

Report on Natural Resources in Ream Community, Sihanoukville

Fisheries

The information from Sihanoukville Department of Agriculture, Forestry and Fisheries (DoAFF) has been revealed nothing in which it related to the statistic of fish caught in the Prey Nob district, especially to the community project in Ream Communities. The other statistics of the fishing activities to the community project have shown in the table below:

Table. 1 shown the numbers of fisher-folks and fishing boats in the community project.

No	Village's names	No. of fisher folks		Engine boats		Row boats	
		Men	Women		PRA		PRA
1	Koh Kchyong	78	10	70	391*	4	23*
2	Sre Khnong	78	48	10	8*	106	73*
3	Sre Cham Kroam	43	27	-	-*	16	10*
4	O Chrov	37	19	7	5*	43	30*
5	Boeng Ta Srei	52	15	12	18*	31	39*
6	Toek Chenh	31	9	1	-	30	-
7	Don Loy	80	56	9	-	61	-
8	O Oknga Heng	87	3	-	-	59	80**
9	Bat Koki	111	21	31	10*	66	37*
10	Boeng Chum	141	80	-		42	55*
11	Phnom Toch	25	-	-	3*	14	25*
Total		763	288	140	443*	472	372*

Source: statistics of fisher folks from Sihanoukville Fisheries Office 2002. Most machine boats are ranged from 3.5HP to 10HP. Notes: * = PRA information, ** = mixed both kinds of boats

Table. 2 shown the number of fishing gear in the community project in Ream Community

Gear types	1*	2*	3*	4*	5*	6*	7*	8*	9*	10*	11*
Opensea fishing											
Shrimp nets	22	0	0	1	0	1	6	0	14	0	0
Fishnets (All kind of fishes)	0	1	0	0	17	0	0	0	2	0	0
Ray nets	0	0	0	0	2	0	0	0	0	0	0
Inshore fishing											
Shrimp nets	3	24	3	28	48	20	34	0	23	2	0
Crab-traps	8	0	0	0	0	0	0	32	1	245	0
Motorized push nets	50	0	0	0	0	0	0	0	0	0	0
Hand push nets	0	25	13	5	0	15	27	50	1	0	0
Fishnets	1	6	0	5	0	4	9	7	39	268	65
Fish trap/bamboo fence	0	0	0	1	0	0	0	0	0	25	14
Crab nets	2	0	0	1	0	0	0	0	41	15	0
Fishing hook	0	0	0	2	0	0	0	1	2	2220	190
Hand collectors	1	62	54	23	0	0	65	0	9	125	2

Notes: 1*2*...11*, they represented the villages as shown in vertical column of table 1.
Source: Sihanoukville Fisheries Office 2002

The fisheries resources were once the outstanding natural resources in Cambodia. The historical and past events in which related to the sea and/or coastal fishing activities were occurred little compared to freshwater fishing. Information from PRA dialogues in the villages and observations have shown that all sizes of fishing gears used. The gears are categorized for deepwater gears (opensea fishing) and inshore fishing gears.

The opensea fishing gears consists of shrimp nets, fishnets, crab traps, squid nets and fishing-hooks are also used where frequently occur in the coral reef and rocky areas near the islands of Koh Ses, Koh Tmei Islands and somewhere in Koh Sompoch Island. The fish species caught by such hooks are coral fish of groupers, seabass and snappers. The opensea fishing often occurs in the areas near of Koh Thmei Island, Koh Ses, Koh Sompoch, Koh Rong and Koh Tang Islands and elsewhere near Kampot's water territory. Generally, the directions and distance of the opensea fishing areas could not be measured but at least approximately 7km to 10km from the shoreline. Some fishing areas are further than 60km off the Koh Tang Island.

Likewise, some gears such as fishnets, shrimp nets long-line fishing hooks, crab traps (mudcrab), hand-pushnets, motorized pushnets, motorized cockle-drags, bamboo fences and coastal bagnets have used in the shallow water and inshore fishing. Based on the PRA information, there are several areas for inshore and shallow water fishing; they are marked the names as Prek Taben, Khaek Dek, Chhrov Svay, Prek Tu Teung, Koh Kra Bay, Khem, Thmor Thom, Ma Ou, Angdong Teouk, and Prek Trabek. Most fisher folks go fishing in the shallow water for daily subsistence.

There are some moorings placing in the villages where boats can access through rivers and creeks. However, the important mooring place is in Koh Kchyong village. Ma Ou area is another second large mooring place for fishing boats in the community project.

Based largely on the PRA information it indicated that fisheries resources have declined sharply and this declination can lead to the poor fisher folks losing their alternatives for daily livelihoods but new alternatives ones have chosen.

There are several causes such as used destructive fishing gears (motorized pushnets and motorized cockledrag) in the shallow water. Such fishing can affect to seagrassbed and disturb fish habitat. Additionally, the used coastal bagnets and converted mangrove forest into shrimp farm are another negative impact to the fisheries resources. Furthermore, the increasing a number of fishermen is also an indicator to fishing effort in the area and having limited options for livelihood alternatives.

The degradation of fisheries resources because of the several consequences of the local people in which related to the low awareness, education, and poor technical skills including the lack of livelihood alternative for resource exploitation. Furthermore, the weak of institutional and legal framework that leading to the increasing number of illegal fishing activities, as well as poor cooperation amongst the relevant agencies. A sustainable fisheries management should be considered and recommended on the improving of the depleted resources at the present status.

Table 3 shown of seasonal fishing calendar for subsistence

Fishers items	1	2	3	4	5	6	7	8	9	10	11	12	Remarks
Krill												▶	Subsistence
Shrimp												▶	Subsistence
Sesarmid Crab												▶	Subsistence
Mullet fish												▶	Subsistence
B.S. Crab												▶	Subsistence

Krill fishing: The peak season for krill fishing is between the month of September and October and can be caught of 20kg –30kg per night. Normally, the krill fishing occur during the nighttime. The rest of year can caught around 5kg-10kg per night. There are two kinds of gears for krill fishing: (i) used motorized pushnets and (ii) hand pushnets. Motorized pushnets usually fish in the water around the islands of the water depth of 6m-10m deep whereas hand pushnets are used in the shallow water in front of mangrove forests or in the mudflat areas.

Shrimp fishing: Most seasonal lucrative shrimp fishing usually occur in the months of the July to November. Although, the peak season for shrimp but only few days of more than 5days to 8days that fishermen can catch shrimp with high products of 3-5kg per night. For the shrimp fishing, occur in the opensea with the high *Horse Power* engine boats. The shrimp fishing operate year round but the other months can be caught of 4kg to 8kg and fishing areas is further of 7 to 10km offshore.

Mullet fishing: There are two kinds of mullet fishing (i) mullet fishing in the opensea and (ii) mullet fishing in the shallow water during the high tide. The mullet fishing operate year round and peak season of the opensea fishing is in the months of July and December that coincide similarly with shrimp fishing and the high ‘horse power engine boats’ are used to such fishing. There are few types of gears are used by the opensea fishing boats. i.e. If shrimp could not be caught, the fishnets will be fished for mullet fish and other kinds of fish species. Meanwhile, mullet fishing in the shallow water usually operate year round the caught by small engine boats or rowboats with several kinds of gears such as fishnets, long line hooks, trap and coastal bagnets. The captured fish in the shallow water is low products compared to opensea fishing.

Sesarmid Crabs: The mangrove crabs are caught by handcollectors of the poor fishermen. The peak months are between January to May and November to December. However, the rest of the month is still fishing but low catches and low products. The sesarmid crabs can be caught of 1.5kg to 3kg per night. For the hand collectors, they are not only catch crabs, but also other products of cockles, clams and mudcrabs. The figure of product is hard to estimated but ranged from 1kg to 3kg of total catches.

Blue Swimming Crabs: The fishing operates also year round but very less products even the in the peak season on between June to August. The crabs seem to be rare because of high fishing efforts. The maximum caught is around 0.5kg to 2-3kg of each boat per

night. The shrimpnets and mullet fishnets are also used by the crab-fishermen. In general, the fisherfolks use several kinds of gears during they go fishing.

Mangroves

Information from the PRA discussion it seems that mangrove forest has been threatened for past several years due to conversion to the shrimp farms and settlements including agricultural purposes. Additionally, PRA dialogues revealed that the present status of mangroves is worse than the past ten years in 1992. The mangrove products become the benefits to local people such as firewood, construction materials and charcoal production. Either the insiders or outsiders have been involved in mangrove harvesting in the areas. The past pressures on mangrove extraction can lead to minimize of mangrove products. Today, the extracted mangrove products are less and less because of over extraction and past harvest. The mangrove forests are found largely in front of the Koh Kchyong village and along the Prek Toeuk Sap estuary and small rivers and creeks. Furthermore, mangroves are also found in the some patches of the Koh Thmei and Koh Sompoch Islands where freshwater can pass through the creeks and small rivers from the hills in the Islands. There are several species of true mangroves and mangrove associated species. The most dominant species is the species of Genus-*Avecinnia*, *Rhizophora*, *Bruguera*, and follow by mangrove-associated species located behind. From the PRA interview, local people do aware of the important of the mangroves because they know that mangrove provides a significant habitat for fisheries resources. The mangrove crabs (*Sesarmid crab*), mudcrabs, and some mollusk species are collected in the mangrove forest in particularly to the poor fisher folks. However, the lack of awareness linkage to limited livelihood alternatives can lead to mangroves depletion soon if sustainable practices are neglected.

No any secondary data of mangroves come from the Sihanoukville Fisheries Office. The secondary information related to mangrove was completely unknown. However, referred to the 'Initial Mangrove Resource Management Plan in Ream National Park' indicated that approximately of 1, 882 ha of mangrove forest in the park (IUCN, 1996). In the period between 1997-99, the mangrove forest in the park was harvested unsustainably of the charcoal exploitation.

There were more than 200 charcoal kilns operating illegally (Park report, 1999). The previous 40ha of shrimp farms operated in the mangroves (MoE report 2000) and at the present increasing up to around 100ha during the PRA interview. Additionally, the current dike construction to keep freshwater for agricultural rice farming has caused the conversion of mangroves in the Ma Ou area into agricultural farm.

This is as an indicator of loosing the mangrove habitat for aquatic resources and narrow down fishing areas of the poor fisher folks. Beside this, the creek (called Prek Romeas Ngop) was blocked by dike and seawater could not pass through that river. Information from PRA in Boeng Tasrey village, it indicated that the mangroves standing along that creek are being got worse and soon conversion to non-mangrove area.

Mudflats

The mudflats are frequently seen in front of the mangrove areas during ebb tide. The large mudflat areas are found at the mouth of Prek Toeuk Sap estuary where located in the north of Koh Thmei Island and somewhere of mangrove areas in the Koh Kchyong village. The information from PRA discussion, the poor fisher folks realized that mudflats are important for hand collector during the high tide.

The small shrimps for shrimp paste (called *Ki*), cockles and other mollusks and mullet fishes are caught in this area during the high tide. The historical events it indicated that fishery resources had been harvested in the mudflat and mangrove areas and that time a little opensea fishing was occurred. That time, most fishermen fished around the shallow water and inshore areas.

The present degradation of fish species due to several illegal activities such as the using of motorized pushnets and motorized cockledrags in the mudflat areas and other factors of the cockle seed/fingerling collection for aquaculture practices. The cockle seed collection was sold to the Vietnamese farmers for aquacultures on the past years. No secondary data shown the captured fishes mentioned in which it related to the inshore statistic of fish caught.

Seagrasses

Information from the Sihanoukville Fisheries Office (SFO) has been clearly unknown for any information that related to the coastal resources, especially, statistic of fish caught, mangroves, and coral reef and seagrass. Information from PRA dialogues in the villages of the community project, it seems that seagrassbed was less disturbed. However, the illegal shallow fishing is a significant indicator of the depletion of seagrassbed. Furthermore, any disturbances from outside fishermen are completely unknown. The PRA interview, the seagrasses found somewhere around Koh Ses Island, Koh Thmei and Koh Sompoch Islands. The important of seagrassbed is seems far away of people's consideration during the PRA discussion in the villages in Ream community. The most threatened to seagrassbed is due to fishing in shallow water by using motorized pushnets and motorized cockledrags.

Coral Reefs

Generally, coral reefs in the Ream community are found around the islands of Koh Ses, Koh Thmei and Koh Sampoeh Islands. Based on the PRA information it seems shown that the present status of the coral reefs is in a good healthy conditions. The coral reefs areas are less disturbed by fishermen because of they are difficult to fish in the coral reef areas. No any information in which it related to dynamite fishing in the coral reefs were revealed. However, the outside disturbance is unknown. Additionally, PRA discussion

revealed that most fisher folks are poor so that they could not go further distant for fishing, especially around the islands where coral reef presence.

Most fishermen in Koh Kchyong village have engine boats with high *Horse Power* and can go fishing in the distant areas and probably those fishermen know some of coral reef status related to fishing impact in the coral reef areas. Some coral reef disturbance occurred by incidental collection for ornaments in the houses. The collection, it occasionally happens during ceremony days when the fishermen took their family's members to visit in the islands.

Forests

Based on the PRA information, forest areas are classified into forestry community (CF) and non-forestry community and protected forest in the national park. The present status is very degraded and need long time to recover. The forest is used to extract non-timber forest products (NTFPs), firewood, mushrooms, traditional medicine and construction material for family's scale. These areas have been under threatened by altering into agricultural crop farms and human settlements and also under the shape of land speculations.

During PRA discussion, forest areas are completely absence in the most villages and the villagers extract forest resources from the park. The *malaleuca* forest is represented in the Forestry Community and some NTFPs extracted such as *malaleuca* mushrooms (it can cost 5000riel per kg), and other NTFPs. The villagers go picking mushrooms in the *malaleuca* forest, and sold at the price of 500riel per kilogram. The mushroom emerge from the soil where is around the tree base after the day of raining.

Wildlife

Information from PRA discussion, the wildlife presents in some areas in the Phnom Koh Kchyong hill, and mountain area in the west of the Bat Koki village as well as in the national park. The wildlife status is also under threatened for subsistence. No any indicator of hunting for trade and local consumption clearly known during the PRA in those villages. No any information on the wildlife status from the park authority is obtained.

However, through PRA interview shown that the park and elsewhere outside the park no large animals were found. Due to loose management of the park authority and poor cooperation relevant agencies that lead most animal nearly disappear in the park

Protected Areas

Since established the park in 1993, has been under threatened by several illegal and legal activities. It was recognized that the forest resources in the park, divided into two categorized; terrestrial forest and mangrove forest. The mangroves are in good condition because of growing young seedlings and extend seaward but most mangrove product for

construction material is still limited. The terrestrial forest is degraded and still illegal operating till today.

The present status of park management is under threatened due to lack of cooperation amongst lines agencies and loose management with some corruption as well as limited law enforcement. Based on information from PRA discussion, the park is not clearly known by the most of villagers but recognized that area is under the competent of environmental authority. Such moves should be placed considering on the possible future risk unless manage sustainably is taken measures.

The exploitation resources in the park for small-scale utilizations are accepted such as NTFPs products, firewood, honey, traditional medicine, and wild fruits and so on. Furthermore, the villagers felt that park provide alternatives to support daily subsistence and prevent the land encroachment for land speculation.

Freshwater

Based on information from PRA interview in the community project, freshwater divide into two sections as drinking water and irrigation water supply. From PRA interview, freshwater sources from wells, ponds are used for drinking water and cooking. In short period of dry season, the freshwater supply is limited, but still meet the needs in some villages. In case of Koh Kchyong village, freshwater supply has been underpaid to private owners. However, drinking water is in poor quality because of some contamination substances.

The water consumption for irrigation system used only agricultural rice farming. There are several seasonal small rivers for freshwater supply to agricultural irrigation in the wet season. The dike construction for irrigation water supply to agricultural farming is increasing the rice yield in the area. However, from PRA dialogues, dike construction is being reduced rice yields of two villages with low yields before the construction. This is because of water distribution and its impact to the lower areas.

Land Uses

The overall overview of the land uses, they are categorized into several sections such as land for agricultural farms, aquaculture, settlements, and reserved land for future development and so on. Information form PRA discussion, agricultural land is typically characterized of paddy fields and agricultural crops (both seasonal and fruit crops) with medium quality soil condition.

Based on the quality of soil through general observation on the some crop plants, it seems that local villagers being neglected to agricultural crops for their livelihood alternatives. Due to, therefore lack of technical skills and limited capability to support daily subsistence and directly chose fishing alternatives as main occupations. No any reserve land left for future development except the forestland for villages in which established as forestry community.

For aquaculture-traditional extensive shrimp farms of around 100 ha have been operated illegally in the mangrove areas. The conversion of mangroves into traditional shrimp culture are not only for culture purposes but also area kept for speculation for booming business.

Settlements are located mixing with some fruit trees around the houses and villages. The seasonal crop used as home garden have grown in the wet season for subsistence. The most popular fruit plant in the villages is coconuts, mangoes, and jackfruits as well as edible wild-fruit plant of the family *Sapindaceae*, local name called *Derm Phreav*.