

# Koh Toch Community - Koh Rong, Preah Sihanouk Province

## Socio-Demographic Survey



For Fisheries Administration: Fisheries Conservation Department  
July 2011



Photo 1 – “Bungalow/Tourist area”, Koh Toch



Report By:

Marine Skopal – MA Integrated Coastal Management (ICM) – ICM Project Manager, MCC

## Acknowledgements

Thanks are due to a great many people for helping to make the project a success. Of prime importance in the establishment and continued work carried out are the Fisheries Administration of Cambodia in Phnom Penh and in Kampong Som for their support and Koh Rong Samloem Community Fishery (“Village 23”) who has provided the project with a home.

<b>H.E. Mr. Nao Thuok</b>	Director General of the Fisheries Administration
<b>Ms. Kaing Khim</b>	Deputy Director Fisheries Administration
<b>Mr. Ouk Vibol</b>	Director of Fisheries Conservation Division
<b>Mr. Prak Visal</b>	Project Coordinator of Integrated Coastal Management (ICM) – Provincial Hall of Preah Sihanouk Province
<b>Miss. Nay Sally</b>	Project Management Office (PMO) staff – Sihanoukville ICM Program – Provincial Hall of Preah Sihanouk Province
<b>Mr. Thay Somony</b>	National Project Coordinator of Regional Fisheries Livelihoods Program (RFLP), FAO
<b>Mr. Yos Chanthana</b>	Consultant for Fisheries Co-Management, RFLP/FAO
<b>Mr. Nen Chamreun</b>	Deputy Director of Community Fisheries Department, FiA
<b>Mr. Daich Sokhom</b>	Koh Rong Sangkat Chief
<b>Mr. Lay Thay</b>	Koh Rong Samloem Community Chief

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

**All Marine Conservation Cambodia Staff and Volunteers**



## 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.

## Survey Team

**Srey Roat & Vishna**

Koh Rong Samloem CFi students

**Marine Skopal**

MCC

**Julia Herbolsheimer**

MCC

Marine Conservation Cambodia  
Koh Rong Samloem Village, Koh Rong Samloem  
Mittapheap District, Sihanoukville  
CAMBODIA  
[maskop@marineconservationcambodia.org](mailto:maskop@marineconservationcambodia.org)



## Table of Contents

Acknowledgements .....	3
Abstract .....	4
Table of Figures .....	7
Illustrations.....	7
List of Abbreviations.....	8
Introduction.....	9
I. Site description: Koh Rong Island .....	11
II. Goals and objectives of the assessment .....	13
III. Indicators Selected .....	14
IV. Methodology .....	15
a. Interview with the Head of Community.....	16
b. Household survey .....	16
c. Observations.....	16
V. Results .....	17
a. Community Demographics .....	17
1. Age and gender .....	17
2. Migration, Ethnicity and Religion .....	18
3. Education.....	20
4. Occupations / Activities / Sources of income.....	21
b. Community Infrastructures .....	22
1. Overview.....	22
2. Transportation.....	23
3. Authorities.....	23
4. Tourism sites .....	24



5. Network coverage and electricity .....	24
6. Waste Management.....	25
c. Fishing.....	25
1. Generalities .....	25
2. Fishing with long-tail boats .....	26
3. Fishing with paddle-boats .....	28
4. Perception of fisheries resource conditions.....	28
d. Threats and Issues to marine resources & perceived resource-use conflicts.....	29
e. Tourism development and related issues .....	31
Conclusion .....	34
Annex - Questionnaire conducted in Koh Toch.....	34



## Table of Figures

Figure 1 - Coastal Cambodia: close-up on Koh Rong and Koh Rong Samloem .....	11
Figure 2 - Location of the four villages currently established on Koh Rong.....	12
Figure 3 : map of the Community Fishing Area, courtesy of FiA.....	13
Figure 4 – Gender Composition in Koh Toch.....	17
Figure 5 - Age Composition in Koh Toch Community.....	18
Figure 6 - Proportion of arrivals to Koh Toch per year, from 1990 to 2010.....	19
Figure 7 – Origin of Koh Toch Community members (hometown) .....	19
Figure 8 - Literacy rate within Koh Toch Community.....	20
Figure 9 – Occupations and activities within Koh Toch.....	22
Figure 10 - Paradise Bungalows advertising.....	24
Figure 11 – Fishing gears used by long-tail boats in Koh Toch community.....	27
Figure 12 - Main species caught by fishermen from Koh Toch .....	28
Figure 14 – Perception of fisheries resource evolution due to the creation of the CFA.....	29
Figure 15 - Main threats and issues perceived and/or witnessed in the area .....	30
Figure 16 - « Monkey Island » is a branch of « Monkey Republic », a famous backpacker guesthouse and bar on Beach Road, Sihanoukville .....	32
Figure 17 - Tree Bungalows advertising .....	33

## Illustrations

Photo 1 – “Bungalow/Tourist area”, Koh Toch .....	2
Photo 2 and Photo 3 - Type of housing observed in Koh Toch .....	22
Photo 4 and Photo 5- Main, secondary and third pier in Koh Toch .....	23
Photo 6 – The issue of waste-management is commonly found in many coastal communities.....	25
Photo 7 – Crab net boat, KRS area .....	26
Photo 8 and Photo 9 – Crab net by-catch: pencil urchins and endangered seahorses. KRS 2011.....	27
Photo 10 – Overview of community and tourism infrastructures, Koh Toch 2011. ....	31
Photo 11 – Monkey Island bungalow .....	32
Photo 12 – Tree Bungalow facilities .....	33

*Photo Credits: MCC Team*



## 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 Toch Community will be the subject of this report.



## I. Site description: Koh Rong Island

“The island of Koh Rong (*Figure 1*) is located offshore about 34 Km from and northwest of the mainland of Sihanoukville port. It lies between the coordinates of UTM 1178 to 1192 N, and 3028 to 3165”, located between the islands of Koh Rong Samloem (toward the south) and Koh Ta Team and Koh Mneas (to the north). Koh Rong is the second largest island in Cambodia after the island of Koh Kong (Koh Kong province), covering 78 km<sup>2</sup> of “undulating topography with its highest peak at 133 meters (m), 28 beaches ranging from 30m to 6km in length and seven with shallow waters”<sup>1</sup>. “Koh Rong has three subordinated small islets locally known as Koh Oun, Koh Bang and Koh Daung.”<sup>2</sup>”

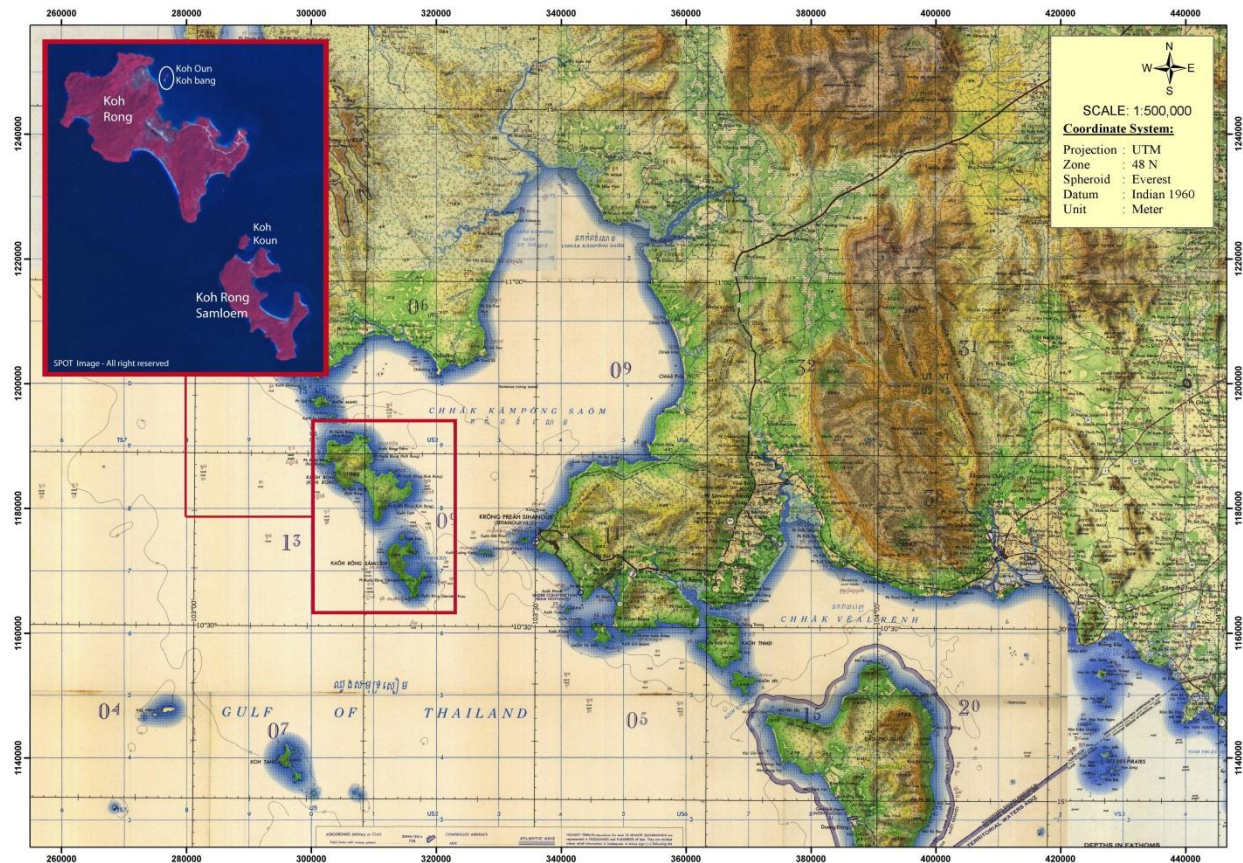


Figure 1 - Coastal Cambodia: close-up on Koh Rong and Koh Rong Samloem

<sup>1</sup> Koh Rong Island – Millennium Group - [www.millenniumgroup.net](http://www.millenniumgroup.net)

<sup>2</sup> S. Sophat, H. Sereivathanak Reasey. *Socio-economic Monitoring of Coral Reef in Koh Rong Island, Preah Sihanouk Province, Cambodia*. FACT April 2010

Koh Rong hosts four villages: Koh Toch, Daem Thkov, Prek Svay and Sok San, but only the former three were legally registered with the Ministry of Interior. Daem Thkov is located east of the island, Koh Toch on the south, and Prek Svay on the northeast end (*Figure 2*). “Koh Rong is currently a wilderness and will be completely master planned. [...] Millennium Group and its Cambodian partner, Royal Group (together the “Master Developer”) intend to develop the island into a luxury resort destination; it has now been divided into 33 lots for development consisting of a gross usable land area of 5,103 hectares leaving 2,790 as virgin rainforest”<sup>3</sup>.



Figure 2 - Location of the four villages currently established on Koh Rong

Koh Toch Community is located within Koh Rong Samloem Community Fishing Area (CFA) that surrounds the islands of Koh Rong Samloem, Koh Koun, and stretches to the southern shores of Koh Rong (*Figure 2*). Details on surrounding marine ecosystems can be viewed in Koh Rong Samloem and Koh Koun Marine Environmental Assessment<sup>4</sup>.

According the Head of Community, Koh Toch hosts 81 households. Statistically based on factor 2,53 after processing the data, the total number should approach 339 people.

<sup>3</sup> Koh Rong Island – Millennium Group - [www.millenniumgroup.net](http://www.millenniumgroup.net)

<sup>4</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 May 2011.

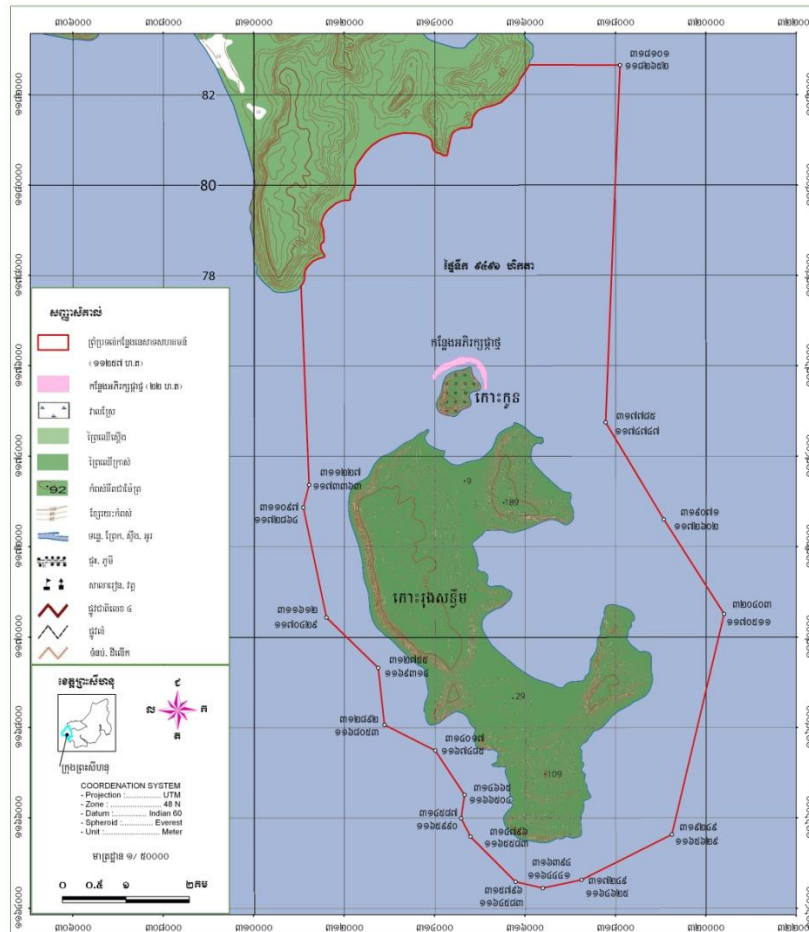


Figure 3 : map of the Community Fishing Area, courtesy of FiA

## 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 Toch Community. 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 and Koh Rong Samloem. Discussion topics on people's feeling towards changes carried by recent and rapid increase in local tourism were brought up when possible.

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 was divided into two 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
<i>Demographics</i>	<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>
<i>Fishing Practices</i>	<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>
<i>Perceived issues and threats</i>	<ul style="list-style-type: none"> <li>• <i>Perceived main threats to fisheries resources and related activities</i></li> </ul>
<i>Livelihood/Lifestyle</i>	<ul style="list-style-type: none"> <li>• <i>Type of building / material used</i></li> </ul>
<i>Tourism</i>	<ul style="list-style-type: none"> <li>• <i>Open discussion on people's feelings about local tourism</i></li> </ul>

Table 1 - Summary of selected indicators

## IV. Methodology

The survey was conducted in April 2011, over two return trips to Koh Rong. Two students from Koh Rong Samloem CFI, already trained on-site in their own community, were assigned to conduct the survey. The methodology was quite simple: going from house to house with a short but precise questionnaire. The questionnaire itself was slightly modified and improved compared to the one conducted in Koh Rong Samloem CFI, taking into account the difficulties encountered at the time.



### **a. Interview with the Head of Community**

Meeting with the Head of Community allowed gaining general knowledge of the Community, such as the total number of households, types of activities and main issues related to natural resource management, especially fisheries resource management and tourism increase.

### **b. Household survey**

Household surveys were conducted during two days in the community. The two-part questionnaire (*see Annex*) 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.

As we were said that tourism development was a sensitive issue in Koh Toch, we decided not to include proper questions within the survey but rather to engage the discussion in a more natural way. Thus, we recorded comments and quotes rather than predefined answers.

Because the community was relatively homogeneous in term of occupations, no special sampling method was used. The amount of surveyed households represents more than one third of the total number of households which makes the data set usable and reliable, following statistics rules.

### **c. Observations**

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 two young interviewers from Koh Rong Samloem CFI were familiar with the site 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

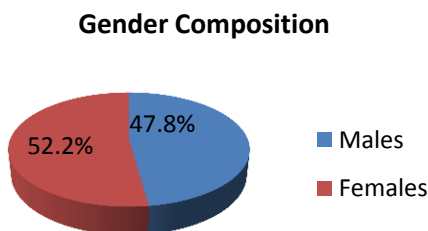
*Note: Although overall we got intended results, some answers/translations were confusing. As such, we decided not to treat the results that we know were going to be biased.*

### a. Community Demographics

#### 1. Age and gender

32 out of 81 households were surveyed, that is to say 39,5% (more than one third) of the total number of households. Thus, statistically, estimated numbers based on factor 2, 53 are the followings:

- Total number of inhabitants: 339
- 52,2 percent are females
- 47,8 percent are males (*Figure 4*)
- Average household size: between 4 and 5 persons



**Figure 4 – Gender Composition in Koh Toch**

By computing the percentage of population based on the distinct age groups, it was estimated that (*Figure 5*):

- 38,8 percent of the population was in the 0-18 age group.
- 26,1 percent were between 18 and 30 years old.



- 26,9 percent were between 31 and 50.
- 8,2 percent were over 50
- The average age is therefore 25 years old; the oldest recorded person was a 66 year old woman.

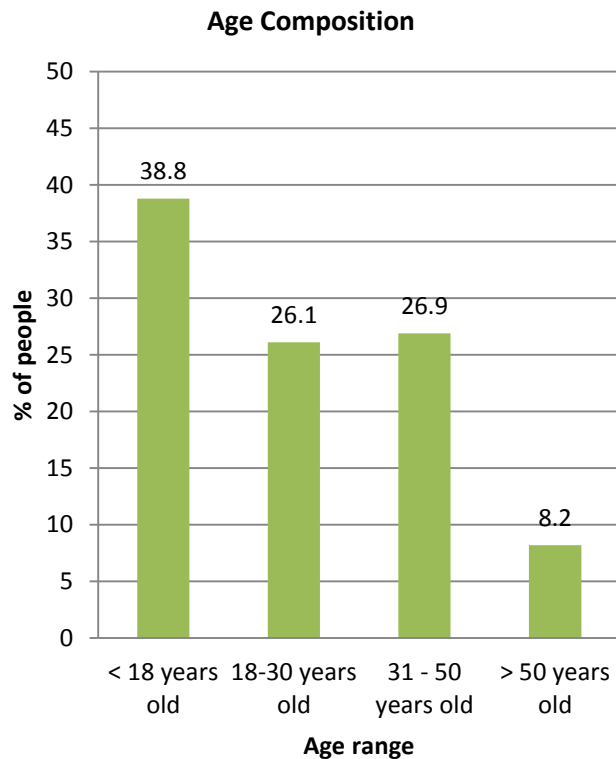


Figure 5 - Age Composition in Koh Toch Community

## 2. Migration, Ethnicity and Religion

### *Year of arrival*

In the recorded sample, the first family immigrated to Koh Toch in 1990. Most families followed throughout the 90's with three main peaks of arrivals in 1993, 1995 and 1999. The first decade of 2000 is illustrated by regular arrivals; the increase in tourism will most likely draw further people to the island, with community members' relatives coming back to the family house attracted by tourism-related job opportunities.



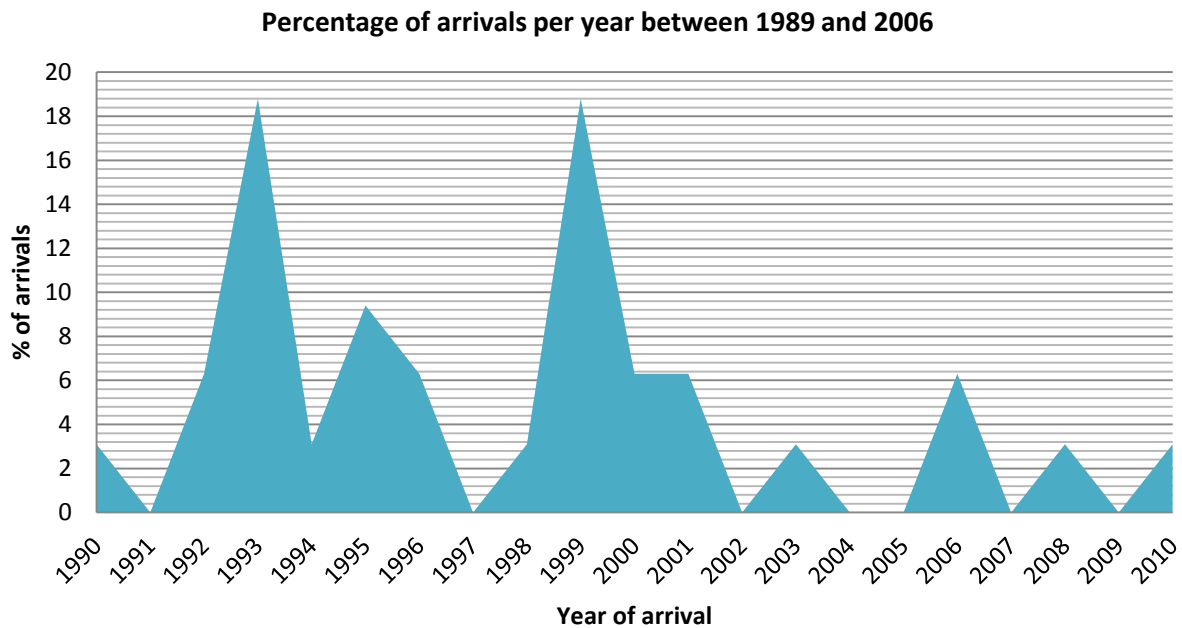


Figure 6 - Proportion of arrivals to Koh Toch per year, from 1990 (first settlement) to 2010 (latest arrival)

Most people were found to be from Preah Sihanouk and Kampot provinces (44 and 37%, respectively - *Figure 7*). Prey Veng ranks 3<sup>rd</sup>, while the other provinces are represented by only small minorities of people. One person recorded being of Vietnamese origins.

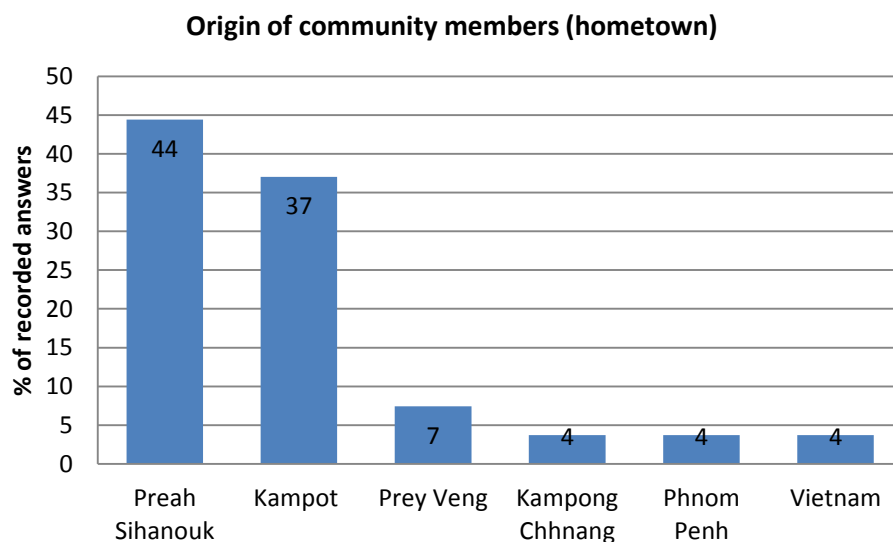


Figure 7 – Origin of Koh Toch Community members (hometown)



When asked about the reason why they moved to the island, participants' responses were all related to livelihood opportunities: "to make a living", "to make more profit", "to find a better job", etc.

Relating to ethnicity and religion, the results show that:

- 100 percent of the population is Khmer.
- Buddhism encompasses 100 percent of the community.
- Khmer is obviously the main language as it is also represented by 100 percent of the community members.

However, the presence of other ethnicities such as Cham (Muslim) or Vietnamese and other religions (e.g.: Islam), although most likely representing a very low percentage of the population, shall not be excluded even though it was not recorded within the sample.

### 3. Education

Koh Toch Community has a Khmer school. However, several persons raised the issue of the teachers' absenteeism and the difficulty to find teachers from Kampong Som willing to move to the island: "*the teacher comes for three days, leave for ten days, then comes back for another few days, etc.*" The average time spent in school is 5 years. Regarding literacy, the results (Figure 8) show that:

- 49,6 percent of the community members are literate.
- 47,3 percent are illiterate.
- 3,1 percent can only read.

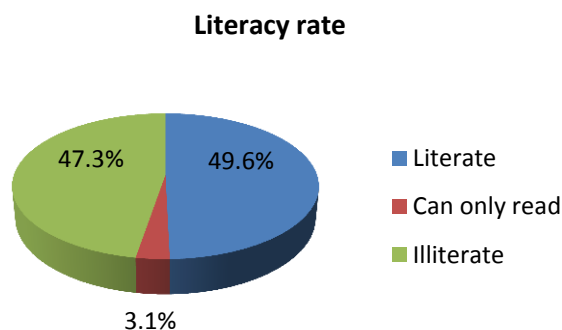


Figure 8 - Literacy rate within Koh Toch Community



With almost 40 percent of the population under 18 year olds, about 65 percent under 30 years old, Koh Toch faces a relatively low literacy rate and a lack of educational infrastructure and resources. This will constitutes a serious challenge for the community as increasing tourism will require local people to be educated and train in order to benefit from employment opportunities.

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

Despite an increase in local tourism flow with new tourism operators setting facilities (bungalows) next to the village, the main sources of income do not come from tourism but from the exploitation of natural resources. The results (*Figure 9*) show that:

- 35 percent of people are fishermen, thus showing a significant dependence of the community upon the availability of fisheries resources.
- 24 percent of the activities are related to commerce: bars, family shops, food sellers. It seems that tourism is not so much related to this relatively high percentage: according to some testimonies, visitors rarely spend time or money in the village as tourism operators warn them about food hygiene issues. There is no public market on the island: sale and purchase take place at family shops.
- Grass cutting (for roofing) seems to be a popular activity as it involves 17 percent of the population.
- Tourism-related activities rank at the 4<sup>th</sup> position with 12 percent of the population. Activities include working in restaurants/bungalows and boat driver.
- Other minor activities recorded in the sample included policeman, tailor, woodcutter and monk/teacher.



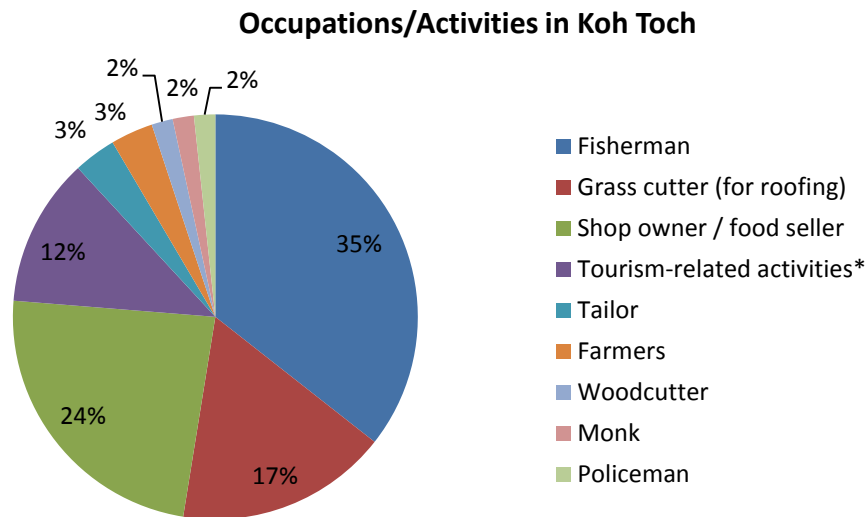


Figure 9 – Occupations and activities within Koh Toch

## b. Community Infrastructures

### 1. Overview

Wood is the most common material being used for construction of structural walls, flooring, and village facilities (piers). Yet, spare pieces of tin, thatch and tree bark were also found to be used by a significant number of households (*Photos 2 and 3*). Tin roof are the most popular for roofing while some houses use grass.



Photo 2 and Photo 3 - Type of housing observed in Koh Toch

Because the island has so far not been developed, there is no heavy infrastructure. After the island was leased to private development companies, touristic infrastructures, including road network, have been started and will be completed over the next years, thus benefiting local communities. As for now, boat is the main means of transportation although a few motorbikes are now using the dirt road starting at Daem Thkov Community Fishery.

## 2. Transportation

Koh Toch has one main pier used to unload fisheries products and commodities brought from Sihanoukville as well as tourists visiting the island and where the Dive Shop Cambodia facilities are located (*Photo 4*). A secondary pier next to the main seems to be mainly used by fishing boats. Another pier is located on the main beach next to the village yet does not seem to be much used (*Photo 5*).



Photo 4 and Photo 5- Main, secondary and third pier in Koh Toch

## 3. Authorities

Local authority offices such as the Sangkat office and the Sangkat Police office are located in Daem Thkov Community Fishery (Koh Rong, *Figure 2*).

#### 4. Tourism sites

Flows of tourists have been observed during the time of the survey, being loaded and unloaded from the main pier. If we look at the advertising for Koh Rong in Sihanoukville (*Figure 10*), tourists are most likely first attracted by the pristine beaches and jungle that have not yet been altered by development.



Figure 10 - Paradise Bungalows advertising

Diving seems to be the second major attraction: with an operator from Sihanoukville based on the main pier, diving trips are organized, yet mainly occurring within Koh Rong Samloem Community Fishing Area (CFA) where the dive sites have been protected by Koh Rong Samloem CFI since 2009.

Visitors were very rarely seen within the village and were found either staying in the dive center's facilities or in the "bungalow area". Local tourism development will be discussed later on in this document.

#### 5. Network coverage and electricity

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





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.

## 6. Waste Management

Koh Toch does not benefit from waste-management program. A few garbage been have been observed dispatched in the village but there was no mention of “village cleaners” or “recyclers”. Solid waste is found piling up in random wild dumping sites close-by (*Photo 6*).



Photo 6 – The issue of waste-management is commonly found in many coastal communities.

## c. Fishing

### 1. Generalities

As it has already been mentioned earlier (*Figure 8*), 35 percent of the community members are fishermen:

- 20 households (76,7%) recorded having at least one member involved in fishing.
- Fishermen have a mean age of 34 ½ years old. The youngest recorded was 21 while the oldest was 52.
- 6 persons (18,75%) said they used to be fisherman in the past. Among them:

- 4 (66,7%) gave up because of the decrease in the quantities caught and the difficulty to make enough profit.
  - 2 persons gave because of their advanced age (33,3%).
- 18 persons (90%) work on long-tail boats.
- 2 households had paddle-boats, with one having 3. Thus, long-tails are most commonly used as no other type of motorized boats was recorded.
- Lines and crab nets are the dominant fishing gears; no traps have been recorded within the sample.

## 2. Fishing with long-tail boats

Long-tails were the only type of motorized boat recorded, although some trawlers were seen moored at the pier but most likely coming from Kampong Som. Among the 18 persons recorded as working on long-tail boats:

- 7 persons were captains/owners of the boat.
- 11 were crew members.
- The average power was 17,5 HP (average of all fishermen who answered as “owner” or “captain” because crew members might work on the same boat, which would create a biased average).

### ***Fishing gears***

Crab nets (*Photo 7*) constitute the dominant fishing gear in Koh Toch Community (79% of recorded answers, *Figure 11*). Crab nets are bottom-weighted nets that can be several kilometer long. They have a significant destructive impact on the ecosystem as they collect not only crabs, but also corals, undersized fish and endangered species such as seahorses (*Photos 8 and 9*).



Photo 7 – Crab net boat, KRS area



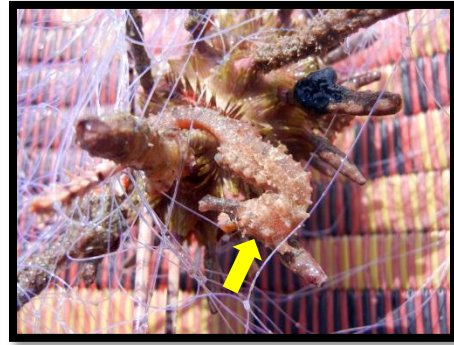


Photo 8 and Photo 9 – Crab net by-catch: pencil urchins and endangered seahorses. KRS 2011

Ghost nets (nets that have been lost accidentally, deliberately discarded, or simply abandoned at sea) constitute a real threat to marine life as they move according to the currents and tides, continually fishing indiscriminately, not only catching threatened species but undersized and protected fish as well.

In Koh Toch, the length of the nets was recorded to vary between 1 and 4 kilometers, with a mesh size of 10 cm. The nets are thrown and stay in the water for 1 to 3 days average.

#### Fishing gears used by long-tail boats

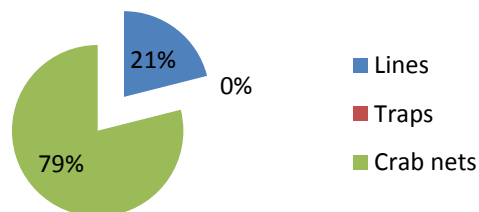


Figure 11 – Fishing gears used by long-tail boats in Koh Toch community

Squid lines rank second, while there was no trap recorded within the sample. However, as a few fish traps were observed around some houses in the village, we could deduce that a slight minority of fishers use traps. One person mentioned using bottom long line to catch sting rays.

The main species caught (*Figure 12*) are obviously crab (blue swimmer crab) at 79%, followed by squid (16%), and fish (5%, a significant number of boats also frequently uses fish lines to complete their catches or for family consumption).

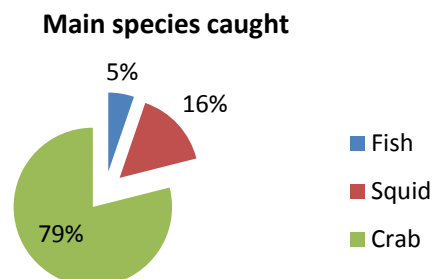


Figure 12 - Main species caught by fishermen from Koh Toch

### 3. Fishing with paddle-boats

Fishing with paddle-boats seems well less developed than in the neighboring community of Koh Rong Samloem. Only three boats were recorded within the sample, two belonging to the same family. All three boats were fishing for squid with lines and an average of 8 lures.

### 4. Perception of fisheries resource conditions

The average crab catch per fishing trip is 15, 6 kg. However, as some of the interviewees might work on the same boat as crew member, the average quantity caught could be biased. All mentioned that the catch had decreased compared to the time when they settled on the island.

Furthermore, we asked the person to compare the quantity caught between the first time the person started fishing in the area and the introduction of the Community Fishing Area -CFA-. The results (*Figure 13*) show that:

- Half of the people did not give any answer.
- 41 percent said the catches were less than before.
- Only 9 percent said the catches had increased.

These results could be explained by the fact that most people fishing with crab nets, a destructive technique banned within the conservation areas of the CFA, now have to go fishing outside the CFA borders. While the CFA is now fairly well protected against large-scale fishing, especially illegal inshore



trawling, fishers crab netting outside the area still suffer from conflict with large-scale fishing boat that most likely results in catch decrease.

**If you go fishing within Koh Rong Samloem Community Fishing Area: Do you think that because of the CFAa, there are more fish/crabs/squid than before?**



**Figure 13 – Perception of fisheries resource evolution due to the creation of the CFA**

The 9 percent of interviewed people would most likely be squid fishers who now, along with a dramatic drop in illegal and destructive fishing activities, start witnessing an increase of the squid catch within the CFA. Further studies and monitoring should be carried out among local fishermen from Koh Toch in order to verify these correlations.

#### **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 14*). Seven predefined answers were presented. The results show that:

- Destructive fishing techniques and foreign illegal fishing and poaching (e.g.: Vietnamese boats) both totalize 35 % of the answers (15% and 20%, respectively).



- Anchoring on the coral, explained to the interviewee as “destroying the habitat where the fish can reproduce”, was mentioned at 19 %.
- Conflicts between small fishing boats and big fishing boats (e.g.: traps are broken or destroyed by bigger fishing boats with big fishing gears) was equally cited by 19% of the person interviewed.
- The Fisheries Law is not well enforced / the police does not control often enough Resource-use ranked at the 4<sup>th</sup> position with 11 % of the answers.
- Pollution (e.g.: garbage thrown at sea, dirty water...) was mentioned at 9%.
- Finally, conflicts between fishing boats and tourist boats were cited in 7% of the recorded answers.

**What do you think are the main issues that affect fisheries resource/fishing in the area?**

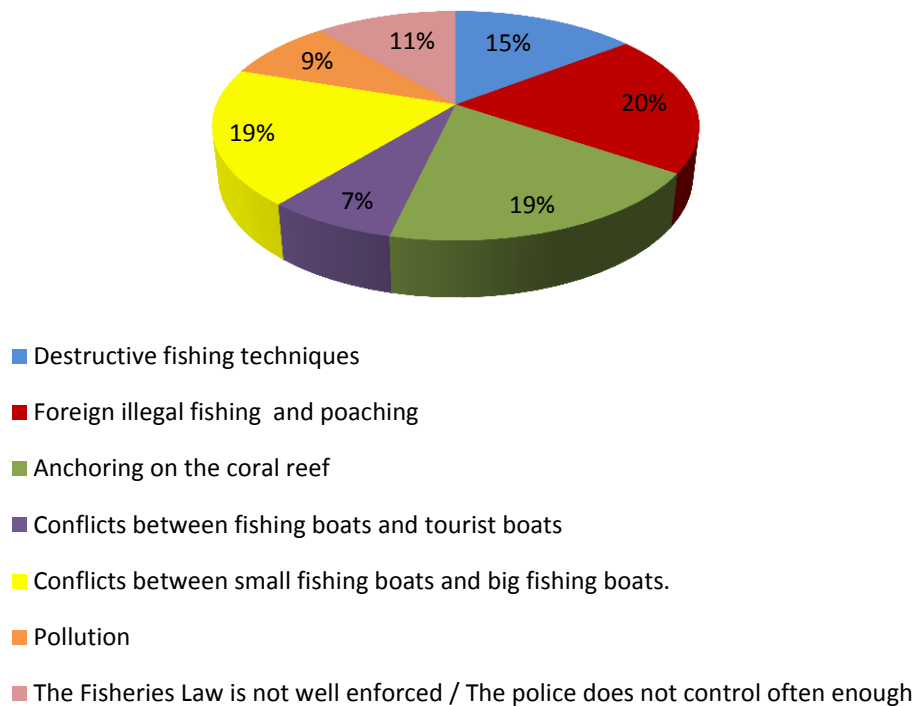


Figure 14 - Main threats and issues perceived and/or witnessed in the area





Besides, we found interesting to ask who, in case of conflict, the person would refer to. Open answers were recorded and it was found that most conflicts involving big against small fishing were dealt with by the Sangkat, less frequently by the Community Chief.

#### e. Tourism development and related issues

Koh Toch seems to receive a significant flow of tourists and counts at least 5 tourist operators: a Sihanoukville-based dive center, located on the main pier; at least three bungalow companies (Monkey Island, Paradise Bungalows and Tree Bungalows, *Figures 15 & 16, Photos 11 & 12*), as well as a few smaller businesses such as Rudy Guesthouse. All these businesses are located next to the village, in an area which we could call “bungalow” or “tourist area” where the only locals present are those working for the companies (*Photo 10*). While our team was there, fairly large groups of tourists from Sihanoukville were seen being loaded and unloaded on the pier.



Photo 10 – Overview of community and tourism infrastructures, Koh Toch 2011.

According to the heads of the Community, tourism operators urge their customers not to eat in the village due to hygiene reasons. As a result, visitors sleep, eat and drink at the bungalows while only a handful of them wander in the village, most of them making a stop to buy cold drinks at the first family shop located at the end of the main pier but rarely going further.



Figure 15 - « Monkey Island » is a branch of « Monkey Republic », a famous backpacker guesthouse and bar on Beach Road, Sihanoukville; Photo 11 – Monkey Island bungalow

Topics relating to tourism development were brought up after finishing the questionnaire. Open answers and comments were recorded afterwards so the participants would feel more comfortable in expressing themselves.

After discussions with several families, perceptions of tourism are first positive: more jobs opportunities, more money. However, no one among the interviewees had even a slight idea neither on how much profit the companies make from tourism, nor on how much of that profit was put back into the community. As an example, according to an ex-employee, the biggest dive centers used to make around 100,000 of net profit per year, four years ago, and this has without any doubt increased since then. As for now, the community does not really seem to benefit from the revenues generated through tourism and no one knows if a part of the benefit made by tourism companies is being put back into education, health care or simply waste-management.





Figure 16 - Tree Bungalows advertising

Photo 12 – Tree Bungalow facilities

Regarding to cultural impact, we tried to introduce the topic with a comic tone by asking if people were bothered by visitors (including the rare ones walking through the village) wandering around wearing bikinis, which is of course culturally inappropriate, not to say very shocking, for local people. Making jokes at first, people would then become very serious and expressed deep concerns regarding the impact of western culture on their own, especially on the youth. Inappropriate sexual behaviors on the beach were often mentioned along with the fear of local teenagers wanting to “copy the visitors”. A woman told us: *“I don’t want my daughter to work at the bungalows because I am scared”*. Another study conducted in Daem Thkov community recorded comments such as *“we want tourism same as Koh Rong Samloem; in Koh Toch they have too many problems now”*.

Thus, after such comments, it seems that tourism development in Koh Toch lacks of proper management, integration and participation to the improvement of local livelihoods. As such, we can already start feeling a resentment towards the visitors from the villagers who, so far, have not witnessed any fair share of the profits generated through tourism.

Responsible businesses, contributing to community development by insuring that a part of their revenue generated through the use of the community’s infrastructures (pier, freshwater supply, etc.) and natural

resources (jungle trekking, snorkeling, diving, recreational fishing, etc.), would allow community members to see the benefits of tourism and encourage them to direct their activities towards sustainable tourism including further achievements in term of marine conservation, fisheries management, terrestrial and marine ecotourism development.

## Conclusion

Koh Toch is a very interesting case study illustrating the impact of rapid tourism development occurring in a small, traditional and until recently remote island fishing community. Despite a great potential of livelihood improvement through marine and cultural ecotourism, it seems that focus has been turned towards immediate profit rather than integrated, sustainable tourism and community development. In the context of a Marine Fisheries Management Area creation process, several challenges will most likely be faced and should be anticipated:

- The predominant use of destructive fishing techniques (bottom-weighted gillnets/crab nets) by community members. Giving the fact that such fishing gears will not be allowed within the MFMA, a change in fishing habits and the introduction to sustainable fishing techniques shall be anticipated and enforced.
- Illegal and destructive fishing techniques as well and foreign poaching and anchoring were seen by community members as the main issues affecting fisheries resources and habitats in the area. After discussions, the interviewees stressed on the lack of enforcement, human and material resources to crack down on these activities. Again, these issues could be addressed and financed by revenue generated through tourism as shown by Koh Rong Samloem CFI<sup>5</sup>.
- Relationship between community members and visitors will most likely quickly deteriorate if no action is taken. Plans to develop a community tourism awareness program, in the form of “code of conduct” posters, would be simple to set up.

---

<sup>5</sup> M.Skopal, P.Ferber. *Koh Rong Samloem Community Fishery, Socio-Demographic Survey – April 2011 update*. MCC 2011



## Annex - Questionnaire conducted in Koh Toch

---

### PART 1 - SOCIO-ECONOMIC & DEMOGRAPHICS

**H1.** Family name: \_\_\_\_\_

**H2.** When did you arrive in the village (year)? \_\_\_\_\_

H2.1. From where (what is your homeland)? \_\_\_\_\_

H2.2. Why did you leave your homeland? \_\_\_\_\_

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

Name	Age	Gender (M/F)		Ethnicity (Khmer, Cham, Other ____)			Religion: buddhist (B), muslim (M), other (O)			Language	Education (Read/Write, Number of years____)			Occupation 1 (\$\$\$\$) & where do you sell?*		Occupation 2 (\$\$\$) & where do you sell?*		Occupation 3 (\$) & where do you sell?*	
		M	F	K	C		B	M	O		R	W							
		M	F	K	C		B	M	O		R	W							
		M	F	K	C		B	M	O		R	W							
		M	F	K	C		B	M	O		R	W							

\* Where do you sell?

- Products is used by the family only: write: “family”
- Product is sent and sold not too far (other islands or Preah Sihanouk province): write the name of the place: “Koh Rong”, “Kampong Som” ....)
- Product is sent and sold in other provinces or in Phnom Penh: write the name of the province or “Phnom Penh”
- Product is sent and sold to another country: write the name of the country

## PART 2 – FISHING PRACTICES

**F1.** Are you or a member of your family a fisherman? ☐ Yes ☐ No

IF NO: **F.1.1** Were you or a member of your family a fisherman before? ☐ Yes ☐ No

IF YES: **F1.2** When and why did you stop? \_\_\_\_\_

*If the answer for H5 is no, you can stop the questionnaire here. If yes, continue until the end.*

**F2:** Details on boats and gears

Type of boat	Number of boats	Number of engines and power (horsepower HP)	Are you: Owner of the boat (O) and/or Captain (C) or crew member (CM)?			Type of fishing gears: line (L), traps (T) or nets (N)			Species you want to catch: fish (F), squid (S), crab (C), others _____				You fish for: family (F) or to sell (M)?	
Paddle-boat			O	C	CM	L	T	N	F	S	C		F	M
Long-tail boat			O	C	CM	L	T	N	F	S	C		F	M



Type of boat	Number of boats	Number of engines and power (horsepower HP)	Are you: Owner of the boat (O) and/or Captain (C) or crew member (CM)?			Type of fishing gears			Targeted species: fish (F), squid (S), crab (C), others _____				Fish for: family (F) or market/to sell (M)	
Trawling boat			O	C	CM	L	T	N	F	S	C		F	M
Other boat (precise): -----			O	C	CM	L	T	N	F	S	C		F	M

**F3: Details on fishing gears**

**F3.1: If fishing with lines:**

Type of line (squid line, octopus line, long line....)	Number of line	Number and size of hooks	How long do you go fishing when you use lines?						If you leave the line and pick it up later (octopus line for example), how long do you leave the line in the water?			
			1 to 2 hours	2 to 4 hours	4 to 6 hours	6 to 8 hours	8 to 10 hours	10 + hours	½ day	1 day	1 to 2 days	More than 2 days
			1 to 2 hours	2 to 4 hours	4 to 6 hours	6 to 8 hours	8 to 10 hours	10 + hours	½ day	1 day	1 to 2 days	More than 2 days



**F3.2: If fishing with traps:**

Type of traps (fish traps, crab traps -wood or metal?-, squid traps....)	Number of traps	If you leave the line and pick it up later (octopus line for example), how long do you leave the line in the water?			
		½ day	1 day	1 to 2 days	More than 2 days
		½ day	1 day	1 to 2 days	More than 2 days

**F3.3: If fishing with nets:**

Type of nets (fish nets, crab nets, trawl net....).	Bottom (B) or surface (S) net ?		Number of nets	Length of each nets (meters or kilometers)	Size of mesh	If you leave the line and pick it up later (octopus line for example), how long do you leave the line in the water?			
	B	S				½ day	1 day	1 to 2 days	More than 2 days
	B	S				½ day	1 day	1 to 2 days	More than 2 days



**F4.** How much do you catch per fishing trip?

**F4.1:** *If fishing with lines*

Type of lines #1	Species you catch the most	How much do you usually catch (kilograms)?	Do you catch: less than before (when you arrived on the island) or more than before?	
	Species 1:		Less	More
	Species 2:			

Type of lines #2	Species you catch the most	How much do you usually catch (kilograms)?	Do you catch: less than before (when you arrived on the island) or more than before?	
	Species 1:		Less	More
	Species 2:			

**F4.2:** *If fishing with traps*

Species you catch the most	How much do you usually catch (kilograms)?	Do you catch: less than before (when you arrived on the island) or more than before?	
Species 1:		Less	More
Species 2:			



**F.4.3: If fishing with nets**

Type of net #1	Species you catch the most	How much do you usually catch (kilograms)?	Do you catch: less than before (when you arrived on the island) or more than before?	
	Species 1:		Less	More
	Species 2:			

Type of net #2	Species you catch the most	How much do you usually catch (kilograms)?	Do you catch: less than before (when you arrived on the island) or more than before?	
	Species 1:		Less	More
	Species 2:			

**F5. If you go fishing within Koh Rong Samloem Community Fishing Area:** Do you think that because of the Community Fishing Area, there are more fish/crabs/squid than before? ☐ Yes ☐ No ☐ Same same

**F6. How many days per week do you go fishing (average)?**

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





**F7.** What do you think are the main problems in the area ?

- ☐ Destructive fishing techniques
- ☐ Foreign illegal fishing and poaching (example: Vietnamese boats)
- ☐ Anchoring on the coral reef: destroys where the fish can reproduce
- ☐ Conflicts between fishing boats and tourist boats
- ☐ Conflicts between small fishing boats and big fishing boats. Example: traps are broken or destroyed by bigger fishing boats with big fishing gears
- ☐ Pollution. Example: garbage thrown at sea, dirty water....
- ☐ The Fisheries Law is not well enforced / The police does not control often enough

