or expressed freely by participants during the interviews, although the fact that the interviewers were from the Community or had been working them for a long time made it comfortable enough for the inhabitants to express themselves freely . In addition, observations were used to get



some details on local fishing habits and gears, as well as illegal and destructive fishing occurring in the area.

## V. Results

### a. Community Demographics

#### 1. Age and gender

The results of the survey totalize a population of 220 including 106 females and 144 males (Figure 3), within 43 households (HH) with an average of 5 persons per HH. By computing the percentage of population based on the distinct age groups, it was estimated that (Figure 4):

- 39,5 percent of the population was in the 0-18 age group.
- 29,1 percent were between 19 and 30 years old.
- 20,9 percent were between 31 and 50.
- 10,5 percent were over 50
- The average age is therefore 25 years old.

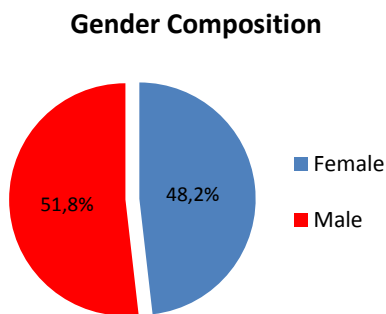


Figure 3 – Gender composition

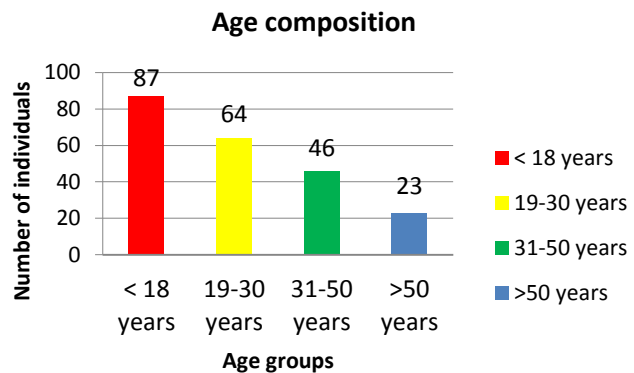


Figure 4 - Age Composition



## 2. Migration, Ethnicity and Religion

### Year of arrival

The first family immigrated to Koh Rong Samloem in 1989, attracted by the abundance of fishing opportunities in the surrounding waters while looking for a safe and peaceful place to live, away from the social and political troubles that were happening at that time. Several families followed throughout the years yet the peak in arrivals was between 1998 and 2000 when the island received most of its current population (76,8 percent). Since then only 4 new families settled in the community, the last one in 2010 (Figure 5).

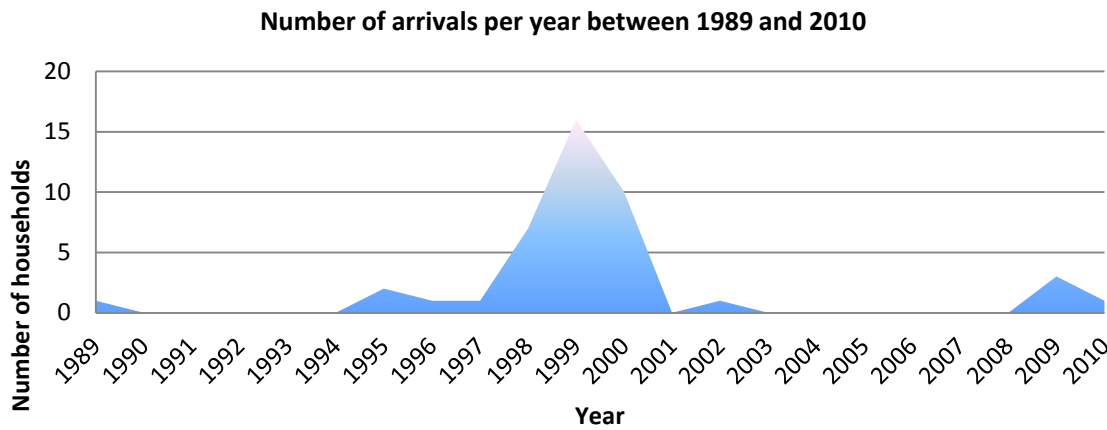


Figure 5 – Number of household arrivals to KRS CFI per year, from 1989 (first settlement) to 2010 (latest arrival)

The main reason to their settlement on the island was to change occupation and improve their livelihood (86%), with many people looking for better fishing grounds. About 9 percent followed their spouse while one person was sent as a soldier in the military quarter of the island.

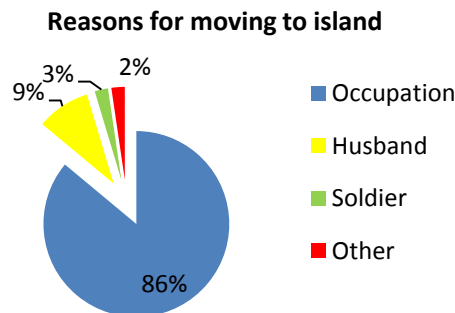


Figure 6 – Reasons for moving to Koh Rong Samloem



Relating to ethnicity and religion, the results show that:

- 98,6 percent of the population is Khmer.
  - One household was recorded as belonging to the Cham community.
  - One community member was recorded of Thai origins.
  - One community member Vietnamese.
- 
- Buddhism encompasses 99,5 percent of the community and is thus the main religion, while Islam is only represented by one household.
- 
- Khmer is obviously the main language as it is represented by 99,5 percent of the community members.
- 
- Vietnamese language and Thai language as mother tongue are both respectively represented by one person.

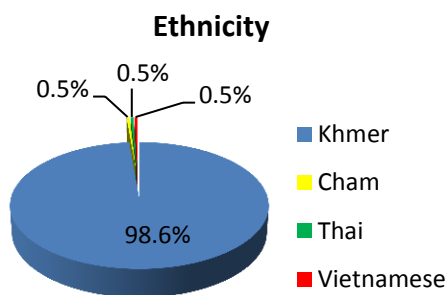


Figure 7 - Ethnic composition

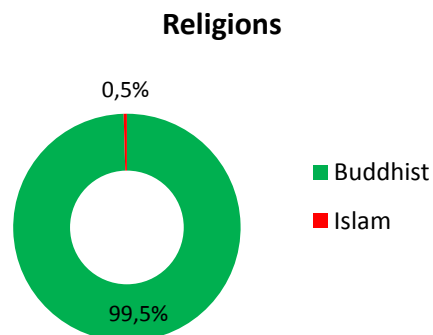


Figure 8 - Religions

### 3. Education

Koh Rong Samloem CFI has two school buildings that are the only school facilities on the island. All children attend Khmer school during the week. In addition, daily English lessons are run several times a day by MCC volunteers to children and teenagers with a large part being now able to use the basics of the language. Results (Figure 8) show that:



- 71.8 percent of the population has sufficient skills in reading and writing.
- 28,2 percent are illiterate

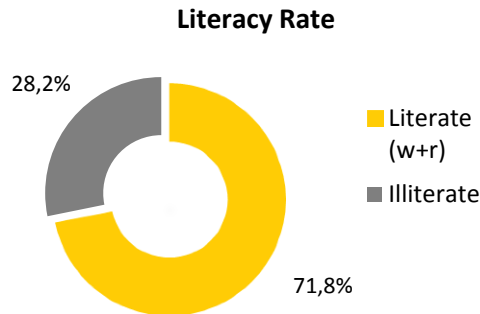


Figure 9 – Literacy rate within Koh Rong Samloem CFI (“w” for “write” and “r” for “read”)

#### 4. Occupations / Activities / Sources of income

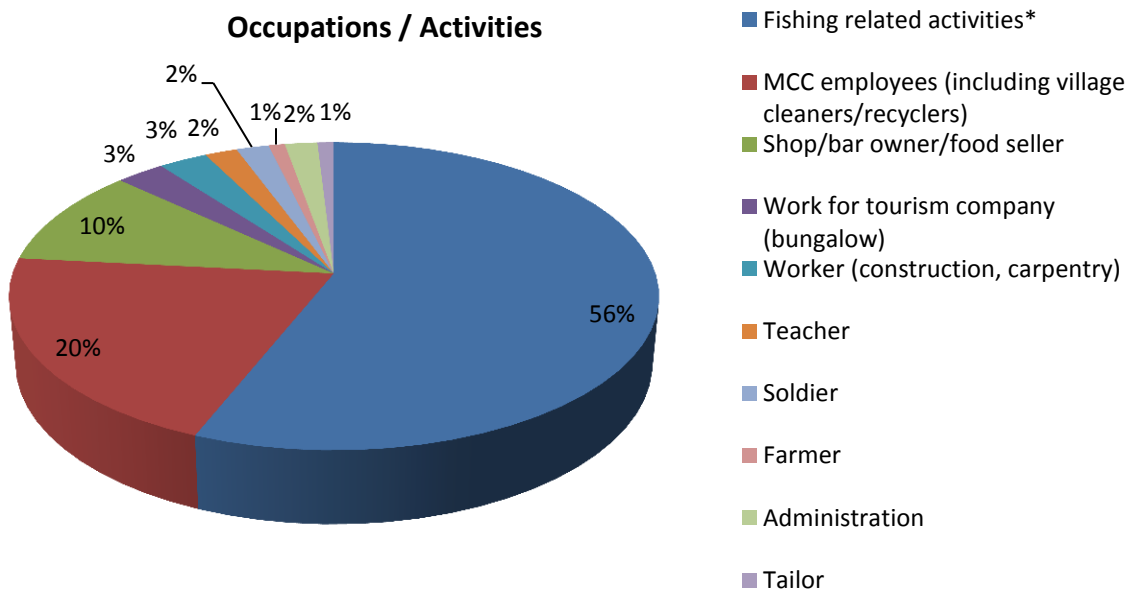
Young children and students constitute the largest part of the population (38,2% if taken into account within the “occupations/activities”). However, they do not participate as much in the community’s economy as the other categories, it is however quite frequent to see the children helping the adults selling goods at family shops or making traps, for instance. Similarly, giving the percentage of population under 18 years old (39,5%), a significant part of the population (14,1%) is constituted by “housewives” (“stay-at-home”), taking care of children and house work. We decided not to include these two categories in the figure below.

Despite an increase in local tourism flow over the past three years that allowed the people to diversify their sources of income, community livelihoods still largely depends on fisheries-related activities. The results (*Figure 10*) show that:

- Fishing-related activities add up to 56 percent including fishing, trap making and trade, thus showing the great dependence of the community upon the availability of fisheries resources.



- Tourism-related activities directly involve 23 percent of the population, with MCC itself hiring 20% of the community members (including boat drivers, cooks, maintenance workers, gardeners, village cleaners/recyclers, etc.).
- 10 percent of the activities are related to commerce: bars, family shops, food sellers. This percentage has been increasing along with local tourism as there were only two bars/shops in the village two years ago. There is no public market on the island: sale and purchase take place at family shops.
- Other activities include construction workers, teachers and soldiers. Yet, it is not rare that people are involved in different activities: one can be fisherman during most of the year, yet become boat carpenter/construction worker when the weather limits the fishing activity.



\* Fishing-related include: fishermen (49%), middleman (squid trade) (1%) and fish/squid trap makers (6%)

Figure 10 - Occupations and activities within Koh Rong Samloem CFI

Small scale freshwater fish farming has been observed, not for trade but for own consumption during the rainy season, when fishing is limited by the weather (Photos 10 and 11).





Photo 10 and Photo 11 – Small-scale freshwater fish farming in KRS CFI

There is no agriculture or rice farming on the island; however, a number of households are now starting to grow their own vegetables and fruits (cucumbers, eggplants, squashes, pineapples, etc.) There is also a coconut plantation that was established a few years ago, several hundred meters from the village as well as cashew trees.

## b. Community Infrastructures

### 1. Overview

Due to distance, isolation from the mainland and its small population, the island of Koh Rong Samloem has yet to be developed although it has already been leased to Hong-Kong based private development company LimeTree Capital. As such, there is a quasi-absence of infrastructures on the island. From local observations, there are no roads, only a few small paths through the jungle to access the military base; a NGO-funded primary school and a small clinic funded by MCC on the main village pier. There are four businesses on the island: non-profit organization Marine Conservation Cambodia, M'Pay Bay Bungalows, and Sihanoukville-based dive operator EcoSea, all located within Koh Rong Samloem CFI, as well as Lazy Beach Bungalows, located in a sheltered bay on the western part of the island. A community member has recently built five rooms in the hope to rent them to occasional visitors: this is the very first community member-owned guest-house.



## 2. Transportation

KRS CFI has one main pier used to unload fisheries products and commodities brought from Sihanoukville as well as tourists visiting the island. A second pier has been built by EcoSea and for its own use.



Photo 12 – Arrival at KRS CFI : main pier, June 2011

## 3. Authorities

Local authority offices such as the Sangkat office and the Sangkat Police office are located in Daem Thkov Community.

## 4. Tourism sites

Tourists are first attracted to KRS CFI by the diving opportunities but also by the pristine beaches and jungle that have not yet been altered by development and the popular hospitality of its community. There, they can dive and snorkel the reefs around the island and observe a delicate and diverse combination of sea life and ecosystems, both accessible and affordable to the vast majority of tourists staying in Preah Sihanouk Province.



## 5. Network coverage

Koh Rong Samloem has a decent access to the mobile phone antennas set up on the neighboring island of Koh Rong operated by Mobitel (012), Mfone (011) and Hello (016).

## 6. Electricity

There is no regular electricity supply on the island; small diesel generators are run by a relatively low percentage of the community members, mostly by people owning small businesses (karaoke bars). The generators run on average from nightfall (around 6:30pm) to 10pm

## c. Fishing-related Activities

### 1. Generalities

As it has already been mentioned earlier (*Figure 10*), 56 percent of the community members practice an activity related to the exploitation of fisheries resources:

- 33 households (76,7%) have at least one member involved in fishing, with 53 persons recorded as fishermen including the youths who go fishing for squid with paddle-boats. A few adults mentioned that they first used to fish crabs but they all stopped between 8 and 5 years ago and switched to squid fishing. The main reason cited was the destruction of fishing nets by trawling boats, which were indeed in their highest peak of activity in the area at that time.
- 6 percent (6 persons/households) are involved in the making of squid/fish traps which are either sold to Kampong Som or for personal use.
- 1 person is a middleman for squid trade.

25 long-tail boats (*Photo 13*) were recorded and are widely used as well as small polystyrene “paddle-boats”, which are said to be very specific to the island (*Figure 11*). Around 15 paddle-boats were counted, yet since they are constantly being built and repaired it is difficult to keep the numbers



updated. The average size of the long-tails varies between 6 and 7 planks; their average power is 10,4 HP.

**Type of fishing boats**

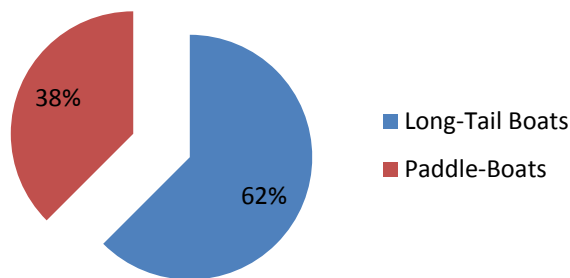


Figure 11 – Types of boats used in KRS CFI

## 2. Fishing with long-tail boats



Photo 13 - Long-tail boat equipped for squid fishing, KRS 2011

Long-tail boats predominantly use squid lines (82%, *Figure 12*), with an average of 12 lures. A significant part of the fishermen use a combination of gears, switching according to the season. Thus, 11 percent use a combination of squid lines and fish traps. One family was not recorded for unknown reasons but was regularly seen operating collapsible crab traps in the area. It is not rare that some families buy crab traps only to use them during the best season, then selling them switching back to another type of fishing gear. Only one community member uses an octopus line with 200 shells.



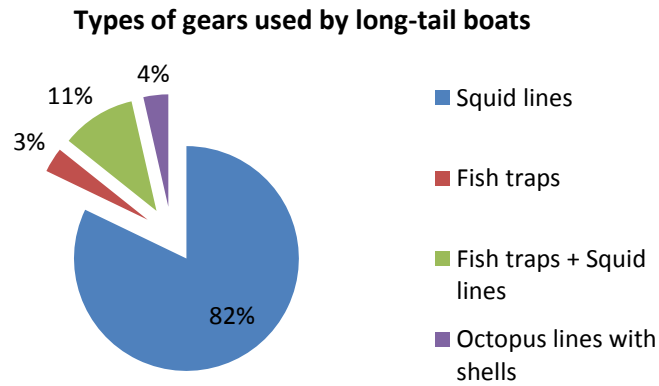


Figure 12 – Type of fishing gears used by fishers on long-tail boats within KRS CFI

Furthermore, relating to the catches, the results show that (Figure 13):

- Most fishermen go for squid (72% of the interviewed fishers)
- A relative smaller part target fish, using traditional traps (14%)
- Around the same percentage of fishers targets both squid and fish, which matches with the distribution of fishing gears (Figure 12)
- Only one family seemed to target the blue swimmer crab.

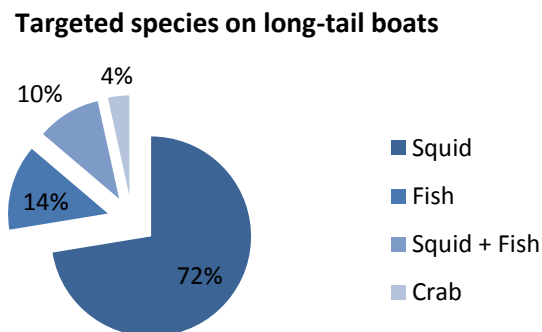


Figure 13 – Main species targeted by fishers on long-tail boats

Finally, the results show a great dependence upon fishing as the activity seems to occupy a significant part of the daily life within the community with 66,7 percent of the interviewees spending between 3 and 7 days a week at sea (Figure 14). The average time per fishing is 3 ½ hours.



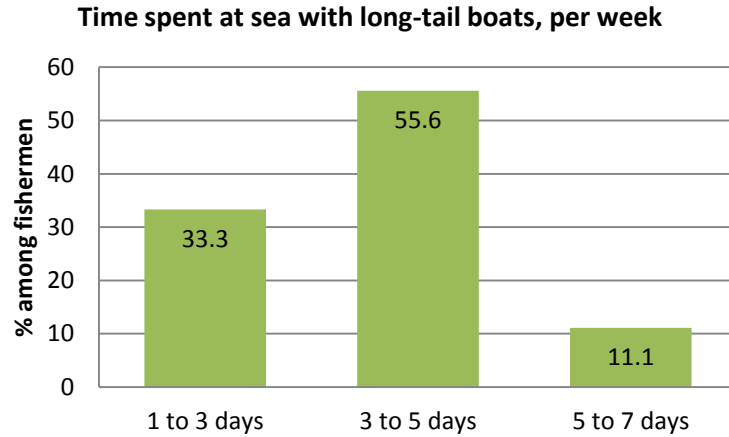


Figure 14 – Number of days spent at sea with long-tail boats, per week

It has been observed that long-tail boats are often used by several families altogether that share gasoline costs and go fishing for subsistence. There, they use the simplest technique, that’s to say a nylon line with 1 to 3 hooks baited with squid. Also, a line with one squid lure and one or two fish hooks is quite common, as it allows catching both squid and fish.

### 3. Fishing with paddle-boats

Since paddle-boats are entirely part of the fishing activity within KRS CFi, we decided to record the data the same way as we did for the other boats. Paddle-boats, made of bamboo and polystyrene, are mostly used by children but also sometimes by men and women. Paddle-boats are an economic alternative to long-tail boats as they avoid gasoline expenses. However, they do not allow people to go as further out thus the catches are often less significant. Furthermore, this type of fishing is restricted during the rainy and windy seasons when the weather can change suddenly and strong winds can become dangerous.



Photo 14 – Paddle-boats, KRS



Results show that:

- All fish for squid with lines and an average of 8 lures.
- They spend less time at sea (per week) than fisher on long-tail boat (*Figure 15*). This could be due to the fact that most of them are children or teenagers who also share their time between school and house activities during the week.
- However, they seem to spend more time at sea per fishing trip (4,4 hours).

According to our observations, fishers on paddle-boats also sometimes catch fish with simple lines and hooks.

**Time spent at sea with paddle-boats, per week**



**Figure 15 - Number of days spent at sea with paddle-boats, per week**

#### 4. Most common catches

Squid (*Sepia* sp.) is the most common commercial catch. Groupers, snappers and sweetlips are among the most valuable fish, as well as the blue swimmer crab. Subsistence catches include bream, paradise whiptails and rabbit fish. A more comprehensive list is presented in *Annex 2*.



**Photo 15 – Caught with fish traps**

**Photo 16 – Daily squid catch from a paddle-boat being monitored by FiA (Department of Planning) representatives (RFLP-FAO Catch Monitoring Programme), KRS 2011**

## 5. Perception of fisheries resource conditions

Relating to the evolution in the quantities caught, we decided to ask two different questions related to different time frames and events: the first one would compare the amount of fish caught between the first time the person started fishing in the area and nowadays; the second question would ask for the same information but the time frame being between summer 2009 (introduction of the Community Fishing Area -CFA- and protection of certain reefs and areas) and today. The results (*Figure 16*) show that:

- A great majority of the community members (92,3%) responded that the catch quantities had decreased since their settlement in the area.
- The 5,1% who recorded that the catch had increased do not seem to be representative of the overall situation and would most likely be families who arrived on the island after 2009, when the area started to receive protection.

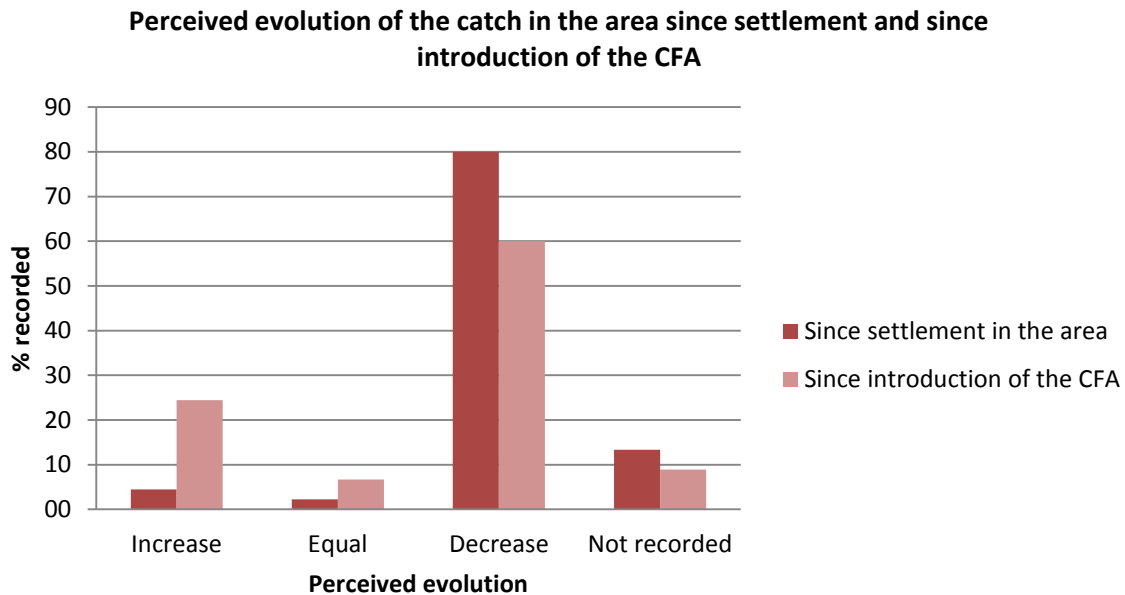


Figure 16 - Perceived evolution of the catch

However, since the introduction of the CFA in 2009:

- 24,4 % recorded they had seen an increase in catches, that is to say 20% of the interviewees changed their opinion and show this effectiveness of the introduction of the CFA.



Still, this question needs to be better studied and would need further investigation with more factors taken into account. Indeed:

- The species was not specified in the question. The fisherman could have related his answer to a population that will need more time to recover, such as groupers.
- An increase in fisheries resources in the area brought more people in. Thus, the fisherman could have faced an increase in competition for the same species. As an example, in 2010, the area suffered from the presence of many fishermen from outside attracted by the increase the population of blue swimmer crab. As a result, fishermen from the community saw a decrease in their own catches.

To work out which factors influence the negative development of catches, we asked the participants about the reasons why the catch had decreased/was decreasing or increasing.

#### **d. Threats and Issues to marine resources & perceived resource-use conflicts**

A multiple-choice question was included in the questionnaire, asking the participants about the main threats and issues they perceive and/or witness in the area that are affecting the sustainable management of fisheries resources (*Figure 17*). Nine predefined answers were presented, among which the interviewee could choose five. The results show that:

- Illegal inshore trawling and destructive fishing techniques such as bottom weighted gillnets (e.g. crab nets) come altogether as being the major issue in the area (35 % of recorded answers).
- Foreign illegal fishing and poaching, such as Vietnamese air-supplied fishing, come second (27%).
- Pollution (waste and garbage thrown at sea) comes as the third main issue (15%).
- Lack of law enforcement & Lack of human resources/equipment to improve law enforcement totalize altogether 15% of the answers.
- Resource-use conflicts between subsistence/commercial/recreational fishers and between fishing techniques add up to 6 % of the answers.





**What are the main threats and issues you perceived and/or witness in the area that are affecting the sustainable management of fisheries resources?**

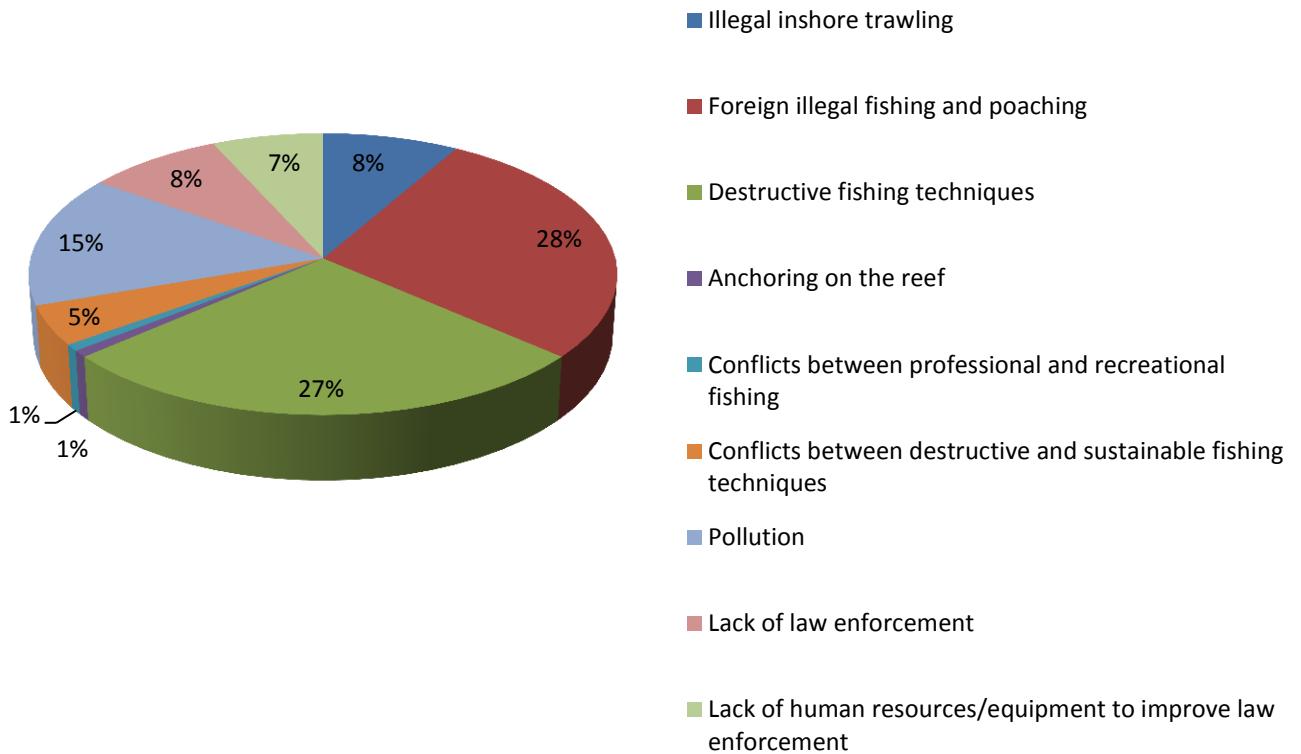


Figure 17 – Open answers related to the threats to fisheries resources in the area.

Besides, open answers were recorded, allowing the participants to express more personal thoughts and/or mention issues that were not suggested on the multiple-choice question. The reasons cited to be the cause of the decrease in catches were almost all related to illegal and destructive fishing (71% of recorded answers, *Figure 18*) the main causes being:

- Trawling boats (42%) “from Kampong Som” that «catch the fish and the squid », « destroy traps » and « cause fish size to decline ».
- Illegal Vietnamese boats “using chemicals to destroy the fish”, which “put their gasoline in the sea”, use “bombs, explosive, destructive fishing gears” come second with 21% of answers recorded.



- Increase in fishermen in the area seems to be a significant issue with 13% of answers recorded. “Fishermen have the same boats and a lot of boats”, “there are so many traps” and they “work too close to each other”. This constitutes an important comment to be taken into account for future fisheries management plan of the area.
- Changes in weather patterns were also mentioned as a cause for the decrease in fisheries with “bad weather”, “big winds”, “too big waves” that seem to have been increasing over the past years: “before there were no big waves, it was better for fishing”.
- “Big Boats with lamps” were also mentioned as “going fishing near the island” and contributing to the decrease of fisheries in the area. However, it has been observed that over the past years, these boats have tended to operate further away from the island and no longer come within the CFA.
- Finally, conflicts with foreigners were cited by two persons saying that “Barangs destroy the traps” and that “low fishing was caused by foreigners”. Similar stories have been heard in Koh Toch and Daem Thkov communities (Koh Rong), referring to dive operators from Sihanoukville cutting the traps when found underwater.

Perceived threats to fisheries resources in the area

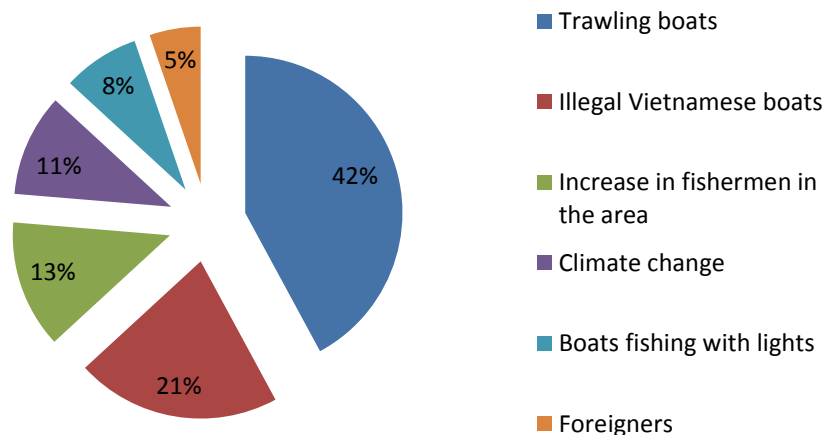


Figure 18 - Perceived threats to the fisheries resources and decrease in catches in the area



On the other hand, the persons who noticed an increase in the catches since the introduction of the all recorded that the introduction of the CFA and the proactivity of their CFi, especially in patrolling the area “in good cooperation with MCC” against the illegal inshore trawling (Photo 17 and 18), was the reason why the catches started to increase again.



Photo 17 and Photo 18 – Community patrols making trawlers pulling their nets out of the CFA, April 2011.

### e. Tourism

“KRS Community Fishery has been developing marine ecotourism as an alternative source of revenue to fishing over the past four years. As such, it has been able to reduce the pressure on the marine environment while increasing the livelihoods of the community members. The Community is currently seen as a model of Community-Based Marine Resource Management with an ongoing successful experience in Marine Conservation, Sustainable Fishing and Marine Ecotourism. The creation of a Marine Fisheries Management Area will be supported by and could largely use the experience of the community members in managing such an area.”<sup>1</sup>

As such, we found interesting to add questions related to tourism development and to people’s feeling towards it. The results show that:

- 41 persons (97,6%) recorded tourism development as being positive.
- Only 1 person recorded it as being negative.

<sup>1</sup> B. Krell, M. Skopal, P. Ferber. Koh Rong Samloem and Koh Kon Marine Environmental Assessment, Preah Sihanouk Province. Report on Marine Resources and Habitats. MCC 2011.



- 1 community member did not answer.

Positive aspects of tourism were mostly linked to the increase of job opportunities and increase in income. Indeed, MCC itself employs 25 community members, while others occasionally rent their boats to transport tourists to the mainland. As mentioned earlier in the document, small businesses and family shops have been flourishing over the past year along with the increase in local tourism. Besides, among the positive contribution of tourism, 37 participants mentioned the opportunity for their children to learn and practice English that will help them get better jobs in the future. Additionally, some stated the possibility to learn more about foreign cultures as being another positive aspect of tourism.

However, although the great majority of people chose the “positive” answer when asked about their feeling about tourism, we nevertheless decided to ask them about potential negative aspect of tourism. To avoid people being shy or too polite to express their feeling, we introduced the question by making jokes about recent tourists brought by Sihanoukville “Island Tour” operators, seen walking around the village wearing inappropriate clothing. Many comments and issues were actually raised during the discussion; the results show that:

- 54,1% of the interviewees felt that many tourists brought by mainland-based operators present a lack of cultural knowledge and do not respect Khmer culture, mentioning situations when visitors would walk through the village only wearing bikinis or taking pictures of community members without asking permission first.
- As such, 35,1% of the surveyed people found tourism generally influencing Khmer culture in a negative way.
- Others (5,4%) express the fact that the income generated through tourism was not shared fairly between community members.
- 4 people stated that the increase of tourism disturbed the tranquility of the village at night time by being too noisy.



When asked about the possibility to establish a “Code of Conduct” (e.g. *Figure 19*) in the form of a poster that would be displayed at strategic locations in the village, all members agreed and were all willing to participate in the development of such a code.

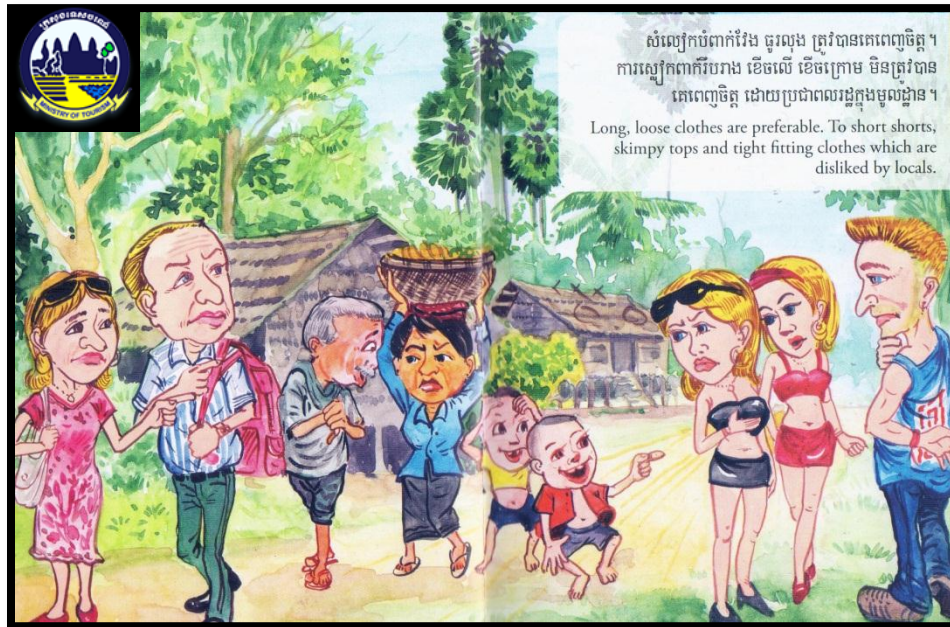


Figure 19 – Example of « Code of Conduct » distributed by the Ministry of Tourism of Cambodia

Responsible businesses, contributing to community development by insuring that a part of their revenue generated through the use of the CFI infrastructure (pier, freshwater supply, etc.) and CFA natural resources (snorkeling, diving, recreational fishing, etc.), would encourage and allow further achievements from the Community in term of marine conservation, fisheries management and ecotourism development. MCC’s model of sustainable ecotourim shows how responsible businesses can directly contribute to environmental protected and community development through incomes generated by marine ecotourism. Besides hiring 20 percent of community members, MCC itself provide village cleaners, marine patrols, healthcare (clinic) and English schooling, all funded by tourism.



## Conclusion

Koh Rong Samloem Community Fishery, compared to other villages in the area, appears fairly involved in Community-Based Fisheries Management, trying to reduce the pressure on fisheries stocks by promoting alternative sources of income through ecotourism. Since 2008 and despite numerous challenges, the Community successfully achieved several objectives:

- To give up on unsustainable and destructive fishing techniques such as crab nets: only traps and lines are now used by fishermen from the community.
- To create a no-take / replenishing area “House Reef” in agreement with all fishermen from the CFi, reserved for marine research with hope to create a spill-over effect to the other areas. Monitoring has started showing the effectiveness of protection with an increase in biodiversity and fish sizes.
- To create a 300 meter no-fishing buffer around the small island of Koh Kon to protect the reef habitat and allow the replenishing of fisheries stock.
- To protect the main seahorse breeding ground; seahorse have seen to be increasing over the past months while their fragile habitat is slowly regenerating from years of intense illegal trawling.
- Protecting the Community Fishing Area from illegal large-scale fishing and foreign poaching: Community Fishery patrols can now go through a whole month with only a few illegal incidents to deal with. Currently, the major issue is the illegal night time activities which are much more difficult to deal with due to safety concerns.
- To enhance Capacity Building with CFi representatives regularly attending FiA and RFLP/FAO trainings and seminars; local CFi members being trained in scuba diving and underwater monitoring through partnership with MCC; children and teenagers following daily English lessons to improve their communication skills, anticipating an increase in visitor volumes in the near future.



- To develop a Community Fishing Area Management Plan through a participatory process supported by the FiA and the RFLP/FAO, aiming at improving resource management and community development.

With much experience in managing their own fisheries resource made possible by a long-term collaboration with the FiA, local authorities and partner organization MCC, Koh Rong Samloem CFi would without any doubt be a major asset in a future Marine Fisheries Management Area co-management process.



## Annex 1 - Questionnaire conducted in Koh Rong Samloem Community Fishery

### PART 1 – SOCIO-ECONOMICS & DEMOGRAPHICS

H1. Family Name: \_\_\_\_\_

H2. When did you arrive in the village? \_\_\_\_\_

H2.1 From where? \_\_\_\_\_

\* read (r) and / or write (w)

Member	Age	Gender	Ethnicity	Religion	Language	Education*	Occupation

H2.2 Why? \_\_\_\_\_

H3. How many family members do you have? \_\_\_\_\_

H4. Household income sources:

Occupation	Primary	Secondary	Tertiary	Market Orientation*

\* for household consumption, local, national or international market

H5. Were you a fisherman in the past?  Yes  No

H5.1 If yes, when and why did you stop? \_\_\_\_\_

### PART 2 – FISHING PRACTICES

F1. What kind of boat do you have and how many?

No Boat     Long-tail boat X \_\_\_\_\_     Paddle-boat X \_\_\_\_\_

Other \_\_\_\_\_





F1.1 If you have a long-tail boat: size (in *horsepower*) and number of engines? \_\_\_\_\_

F1.2 Are you:  Captain  Crew

F1.2.1 If you are crew member, do you also sometimes go fishing for your own consumption:

Yes  No

F2. Do your kids or other members of your family (wife) go fishing ?

Yes  No

F2.2 If Yes, how many kids/member of family: \_\_\_\_\_

F2. What types of fishing gear do you use, how many do you have and for which targeted species?

Fishing gear	Number	Targeted species*

\* fish, squid, crabs or others

F3. What is your main targeted species?

crab  squid  fish  other \_\_\_\_\_

F4. How many days per week do you go fishing (average)?

1 to 3 days  3 to 5 days  5 to 7 days

F5. How much time (average) do you spend on what kind of boat on one normal fishing day?

Type of boat	Time (hours)	Type of gear	Targeted species
Long-tail			
Paddle-boat			
Other _____			
No boat			

F6. Have you noticed a difference in the quantities of your catches, between now and when



you first arrived in the area? Average quantities of catch:

- have increased       are the same as before       have decreased

F6.1 If you think the catch quantities are now lower than in the past, what do you think are the potential reasons for this decrease in catch rates?

---

F7. Have you noticed a difference in the quantities of your catches since the creation of the Protected Community Fishing Area? Average quantities of catch are now:

- increasing       equal       decreasing

F7.1 If you think the catch quantities are now increasing, what do you think are the potential reasons for this increase in catch rates?

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F8. What are the main threats and issues you perceived and/or witness in the area that are affecting the sustainable management of fisheries resources?

→ 5 answers maximum

- Illegal inshore trawling
- Foreign illegal fishing and poaching (e.g.: Vietnamese air-supplied fishing)
- Destructive fishing techniques: bottom gillnets (e.g.: crab nets)
- Anchoring on the reef
- Conflicts between professional and recreational fishing
- Conflicts between destructive and sustainable fishing techniques (e.g. traditional traps V.S. trawling, lost of equipment, etc.)
- Pollution (waste/garbage thrown at sea)



- Lack of law enforcement
- Lack of human resources/equipment to improve law enforcement

### Tourism

T1. What is your feeling about tourism increase in the Community Fishing Area?

- positive
- positive and negative
- negative

T1.1 If your answer is *positive* or *positive and negative*, what are the positive aspects of tourism increase?

- Increase in incomes
- Increase in job opportunities
- Possibility to learn/improve English
- Possibility to learn about foreign culture
- Other \_\_\_\_\_

T1.2 If your answer is *positive and negative* or *negative* what are the negative aspects of tourism increase?

- Negative cultural influence
- Lack of cultural knowledge and respect (e.g. tourists not asking before taking photos; tourists walking through the village wearing bikinis, etc.)
- Too much noise/loud people at night time
- Increase in incomes not being shared fairly (only benefit to some people)
- Other \_\_\_\_\_



T1.2 If your answer is *positive and negative* or *negative*, would you be in favor of the creation of a *Code of Conducts* for visitors (e.g. : 10 rules and information on how to behave that would be given to visitors at their arrival)?

Yes       No

T1.2.1 If yes, would you like to participate in creating it?

Yes       No

T1.2.1 If *no*, why?

It would have bad impact on tourism (decrease)

It would not change anything

Other \_\_\_\_\_



## Annex 2 - Targeted species and most common catches in KRS CFI

### Squid and Octopus



Big fin reef squid *Sepiotheuthis lessoniana* - Indian squid *Urotheuthis duvaucelii*



*Loligo sp.* - *Octopus sp.*

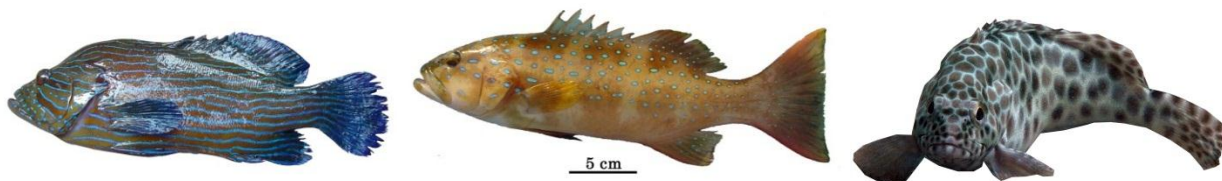
### Crab



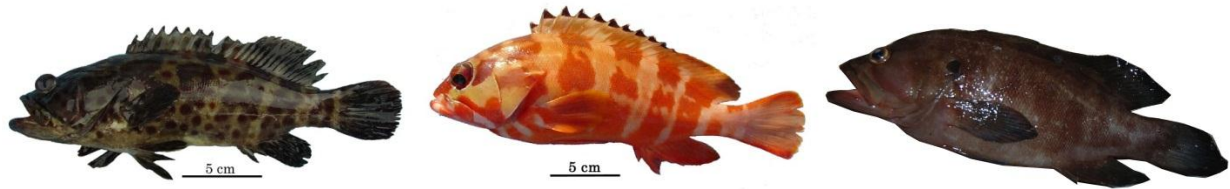
Blue Swimmer Crab *Portunus pelagicus*

### Fish

#### Groupers



Bluelined grouper *Cephalopholis Formosa* – Highfin coral grouper *Plectropomus oligocanthus* – Honeycomb Grouper *Epinephelus merra*



Orangespotted grouper *Epinephelus coioides* - Blacktip grouper *Epinephelus fasciatus* - Chocolate grouper *Cephalopholis boenack*



Areolate grouper *Epinephelus areolatus* – Duskytail grouper *Epinephelus bleekeri* – Sixbar grouper *Epinephelus sexfasciatus*

### Snappers



Russel's Snapper *Lutjanus russelli* - Brownstripe snapper *Lutjanus vitta* - John's snapper *Lutjanus johnii*



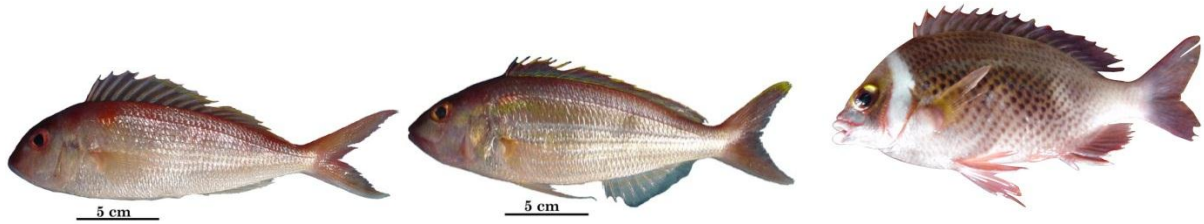
Red snapper

### Sweetlips



Yellowdot sweetlips *Diagramma pictum* – Harry hotlips *Plectorhinchus gibbosus* – Harlequin sweetlips *Plectorhinchus chaetodonoides*

Others



Forktail threadfin bream *Nemipterus furcosus* - Teardrop threadfin bream *Nemipterus isacanthus* - Whitecheek monocle bream *Scolopsis vosmeri*



Rainbow Monocle Bream *Scolopsis monogramma* - Yellowscale parrotfish *Scarus ghobban* - Quoy's parrotfish *Scarus quoyi*



Pinkear emperor *Lenthrinus Lentjan* - Goldenspotted spinefoot *Siganus guttatus* - Silver spinefoot *Siganus argenteus*



Doublebarred spinefoot *Siganus virgatus*



Paradise whiptail *Pentapodus paradiseus*